GZA GeoEnvironmental of New York

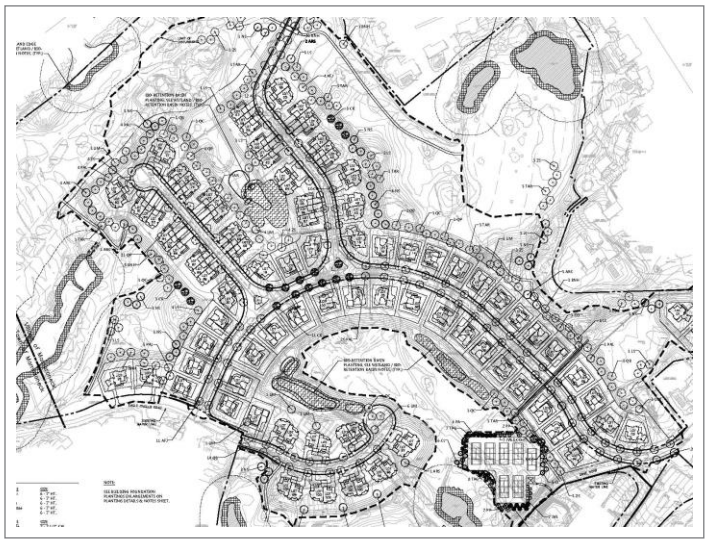
Appendix 3 – Material Handling Plan

Proactive by Design

MATERIAL HANDLING PLAN

Hampshire Country Club
Planned Residential Development
Village of Mamaroneck
Westchester County, New York

September 2018
File No. 41.0162548.10



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1.0 INTRODUCTION

GZA GeoEnvironmental of New York (GZA) prepared this Material Handling Plan (MHP) in coordination with the VHB, for the Planned Residential Development in the Village of Mamaroneck. The Planned Residential Development will redevelop a portion of the Hampshire Country Club located in 1025 Cove Road, Mamaroneck, New York (Site). The MHP was prepared in consideration of applicable federal, state, and local laws, codes, rules, and regulations, including, but not limited to, the United State Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and the New York State Department of Labor (NYSDOL).

1.1 OBJECTIVES

This MHP, supplements the Construction Management Work Plan (CMWP), and presents the procedures to be implemented during the planned construction activities at the Site. The MHP is designed to limit potential impacts to the environment, protected resources, and communities within and adjacent to the project area. The objectives of the MHP are to:

- Identify environmental requirements within the Project that require compliance with Federal, State, and local regulatory permit conditions and the procedures defined to meet them;
- Define responsibilities and actions required to maintain compliance with environmental requirements during the earthwork activities associated with the Project and to effectively respond to problem situations or agency/public concerns;
- Establish procedures for communication, documentation, and review of environmental compliance activities for the project;
- Establish formal procedures for soil handling, transfer and disposal activities; and
- Promote resource recovery efforts by establishing best management practices on soil segregation, storage, and disposal.

This MHP will be updated regularly as earthwork construction progresses and additional information is identified regarding environmental hazards and concerns.

1.2 PROJECT BACKGROUND

The Site is located in the southern portion of the Westchester County in the Village of Mamaroneck and Village of Mamaroneck, New York. The Site is also situated just north of the Long Island Sound. Currently, Site consists of a golf course and a club house. The Site is approximately 94.5 acres (R-20 zone) of which approximate 2.7 acres is impervious. The rest are golf course, overgrown and grass areas.

The approximately 130-acre Site is known as Hampshire Country Club. The country club is identified in the Village of Mamaroneck Section 9, and the following assessor's block and lot numbers:

Block 35: Lot 700,
Block 36: Lot 1

Block 42: Lots 367, 568, 659
Block 43: Lots 1, 12

The proposed planned residential development consists of the construction of 105 units of single-family homes and town homes with associated roadways, utilities, detention ponds, and recreational facilities.

The construction project involves leveling a 55.6-acre area of the Site and creating a development platform by raising the existing grade for the base of the building foundations. To accomplish this, on-site soil will be reused to construct a new roadway and development platform. On-Site excavated material is planned to be reused through a cut and fill program to the extent possible. The on-Site soils will then be covered by a minimum 1-foot layer of certified clean fill that will be purchased and transported to the Site to be used as part of the construction project until the final development platform grades are reached.

2.0 MATERIALS IMPORT AND REUSE PROCEDURES

This section describes the procedures for imported material documentation, collection of representative samples, laboratory analytical testing, soil reuse procedures and demarcation.

2.1 IMPORTED MATERIAL SOURCE DOCUMENTATION

The source of imported material will provide the following documentation prior to transporting certified clean fill to the Site. All imported material will be certified clean fill. The documentation must include the following information.

i. the name of the person providing the documentation and relationship to the source of the fill;
ii. the location where the fill was obtained;
iii. identification of any state or local approvals as a fill source; and
iv. if no prior approval is available for the source, a brief history of the use of the property which is the source of the fill.

The Contractor shall provide bills of lading to NYSDEC to document that the fill delivered was from a NYSDEC-approved source(s).

Inspection of imported fill material will include visual, olfactory and photoionization detector (PID) screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The Contractor will be responsible to ensure that every truck load of imported material is from the documented source and inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

2.2 SAMPLING AND ANALYSIS PROCEDURES FOR IMPORTED MATERIAL

Sampling is required for all imported soil for use as backfill or cover material. Materials imported to the Site will comply with the requirements set forth in NYSDEC DER-10 Section 5.4(e)4. Based on the soil quantity and type of constituents, samples will be collected as a combination of discrete and composite samples.

The Laboratory being used for materials testing will send the original test report directly to the Contractor, with copies of the test results sent to the NYSDEC. The Laboratory shall issue the original reports no later than five (5) calendar days after the representative samples are collected. The reports will contain the following: the characteristics of the materials analyzed, the number of samples collected and tested, dates of sampling and testing, laboratory test procedures utilized, the names and signatures of the individuals collecting the samples and conducting the laboratory tests, an interpretation of the test results and chain-of-custody forms.

2.3 TRANSPORTER INFORMATION

A Statement of Qualification for each proposed Transporter who will transport the material must be submitted. Transporters are required to have a 6 NYCRR Part 364 Waste Transporter permit. If the transportation passes through other states, the Transporter shall provide evidence that the transporter complies with the applicable laws, codes, rules, and regulations of the respective states.

Loaded vehicles will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364.

2.4 SOIL REUSE PROCEDURES

In accordance with the NYSDEC Division of Materials Management, the project's cut and fill program meets the conditional exemption under the 6 NYCRR Part 360.13 (C) which states that:

(c) Exemption for on-site reuse of fill material. Fill material used as backfill for the excavation from which the material was taken or as fill in areas of similar physical characteristics on the project property is exempt from regulation under this Part. If fill material exhibits historical or visual evidence of contamination (including odors) and will be used in an area with public access, the relocated fill material must be covered with a minimum of 12 inches of soil or fill material that meets the criteria for general fill, as defined in this Part.

Excavated materials will be reused in areas containing similar characteristics, at locations where the material characteristics meet the engineering criteria for that use, and at locations that are considered acceptable. In a letter dated August 7, 2018 the NYSDEC indicated that the reused soils for this project meet the conditions of the exemption and are not regulated by 6 NYCRR Part 360 as Solid Waste.

2.5 DEMARCATION

The reuse materials will be placed under the development platform underneath at least 12-inches of clean fill. The reuse material will be placed at the base of the platform. An orange geotextile will be installed at the top of the resuse material as a "demarcation fabric," prior to placement of clean fill. The orange "demarcation fabric" will serve as a marker and will provide a visual indicator of the extent of reuse material, and the clean fill above it.

3.0 PROCEDURES FOR ON-SITE HANDLING AND STORAGE

3.1 SOIL HANDLING AND STORAGE

On-site personnel involved in excavation activities will comply with OSHA rules and regulations, NYSDOL requirements. The Contractor's Project Superintendent will designate an on-site Field Representative to document the on-site management of soils. Soils will not be transported off-Site.

The Field Representative will also independently observe and document the volume of material and the material handling activities. Excavated materials will be documented in daily field reports that will provide a record of the movement of excavated materials. Improper handling and transport of soils may result in the immediate shutdown of the Project until appropriate corrective action is completed.

3.2 EROSION AND SEDIMENTATION CONTROL

The erosion and sedimentation control procedures (ES&C) are meant to combat erosion and sedimentation caused by rainfall and surface run-off. These include control measures commonly used for compliance with the requirements set by the site-specific Storm Water Pollution Prevention Plan (SWPPP). The ES&C procedures and SWPPP are directly addressed under the CMWP and the Contractor drawings will show the locations and details for the required soils ES&C.

3.3 STOCKPILING EXCAVATED MATERIALS

Preference will be to directly load trucks with excavated materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the Engineer. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum thick poly sheeting, will be kept covered always, when not being removed or added to, with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations, and SWPPP. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least 50 feet from the property boundaries, and surface waters, where possible. Straw bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and straw bales will be used as needed near catch basins, surface waters and other discharge points.

3.4 DUST CONTROL

Dust management during invasive on-Site work will include, at a minimum:

- The ability to use a dedicated water spray methodology for roads, excavation areas and stockpiles.
- The ability to properly anchored tarps to cover stockpiles.
- The exercise of extra care during dry and high-wind periods.
- The use of gravel to construct a stabilized construction entrance on egress and other roadways to provide a relatively clean and dust-free road surface.

During excavations the Field Representative will be capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. All dust complaint events, and implementation of all dust controls, including halt of work, will be the responsibility of the Contractor and will be recorded in a logbook and maintained at the Site and available for inspection.

The Construction Health and Safety Plan (CHASP) provides more information on dust management.

3.5 EMERGENCY RESPONSE AND CONTINGENCY

This contingency plan is developed to address the discovery of unknown structures or contaminated materials during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to the Environmental Consultant. Petroleum spills will be reported to the NYSDEC Spill Hotline. Federal agencies can be notified by calling the National Response Center.

- NYS Spill Hotline: 1-800-457-7362
- National Response Center: 1-800-424-8802

If previously unidentified contaminant sources are found during on-Site excavations, sampling will be performed on contaminated source material and surrounding soils to characterize it as “hazardous waste” or “non-hazardous waste” and the findings reported to the NYSDEC. Chemical analytical testing will be performed for Full List volatiles and semi-volatiles, pesticides/PCBs, and metals, as appropriate. Visual, olfactory and photoionization detector (PID) soil screening and assessment will be conducted to identify these areas of previously unidentified impacts under the supervision of a Qualified Environmental Professional (QEP). These findings will be included in the daily report.

Excavated soil from suspected areas of contamination will be stockpiled separately from soil planned for on-site reuse and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event.

All necessary means will be employed to prevent on- and off-Site odor nuisances during excavation and loading of contaminated soil, if encountered. At a minimum, procedures will include: (a) limiting the area of open excavations with potentially impacted soil; and (b) shrouding open excavations with tarps and other covers. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (c) direct load-out of soils to trucks for off-Site disposal; and/or (d) use of chemical suppressing foams.

3.6 SOIL EXPORTED FROM THE SITE

All excavated materials are anticipated for consolidation under the development platform and on-site reuse. In the event that excavated material is not suitable for on-site reuse, then soil will be sampled for export as described under NYSDEC CP-51 Soil Cleanup Guidance, Table 4: Recommended Number of Soil Samples for Soil Exported from a Site. Soil which is not being reused shall be transported to an off-site disposal facility meeting the requirements of 6 NYCRR Part 360 or equivalent out-of-state facility approved by the regulatory agency of that state with a permit to receive excess excavated material.

GZA GeoEnvironmental of New York

Appendix 4 – Tree Removal Plan

REFERENCES:

1. PROPERTY BOUNDARIES, MEET AND BOUND WERE PROGRAMMATICALLY OBTAINED BY RICHARD A. SPINELLI APRIL 14, 2010 WHICH SURVEYED BY RICHARD A. SPINELLI
2. AERIAL IMAGERY WAS OBTAINED BY NEARMAP FROM PHOTO DATE: 07 AUG 2014 12:47 PM (GMT) COMPILATION DATE: 08 SEPT. 2014 MILFORD, NH
3. TOPOGRAPHIC CONTOURS WERE DERIVED BY KIMLEY-HORN, INC USING DIGITAL TERRAIN MODELING (DTM) METHODS WITH ICT BULLSEYE SOFTWARE PACKAGE. BREAKLINES REPRESENT TOPOGRAPHIC FEATURES AS COLLECTED FROM AERIAL PHOTOGRAPHY.

NOTE:
432 TREES TO BE REMOVED WITHIN LIMIT OF DISTURBANCE
284 TREES WITHIN PROPERTY BOUNDS BUT NOT WITHIN LIMIT OF DISTURBANCE

SHEET NUMBER

HAMPSHIRE COUNTRY CLUB
PLANNED RESIDENTIAL DEVELOPMENT (P.R.D)
PREPARED FOR
HAMPSHIRE RECREATION LLC
VILLAGE OF MAMARONECK NEW YORK

KHA PROJECT 112056005	LICENSED PROFESSIONAL
JUNE 25, 2015	
SCALE AS SHOWN	
DESIGNED BY MWJ	
DRAWN BY DAR	
CHECKED BY MWJ	

Kimley»Horn Kimley-Horn of New York, P.C.

