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Site Engineering Wastewater Engineering rrdeben@aol.com Environmental Studies Project Management

SOILMANAGEMENT PLAN
for the
EXPANSION
of the
Site Reclamation Project
48 Marion Drive, Kingston MA

Prepared for the:

O'Donnell Family Trust
54 Grove Street
Kingston, MA 02364

Revised: February 3, 2021

Prepared by: Richard R. DeBenedictis, P.E. Mass. Registration #28318 57 Sanderson Drive Plymouth, M

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February 22, 2020

Mr. Gerard Martin
Acting Section Chief
Bureau of Waste Site Cleanup
MassDEP-SERO
20 Riverside Drive
Lakeville, MA 02347

Re: Narrative Report for Reuse of ACO Soils for the Expansion of the Site Reclamation Project at 48 Marion Drive, Kingston, MA 02364

Dear Mr. Martin,

On behalf of our client the O'Donnell Family Trust and its Trustee Mary O'Donnell , we hereby submit this Application for the Expansion of the existing Administrative Consent Order (the ACO) with an updated *Soils Management Plan* prepar ed by Richard R. DeBen edictis, P.E. Mr. DeBenedictis (the Engineer) is both a Qualified Environmental Professional (QEP) as it applies to this Application and the Project Engineer for the development of the Reclaimed property.

This proposal is for the Expa nsion of the ACO and for the reclamation of land that has been used as a borrow pit for sand and gravel for more than 30 years under the existing owner, the O'Donnell Family Trust, aka O'Donnell Sand & Gravel. The expansion is considered to be part of the property which is cons idered to be Natural Background and will encompass the remainder of the O'Donnell Sand & Gravel operation.

This submittal includes the following information:

1. The Soils Management Plan (SMP)
2. The Stormwater Pollution Prevention Plan (SW PPP)

It is being submitted as both an electronic and a hard copy submission. This submittal is in accordance with the Interim Policy on the Re-Use of Soil for Large Reclamation Projects (Policy # COMM -15-0I) of August 28, 2015 and in compliance with Sect ion 277 of Chapter 165 of the Acts of2014; M.G.L. c 21E, Section 6 and M.G.L. c 111, Section 150A. It is understood that the Interim Policy is subject to the eventual promulgation of regulations that will govern the future operation of such facilities.

The entire O'Donnell property consists of approximately 105 acres. It's zoned Commercial/Industrial and has been worked as a sand and gravel pit for more than three decades. The original topography consisted of a hill ranging in elevation from 110 feet to 180 feet. Groundwater at the southerly section of the property is at elevation 100 feet and it declines in elevation 80 feet as it underlies the northerly portion of the land at Marion Drive.

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The original reclamation project under the MassDEP ACO permit was for the approximate 60 acres fronting Marion Drive. This Expansion request is for the balance of the property consisting of approximately 45 acres (Phase III & Phase IV).

As noted in our Quarterly Reports the potential for the development of the original 60 acres was severely impacted by the inability of the contractor who had negotiated exclusive rights to the ACO project, to provide soils that met the standard of being suitable for future development of buildings without costly mitigating construction elements. Since the vast majority of the incoming soils were marine clays or similar materials development of the property would require expensive measures to overcome the foundation integrity of the resulting fill materials.

As a result of that situation, the plan for development was redesigned while we investigated the impact that the acceptance of such soils would have on the future development of the Property. During the time we limited the contractor to approximately 36 acres (Phase II), leaving the first 21 (Phase I) acres in its pre-ACO state to ensure the potential for its use for future development. The contractor was given the opportunity to use the first 21 acres for the ACO project if they could ensure compliance with the original ACO permit by importing only soils suitable for Reclamation of the site for development. Since they indicated that they could not commit to that requirement, at this time we anticipate using only development suitable ACO materials or on-site materials *that are suitable* for such development.

Since the commencement of the ACO project in March 2017, we have evaluated the various solutions available for overcoming the impact of certain soils on the development of the land. This Application's "Soils Management Plan" describes that effort and the resulting remedial solution to restore the integrity of the land. In order to accomplish our goals, we propose several site related modifications that are designed to overcome the impact of the unsuitable soils on the potential for future the previously planned future development.

On behalf of my Client, the O'Donnell Family Trust and its Trustee, Mary O'Donnell, we respectfully request the MassDEP's issuance of an Administrative Consent Order Amendment #1 (ACO) under the Department's program for managing Similar Soils from certain construction sites in Massachusetts.

Very Truly Yours,

Richard R. DeBenedictis. P.E.
Project Engineer

Joseph E. Webby, Jr. R.L.S.
President Webby Engineering Associates

cc O'Donnell Family Trust

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Figures:

- ☐ Locus Map
- Alta Survey
- Groundwater Contour Map
- Proposed Site Plans for ACO Phase III (Sheets 1-5)

Attachments:

- Table 1A Similar Soils Acceptance Criteria
- Stormwater Pollution Prevention Plan (SWPPP)

I INTRODUCTION

The subject Site located at 48 Marion Drive, Kingston, MA consisting of approximately 105 acres, has been utilized as a soil (sand & gravel) borrow pit for more than 30 years. The property owner is the O'Donnell Family Trust. They are the Applicant for this ACO Expansion permit which intends to reclaim the remaining sand & gravel pit area, encouraging its development as a site that is valued by the community. The area is prime for commercial development which is needed to enhance the economic integrity of Town of Kingston.

This project would reclaim the land in order to establish an environmentally sensitive commercial park, using "green technology." The Site will be brought to its approximate original height, which will allow for views of Kingston Bay, enhancing its market viability.

Phase I of the Site, about 21 acres, which was part of the original ACO, will now be designated as the first development area of the property. This area will only receive either non-ACO soils or soils that are adequate for the construction of buildings, roads and utilities without the use of pilings or special foundations.

Phase II of the Site, about 36.7 acres is under contract with Boston Environmental and its parent company, J.Derenzo. This is the original ACO operation which is presently operating on a restricted section of the Site. To date, the vast majority of the soils brought to the Site by Boston Environmental / J.Derenzo (the Contractor) under the existing ACO has been marine clays from the greater Boston area which are unsuitable for the Site's proposed reclamation plan for the Site's development, as mandated in the current MassDEP approved ACO permit. We learned several weeks into the ACO project that the Contractor would be delivering primarily that type of material instead of the soils that were required by the applicant as part of ACO permit for the reclamation of the land.

The future utilization of the Phase II area being worked by J.Derenzo, under contract with its subsidiary Boston Environmental, will be restricted to the original demands of the current ACO under this ACO Expansion. The area identified as Phase II on the attached plan for expansion will be required to limit the deposit of soils that are not suitable for the construction of buildings to a maximum of elevation of 140 ft. Unless otherwise authorized in writing by the O'Donnell Family Trust, all soils deposited above that elevation shall be suitable for construction and shall act as a '"preload" to be monitored for settlement until the subject site is capable of supporting the anticipated development of buildings.

This solution requires the soils deposited above elevation 140 ft. to not exceed elevation 180 ft., the maximum elevation under the ACO permit, to be a “preload”. The preloaded soils will be monitored until such time that the anticipated settlement, due to the previous depositing of clays, has stabilized. According to the Geotechnical Engineers engaged to study the Phase II site, preloading the unsuitable soils would allow for the eventual stability for future building construction and development, which is the purpose of the Reclamation stipulated under both the existing ACO and this proposed Expansion of the ACO. This solution to the problem of future settlement that was incurred by the use of clay as ACO soils on the site, is the most cost effective method of mitigation. It eliminates the need for piles and the costly development efforts that would allow the construction of roadways and utilities

In all Phases, the fill material shall be placed in such a manner, using proper and approved methods of capping of the fill, as to be stable and not pose any threat to public health and safety.

Phase III, which is approximately 31.46 acres on the most southerly portion of the Property, will be the primary are for Expansion of the ACO permitted activity. This area has been actively part of the sand & gravel operation. In order to maximize its potential for the expanded ACO project approximately 650,000 cubic yard s of soils will need to be removed. The base will be graded to elevation 110 feet and the final elevation will be at 180 feet at its northerly point sloping to 160 feet at its southerly boundary, which is the existing elevation at that point.

In all cases the fill material shall be placed in such a manner, using proper and approved methods of capping of the fill, as to be stable and not pose any threat to public health and safety.

Phase IV, which is approximately 13 acres in the middle of the Property, will be designated as the processing area for various field-type operations such as composting, recycling and green house farming. Certain sections of the land will continue to operate as a sand and gravel pit and processing areas until they are determined to be ready for participation in the ACO program. At that point in time Phase IV will participate in the ACO program. The excavation and fill elevations will be the same as Phase III.

The Town of Kingston has expressed interest, in writing, in favor of the proposed concept of reclamation, particularly as it is related to the development of job creation and increased tax revenue. This fill project, under the expanded ACO, is undertaken so that the future development of the site will be a more viable project.

In all cases the fill material shall be placed in such a manner, using proper and approved methods of capping of the fill, as to be stable and not pose any threat to public health and safety.

1.1 Site Background and Investigations - In preparation for participation in the MassDEP's ACO program to reclaim land formerly used for sand & gravel or quarry operations, we have reviewed previous work prepared over the years by a former firm, GHR Engineering, and have researched previous studies for proposed developments on the subject site. The information, determined by the various studies, was related to the direction of groundwater flow; the Hydraulic Conductivity of the groundwater flow on the Site as well as other pertinent information that are useful to this project.

1.2 Concurrent Site Activities - The sand & gravel (S&G) operation will continue in the southerly area designated as Phase III, an approximately 31.46-acre area, until the site achieves the topographic elevations suitable for the "base" of the proposed ACO project. The base elevation will be 112feet. That is anticipated to be within a year. The S&G and ACO Proposed Soil Fill operations will be staked and managed to assure that there is no export of the received ACO "Soil Fill" once it is on the Site unless it is being rejected for not meeting the MassDEP Acceptance Criteria, identified in the ACO permit.

II SITE CONDITIONS

1.1 - The Soils & Geology within the Property, which consist of 105 ± acres, is underlain by Carver and Gloucester soils (CcD), which are highly permeable, well drained soils of the Hydrologic Soil Group "A." The original soils, mined as a sand and gravel operation, were of a material which made them a marketable. The remaining soils consist primarily of sand and loamy sand deposits. The depth to groundwater varies due to the undulation of the excavated topography. the approximate roadway elevation of Marion Drive is 110 feet, and the groundwater is at, about a 35- foot depth at elevation 80-feet.

1.2 - The Direction of Groundwater Flow was determined to be northerly, towards Marion Drive and, eventually to Kingston Bay. Although, hydrologic (i.e., surface water) flow directions can change based on the development of a site with roads and buildings. In effect, the modification of groundwater flow direction is also subject to change if the site is developed with a storm water management plan which utilizes surface and subsurface structures. A copy of the Groundwater Contour Map is attached.

1.3 - The Hydraulic Conductivity (k) of the groundwater regime was calculated using the Hazen Masch-Denny method of analyses and determined to range from 137 to 155 feet per day (ft/day) in the remaining soils and averaging 196 ft/day in the outwash deposits. These values would not have changed in time, considering the past use of the Site.

1.4 - The Transmissivity for the overburden on the aquifer, which underlies the Site as the saturated thickness of the aquifer was calculated to be 14,413 gallons per day/ft to 74,231 gpd/ft, which compares favorably with those calculated by the Town's consultants, Whitman & Howard, for the Town water supply wells of 13,000 to 80,000 gpd/ft.

1.5 - The Groundwater Seepage Velocity, or "average linear groundwater seepage velocity" in the area was calculated to be 2.67 ft/ day using a K value of 117 ft/day; i=0.008ft/ft and n = 0.35 This is consistent with the type of the soils which are prevalent on the Site.

1.6 - Groundwater Classification, the groundwater elevations for the total acreage, including the 31.46± acres proposed for Phase III of the project vary from 100-feet at the southerly border where the surface elevations of the "base" of the ACO in that area are to be 110-feet to the northeasterly area where groundwater elevations are about elevation 75-feet and surface grades vary from 110- feet to 112 feet. The area that is subject to this permit request is not considered to be a Potentially Productive Aquifer (PPA) since it consists of over 100 acres of Commercial/Industrial land. In its present state it is vacant land used as a sand & gravel pit. It has Town Water available in Marion Drive. The finished grades of the ACO will be higher, adding to the depth to groundwater. Although, not a Potentially Productive area, a very conservative MassDEP GW-1 classification is used for this project with a "Natural Background" classification of RCS-1/GW-1

1.7 - Proximity to Schools, Residences etc., the nearest homes are on Copper Beach Drive to the northwest, at a distance of 733 feet and at Indian Pond Estates to the west at 510 feet. The closest school is an elementary school at 1030 feet to the northwest; The closest municipal water supply source is within Marion Drive which the O'Donnell Property fronts on to the north. The Kingston Wastewater Treatment Plant is to the northeast approximately 800 ft. distant from the property's frontage.

1.8 - Wetland Areas - The proposed reclamation site, is primarily uplands, with wetlands along its northerly perimeter. It is more than 200-feet from Smelt Brook and its associated wetlands. The wetlands in the area are regulated under the State's Wetlands Act and the Massachusetts Rivers Act. The proposed project is beyond 200-feet from any wetlands and 200 feet from the Brook. The "limits of construction" for portion of the proposed Site Reclamation Project and the subsequent development, will be set at 210 ft and as was the original ACO area, will not be subject to the Wetlands Act and, therefore, would not be required to file a Notice of intent (NOI).

1.9 - Topography - The current topographic layout of the Site is the result of mining sand and gravel for more than 30 years. The original topography was of a moraine with elevations approaching 180 feet (NAVD 88). The elevation at Maron Drive, which is north of the Property, ranges from 110-feet to 112-feet (NAVD 88). An Existing Conditions Topographic Map is included in Figure 2.

1.10 - Water Supplies - The Site has a well in the northeast section of the property that is used for irrigation. Potable water is located and available in Marion Drive. This will be necessary for the future development of the Site. The water supply system for development will be looped to the westerly located high-pressure system at Indian Pond Estates. This high-pressure water supply system was brought to the mutual property line as a requirement by the Town for that purpose.

1.11 - MCP Status -The subject Site is not a disposal site as defined by Chapter 21E of the MGLs. It Has been either vacant land or utilized as a sand and gravel pit operation for over 30 years. It doesn't have any buried tanks and is not an MCP Listed Site.

1.12 - Contact Information - The Owner and Applicant of the Site is:

O'Donnell Family Trust
54 Grove Street
Kingston, MA 02360
(617-688-6088)

III. THE NEED FOR ADDITIONAL FILL

As noted above the potential reclamation of the subject Site requires significant modifications to its topography for both the Base and for the future development once after Reclamation. These modifications will enhance the development of the proposed project and allow for the most efficient operation of the Expanded ACO. This is best achieved by raising the Site to elevations that are similar to the original contours. It is anticipated that the raising of the Site may allow for views of the Bay from about 50% of the project. The Reclamation of the Site will allow for a mixed use with retail, commercial and light industrial projects. Its anticipated that the expanded ACO will require the reuse of at least 2 to 2.5 million cubic yards of soils to achieve its full Reclamation potential.

IV. The CLASSIFICATION of the RECEIVING SITE SOILS

The classification of the receiving Site soils is as "Natural Background" based on the Similar Soils Provision (SSP) of the MCP. The property has been subject to excavation of its soils as a sand and gravel pit and is not a landfill or a commercially or industrially developed Site, therefore, it is assumed that the remaining soils are representative of background as defined in the SSP.

1.1 The Similar Soils Provision (SSP) - as described in this excerpt, assures an accurate presentation of its provisions: The SSP was the basis of the original ACO permit for the Site, issued on October 7, 2016.

1.2 Natural Background It is noted that the costs associated with determining site-specific background are not justified by likely differences. Further, the published "Natural Background" levels are similarly used for several areas of the MCP as an acceptable endpoint, including site delineation and the development of the MCP cleanup standards."

The soils, as they exist on-site, are accessible and therefore, considered to be S-1 soils. The Site is part of a sand and gravel pit that will be developed once it is filled to its approximate original elevations. The proposed development will be a commercial development using a concept that will model environmentally sound technologies and, as such, will also be considered as having accessible soils. If assumed at the Receiving Site, the MassDEP published Natural background concentrations (that are used as limits) are upper percentile levels that are appropriately compared to similar (e.g., maximum) values of the soil data set. See WSC 13-500 - Similar Soils Provision (310 CMR.40.0032(3)), Guidance dated September 4, 2014.

Assuming the soils at the receiving location are Natural Background: Sampling of the soil at the receiving location is not necessary if it is assumed that the concentrations of OHM there is a range of background levels, and that the concentrations at any given costs associated with determining site-specific background are not justified by likely differences. Further, the published "Natural Background" levels are similarly cited in several areas of the MCP as an acceptable endpoint, including site delineation and the development of the MCP cleanup standards."

