

**Brooklyn Inland Wetlands Commission
Regular Meeting Minutes
November 12, 2019**

Call to Order: The meeting was called to order at 6:07 p.m.

Members Present: Jeffrey Arends, Demian Sorrentino, George Sipila, James Paquin.

Absent: Richard Oliverson with notice.

Staff Present: Margaret Washburn, Wetlands Agent, Audrey Cross-Lussier, Recording Secretary.

Also Present: Attorney Harry Heller, David Held, Madilyn Smith, Aaron Kerouac.

Roll Call: All members present stated their name for the record.

Seating of Alternates: None.

Public Hearings: None.

Public Commentary: None.

Additions to Agenda:

A motion was made by Jim Paquin to add under New Business #1 Review scope of services received from the hydrogeologist for application 102219B Strategic Commercial Realty, Inc., d/b/a Rawson Materials, Maynard Road, Map 29, Lot 5, RA Zone; Excavation of 1.2 million cubic yards of sand and gravel. George Sipila seconds this motion. No discussion held. All in favor. The motion passes unanimously.

Approval of Minutes:

1. Special Meeting Minutes October 22, 2019. The meeting minutes were accepted as written with no changes.

Old Business:

1. 102219A Strategic Commercial Realty, Inc., d/b/a Rawson Materials, 200 acres +/- on the south side of Rukstela Road (Map 21, Lot 7 and Map 30, Lot 16) in the RA Zone; Excavation of approximately 1.9 million cubic yards of sand and gravel. All excavated material will be transported off site to a processing facility in Canterbury.

Attorney Harry Heller represents the applicant along with David Held from Provost and Rovero. At the special meeting of 10/22/19 there was discussion concerning the delineation of the wetlands on the property and whether or not the applicant was proposing to engage in any regulated activities. At that time, it was agreed to obtain the services of soil scientist Joseph Theroux to re-delineate the wetlands on the portion of the property in proximity to the proposed work. The original delineation was performed by a soil scientist retained by NexTerra in conjunction with the solar project. Attorney Heller submits a report dated 11/5/19 from Joseph Theroux (see attached). On 11/12/19 the plans were revised, and wetland flags were shown in larger font. Sheet 2 shows the delineation with all flag numbers as flagged in the field by Mr. Theroux and located by Provost and Rovero on the project plan. Sheet 3 is the overall site development at 100 scale. The 125 ft. upland review area from wetlands is shown. The 175 ft. watercourse setback is shown along the northerly side of the westerly excavation area. The additional investigation conducted verifies the applicant is not proposing any activities in wetlands or watercourses or within the 125 ft. upland review area adjacent to a wetlands, or the 175 ft. upland review area adjacent to the watercourse per IWWC regulations. At the last meeting the excavation into the water table to create two ponds was discussed. The proposal was to backfill one of the ponds with silt in order to accommodate a portion of the NexTerra project. An opinion was received from the Town's Attorney, Peter Alter, that this is a regulated activity. Attorney Heller disagrees. For purposes of this application, the proposal to backfill the pond has been removed and will leave permanent ponds as the closure plan for the project so that the applicant is not under Attorney Alter's interpretation, engaging in any regulated activity in conjunction with the project. Being outside the regulated area, with no adverse impacts to wetlands or watercourses, the applicant requests a jurisdictional ruling. Mr. Sorrentino does not agree with Attorney Alter's opinion. Discussion ensued.

Mr. Arends asked when the delineation was done. Attorney Heller commented 2 weeks ago. Ms. Washburn passes out USGS Maps of intermittent watercourses for the Commission members to review (see attached). Ms. Washburn reviews her Wetlands Agent's Report Upland Review Areas page 2 (see attached). Ms. Washburn reviews IWWC regulations with regards to definition of regulated areas. Discussion ensued.

Attorney Heller reviews sheet 14 with Commission Members and discusses the E & S plan. As it is excavated in phases, the banks will be stabilized in phases. The whole bank will not be exposed. Ms. Washburn asked what if the lip blows out. Attorney Heller commented it will have to be reshaped. Ms. Washburn asked for further explanation of the phases. Mr. Held commented the intent is they will do the excavation of the first several phases to 14 ft. above the water table and the last phase would be the actual excavation of the pond and the bottom of the excavation.

There will be at least one full growing season and likely two before there is a finished pond. Further discussion ensued regarding the phases of the east and west ponds.

Ms. Washburn asked if the Commission wishes them to come back with the 175 ft. upland review areas for the central and southeast wetlands. Commission members feel it is appropriate and can be a condition of approval.

Ms. Washburn discusses significant impact status with regards to this application.

Attorney Heller comments that the Statutes specifically directs unless a significant impact is found, you should not hold a public hearing on the application. Attorney Heller discusses the downcutting detail on sheets 14 and 15 demonstrates the methodology by which the excavation will occur. It will always be contained within the excavation itself. There is no potential based on the methodology that will be used for any erosion event to impact any of the wetlands or watercourses on the site. Ms. Washburn questions the timing, rate and amount of water hitting the wetlands and questions what the hydrological effects will be. Attorney Heller discusses Ms. Washburn's concerns. Mr. Arends asked Attorney Heller if he's a hydrologist or a wetlands scientist. Attorney Heller comments he has been doing this for 45 years and over this period of time has acquired a body of knowledge.

Mr. Held stated the same project was approved by the Town in 2010 and it was probably 30% completed before work stopped. The site was operated for approximately 5 years. There has been approximately 700,000 to 800,000 cubic yards of material removed from the easterly excavation area.

Ms. Washburn hands out a vernal pool analysis generated by the solar project and reviews with commission members (see attached).

Attorney Heller comments that the Commission operates by virtue of legislation that created municipal inland wetland and watercourses commission. The Commission has authority to enact regulations and to regulate under those regulations based on the enabling legislation. Connecticut General Statutes 22a, 41 sub d, which arose out of the Avalon Bay case specifically provides a municipal inland wetland agency shall not deny or condition an application for regulated activity in an area outside of wetlands or watercourses on the basis of an impact or effect on aquatic plant or animal life unless such activity will likely impact or effect the physical characteristics of such wetlands or watercourses. Mr. Held comments with regards to critical terrestrial habitat, Tier 1, Tier 2 vernal pools. A previously disturbed gravel excavation would not be considered critical habitat. Undisturbed forested landscape would be considered critical habitat. They are not disturbing any of that. About 85 % of the entire project footprint is previously excavated and disturbed and void of that critical habitat which would support the vernal pool species. Ms. Washburn discusses a letter dated 11/12/19 received from DEEP (see attached). Discussion ensued.

Mr. Sorrentino is concerned about the Commission overstepping their authority. The Commission has to act within their statutory obligation and in accordance with past practice. If the Commission goes outside of their jurisdiction, there is risk to the Town for legal action.

Ms. Washburn asked the Commission if they feel this application meets the criteria for a significant impact. Mr. Sorrentino and Mr. Paquin do not feel it meets the criteria for significant impact. Mr. Arends feels it does meet the criteria for significant impact. Mr. Sipila makes no comment. Mr. Sorrentino comments that a lot of information has been received tonight and appropriate time to review the information is necessary.

Mr. Paquin will not be available to attend next month's meeting December 10, 2019.

Mr. Arends would like to see the 175 ft. lines drawn with the intermittent streams on the site plan.

Ms. Washburn discusses erosion and sedimentation controls within in the ponds.

A motion was made by Demian Sorrentino to table application 102219A and continue to the next regularly scheduled meeting on December 10, 2019. George Sipila seconds this motion. No discussion held. All in favor. The motion passes unanimously.

New Business:

1. Review scope of services received from the hydrogeologist for application 102219B Strategic Commercial Realty, Inc., d/b/a Rawson Materials, Maynard Road, Map 29, Lot 5, RA Zone; Excavation of 1.2 million cubic yards of sand and gravel.

Commission Members reviewed the GZA letter dated 11/12/19 regarding hydrogeologic assessment of an isolated kettle wetland, Potvin Family Trust Property, Maynard Road, Brooklyn, CT. Discussion ensued.

Commission Members unanimously agreed to Task 1 – Site Walk, Task 2 – Brooklyn Set-Back Regulatory Review, Task 3 – Wetland Evaluation, Task 4a – Hydraulic Connectivity Assessment (Phase 1), Task 5 – Potential Mitigation Measures and/or Recommendations, Task 6 – Hydrogeologic Connectivity Summary (see attached).

Task 4b – Hydraulic Connectivity Assessment (Phase 2) no additional borings are authorized at this time. If additional borings are required, they will need to seek prior authorization.

Task 7 – Threatened and/or endangered Wildlife Assessment is not authorized at this time.

Mr. Arends will come into the office to sign the revised scope of work once received.

Ms. Washburn sent a letter to Allan Rawson dated 10/28/19 and given 30 days to submit a remediation plan. Ms. Washburn spoke with Mr. Rawson on 11/7/19 regarding this issue.

Communications:

1. Budget Update: Commission members reviewed budget.

2. 2020 Meeting Schedule:

A motion was made by Demian Sorrentino to accept the meeting schedule of 2020 as presented. Jim Paquin seconded this motion. No discussion held. All in favor. The motion passes unanimously.

3. Wetlands Agent Monthly Report:

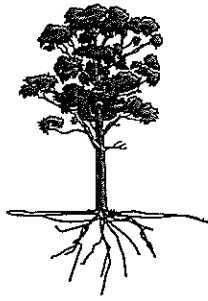
Paul Terwilleger, L.S., PC Survey, LLC, came in today to notify Ms. Washburn there will be two small subdivisions coming in the future. One will be on Prince Hill Road. The other will be on the east side of Church Street and North of Malbone Lane.

Public Commentary:

Aaron Kerouac asked if there is going to be any more tree cutting in Town and will they be coming through IWWC. Mr. Sorrentino commented typically they come before the Commission if there are land disturbing activities. Mr. Kerouac's concern is cutting a tree and leaving it in the wetland stream. There is also wood left roadside. Discussion ensued.

Adjourn: A motion was made by Demian Sorrentino to adjourn the meeting at 7:47 p.m. Jim Paquin seconded this motion. No discussion held. All in favor. The motion passes unanimously.


Audrey Cross-Lussier, Recording Secretary



Joseph R. Theroux

~ Certified Forester/ Soil Scientist ~

Phone 860-428-7992 ~ Fax 860-376-6842

P.O. Box 32, Voluntown, CT. 06384

Forestry Services ~ Environmental Impact Assessments
Wetland Delineations and Permitting ~ E&S/Site Monitoring
Wetland function and value assessments

11/5/19

Provost & Rovero, Inc.
57 East Main St.
P.O. Box 191
Plainfield, CT. 06374

Attn: Mr. David Held

Re: Wetland delineation, Strategic Commercial Realty Property, southerly of
Rukstella Rd. Brooklyn, CT.

Dear Mr. Held,

At your request I have delineated the inland wetlands, intermittent watercourses and the high water mark of Blackwell Brook & Cold Spring Brook and their adjacent floodplain soils adjacent to the proposed gravel removal operation on the above referenced property.

Fluorescent pink flags with a corresponding location number delineate the boundary between the upland soils and wetlands.

These wetland soils have been delineated in accordance with the standards of the National Cooperative Soil Survey and the definitions of wetlands as found in the Connecticut Statutes, Chapter 440, Section 22A-38.

Flag numbers WF-1 thru WF-110 delineate the eastern and southwestern boundaries of the palustrine forested wetland complex and intermittent watercourses found in the central portion of the property. On the date of the delineation, (10/29/19), portions of these inland wetlands were inundated and flows were noted in portions of the intermittent watercourses.

These wetland soils have formed from prolonged wetness and are characterized by shallow redoximorphic features, thick organic "A" horizons and low chroma colors found within 20 inches of the soil surface.

Flag numbers WF-1A thru WF-118A delineate portions of the eastern & southeastern boundaries of Blackwell & Cold Spring Brooks, (perennial), and their adjacent palustrine forested inland wetlands and floodplain soils in the western and northwestern portions of the property.

These wetland soils have formed from prolonged wetness and are characterized by shallow redoximorphic features, thick organic "A" horizons and low chroma colors found within 20 inches of the soil surface.

The floodplain soils found adjacent to the brooks are characterized by soil horizons buried by fine silt layers, are fine textured, in some cases show a lack of developed soil horizons, are well sorted, and occur in nearly level areas directly adjacent to the Brooks. Alluvial and floodplain soils meet the definition of wetlands as per the definition in the State Statutes.

Flag numbers WF-1B thru 58B delineate a portion of the western boundary of a palustrine forested wetland complex in the western portion of the property. The northern portion of this wetland extends into the hay field.

This wetland has formed from prolonged wetness from ground water breakout and perched water tables trapped above a restrictive layer of compact till. These wetland soils are characterized by thick organic "A" horizons and low chroma colors found within 20 inches of the soil surface.

Two intermittent watercourses flow downslope from this wetland to the tree line, where they terminate along the field area and infiltrate into the well-drained soils. The southern watercourse flows downslope into an excavated trench where it flows to the north along the field edge. The northern watercourse was not flowing on the date of the delineation, (10/30/19), however, the southern watercourse was flowing.

To the west of this wetland, two depressed areas within the open field area, (labeled on the plans as former manure dump pits), were investigated for the presence of wetland soils. Numerous soil samples were taken to depths exceeding 30 inches and no evidence of wetland soil indicators such as shallow redoximorphic features, low chroma colors or histic epipedons were found. Soil colors in the 20 to 30 inch depth range were 10YR-4/4 and 10YR 5/3 and no low chroma colors were found.