Engineering, Planning, and Environmental Consultants
1 N Lexington Ave, Suite 1575
White Plains, NY 914-368-9200

No.	REVISIONS	DATE	BY
3	DEIS COMPLETENESS REVISION	10/20/17	MWJ
2	DEIS COMPLETENESS	8/04/17	MWJ
1	REVISED LAYOUT TO PRESERVE EXISTING GOLD COURSE	9/28/16	MWJ

Appendix 5 – Blasting Guidlines

DOT.NY.GOV

PROCEDURES FOR BLASTING

GEOTECHNICAL ENGINEERING MANUAL
GEM-22
Revision #3

GEOTECHNICAL ENGINEERING BUREAU
SEPTEMBER 2011

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING MANUAL:
PROCEDURE FOR BLASTING

GEM-22
Revision #3

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING BUREAU

SEPTEMBER 2011

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1. INTRODUCTION

A. Purpose

This document specifies the procedure that shall be followed when a Contractor or Permittee is proposing to blast. By following this procedure, the Engineer-In-Charge or the Permit Engineer can help ensure that the Contractor accomplishes the work in a safe and effective manner. Engineering Geologists from the Geotechnical Engineering Bureau are trained and experienced in blasting safety and blasting techniques, and are available to provide assistance during all phases of the blasting operations. Prior to blasting the Contractor shall submit a written blast plan to the Engineer for conditional approval. The Engineer will forward the blast plan to the Engineering Geology Section, Geotechnical Engineering Bureau for review and written comment. After approval of the blast plan, a preblast meeting will be held which shall be attended by the Engineer, the Contractor, the Project Blaster(s), an Engineering Geologist from the Geotechnical Engineering Bureau, and representatives of all interested Agencies to discuss the proposed blasting operations. Final approval to blast will be granted based upon the results of the meeting. Test blasts may be required and may result in modifications to the blast plan. All blasts on Department contracts will be documented by the Engineer using the *Blasting Report Form SM 469 US Customary Units (GE 469 International System of Units) (See Appendix C).*

B. General

Presplit blasting is required on State ROW when the design rock slope is one vertical on one horizontal or steeper and the vertical height of the exposed rock slope exceeds 5 ft. (1.5 m). The contract documents may also specify blasting. The Contractor may choose to use production blasting in conjunction with required presplit blasting or for general rock excavation. The Contractor may also elect to use blasting for trenching operations, structure excavations, and structure demolitions. Permit jobs that involve blasting on State ROW are subject to the same requirements as Department-let contracts. If the Permit Engineer is concerned or uncertain about the effects of blasting adjacent to State ROW, the Engineering Geology Section should be contacted for advice.

Blasters in New York State are required to posses a valid New York State Department of Labor (NYSDOL) issued Blaster Certificate of Competence. The Blaster Certificate of Competence permits the use of explosives specific to the following blasting operations. These are classified as follows: A Class A (Above\Below Ground) Certificate or Class B (Aboveground) Certificate is required for rock blasting. A Class D (Demolition) Certificate is required for demolition of bridge superstructures or substructures. A Class E (Seismic) Certificate is required for seismic surveys. In conjunction with a Blaster Certificate of Competence an Explosives License is also needed for the licensee to purchase, own, posses or transport explosives.

The blaster will conduct all blasting operations in a skillful manner so as not to cause injury, damage property, adversely affect traffic, or cause the migration/accumulation of noxious gases. Blasting activities can have negative consequences which include the following:

1. Flyrock

Flyrock can cause serious injury or damage when it travels outside the blast zone. Flyrock can be caused by: improper blast design; improper or insufficient stemming;

unanticipated geologic features such as voids, soft seams, and other planes of weaknesses; borehole deviation; insufficient burden; and poorly distributed explosives.

The Blaster should inspect any free rock faces for irregularities and geologic conditions that may affect the blast and adjust the drill hole locations accordingly. Profiling the rock face using simple measuring tapes, conventional surveying techniques, or more advanced laser profiling may be warranted. Driller's notes and logs should be kept and used by the Blaster to make adjustments to explosives loading to account for geologic conditions and borehole deviation. The use of Borehole Deviation Surveys may be feasible to determine boreholes that have wandered too close to each other or too close to the rock face. Monitoring of drilling operations will also provide feedback to the drillers so that they may make adjustments to their methods.

Flyrock can also be controlled by using blasting mats or soil cover to retain the exploded rock. It's important that the Blaster make sure that all personnel are outside the blasting area where fly rock can be expected.

2. Vibrations

Blasting generated vibrations can damage underground and aboveground structures. When the Contractor is using a seismograph to monitor vibrations on State ROW, the Standard Specifications (§ 203-3.05 C) provides the maximum particle velocity unless directed otherwise by the Engineer or the Contract Documents. In the absence of seismic monitoring equipment, the explosives loading limits shall be based upon the scaled distance formula in the Standard Specifications. In certain circumstances, NYSDOT contract documents may also require monitoring of adjacent structures that are off the State ROW. NYSDOL regulations (12 NYCRR 61) restrict vibration levels at buildings in the vicinity of blasting operations based upon distance or vibration frequency. Even when vibrations are not at a level sufficient to cause damage, they can disturb individuals and result in complaints. Proper placement and operation of the seismograph is critical for obtaining accurate readings. Vibrations can be controlled by modifying the weight of explosives per delay, the loading density, and the delay pattern. A preblast condition survey of a structure may be required prior to blasting.

3. Displacement of Bedrock

Blasting, primarily trench and ditch blasting, can displace rock and damage adjacent pavement and underground utilities.

4. Noxious Fumes

Blasting generates carbon monoxide and other noxious fumes. The fumes generated during blasting operations, especially during trenching operations, can migrate and collect in excavations, manholes and D.I.'s, and nearby buildings. The build up of significant concentrations of gases can occur 12 hours or more after the blast. All blasting shall be conducted so that the noxious gases generated by the blast do not affect the health and safety of individuals.

When site conditions and blasting procedures indicate that there is the potential for the migration and accumulation of gases, the Contractor should specify information collection activities, modification of blasting procedures, and an action plan in the event of a high reading or alarm. Such site conditions could include but are not limited to: open jointed bedrock (i.e. karstic limestone); an impermeable soil layer overlying the bedrock (i.e. clay or saturated soil); and proximity to buildings. Blasting procedures that may increase the risk include confined (i.e. trenching), large, and frequent blasts. Information collection activities should include preblast surveys of all buildings within a minimum of 300 ft. (100 m) of the blast, which would identify potential sources of entry and potential pathways to the buildings such as buried utility trenches. Information collection activities should also include monitoring of carbon monoxide levels before, during, and after the blast. Modification of blasting procedures should include limiting the size and frequency of blasts to limit the production of noxious fumes, and stripping of the overburden prior to blasting and excavating the shot rock immediately after blasting to allow the venting of gases. The use of vent holes or vent pits may also be necessary. The action plan should cover both building occupants and monitoring personnel.

5. Airblast Overpressure

Although unusual, blasting generated air waves can reach a level where they can damage buildings. NYSDOL (12 NYCRR 61) specifies limits for airblast levels at buildings in the vicinity of blasting operations. Air waves not at a level sufficient to cause damage can disturb individuals, resulting in complaints. Factors that affect air blast overpressure include topography, blast design, and atmospheric conditions. Blasts may have to be redesigned or rescheduled for more favorable atmospheric conditions to minimize air waves.

6. Misfires

Misfires happen when a loaded hole, portion of a loaded hole, or several loaded holes fail to detonate during a blast. Misfires can be caused by failure of the detonation system or by explosive column cutoffs. Sometimes it is apparent immediately after a blast that a misfire has occurred. Other times it's not discovered until the blasted rock is being excavated and unexploded explosives are discovered within the shot rock pile. The Blaster-in-Charge is responsible for checking the shot immediately after the blast for misfired holes and, if discovered, re-detonating the loaded holes. If re-firing a misfired hole presents a hazard, the explosive may be removed by washing out with water or, if underwater, blown out with air. No drilling or digging shall be permitted until all missed holes have been addressed. When unexploded explosives are discovered mixed in with the shot rock, excavation will cease until a Project Blaster is notified and he is able to supervise the continued rock excavation and proper disposal of the unexploded explosives. All personnel involved with excavating shot rock should be vigilant for the presence of unexploded explosives.

Each Certified Blaster is required to report to the NYSDOL any unusual incident or event that occurs during the blasting operations. They are also required to report any instances of premature detonation, damage from air blast, damage from excessive ground vibration, or instances of fly rock. Damage must be reported even when it is alleged and/or the complaint is made after a

substantial lapse of time.

C. <u>Definitions</u>

Airblast - The airborne shock wave generated by an explosion.

ANFO – A blasting agent composed primarily of ammonium nitrate and fuel oil.

Authorized Blasting Assistant – An individual who has been authorized by the certified blaster-in-charge to work on a blasting operation after such blaster-in-charge has confirmed that the individual is either a certified blaster, or otherwise meets the following qualifications:

(1) Is at least eighteen years old;
(2) Has been properly trained in the performance of the tasks to be assigned; and
(3) Has been made aware of and understands the blasting hazards and risks.

Backbreak – Rock broken beyond the limits of the last row of holes in a blast, synonymous with overbreak.

Base Charge – The main explosive charge in the base of a detonator or a heavy charge at the base of a column of presplit powder.

Battered Production Holes – The row of production holes closest to presplit line, drilled at the same angle as the presplit holes.

Bench – A horizontal ledge from which holes are drilled downward into the material to be blasted.

Binary Explosive – A blasting explosive formed by the mixing of two plosophoric materials, for example, ammonium nitrate and nitromethane.

Blast Pattern – The plan view of the drill holes as laid out for blasting.

Blast Plan – A written procedure that details the methods and manner by which a Project blaster will comply with pertinent laws, rules, regulations, and contract documents. The plan shall include all information, as detailed in Section 2A, necessary to evaluate the effectiveness and safety of the proposed blasting operations. Individual blasts on a project are rarely identical. The plan should show the details for a typical blast with the understanding that minor modifications in the field will be allowed. Significant changes to the blasting operations will require that a new blast plan be submitted for approval. When deemed necessary by the Engineer, approved blast plans will be required for each individual shot.

Blaster-in-Charge – The Project Blaster in charge of a specific blast. Responsibilities include delivery of explosives, storage, loading, and detonation of the blast. *A project may have several Project Blasters, but only one blaster is in charge of each blast.*

Blasting Agent – An explosive material, consisting of fuel and oxidizer that can't be detonated with only a No. 8 blasting cap.

Blast Area – An area near any blasting operation in which concussion, flying material or debris, or gases resulting from a detonation of explosives can reasonably be expected to cause injury or property damage.

Blasting Galvanometer – An electrical resistance instrument designed specifically for testing electrical continuity of electric detonators and circuits containing them. Other acceptable instruments for this purpose are Blasting Ohmmeters and Blaster's Multimeters.

Blasting Mat – A Mat of woven steel wire, scrap tires, or other suitable material to cover blastholes for the purpose of preventing flyrock.

Blasting Site – The specific place defined by the Blaster-in-Charge where explosives are used in blasting operations. A blast site is part of the blast area.

Blasting Superintendent – The Contractor may use a Blasting Superintendant to provide general oversight for drilling and blasting operations. However, the Blaster-in-Charge is responsible for each blast.

Blasting Vibrations – The energy from a blast that manifests itself in the form of vibrations which are transmitted through the earth away from the immediate blast area.

Booster – An explosive charge, usually of high detonation velocity and detonation pressure, designed to be used in the explosive initiation sequence between an initiator or primer and the main charge.

Bulk Strength – The strength per unit volume of an explosive calculated from its weight strength and density.

Burden – The distance from the borehole to the nearest free face or the distance between boreholes measured perpendicular to the spacing.

Certified Blaster – An individual who has been issued a "Blaster Certificate of Competence" by the NYSDOL for using explosives.

Collar – The mouth or opening of a borehole.

Column Charge – A long, continuous, unbroken column of explosives in a blasthole.

Continuity Check (Circuit) – A determination that an initiation system is continuous and contains no breaks or improper connections that could cause stoppage or failure of an ignition system. For an electric initiation system, the check is performed both visually and by using a blasting galvanometer or other device. For a non-electric initiation system, the check can only be done visually.

Deck Loading (Decking) – A method of loading blastholes in which the explosive charges, called decks or deck charges, in the same hole are separated by stemming or an air cushion. The separate decks may or may not be fired on the same delay.

Deflagration – An explosive reaction such as a rapid combustion that moves through an explosive material at a velocity less than the speed of sound in the material.

Delay Blasting – The practice of initiating individual explosive decks, boreholes, or rows of boreholes at predetermined time intervals using delay detonators, or other delaying methods, as compared to instantaneous blasting where all holes are fired essentially at the same time.

Delay Detonator – An electric or nonelectric detonator used to introduce a predetermined lapse of time between the application of a firing signal and the detonation of a charge.

Departmental Engineering Geologist – An Engineering Geologist of the Geotechnical Engineering Bureau authorized by the Director of the Geotechnical Engineering Bureau to perform the duties required under the NYS DOT Standard Specifications. Engineering Geologists are trained and experienced in blasting safety and blasting techniques, and are available to provide assistance during all phases of the blasting operations.

Design Rock Slope – A cut slope in rock constructed at the angle and location specified in the contract plans. Presplit blasting is usually used to construct the slope so that the finished slope is stable and free from significant rock hazards.

Detonating Cord – A flexible cord containing a center core of high explosives which may be used to initiate other high explosives.

Detonating Cord Trunkline – The line of detonating cord that is used to connect and initiate other lines of detonating cord.

Detonation – An explosive reaction that moves through an explosive material at a velocity greater than the speed of sound in the material.

Detonator – Any device containing an initiating or primary explosive that is used for initiating detonation in another explosive material.

Drilling Pattern – The location of blast holes in relation to each other and the free face.

Dynamite – A high explosive used for blasting, consisting essentially of a mixture of, but not limited to nitroglycerin, nitrocellulose, ammonium nitrate, sodium nitrate, and carbonaceous materials.

Electric Blasting Circuit – An electric circuit containing electric detonators and associated wiring.

Electric Detonators – A detonator designed for, and capable of, initiation by means of an

electric current.

Emulsion – An explosive material containing substantial amounts of oxidizer dissolved in water droplets, surrounded by an immiscible fuel; or droplets of an immiscible fuel surrounded by water containing substantial amounts of oxidizer.

Explosion – A chemical reaction involving an extremely rapid expansion of gases usually associated with the liberation of heat.

Explosive – Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion.

Explosives License – Own & Possess – A license issued by NYS Department of Labor for the purpose of purchasing, owning, possessing, or transporting explosives.

Explosive Loading Factor – The amount of explosive used per unit volume of rock. Also called Powder Factor.

Explosive Materials – These include explosives, blasting agents, and detonators. The term includes, but is not limited to, dynamite and other high explosives; slurries, emulsions, and water gels; black powder and pellet powder; initiating explosives; detonators (blasting caps); and detonating cord.

Extra (Ammonia) Dynamite – A dynamite in which part of the nitroglycerin is replaced by ammonium nitrate in sufficient quantity to result in the same weight strength.

Extraneous Electricity – Electrical energy, other than actual firing current or the test current from a blasting galvanometer, that is present at a blast site and that could enter an electric blasting circuit. It includes stray current, static electricity, RF (electromagnetic) waves, and time-varying electric and magnetic fields.