First, the provisions of 310 CMR 40.0032(3) include comparisons to Reportable Concentrations and notification is triggered by any single value (i.e., maximum value) exceeding the RC. Second, soil is by its nature heterogeneous, and the use of maximum values is a means of minimizing sampling costs while addressing the expected variability of the results. Third, if natural background levels are assumed at the Receiving Site, the MassDEP published background concentrations are upper-percentile levels that are only appropriately compared to similar (e.g., maximum) values of the soil data set.

1.3 Receiving Site Concentration Multiplying Factors, it is also important to note the following excerpt, including the Table, from the Similar Soils Policy (SSP): "The maximum concentration in the soil at the receiving location may be less than that in the proposed disposed/reused soil by some amount and not be considered "significantly lower." The question is how much lower is "significantly lower"? In this guidance, MassDEP establishes a multiplying factor to be applied to the concentration in the soil at the receiving location.

The multiplying factor varies depending upon the concentration in the soil at the receiving location, as shown in Table 1 below.

Table 1. Receiving Soil Concentration Multiplying Factors

If the concentration in soil at the receiving location for a given OHM Is:	Then use a multiplying factor of:
< 10 mg/kg	10
10 mg/kg: s *x* <100 mg/kg	7.5
100 mg/kg *x* <1,000 mg/kg	5
≥1,000 mg/kg	2.5

The multiplying factors in Table I above and the MassDEP published natural background levels can be used to establish concentrations of OHM in soil that would be acceptable for reuse at an RCS-I receiving location, consistent with the requirements of 310 CMR 40.0032(3).

Table lA, which is provided as an Attachment, lists such concentrations. Note that soil that meets the criteria in Table lA could be re-used at any location (RCS-I or RCS-2). Similarly, Table 3 in the MassDEP Similar Soils Provision, lists concentrations of OHM in soil that would be acceptable for reuse at an RCS-2 receiving location (but not RCS-I locations). This project will only accept soils within the RCS-1 classification as adjusted by calculations, using the factors in Table 1 above and presented in Table IA (see Attachment).

If a chemical is not listed on these tables, then MassDEP has not established a natural background concentration for that chemical. This guidance is limited to the use of only MassDEP-published statewide background concentrations. Therefore, an alternative approach, such as sampling the receiving location and comparing maximum reported concentrations, would be appropriate to meet the requirements of310 CMR 40.0032(3)."For example, MassDEP has Not Established (i.e. NE) the Natural Background levels for PCBs, volatile organic compounds (VOCs) or petroleum-related constituents. WSC 13-500 Similar Soils Provision (310 CMR 40.0032(3)) Guidance September 4, 2014."

IV. THE SENDING SITE'S SCREE NING & TESTING of SOILS

In order to be accepted at the Receiving Site soils must be "Field Screened" at the Sending Site. **This requires sampling and analyses prior to shipment of the *"Candidate Soils."*** The sampling, analyses and characterization of the subject soils must be done under the supervision of the *Sending Site's Licensed Site Profes sional* (LSP) or *Qualifying Environmental Professional* (QEP), in accordance with the Similar Soils Provisions (SSP) Guidance policy of the MassDEP. The sampling protocol may be in-situ or ex-situ using either discreet or composite sampling techniques (3 to 5 grab samples per composite) whichever best represents the actual soils constituents.

1.1 The LSP/QEP at the Sending Site *must* compare the laboratory analyses to the required established standards of the "Receiving Site" and certify as to their compliance with the Receiving Site's established standards, as mandated by the MassDEP's SSP, which were created to address the MCP provisions related noted as the "Acceptable Criteria" to the reuse of soils, 310 CMR 40.0032(3).

1.2 The Four (4) Requirements for the Management of the Candidate (Sending Site) Soils - these are for soils from a disposal (i.e., Sending) site to be reused at a Receiving Site, without prior MassDEP approval:

a) The Soil from the "Sending Site" cannot be Hazardous Waste;

b) The reused soil must have a concentration less than the MCP Reportable Concentrations as presented in the Attached **Table lA, as Acceptable Criteria;**

c) The reused soil must not create a Reportable Condition at the Receiving Location;

d) The reused soil must not violate the "anti-degradation provision" and be in compliance with the Receiving Site's **Multiplying Factors** for soils cited in **Table 1** above.

Because the soils to be reused for Reclamation at this Site must be suitable for the proposed construction of buildings, its integrity for development as well as its chemical compatibility must be evaluated.

In addition to meeting the Receiving Site's Natural Background parameters, unless otherwise specifically approved in writing, soils deposited above elevation 140 ft. must also be geotechnically suitable for the Site's intended development.

Soils intended for reuse must be identified and certified with a MassDEP Material Shipping Record (MSR), signed by the Sending Site's LSP/QEP, accompanying each truckload.

It is important to emphasize that the Receiving Site is to be classified as having a *Natural Background* condition as explained in Section IV above. Therefore, In lieu of sampling for SVOCs and metals at the proposed receiving locations, which is an expensive undertaking, the MassDEP has established concentrations of these constituents in "Natural Soil" for RSC-I and RCS-2 locations. These concentrations can be found in the MassDEP document titled "Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil" (May, 2002).

The Receiving Site will only accept soils less than RCS-1 classifications as represented in the
Attached Table lA as Acceptable Criteria.

In all cases the fill material shall be placed in such a manner, using proper and approved methods of capping of the fill, as to be stable and not pose any threat to public health and safety.

V. THE RECEIVING SITE'S SCREENIN G & TESTING of SOILS

The Engineer (Mr. Richard DeBenedictis), or his designee, will conduct random screening of the shipped soils in-situ or prior to unloading and their accompanying records to assure the soils are as represented. Authorized personnel and/or the Independent lbird Party Inspector, who are trained in sample collection, will conduct inspections of incoming loads on a random basis and have the subject samples analyzed by a MassDEP certified laboratory *with coordination and written notification to, the Site's Owner and Engineer.*

In order to qualify for reuse at the Receiving Site, Candidate Soils must be characterized at the Sending Site for the following criteria. The screening results must be included in the profiling **Soils Package** prepared by the Sending Site's LSP for submittal to the Receiving Site.

In summary, Candidate Soils from a potential Sending Site, which are proposed to be reused at the Receiving Site shall not exceed the following field screening or visual criteria:

1. In addition to the sampling and analyses of the Candidate Soils at the Sending Site, field screening of soils using a Photo-Ionizing Detector (PID) in a jar headspace protocol, from representative samples, will be conducted at the Receiving Site. The results from the PID must not exceed a reading of Total Organic Vapors (TOV) of2 (two) parts per million by volume (_p_pmV).

2. Frequency of screening at the Receiving Site will be one test per every 50 cyds. This screening should be performed at the Sending Site as well as at the Receiving Site, by the respective Engineer or their designee.

3. **If screening conducted at the Receiving Site results in an exceedance to the criteria stated above, the load(s) will be rejected and immediately removed from the Site.**

4. **The soil designated for reuse must not exhibit any staining, odors, or other discolorations indicative of an oil or hazardous material (OHM) release.** All candidate soils are subject to a random inspection for these characteristics, on arrival at the Receiv ing Site, by the En gineer or their designee.

5. **The reclamation fill soils imported to the Site must not contain any refuse, trash or solid debris.** The soil may contain a small percentage of ABC (i.e., <3" in size and< 5%) material or non-coated/ non-painted brick or non-coated /stained or non-impregnated concrete pieces less than three (3) inches in diameter or cobbles less than six (6) inches in diameter within certain fill soils in quantities constituting less than 5% of the load. Soils exceeding 5% of the load of "offending materials" will be rejected by the Engineer, their designee or Owner and sent back to the site of origin at the generator's cost.

6. At the Receiving Site's Engineer's or Owner's discretion, the Generator Contractor's representative may physically separate the offending material, without disturbing the unloading of the fill operation, in order for the material to be sent, by them, to a designated Construction and Demolition (C&D) landfill or permitted Asphalt, Brick, Concrete (ABC) disposal facility.

7. Soil's that meet the physical and chemical requirements for reuse may contain some naturally deposited silt and clay and have a certain portion of naturally occurring organic content and moisture. If excessively wet they must be unloaded at a designated area away from the active fill area in order to properly drain. In order for it to be acceptable by the Owner for reuse it may need to be stored, blended, and re-worked as supervised by the Engineer. Soils having a pH that exceeds the upper limit of 9.0 by no more than 10% and do not exhibit any chemical exceedances to the Receiving Site's Acceptance Criteria *may be excepted on a case-by-case basis.*

8. The following section is a verbatim presentation of another ACO Site's stipulation, which we are incorporating herein: Soils mixed with bentonite or other slurry materials may be accepted on a case by case basis. A description of the process and materials generating soil with slurry must be provided. The Material Safety Data Sheet (MSDS) for all slurry and any other additive products must be submitted to Site Owner's LSP/QEP for review. Soils that contain de-minimis amounts (based on visual observations) of mixed-in slurry may be accepted for re-use based on review and approval by the Site Owner's LSP/QEP. Soils with more than de minimis amounts of mixed-in slurry will require MassDEP **approval.**

The owner may require a premium payment for such soils to offset the added management required prior to use as fill. No dredge spoils will be allowed unless permitted by MassDEP . incoming loads will be inspected for stains and odors and be subject to a random field screening with a PID by the Engineer or designated party. In addition, discrete soil samples may be collected from a representative number of loads and incorporated into a composite sample for confirmatory analysis by the Owner's or Engineer's laboratory.

9. QA/QC sampling will occur randomly on a monthly basis by a designated Independent Third Party, to be named prior to start-up. The load selected for QA/QC sampling will be segregated in a quarantined area until receipt of the laboratory analyses determines its disposition. If the results exceed the Receiving Site's Acceptance Criteria, the generator will have ten 10) days to remove the soil from the quarantined area.

10. If a load is rejected based upon the QA/QC procedures (i.e., by visual/olfactory, PID Screening) or as the result of the independent Third-Party QA/QC procedures, the Owner and/or Engineer will not accept any soils from that particular Sending Site until proof that the validation process at that facility has been upgraded to meet the required acceptance standards of the Receiving Site.

Information regarding rejected loads shall be included in the MassDEP required monthly and quarterly status reports.

VI. ADDITIONAL GUIDANCE DOCUMENTS CITED

In addition to the **Similar Soils Provision (SSP) Guidance document (WSC# 13-500),** the reuse of soils must comply with the Due Diligence of the **MassDEP's Waste and Recycling Policies Guidelines (HW93-01H), and Landfill Soil Re-Use Policies (COMM-97-001).**

VIII LABORATORY TESTING REQUIREMENTS

The following parameters (i.e., the "test profile") are to be analyzed at the Sending Site for each sample **prior to shipment to the Receiving Site:**

- **Volatile Organic Compounds (VOCs) by EPA Method 8260;**
- Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270;
- **TotalMCP-14 by EPA Methods 6010, 7470 (for mercury) and 7010 (for thallium) (refer to Section XIV for the analytelist);**
- Pesticides by EPA Method 8081 (may be excluded or limited based on site history);
- **Herbicides by EPA Method 8151 (may be excluded or limited based on site history);**
- Total Petroleum Hydrocarbons (TPH) (summation of EPH fractions can be substituted);
- **Reactivity (cyanide/sulfide) by EPA Method Ch. 7.3;**
- pH Corrosivity by EPA Method 9045;
- **ignitibility/Flashpoint by EPA Method 1010;**
- Specific Conductance (Conductivity) by EPA Method SM2510; and
- **Any other potential constituents based on location-specific history;**

Analysis for hexavalent chromium will be required on every sample that exceeds RCS-1 for total chromium, and **TCLP analysis is required of each sample that exceeds potential threshold values.**

- **Please note: the averaging of concentrations is not acceptable!**
- **Soil containing Arsenic > RCS-1, from anywhere, is not acceptable**

The sampling and analyses for PCBs shall be required for all data packages to assure that **there isn't a source of such chemical on the Sending Site either now or from the past. No deviations from the sampling/analyses plan of this SMP are allowed!**

IX. MINIMUM SAMPLING FREQUENCIES at the SENDING SITE

The following are Minimum Sampling Frequencies established by MADEP for soil re-use at the Generator or Candidate Site (i.e. The Sending Site), prior to shipping to the Receiving Site:

SOIL CATEGORY	GENERAL SOURCE/ORIGIN DESCRIPTION	MINIMUM TEST PROFILE FREQUENCY
1.	Naturally Deposited Soil: Not from an area of known or suspected high background levels of constituents (i.e., not arsenic belt, boston blue clay); not proximate to urban fill soil; no MCP disposal sites nearby; and no industrial or manufacturing history	1 Test profile per 1,000 cubic yards (1,500-1,700 tons) for initial review. Supplemental testing of specific areas for specific contaminants that exceed any Soil Acceptance Criteria (SAC) to define / confirm limits of acceptable soil at 1 test per 100 cu. Yd.
2.	Naturally Deposited Soil: in proximity to urban fill or an MCP disposal site	1 Test profile per 1,000 cubic yards (1,500-1,700 tons) for initial review. Supplemental testing of specific areas for specific contaminants that exceed any Soil Acceptance Criteria (SAC) to define / confirm limits of acceptable soil at 1 test per 100 cu. Yd.
3.	Naturally Deposited Marine Soils and Boston Blue Clay: from areas of known or suspected naturally occurring high background levels of constituents or otherwise regulated soil.	1 Test profile per 1,000 cubic yards (1,500-1,700 tons) for initial review. Test profile must include MCP-14 metals Supplemental testing of specific areas for specific contaminants that exceed any Soil Acceptance Criteria (SAC) to define / confirm limits of acceptable soil at 1 test per 100 cu. Yd.
4.	Urban Fill Soil	1 Test profile per 500 cubic yards (750-850 tons) for initial review. Test profile must include MCP-14 metals Supplemental testing of specific areas for specific contaminants that exceed any Soil Acceptance Criteria (SAC) to define / confirm limits of acceptable soil at 1 test per 100 cu. Yd Additional test parameters such as cyanide and asbestos may be required.
5.	Soil from industrial, commercial or manufacturing site with history of any of the following: tannery, textiles, chemical/paint production, circuit board manufacturing, plating/metal finishing, foundry operations, coal gasification, dry cleaning, salvage yards, pesticide/herbicide use, storage or distribution. A LSP, LSRP or LEP must provide a report detailing why such soils conform to the SAC	1 Test profile per 500 cubic yards (750-850 tons) for initial review. Test profile must include MCP-14 metals Supplemental testing of specific areas for specific contaminants that exceed any Soil Acceptance Criteria (SAC) to define / confirm limits of acceptable soil at 1 test per 100 cu. Yd Additional test parameters such as cyanide and asbestos may be required.
6	Historic test data indicate potential exceedance of any SAC or where past use or storage of OHM at more than household quantities	(tons) for initial review. Supplemental testing of specific areas for specific contaminants that exceed any SAC to define /confirm limits of acceptable soil at 1 test / 100 cu. Yd. Additional test parameters based on historic test data may be required.

Multi-point composite samples (3-5 grab samples per composite) shall be used for test samples, except use discreet sample s for VOC analyses of the highest PID screening result for that test profile. Soil density is to be considered at 1.5 tons per cyd., for a stockpile sample, and less than
1.7 ton per cyd. for in-situ samples from borings or test pits. Technical justificati on is required for the acceptance of soil with an assumed density greater than I.7 ton per cu. yd.

X. SITE SOIL ACCEPTANCE CRITERIA (SAC)

The MassDEP's derivation of the **Soil Acceptance Criteria (SAC)** for the Site is summarized in the below:

!PARAMETER	SOIL ACCEPTANCE CRITERIA
OCs (EPA 8260)	List analytes individually, with criteria based on< 10% of RCS-1. For nalytes with no RCS-1 value.
SVOCs (EPA 8270)	Similar Soil Policy Table 2. For analytes not listed in Table 2: < 10% of RCS-1. For analytes with no RCS-1: to be determined on a case by case basis.
EPH	Each carbon range 1/2 RCS-1. Target analytes from Similar Soil Policy table 2
TPH	1/2 RCS-1 (i.e., 500 mg/kg)
Pesticides (EPA 8081)	ND Trace levels of pesticides/herbicides can be accepted on a case by case basis
Herbicides (EPA 8151)	ND Trace levels of pesticides/herbicides can be accepted on a case by case basis
PCBs (EPA 8082)	Non-Detect (ND) for total PCBs
MCP-14 (with Vanadium)	Similar Soil Policy Table 2 or calculate site specific criteria
Hexavalent Chromium	Similar Soil Policy Table 2 or calculate site specific criteria
Specific Conductance (EPA SM2510)	2000 umhos/cm (1/2 Comm 97 limit)
Flashpoint (EPA 1010}	> 140 degrees
pH/Corrosivity (EPA **9045}**	t>.0-9.0
Reactive Sulfide/Cyanide EPA Ch. 7.3)	500/250
PID Screening	<2 ppmV
asbestos fibers	ND (Non-Detect)

The **Site Soil Acceptance Criteria (SAC)** have been revised to reflect limiting concentrations for SVOCs and metals for a RCS-I receiving location assuming Natural Background cond itions established in the Similar Soils Provision Guidance and MADEP's recommendations for other constituents set forth in the above referenced table. The revised Site Soil Acceptance Criteria are presented in **Table 1A (Attached).**

XI APPROVAL of SOILS for REUSE

It **is the responsibility of the Generator's (i.e. the Sending Site's) Engineer, QEP or LSP to conduct the sampling and review the analyses of the candidate soils proposed for reuse at the Receiving Site.** Once approved, the analytical results shall be forwarded within the **Soil Profile Package** as part of the pre-characterization study, in letter format with attachments to the Receiving Site's Owner, Engineer and Project LSP.