A third manure storage area located to the north of the existing eastern gravel excavation was also investigated. Although partially filled with rock and gravel, I found the western portion of the pit had a concrete slab base covered with a thin

layer of sand and gravel. The eastern depressed area of the pit was filled with sand, gravel, and rock. No evidence of wetland soils were found within 30 inches of the surface.

Flag numbers WF-1C thru WF-33C delineate a portion of the northwestern boundary of a palustrine forested wetland complex and intermittent watercourse found in the southeast portion of the property. This wetland and watercourse receive flows from groundwater breakout and intermittent watercourses on the hillside to the southeast. On the date of the delineation, (11/4/19), flows were noted in the intermittent watercourse.

These wetland soils have formed from prolonged wetness and are characterized by thick organic "A" horizons and low chroma colors found within 20 inches of the soil surface.

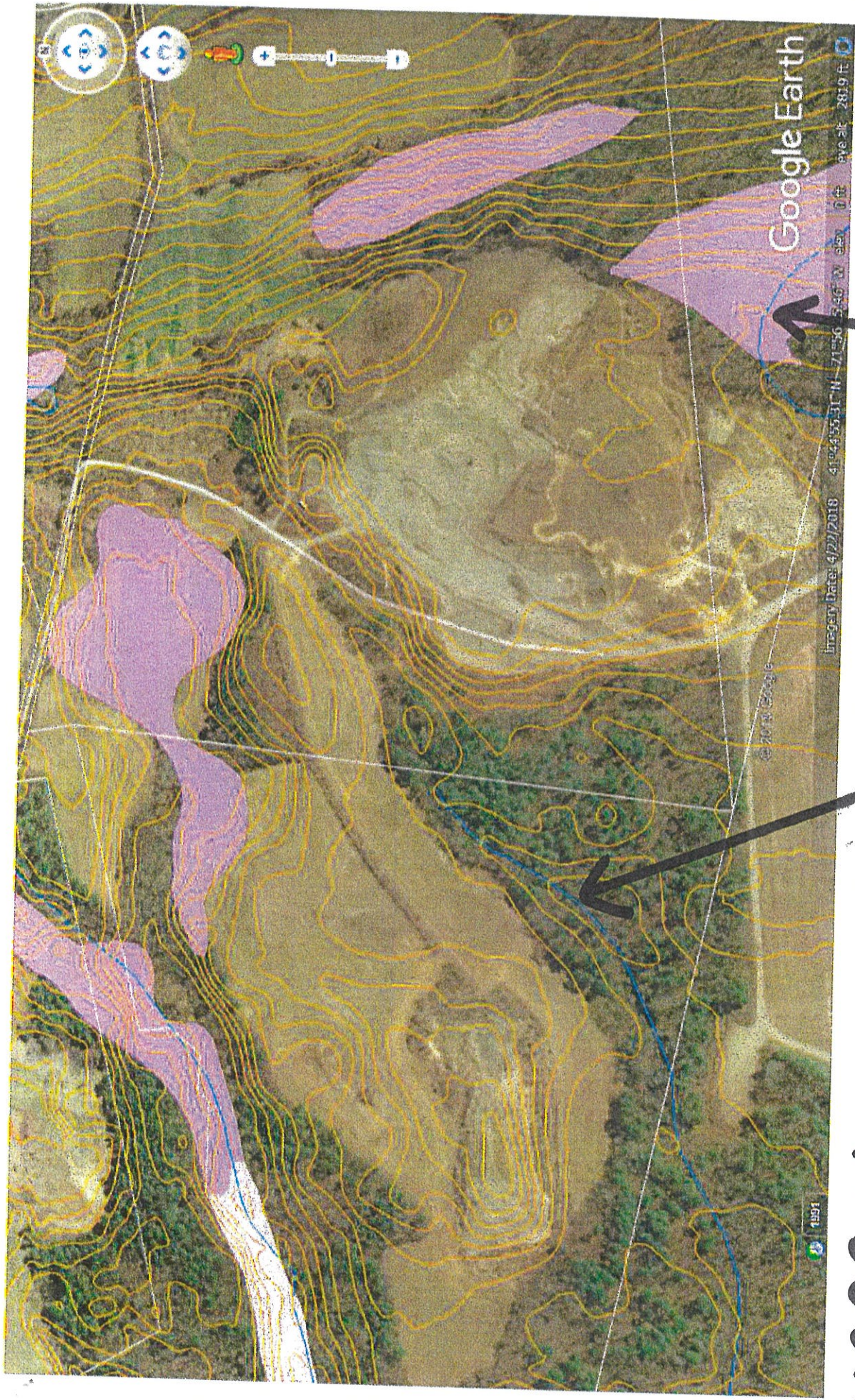
All remaining areas within 200 feet of the proposed excavations, east and west, were investigated for the presence of inland wetlands and watercourses, and none were found.

If you have any questions concerning the delineation or this report, please feel free to contact me.

Thank you,

A handwritten signature in black ink, appearing to read 'J. R. Theroux', with a stylized flourish at the end.

Joseph R. Theroux
Certified Soil Scientist
Member SSSSNE, NSCSS, SSSA.



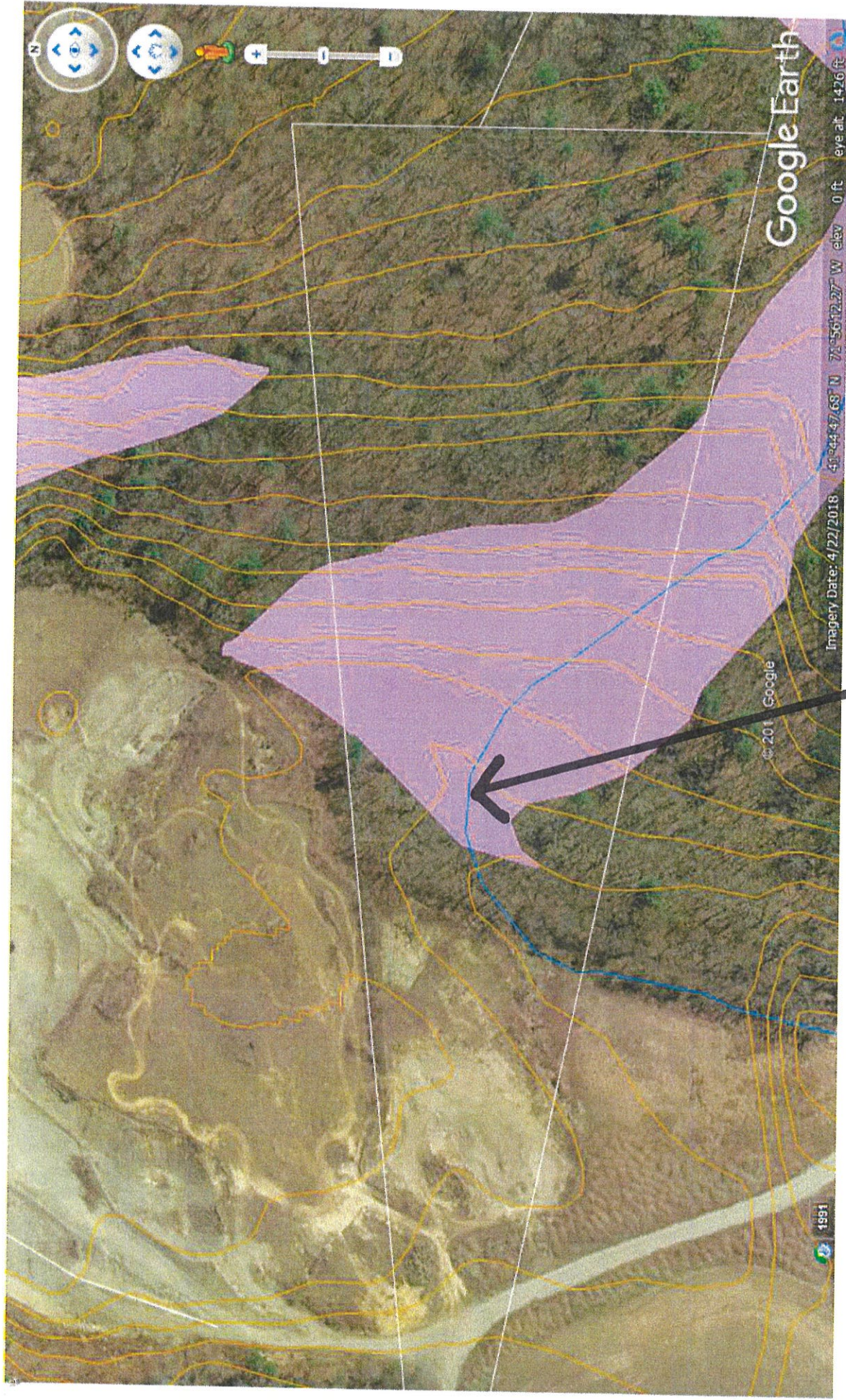
USGS streams map

1

Central watercourse
WF1-WF110.

↖

Southeast watercourse
WF1C-WF33C.



USGS streams
map 2
Southeast watercourse
WF1C-WF33C.

Inland Wetlands Agent's Report

November 12, 2019

Old Business:

Off Rukstela Road – Allan Rawson - Map 29, Lot 1. As per the IWWC directive at the 10/22/19 meeting, I sent a letter to Allan Rawson (copied to Paul Kaplan), asking him to submit a remediation plan within 30 days. He has not done so. Allan called me on 11/7 and told me that Jeff Rawson needs to do grading on Map 29, Lot 1. I told Allan that the Commission has asked for a remediation plan within 30 days and that it doesn't matter whether Allan or Jeff's signature is at the bottom.

Request for Conservation Commission review of the Rawson Rukstela and Potvin sites

On 11/7, I received this email:

"Good Morning. It has come to our attention that the Conservation Commission did not have a quorum for our last meeting. We can review the site plans for the gravel pits at our next meeting on December 2nd.

Jeannine"

New Business:

102219A Strategic Commercial Realty, Inc, d/b/a Rawson Materials, Southerly of Rukstela Road.

Ponds

The applicant proposes to **create** 2 new jurisdictional resource areas: 2 ponds, each several acres in size, up to 30 feet deep.

The alternative closure plan showing the western pond filled with 360 cubic yards of silt has been removed. Now, the 2 ponds are to remain permanently.

No sediment controls are shown around the ponds.

Upland Review Areas

Joe Theroux has flagged the wetlands and the flags are shown on the plan revised 11/6/19.

The applicant is seeking a jurisdictional ruling because work is theoretically outside jurisdictional resource areas and upland review areas.

The central wetland, flagged by WF 1 – WF110, and the southeast wetland, flagged by WF WF1C – WF33C, are shown with 125-foot upland review areas appropriate for wetlands, not watercourses.

Both the central wetland, flagged by WF 1 – WF110, and the southeast wetland, flagged by WF WF1C – WF33C, are shown as intermittent watercourses on the United States Geological Service (USGS) maps for the subject property. Please refer to the map handout.

It appears that the central wetland, flagged by WF 1 – WF110, and the southeast wetland, flagged by WF WF1C – WF33C, should be shown on the plans with 175-foot upland review areas. If this change is made, some of the proposed work would require wetlands permits.

Significant Impact Status

Please refer to the definition of “Significant Impact” in the Brooklyn IWWC Regulations. Although we do not have an ERT for the Rukstela site, as we have for the Potvin site, there is the potential for the removal of enough sand and gravel to “have a substantial effect on the wetland or watercourse or on the wetlands or watercourses outside the area for which the activity is proposed (1).”

The work has the potential to “substantially change the natural channel or may inhibit the natural dynamics of a watercourse system” (2).

The work has the potential to “substantially diminish the natural capacity of an inland wetland or watercourse to supply aquatic, plant or animal life and habitats; supply water or perform other functions” (3).

The work has the potential to “cause substantial diminution of flow of a natural watercourse or groundwater levels of the wetland or watercourse” (5).

The work has the potential to “damage or destroy unique wetlands or watercourse areas or such areas having demonstrable scientific or educational value” (7).

It appears that the IWWC could determine that the work represents Significant Impact and call for a public hearing.

Hydrological Impacts

Again, although we do not have an ERT for the Rukstela site, as we have for the Potvin site, there is the potential for the removal of enough sand and gravel to change the hydrology in wetlands and watercourses both inside and outside upland review areas. It appears that a hydrological review by GZA of the Rukstela project may be warranted.

Vernal Pool Impacts

From the Brooklyn IWWC Regulation, Section 1, Title and Authority”: It is, therefore, the purpose of these regulations to protect the citizens of the state by making provisions for the protection, preservation, maintenance and use of the inland wetlands and watercourses by minimizing their disturbance and pollution; maintaining and improving water quality in accordance with the highest standards set by federal, state or local authority; preventing damage from erosion, turbidity or siltation; preventing loss of fish and other beneficial aquatic organisms, wildlife and vegetation and the destruction of the natural habitats thereof...”

Furthermore, from the Brooklyn IWWC Regulation, Section 10, “Considerations for Decision:”

“10.5 For purposes of this section, (1) “wetlands and watercourses” includes aquatic, plant or animal life, and habitats in wetlands or watercourses, and (2) “habitats” means areas or environments in which an organism or biological population normally lives or occurs.”

Please refer to the vernal pool maps generated by the CT Siting Council for the subject property. The vernal pools should be taken into consideration for their

wildlife habitat value because the gravel removal may cause direct impacts and changes to these wetlands. The impacts and changes to these wetlands may, in turn, affect wildlife habitat for obligate species and other species that use vernal pools.