Flyrock – Rocks propelled from the blast area by the force of an explosion.

Fragmentation – The breaking of a solid mass into pieces by blasting.

Free Face – A rock surface exposed to air or water which provides room for expansion upon fragmentation. Sometimes called open face.

Fuel – A substance which may react with oxygen to produce combustion.

Fumes – The gaseous products of an explosion. For the purpose of determining the fume classification of explosive material, only poisonous or toxic gases are considered.

Gelatin Dynamite – A type of highly water resistant dynamite characterized by its gelatinous or plastic consistency.

Geology – A description of the types and arrangement of rock in an area; the description usually includes the bedding dip and strike, the type and extent of pre-existing breaks in the rock, and the hardness and massiveness of the rock, as these affect blast design.

Grains – A weight measurement where 7000 grains are equivalent to 1 lb. (0.45 kg).

Ground Vibration – Shaking the ground by elastic waves emanating from a blast. Usually measured in in/s (mm/s) of particle velocity.

High Explosives – Explosives which are characterized by a very high rate of reaction, high pressure development, and the presence of a detonation wave in the explosive.

Initiator – A detonator, detonating cord or similar device used to start detonation or deflagration in an explosive material.

Lift – The vertical thickness of rock fragmented from a single blast.

Loading – Placing explosive material in a blast hole or against the material to be blasted.

Loading Density – The weight of explosive loaded per unit length of borehole occupied by the explosive, expressed as lbs/ft (kg/m) of borehole.

Loading Limits – The maximum quantity of explosives allowed per delay period as specified by the Standard Specifications.

Loading Pole – A nonmetallic pole used to assist in placing and compacting explosives charges in boreholes.

Low Explosives – Explosives which are characterized by deflagration or low rate of reaction and the development of low pressure.

Magazine – Any building, structure, or container approved for the storage of explosives materials.

Mass Explosion – An explosion which affects almost the entire load or quantity of explosives virtually instantaneously.

Maximum Particle Velocity (Peak Particle Velocity) – The maximum velocity at which the ground surface moves as a wave passes under it. The customary practice is to apply vibration limits to the peak particle velocity of the largest single component on the seismograph.

Millisecond (ms) – One thousand part of a second (.001 or 1/1000 sec.).

Misfire – A blast or specific borehole that failed to detonate as planned. Also the explosive

materials that failed to detonate as planned.

Muckpile – The pile of broken material resulting from a blast.

Nitroglycerin – An explosive chemical compound used as a sensitizer in dynamite.

Nonelectric Detonator – A detonator that does not require the use of electric energy to function.

Nonsparking Metal – A metal that will not produce a spark when struck with other tools, rock, or hard surface.

Overbreak – See backbreak.

Overburden – Material of any nature laying on top of the rock that is to be blasted.

Oxidizer – A substance, such as nitrate, that readily yields oxygen or other oxidizing substances to promote the combustion of organic matter or other fuel.

Particle Velocity - The velocity at which the ground surface moves as a wave passes under it.

PETN – An abbreviation for the name of the high explosive pentaerythritol tetranitrate.

Placards – signs placed on vehicles transporting hazardous materials (including explosive materials) indicating the nature of the cargo.

Plosophoric Materials – Two or more unmixed, commercially manufactured, prepackaged chemical materials which are not classified as explosives but which, when mixed or combined, form a blasting explosive.

Powder Factor – The amount of explosive used per unit volume of rock. Also called Explosive Loading Factor.

Preblast Survey – A documentation of the preexisting condition of structures near an area where blasting is to be conducted.

Premature Firing – The detonation of an explosive charge before the intended time.

Presplitting – A blasting method in which cracks for the final contour or payline are created by firing a single row of holes containing light, well distributed charges, prior to the initiation of the remaining holes in the blast pattern.

Prilled Ammonium Nitrate – Ammonium nitrate in a pelleted or prilled form.

Primer – An explosive charge used to initiate other explosives or blasting agents. The primer is initiated by a detonator or detonating cord to which is attached a detonator.

Production Blasting – A blasting method whose sole purpose is to fragment the rock.

Propagation – The detonation of an explosive charge by an impulse received from an adjacent or nearby explosive charge.

Project Blaster(s) – A certified blaster who has been approved to blast on State ROW (see Blaster-in-Charge).

Relief – The effective distance from a blast hole to the nearest free face (synonymous with burden).

Round – A group of boreholes fired or intended to be fired in a continuous sequence.

Scaled Distance – A factor relating expected vibration levels from various weight charges of explosive materials at various distances.

Secondary Blasting – Blasting to reduce the size of boulders resulting from a primary blast.

Seismograph – An instrument which records ground vibrations generated by blasting operations. Particle velocity displacement is generally measured and recorded in three mutually perpendicular directions.

Sensitivity – A physical characteristic of an explosive material classifying its ability to be initiated upon receiving an external impulse such as impact, shock, flame, friction, or other influence which can cause detonation.

Shaped Charges – An explosive with a shaped cavity specifically designed to produce a high velocity cutting or piercing jet of product reaction; usually lined with metal to create a jet of molten liner material. They are generally used to cut steel members during superstructure demolition.

Shock Tube – A small diameter plastic tube used for initiating detonators. It contains only a limited amount of reactive material so that the energy that is transmitted through the tube by means of a detonation wave is guided through and confined within the walls of the tube.

Short Delay Blasting – The practice of detonating blastholes in successive intervals where the time distance between any two successive detonations is measured in milliseconds.

Slurry – An explosive material containing substantial portion of a liquid, oxidizers, and fuel, plus a thickener.

Stemming – Inert material placed in a borehole on top of or between separate charges. Used for the purpose of confining explosive gases or to physically separate charges of explosive material in the same borehole.

Subdrilling – The practice of drilling boreholes below floor level or working elevation to insure

breakage of rock to working elevation.

Sympathetic Detonation – The detonation of an explosive material as the result of receiving an impulse from another detonation through air, earth, or water. Synonymous with sympathetic propagation.

Tamping – The action of compacting the explosive charge or the stemming in a blasthole. Sometimes refers to the stemming material itself.

Warning Signal – An audible signal which is used for warning personnel in the vicinity of the blast area of the impending explosion.

Water Gel – An explosive material containing substantial portions of water, oxidizers, and fuel, plus a cross-linking agent.

Water Resistance – The ability of an explosive to withstand the desensitizing effect of water penetration.

Weight Strength – The energy of an explosive material per unit of weight.

2. PROCEDURE FOR BLASTING WITHIN NYSDOT ROW

A. Submittal of Written Blast Plan

A written blast plan prepared by a Project Blaster shall be submitted by the Contractor to the Engineer a minimum 10 working days prior to scheduling a preblast meeting. The Engineer shall send a copy of the Blast Plan to the Regional Geotechnical Engineer who shall forward a copy to the Geotechnical Engineering Bureau, Engineering Geology Section for review. The Blast Plan may be returned to the blaster for revision or clarification prior to scheduling the preblast meeting. The blast plan shall detail the methods and manner by which the Project Blaster will comply with pertinent laws, rules, regulations, and contract documents. The plan shall include all information necessary to evaluate the effectiveness of the proposed blasting operations. The blast plan shall included all steps necessary to ensure that the proposed blasting activity does not cause injury, damage property, adversely affect traffic, or cause the migration/accumulation of noxious gases. Individual blasts on a project are rarely identical. The plan should show the details for a typical blast with the understanding that minor modifications in the field will be allowed. Significant changes to the blasting operations will require that a new blast plan be submitted for approval. When deemed necessary by the Engineer, approved blast plans will be required for each individual shot. The blast plan shall include the following items:

1. Project Designations
   - Name of Project Blaster(s).
   - Photocopy of the Project Blaster's Explosives License (Own & Possess) and Certificate of Competence.
   - Employer of the Project Blaster (Contractor or subcontractor).
   - Scheduled start date and length of blasting operations and blast monitoring operations.
   - Limits of blasting work.
   - Requirements for local permits.
   - Location of any State owned structures in proximity to the blasting.
   - Location of any utilities in proximity to the blasting.
   - Location of any contaminants or flammable liquids or vapors in the area to be blasted.

2. Safety and Health Requirements
   - Type of audible warning signals and signal sequence.
   - Name of company that will deliver explosives to the project site.
   - Location of any preblast surveys.
   - Location of any vibration monitoring at State owned structures, utilities on or off State ROW, or privately owned structures off State ROW.
   - Location of any air blast overpressure monitoring.
   - If seismographs will be used, provide the manufacturer's name, model number, and documentation of calibration performed within the last 12 months. Also provide name(s) of seismograph operators and relevant training and experience.
   - List steps that will be taken to control flyrock (i.e. blasting mats).

- Are carbon monoxide or other noxious fumes likely to migrate from the blast location or accumulate within nearby structures and, if so, what will be done to detect and prevent their migration.

3. Methods and Procedures
   - Type of drilling equipment.
   - Method of collaring and aligning presplit drill holes.
   - Hole diameter.
   - Drilling pattern.
   - Use of sequential timer.
   - Types of explosives, primers, initiators, and other blasting devices. Include manufacturer's technical data sheets and material safety data sheets for all products.
   - Loading parameters:
     A. Maximum and/or average weight of explosives per volume of rock.
     B. Maximum weight of explosives per delay.
   - Blasting cap delay patterns.

B. Scheduling Preblast Meetings

After approval is granted to schedule the meeting, the Engineer should contact the Engineering Geology Section via the Regional Geotechnical Engineer, and the Contractor, to schedule the meeting. The Contractor is responsible for inviting the Blaster (all Blasters whom the Contractor wants to be designated as Project Blasters must attend the meeting) and all interested parties (including but not limited to utilities, railroads, local political jurisdictions, local law enforcement agencies, and local emergency services) a minimum of 3 work days in advance of the meeting. Representatives for all utilities located within 200 ft. (60 m) of the blasting (300 ft. (90 m) for gas transmission lines) shall be invited.

C. Conducting Preblast Meetings

A preblast meeting shall be held at the site to discuss the proposed blasting operations. In attendance will be the Engineer, the Contractor, the Project Blaster(s) an Engineering Geologist from the Geotechnical Engineering Bureau, and other interested parties. Final approval to blast will be granted based upon the results of the meeting.

A preblast meeting is intended to initiate open communications with the Project Blaster(s) relating to the requirements for rock drilling and blasting, and demolition by blasting work on Departmental projects. An Engineering Geologist from the Geotechnical Engineering Bureau conducts the preblast meeting, which includes discussions on the blast plan and other pertinent information (see Appendix A).

A new preblast meeting will be required to designate new Project Blasters.

D. Inspection and Documentation

An Engineering Geologist will be available to train construction inspection staff in the proper method of inspecting blasting operations including ensuring that the blasting is carried out in a safe manner and documenting each blast using the *Blasting Report Form SM 469 US Customary Units (GE 469 International System of Units)* (see Appendix B, C, and D).

The State requires that, when seismographs are used to monitor vibrations, the Contractor will maintain seismograph records and make them available to the State if requested.

E. Test Blasts

Test sections are required for presplit slopes and test blasts may be required for other types of blasting situations. An Engineering Geologist will evaluate the test blast/section and determine if adjustments to the rock slope design and/or blasting operations are necessary (see Appendix F).

F. Blasting Progress Meetings

At the request of the Engineer, meetings may be held at any time during the project to review the progress of the blasting operations, discuss modifications to the methods and procedures of the written blast plan and/or discuss issues with upcoming blasts. In attendance will be the Engineer, the Contractor, the Project Blaster(s), an Engineering Geologist from the Geotechnical Engineering Bureau, and other interested parties.

As indicated previously, a new preblast meeting is required to designate new Project Blasters.

G. Blasting Review

If a blast causes injury, damage to property, adversely affects traffic, or causes gases to migrate and/or accumulate in a potentially harmful manner, all blasting operations shall cease by order of the Engineer for a review of the procedures. The review will be conducted by the Engineer in conjunction with an Engineering Geologist from the Geotechnical Engineering Bureau to ensure proper procedures and practices were used and to determine if the approved procedures need to be revised. Should the findings of the review indicate the injury, damage, traffic delay, or migration/accumulation of gases was attributed to improper blasting operations, the Blaster-in-Charge may be removed at the State's option.

APPENDICES

APPENDIX A **Preblast Meeting Itinerary**

1. Opening Remarks
    a. Verification of Attendance of Concerned Parties
    b. Statement of DOT Standard Specifications
    c. Description of Project by Engineer (Scope of Work, Stationing, etc.)
    d. Start Date for Blasting Operations
    e. Estimated Time to Complete Blasting
2. Project Designations
    a. Identify Prime Contractor
    b. Identify Project Blaster(s)
    c. Insurance Details
3. Safety and Health Requirements
    a. State and Federal Laws
    b. Local Permits/Laws
    c. Signage and Traffic Control (per MUTCD)
    d. Audible Warning Signal System
    e. Proper Delivery and Storage of Explosive Material
    f. Pre-Blast Survey
    g. Vibration and Airblast Monitoring (NYSDOL limits and qualified seismograph operators)
    h. Flyrock Control
    i. Control of Blast Generated Fumes
    j. Other concerns (Utilities, Municipalities, etc.)
    k. Duty to Report Unusual Incidents (12 NYCRR 61)
4. Blasting Specifics/Review of Blast Plan
    a. Verification of License/Certificate of Competence
    b. Methods/Procedures
        1. Type of Drilling Equipment
        2. Hole Size
        3. Drilling Pattern
        4. Timing of Blast/Type of System (Electric/Non-Electric)
        5. Explosives (Brand, Size, etc.)
        6. Blasting Caps (Type, Delay, etc.)
        7. Loading of Holes
5. Presplitting
    a. General Rules/Regulations/Specifications regarding presplit rock slopes
    b. Test Section
    c. Rules/Regulations regarding multiple lifts
    d. Scaling
6. Conclusion

APPENDIX B General Guidelines for Project Inspectors

1. Drilling

   Establish that:

   a. Prior to blasting, no rock excavation is allowed within 10 ft. (3 m) of the presplit line.
   b. Overburden is stripped from bedrock along the top of the presplit line. Ensure that the bedrock surface is not overexcavated as in the case of weak shale.
   c. The drill steel is straight and in satisfactory condition.
   d. The plumb line for orienting the drill steel alignment is correctly located on a line parallel to the presplit line.
   e. The slope inclination template is the proper dimension and that a minimum 2 ft. (0.6 m) carpenter's level is attached to the template. (Preblast meeting agreement).
   f. The driller or the driller's assistant has achieved the proper drill steel alignment as the drill bit is collared by the bedrock surface. (The alignment can only be assured at this time since once the drill is progressed into the rock, it is very difficult to reconfigure alignment).
   g. The drill hole is of the proper depth (including sub-drilling) for each hole
   h. The pre-split drill holes are on 3 ft. (1 m) centers
   i. The driller is using carbide insert cross bits (preferable to button bits) and solid drill steel (preferable to spiral drill steel).
   j. The closest row of production (fragmentation) holes to the presplit line is drilled no closer than 4 ft. (1.2 m) to and on the same angle as the presplit holes.
   k. Driller's notes and logs should be kept.