The suitability of the soils shall be indicated by the Candidate Sending Site's Engineer or their designee, and noted, if **approved, within the Soils Package. Any Soils Package not having this evaluation and approval will be rejected. This stipulation may. be waived, in writing, for a particular Sending Site by the Owner. This waiver, if granted, will only be for that particular Sending Site.**

The Engineer or their designee, will provide an initial indication of the acceptability of a subject soil. **After initial approval is gained, the Soils Package will be sent to the Receiving Site's designated QEP or LSP for review.** The soils for reuse from each **Candidate Sending Site** will be reviewed to confirm that they meet the requirements set forth herein.

The next step is for the Candidate Sending Site's LSP to prepare an acknowledgement/approval letter to the Receiving Site's Owner and Engineer confirming their (i.e. the Candidate Site's) receipt of the acceptance of the soil for confirmatory signature by Receiving Site's Engineer. The letter will specify the approved quantity to be shipped, with dates, noted restrictions (if any), and any other pertinent items. Once signed by the Site's Engineer the letter will be forwarded by to the Generator.

1.1 Soil Package Submittal Requirements

As stated, soil that is scheduled to be placed at the **Receiving Site** will be from construction projects where the soils have been pre-characterized during the engineering phase of the development or from stockpiled soil.

All soils to be placed at the Receiving Site will be pre-characterized by the Generator using appropriate characterization guidelines established in this SRMP. All sampling results shall be demonstrated to meet the **SAC limits** identified in **Table 1 in Section** IX **of this Report/Plan.**

An Application by a potential Sending (Candidate) Site for Acceptance of Soil for Reuse is necessary. Prior to acceptance of soil for reuse at the Site, the Receiving Site's QEP or Project LSP will review the pre-characterization data packages of the Candidate soils to assure that they are in compliance with the established Soil Acceptance Criteria and provisions of this plan. The Site LSP, Owner or Engineer requires the review of any environmental investigative reports regarding potential oil & hazardous material (OHM) release(s) or indications of soil quality at the originating property.

Prior to transporting any soils to the Receiving Site, the Generator must submit a Soil Profile Package prepared by the Candidate site's QEP or LSP signed/stamped and dated for review by the potential Sending Site's Owner, QEP or Project LSP. The following information is required in the Soil Profile Package to obtain approval for soil reuse at the above referenced location:

1.2 The Application Package -The first step in the process is an Application letter from the Candidate Site Owner or Engineer , to the Owner, with copies to the Receiving Site's Engineer and the Receiving Site's LSP with information contained as described below.

a. Name of property Owner (the Generator), and their LSP/ and/or QEP;

b. Project Name and Location, MCP Release Tracking Num ber (if applicable), and MCP history relative to candidate soils. A brief description of Site history including; a) current and past uses, b) soil category and c) a description/source of any release(s) tha t have impacted the soil;

c. Boring logs & test pit lo gs or a physical description of the material (sand, silt, clay, etc.);

d. The quantity of soil planned for reuse, the number of soil samples collected, and a description of the samples collection protocol utilized;

e. A site map depicting sampling locations by number and field screening with an attached copy of the numbered results with an explanation as to the reasons for using either discrete or composite sampling to develop representative data;

f. An indication on the Candidate's Site Map as to the relative location of the candidate soils to any on-site contaminated area(s). Contaminated soils that exceed the RCS-1 classification will not be accepted at the Receiving Site.

g. A comparison of the analytical data sheets; the summary of the analytical results and the Soils Acceptance Criteria (SAC). demonstrating that data and results meet the SAC criteria;

h. Identification and discussion of a proposed shipment schedule, the name of the transporter (if known), and other pertinent coordination items, and

1. The soil shipme nt must have a completed Material Shipping Record (MSR) signed by the Generator Site's QEP or LSP.

1.1 The Soil Profiling Package

The Soil Profiling Package must be sent electronically to the Receiving Site's Engineer, with copies to the Owner, to be revie wed and, if acceptable, and if applicable in the case of there being an intermediate LSP overseeing the Sending Site's Soil Package, it shall be forwarded to that Sending Project's LSP for review. The Sending Project's LSP will review the package and will issue a written acknowledgement via email and acceptance to the Receiving Site's Engineer and the Generator's QEP or LSP for countersignature

If sufficient analytical data is not available from the Generator, the Site's Engineer, will require that the Gene rator of the soils collect additional samples to ensure that all concentrations of potential contaminants in the material are properly identified and that they meet the Receiving Site's Soil Acceptance Criteria and the equivalent frequency of testing requi rements established in this SMP.

XII SITE ACCESS and MAINTENANCE

Directions to the site are provided as a Locus Map. 1 e Site is the O'Donnell Sa nd & Gravel Pit at 48 Marion Drive Kingston, MA. All trucks will be weighed upon arrival at the Receiving Site on a certified scale. A Site Manager will be designated by the Receiving Site's Owner to work under the direction of the Receiving Site's Engine er to monitor and accept or reject soils on a daily basis.

1.1 Receiving Site's Access and Hours of Operation

Acces s will be through the gravel drive into the Site; to the designated Phase area as directed by the Receiving Site Manager. Roadways will be maintained for truck access. Hours of operation are 7:00 am to 4:30 pm from Monday to Friday and certain Saturdays. The Site Manager will maintain appropriate equipment year -round to spread, dry, and compact the soils.

1.2 Dust and Sediment Control

The Owner w ill utilize the following measures to control dust and sediment associated with transporting, spreading and compactin g soil to fill the Site:

- A water truck will be used to control and prevent dust emissions.
- The unloading of soil will be conducted in a manner to minimize fugitive dust generation.
- A gravel mat/tracking pad will be constructed at the Site's exit to mitigat e soil/mud from wheels and tracks prior to a vehicles access onto public ways.
- The access roadways from the Site will be maintained as needed to control the buildup of dust and soils onto the public way.
- Erosion controls shall be installed at the perimeter of the active fill area. Erosion controls could include a series of sediment traps, hay bales and/or crushed stone filter berms.

It is important to note that **the Storm Water Pollution Prevention Plan (the SWPPP)** describes the method used to control erosio n. The SWPPP is to be maintained on -site and be available for review at all times! The proposed active fill area and the limits of construction are to be staked.

XIII, HEALTH and SAFETY

Site specific Health and Safety measures will be implemented by the Re ceiving Site's Manager to specify the types of personal protection, and engineering controls, to manage physical hazards associated with soil work. Once a soil is accepted, no health -related environmental monitoring will be necessary as soils are < **RCS-1** and will not constitute unacceptable exposures to contaminated soil through ingestion, dermal contact and inhalation.

The nearest hospital is Beth Israel Deaconess located on Obery Street, off of Route 3 at Exit #13 (formerly Exit #5) in Plymouth, MA.

GROUND WATER MONITORING

There are four (4) monitoring wells already installed at the Receiving Site; one up-gradient well that will be considered the control well and three (3) down-gradient monitoring wells (MWs).

- One week after they were installed, the wells were purged
- and sampled for all the acceptance criteria described in **Section X.**
- Two (2) years after completion of the Fill/Reclamation project, the down-gradient MWs will be purged and sampled again for the acceptance criteria described in **SectionX.** During the operation of the Receiving Site, there will be annual sampling and analyses of the MWs **for the full suite ofanalytes.**

XV SITE INSPECTIONS, MONITORING & REPORTING PROCEDURES

The Reclamation/Fill operation requires a certain level of monitoring, record keeping and reporting to be conducted **on various schedules:**

- The Receiving Site's Manager, under the direction of the Engineer, will keep daily and weekly tally sheets of soil that is accepted at the facility and will note the observable characteristics of the soil in a log that will be available on-site.
- The general locus of where soil is placed will be noted as a sketch of the area on a Site Plan that is kept onsite.

The Following Inspections and Reports will he Required;

These reports are to be kept up to date and available for inspection by the following Receiving Site personnel:

- ***Independent Third-Party inspections*** *by an independent LSP or QEP,* will occur monthly, unless otherwise stipulated and include:
- Observation of the practices involved in the receipt and/or placement of soil and fill materials;
- Inspection of the soil and fill materials that are being unloaded and inspect all areas of the Site where soil and fill materials have been placed since the previous inspection;
- Collect one QA/QC composite soil sample for laboratory testing for all of the parameters listed in Section VIII & **X;**
- Collect and document a minimum of six (6) spot elevation measurements within the filled areas of the Site with respect to established benchmarks using a hand-held GPS or survey instrument; and
- Inspect all erosion control measures including, but not limited to, silt fence, hay bales, temporary basins and swales and log in the SWPPP.

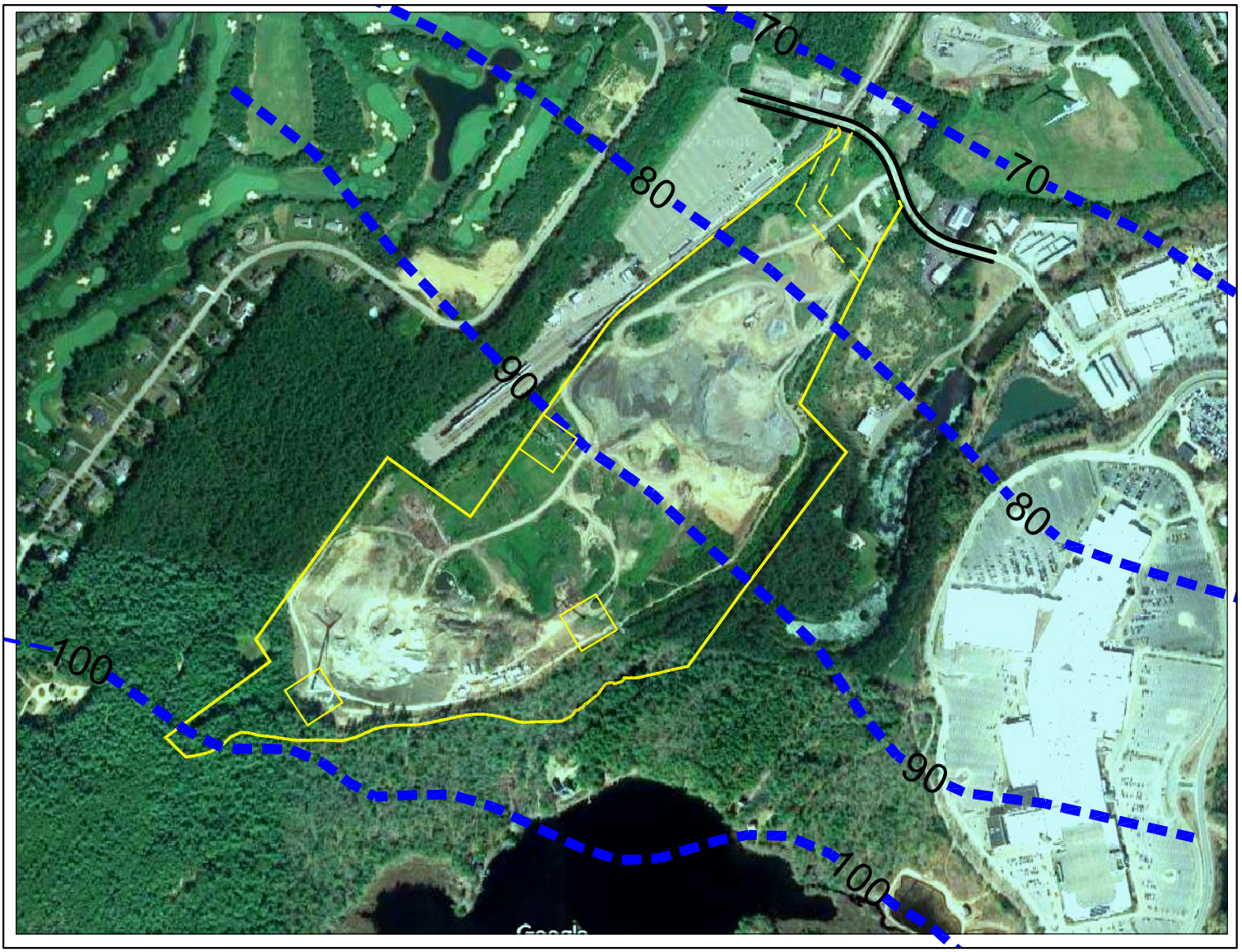
a) **Monthly Inspection Reports** will be prepared by the Independent Third Party and submitted to the Engineer, Owner, Project LSP for their review and then submitted to the MassDEP. The Reports must include the information identified as required in the Administrative Consent Order (ACO);
b) **Quarterly Construction Status Reports** prepared and certified by the Engineer and Project LSP must include the information required in the ACO.

End of Narrative Report

LOCUS & SITE PLANS

SITE LOCUS MAP

SCALE : 1" = 2,000'



GROUNDWATER ELEVATIONS MAP

SCALE : 1" = 800'

Information taken from
GeoHydroCycle, inc. map
Project no. GHO#07029
date: 12/13/08
Elevations taken from USGS Topografic Map

POSSIBLE ENCROACHMENTS:

1. RAILROAD TRACK, TRACK BALLAST AND FENCE CROSSING NORTHWEST CORNER OF PROPERTY.
2. UTILITY POLES AND GRAVEL ACCESS ROAD SERVICING WIND TURBINE GENERATOR WTG-3 CROSSING MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROPERTY.
3. WIND TURBINE BLADES FROM WIND TURBINE GENERATOR WTG-3 CROSSING MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROPERTY.

SCHEDULE B ITEMS PERTINENT TO SURVEY:

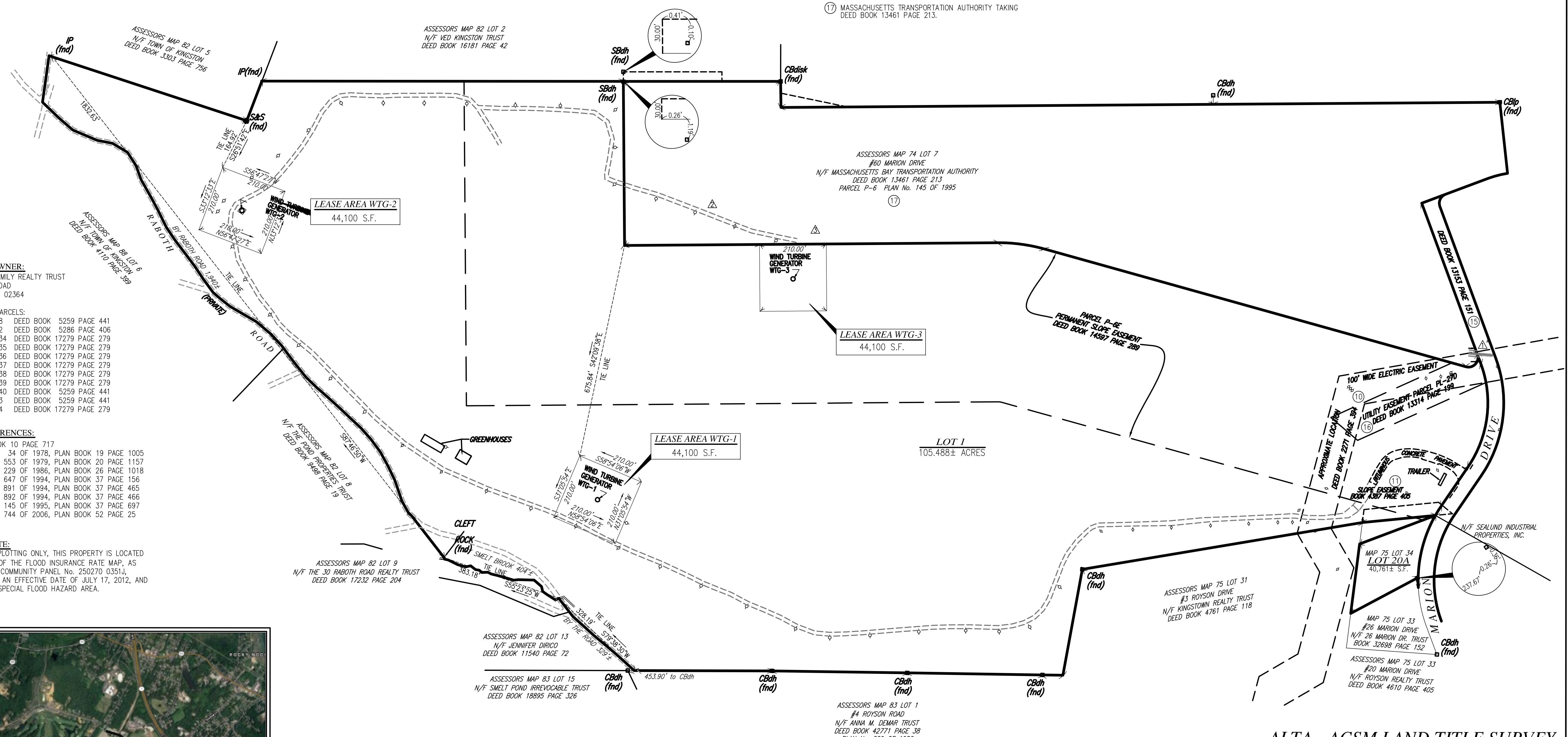
(10) PLYMOUTH COUNTY ELECTRIC EASEMENT DEED BOOK 2271 PAGE 394.