Endangered Species and State Special Concern Species

Please refer to the letter dated today from CT DEEP, which reads, in part, “I have determined that this project (as described in the NDDB Request Application you submitted) will have a direct negative impact on the populations of the endangered pure diploid blue-spotted salamander and eastern spadefoot. Direct adverse impacts to endangered and threatened species should be avoided and conservation strategies and mitigation for these species should be developed.”

The recommendations in this report should be taken into consideration for the IWWC’s decision.

102219B Strategic Commercial Realty, Inc, d/b/a Rawson Materials, Maynard Road.

Please refer to the Scope of Services received today from GZA, and the Ordinance “Chapter XX Fees for Land Use Applications”.

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

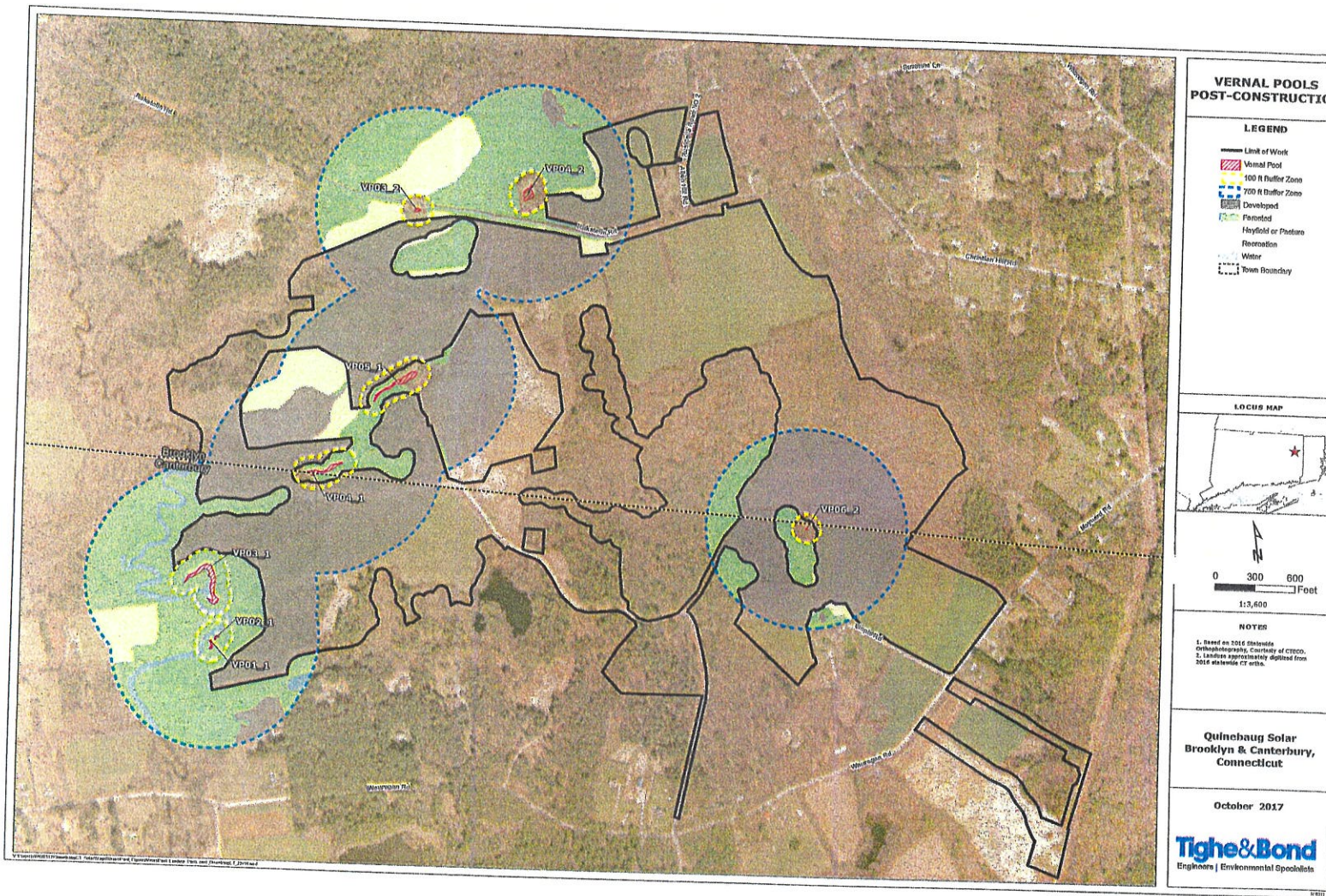
Petition No. 1310

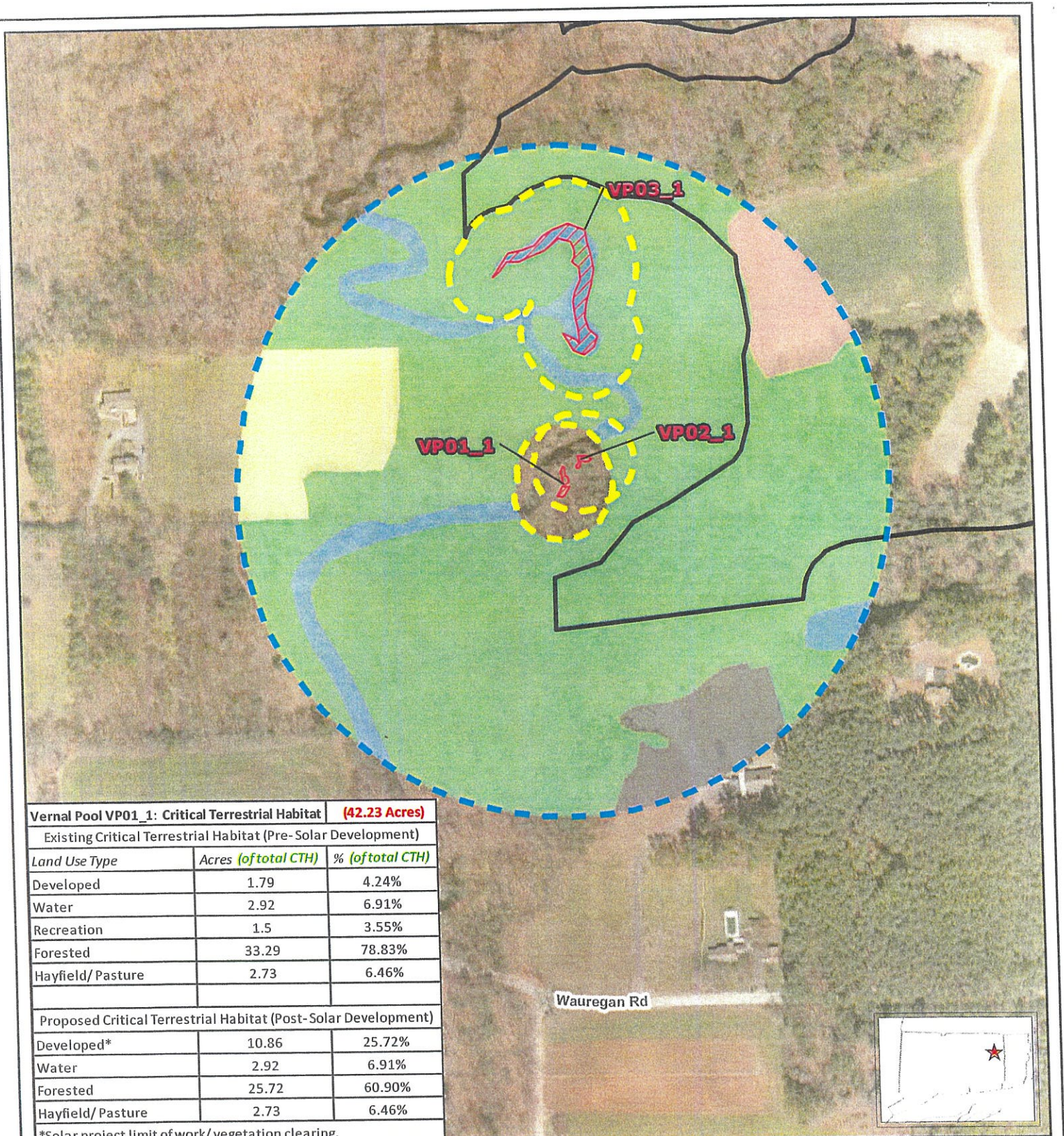
Company: Quinebaug Solar, LLC

Submission Date: October 10, 2017

Exhibit CSC-103

Vernal Pool BDP Analysis





Legend

- Limit of Work
- Vernal Pool
- 100' Vernal Pool Envelope

- 100' - 750' Critical Terrestrial Habitat Area
- Town Boundary

- Land Use Type**
- Developed
- Forested
- Hayfield or Pasture
- Recreation
- Water

Tighe & Bond
Engineers | Environmental Specialists

Based on 2016 Statewide Leaf-Off Orthophotography,
Courtesy of CTECO.

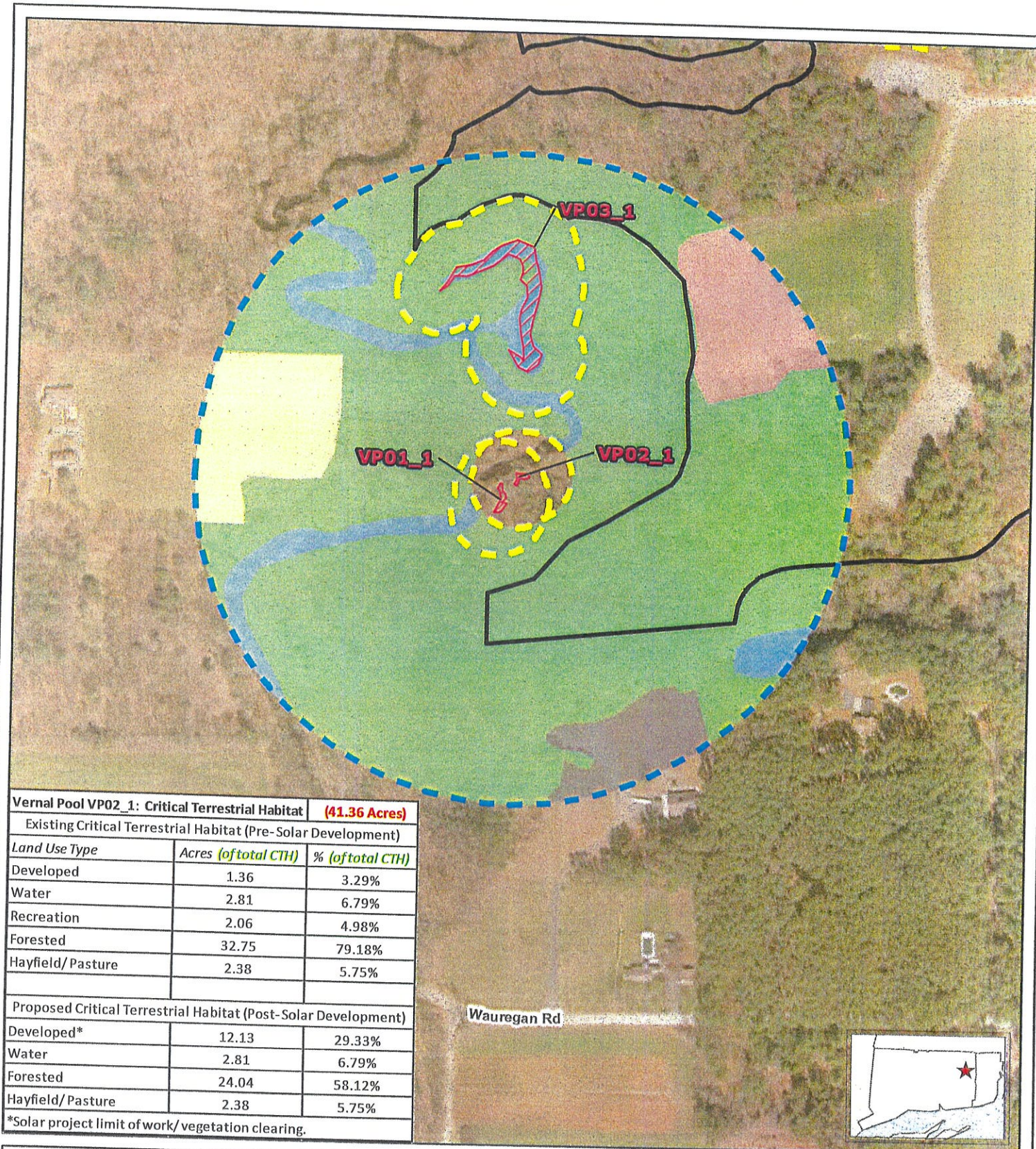
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VERNAL POOL ANALYSIS MAP VP01_1