2. Blasting

   Check:

   a. The depth of each presplit hole and clear any obstructions immediately prior to loading any explosives.
   b. The presplit explosive weight to insure that it is not heavier than the specified maximum weight of 0.35 pound per linear foot (0.5 kg per meter). It is recommended that the inspector count the number of sticks of explosive in a new box, multiply by the standard length of each cartridge to obtain the total cartridge length of each box and divide the box weight by the total cartridge length of box.
   c. That the presplit line is loaded first, and a minimum distance of burden + 3 ft. (1 m) in advance of the closest loaded production hole in the section
   d. That the earliest sequenced delay detonator is affixed to the presplit trunk line detonating cord, ensuring that the presplit slope is blasted prior to any adjacent production hole by a minimum of 25 milliseconds.
   e. That no free flowing explosives (ANFO, prills or water gels) be used in any production holes located within 10 ft. (3 m) of the presplit slope.
   f. That the stemming material to be used for presplit holes is #1A crushed stone rather than crushed gravel. (Crushed gravel has rounded edges and shotguns out of the hole rather than locking together to keep the presplit explosive gasses in the hole to split the bedrock).
   g. Driller's notes and logs should be used by the Project Blaster to make adjustments to explosives loading to account for geologic conditions and borehole deviation.

APPENDIX C **Blasting Report Form SM 469 (US Customary Units)**

SM 469 (5/90)

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION

BLASTING REPORT

Job Stamp

E.I.C.:
Inspector:
Blaster:

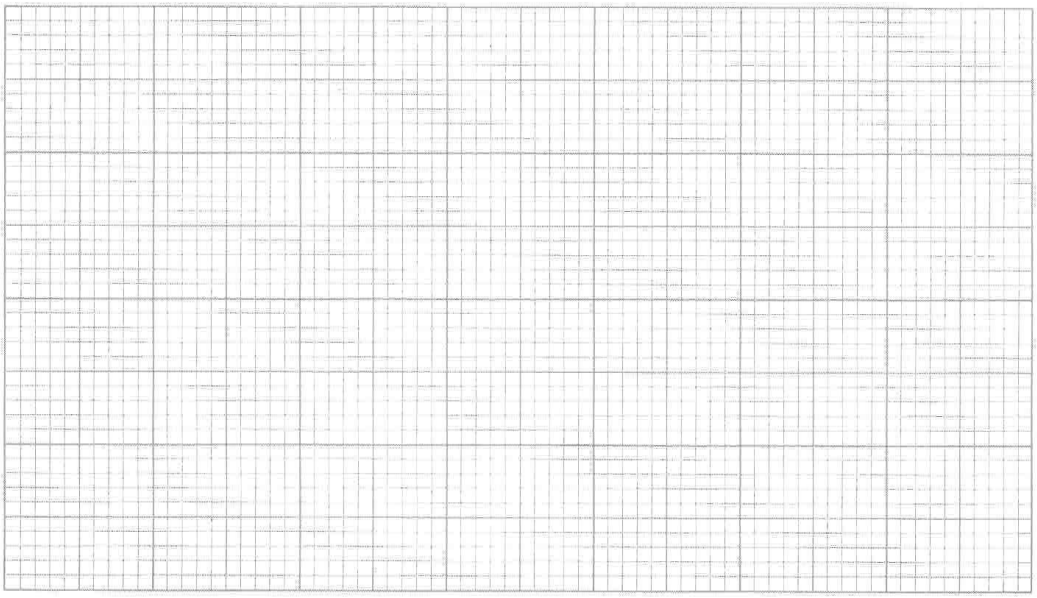
Report No.:
Date:
Time:

SHOT HOLE DATA	PRESPLIT			PRODUCTION		
Station Limits		Offset				
No. & Diameter	No.	Diam.		No.	Diam.	
Spacing/Pattern	Spacing			Pattern		
Depth	To Grade	Overdrilling		To Grade	Overdrilling	
Total Depth						
Stemming	Depth	Type		Depth	Type	
Explosive & Detonation Data		Base Charge	Column Charge		Explosive	Blasting Agent
	Producer			Producer		
	Type			Type		
	Dimension			Dimension		
	Weight		#/Ft.	Weight		
Total Weight						
Initiation (type)						
Delays	Number	Period(s)		Number	Period(s)	
Max. lbs/Delay						

Presplit Check List
Holes Tested for Obstruction ☐, Burden +3 Ft. (or ____) Loaded Ahead ☐
Fired 25MS Ahead ☐, Only Cartridges within 10 Feet of Slope ☐

Remarks: _____

IGNITION PATTERN



APPENDIX C Blasting Report Form GE 469 (International System of Units)

GE 469 MET (2/00)

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION

BLASTING REPORT

Job Stamp

E.I.C.:
Inspector:
Blaster:

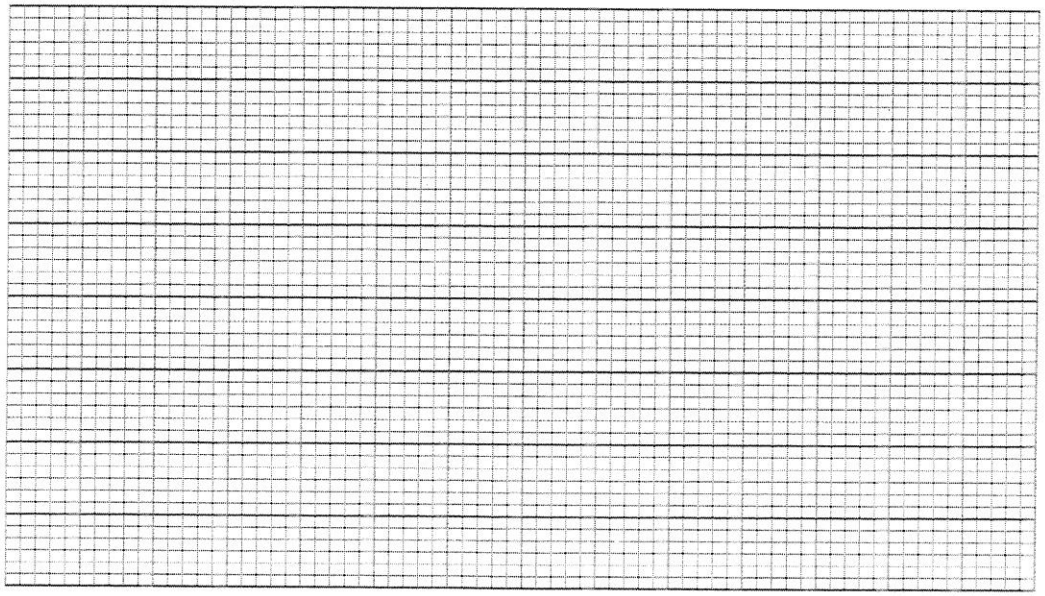
Report No.:
Date:
Time:

SHOT HOLE DATA	PRESPLIT			PRODUCTION		
Station Limits		Offset				
No. & Diameter	No.	Diam.		No.	Diam.	
Spacing/Pattern	Spacing			Pattern		
Depth	To Grade	Overdrilling		To Grade	Overdrilling	
Total Depth						
Stemming	Depth	Type		Depth	Type	
Explosive & Detonation Data		Base Charge	Column Charge		Explosive	Blasting Agent
	Producer			Producer		
	Type			Type		
	Dimension			Dimension		
	Weight		kg/m	Weight		
Total Weight						
Initiation (type)						
Delays	Number	Period(s)		Number	Period(s)	
Max. kg/Delay						

Presplit Check List: Holes Tested for Obstruction ❑, Burden +1 m (or _____) Loaded Ahead ❑
Fired 25MS Ahead ❑, Only Cartridges within 3m of Slope ❑

Remarks: _____

IGNITION PATTERN



APPENDIX D Instructions for Filling Out the Blasting Report Form (SM 469 and GE 469)

Heading Data

Job Stamp - Imprint job stamp under "Job Stamp'.

E.I.C. - Enter the name of the Engineer-in-Charge.

Inspector - Enter the name of the state or consultant blast inspector.

Blaster - Enter the name of the Blaster-in-Charge.

Report No. - Sequentially number from 1, beginning with the first blast detonated.

Date - Enter the date of the blast. If the shot is loaded one day and detonated the next, enter the date of the detonation.

Time - Enter the actual time and date (if different from loading) the blast is detonated (Hr. & Min).

Shot Hole Data

Station Limits - Enter the stations of the beginning and end of the presplit holes to be detonated if presplit is involved. Do the same for production holes, if production only is loaded.

No. & Diameter - Enter total number of presplit holes & diameter. Do the same for production holes.

Spacing/Pattern - Maximum 3 ft. (1 m) on center for presplit holes. For production pattern enter average distance between holes in rows and average distance between rows (Spacing X Burden) in feet (meters).

Depth - Enter range of depth to grade next to "To Grade", enter depth of overdrilling next to 'Overdrilling' (feet) (meters).

Total Depth - The sum of 'To Grade' & 'Overdrilling' = total depth. Because ‘to grade’ and ‘overdrilling’ are usually ranges, ‘total depth’ will usually be a range also.

Stemming - Depth in feet (meters), from top of drill hole to top of explosives. For presplit holes it’s required that the presplit powder be within 3 ft. (1 m) of the ground surface and the entire hole stemmed.

Type - It’s required that No. 1-A crushed stone be used for stemming presplit holes. Production holes can be stemmed with drill cuttings or soil as long as it’s effective.

APPENDIX D Instructions for Filling Out the Blasting Report Form (SM 469 and GE 469)

Explosive and Detonation Data

Producer - Enter the manufacturer of each explosive (base charge, column charge, production explosive & blasting agent). Examples are Dyno Nobel and Austin.

Type - Enter the manufacturer's product name of each in the appropriate column. Also enter the strength percentage (40%, 60%, etc.) as on the container. Examples are Dynosplit and Unimax.

Dimension - Enter diameter and length of the individual cartridges in the appropriate columns.

Weight - Enter weight per stick of base charge, weight/foot (weight/meter) of presplit powder, weight per stick of production charges & weight of column for blasting agent. All weight is in pounds (kilograms).

Total weight - Enter the sum total for each type of explosive, base charge, column charge, production explosive & blasting agent.

Initiation (Type) - Enter 'electric blasting (EB) caps' or 'non electric blast (NEB) caps' or other method as used. List cap manufacturer brand and series.

Delays - Enter the number of different delay periods used. Period(s): enter the delay periods used. Examples are: electric – 25,75,100 ms; nonelectric – 25/350, 25/500 ms.

Max. lbs/Delay
Max. kg/Delay - Add the weight of explosives on each different delay per blast. The greatest weight of explosives detonated per delay is the max. pounds/delay (kilograms/delay) at 25 ms or 75 ms or 250 ms, etc.

APPENDIX D **Instructions for Filling Out the Blasting Report Form (SM 469 and GE 469)**

Presplit Check List

Before Loading any holes with explosives

1. The blaster must designate P-S holes in the section to be loaded.
2. Back up from end and designate the production section to be loaded.
3. Check all P-S holes for obstruction and clear all P-S holes before loading any P-S or production powder.

Holes Tested for Obstructions ☐ - check the box only after all presplit holes have been tested for clearance immediately before loading any explosives. Use either loading poles, measuring tape or some other device which can assure that the holes are clear to the full drilled length. All obstructed holes must be cleared before any explosives loading can begin.

Burden +3 ft. (or _____)
(Burden +1 m (or ___))

Loaded Ahead ☐ - check the box only after it has been determined that the presplit line is loaded with explosives a length which equals the burden + 3 ft. (+ 1 m) past the closest production hole to the end of the presplt line. Usually this works out to 3 presplit holes. No production holes can be loaded past a perpendicular line to the presplit line from the third hole back.

Fired 25 MS ahead ☐ - Presplit holes must be detonated a minimum of 25 MS ahead of the production holes in that section.

Only Cartridges within 10 ft. of Slope ☐ -
(Only Cartridges within 3 m of Slope ☐)- No uncontained or poured explosives are allowed in holes within 10 ft. (3 m) of the presplit plane.

Remarks - Utilized this area to report on the results of the blast, i.e. damage/no damage, cutoffs, flyrock, road closed, traffic delay, seismograph locations and readings, carbon monoxide monitor locations and readings, etc.

APPENDIX D — Instructions for Filling Out the Blasting Report Form (SM 469 and GE 469)

Ignition Pattern- Utilize this area to draw an accurate plan view of drill holes, including:

a. edge of rock
b. north arrow
c. station and offset of beginning and end of presplit line
d. hole numbers
e. spacing
f. burden
g. timing of initiation of each hole (adjusted to sequential timer if one is used. Diagram wiring connections).
h. important geologic features, i.e., seams, boulders, etc.
i. hole depths and lbs. (kg) of explosives per hole & per deck, if used
j. show detonation cord type & location

APPENDIX E Highlights from State and Federal Safety Regulations

Transportation of explosives (12 NYCRR 39; 49 CFR 177; 29 CFR 1926 Subpart U)

- A vehicle carrying explosives shall not be left unattended or unguarded. Someone able to move the vehicle, familiar with the hazards of the material being transported and who knows what to do in an emergency must be awake in the vehicle or within 100 ft. (30 m) of the vehicle and have it in clear view.

- It is prohibited to park within 300 ft. (90 m) of a bridge, tunnel, building, a place where people gather, or an open fire unless absolutely necessary to perform their work.

- The vehicle shall not be parked within 5 ft. (1.5 m) of a traveled roadway.

- The vehicle shall make no unnecessary stops.

- Explosives shall be loaded/unloaded only when engine is off and parking brake is set.