(11) SLOPE EASEMENT – DEED BOOK 4387 PAGE 405.

(15) MASSACHUSETTS TRANSPORTATION AUTHORITY TAKING DEED BOOK 13153 PAGE 151 – MARION DRIVE.

(16) MASSACHUSETTS TRANSPORTATION AUTHORITY TAKING DEED BOOK 13314 PAGE 199.

(17) MASSACHUSETTS TRANSPORTATION AUTHORITY TAKING DEED BOOK 13461 PAGE 213.



RECORD OWNER:
O'DONNELL FAMILY REALTY TRUST
47 MARION ROAD
KINGSTON, MA 02364

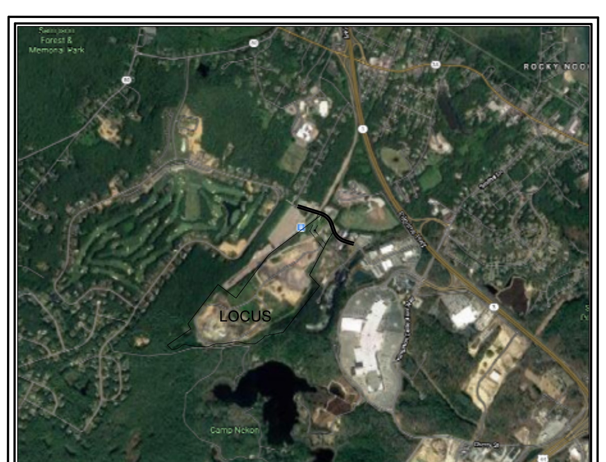
ASSESSORS PARCELS:

MAP 74 LOT 8	DEED BOOK 5259	PAGE 441
MAP 75 LOT 2	DEED BOOK 5286	PAGE 406
MAP 75 LOT 34	DEED BOOK 17279	PAGE 279
MAP 75 LOT 35	DEED BOOK 17279	PAGE 279
MAP 75 LOT 36	DEED BOOK 17279	PAGE 279
MAP 75 LOT 37	DEED BOOK 17279	PAGE 279
MAP 75 LOT 38	DEED BOOK 17279	PAGE 279
MAP 75 LOT 39	DEED BOOK 17279	PAGE 279
MAP 75 LOT 40	DEED BOOK 5259	PAGE 441
MAP 82 LOT 3	DEED BOOK 5259	PAGE 441
MAP 82 LOT 4	DEED BOOK 17279	PAGE 279

PLAN REFERENCES:

1. PLAN BOOK 10 PAGE 717
2. PLAN No. 34 OF 1978, PLAN BOOK 19 PAGE 1005
3. PLAN No. 553 OF 1979, PLAN BOOK 20 PAGE 1157
4. PLAN No. 229 OF 1986, PLAN BOOK 26 PAGE 1018
5. PLAN No. 647 OF 1994, PLAN BOOK 37 PAGE 156
6. PLAN No. 891 OF 1994, PLAN BOOK 37 PAGE 465
7. PLAN No. 892 OF 1994, PLAN BOOK 37 PAGE 466
8. PLAN No. 145 OF 1995, PLAN BOOK 37 PAGE 697
9. PLAN No. 744 OF 2006, PLAN BOOK 52 PAGE 25

FLOOD NOTE:
BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS LOCATED IN ZONE "X" OF THE FLOOD INSURANCE RATE MAP, AS DEPICTED ON COMMUNITY PANEL No. 250270 0351J, WHICH BEARS AN EFFECTIVE DATE OF JULY 17, 2012, AND IS NOT IN A SPECIAL FLOOD HAZARD AREA.



LOCATION MAP SCALE: 1" = 2000'

CERTIFICATE OF SURVEY
TO: O'DONNELL FAMILY REALTY TRUST, NO FOSSIL FUEL, LLC, KAWA WIND FINANCE, LLC, AND STEWART TITLE GUARANTY COMPANY:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 7a, 8, 9, 11a AND 13 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON MAY 20, 2014.

PETER E. TUTTLE, P.L.S.
MA REGISTRATION No. 40767
FEBRUARY 12, 2015

NOTES:

1. THIS SURVEY IS BASED ON STEWART TITLE GUARANTEE COMPANY COMMITMENT FOR TITLE INSURANCE COMMITMENT No. KINGSTON, DATED DECEMBER 26, 2013.
2. THE PROPERTY ADDRESS IS 48 MARION DRIVE – KINGSTON, MA.
3. ALL OBSERVED IMPROVEMENTS ARE SHOWN ON THIS SURVEY.
4. NAMES OF OWNERS WERE COMPILED FROM THE TOWN OF KINGSTON ASSESSORS RECORDS.
5. THE SITE IS AN ACTIVE GRAVEL PIT.
6. NO EVIDENCE OBSERVED OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS.
7. NO EVIDENCE OBSERVED OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.
8. WETLANDS WERE NOT INVESTIGATED NOR DELINEATED FOR THIS SURVEY.
9. THE SUBJECT PROPERTY ABUTS AND HAS ACCESS TO MARION DRIVE, A DEDICATED PUBLIC WAY, AND RABOTH ROAD A PRIVATE WAY.
10. ALL ENCROACHMENTS OBSERVED DURING THIS SURVEY ARE SHOWN.

150 0 150 300 450
Scale 1" = 150'

ALTA - ACSM LAND TITLE SURVEY

MARION DRIVE
KINGSTON, MASSACHUSETTS

PREPARED FOR:
O'DONNELL FAMILY REALTY TRUST
MARY K. O'DONNELL, TRUSTEE
47 MARION ROAD
KINGSTON, MA 02364

MAY 23, 2014
SCALE: 1"=150'
JOB No. 14-018

GRADY CONSULTING, L.L.C.
Civil Engineers and Land Surveyors
71 Evergreen Street, Suite 1, Kingston, MA 02364
Phone (781) 585-2300 Fax (781) 585-2378

NOTE:

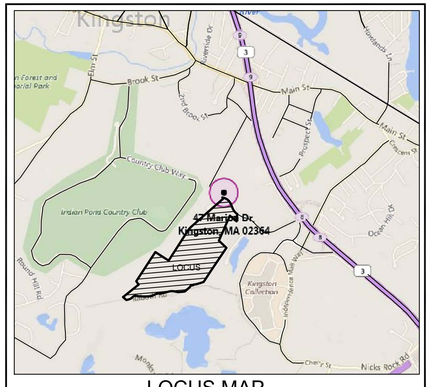
1.) THE TOTAL AREA OF PHASE I = 21.00± ACRES
THE AREA OF PHASE I IS DESIGNATED FOR FUTURE DEVELOPMENT AND IS TO BE FILLED WITH STRUCTURAL FILL AND SET AT A 2.5% MAXIMUM SLOPE TO PHASE II. PROPOSED ELEVATION AT PHASE II IS SET AT 45±.

2.) EXCAVATION
THE TOTAL AREA OF PHASE II = 36.70± ACRES.
THE APPLICANT IS PROPOSING TO EXCAVATE THE PHASE II AREA DOWN TO ELEVATION 120. THE TOTAL VOLUME OF EARTH REMOVAL FROM THE DESIGNATED AREA SHOWN ON THIS PLAN IS APPROXIMATELY 400,000± CUBIC YARDS OF MATERIAL.

ACO FILL
THE TOTAL AREA OF PHASE II = 36.70± ACRES
THE APPLICANT IS PROPOSING TO FILL THE PHASE II AREA FROM ELEVATION 110 (POST EXCAVATION ELEVATION) TO AN AVERAGE ELEVATION OF 180 WITH SIDE SLOPES SET AT A 2:1 MAXIMUM SLOPE.
THE TOTAL POTENTIAL VOLUME OF ACO FILL IN THIS DESIGNATED AREA IS APPROXIMATELY 1,900,000 CUBIC YARDS OF MATERIAL.

3.) EXCAVATION
THE TOTAL AREA OF PHASE III = 31.46± ACRES.
THE APPLICANT IS PROPOSING TO EXCAVATE THE PHASE III AREA DOWN TO ELEVATION 110. THE TOTAL VOLUME OF EARTH REMOVAL FROM THE DESIGNATED AREA SHOWN ON THIS PLAN IS APPROXIMATELY 670,380 CUBIC YARDS OF MATERIAL.

ACO FILL
THE APPLICANT IS PROPOSING TO FILL THE PHASE III AREA FROM ELEVATION 110 (POST EXCAVATION ELEVATION) TO AN AVERAGE ELEVATION OF 175 WITH SIDE SLOPES SET AT A 2:1 MAXIMUM SLOPE.
THE TOTAL POTENTIAL VOLUME OF ACO FILL IN THIS DESIGNATED AREA IS APPROXIMATELY 1,950,000 CUBIC YARDS OF MATERIAL.



LOCUS MAP
N.T.S.

NOTES:

1.) LOCUS IS SHOWN AS LOTS 2, 35, 36, 37 & 40 ON MAP 75; LOT 8 ON MAP 74; AND LOTS 3 & 4 ON MAP 82 OF THE TOWN OF KINGSTON ASSESSORS PLANS.

2.) RECORD OWNER: O'DONNELL FAMILY TRUST
47 MARION DRIVE
KINGSTON, MA 02364

3.) LOT SIZE: 105.49± ACRES

4.) ZONING: COMMERCIAL / INDUSTRIAL

SCALE:1"=150'
150 0 75 150 300 600

COMMONWEALTH OF MASSACHUSETTS
RICHARD ROBERT DEBENEDICTIS
No. 28318
REGISTERED PROFESSIONAL ENGINEER

ISSUE	DATE	DESCRIPTION	DRAWN	DESIGN	CHECK	RESP. ENG.

ACO SITE PLAN

TOWN : KINGSTON, MASS. PARCEL ID:

LOCATION : MARION DRIVE

PREPARED FOR : O'DONNELL FAMILY REALTY TRUST
54 GROVE STREET
KINGSTON, MA. 02364

SCALE : 1" = 150' | DATE : JANUARY 18, 2020

RICHARD R. DEBENEDICTIS, P.E.
CIVIL ENGINEERS & LAND SURVEYORS
180 COUNTY ROAD - PLYMPTON, MA.
(781) 585-1164

PHASE I
21.33 ACRES
(FUTURE DEVELOPMENT AREA)

MARION DRIVE

NOTE:

1.) THE TOTAL AREA OF PHASE I = 21.00± ACRES

2.) THE TOTAL AREA OF PHASE I = 21.00± ACRES
THE AREA OF PHASE I IS DESIGNATED FOR FUTURE DEVELOPMENT AND IS TO BE FILLED WITH STRUCTURAL FILL AND SET AT A 2.5% MAXIMUM SLOPE TO PHASE II. PROPOSED ELEVATION AT PHASE II IS SET AT 45±.

SCALE:1"=60'

60 0 30 60 120 240

COMMONWEALTH OF MASSACHUSETTS
RICHARD ROBERT DeBENEDICTIS No. 28318 REGISTERED PROFESSIONAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER

ISSUE	DATE	DESCRIPTION	DRAWN	DESIGN	CHECK	RESP. ENG.

ACO SITE PLAN (PHASE III)

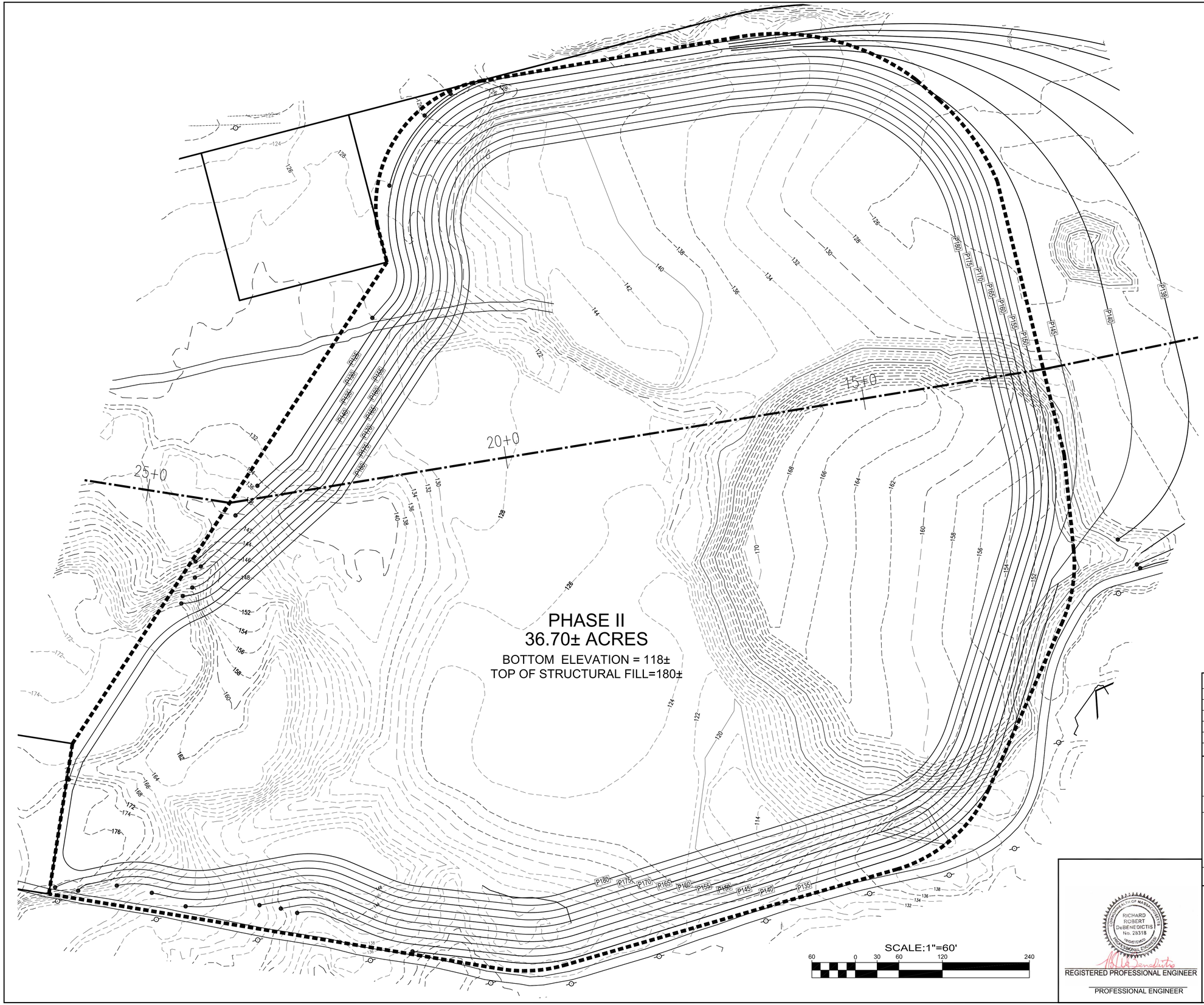
TOWN : KINGSTON, MASS. PARCEL ID:

LOCATION : MARION DRIVE

PREPARED FOR : O'DONNELL FAMILY REALTY TRUST
54 GROVE STREET
KINGSTON, MA. 02364

SCALE : 1" = 60' | DATE : JANUARY 18, 2020

RICHARD R. DEBENEDICTIS, P.E.
CIVIL ENGINEERS & LAND SURVEYORS
180 COUNTY ROAD - PLYMPTON, MA.
(781) 585-1164



NOTE:

1.) EXCAVATION
THE TOTAL AREA OF PHASE II = 36.70± ACRES.
THE APPLICANT IS PROPOSING TO EXCAVATE THE PHASE II AREA DOWN TO ELEVATION 120. THE TOTAL VOLUME OF EARTH REMOVAL FROM THE DESIGNATED AREA SHOWN ON THIS PLAN IS APPROXIMATELY 400,000± CUBIC YARDS OF MATERIAL.