Quinebaug Solar
Brooklyn & Canterbury,
Connecticut

October 2017



Legend

Limit of Work

Vernal Pool

100' Vernal Pool Envelope

100' - 750' Critical Terrestrial Habitat Area

Town Boundary

Landuse Type

Developed

Forested

Hayfield or Pasture

Recreation

Water

VERNAL POOL ANALYSIS MAP VP02_1

Quinebaug Solar
Brooklyn & Canterbury,
Connecticut

October 2017

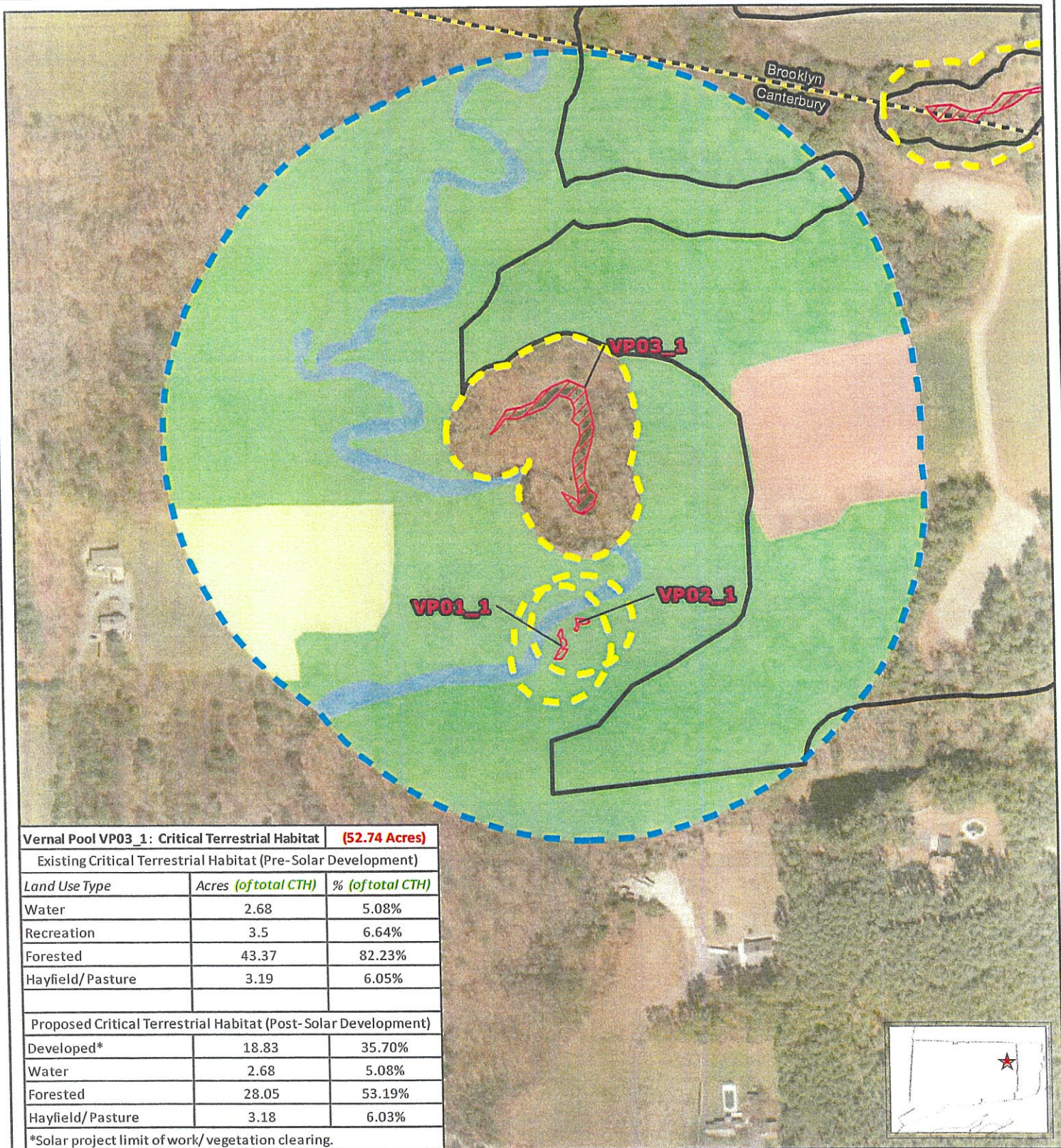
Tighe & Bond

Engineers | Environmental Specialists

Based on 2016 Statewide Leaf-Off Orthophotography,
Courtesy of CTECO.

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Feet





Legend

- Limit of Work
- Vernal Pool
- 100' Vernal Pool Envelope

- 100' - 750' Critical Terrestrial Habitat Area
- Town Boundary

Landuse Type

- Developed
- Forested

- Hayfield or Pasture
- Recreation
- Water

Tighe&Bond
Engineers | Environmental Specialists

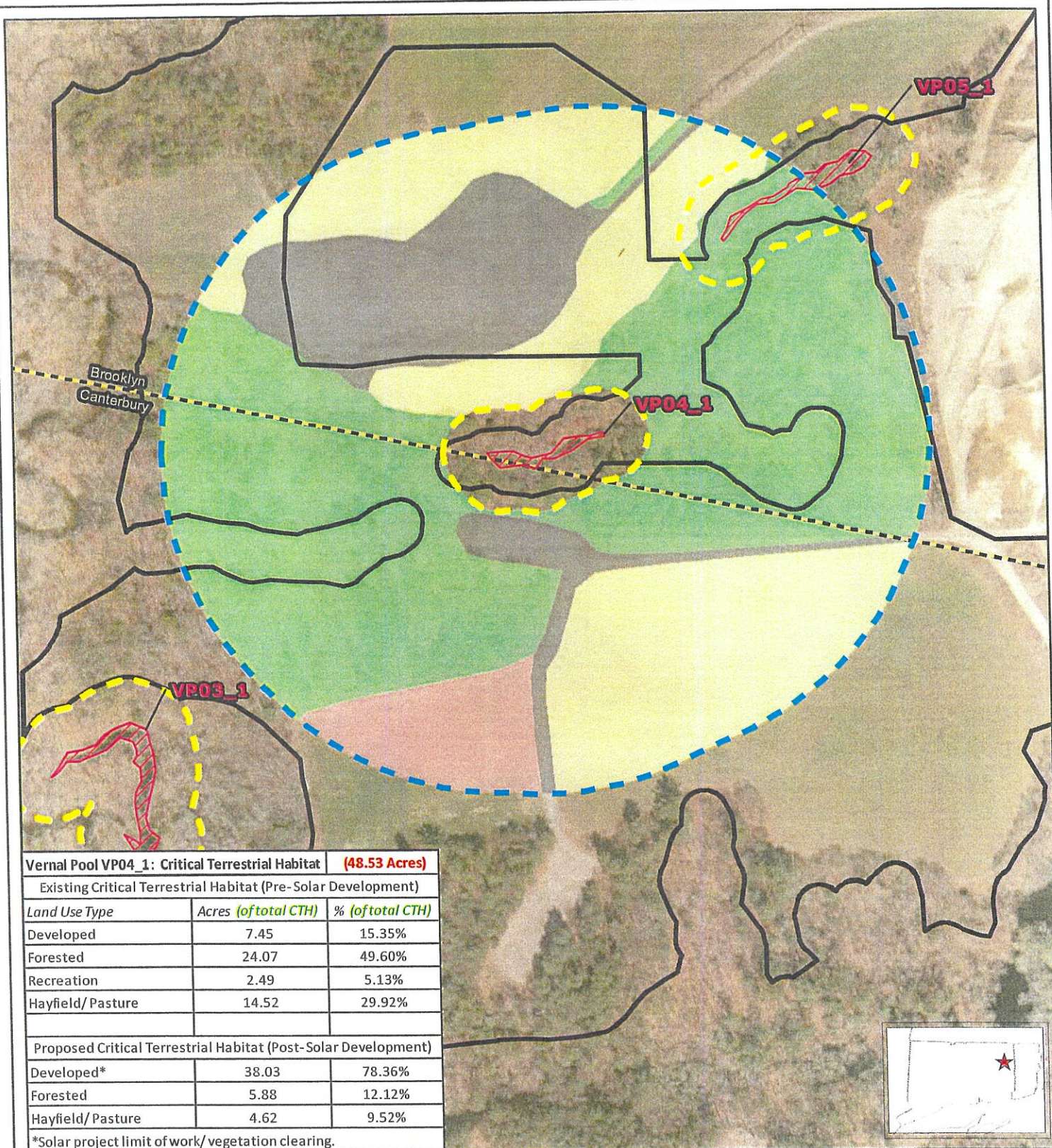
Based on 2016 Statewide Leaf-Off Orthophotography,
Courtesy of CTECO.

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VERNAL POOL ANALYSIS MAP VP03_1

Quinebaug Solar
Brooklyn & Canterbury,
Connecticut

October 2017



Legend

- Limit of Work
- Vernal Pool
- 100' Vernal Pool Envelope

- 100' - 750' Critical Terrestrial Habitat Area
- Town Boundary

- Landuse Type
- Developed
- Forested
- Hayfield or Pasture
- Recreation
- Water

Tighe&Bond
Engineers | Environmental Specialists

Based on 2016 Statewide Leaf-Off Orthophotography,
Courtesy of CTeco.

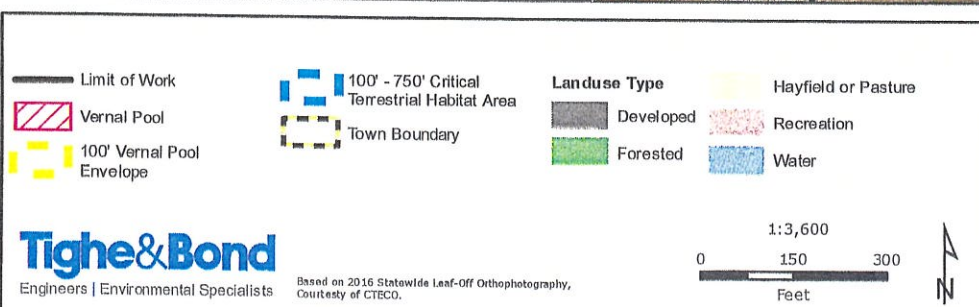
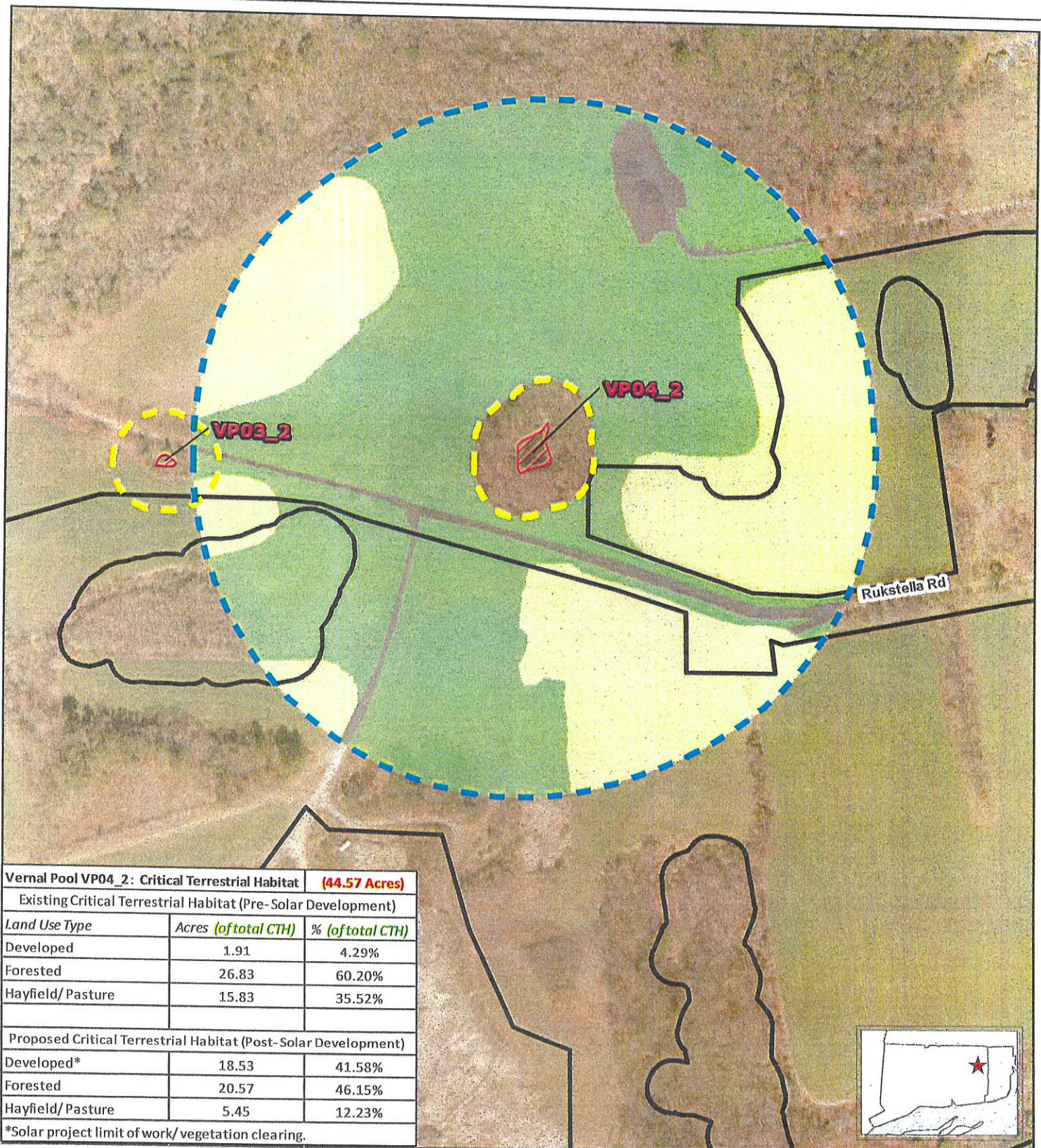
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VERNAL POOL ANALYSIS MAP VP04_1