- Do not travel through congested areas or heavy traffic unless it is a designated route.

- No device or material capable of producing spark, flame or heat shall be placed or carried on a vehicle containing explosives.

- Proper placards are required on both sides and the front and back of the vehicle.

- Fire extinguishers required with a rating of at least 10: ABC. If carrying 200 lbs. (90 kg) or more of explosives, two 10 to 12 lbs. (4.5 to 5.5 kg) carbon dioxide fire extinguishers or two 4 to 7 lbs. (1.8 to 3 kg) dry chemical fire extinguishers are required.

- Explosives shall not be transported on a trailer and a vehicle carrying explosives shall not have a trailer in tow.

- The sides and ends of an open-ended vehicle shall be high enough to prevent packages of explosives from falling off the vehicle and the explosives shall not be stacked higher than the sides of the vehicle.

- Up to 50 detonators may be carried on a vehicle containing explosives provided that: the detonators are in their original shipping containers, or a box constructed of 1 in. (25 mm) lumber lined with padding not less than ½ in. (13 mm) thick or wrapped in cloth with cloth separating each detonator, and the detonators must be in a place remote from the explosives that is easily accessible for quick removal.

- Exposed ferrous metal on the vehicle body that may come in contact with the explosive packages must be covered with wood or other non-ferrous material.

APPENDIX E Highlights from State and Federal Safety Regulations

Explosive safety and handling (29 CFR 1926 Subpart U)

- Smoking, firearms, matches, open flames lamps, flames, heat producing devices and sparks are prohibited in or near magazines or while explosives are being handled, transported or used.

- All explosives must be accounted for at all times. Explosives not in use shall be in a locked magazine.

- Explosives or blasting agents shall not be abandoned.

- Original containers or class II magazines shall be used for the transport of detonators and explosives from storage to the blasting area.

- Blasting operations above ground shall be conducted between sunup and sundown.

- Electric detonators shall be short-circuited and shunted in holes which have been primed until wired into the blasting circuit.

- Blasting operations shall be suspended and personnel shall leave the blasting area upon the approach and progress of an electrical storm.

- Blasting zone signs and signs warning against the use of mobile radio transmitters must be posted on all roads within 1000 ft. (300 m) of the blasting area.

- Mobile radio transmitters which are less than 100 ft. (30 m) from electric blasting caps shall be deenergized and effectively locked.

- Empty boxes and paper and fiber packing materials, which have previously held explosives, shall not be used for any purpose and shall be destroyed by burning.

- Blasting operations in the vicinity of overhead power lines, communication lines, utilities, or other services and structures will not be carried out until the Utilities are notified and measures for safe control have been taken.

- Use of black powder is prohibited.

- Smoking and open flames are not permitted within 50 ft. (15 m) of explosives and detonator storage magazines.

- Tamping will be done with wood rods or plastic tamping poles without exposed metal parts. No violent tamping is allowed.

- After loading holes, all unused explosives and detonators must be returned to an authorized magazine.

APPENDIX E Highlights from State and Federal Safety Regulations

- No person will be allowed to deepen drill holes which have previously contained explosives or blasting agents.
- Equipment will not be operated within 50 ft. (15 m) of loaded holes (no drilling, digging, etc.).
- Electric cables in the proximity of the blast area shall be deenergized and locked out.
- Holes will be checked prior to loading to determine depth and conditions of the hole.
- No drilling is allowed within 50 ft. (15 m) of a hole that has been loaded with explosives and has failed to detonate.
- All blast holes will be stemmed to the collar or a point that will confine the charge.
- Blasting cap leg wires will be kept short-circuited (shunted) until they are connected into the circuit for firing.
- A code of blasting warning signals (29 CFR 1926) shall be posted conspicuously at the operation and all employees shall be familiar with the signals.
- A loud signal must be given by the blaster of record prior to firing the blast.
- Flaggers must be safely positioned on roadways passing through the danger zone to stop traffic during the blasting operations.
- Following the blast, the blasting machine or other initiation devices shall be disconnected from the firing line or turned off in the case of power switches.
- The blaster shall check the surrounding rubble and blasting area to determine that all charges have been exploded.
- If a misfire occurs, only those employees necessary to do the work shall remain in the blast zone.
- No attempt will be made to extract explosives from any charged or misfired hole. A new primer shall be installed and the hole reblasted. If refiring the hole is a hazard, the explosives may be removed by washing out with water.
- No drilling, digging, or picking will be permitted until all missed holes have been detonated.

APPENDIX E Highlights from State and Federal Safety Regulations

Explosive licensing (12 NYCRR 39, 12 NYCRR 61)

- To purchase, transport, own and possess explosives, an explosives license is required.
- The handling and placing of explosives in preparation of a blast shall be performed by a certified blaster or by persons under the supervision of a certified blaster.
- Only a certified blaster may detonate explosives. The Blaster must be certified in the specific Department of Labor category in order to perform the work.

Explosive storage (12 NYCRR 39, 29 CFR 1926 Subpart U)

- Magazines and all enclosures used for storage of explosives shall be kept locked.
- Inventory of explosives shall be taken at the end of the day after blasting operations or whenever the magazine is opened.
- Magazines shall be inspected at least every 3 days.
- No smoking or flames are allowed within 50 ft. (15 m) of any explosive or magazine.
- No blasting equipment shall be stored in a magazine.
- Separate magazines shall be provided for explosives and detonators.
- No lights in magazine except battery activated electric flashlights or electric lanterns enclosed in rubber or other insulating cover.
- Ground around the magazine for a distance of 25 ft. (7.5 m) must be kept clean of flammable debris such as dry leaves and grass.
- No discharge of firearms at or within 500 ft. (150 m) of a magazine.
- Magazines must be located certain distances from buildings, railways, highways and other magazines based on the quantity of explosives stored in the magazine.
- The distances of separation can be decreased by 50% if the magazine or other structure containing explosives if protected by an efficient barricade.
- Explosive quantity conversion of detonators and detonating cord.
    - Cap size up to and including #8: 1000 caps are rated equivalent to 1.5 lbs. (0.7 kg) of explosives.
    - Cap size larger than #8: 1000 caps are rated equivalent to 3 lbs. (1.4 kg) of explosives.

- Detonating cord up to and including 60 grains/foot: 1000 ft. (300 m) is rated equivalent to 9 lbs. (4 kg) of explosive.

- Detonating cord above 60 grains/foot: 1000 ft. (300 m) is rated equivalent to 15 lbs. (6.8 kg) of explosives.

Underground utilities (12 NYCRR 53)

- Underground facilities within 15 ft. (4.5 m) of a proposed excavation or demolition must be staked, marked or otherwise designated.

- Verification shall be accomplished by exposing the underground facility or its encasement to view or by other means mutually agreed to by the excavator and operator.

- Powered equipment shall not be used within 4 in. (100 mm) of the verified location of an underground facility.

APPENDIX F Geologic Evaluation of Test Section

A test section is required on all newly constructed (or reconfigured) presplit slopes. The test section should be cleared and scaled in such a manner that its appearance and attitude be identical to that of the finished rock cut.

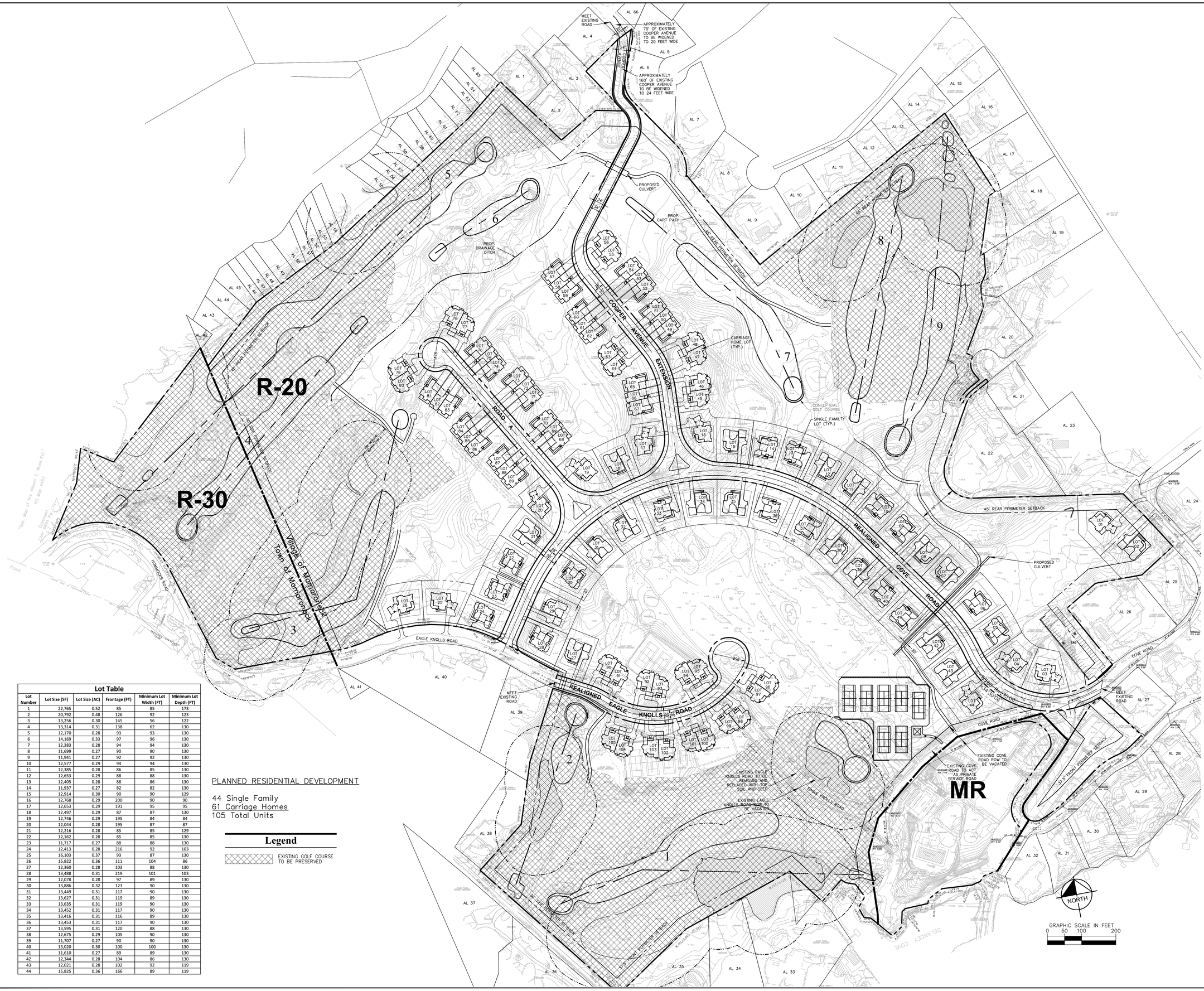
The test section exposes all discontinuities present in the bedrock. Since even the most advanced design exploration methods cannot reveal every feature present, the test section will enable the Engineering Geologist to determine if the slope will be stable as designed. If it is determined upon evaluation of the test section that the slope is unstable, the Engineering Geologist can change the slope design to one which will be stable.

The Engineering Geologist will inspect the test section, paying specific attention to drill butt traces. The geologist will examine:

1. Initial alignment of drill steel
2. Divergence, convergence or oversteepening of drilled holes
   Possible causes:
   a. Drill Bits (Cross Bits are preferable to Button Bits)
   b. Drill Steel (Solid Steel is preferable to Spiral Steel)
   c. Geology
      1. Alternating Beds (e.g. shale/sandstone/shale)
      2. Jointing/Fractures/Voids
      3. Soft Rock (leading to gravity caused oversteepening)
   d. Excessive down pressure
3. Final Appearance of Finished Slope
   a. Dimensions of Finished Product
   b. Rock Condition
   c. Unconformities/Significant Facies Changes
4. Concerns/Issues as the slope weathers

If the Engineering Geologist is not satisfied with the final appearance of the test section, or more information is needed, an additional test section may be required to fully address all concerns.

Appendix 6 – Site Plans



No.	REVISIONS	DATE	BY
4	DEIS COMPLETENESS REVISION	08/23/18	MWJ
3	DEIS COMPLETENESS REVISION	10/20/17	MWJ
2	DEIS COMPLETENESS	8/04/17	MWJ
1	REVISED LAYOUT TO PRESERVE EXISTING GOLD COURSE	9/28/16	MWJ

Kimley»Horn
Kimley-Horn of New York, P.C.

Engineering, Planning, and Environmental Consultants
1 N Lexington Ave, Suite 1575
White Plains, NY 914-368-9200

LICENSED PROFESSIONAL
STATE OF NEW YORK
MARK W. JAMES
072042
PROFESSIONAL ENGINEER

KHA PROJECT 112056005
JUNE 25, 2015
SCALE AS SHOWN
DESIGNED BY MWJ
DRAWN BY DAR
CHECKED BY MWJ

LAYOUT PLAN

HAMPSHIRE COUNTRY CLUB
PLANNED RESIDENTIAL DEVELOPMENT (P.R.D)
PREPARED FOR
HAMPSHIRE RECREATION LLC
VILLAGE OF MAMARONECK NEW YORK

SHEET NUMBER
C-1

Notes

1. Effective FEMA 100-Year Flood Elevation is 12' (NAVD 88 datum)
2. This plan elevation is based on NAVD 88 datum.

R-20

R-30

MR

LIMIT OF DISTURBANCE

CONCEPTUAL GOLF COURSE

30' EMERGENCY WEIR

INFILTRATION BASIN

BIORETENTION BASIN

PUMP STATION

HAMMONDS ROAD

EAGLE KNOLLS ROAD

COVE ROAD

Village of Mamaroneck
Town of Mamaroneck

GRAPHIC SCALE IN FEET
0 50 100 200

NORTH

No.	REVISIONS	DATE	BY
4	DEIS COMPLETENESS REVISION	08/23/18	MWJ
3	DEIS COMPLETENESS REVISION	10/20/17	MWJ
2	DEIS COMPLETENESS	8/04/17	MWJ
1	REVISED LAYOUT TO PRESERVE EXISTING GOLD COURSE	9/28/16	MWJ

Kimley-Horn of New York, P.C.
Engineering, Planning, and Environmental Consultants
1 N Lexington Ave, Suite 1575
White Plains, NY 914-368-9200

LICENSED PROFESSIONAL
STATE OF NEW YORK
MICHAEL W. JOHNSON
072042
PROFESSIONAL ENGINEER

KHA PROJECT	112056005
DATE	JUNE 25, 2015
SCALE	AS SHOWN
DESIGNED BY	MWJ
DRAWN BY	DAR
CHECKED BY	MWJ

HAMPSHIRE COUNTRY CLUB
PLANNED RESIDENTIAL DEVELOPMENT (P.R.D)
PREPARED FOR
HAMPSHIRE RECREATION LLC
VILLAGE OF MAMARONECK NEW YORK

GRADING PLAN

SHEET NUMBER
C-2

Notes

1. Effective FEMA 100-Year Flood Elevation is 12' (NAVD 88 datum)
2. This plan elevation is based on NAVD 88 datum.
3. The sanitary pipes are 8" diameter.
4. Storm pipes are 15" diameter or otherwise indicated on plan.