ACO FILL
THE TOTAL AREA OF PHASE II = 36.70± ACRES
THE APPLICANT IS PROPOSING TO FILL THE PHASE II AREA FROM ELEVATION 120 (POST EXCAVATION ELEVATION) TO AN AVERAGE ELEVATION OF 180 WITH SIDE SLOPES SET AT A 2:1 MAXIMUM SLOPE.
THE TOTAL POTENTIAL VOLUME OF ACO FILL IN THIS DESIGNATED AREA IS APPROXIMATELY 1,900,000 CUBIC YARDS OF MATERIAL.

ISSUE	DATE	DESCRIPTION	DRAWN	DESIGN	CHECK	RESP. ENG.

ACO SITE PLAN (PHASE III)

TOWN : KINGSTON, MASS. PARCEL ID:

LOCATION : MARION DRIVE

PREPARED FOR : O'DONNELL FAMILY REALTY TRUST
54 GROVE STREET
KINGSTON, MA. 02364

SCALE : 1" = 60' | DATE : JANUARY 18, 2020

COMMONWEALTH OF MASSACHUSETTS
RICHARD ROBERT DeBENEDICTIS No. 28318 REGISTERED PROFESSIONAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER

RICHARD R. DEBENEDICTIS, P.E.
CIVIL ENGINEERS & LAND SURVEYORS
180 COUNTY ROAD - PLYMPTON, MA.
(781) 585-1164

NOTE:

1.) THE TOTAL AREA OF PHASE III = 31.46± ACRES.
EXCAVATION
THE APPLICANT IS PROPOSING TO EXCAVATE THE PHASE III AREA DOWN TO ELEVATION 110. THE TOTAL VOLUME OF EARTH REMOVAL FROM THE DESIGNATED AREA SHOWN ON THIS PLAN IS APPROXIMATELY 670,380 CUBIC YARDS OF MATERIAL.

2.) THE TOTAL AREA OF PHASE III = 31.46± ACRES
ACO FILL
THE APPLICANT IS PROPOSING TO FILL THE PHASE III AREA FROM ELEVATION 110 (POST EXCAVATION ELEVATION) TO AN AVERAGE ELEVATION OF 175 WITH SIDE SLOPES SET AT A 2:1 MAXIMUM SLOPE.
THE TOTAL POTENTIAL VOLUME OF ACO FILL IN THIS DESIGNATED AREA IS APPROXIMATELY 1,950,000 CUBIC YARDS OF MATERIAL.

SCALE:1"=60'

60 0 30 60 120 240

ISSUE	DATE	DESCRIPTION	DRAWN	DESIGN	CHECK	RESP. ENG.

ACO SITE PLAN (PHASE III)

TOWN : KINGSTON, MASS. PARCEL ID:

LOCATION : MARION DRIVE

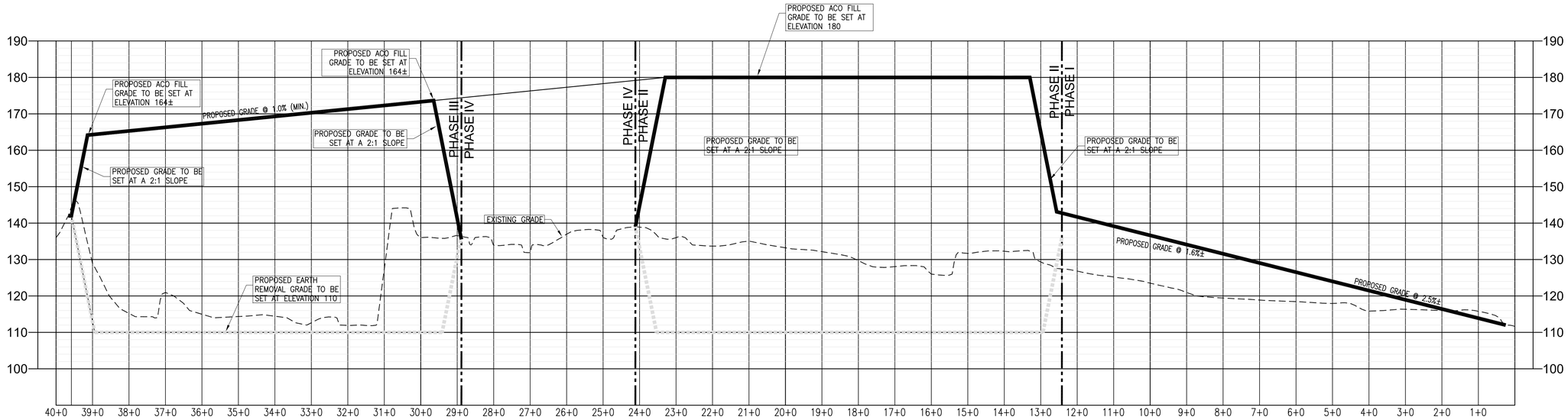
PREPARED FOR : O'DONNELL FAMILY REALTY TRUST
54 GROVE STREET
KINGSTON, MA. 02364

SCALE : 1" = 60' DATE : JANUARY 18, 2020

COMMONWEALTH OF MASSACHUSETTS
RICHARD ROBERT DeBENEDICTIS
No. 28318
REGISTERED PROFESSIONAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER

RICHARD R. DEBENEDICTIS, P.E.
CIVIL ENGINEERS & LAND SURVEYORS
180 COUNTY ROAD - PLYMPTON, MA.
(781) 585-1164



SCALE:1"=60'

60 0 30 60 120 240

ISSUE	DATE	DESCRIPTION	DRAWN	DESIGN	CHECK	RESP. ENG.

ACO SITE PLAN (PROFILE)

TOWN : KINGSTON, MASS. PARCEL ID:

LOCATION : MARION DRIVE

PREPARED FOR : O'DONNELL FAMILY REALTY TRUST
54 GROVE STREET
KINGSTON, MA. 02364

SCALE : 1" = 150' DATE : JANUARY 18, 2020

COMMONWEALTH OF MASSACHUSETTS
RICHARD ROBERT DeBENEDICTIS No. 28318 REGISTERED PROFESSIONAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER

RICHARD R. DEBENEDICTIS, P.E.
CIVIL ENGINEERS & LAND SURVEYORS
180 COUNTY ROAD - PLYMPTON, MA.
(781) 585-1164

ATTACHMENTS

TABLE 1A: SIMILAR SOILS ACCEPTANCE CRITERIA

O'DONNELL SAND & GRAVEL PIT

48 MARION DRIVE, KINGSTON, MASSACHUSETTS

The Accep tance Criteria, which is displayed as less than (<) RCS -1/GW -1 in the last column of this Table must be met in order for soil to be accepted at the O'Donnell Sand & Gravel Site!

CHEMICAL	Natural Soil Concentration	**MCP-Reportable** Concentrations **RCS-1/GW-1**	Acceptance Criteria < RCS-1/GW-1 ***	
GC/MS SEMI VOC/PAHS by 8270D Note that VOSs Are Not Accepted	**(mg/kg)**	**(mg/kg)**		**(mg/kg)**
1,1-Biphenyl	NE*	0.05	<	0.005
1,2,4-Trichlorobenzene	NE	2	<	0.2
1, 2-Dichlorobenzene	NE	9	<	0.9
1,3-Dichlorobenzene	**NE**	1	<	0.1
1,4-Dichlorobenzene	NE	1	<	0.1
2,4,5-Trichlorophenol	NE	4	<	0.4
2,4,6-Trichlorophenol	NE	1	<	0.1
2,4-Dichlorophenol	NE	1	<	0.1
2,4-Dimethylphenol	NE	1	<	0.1
2,4-Dinitrophenol	NE	3	<	0.3
2,4-Dinitrotoluene	NE	1	<	0.1
2,6-Dinitrotoluene	NE	100	<	10
2-Chloronaphthalene	NE	1,000	<	100
2-Chlorophenol	NE	1	<	0.1
2-Methylnaphthalene	0.5	0.7	<	<0.7
2-Methylphenol	**NE**	NE		NE
2-Nitrophenol	NE	100	<	10
3,3'-Dichlorobenzidine	NE	3	<	0.3
3+4-Methylphenol	NE	NE		NE
4-Bromophenyl phenyl ether	NE	100	<	10
4-Chtoroaniline	NE	1	<	0.1
4-Nitrophenol	**NE**	100	<	10
Acenaphthene	0.5	4	<	**<4**
Acenaphthylene	0.5	1	<	<1
Acetophenone	NE	1,000	<	100
Aniline	**NE**	1,000	<	100
Anthracene	1	1,000	<	<10
Azobenzene	NE	**NE**		NE
Benzo[a]anthracene	2	7	<	<7
Benzo[a]pyrene	2	2	<	<2
Benzo[b]fluoranthene	2	7	<	<7
Benzo[g,h,i]perylene	1	1,000	<	<10
Benzo[k]fluoranthene	1	70	<	<10

TABLE 1A: SIMILAR SOILS ACCEPTANCE CRITERIA

O'DONNEU SAND & GRAVEL PIT

48 MARION DRIVE, KINGSTON, MASSACHUSETTS

The Acceptance Criteria, which is displayed as less than (<) RCS -1/GW -1 In the last column of this Table must be met in order for soil to be accepted at the O'Donnell Sand & Gravel Site I

CHEMICAL (mg/kg)	NATURAL SOIL	MCP: RCS -1/GW -1		< RCS-1/GW-1 ***
Bis(2-chloroethoxy)methane	NE	500	<	SO
Bis(2-chloroethyl)ether	NE	1	<	0.1
Bis(2-ethylhexyl) phthalate	NE	90	<	9
Butyl benzyl phthalate	**NE**	100	<	10
Chrysene	2	70	<	<20
Dibenz(a,h)anthracene	0.5	0.7	<	<0.7
Dibenzofuran	NE	100	<	10
Diethyl phthalate	**NE**	10	<	1
Dimethyl phthalate	**NE**	0.7	<	0.07
Di-n-butyl phthalate	NE	SO	<	5
Di-n-octyl phthalate	**NE**	1,000	<	100
Fluoranthene	4	1,000	<	<40
Fluorene	1	1,000	<	<10
Hexachlorobenzene	NE	1	<	0.1
Hexachlorobutadiene	**NE**	30	<	3
Hexachloroethane	**NE**	1	<	0.1
Indenol [1,2,3-cd]pyrene	1	7	<	<7
Isophorone	**NE**	100	<	10
Naphthalene	0.5	4	<	**<4**
Nitrobenzene	**NE**	500	<	50
n-Nitroso dimethylamine	**NE**	**50**	<	5
Pentachlorophenol	NE	3	<	0.3
Phenanthrene	3	10-600	<	<10
Phenol	NE	1	<	0.1
Pyrene	4	1,000	<	**<40**
GM/MS VQA by 8260(		-		
1,1,1,2-Tetrachloroethane	NE	0.1	<	0.01
1,1,1-Trichloroethane	NE	30	<	3
1,1,2,2-Tetrachloroethane	NE	0.005	<	0.0005
1,1,2-Trichloroethane	NE	0.1	<	0.01
1,1-Dichloroethane	NE	0.4	<	0.04
1,1-Dichloroethene	NE	3	<	0.3
1,1-Dichloropropene	NE	NE		NE
1,2,3-Trichlorobenzene	NE	NE		NE
1,2,3-Trichloropropane	NE	100	<	10
1,2,4-Trichlorobenzene	NE	2	<	0.2
1,2,4-Trimethylbenzene	NE	1,000	<	100
1,2-Dibromo-3-Chloropropane	NE	10	<	1

TABLE 1A: SIMILAR SOILS ACCEPTANCE CRITERIA

O'DONNELL SAND & GRAVEL PIT

48 MARION DRIVE, KINGSTON, MASSACHUSETTS

The Acceptance Criteria, which is displayed as less than (<) RCS -1/GW -1 in the last column of this Table must be met in order for soil to be accepted at the O'Donnell Sand & Gravel Site!

CHEMICAL (mg/kg)	NATURAL SOIL	MCP: RCS -1/GW -1		< RCS-1/GW-1 ***
1,2-Dibromoethane	NE	0.1	<	0.01
1,2-Dichlorobenzene	NE	9	<	0.9
1,2-Dichloroethane	NE	0.1	<	0.01
1,2-Dichloropropane	**NE**	0.1	<	0.01
1,3,5-Trimethylbenzene	**NE**	10	<	1
1,3-Dichlorobenzene	NE	3	<	0.3
1,3-Dichloropropane	**NE**	500	<	50
1,4-0ichlorobenzene	**NE**	1	<	0.1
1,4-Dioxane	NE	0.2	<	0.02
2,2-Dichloropropane	**NE**	NE		**NE**
2-Butanone (MEK)	NE	4	<	**0.4**
2-Chlorotoluene	NE	NE	<	**NE**
2-Hexanone	NE	100	<	10
4-Chlorotoluene	NE	**NE**		NE
4-Isopropyltoluene	NE	**NE**		NE
4-Methyl-2-pentanone {MIBK)	**NE**	**NE**		NE
Acetone	NE	6	<	0.6
Aerolein-Screen	NE	NE		**NE**
Benzene	**NE**	2	<	0.2
Bromobenzene	NE	**100**	<	10
Bromochloromethane	**NE**	0.005	<	0.0005
Bromodichloromethane	**NE**	0.1	<	0.01
Bromoform	NE	0.1	<	0.01
Bromomethane	NE	1	<	0.1
Carbon disulfide	NE	100	<	10
Carbon tetrachloride	**NE**	5	<	**0.5**
Chlorobenzene	NE	1	<	0.1
Chlorodibromomethane	NE	0.005	<	0.0005
Chloroethane	NE	100	<	10
Chloroform	NE	0.2	<	0.02
Chloromethane	**NE**	100	<	10
cis-1,2-Dichloroethene	NE	0.1	<	0.01
cis-1,3-Dichloropropene	NE	NE		NE
Dibromochloromethane	**NE**	0.005	<	0.0005
Dibromomethane	NE	**500**	<	50
Dichlorodifluoromethane	NE	1,000	<	100
Diethyl ether	NE	100	<	10
Di-Isopropyl ether	NE	NE		NE
Ethylbenzene	NE	40	<	4

TABLE 1A: SIMILAR SOILS ACCEPTANCE CRITERIA

O'DONNELL SAND & GRAVEL PIT

48 MARION DRI VE, KINGSTON, MASSACHUSETTS

The Acceptance Criteria, which is displayed as less than (<) RCS -1/GW -1 in the last column of this Table must be met in order for soil to be accepted at the O'Donnell Sand & Gravel Site!

CHEMICAL (mg/kg)	NATURAL SOIL	MCP: RCS-1/GW-1		< RCS-1/GW·l ****
Hexachlorobutadiene	NE	6	<	0.6
Isopropylbenzene	NE	1,000	<	100
Methyl tert-butyl ether	NE	0.1	<	0.01
Methylene Chloride	NE	0.1	<	0.01
m-Xylene & p-Xylene	NE	100	<	10
Naphthalene	NE	4	<	0.4
n-Butylbenzene	NE	NE		NE
N-Propylbenzene	NE	100	<	10
o-Xylene	NE	100	<	10
sec-Butylbenzene	NE	NA		NE
Styrene	NE	3	<	0.3
Tert-amyl methyl ether	NE	NE		NE
Tert-butyl ethyl ether	NE	NE		NE
tert-Butylbenzene	NE	100	<	10
Tetrachloroethene	NE	1	<	0.1
Tetrahydrofuran	NE	500	<	50
Toluene	NE	30	<	3
trans-1,2-Dichloroethene	NE	1	<	0.1
tra ns-1,3-Dichloropropene	NE	NE		NE
Trichloroethene	NE	0.3	<	0.03
Trlchlorofluoromethane	NE	1,000	<	100
Vinyl chloride	NE	0.7	<	0.07
GC SEMI VOA by 8100 MODIFIED				
TPH	NE	1,000	<	500
MA EPH Allphatic/Aromatlc Ranges by Mass DEP CAM IV 8				
C9-C18 Aliphatic	NE	1,000	<	500
C19-C36 Aliphatic	NE	3,000	<	1500
Cll-C22: Aromatic	NE	1,000	<	500
PESTICIDES by 80818 (mg/kg) Trace Levels May be Accepted on a Case by Case Basis				
4,4'-DDD	NE	8	<	0.015
4,4'-DDE	NE	6	<	0.15
4,4'-DDT	NE	6	<	0.15
Aldrin	NE	0.08	<	0.08
alpha-BHC	NE	50	<	0.15
beta-BHC	NE	10	<	0.15
Chlordane {technical)	NE	5	<	0.15

The Acceptance Criteria, which is displayed as less than (<) RCS -1/GW -1 In the last column of this Table must be met in order for soil to be acce pted at the O'Donnell Sand & Gravel SiteI

CHEMICAL (mg/kg)	NATURAL SOIL	MCP: RCS-1/GW-1		< RCS-1/GW·l *"**
Delta-BHC	NE	10	<	0.015
Dieldrin	NE	0.08	<	0.08
Endosulfan I	NE	0.5	<	0.15
Endosulfan II	NE	0.5	<	0.15
Endosulfan Sulfate	NE	NA	<	0.15
Endrin	NE	10	<	0.15
Endrin Ketone	NE	NA	<	0.15
Gamma-BHC	NE	0.003	<	0.003
Heptachlor	NE	0.3	<	0.15
Heptachlor Epoxide	NE	0.1	<	0.1
Hexachlorobenzene	NE	0.7	<	0.15
Methoxyclor	NE	200	<	0.15
PCBs by 808ZA (mg/kg)				
PCB-1016	NE	1	<	0.1
PCB-1221	NE	1	<	0.1
PCB-1232	NE	1	<	0.1
PCB-1242	NE	1	<	0.1
PCB-1248	NE	1	<	0.1
PCB-1254	NE	1	<	0.1
PCB-1260	NE	1	<	0.1
PCB-1262	NE	1	<	0.1
PCB-1268	NE	1	<	0.1
HERBICIDES by 8151A (mg/kg)- trace levels may be accepted on a case by case basis				
2,4,5-T	NE	NA	<	0.03
2,4-D	NE	NA	<	0.03
2,4-DB	NE	NA	<	0.03
Dalapon	NE	NA	<	0.03
Dichlorprop	NE	NA	<	0.03
Dinoseb	NE	NA	<	0.03
Silvex	NE	NA	<	0.03
MCP14 METALS by 6010 & 7470 for Mercury & 7010 for THALIUM				
Antimony	1	20	<	10
Arsenic	20	20	<	20
Barium	50	1000	<	375

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TABLE 1A: SIMILAR SOILS ACCEPTANCE CRITERIA

O'DONNELL SAND & GRAVEL PIT

48 MARION DRIVE, KINGSTON, MASSACHUSEm

The Acceptance Criteria, which is displayed as less than (<) RCS -1/GW l in the last column of this Table must be met in order for soil to be accepted at the O'Donnell Sand & Gravel Site!