Quinebaug Solar
Brooklyn & Canterbury,
Connecticut

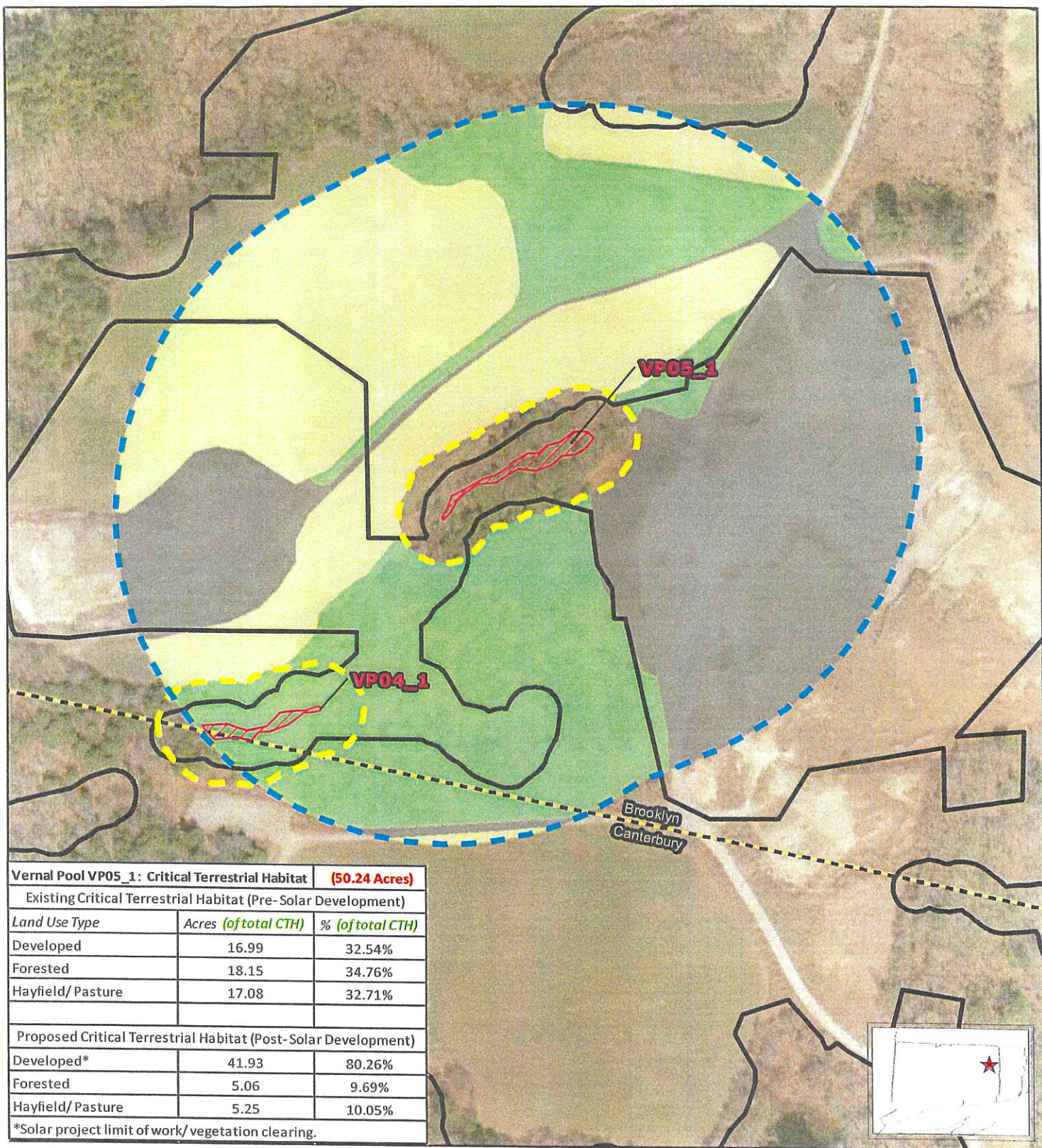
October 2017



**VERNAL POOL ANALYSIS MAP
VP04_2**

Quinebaug Solar
Brooklyn & Canterbury,
Connecticut

October 2017



Legend

- Limit of Work
- 100' - 750' Critical Terrestrial Habitat Area
- 100' Vernal Pool Envelope
- Town Boundary
- Landuse Type**
 - Developed
 - Forested
 - Hayfield or Pasture
 - Recreation
 - Water

Tighe&Bond
Engineers | Environmental Specialists

Based on 2016 Statewide Leaf-Off Orthophotography,
Courtesy of CTeco.

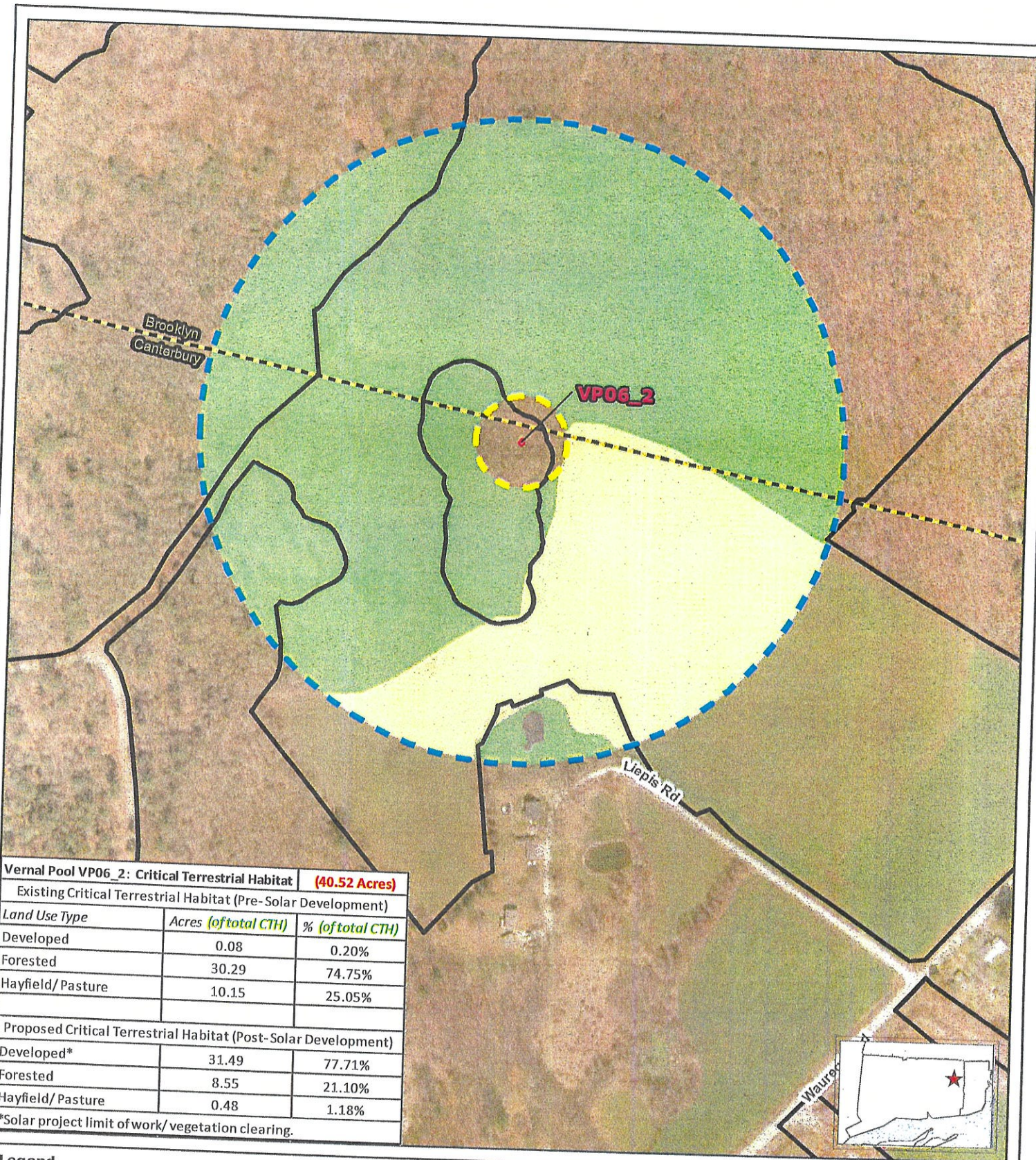
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VERNAL POOL ANALYSIS MAP VP05_1

Quinebaug Solar
Brooklyn & Canterbury,
Connecticut

October 2017



Legend

Limit of Work

Vernal Pool

100' Vernal Pool Envelope

100' - 750' Critical Terrestrial Habitat Area

Town Boundary

Landuse Type

Developed

Forested

Hayfield or Pasture

Recreation

Water

Tighe&Bond

Engineers | Environmental Specialists

Based on 2016 Statewide Leaf-Off Orthophotography,
Courtesy of CTECO.

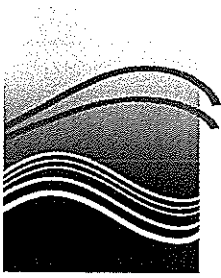
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VERNAL POOL ANALYSIS MAP VP06_2

Quinebaug Solar
Brooklyn & Canterbury,
Connecticut

October 2017



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

November 12, 2019

Ms. Jana Roberson
Town of Brooklyn
Planning and Zoning Commission
69 South Main Street
Brooklyn, CT 06234
j.roberson@brooklynct.org

Project: Preliminary Assessment for Gravel Removal from Rukstella Road Property (Rawson Materials) in Brooklyn, Connecticut
NDDB Preliminary Assessment No.: 201913012

Dear Jana Roberson,

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map provided for the Gravel removal from Rukstella Rd. property (Rawson Materials) in Brooklyn, Connecticut. According to our information, there are current extant records for State Endangered *Ambystoma laterale* (pure diploid blue-spotted salamander), *Scaphiopus holbrookii* (eastern spadefoot) and State Special Concern *Terrapene carolina carolina* (eastern box turtle), *Glyptemys insculpta* (wood turtle), *Clemmys guttata* (spotted turtle) and *Heterodon platirhinos* (eastern hognose snake) in the vicinity of this project.

State Endangered Species:

Blue-spotted salamander: The pure diploid populations of this salamander are considered state endangered. This small to medium mole salamander is generally associated with lowland swamps, marshes, wet meadows and the surrounding uplands (upland forest) with sandy or loamy soils. The adults spend much time underground. These salamanders lay eggs in early spring (March through April). The larvae metamorphosis in late June through August but sometimes may overwinter as larvae. Adults may migrate up to several hundred meters between their breeding pools and summer foraging area. These salamanders have high site fidelity to their breeding pools. Populations of this salamander are threatened by habitat loss and fragmentation as well as increased urbanization. Conservation strategies and best management practices to protect this salamander includes the protection of lowland forested wetlands and surrounding uplands.

Eastern Spadefoot: Limited information is known about the state endangered eastern spadefoot toad. It is a very secretive species and has irregular breeding periods. It is most active from June through August. It is an expert burrower, reaching depths of 6-feet in sandy well-drained soil. They are very rarely observed outside of the breeding period. Its habitat is described as arid to semi-arid areas, such as fields, farmland, dunes and woodlands with sandy or loose soils. This toad breeds in temporary bodies of water, flooded fields and forested wetlands. The conservation strategies for this toad is to protect and conserve their habitat.

Threats to the State Endangered Spadefoot:

- 1) Habitat destruction from residential and industrial development
- 2) Habitat alteration and changes in water chemistry
- 3) The species' breeding habitat is often temporary pools, which are not necessarily delineated as wetlands. Thus, wetland regulations cannot be relied upon to provide sufficient protection for this species.
- 4) Even where wetlands are protected (breeding habitat), without upland buffers (foraging and burrowing habitat) this species could not persist.
- 5) The fossorial nature and its unpredictable breeding schedule make the eastern spadefoot difficult to detect and thus difficult to inventory and protect.

Protection for Eastern Spadefoot in this area:

I recommend no further gravel operations in this area to prevent adverse impacts to the eastern spadefoot. The eastern spadefoot is protected under (RCSA Sec. 26-306).

I have determined that this project (as described in the NDDDB Request Application you submitted) will have a direct negative impact on the populations of the endangered pure diploid blue-spotted salamander and eastern spadefoot. Direct adverse impacts to endangered and threatened species should be avoided and conservation strategies and mitigation for these species should be developed.

To prevent impacts to State-listed species, habitat assessments and field surveys of the site should be performed by a qualified biologist when these target species are identifiable. A report summarizing the results of such surveys should include:

1. Survey date(s) and duration
2. Site descriptions and photographs of the project site
3. List of species within the survey area (including scientific binomials)
4. Data regarding population numbers and/or area occupied by State-listed species
5. Detailed maps of the area surveyed including the survey route and locations of State-listed species
6. Detailed evaluation of habitat type within the project area with respect to the state endangered blue-spotted salamander and eastern spadefoot and potential mitigation measures to prevent impacts.
7. Statement/résumé indicating the biologist's qualifications. Please be sure your consulting biologist has the appropriate state collectors permit to work with state-listed species at this project site.
8. Conservation strategies or protection plans that indicate how impacts may be avoided for all state-listed species present on the site.

The site surveys report should be sent to our CT DEEP-NDDDB Program (deep.nddbrequest@ct.gov) for further review by our program biologists along with an updated request for another NDDDB review. Further comments and a final determination letter will be developed and sent to you after our program biologists have reviewed the results of the habitat assessment, field surveys and/or protection plans you submit.

This letter is a preliminary assessment and not a final determination. This letter cannot be submitted with any CT DEEP permit or registration. A final determination cannot be provided without discussing mitigation or other conservation strategies that will prevent negative impacts to the endangered salamander and eastern spadefoot. This preliminary assessment is valid for one year from the date on this letter.