No.	REVISIONS	DATE	BY
4	DEIS COMPLETENESS REVISION	08/23/18	MWJ
3	DEIS COMPLETENESS REVISION	10/20/17	MWJ
2	DEIS COMPLETENESS	8/04/17	MWJ
1	REVISED LAYOUT TO PRESERVE EXISTING GOLD COURSE	9/28/16	MWJ

Kimley»Horn Kimley-Horn of New York, P.C.

Engineering, Planning, and Environmental Consultants
1 N Lexington Ave, Suite 1575
White Plains, NY 914-368-9200

LICENSED PROFESSIONAL

KHA PROJECT 112056005
JUNE 25, 2015
SCALE AS SHOWN
DESIGNED BY MWJ
DRAWN BY DAR
CHECKED BY MWJ

GRADING & UTILITY PLAN

HAMPSHIRE COUNTRY CLUB
PLANNED RESIDENTIAL DEVELOPMENT (P.R.D)
PREPARED FOR
HAMPSHIRE RECREATION LLC
VILLAGE OF MAMARONECK NEW YORK

SHEET NUMBER C-3

Files updated in:

H Landscape Management Plan and Wetland Mitigation and Monitoring Plan

Wetlands Mitigation and Monitoring Plan

Hampshire Country Club Planned Residential Development Village of Mamaroneck, Westchester County, New York

PREPARED FOR

Mr. Daniel Pfeffer, Managing Director c/o Hampshire Country Club, LLC 1025 Cove Road

PREPARED BY

VHB Engineering, Surveying, Landscape Architecture and Geology, P.C.
50 Main Street, Suite 360 White Plains, NY 10606

April 2019

Table of Contents

1

Proposed Action

1.1 Introduction and Background

This Wetland Mitigation and Monitoring Plan has been prepared by VHB Engineering, Surveying, Landscape Architecture and Geology, P.C., (VHB) for the Hampshire Country Club Planned Residential Development (PRD) proposed for the 106.2-acre Hampshire Country Club property, located in the Village of Mamaroneck, Westchester County, New York (hereinafter, the "Project Site," see Attachment A, Figure 1).

The Project Site, which is owned by Hampshire ~~Country Club~~Recreation, LLC (HCC), is located adjacent to the tidal waters of Delancey Cove and includes an 18-hole golf course, a clubhouse, swimming pool, seven tennis courts, a one-story tennis pavilion, two- story pool facility/pro-shop, several maintenance/support buildings and off-street parking. Two roads (Cove Road and Eagle Knolls Road) run east-west through the southern section of the Project Site. The majority of the Project Site is comprised of the fairways, greens, roughs, and water features of the 18-hole golf course.

The PRD consists of 105 residential units to be constructed on interior portions of the Project Site, development of seven tennis courts and creation of ~~36~~ 30.6 acres of common open space (hereinafter, the "Proposed Action") and an additional 108,911 square feet (~2.5 acres) of wetlands buffer plantings (See Table 1). ~~The common open space would be owned and maintained by the Homeowner's Association of the PRD.~~The wetlands at the

Project Site (as described in detail below) will be maintained by the Hampshire Golf Club, Additionally, the existing 18-hole golf course use would be downsized to a ~~36.8~~37.6- acre, nine-hole golf course to be owned and maintained by ~~HCC~~Hampshire Golf Club.

~~The proposed nine-hole golf course contains or abuts eight existing wetlands, including golf course ponds and emergent vegetation wetlands.~~ The Project Site contains seven ponds and two emergent wetlands, as well as various drainage ditches and subgrade drainage pipes associated with three golf course drainage systems (Golf Course Drainage Systems 1, 2 and 3, see see Attachment A, Figure 2). These wetland features were created or altered historically for drainage and irrigation purposes and to serve as water hazards for the golf course, which has been operational since 1944. Two of the golf course drainage systems (Golf Course Drainage Systems 1 and 3) discharge to Delancey Cove via a series of culverts and tide gates, while the third drainage system (Golf Course Drainage System 2) is self- contained. A summary of the wetlands at the Project site is provided on Table 1.

Table 1 – Wetland Summary

Feature	Components	Discharge Point	Acres	Wetland Edge Planting Area
Golf Course Drainage System 1	Ponds 13 & 16, drainage ditches and sub-grade pipes	Delancey Cove	1.07	Pond 13: 34,187 SF Pond 16: 5,574 SF
Golf Course Drainage System 2	Ponds 5 & 6, sub-grade drainage pipes	None	0.81	Pond 5: 9,553 SF Pond 6: 15, 247 SF
Golf Course Drainage System 3	Ponds 10 (includes vegetated wetland area), 11 & 18, drainage ditches and sub-grade pipes	Delancey Cove	2.28	Pond 10: 13,300 SF Pond 11: 12,450 SF Pond 18: 10,575 SF
Wetland A	Emergent Wetland	None	0.39	8,025 SF

As required by the Village of Mamaroneck, a functional assessment of ~~these~~ the wetlands at the Project Site ~~wetlands~~ was performed by VHB in May 2016, according to the methods developed by Dennis W. Magee (with technical contributions from Garrett G. Hollands), as described in "*A Rapid Procedure for Assessing Wetland Functional Capacity Based on Hydrogeomorphic (HGM) Classification*" (the "Magee- Hollands Method"). Under the Magee-Hollands Method, the functional capacity for each of the

eight principal wetland functions described below is assessed, based partially on review of "desktop" resources (e.g., aerial imagery, maps and other references), but primarily upon field observations and measurements of hydrological, geological and biological characteristics of the wetlands and identification of land uses within the surrounding watershed.

The results of the wetland functional assessment indicated that the ~~eight~~ site wetlands, including the seven drainage system ponds listed in Table 1, are primarily anthropogenic features that were created or altered to provide drainage and irrigation for the golf course, and to serve as water hazards. The wetlands also receive stormwater from onsite and offsite sources. Accordingly, the primary Magee-Hollands functions performed by the wetlands are the Modification of Groundwater Quality and Storm and Floodwater Storage functions that these features were created or historically altered to perform. The wetlands provide a moderate degree of functionality for Modification of Groundwater Recharge and Modification of Groundwater Discharge. With the exception of Wetland A and the western portion of Pond 10, the wetlands are largely devoid of submergent and emergent vegetation. Moreover, the areas immediately adjacent to the wetlands are comprised primarily of landscaped golf course fairways and greens dominated by a monoculture of common turfgrasses, with few or no trees, shrubs or native herbaceous plants. As a consequence, ~~O~~ overall functionality is low for the Diversity of Wetland Vegetation and Contribution to Abundance and Diversity of Wetland Fauna functions. Given the artificial and/or altered nature of the wetlands, as well as the absence or permanent outlet for the three gold course drainage systems, overall wetland functionality is also low for the Export of Detritus and Modification of Stream Flow functions.

As the eight existing wetlands at the Project Site would be preserved under the Proposed Action, the mitigation efforts proposed for these features have been specifically designed to improve their functional capacity for the eight Magee- Hollands wetland functions described above, particularly the Diversity of Wetland Vegetation and Contribution to Abundance and Diversity of Wetland Fauna functions. Accordingly, this Wetland Mitigation and Monitoring Plan has been created to summarize the mitigation efforts proposed for these features, and to outline monitoring and maintenance efforts designed to ensure the success of the proposed mitigation.

1.2 Project Impacts

The Proposed Action has been designed to avoid or minimize potential adverse impacts by situating development away from wetlands, improving stormwater quality and providing for native plant buffers along wetland perimeters. Specifically, none of the residential buildings, tennis courts or other improvements would occur within a minimum of 100 feet of eight

wetlands that occur on adjacent to the nine- hole golf course. Similar to existing conditions, the wetlands would continue to provide drainage and irrigation, serve as water hazards and receive stormwater discharge. Under the proposed PRD, stormwater would be directed to a stormwater management system designed to filter pollutants and control runoff from impervious surfaces. The stormwater management system includes vegetated infiltration basins equipped with continuous deflective system (CDS) units and stone diaphragms to provide pretreatment of stormwater. As a result, a reduction in discharges of pollutants, organic material and mineral sediments to the wetlands will occur. Moreover, the Proposed Action would result in reduction of the existing 18- hole golf course to a smaller, 9-hole golf course. Accordingly, a corresponding reduction in golf course management practices, including fertilizer, pesticide, and herbicide applications at would occur, and associated wetland water quality improvements are anticipated. Finally, the Proposed Action would result in installation of 20-foot wide wetland edge plantings along the perimeter of the eight wetland features, as described in section 1.3 below.

Based upon the foregoing, the primary impacts of the Proposed Action to wetlands are anticipated improvements in the Magee-Hollands Modification of Groundwater Quality, Storm and Floodwater Storage, Modification of Groundwater Recharge, Modification of Groundwater Discharge, Diversity of Wetland Vegetation and Contribution to Abundance and Diversity of Wetland Fauna functions provided by these features, as compared to exiting conditions.

1.3 Wetland Mitigation Plan

As detailed in section 1.1, due to low vegetative abundance and diversity, the existing wetlands at the Project Site received low overall Magee-Holland scores for the Diversity of Wetland Vegetation and Contribution to Abundance and Diversity of Wetland Fauna functions. Specifically, with the exception of Wetland A and the western portion of Pond 10, the wetlands are currently largely devoid of submergent and emergent vegetation. Moreover, the areas immediately adjacent to the wetlands are comprised primarily of landscaped golf course fairways and greens dominated by a monoculture of common turfgrasses, with few or no trees, shrubs or native herbaceous plants. As a consequence, the existing vegetated habitats within and surrounding the wetlands are characterized by low vegetative diversity, little habitat variation and limited wildlife habitat value, Therefore, overall functionality is low for the Diversity of Wetland Vegetation and Contribution to Abundance and Diversity of Wetland Fauna functions under existing conditions. ~~Accordingly~~Based on these findings, the wetland mitigation plan has been specifically designed to improve the performance of the wetlands for these two important functions, as compared to exiting conditions.

As detailed on the Landscaping Plan (see Attachment B) implementation of the wetland mitigation plan would result in the installation of native plantings in 20-foot wide zones situated along perimeter areas of the eight wetlands located on or adjacent to the nine-hole golf course (see Table 1 for wetland edge planting area). The species to be planted within the mitigation areas include native trees, shrubs and herbaceous plant species that commonly occur along wetland and pond edge communities in southeastern New York State. Among the proposed species are red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), tupelo (*Nyssa sylvatica*), summersweet (*Clethra alnifolia*), winterberry (*Ilex verticillata*), gray dogwood (*Cornus racemosa*), switchgrass (*Panicum virgatum*), Joe-Pye weed (*Eupatorium purpureum*), tussock sedge (*Carex Stricta*) and others. ~~Once established~~As compared to the above existing conditions within and surrounding the wetlands as described above, the proposed conditions under the wetland mitigation plan would improve vegetative diversity, habitat variation and wildlife habitat value. Therefore, it is anticipated that the wetland mitigation areas will significantly improve the Diversity of Wetland Vegetation and Contribution to Abundance and Diversity of Wetland Fauna functions of the eight wetlands.

Provisions for monitoring and maintenance of the mitigation areas are detailed in Sections 2 and 3 of this plan.

.

2

Monitoring and Maintenance Proposed Action

1.4 Mitigation Goals

The success of the wetland mitigation plan will be determined ~~to be successful~~ during annual monitoring surveys for three years following installation of the plantings (as described in Section 2.2 below), based on the following mitigation goals:

- A minimum survivability rate of 75 percent for trees, shrubs and herbaceous plants.
- A maximum twenty percent areal cover threshold for invasive plant species.
- ~~If the plantings within the eight wetland mitigation areas (20~~Twenty-foot wide ~~wetland edge planting zones) achieve 85 percent areal coverage within 5 years of their installation, and if~~ quantitative~~ualitative~~ improvements in the two targeted Magee-Hollands wetland functions (Diversity of Wetland Vegetation and Contribution to Abundance and Diversity of Wetland Fauna) ~~are realized~~ for each wetland, as compared to baseline conditions.

Any negative exceedances of the above thresholds (i.e., less than 75 percent plant survivability rare, greater than 20 percent aerial coverage of invasive plants or lower Magee-Hollands functional scores) noted during the annual monitoring surveys will trigger corrective action(s) to ensure that the mitigation goals are met. Such actions may include replacement of dead or dying trees, shrubs or herbaceous plants and/or removal of invasive plants. The~~These~~ mitigation plan goals outlined above may be modified, as necessary, to comply with any potential Village of Mamaroneck (the "Village") and/or United States Army Corps of Engineers (USACE) permitting or mitigation requirements.

1.5 Monitoring Surveys

~~HCC~~ The Hampshire Golf Club will be responsible for maintenance of the wetland mitigation areas as part of normal operations and maintenance of the nine-hole golf course. To evaluate the efficacy of the wetland mitigation

plan, annual vegetation monitoring surveys will be performed for three years by ~~VHB or other~~ qualified personnel. Monitoring will commence with a baseline survey in Year 1, which will be the year that installation of the mitigation areas is completed.