CHEMICAL (mg/kg)	NATURAL SOIL	MCP: RCS -1/GW -1		< RCS-1/GW-1 ***
Beryllium	0.4	90	<	4
Cadmium	2	70	<	20
Chromium {Total) **	30	100	<	<100
Chromium (Tri) **	30	1,000	<	225
Chromium (Hex) **	30	100	<	<100
Copper	40	NE	<	300
Lead	100	200	<	200
Mercury (by Method 7470)	0.3	20	<	3
Nickel	20	600	<	150
Selenium	0.5	400	<	5
Silver	0.6	100	<	6
Thallium (by Method 7010)	0.6	8	<	6
Vanadium	30	400	<	·225
Zinc	100	1000	<	500
GENERAL CHEMISTRY by% MOISTURE				
Percent Solids	NE	NA	NA	
GENERAL CHEMISTRY by **SM 25108** (UM HOS/CM)				
Specific Conductance {umhos/cm)	NE	NA		2000
Flashpoint (EPA 1010}	NE	NA	>	140
pH/Corrosivity (EPA 9045}	NE	NA		5.0-9.0
Reactive Sulfide/Cyanide	NE	NA		500/250
PIO SCREENING	NE	NA	<	2 ppmv
asbestos fibers	NE	NA		ND

Notes:

* NE: The MassDEP has NOT ESTABLISHED a standard for that Chemical.

** MCP-14 Metals includes the three Chromiums (Total/Tri & Hex) as one metal of the 14 Metals.

*** The< RCS-1/GW-1 (i.e. less than) values are the result of a calculation that uses the Factors from Table 1, which are presented in the **MassDEP's SimilarSoilsProvision**and below, as being the values of the respective chemical constituents that are acceptable at the Receiving Site.

TABLE 1A: SIMILAR SOILS ACCEPTANCE CRITERIA

O'DONNELL **SAND** & **GRAVEL** PIT

48 MARION DRIVE, KINGSTON, MASSACHUSETTS

The Acceptance Criteria, which is displayed as less than (<) RCS-1/GW-1 in the last column of this Table must be met in order for soil to be accepted at the O'Donnell Sand & Gravel Site!

The Factors used in the calculation of the "less than" (i.e. the Acceptable) limits are presented here and on Page 5 of this Soils Management Plan narrative. The< **RCS-1/GW-1** limits must be met by the Sending Site in order to be accepted at the Receiving Site

Table 1. Receiving Soil Concentration Multiplying Factors

If the concentration in soil at the receiving location for a given OHM is:	**Then use a multiplying factor of:**
< 10 mg/kg	10
10 mg/kg ≤ *x* <100 mg/kg	7.5
100 mg/kg ≤ *x* < 1,000 mg/kg	5
≥. 1,000 mg/kg	2.5

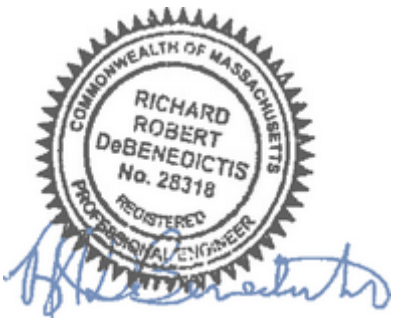
The multiplying factors in Table 1 above and the MassDEP published natural background levels can be used to establish concentrations of OHM in soil that would be acceptable for reuse at an RCS-1 receiving location, consistent with the requirements of 310 CMR 40.0032(3). Table 2 lists such concentrations. Note that soil that meets the criteria in Table 2 could be re-used at *any* location (RCS-1 or RCS-2). Similarly, Table 3 lists concentrations of OHM in soil that would be acceptable for reuse at an RCS-2 receiving location (but *not* RCS-I locations).

If a chemical is not listed on these tables, then MassDEP has not established a natural background concentration. This guidance is limited to the use of only MassDEP published statewide background concentrations. Therefore, an alternative approach, such as sampling the receiving location and comparing maximum reported concentrations, would be appropriate to meet the requirements of 310 CMR 40.0032(3)."

Richard R. DeBenedictis P.E.
57 Sanderson Drive RRDEBEN@aol.com Plymouth, MA 02360

SITE PLANNING AND DESIGN
ENVIRONMENTAL CONSULTING
WASTEWATER TREATMENT DESIGN
REGULATORY COMPLIANCE

Storm Water Pollution Prevention Plan
(SWPPP)
&
The Phasing and Sequencing of Construction
for
48 MARION DRIVE, KINGSTON, MA



Prepared for:

O'Donnell Family Realty Trust
54 Grove Street
Kingston, MA 02364

March 10, 2016

TABLE OF CONTENTS

SWPPP

STORMWATER POLLUTION PREVENTION PLAN

O'Donnell Family Realty Trust

Storm Water Pollution Prevention Plan (SWPPP) & Phasing and Sequencing of Construction

1.0 Introduction:

The subject Site at 48 Marion Drive, Kingston, MA. has been utilized as a soil borrow pit for more than 30 years. Prior to and during that time period a number of environmental and site development studies have been cinducted. Two of the studies that I reviewed were the original work prepared by my former company, OHR Engineering in 1989 as a Draft Environmental Impact Report and the more recent effort titled, *Drainage Report & Hydrologic Analysis* prepared for the Thorndike's proposed 1021 Kingston Place project by their consultants Cubellis Engineers and Architects in 2009, with the assistance of Hydrogeologist Stephen Smith of GeoHydroCycle, Inc.

The information determined by those studies and the subsequent work over the next 20 years were consistent in their findings relative to the direction of flow and the Hydraulic Conductivity of the groundwater flow on the Site as well as other pertinent information that may be useful to your project. The information that is relevant to the proposed development of an onsite pond is summarized herein.

2.0 Evaluation of the Soils:

The soils within the property are classified as Plymouth/Carver and Gloucester soils (CcD). which are a highly permeable/well drained soil of the Hydrologic Soils Group A (HSO-A). These soils consist primarily of sands from a moraine and/or glacial outwash deposit. The depth to groundwater varies due to the undulation of the topography, which has been affected by the soil removal activity of the O'Donnell Sand & Gravel operation.

2.1 The Direction of Groundwater Flow was determined during the original study and verified by the most current studies as being to the east - northeast, towards Marion Drive and eventually to the Jones River. Although, hydrologic (i.e., surface water) flow directions can change based on the development of a site with roads and buildings, the modification of groundwater flow direction is less subject to change especially if the site has not been developed with surface and subsurface structures. A copy of the Groundwater Contour Map prepared by Hydrogeologist Stephen Smith of GeoHydroCycle, Inc. is attached. Hydrogeologist Smith also determined a flow rate of 2.66 cubic feet per second (cfs) within the "A" soils.

2,2 The Hydraulic Conductivity (k) of the groundwater regime was calculated by OHR using the Hazen Masch-Denny method of analyses and determined to range from 137 to 255 feet per day (ft/day) in the outwash deposits averaging 196 ft/day. These values would not change in time considering the use of the Site over the years.

2,3 The Transmissivity for the overburden aquifer underlying the Site for the saturated thickness of the aquifer was calculated to be 14,413 gallons per day/ft to 74,231 gpd/ft which compares favorably with those calculated by the Town's consultants, Whitman & Howard, for the four Town water supply wells of 13,000 gpd/ft to 80,000 gpd/ft.

2.4 The Groundwater Seepage Velocity or "average linear gr01md water seepage velocity" in the outwash were calculated to be 2.67 ft/ day using a K value of 117 ft/day; I+ 0.008 ft/ft and n = 0.35. This is consistent with the high permeability of the outwash soil which is prevalent on the O'Donnell Site.

In conclusion, the relatively high permeability of the parent glacial outwash material is beneficial to the proposed development of the project since it allows for a continuous infiltration and recharge within the storm water management system basins.

3.0 The Identification of the Project and the Parties Involved:

The Project, is known as the O'Donnell Reclamation/Fill Project. It is the intent of this effort to reclaim approximately 60 + acres of the I05.5 acres that is available on the Site operated by O'Donnell Sand & Gravel, Inc. for the past 30 + years. The balance of the Property is used as the site of three clean energy generating Wind Turbines and for organic farming. The reclamation of the 60 + acres is intended to raise the height of that portion of the property to its approximate original elevation of 184 feet which would allow for views of Kingston Bay for a planned residential community.

3.1 **The Owner of the Property** is:

O'Donnell Family Realty Trust
c/o Mary O"Donnell
54 Grove Street
Kingston. MA 02364

3.2 The Site Design and Environmental Engineer is:

Richard R. DeBenedictis, P.E.
57 Sanderson Drive
Plymouth, Massachusetts 02360

3.3 This Site Contractor is To Be Determined by Bid

4.0 The Narrative:

The following narrative, describes the Phasing and Sequencing of Construction and the Best Management Practices (BMPs) for assuring pollution prevention during construction. That is the purpose of this Storm Water Pollution Prevention Plan (SWPPP), which is supported by the information provided by previous and current studies and reports, including the Storm Water Management Plan (SWMP), which includes the Pre- and Post-Development Drainage Calculations, and the set of Site Design Plans prepared by Richard R. DeBenedictis, P.E.

The construction of the proposed project requires a defined Phasing Plan to ensure protection for the distant wetlands and streams, which are more than 200 feet from the proposed disturbed areas, are properly addressed during construction. The phasing and sequencing of this project is intended to assure that construction be accomplished in an orderly manner that is sensitive to the environmental impacts on the Site and its contiguous environmental resources.

5.0 Dust and Sediment Control:

The Owner will utilize the following measures to control dust and sediment associated with transporting, spreading and compacting soil to fill the Site:

I) If wind speeds exceed 40 mile per hour or if dust carries beyond the property line;

2) A water truck will be used to control the dust and prevent dust emissions and offsite impacts;

3) The unloading of soil will be conducted in a manner to minimize fugitive dust generation;

4) A gravel mat/tracking pad will be constructed at the Site's exit to mitigate soil/mud from wheels and tracks prior to access onto public ways;

5) The access driveway from the Site will be maintained as needed to control the buildup of dust and soils onto the public way;

6) Erosion controls shall be installed at the perimeter of the active fill area. Erosion controls could include a series of sediment traps, hay bales, silt sock and/or crushed stone filter berms. The proposed active fill area or is more than 200 feet from any wetland or stream and the erosion control systems shall be installed to protect that buffer zone.

The subject Site's phasing requirements and sequence of construction are best categorized and described as follows:

6.0 Phase 1 - Construction of the Entrance Access:

The Phase I area is actually the full length of the proposed development Site from Marion Drive at elevation 110 ± feet (MSL) to elevationl40 feet (MSL) at the western edge of the proposed development project, but before the Wind Turbines. Phase 1 is limited in that it is to be graded to an initial elevation leveling the stockpiles of soils on the site, if they are not otherwise removed, for the placement and compaction of Urban Fill in 2-foot layers.

The Sequence of Construction is by elevation with each two (2) foot layer of acceptable Urban Fill being compacted to at least I5%. The first layer or Phase, is to level the site to the designed base elevations from which the contours will eventually reach the goal shown in the final Phase. Since the Site is an operating sand and gravel pit it is open and relatively free of vegetation. The control of erosion has during the fill operation need to

10) The entrance driveway shall be constructed with a gravel base for access during construction and a water truck shall be on stand-by to be used to control dust.

7.0 Phase 2 - Grading to Elevation 170 feet:

The goal of Phase 2 is to bring the Site to an elevation within 10 feet of its finished grade of highest elevation of 180 ± (MSL). The last 10 feet will be accomplished as Phase 3 and will be filled with soil that is "suitable for residential construction," which is the intent of this development project.

The Soil Fill will need to be significantly less than the MassDEP's RCS-I standard in order to be accepted for the final 10 foot layer.

1) Complete Phase 2 grading with acceptable Urban Fill;

2) Construct temporary drainage systems and driveway as per plan:

3) Maintain perimeter and interior erosion control systems;

4) Maintain the vegetation on all of the side-slopes;

5) Remove loam stockpiles and place in areas needing to be re-vegetated throughout the Site and seed immediately;

6) Temporary drainage basins are to be cleaned of incompatible materials and restored to design grades;

8.0 Phase 3 - Project Completion Phase

The final phase of the Soil Fill project becomes the base for the proposed mixed use development project with the benefit of having views of the Bay from the increased elevations to add to the transit orientation to the abutting MBTA Kingston Rail Station. The potential development of the Site as an environmental designed green village, will require its own Site Design and SWPPP. The objective of this Phase is to reach that goal.

1. Complete the filling of the Site with the approved soil material until the final grades are achieved as per MassDEP approved ACO plan.

2. Utilize stockpiled loam and additional loam to vegetate all areas not due for pavement or building foundations;

3. Complete construction drainage systems in access drives to respective drainage basins or infiltration area;

4. Protect all catch basins with filter fabric and /or hay bales until all Site construction is complete;

5. Clean all catch basins and temporary drainage basins, and

6. In accordance with this SWPPP, inspect all systems including drainage, and erosion control systems, for compliance with approved plans and on a weekly basis to identify and perform maintenance needs, and

Stabilization **(e.g.** loam and seeding) is to be implemented within 14 days on any area for which site work has been completed. The Site's Engineer shall inspect the Site on a weekly basis; review the GC's daily SWPPP Log and report to the Owner within 24 hours relative to any non-compliance with the SWPPP.

9.0 Inspections by the General Contractor:

In addition to inspections by the Site's Engineer, inspections of the Storm Water Pollution Prevention {SWPPP) measures to detennine compliance with the Plan are to be done by the General Contractor's (OC) Project Manager, or the Owner/Develope r's Environmental Engineer. See Daily Construction Inspection Log fonns.

This effort shall include:

- A daily physical inspection of the perimeter erosion control system to assure its continuity and integrity;
- A daily inspection of the active area-specific erosion and sediment control systems to evaluate their respective performance and integrity, and
- Removal of any buildup of soils or other debris at the hay bale/silt fence or silt sock line.

10.0 The Daily SWPPP Log:

During construction, a daily log (see the attached sections of this report) must be kept on-site and available for review by the local, state and /or federal regulatory authorities.

This SWPPP Log must identify all of the activities and conditions, including inspections, problems and mitigating measures as they occur. The Daily Construction Inspection Log sheets are provided as attachments to this SWPPP.

1) The SWPPP Daily Log shall identify:

   - The weather conditions;
   - The respective conditions of the elements of the pollution prevention systems, including the erosion control systems, that are in place;
   - Any measures taken to correct ineffective conditions;
   - The area being worked;
   - The dates when major excavation and grading occurs, and
   - The method used to correct problem conditions.