State Special Concern Species:

Eastern Box Turtle: Eastern box turtles inhabit old fields and deciduous forests, which can include power lines and logged woodlands. They are often found near small streams and ponds. The adults are completely terrestrial but the young may be semiaquatic, and hibernate on land by digging down in the soil from October to April. They have an extremely small home range and can usually be found in the same area year after year. Eastern box turtles have been negatively impacted by the loss of suitable habitat. Some turtles may be killed directly by construction activities, but many more are lost when important habitat areas for shelter, feeding, hibernation, or nesting are destroyed. As remaining habitat is fragmented into smaller pieces, turtle populations can become small and isolated. Reducing the frequency that motorized vehicles enter box turtle habitat would be beneficial in minimizing direct mortality of adults.

Wood turtle: Wood turtles require riparian habitats bordered by floodplain, woodland or meadows. They hibernate in the banks of the river in submerged tree roots. Their summer habitat includes pastures, old fields, woodlands, powerline cuts and railroad beds bordering or adjacent to streams and rivers. This species has been negatively impacted by the loss of suitable habitat.

Spotted Turtle:

Spotted Turtles are semi-aquatic in nature, which means they live both on terrestrial land and water. This species lives in several types of habitats including bogs, swamps, fens, woodland streams, wet pastures and marshes. They sometimes also inhabit brackish streams influenced by tides. These reptiles always live in areas with slow moving

water and soft soil. Spotted turtles are active hunters and they mainly hunt underwater they sometimes move onto terrestrial lands for hunting. Habitat destruction, degradation or alteration and fragmentation all threaten spotted turtle populations. Turtles are also particularly vulnerable to any activity that consistently reduces adult survivorship. The greatest concern during projects occurring in spotted turtle habitat are turtles being run over and crushed by mechanized equipment. Reducing the frequency that motorized vehicles enter spotted turtle habitat would be beneficial in minimizing direct mortality of adults.

Recommended Protection Strategies for Box, Wood and Spotted Turtles:

I recommend these strategies in order to protect these turtles:

- Hiring a qualified herpetologist to be on site to ensure these protection guidelines remain in effect and prevent turtles from being run over when moving heavy equipment. This is especially important in the months of May, June and July when turtles are selecting nesting sites.
- Exclusionary practices will be required to prevent any turtle access into construction areas. These measures will need to be installed at the limits of disturbance.
- Exclusionary fencing must be at least 20 in tall and must be secured to and remain in contact with the ground and be regularly maintained (at least bi-weekly and after major weather events) to secure any gaps or openings at ground level that may let animal pass through. Do not use plastic or netted silt-fence.
- All staging and storage areas, outside of previously paved locations, regardless of the duration of time they will be utilized, must be reviewed to remove individuals and exclude them from re-entry.
- All construction personnel working within the turtle habitat must be apprised of the species description and the possible presence of a listed species, and instructed to relocate turtles found inside work areas or notify the appropriate authorities to relocate individuals.
- Any turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside of the excluded area and fencing should be inspected to identify and remove access point.
- In areas where silt fence is used for exclusion, it shall be removed as soon as the area is stable to allow for reptile and amphibian passage to resume.
- No heavy machinery or vehicles may be parked in any turtle habitat.
- Special precautions must be taken to avoid degradation of wetland habitats including any wet meadows and seasonal pools.
- The Contractor and consulting herpetologist must search the work area each morning prior to any work being done.
- When felling trees adjacent to brooks and streams please cut them to fall away from the waterway and do not drag trees across the waterway or remove stumps from banks.
- Avoid and limit any equipment use within 50 feet of streams and brooks.
- Any confirmed sightings of box, wood or spotted turtles should be reported and documented with the NDDB (nddbrequestdep@ct.gov) on the appropriate special animal form found at (http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&depNav_GID=1641)

Eastern hognose snakes: Eastern hognose snakes are a species that has been declining due to loss of suitable habitat. They favor sandy areas with well drained gravelly soils. The active period for these snakes is April through November.

Recommended Protection Strategies for Eastern Hognose Snake:

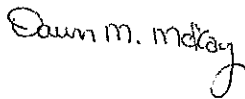
- Any snakes observed shall be moved, unharmed, to an area immediately outside of the work area, and positioned in the same direction that it was traveling;
- These animals are protected by law and should never be removed entirely from the site;
- Vehicles and heavy machinery should operate at slower speeds to allow animals the time to move out of harm's way on their own;

- Work conducted during early morning, evening hours or shortly after rain events shall occur with special care not to harm basking or foraging individuals;
- Vehicles shall be parked on graveled surfaces only;
- Material used for this project should only be placed on existing graveled surfaces.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits.

Please contact me at your earliest convenience (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.

Sincerely,

A handwritten signature in cursive script that reads "Dawn M. McKay".

Dawn M. McKay
Environmental Analyst 3



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Eastern Spadefoot

Scaphiopus holbrookii

State Endangered Species



Dennis Duber

Background: The Eastern spadefoot belongs to the genus *Scaphiopus*, which differs from true toads in having vertical pupils, relatively smooth skin, and a distinct spade-like projection on the hind limbs from which its common name is derived. This spade-like projection is used in the excavation of burrows. The Eastern spadefoot is among the rarest amphibians in the northeastern United States. While often referred to as a toad, the Eastern spadefoot is actually a primitive frog. Spadefoots are listed as endangered under Connecticut's Endangered Species Act and designated as a species of greatest conservation need in Connecticut's Wildlife Action Plan. Spadefoots are secretive, spending most of the year in subterranean burrows, emerging at night to feed during warm-weathered rains.

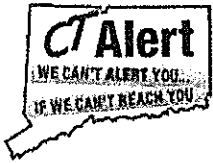
Range: The Eastern spadefoot occurs from southern New England, south to Florida along the Atlantic Coastal Plain and as far west as the Mississippi Valley north to Tennessee. New England populations are scattered and typically occur in low elevation river valleys with sandy, well-drained soils.

Description: The spadefoot is a medium-sized amphibian, ranging from 1.75 to 3 inches in body length. The skin is smooth and warts are very small and scattered. The spadefoot has large, bright yellow eyes with vertical pupils. The dorsal (back) coloration ranges from brown to gray with two yellowish stripes running down the back and forming a vase-shaped pattern. The venter (belly) is translucent white with a pinkish cast.

Habitat and Diet: Spadefoots require dry environments with sandy or loose soils that are sparsely vegetated. These soils are preferred because spadefoots can easily excavate burrows in them. These amphibians breed and reproduce in temporary bodies of water (e.g., vernal pools, flooded fields, etc.). When spadefoots emerge from their burrows they are opportunistic hunters, feeding on a variety of spiders and insects.

Life History: Spadefoots spend most of their time in underground burrows, awaiting the warmer rains of late spring, summer, and fall. They can remain dormant for months in a state of torpor. The Eastern spadefoot will dig its burrow several inches below ground but has been known to dig as deep as 8 feet. When heavy rains fall, typically of 2 or more inches, the amphibians emerge from their burrows in large numbers and explosively breed. Eggs are strewn out in irregular bands under water and attached to grass or plant stems. The eggs can hatch in as little as 24 hours with rapidly developing tadpoles that can grow into land-dwelling amphibians in as little as 14 days. Tadpoles feed opportunistically on vegetation, invertebrates, or other amphibian larvae.

Interesting Facts: Because the breeding pools used by spadefoots are ephemeral (short-lived), they do not often support larval development of other Connecticut amphibians. Therefore, spadefoots often breed alone. Spadefoot tadpoles can have cannibalistic tendencies, often eating their own siblings. The breeding call of adult male spadefoots sound like "caw...caw", something similar to that of a young crow. During hibernation, spadefoots curl into a tight ball and excrete a fluid that hardens the soil around them, forming a compact chamber to retain moisture.



Conservation Concerns: Spadefoot populations in Connecticut appear to be in decline. Many localized populations have been extirpated, presumably due to urban/suburban developments impacting their breeding pools. Urbanization of early successional habitats and alteration of breeding pools, which are often not afforded wetland protection status due to their highly short-lived nature, are the greatest causes of decline. Some populations in eastern Connecticut remain relatively undisturbed but face threats from both agriculture and sand and gravel extraction. Due to their very secretive lifestyle, it can be difficult to detect the presence of spadefoots and accurately estimate population size. Eastern spadefoots are protected by the Connecticut Endangered Species Act, and collection of these amphibians is prohibited.

What You Can Do: If you find an Eastern spadefoot, please take a photograph and report it to the Wildlife Division at deep.wildlife@ct.gov or call 860-424-3011. It is best to observe the animal(s) from a distance, and never attempt to capture an individual – it is both harmful to the animal and illegal. Additionally, you may elect to properly manage breeding pool areas if populations occur on your property, after consultation with the CT DEEP Wildlife Division. Often, education and awareness of these endangered amphibians can be a powerful conservation tool.



The production of this Endangered and Threatened Species Fact Sheet Series is made possible by donations to the Endangered Species-Wildlife Income Tax Checkoff Fund.

Content last updated on March 5, 2019.

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November 12, 2019
File No. 05.P000367.20

Ms. Margaret Washburn
ZEO/WEO/Blight Enforcement Officer
Town of Brooklyn
69 South Main Street
Brooklyn, CT 06234

Re: Hydrogeologic Assessment of an Isolated Kettle Wetland
Potvin Family Trust Property
Maynard Road, Brooklyn, Connecticut

Dear Ms. Washburn:

GZA GeoEnvironmental Inc. (GZA) is pleased present this proposal to the Town of Brooklyn (Town) to evaluate the hydrogeologic connectivity of an isolated kettle wetland located in the southeastern portion of the 29.99-acre property along the Brooklyn/Canterbury town lines. GZA has reviewed the following documents to develop our scope-of-work.

- Brooklyn Sand & Gravel Excavation Report - Eastern Connecticut Environmental Review Team Report (ERT Report).
- The Proposed Gravel Excavation Site Plans prepared by Provost & Rovero, Inc. (13-sheets).
- Wetland permit application dated October 9, 2019.
- Joseph R. Theroux report dated November 7, 2017.
- Proposed scope of services prepared by the Town of Brooklyn

GZA's review of the existing condition site plans indicate that shallow refusal (either due to bedrock, boulders, or dense glacial till) was observed along Maynard Road. Soil borings within the central portion of the site, indicated the presence of sand and gravel to a depth of up to 86.5 feet below grade (B-4). Groundwater was measured at 71.4-feet below grade (elevation 128.6 feet), at monitoring well B-4, the only monitoring well (MW) currently located on the site.

Our proposed Scope of Work includes those tasks outlined in the Request for Proposals as well as the following additional tasks based upon our subsequent conversations with the Town: 1) a threatened or endangered species assessment and 2) an inventory of wetlands to determine their sensitivity to changes in groundwater levels.

Task 1 – Site Walk

GZA completed a site walk on November 5, 2019 with Ms. Jana Roberson of the Town and Mr. David Held from Provost & Rovero, Inc. The purposed was to view the existing conditions in the vicinity of the kettle wetland and develop a conceptual model of how it might fit into the site-wide hydraulic regime. GZA also observed the types of wetland species that were present within the kettle wetland and the approximate depth of ponded water within the wetland.



Task 2 – Brooklyn Set-Back Regulatory review

GZA will review the regulations cited within the Town of Brooklyn’s Scope of Work. Our review will focus on set-back requirements or other relevant regulations as it relates to either the wetland/watercourses in relationship to the applicants proposed gravel operations.

Task 3 – Wetland Evaluation

GZA will provide a discussion on the types of wetlands present within the kettle wetland and how changes in hydraulic could impact these wetland species. In addition to Task 1, GZA will perform a field visit to assess the soil beneath the kettle wetland, estimate the thickness of the organic sediments underlying the wetland, assess the underlying soil stratum, and survey the relative water levels between the northern and southern kettle wetlands. At the same time, GZA will also evaluate the subsurface soil within an adjacent are of low topographic elevation located approximately 150 feet west of the kettle wetland. At the time of this evaluation, GZA will attempt to advance a hand-auger to evaluate soil conditions outside the limits of the wetland and install a small-diameter temporary well. A second temporary well will be driven into the nearby wetland organic sediments. Water level will be measured within both temporary wells to measure the relative elevations between these points and assess the corresponding hydraulic gradient between the wetland and the shallow groundwater, including direction and approximate magnitude.

Task 4A – Hydraulic Connectivity Assessment (Phase 1)

GZA proposes to assess how groundwater may be connected to the kettle wetland using the limited soil boring data and the limited observed groundwater level data currently available. GZA understands that observed water level measurements have been collected from the monitoring well installed at boring B-4, however, only the data recorded on the soil boring log has been provided to us thus far. GZA notes however, that the data provided within the Proposed Gravel Excavation Site Plans does not provide enough data to determine how groundwater may interact with the kettle wetland, beneath the entire 29.99-acre site.

GZA will use attempt to use reference elevations provided at the kettle wetland, elevations on the Quinebaug River (if there is a USGS staff gauge or estimating using topographical maps) and measurements collected from the single on-site monitoring well and soil boring logs. Because these measurements would have been collected over different periods, our evaluation will only be an estimate of the groundwater interconnectivity due to the many transient variabilities that can influence groundwater (precipitation, river height at the time groundwater was measured at the monitoring will and seasonal groundwater levels).

This task will also include a hydrologic infiltration assessment of precipitation that would recharge the kettle wetland from the surrounding sand and gravel deposits. GZA understands that one of the concerns within the ERT Report was the time of travel from the precipitation recharge reaching the kettle wetland through the adjacent sand and gravels. The topography surrounding the kettle wetland is very steep, well vegetated, with little erosional features into the kettle wetland. To better understand the local recharge potential, GZA will evaluate the sub-watershed(s) to the kettle basin, to estimate the amount of recharge, to the kettle wetland under both existing and proposed conditions. GZA will evaluate the sub-water shed thought to be directly impacting the kettle wetland. Based upon annual precipitation and the roughness coefficients of the well-developed forest, GZA will calculate a water budget that might infiltrate into the kettle wetland.