~~A list of dominant plant species and their estimated relative frequency and percent areal cover will be identified once annually during the growing season within the wetland mitigation areas.~~ The annual survey will occur within ~~one~~ two vegetation monitoring plots selected during Year 1 for each of the eight wetland mitigation areas shown on the Landscaping Plan (see Attachment B). The location of the monitoring plots will be determined after planting of the mitigation areas is complete, to ensure the plots representatively sample each mitigation area and that the potential for invasive species colonization and other potential risk factors that may affect plan efficacy are taken into account. The monitoring plots will remain fixed over the course of the monitoring period to facilitate comparisons between years. Plot locations will be marked with flagged wooden stakes (or similar durable materials) and recorded with a sub-meter Global Positioning System (GPS) unit, to allow for repeat sampling throughout the monitoring period. The monitoring plots will be centered over the installed stake. A ten-foot diameter plot will be used for herbaceous layers (non-woody plants and woody plants less than 3.28 ft tall), a 15- foot diameter plot will be used for saplings/shrubs (woody plants less than three inches in diameter at breast height (dbh) and taller than 3.28 ft), and a 30-foot diameter plot will be used for trees (woody plants greater than three inches dbh). In cases where the plot extends outside the mitigation area, the shape of the plot will be adjusted accordingly to remain within the confines of the mitigation area. The location of monitoring plots will be determined after planting of the mitigation areas ~~is complete, to ensure the plots representatively sample each mitigation area~~.

Permanent photograph locations will be established for each plot during repeat visits to develop a photo record during the monitoring period.

The following data will be collected at each mitigation area:

- Site information – Wetland/plot number, wetland type, date, observer(s).
- Hydrology – Water depth or depth to saturated soils will be recorded to the nearest inch. Depths will be recorded at the center of the monitoring plot.
- Plant survival – The number of trees, shrubs and herbaceous plants from each of the installed plant species will be identified within the monitoring plot and assigned one of three overall fitness categories: (1) thriving, (2) alive but stressed, (3) dead or near dead. In cases where counting of individual herbaceous plants is impractical, the absolute areal cover of these species will be visually estimated within the monitoring plot. Areal cover estimates will be based on the USACE cover class ranges shown in Table 2.

- Invasive plant species – Any invasive plant species rooted within the monitoring plot will be noted, and absolute areal cover of each invasive species will be estimated visually. Areal cover estimates will be based on the USACE cover class ranges shown in Table 2. The areas surrounding the monitoring plot will also be inspected to identify any invasive plant species.
- Magee-Hollands rankings – rankings for the two targeted wetland functions (Diversity of Wetland Vegetation and Contribution to Abundance and Diversity of Wetland Fauna) will be calculated for each wetland.
- Photographs – Representative photographs will be taken annually at each monitoring plot, from permanent photograph locations to maintain consistency and allow for comparison between yearly monitoring surveys.

Table 2: Areal Cover Class Ranges

Areal Cover Range (%)	0-6	6-15	15-26	26-50	50-76	76-95	95-100
Cover Class	3	10.5	20.5	38	63	85.5	97.5

Source: USACE, 1987

1.6 Reporting

Annual monitoring reports summarizing the status of the monitoring and maintenance activities will be prepared each year during the monitoring period. The monitoring period will be ~~a minimum of~~for three years, ~~and will conclude when~~that the mitigation plan meets the mitigation goals outlined in Section 2.1. A copy of the report will be provided to HCC and the Village no later than December 15th of the year during which the monitoring occurred. Each report will include:

- Maps showing wetlands, wetland mitigation areas, monitoring plots and photograph locations.
- Data and results of the monitoring survey for each wetland, including planting survivability rates, areal cover of invasive plant species (as applicable) and Magee-Hollands rankings for each wetland for the two targeted wetland functions (Diversity of Wetland Vegetation and Contribution to Abundance and Diversity of Wetland Fauna).
- Analysis of invasive plant species within the mitigation areas, as necessary.
- Photographs taken during the monitoring survey, with comparison to prior monitoring survey photographs, as necessary.
- Conclusions based on the monitoring survey results, including an assessment of whether progress toward the identified mitigation goals has occurred.

- Recommendations for corrective action(s) to ensure that the mitigation goals are met. Such actions may include replacement of dead or dying trees, shrubs or herbaceous plants and/or removal of invasive plants.

1.7 ~~Responsible Party~~Maintenance

The responsible party for maintenance of the mitigation areas will be:
Hampshire ~~Country Club~~Recreation, LLC

1025 Cove Road

Mamaroneck, New York 10543

(646) 723-4750

During the time when the mitigation area plantings are becoming established (i.e., within the first three years following installation), routine maintenance activities (e.g., supplemental watering, pruning, mulching, staking, etc.) to ensure plan success.

Following establishment, the plantings within the mitigation areas will be left in an unmaintained, wild state. However, HCC reserves the right to trim or remove trees and other vegetation for safety purposes or other relevant reasons. Maintenance of the mitigation areas will include installation of signage identifying the mitigation area boundaries.

Long-term protection of the mitigation area will be ensured through a deed restriction, if required by the Village of Mamaroneck.

2

Monitoring and Maintenance Proposed Action

2.1 Background

The Wetland Mitigation and Monitoring Plan includes an adaptive management strategy to address unforeseen changes in the mitigation areas or surrounding site conditions. Adaptive management measures will be implemented as necessary to address both foreseeable and unforeseen circumstances that may adversely affect the success of the wetland mitigation plan, including colonization by invasive plant species, as discussed in Section 3.2.

The results of each annual monitoring survey will be used to determine whether adaptive management measures are warranted, and any such measures will be included in the recommendations section of the annual monitoring report. HCC will be responsible for implementing the adaptive management recommendations, as necessary.

2.2 Invasive Species

As a proactive measure during routine maintenance activities by HCC, observed occurrences of invasive plant species within the mitigation areas will be removed to the extent practicable. In the event that significant occurrences of invasive plants that threaten the success of the mitigation plan are observed within the mitigation areas during the annual monitoring surveys, HCC will be responsible for implementing methods designed to limit or remove the plants. For the purposes of this plan, any invasive species occurrence exceeding twenty percent areal cover, as determined during the annual monitoring surveys, will be considered significant and require corrective measures.

A variety of methods are available for controlling invasive pants, and the selection of method depends largely on the invasive plant(s), extent of the occurrence and site conditions. If the occurrence is deemed minor, hand-removal will be the preferred method to limit the overall impact within the affected mitigation area(s). For larger occurrences, mechanical means may be employed in accordance with applicable regulations and with appropriate controls to protect adjacent areas and restore native plantings within the affected area. In some cases, biological controls (e.g., beetles) may be effective for limiting the growth of invasive species such as purple loosestrife (*Lythrum salicaria*), although such controls may not completely eliminate all of the targeted plants.

3

Adaptive Management Plan

3.1 Background

The Wetland Mitigation and Monitoring Plan includes an adaptive management strategy to address unforeseen changes in the mitigation areas or surrounding site conditions. Adaptive management measures will be implemented as necessary to address both foreseeable and unforeseen circumstances that may adversely affect the success of the wetland mitigation plan, including colonization by invasive plant species, as discussed in Section 3.2.

The results of each annual monitoring survey will be used to determine whether adaptive management measures are warranted, and any such measures will be included in the recommendations section of the annual monitoring report. HCC will be responsible for implementing the adaptive management recommendations, as necessary.

3.2 Invasive Species

As a proactive measure during routine maintenance activities by HCC, observed occurrences of invasive plant species within the mitigation areas will be removed to the extent practicable. In the event that significant occurrences of invasive plants that threaten the success of the mitigation plan are observed within the mitigation areas during the annual monitoring surveys, HCC will be responsible for implementing methods designed to limit or remove the plants. For the purposes of this plan, any invasive species occurrence exceeding twenty percent areal cover, as determined during the annual monitoring surveys, will be considered significant and require corrective measures.

A variety of methods are available for controlling invasive pants, and the selection of method depends largely on the invasive plant(s), extent of the occurrence and site conditions. If the occurrence is deemed minor, hand-removal will be the preferred method to limit the overall impact within the affected mitigation area(s). For larger occurrences, mechanical means may be employed in accordance with applicable regulations and with appropriate controls to protect adjacent areas and restore native plantings within the affected area. In some cases, biological controls (e.g., beetles) may be effective for limiting the growth of invasive species such as purple loosestrife (*Lythrum salicaria*), although such controls may not completely eliminate all of the targeted plants.

Attachment A

Source: ESRI GIS

0 170 340 680 Feet

Hampshire Country Club - PRD | Village of Mamaroneck, NY

Site Location - Aerial

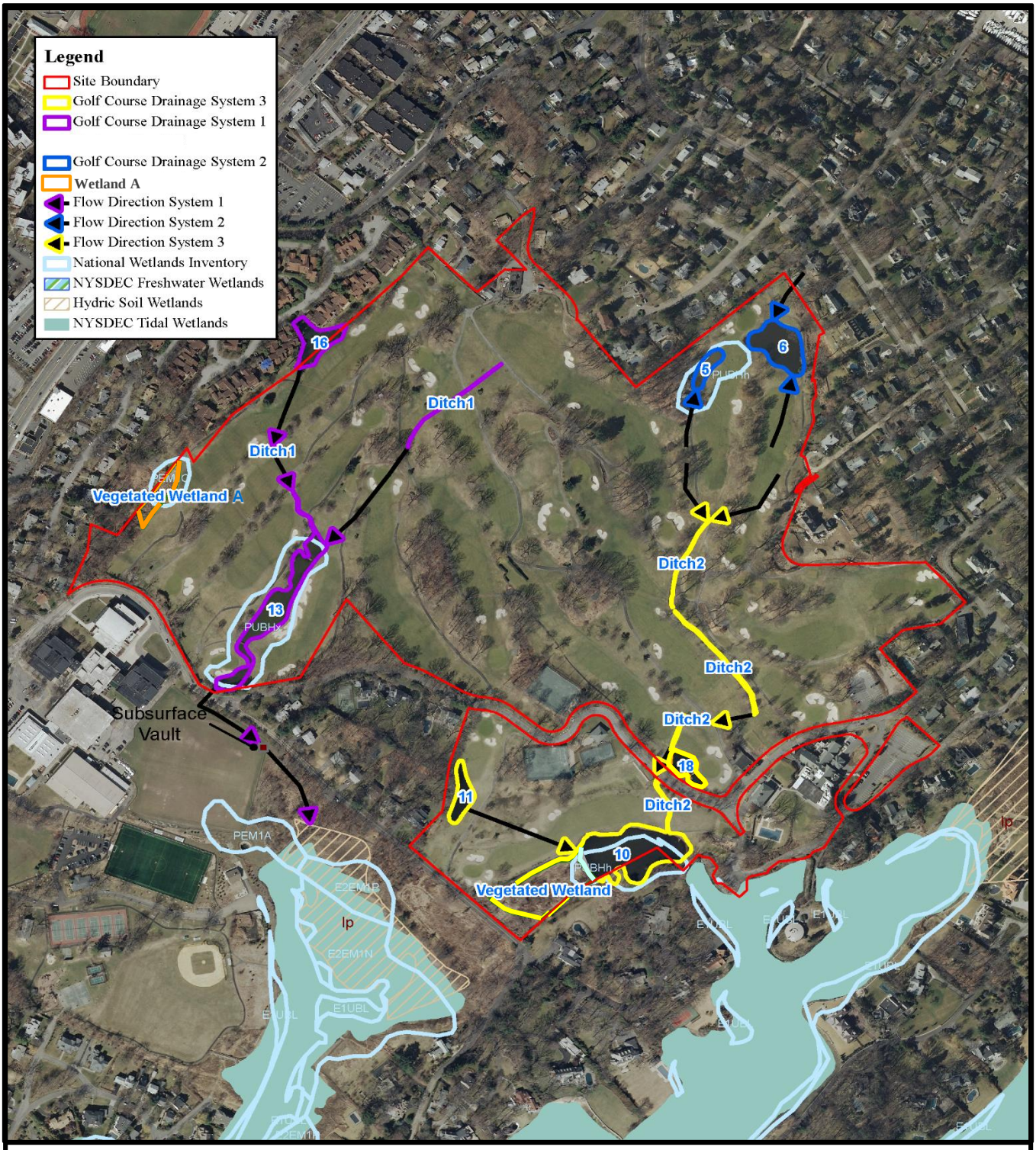


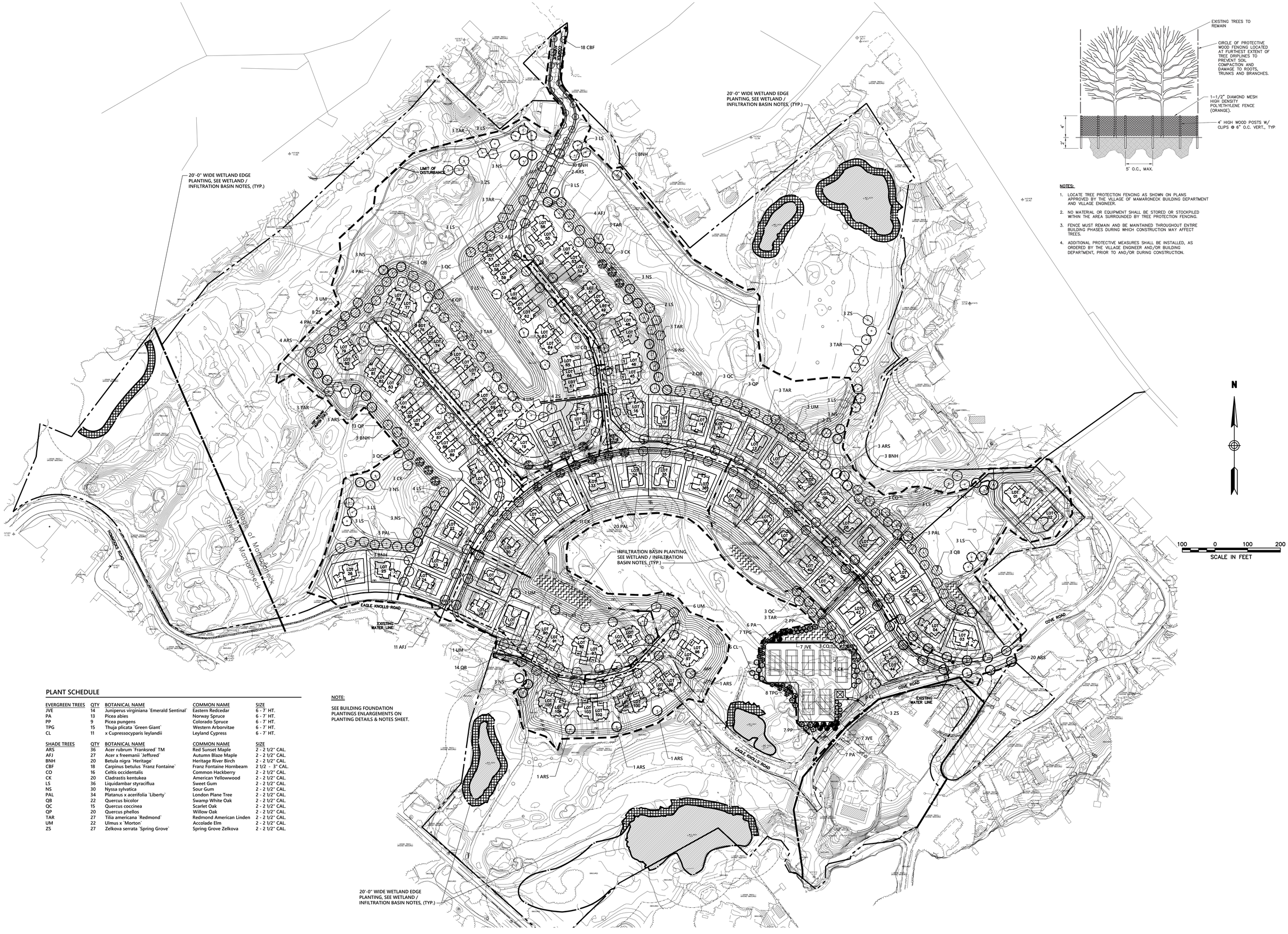
FIGURE 2 – DRAINAGE SYSTEM AND WETLAND MAP