2) SWPPP required activities:

- Stabilization (e.g., loam and seeding) is to be implemented within 14 days on any area for which site work has been completed;
- In addition to the "'as needed inspections" the Design Engineer shall inspect the Site on a weekly basis;
- Review the GC's daily SWPPP Log, and
- Report, in writing (by Fax), to the Developer within 24 hours of an inspection.

11.0 Maintenance of Storm Water Systems:

The constructed project will consist of a comprehensive storm water system to collect and treat storm waters from the property. During the development stages of the project the constructed systems will need the attention of the owner and his delegated Environmental Manager to assure the quality and continuity of their respective performance.

Once the project is completed the Site's ownership will be responsible to assure that the system is receiving the proper attention during its operation.

An Operation & Maintenance (0 & M) Log is also to be kept as part of this SWPPP. The 0 & M Log sheets are provided as attachments.

12.0 Spills and Leaks:

During construction an inspection/maintenance routine is required to maintain the integrity of the systems. This routine includes response to emergency situations, including spills and leaks: from on-site construction equipment and related fuel containers, all of which require some form of mitigation as noted below:

Incidents involving the *spill or leak of chemicals or oil,* require the following actions:

- Spills or leaks 10 **gallons are** reportable under the State Regulations 310 CMR 40.0000, also known as the Massachusetts Contingency Plan (MCP);
- Reporting is to be within 2 hours of such an occurrence, by a direct call to the MassDEP's Southeast Regional Office in Lakeville, MA at 508- 946-2700;
- All spills and/or leaks are to be reported immediately to the Environmental Manager and the owners;
- Immediate action is to be taken to contain and absorb the chemical/oil and prevent it from flowing to the storm water collection system, and

- A spill control kit consisting of absorbents materials, including personnel emergency safety equipment; oil absorbent booms and an appropriate medical kit are to be kept in a visible, contained and well-marked area at the construction.

13.0 Employee Training

Prior to each stage in the construction process the Developer and/or General Contractor for the Site will conduct an employee training program for its persoMel to educate them on the requirements of the SWPPP, including health and safety issues, prior to their active presence on the construction site.

This program will include background information on:

- The components and goals of the plan;
- Hands on training in erosion control methods;
- Hands on training in spill prevention and response;
- Good housekeeping relative to keep the area clean and manageable;
- Proper handling of materials;
- Disposal and control of waste;
- Safe equipment fueling, and
- Proper storage, washing and inspection procedures.

14.0 Locus & Site Plan:

The full set of drawings of the Site Plans is to be available on-site if needed for review during inspections. The locus map is provided on the cover sheet of the set of plans

lS.O Certifications:

- **By Owner(s)/Developer:**

I, ———— a duly authorized representative of the O'Donnell Family Trust, hereby certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage(s) the syste or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief: true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name : _____, Title: ———— Date : ————

INSPECTION LOGS

+

Daily Construction Inspection Log

Construction Activity:

The Tables below are *to be completed each day,* by the General Contractor and reviewed by SCP's Environmental Manager, as a result of inspections as follows:

- The 1•[1] column is to note the date, time and the weather at the time of the inspection
- The 2[114] column is to be completed after inspection of any and all catch basins that are in the street and ***down-gradient flow*** of any construction activity. There are no catch basins planned for the Fill Site;
- The 3n1 Column is to certify that the Erosion Control systems are stable; not torn and, if they are in need of repair;
- The 4[111] column is to assure that driveway and any the public road {Marion Drive} is kept clean of soil and debris from the construction operation;
- The S- and column is to identify any corrective actions taken to mitigate a problem such as a displaced hay bale; tom silt fence or silt sock and removal of debris;
- The **6[111] column,** is for the Contractor's inspector to initial, to assure that the inspections have been conducted as required, and
- The line after the table is for the Owner/Developer's Environmental Engineer or Manager to sign on a weekly basis after his/her review of the **daily** inspection Log.

WEEK#11 Construction

Dateffime (Weather)	Street Catch **Basln** Sump's	Erosion Control Condition	**Driveway & Public Roads Condition**	Corrective Actions	lnltlals

Signature of Environmental Manager:_____Date:____ _

WEEK # 2 I Construction 1

Date/I'ime (Weather)	Street Catch **Basin** Sump's	Erosion Control Condition	Driveway & Public Roads Condition	Corrective Actions	Initials

Signature or Environmental Manager:_____Date:____ _

WEEK#3 1 Construction

Datefl'ime (Weather)	Street Catch **Basin** Sump's	Erosion Control Condition	Driveway & Public Roads Condition	Corrective Actions	Initials

Signature of Environmental Manager:_____Date:____ _

WEEK#4 l Construction

Date/r ime (Weather)	Street Catch **Basin** Sump's	Erosion Control Condition	Driveway & Public Roads Condition	Corrective Actions	Initials

Signature of Environmental **Manager:**_____ Date:____ _

WEEK#5 l Construction

Dat e/lime (Weather)	Street Catch **Basin** Sump's	Erosion Control Condition	Driveway & Public Roads Condition	Corrective Actions	Initials

Signature or Environmental Manager:_____ Date;____ _

This page for copying additional logs

WEEK# (Construction)

Date/l'ime (Weather)	Street Catch Basin Sump's	Erosion Control Condition	Driveway & Public Roads Condition	Corrective Actions	Initials

Signature of EnYironmental Manager:_____Date:____ _

WEEK# (Construction)

Dateffime (Weather)	Street Catch Basin Sump's	Erosion Control Condition	DriYeway & Public Roads Condition	Corrective Actions	Initials

Signature or Environmental Manager-: - - - - - -- - - - - Date: _ _ _

Operation & Maintenance Plan
&
InspectionLogs

0 & M of Storm Water Management

Although relatively passive in its operation, the Storm Water Management and as noted in the previous section, the Erosion Control systems require inspection and maintenance to perform as designed. The intent of the system is to assure that a storm water event does not impact the down-gradient (or downstream) wetland system or its discharge stream. The systems are designed to remove sediment, oil and smaller particles, all of which are considered pollution, from the drainage flow.

This Storm Water Pollution Prevention Plan or SWPPP, as it is called, is an integral part of the design. It is intended to provide information that educates and ensures that the constructed systems operate as anticipated to protect the environment and that no activity during construction causes a breach on this requirement.

The periodic inspection of the various elements of the systems is important to its continuing proper function. The following *Operation & Maintenance* (0 & M) tabular Inspection Logs are provided to assure that the inspections are properly completed and that corrective actions are taken in a timely and effective manner. **The General Contractor's (GC) Project Manager is to conduct weekly inspections** of the Site's Storm Water Management Systems as indicated by the Inspection Logs.

If any mitigation (i.e. corrective) Actions are taken that require additional space to report or if there are remarks to be made. please use additional sheets and attach to the loose leaf binder, behind the applicable Inspection Log sheet. **The Owner/Developer's designated Project Environmental Engineer or Manager** is to review each inspection row of information on a monthly basis and sign the bottom of each sheet, as indicated. Any problem is **to be reported to the Owner/Developer and the Site Design Engineer.**

In accordance with the requirements of the MassDEP's Storm water Management Plan Regulations, including details relative to good housekeeping, all personnel involved in the construction of the Project shall be made aware of the requirements detailed within this **SWPPP** and where required, be specifically trained to ensure that the mandates of those Regulations are followed and that the Site be operated and maintained so that:

- Site generated trash is stored in adequately sized dumpsters and disposed of frequently so as to not create a nuisance;
- Snow plowing & sanding of roads be provided on an as needed basis, which at a minimum, will coincide with Town initiated snow plowing and sanding activities;
- The fueling and maintenance of equipment during construction be done in such a manner as to avoid spills;
- A Spills Cleanup Kit be available on-site at all times and any spill over 10 gallons be reported immediately to the DEP;
- Any areas that exhibit a concrete wash out be mitigated with perimeter buoys and cleaned up immediately;

- All manufacturers maintenance requirements for storm water structures be followed in perpetuity;
- An updated NPDES/ NOi form is to be filed prior to construction;
- The SWPPP be submitted to the Conservation Commission prior to the start of work;
- An SWPPP be kept on site subject to review by local, state and/or federal authorities;
- The SWPPP reflects the approved site design and incorporate inspection logs to be completed on a scheduled basis relative to the maintenance of the erosion control and storm water management systems by the Site's Project Manager or an individual approved by the Project's Environmental Engineer;
- The Project's Environmental Engineer inspects the Site, reviews and signs off of the **SWPPP** logs once per month;
- The approved Site Plan is to be available on-site;
- The infiltration basins are to be maintained free of impervious soils and materials in order to drain efficiently as designed. Remedial steps shall be taken if it does not drain within 72 hours (as required by DEP), or faster, if required by the fmal approved calculations.
- Every effort is to be made to ensure that drainage basins be cleaned of all sedimentation.

The following pages provide the template for the Operation & Maintenance (O&M) of the Storm Water Management systems. Each row is for a weekly Inspection. These logs must be completed and initialed on **a weekly basis** by the on-site Project Manager or their designee as approved by the Project Environmental Engineer.

The logs are an integral part of the SWPPP, which must be kept on-site and available for review by local, state or federal officials who are duly authorized under the law to perform such functions.

Storm Water System O & M Inspection Logs

Weather Day/Date	Street Catch **Basins-** Condition	Condition of Entrance/Exit **Stone Matt**	Drainage **Basins** Condition	Mitigation Actions **Taken**	Initials

Signature of Environmental Engineer:_____Date:___ _

Storm Water System O & M Inspection Log (continued):

Weather Day/Date	Street Catch Basins-Condition	Condition of Entrance/Exit Stone Matt	Drainage **Basins** Condition	Mitigation Actions Taken	Initials

Signature ofEnvironmental **Engineer:**_____Date:___ _

SHEET INDEX

COVER SHEET PLAN

REVISIONS		SCALE:	1" =150'
DATE	DESCRIPTION	DATE:	4/8/20
4/23/20	REVISED LOCATION & ELEVATIONS OF DRAINAGE BASIN #4	DRAWN BY:	GTH
6/15/20	REVISED PER PEER REVIEW LETTER DATED 6/4/20	JOB NO.:	W-6113
		SHEET NO.:	1 OF 9 SHEETS

ZONING INTENSITY SCHEDULE

DISTRICT	MIN. LOT AREA: LOT AREA IN SQUARE FEET	MIN. LOT AREA: CONT. FRONTAGE IN FEET	MAX. HEIGHT DIM.: FEET	MAX. LOT COVERAGE BY BLDG.: IN % (2)	MAX LOT COVERAGE: IN %	MINIMUM YARD SIZE: FRONT YARD IN FEET	MINIMUM YARD SIZE: REAR YARD IN FEET	MINIMUM YARD SIZE: SIDE YARD IN FEET
COMMERCIAL / INDUSTRIAL	40,000	200	35	30	60	40	30	30
PROPOSED CONDITIONS						PROPOSED STRUCTURES		
COMMERCIAL / INDUSTRIAL	105 ACRES	349.89	-*	5.95	11.4	434.9'	1554.8	L - 77.9 R - 97.3

*- SEE PLANS PREPARED BY NEXTGRID FOR PROPOSED CANOPY HEIGHT

NOTES:

1.) LOCUS IS SHOWN AS LOTS 2, 35, 36, 37 & 40 ON MAP 75; LOT 8 ON MAP 74; AND LOTS 3 & 4 ON MAP 82 OF THE TOWN OF KINGSTON ASSESSORS PLANS.

2.) RECORD OWNER: O'DONNELL FAMILY TRUST
47 MARION DRIVE
KINGSTON, MA 02364

3.) LOT SIZE: 105.49± ACRES

4.) APPLICANT: NEXTGRID
P.O. BOX 7775 #73069
SAN FRANCISCO, CA. 94120

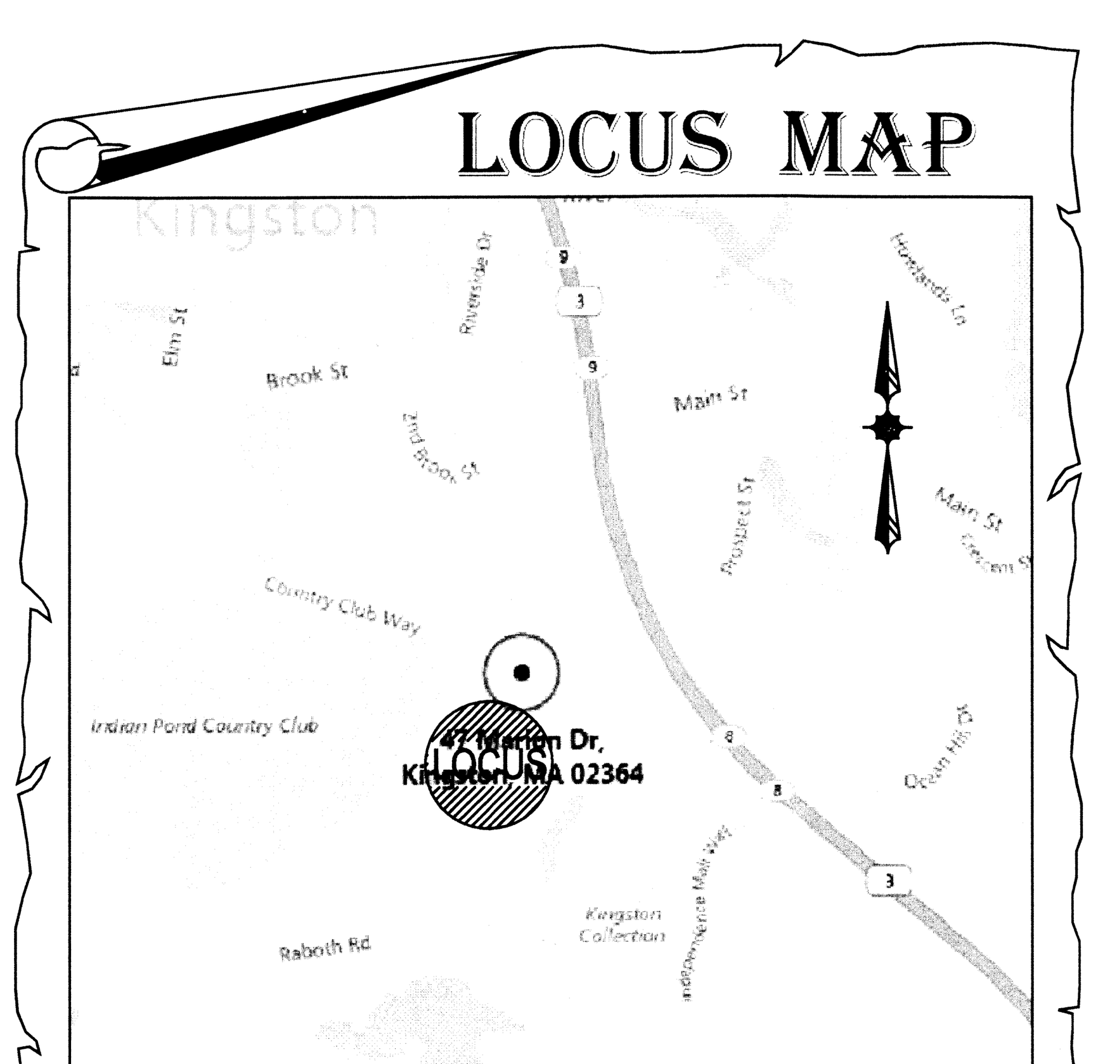
5.) ZONING: COMMERCIAL / INDUSTRIAL (SEE ZONING TABLE)

6.) PROPOSED USE: PHOTOVOLTAIC ARRAY CANOPIES WITH PAVED PARKING LOT.

7.) SEE PHOTOVOLTAIC ARRAY PLANS PREPARED BY : NEXTGRID

8.) THE TOTAL AMOUNT OF PARKING SPACES PROPOSED ON SITE IS 1,000 PARKING SPACES WITH 24 HANDICAP SPACES.

LOCUS MAP



N.T.S.