To assess the impacts of removal of the sand and gravel will change on the connectivity between the groundwater and the kettle wetland, GZA will use the groundwater data from B-4 to calculate a seasonal high groundwater level. While B-4 is north of the Site property's topographic high, these data could be used to determine if the observed groundwater level at B-4 is representative of seasonal high groundwater conditions or if an adjustment factor should be applied to the observed level. GZA will use available numerical calculations to estimate a SHGW based using water levels from an adjacent United State Geologic Survey (USGS) monitoring well. This information will be used to assess if the proposed excavation final grades would be above or below the calculated SHGW at B-4.

Assuming that the kettle wetland is connected to groundwater, long term recharge will be required to sustain the water level within the kettle wetland. While the intent of the sand and gravel operation is not to excavate below the water table or dewater saturated groundwater soils, the design appears to be based on very limited water table elevation data from MW/B-4. However, it is noted that the data from MW/B-4 may not represent the actual maximum season high groundwater level (SHGW).

This task will provide a review to evaluate the connectivity of the connectivity of groundwater, estimate the volume of surface water infiltration, and the SHGW levels relationship to the surface water elevation within the kettle wetland. In addition, GZA will use the information collected to evaluate potential impacts to the Quinebaug River.

Task 4B – Hydraulic Connectivity Assessment (Phase 2)

Given the limited number of existing soil borings (total of 5), their widely-spaced distribution over the site, and that only 1 boring includes a monitoring well, and that the MW is located approximately 300 feet from the river and 900 feet from the kettle wetland, supplemental subsurface explorations may be required to fill data gaps in groundwater level measurements. The purpose of these borings/monitoring wells would be to develop a groundwater contour map depicting groundwater flow direction proximate to the wetland, assess hydraulic gradients, and further assess if groundwater is recharging the kettle wetland or if the kettle wetland is perched above the groundwater. Once a more detailed understanding of the groundwater is developed, then GZA would develop a revised SHGW adjustment factor based upon a single round of water level measurements. This adjustment will be added to the observed groundwater measurement to develop a projected seasonal high groundwater contour maps. This projected seasonal high groundwater contour map can then be overlain on the proposed site plans to determine if the gravel operation will be excavated below groundwater. Once a groundwater contour map is developed, additional hydrogeologic analyses could be performed to assess the mounding potential beneath the kettle wetland, hydraulic gradients, and flow directions.

GZA has estimated an order of magnitude drilling cost at \$5,500 per 60-foot monitoring well, should you consider supplemental subsurface explorations. A 60-foot boring was used for a cost estimate due to rig access into the steep low lying areas. An alternative might be installing hand-drive shallow wells near the wetlands. However, this will be limited due to the steepness of the adjacent slopes. A more detailed cost estimate can be provided should you want to proceed with supplemental explorations.

An alternative to drilling soil borings and installing MWs through the deep sands and gravel deposits would be to identify locations in areas where the topography is closer to the groundwater elevation (B-4 reported groundwater



at 128.6-feet). GZA has identified the following potential locations: 1) the low point, west of the kettle wetland, 2) just north of the open water, south of the kettle wetland and directly east of the kettle wetland and 3) one or two locations along the river, at the base of the bluff¹. The goal would be to supplement groundwater elevation measurement with the existing single monitoring well located north of the kettle wetland. These data would provide information on the overall groundwater proximate to the kettle wetland. GZA envisions that these monitoring points would be installed using a track mounted Geoprobe drilling rig. However, it must be noted that cobbles and boulders could limit the advancement of the boring and the steep, heavily vegetated, slopes could limit access to the proposed drilling locations. To facilitate access, perhaps the Town could provide heavy equipment to clear a path.

Task 5 – Potential Mitigation Measures and/or Recommendations

GZA will use the information gathered from Tasks 1 through 4 to identify potential adverse impacts to the kettle wetlands and Quinebaug River from the proposed sand and gravel excavation operation. These might include proposed plan revision(s) based upon the current Town of Brooklyn Inland Wetlands and Watercourses Regulations, dated October 2013, the Inland Wetlands and Watercourses Act, Section 22A – 36 through 22A – 45, of the Connecticut General Statutes.

Task 6 – Hydrogeologic Connectivity Summary

GZA will provide a summary report on our assessment. This will include an evaluation on the hydrogeologic connectivity of the kettle wetland to the groundwater, the potential recharge to the kettle wetland from the immediate watershed drainage area, an preliminary estimate on the time of travel through the unsaturated sand and gravels within the immediate drainage area, a calculated SHGW and a discussion on wetlands and potential effects with changes in the recharge to the kettle wetland. The report will include a qualitative assessment of potential impacts to the Quinebaug River. We will also provide pertinent conclusions, recommendations, and limitations of our assessment.

Task 7 – Threatened and/or endangered Wildlife Assessment

As requested by the Town, GZA will also conduct a site visit to evaluate for the presence threatened or endangered species identified in the ERT report. GZA understands that the Town of Brooklyn has submitted a NDDDB request application for the area along the Quinebaug River. The most recent mapping for Brooklyn (June 2019) is currently unavailable on the CTDEEP website; however, it can be viewed on the CTECO web page. The only NDDDB polygon identified is located approximately 300 feet from the edge of the Quinebaug River. However, while the kettle wetland is not included within the NDDDB. GZA will evaluate the kettle wetland to assess if it should be considered a vernal pool along with a determination if obligate vernal species are present for breeding. The findings of this assessment will be provided to the Town within a separate summary report.

¹ Assumes that the Town will approve drilling on suitable Town-owned property or on the adjacent property provided that an access agreement is in place.



Task 8 - Meetings

GZA has allocated a one-hour telephone call or web-meeting with the Town to discuss our findings and a second two-hour meeting at the Town offices with the IWWC. Additional meeting will be billed in accordance with the attached fee schedule.

RESPONSIBILITIES OF CLIENT

GZA understands that the Town of Brooklyn will provide additional information as available, including the following.

- GZA is requesting the Provost & Rovero, Inc. provide copies of the boring logs and groundwater measurement from B-4.
- GZA request clarification of soil boring log for B-3 from Provost & Rovero, Inc. that indicates this boring was advanced to 39 feet to refusal and subsequently cored to 44 feet below grade. However, groundwater was observed at 71.4 feet below grade.
- GZA request access to the site to conduct hand sampling, temporary monitoring well installations, surveying, and follow up measurements as required (Task 3).

SCHEDULE

GZA is prepared to work on the project immediately upon authorization. GZA will provide a draft summary report of Phase I to the IWWC by November 25, 2019. However, if the Town wants to proceed with additional subsurface explorations, GZA anticipates that we will be able to provide preliminary findings prior to your public hearing on December 10th. A draft version of our report will be provided to the Town in electronic format prior to preparation of the final report. This schedule does not include performance of any drilled soil borings or monitoring well installations.

COST AND BASIS OF BILLING

GZA has estimated the cost of the Scope-of-Work at \$20,000, excluding subsurface explorations. Should the Town want to proceed with subsurface explorations these additional costs would be approximately \$5,500. The billing for GZA's professional services for the project will be on a lump sum basis. Should additional services be required, they will be billed in accordance with the attached Schedule of Fees. Direct and out-of-pocket expenses and subcontractor expenses will be subject to a 15% mark-up.

GZA cost estimate is based on the anticipated scope of services outlined above, which represent our present judgment as to the level of service that will be needed. The Town of Brooklyn will be notified of any conditions requiring a change in the level of effort or the scope of work and any resultant change in budget if such becomes evident. If Client's billing address is different from the address indicated above, please provide that information on the last page of this agreement.

Progress invoices will be issued approximately every four weeks. Payment is due within 30 days of receipt. Interest charges may be applied on past due balances.



Invoices are the responsibility of Client. Invoices will be sent to the Town of Brooklyn care of Ms. Margaret Washburn at the above address. Should the billing information change, please provide that information on the last page of this agreement.

PROJECT COMMUNICATION PLAN

GZA is committed to providing its clients consistent input on project performance, budget and schedule, but recognizes each client wants this information delivered in a way that best meets his or her needs. Typically, we rely on regular scheduled phone calls, emails or letter reports which can be weekly, bi-weekly or monthly. To establish the Communication Plan that works best for you, GZA's Principal-in-Charge will contact you directly upon our receipt of the signed contract or other authorization to proceed.

CONDITIONS OF ENGAGEMENT AND ACCEPTANCE

Conditions of engagement are described in the attached Terms and Conditions (08/08-Edition 05-9010) and Schedule of Fees. This Proposal for Services and the Terms and Conditions shall constitute the entire agreement between GZA and the Town of Brooklyn. This proposal may be accepted by signing in the appropriate spaces below and returning one copy along with the retainer to GZA. Issuance of a purchase order implicitly acknowledges acceptance of our Terms and Conditions.

Thank you for the opportunity to provide these services to the Town of Brooklyn. If you have any questions, please call Richard Desrosiers at 1-860-858-3130.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Richard J. Desrosiers, LEP, PG
Associate Principal, Hydrogeologist

John R. Paquin, PG
Consultant Reviewer

Attachments: Terms and Conditions (08/08-Edition 0509010)
Schedule of Fees – SNE23D-20

This Proposal and the Terms and Conditions (08/08-Edition 05-9010) is hereby accepted and executed by a duly authorized signatory, who by execution hereof, warrants that he/she has full authority to act for, in the name, and on behalf of Client.

Town of Brooklyn, Connecticut

By: _____ Its: _____

Printed Name: _____ Date: _____

Billing Address (if different from above): _____



TERMS AND CONDITIONS FOR PROFESSIONAL SERVICES
Including Site Investigation, Remediation,
Geotechnical, Construction, And Testing
© 2019 by GZA GeoEnvironmental, Inc.

Client ("You"): Shipman & Goodwin LLP o/b/o Hebron Board of Education
Proposal No: 05.P000337.20

Site: Gilead Hill School – Hebron, Connecticut These Terms and Conditions, together with GZA's Proposal, make up the Agreement between GZA and you, Client, named above.

BEFORE SIGNING THE PROPOSAL, BE SURE YOU READ AND UNDERSTAND THE PARAGRAPHS ENTITLED "INDEMNIFICATION" AND "LIMITATION OF REMEDIES" WHICH DEAL WITH THE ALLOCATION OF RISK BETWEEN YOU AND GZA.

1. **Services.** GZA will perform the services set forth in its Proposal and any amendments or change orders authorized by you. Any request or direction from you that would require extra work or additional time for performance or would result in an increase in GZA's costs will be the subject of a negotiated amendment or change order.
2. **Standard of Care; Warranties.**
 - a. GZA will perform the services with the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services at the same time under similar conditions in the same or similar locality.
 - b. GZA warrants that its construction services will be of good quality, free of faults and defects and in conformance with the Proposal.
 - c. **EXCEPT AS SET FORTH IN SUBSECTIONS 2a AND 2b, ABOVE, NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING WARRANTY OF MARKETABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS MADE OR INTENDED BY GZA'S PROPOSAL OR BY ANY OF GZA'S ORAL OR WRITTEN REPORTS.**
 - d. GZA assigns to you any manufacturers' warranties of equipment or materials purchased from others, to the extent they are assignable, and your sole recourse will be against the manufacturer. Full risk of loss of materials and equipment will pass to you upon delivery to the Site, and you will be responsible for insuring and otherwise protecting them against theft and damage.
3. **Payment.**
 - a. Except as otherwise stated in the Proposal, you will compensate GZA for the services at the rates set forth in the applicable Proposal, amendment or change order; reimburse its expenses, which will include a communication fee calculated as a percentage of labor invoiced; and pay any sales or similar taxes thereon.
 - b. Any retainer specified in GZA's Proposal shall be due prior to the start of services and will be applied to the final invoice for services.
 - c. GZA will submit invoices periodically, and payment will be due within 20 days from invoice date. Overdue payments will bear interest at 1½ percent per month or, if lower, the maximum lawful rate. GZA may terminate its services upon 10 days' written notice anytime your payment is overdue on this or any other project and you will pay for all services through termination, plus termination costs. You will reimburse GZA's costs of collecting overdue invoices, including reasonable attorneys' fees.
4. **Your Responsibilities.**
 - a. Except as otherwise agreed, you will secure the approvals, permits, licenses and consents necessary for performance of the services. If you are the owner or operator of the Site, you will provide GZA with all documents, plans, information concerning underground structures (including but not limited to utilities, conduits, pipes, and tanks), information related to hazardous materials or other environmental or geotechnical conditions at the Site and other information that may be pertinent to the services or, if you are not the owner or operator of the Site, you agree to make reasonable efforts to obtain these same documents and provide them to GZA. Unless otherwise indicated in writing, GZA will be entitled to rely on documents and information you provide.
 - b. If you use the services of a construction manager at the Site, you agree to use best and reasonable efforts to include in your agreement(s) with the construction contractor provisions obligating the latter:
 - (i) to indemnify and hold harmless, to the fullest extent permitted by law, you and GZA, its officers, employees and principals, for or on account of any claims, liabilities, costs and expenses, including attorneys' fees, arising out of or relating to the design or implementation of construction means, methods, procedures, techniques, and sequences of construction, including safety precautions or programs, of the contractor, or any of its subcontractors or any engineer engaged by it;
 - (ii) to name you and GZA as additional insureds under general liability and builder's risk insurance coverages maintained by the contractor, or any of its subcontractors; and