LEGEND

- EXISTING 2' CONTOUR 122 — — — 122
- EXISTING 10' CONTOUR 120 — — — 120
- EXISTING TREELINE
- EXISTING UTILITY POLE U.P.
- PROPOSED FENCE LINE
- CONCRETE BOUND CB
- PROPOSED EROSION CONTROL LINE
- PROPOSED CONTOUR LINE P50
- PROPOSED EDGE OF PAVEMENT / CAPE COD BERM
- PROPOSED CATCH BASIN CBASIN
- PROPOSED DRAIN MANHOLE DMH
- PROPOSED TRAFFIC FLOW ARROWS
- PROPOSED SPOT GRADE P50.0
- PROPOSED CANOPY SUPPORT COLUMN

REGISTERED LAND SURVEYOR — DATE
(Seal: COMMONWEALTH OF MASSACHUSETTS, JOSEPH E. WEBBY, JR. No. 28717, REGISTERED PROFESSIONAL LAND SURVEYOR)

REGISTERED PROFESSIONAL ENGINEER — DATE
(Seal: COMMONWEALTH OF MASSACHUSETTS, RICHARD ROBERT DeBENEDICTIS No. 28318, REGISTERED PROFESSIONAL ENGINEER)

' 48 MARION DRIVE SOLAR '
SITE PLAN
IN

KINGSTON, MASSACHUSETTS

PREPARED FOR
NEXTGRID

WEBBY ENGINEERING ASSOCIATES, INC.
CIVIL ENGINEERS & LAND SURVEYORS
180 COUNTY ROAD, PLYMPTON MA. 02367
Tel.: (781)-585-1164

SCALE:1" = 150'
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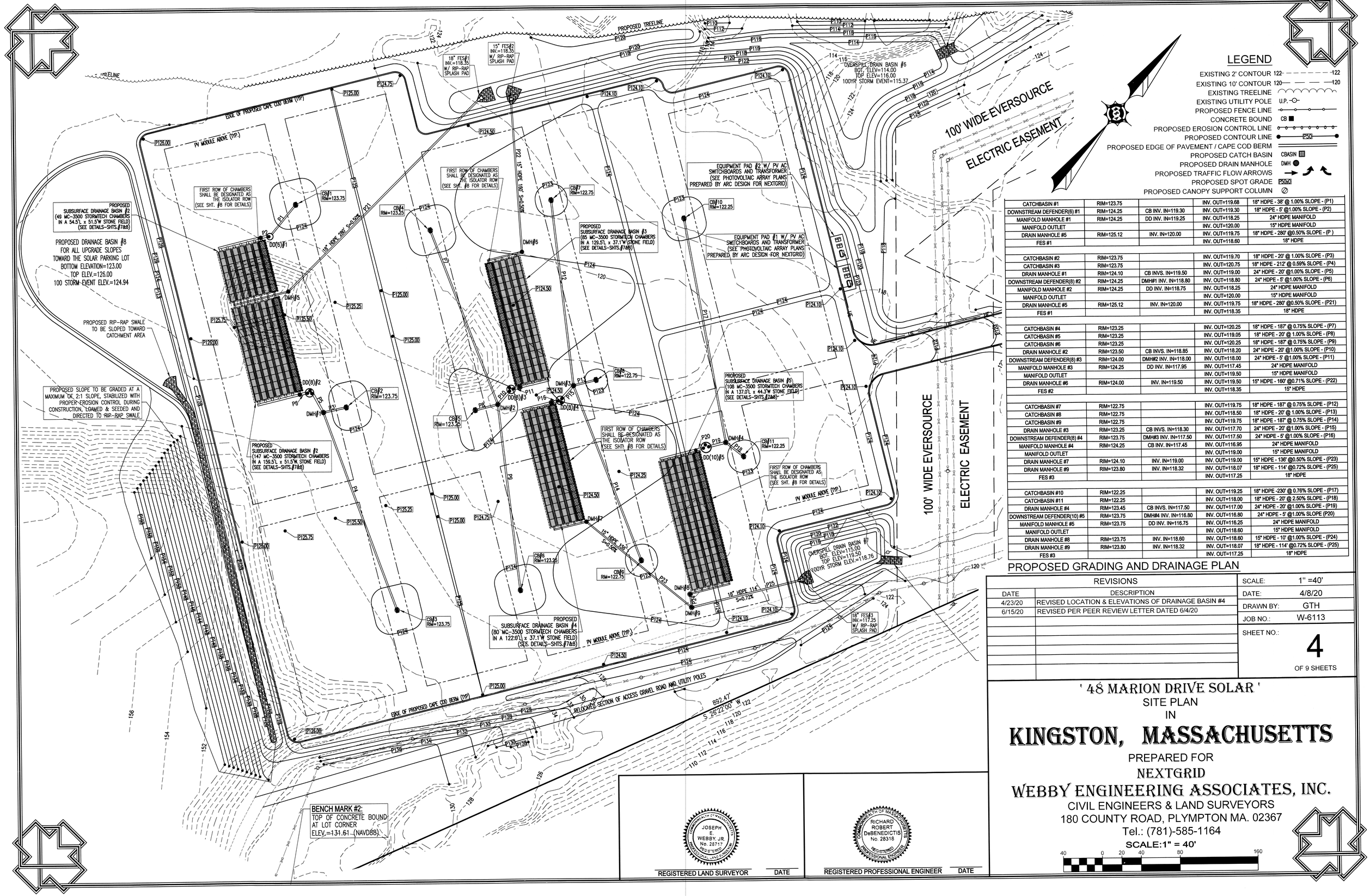


LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- EXISTING TREELINE
- EXISTING UTILITY POLE
- PROPOSED FENCE LINE
- CONCRETE BOUND
- PROPOSED EROSION CONTROL LINE
- PROPOSED CONTOUR LINE
- PROPOSED EDGE OF PAVEMENT / CAPE COD BERM
- PROPOSED CATCH BASIN
- PROPOSED DRAIN MANHOLE
- PROPOSED TRAFFIC FLOW ARROWS
- PROPOSED SPOT GRADE
- PROPOSED CANOPY SUPPORT COLUMN

CATCHBASIN #1	RIM=123.75		INV. OUT=119.68	18" HDPE - 38' @ 1.00% SLOPE - (P1)
DOWNSTREAM DEFENDER(6) #1	RIM=124.25	CB INV. IN=119.30	INV. OUT=119.30	18" HDPE - 5' @1.00% SLOPE - (P2)
MANIFOLD MANHOLE #1	RIM=124.25	DD INV. IN=119.25	INV. OUT=118.25	24" HDPE MANIFOLD
MANIFOLD OUTLET			INV. OUT=120.00	15" HDPE MANIFOLD
DRAIN MANHOLE #5	RIM=125.12	INV. IN=120.00	INV. OUT=119.75	18" HDPE - 280' @0.50% SLOPE - (P)
FES #1			INV. OUT=118.60	18" HDPE
CATCHBASIN #2	RIM=123.75		INV. OUT=119.70	18" HDPE - 20' @ 1.00% SLOPE - (P3)
CATCHBASIN #3	RIM=123.75		INV. OUT=120.75	18" HDPE - 212' @ 0.59% SLOPE - (P4)
DRAIN MANHOLE #1	RIM=124.10	CB INVS. IN=119.50	INV. OUT=119.00	24" HDPE - 20' @1.00% SLOPE - (P5)
DOWNSTREAM DEFENDER(8) #2	RIM=124.25	DMH#1 INV. IN=118.80	INV. OUT=118.80	24" HDPE - 5' @1.00% SLOPE - (P6)
MANIFOLD MANHOLE #2	RIM=124.25	DD INV. IN=118.75	INV. OUT=118.25	24" HDPE MANIFOLD
MANIFOLD OUTLET			INV. OUT=120.00	15" HDPE MANIFOLD
DRAIN MANHOLE #5	RIM=125.12	INV. IN=120.00	INV. OUT=119.75	18" HDPE - 280' @0.50% SLOPE - (P21)
FES #1			INV. OUT=118.35	18" HDPE
CATCHBASIN #4	RIM=123.25		INV. OUT=120.25	18" HDPE - 187' @ 0.75% SLOPE - (P7)
CATCHBASIN #5	RIM=123.25		INV. OUT=119.05	18" HDPE - 20' @ 1.00% SLOPE - (P8)
CATCHBASIN #6	RIM=123.25		INV. OUT=120.25	18" HDPE - 187' @ 0.75% SLOPE - (P9)
DRAIN MANHOLE #2	RIM=123.50	CB INVS. IN=118.85	INV. OUT=118.20	24" HDPE - 20' @1.00% SLOPE - (P10)
DOWNSTREAM DEFENDER(8) #3	RIM=124.00	DMH#2 INV. IN=118.00	INV. OUT=118.00	24" HDPE - 5' @1.00% SLOPE - (P11)
MANIFOLD MANHOLE #3	RIM=124.25	DD INV. IN=117.95	INV. OUT=117.45	24" HDPE MANIFOLD
MANIFOLD OUTLET			INV. OUT=119.50	15" HDPE MANIFOLD
DRAIN MANHOLE #6	RIM=124.00	INV. IN=119.50	INV. OUT=119.50	15" HDPE - 160' @0.71% SLOPE - (P22)
FES #2			INV. OUT=118.35	15" HDPE
CATCHBASIN #7	RIM=122.75		INV. OUT=119.75	18" HDPE - 187' @ 0.75% SLOPE - (P12)
CATCHBASIN #8	RIM=122.75		INV. OUT=118.50	18" HDPE - 20' @ 1.00% SLOPE - (P13)
CATCHBASIN #9	RIM=122.75		INV. OUT=119.75	18" HDPE - 187' @ 0.75% SLOPE - (P14)
DRAIN MANHOLE #3	RIM=123.25	CB INVS. IN=118.30	INV. OUT=117.70	24" HDPE - 20' @1.00% SLOPE - (P15)
DOWNSTREAM DEFENDER(8) #4	RIM=123.75	DMH#3 INV. IN=117.50	INV. OUT=117.50	24" HDPE - 5' @1.00% SLOPE - (P16)
MANIFOLD MANHOLE #4	RIM=124.25	CB INV. IN=117.45	INV. OUT=116.95	24" HDPE MANIFOLD
MANIFOLD OUTLET			INV. OUT=119.00	15" HDPE MANIFOLD
DRAIN MANHOLE #7	RIM=124.10	INV. IN=119.00	INV. OUT=119.00	15" HDPE - 136' @0.50% SLOPE - (P23)
DRAIN MANHOLE #9	RIM=123.80	INV. IN=118.32	INV. OUT=118.07	18" HDPE - 114' @0.72% SLOPE - (P25)
FES #3			INV. OUT=117.25	18" HDPE
CATCHBASIN #10	RIM=122.25		INV. OUT=119.25	18" HDPE -230' @ 0.76% SLOPE - (P17)
CATCHBASIN #11	RIM=122.25		INV. OUT=118.00	18" HDPE - 20' @ 2.50% SLOPE - (P18)
DRAIN MANHOLE #4	RIM=123.45	CB INVS. IN=117.50	INV. OUT=117.00	24" HDPE - 20' @1.00% SLOPE - (P19)
DOWNSTREAM DEFENDER(10) #5	RIM=123.75	DMH#4 INV. IN=116.80	INV. OUT=116.80	24" HDPE - 5' @1.00% SLOPE (P20)
MANIFOLD MANHOLE #5	RIM=123.75	DD INV. IN=116.75	INV. OUT=116.25	24" HDPE MANIFOLD
MANIFOLD OUTLET			INV. OUT=118.60	15" HDPE MANIFOLD
DRAIN MANHOLE #8	RIM=123.75	INV. IN=118.60	INV. OUT=118.60	15" HDPE - 10' @1.00% SLOPE - (P24)
DRAIN MANHOLE #9	RIM=123.80	INV. IN=118.32	INV. OUT=118.07	18" HDPE - 114' @0.72% SLOPE - (P25)
FES #3			INV. OUT=117.25	18" HDPE

PROPOSED GRADING AND DRAINAGE PLAN

REVISIONS	
DATE	DESCRIPTION
4/23/20	REVISED LOCATION & ELEVATIONS OF DRAINAGE BASIN #4
6/15/20	REVISED PER PEER REVIEW LETTER DATED 6/4/20

SCALE:	1" =40'
DATE:	4/8/20
DRAWN BY:	GTH
JOB NO.:	W-6113
SHEET NO.:	4
	OF 9 SHEETS

JOSEPH E. WEBBY, JR. No. 28717 REGISTERED PROFESSIONAL LAND SURVEYOR
COMMONWEALTH OF MASSACHUSETTS

REGISTERED LAND SURVEYOR DATE

RICHARD ROBERT DeBENEDICTIS No. 28318 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

REGISTERED PROFESSIONAL ENGINEER DATE

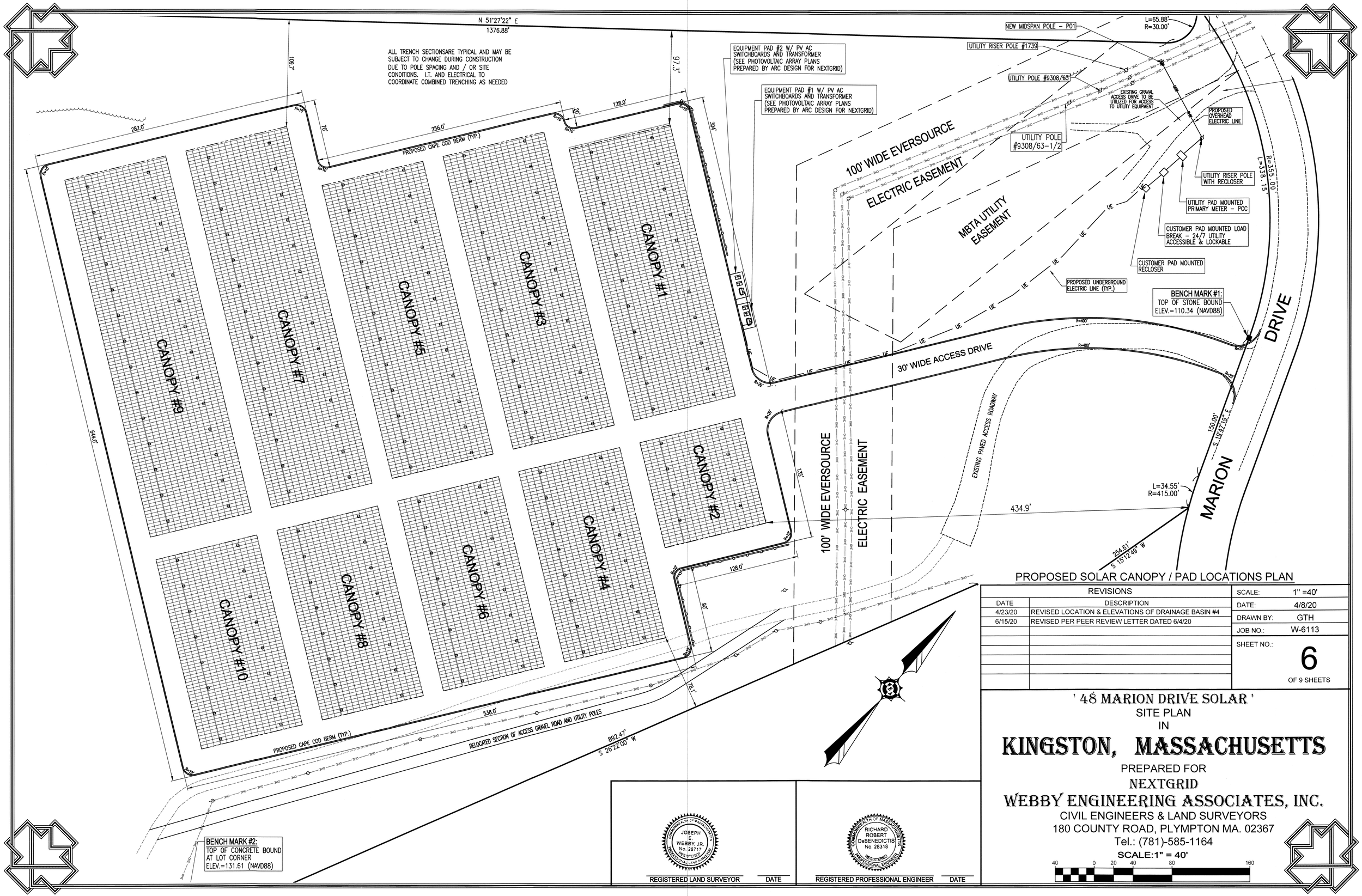
' 48 MARION DRIVE SOLAR '
SITE PLAN
IN
KINGSTON, MASSACHUSETTS

PREPARED FOR
NEXTGRID

WEBBY ENGINEERING ASSOCIATES, INC.
CIVIL ENGINEERS & LAND SURVEYORS
180 COUNTY ROAD, PLYMPTON MA. 02367
Tel.: (781)-585-1164

SCALE:1" = 40'

40 0 20 40 80 160



PROPOSED SOLAR CANOPY / PAD LOCATIONS PLAN

REVISIONS	
DATE	DESCRIPTION
4/23/20	REVISED LOCATION & ELEVATIONS OF DRAINAGE BASIN #4
6/15/20	REVISED PER PEER REVIEW LETTER DATED 6/4/20

SCALE:	1" =40'
DATE:	4/8/20
DRAWN BY:	GTH
JOB NO.:	W-6113
SHEET NO.:	6 OF 9 SHEETS

' 48 MARION DRIVE SOLAR '
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KINGSTON, MASSACHUSETTS

PREPARED FOR
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Tel.: (781)-585-1164

SCALE:1" = 40'

40 0 20 40 80 160

JOSEPH E. WEBBY, JR. No. 28717 REGISTERED LAND SURVEYOR — DATE

RICHARD ROBERT DeBENEDICTIS No. 28318 REGISTERED PROFESSIONAL ENGINEER — DATE