- (iii) to require that all of its subcontractors agree and be bound to the obligations set forth in (i) and (ii) above.
- c. In the event that you are unable to secure such provisions in the agreement(s) with the construction contractor, you shall promptly notify GZA and GZA shall have the opportunity to negotiate with you reasonable substitute risk allocation and insurance indemnities and protections.
5. **Right of Entry; Site Restoration.** You grant GZA and its subcontractor(s) permission to enter the Site to perform the services. If you do not own the Site, you represent and warrant that the owner has granted permission for GZA to enter the Site and perform the services; you will provide reasonable verification on request; and you will indemnify GZA for any claims by the Site owner related to alleged trespass by GZA or its subcontractors. GZA will exercise reasonable care to limit damage to landscaping, paving, systems and structures at the Site that may occur and you agree to compensate GZA for any restoration it is asked to perform, unless otherwise indicated in the Proposal.
6. **Underground Facilities.** GZA's only responsibility under this Section will be to provide proper notification to the applicable state utility "Call-Before-You-Dig" program. You further agree to assume responsibility for and to defend, indemnify and hold harmless GZA with respect to personal injury and property damages due to GZA's interference with subterranean structures including but not limited to utilities, conduits, pipes, and tanks:
- (i) that are not correctly shown on any plans and information you or governmental authorities provide to GZA; or
 - (ii) that are not correctly marked by the appropriate utility.
7. **Reliance.** The services, information, and other data furnished by you shall be at your expense, and GZA may rely upon all information and data that you furnish, including the accuracy and completeness thereof. You acknowledge that the quality of the services provided by GZA is directly related to the accuracy and completeness of the information and data that you furnish to GZA. **GZA's REPORTS ARE PREPARED FOR AND MADE AVAILABLE FOR YOUR SOLE USE. YOU ACKNOWLEDGE AND AGREE THAT USE OF OR RELIANCE UPON THE REPORT OR THE FINDINGS IN THE REPORT BY ANY OTHER PARTY, OR FOR ANY OTHER PROJECT OR PURPOSE, SHALL BE AT YOUR OR SUCH OTHER PARTY'S SOLE RISK AND WITHOUT ANY LIABILITY TO GZA.**
8. **Lab Tests and Samples.** GZA is entitled to rely on the results of laboratory tests using generally accepted methodologies. GZA may dispose of samples in accordance with applicable laws 30 days after submitting test results to you unless you request in writing for them to be returned to you or to be held longer, in which case you will compensate GZA for storage and/or shipping beyond 30 days.
9. **GZA Professionals.** GZA employees or consultants may act as licensed, certified or registered professionals (including but not limited to Professional Engineers, Licensed Site or Environmental Professionals, or Certified Industrial Hygienists collectively referred to in this section as "GZA Professionals") whose duties may include the rendering of independent professional opinions. You acknowledge that a federal, state or local agency or other third party may audit the services of GZA or other contractor/consultant(s), which audit may require additional services, even though GZA and such GZA Professionals have each performed such services in accordance with the standard of care set forth herein. You agree to compensate GZA for all services performed in response to such an audit, or to meet additional requirements resulting from such an audit, at the rates set forth in the applicable Proposal, amendment or change order.
10. **Hazardous Materials; GZA "Not a Generator".** Before any hazardous or contaminated materials are removed from the Site, you will sign manifests naming you as the generator of the waste (or, if you are not the generator, you will arrange for the generator to sign). You will select the treatment or disposal facility to which any waste is taken. GZA will not be the generator or owner of, nor will it possess, take title to, or assume legal liability for any hazardous or contaminated materials at or removed from the Site. GZA will not have responsibility for or control of the Site or of operations or activities at the Site other than its own. GZA will not undertake, arrange for or control the handling, treatment, storage, removal, shipment, transportation or disposal of any hazardous or contaminated materials at or removed from the Site, other than any laboratory samples it collects or tests. You agree to defend, indemnify and hold GZA harmless for any costs or liability incurred by GZA in defense of or in payment for any legal actions in which it is alleged that GZA is the owner, generator, treater, storer or disposer of hazardous waste.
11. **Limits on GZA's Responsibility.** GZA will not be responsible for the acts or omissions of contractors or others at the Site, except for its own subcontractors and employees. GZA will not supervise, direct or assume control over or the authority to stop any contractor's work, nor shall GZA's professional activities nor the presence of GZA or its employees and subcontractors be construed to imply that GZA has authority over or responsibility for the means, methods, techniques, sequences or procedures of construction, for work site health or safety precautions or programs, or for any failure of contractors to comply with contracts, plans, specifications or laws. Any opinions by GZA of probable costs of labor, materials, equipment or services to be furnished by others are strictly estimates and are not a guarantee that actual costs will be consistent with the estimates.
12. **Changed Conditions.**
- a. You recognize the uncertainties related to environmental and geotechnical services, which often require a phased or exploratory approach, with the need for additional services becoming apparent during the initial services. You also recognize that actual conditions encountered



may vary significantly from those anticipated, that laws and regulations are subject to change, and that the requirements of regulatory authorities are often unpredictable.

- b. If changed or unanticipated conditions or delays make additional services necessary or result in additional costs or time for performance, GZA will notify you and the parties will negotiate appropriate changes to the scope of services, compensation and schedule.
- c. If no agreement can be reached, GZA will be entitled to terminate its services and to be equitably compensated for the services already performed. GZA will not be responsible for delays or failures to perform due to weather, labor disputes, intervention by or inability to get approvals from public authorities, acts or omissions on your part, or any other causes beyond GZA's reasonable control, and you will compensate GZA for any resulting increase in its costs.

13. Documents and Information. All documents, data, calculations and work papers prepared or furnished by GZA are instruments of service and will remain GZA's property. Designs, reports, data and other work product delivered to you are for your use only, for the limited purposes disclosed to GZA. Any delayed use, use at another site, use on another project, or use by a third party will be at the user's sole risk, and without any liability to GZA. Any technology, methodology or technical information learned or developed by GZA will remain its property. Provided GZA is not in default under this Agreement, GZA's designs will not be used to complete this project by others, except by written agreement relating to use, liability and compensation.

14. Electronic Media. In accepting and utilizing any drawings, reports and data on any form of electronic media generated by GZA, you covenant and agree that all such electronic files are instruments of service of GZA, who shall be deemed the author and shall retain all common law, statutory law and other rights, including copyrights. In the event of a conflict between the signed documents prepared by GZA and electronic files, the signed documents shall govern. You agree not to reuse these electronic files, in whole or in part, for any purpose or project other than the project that is the subject of this Agreement. Any transfer of these electronic files to others or reuse or modifications to such files by you without the prior written consent of GZA will be at the user's sole risk and without any liability to GZA.

15. Confidentiality; Subpoenas. Information about this Agreement and GZA's services and information you provide to GZA regarding your business and the Site, other than information available to the public and information acquired from third parties, will be maintained in confidence and will not be disclosed to others without your consent, except as GZA reasonably believes is necessary: (a) to perform its services; (b) to comply with professional standards to protect public health, safety and the environment; and (c) to comply with laws and court orders. GZA will make reasonable efforts to give you prior notice of any disclosure under (b) or (c) above. Information available to the public and information acquired from third parties will not be considered confidential. You will reimburse GZA for responding to any subpoena or governmental inquiry or audit related to the services, at the rates set forth in the applicable Proposal, amendment or change order.

16. Insurance. During performance of the services, GZA will maintain workers compensation, commercial general liability, automobile liability, and professional liability/contractor's pollution liability insurance. GZA will furnish you certificates of such insurance on request.

17. Indemnification. You agree to hold harmless, indemnify, and defend GZA and its affiliates and subcontractors and their employees, officers, directors and agents (collectively referred to in this paragraph as "GZA") against all claims, suits, fines and penalties, including mandated cleanup costs and attorneys' fees and other costs of settlement and defense, which claims, suits, fines, penalties or costs arise out of or are related to this Agreement or the services, except to the extent they are caused by GZA's negligence or willful misconduct.

18. Limitation of Remedies.

- a. To the fullest extent permitted by law and notwithstanding anything else in this Agreement to the contrary, the aggregate liability of GZA and its affiliates and subcontractors and their employees, officers, directors and agents (collectively referred to in this paragraph as "GZA") for all claims arising out of this Agreement or the services is limited to \$50,000 or, if greater, 10% of the compensation received by GZA under this Agreement.
- b. You may elect to increase the limit of liability by paying an additional fee, such fee to be negotiated prior to the execution of this Agreement.
- c. Any claim will be deemed waived unless received by GZA within one year of substantial completion of the services.
- d. GZA will not be liable for lost profits, loss of use of property, delays, or other special, indirect, incidental, consequential, punitive, exemplary, or multiple damages.
- e. GZA will not be liable to you or the Site owner for injuries or deaths suffered by GZA's or its subcontractors' employees.
- f. You will look solely to GZA for your remedy for any claim arising out of or relating to this Agreement, including any claim arising out of or relating to alleged negligence or errors or omissions of any GZA principal, officer, employee or agent.

19. Disputes.

- a. All disputes between you and GZA shall be subject to non-binding mediation.



- b. Either party may demand mediation by serving a written notice stating the essential nature of the dispute, the amount of time or money claimed, and requiring that the matter be mediated within forty-five (45) days of service of notice.
- c. The mediation shall be administered by the American Arbitration Association in accordance with its most recent Construction Mediation Rules, or by such other person or organization as the parties may agree upon.
- d. No action or suit may be commenced unless mediation has occurred but did not resolve the dispute, or unless a statute of limitation period would expire if suit were not filed prior to such forty-five (45) days after service of notice.

20. Miscellaneous.

- a. Massachusetts law shall govern this Agreement.
- b. The above terms and conditions regarding Limitation of Remedies and Indemnification shall survive the completion of the services under this Agreement and the termination of the contract for any cause.
- c. Any amendment to these Terms and Conditions must be in writing and signed by both parties.
- d. Having received these Terms and Conditions, your oral authorization to commence services, your actions, or your use of the Report or Work Product constitutes your acceptance of them.
- e. This Agreement supersedes any contract terms, purchase orders or other documents issued by you.
- f. Neither party may assign or transfer this Agreement or any rights or duties hereunder without the written consent of the other party.
- g. Your failure or the failure of your successors or assigns to receive payment or reimbursement from any other party for any reason whatsoever shall not absolve you, your successors or assigns of any obligation to pay any sum to GZA under this agreement.
- h. These Terms and Conditions shall govern over any inconsistent terms in GZA's Proposal.
- i. The provisions of this Agreement are severable; if any provision is unenforceable it shall be appropriately limited and given effect to the extent it is enforceable.
- j. The covenants and agreements contained in this Agreement shall apply to, inure to the benefit of and be binding upon the parties hereto and upon their respective successors and assigns.

GZA GEOENVIRONMENTAL, INC.
SCHEDULE OF FEES- FISCAL YEAR 2020

FOR PROPOSAL FOR SERVICES DATED: November 11, 2019 NO. 05.P000337.20

<u>LABOR</u>	<u>Per Hour</u>
Senior Principals	\$250.00
Principal.....	\$225.00
Associate Principal/Senior Consultant.....	\$205.00
Senior Project Manager.....	\$190.00
Senior Technical Specialist	\$175.00
Project Manager/Technical Specialist	\$150.00
Assistant Project Manager.....	\$130.00
Engineer I/Scientist/Geologist I	\$110.00
Engineer II/Scientist/Geologist II	\$95.00
Field Technician I	\$90.00
Field Technician II	\$65.00
Senior CADD/Technical Designer	\$130.00
CADD/Technical Designer	\$110.00
Technical Administrative Support	\$100.00
Word Processing / Clerical	\$75.00
Outside Services and Subcontractors.....	Cost plus 15%
Expenses	Cost plus 15%

The above rates for technical and support personnel will be charged for actual time worked on the project, including time required for travel from company office to job or meeting site and return. For work requiring out-of-town overnight stay, the minimum charge for work on the project will be eight (8) hours per day.

Overtime work by "Non-Exempt" personnel will be billed at 1.5 times the standard rate.

The above-listed rates are valid for the calendar year in which this proposal is accepted by Client. GZA reserves the right to modify this rate schedule on an annual basis to reflect changes in employee compensation and Client acknowledges that labor rates may change during the execution of this project.

The actual average Labor rate varies due to numerous factors, including project size and complexity. On a typical project, GZA's average Labor rate is \$120 per hour.

EXPENSES

- Rental of specialized field or monitoring equipment and vehicle charges based on GZA standard unit prices
- Transportation, lodging and subsistence for out-of-town travel
- Printing, reproduction, plotting, and wide format scanning
- Express mail and shipping charges
- Project-specific computer hardware and software
- Long distance, local and cellular telephone, facsimile and postage (via U.S. Postal Service) are included in a flat rate Communication Fee of 3 percent per invoice on labor only

INVOICES

GZA will submit invoices periodically and payment will be due within 20 days from invoice date. Overdue payments will bear interest at 1½ percent per month or, if lower, the maximum lawful rate. GZA may terminate its services upon 10 days' written notice any time your payment is overdue on this or any other project.

BUDGETS

The Budget contained within GZA's Proposal represents our estimate of the work involved. Actual charges can vary either upward or downward depending upon many factors. GZA considers a significant budget variance to be 15% and we will not exceed this variance without notifying Client.

RETAINER

Any retainer specified in GZA 's Proposal shall be due prior to the start of services and will be applied to the final invoice for services