Hampshire Country Club, Village of Mamaroneck, New York

N

vhb

Attachment B



NOTES:

1. LOCATE TREE PROTECTION FENCING AS SHOWN ON PLANS APPROVED BY THE VILLAGE OF MAMARONECK BUILDING DEPARTMENT AND VILLAGE ENGINEER.
2. NO MATERIAL OR EQUIPMENT SHALL BE STORED OR STOCKPILED WITHIN THE AREA SURROUNDED BY TREE PROTECTION FENCING.
3. FENCE MUST REMAIN AND BE MAINTAINED THROUGHOUT ENTIRE BUILDING PHASES DURING WHICH CONSTRUCTION MAY AFFECT TREES.
4. ADDITIONAL PROTECTIVE MEASURES SHALL BE INSTALLED, AS ORDERED BY THE VILLAGE ENGINEER AND/OR BUILDING DEPARTMENT, PRIOR TO AND/OR DURING CONSTRUCTION.

PLANT SCHEDULE

EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE
JVE	14	Juniperus virginiana `Emerald Sentinal`	Eastern Redcedar	6 - 7' HT.
PA	13	Picea abies	Norway Spruce	6 - 7' HT.
PP	9	Picea pungens	Colorado Spruce	6 - 7' HT.
TPG	15	Thuja plicata `Green Giant`	Western Arborvitae	6 - 7' HT.
CL	11	x Cupressocyparis leylandii	Leyland Cypress	6 - 7' HT.

SHADE TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE
ARS	36	Acer rubrum `Franksred` TM	Red Sunset Maple	2 - 2 1/2" CAL.
AFJ	27	Acer x freemanii `Jeffsred`	Autumn Blaze Maple	2 - 2 1/2" CAL.
BNH	20	Betula nigra `Heritage`	Heritage River Birch	2 - 2 1/2" CAL.
CBF	18	Carpinus betulus `Franz Fontaine`	Franz Fontaine Hornbeam	2 1/2 - 3" CAL.
CO	16	Celtis occidentalis	Common Hackberry	2 - 2 1/2" CAL.
CK	20	Cladrastis kentukea	American Yellowwood	2 - 2 1/2" CAL.
LS	36	Liquidambar styraciflua	Sweet Gum	2 - 2 1/2" CAL.
NS	30	Nyssa sylvatica	Sour Gum	2 - 2 1/2" CAL.
PAL	34	Platanus x acerifolia `Liberty`	London Plane Tree	2 - 2 1/2" CAL.
QB	22	Quercus bicolor	Swamp White Oak	2 - 2 1/2" CAL.
QC	15	Quercus coccinea	Scarlet Oak	2 - 2 1/2" CAL.
QP	20	Quercus phellos	Willow Oak	2 - 2 1/2" CAL.
TAR	27	Tilia americana `Redmond`	Redmond American Linden	2 - 2 1/2" CAL.
UM	22	Ulmus x `Morton`	Accolade Elm	2 - 2 1/2" CAL.
ZS	27	Zelkova serrata `Spring Grove`	Spring Grove Zelkova	2 - 2 1/2" CAL.

NOTE:

SEE BUILDING FOUNDATION PLANTINGS ENLARGEMENTS ON PLANTING DETAILS & NOTES SHEET.

Wetland Water Budget Analysis

Wetland Water Budget - Existing

DRAINAGE AREA =4.54 AC.
Q100=4.54x0.3x9=12.3 CFS

DRAINAGE AREA =29.38 AC.
Q100 =29.38x0.3*9 =79 CFS

DRAINAGE AREA =9.76 AC.
Q100 =9.2x0.3x9=24.8 CFS

DRAINAGE AREA =28.5 AC.
Q100 =29.1x0.3x9 =78.5 CFS

DRAINAGE AREA =40.82 AC.
Q100 =40.82x0.3x9 = 110 CFS

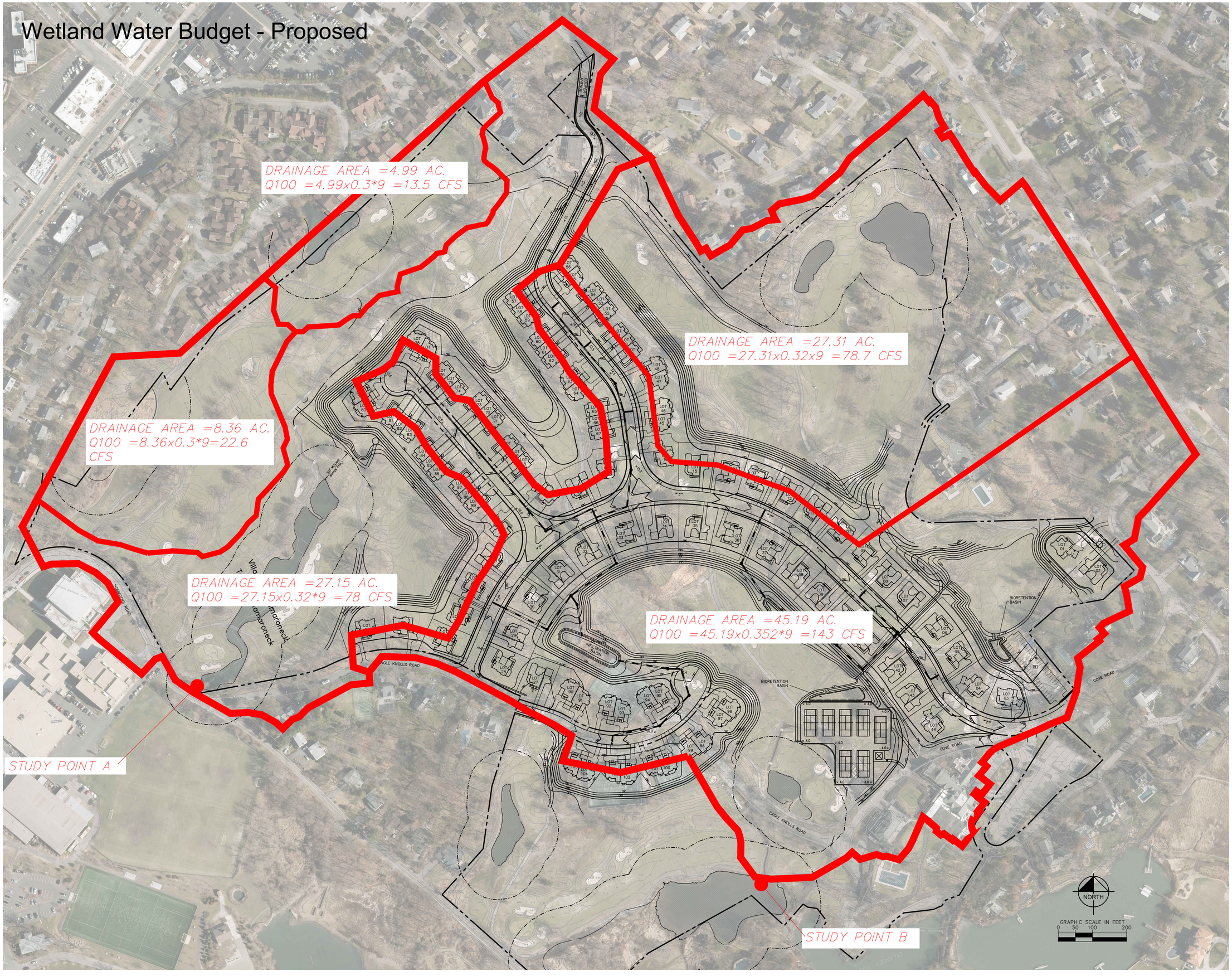
STUDY POINT A

STUDY POINT B

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

Wetland Water Budget - Proposed



LEGEND	
ITEM	SYMBOL
DITCH	
PIPE	
DRAINAGE BOUNDARY	

STUDY POINT A

STUDY POINT B

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

LEGEND

ITEM	SYMBOL
DITCH	
PIPE	
DRAINAGE BOUNDARY	

STUDY POINT A

STUDY POINT B

Village of Mamaroneck
Town of Mamaroneck

EAGLE KNOLLS ROAD

COVE ROAD

30" EMERGENCY WEIR

INFILTRATION BASIN

BIORETENTION BASIN

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

K Bird and Tree Inventory; Tree Basal Area Calculations

Hampshire Country Club Bird Inventory

The following list provides an inventory of birds observed during field surveys of the Project Site conducted on July 24 and July 31, 2018. This list is not intended to be an all-inclusive inventory of the bird species present at the Project Site.

*Indicates species also listed in the New York State Breeding Bird Atlas inventory for Block 6053C.

Scientific Name	Common Name
**Agelaius phoeniceus*	red-winged blackbird
**Anas platyrhynchos*	mallard
Ardea alba	great egret
Ardea herodias	great blue heron
**Buteo jamaicensis*	red-tailed hawk
**Cardinalis cardinalis*	northern cardinal
**Chaetura pelagica*	chimney swift
**Charadrius vociferous*	killdeer
**Colaptes auratus*	northern flicker
**Columba livia*	rock dove
**Contopus virens*	eastern wood peewee
**Corvus brachyrhynchos*	American crow
**Cyanocitta cristata*	blue jay
**Dumetella carolinensis*	gray catbird
Egretta thula	Snowy egret
**Geothlypis trichas*	common yellowthroat
**Haemorhous mexicanus*	house finch
**Hirundo rustica*	barn swallow
**Icterus galbula*	northern oriole
**Melanerpes carolinus*	red-bellied woodpecker
**Melospiza melodia*	song sparrow
**Mimus polyglottos*	northern mockingbird
**Pandion haliaetus*	osprey
**Passer domesticus*	house sparrow

Scientific Name	Common Name
Phalacrocorax auritus	double-crested cormorant
**Picoides pubescens*	downy woodpecker
**Poecile atricapillus*	black-capped chickadee
**Quiscalus quiscula*	common grackle
Setophaga petechia	yellow warbler
**Sialia sialis*	eastern bluebird
**Sitta carolinensis*	white-breasted nuthatch
**Spinus tristis*	American goldfinch
**Spizella passerine*	chipping sparrow
Spizella pusilla	field sparrow
**Stelgidopteryx serripennis*	rough-winged swallow
**Sturnus vulgaris*	European starling
**Thryothorus ludovicianus*	carolina wren
**Troglodytes aedon*	house wren
**Turdus migratorius*	American robin
**Zenaida macroura*	mourning dove

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYS Breeding Bird Atlas

Block 6053C

2000-2005

ATLAS 2000

Navigation Tools

Perform Another Search
Show All Records
Sort by Field Card Order
Sort by Taxonomic Order
View 1985 Data

Block 6053C Summary

Total Species:	86
Possible:	5
Probable:	10
Confirmed:	71

Click on column heading to sort by that category.

List of Species Breeding in Atlas Block 6053C

Common Name	Scientific Name	Behavior Code	Date	NY Legal Status
Red-winged Blackbird	*Agelaius phoeniceus*	NY	//2000	Protected
Saltmarsh Sparrow	*Ammodramus caudacutus*	FY	//2000	Protected
Seaside Sparrow	*Ammodramus maritimus*	FY	//2002	Protected-Special Concern
Mallard	*Anas platyrhynchos*	FL	//2000	Game Species
American Black Duck	*Anas rubripes*	FL	//2000	Game Species
Ruby-throated Hummingbird	*Archilochus colubris*	FL	7/12/2001	Protected
Tufted Titmouse	*Baeolophus bicolor*	FY	//2000	Protected
Cedar Waxwing	*Bombycilla cedrorum*	T2	//2000	Protected
Canada Goose	*Branta canadensis*	NE	//2000	Game Species
Great Horned Owl	*Bubo virginianus*	NY	//2004	Protected
Red-tailed Hawk	*Buteo jamaicensis*	FL	//2004	Protected
Green Heron	*Butorides virescens*	FL	//2000	Protected
Northern Cardinal	*Cardinalis cardinalis*	FL	//2000	Protected
House Finch	*Carpodacus mexicanus*	FL	//2000	Protected

Chimney Swift	*Chaetura pelagica*	ON	6/29/2001	Protected
Killdeer	*Charadrius vociferus*	FL	6/24/2002	Protected
Marsh Wren	*Cistothorus palustris*	NY	7/12/2001	Protected
Yellow-billed Cuckoo	*Coccyzus americanus*	S2	6/13/2005	Protected
Northern Flicker	*Colaptes auratus*	ON	//2000	Protected
Rock Pigeon	*Columba livia*	ON	//2001	Unprotected
Eastern Wood-Pewee	*Contopus virens*	NY	6/13/2005	Protected
American Crow	*Corvus brachyrhynchos*	FL	//2000	Game Species
Fish Crow	*Corvus ossifragus*	FL	//2002	Protected
Blue Jay	*Cyanocitta cristata*	NE	//2000	Protected
Mute Swan	*Cygnus olor*	NE	5/21/2001	Protected
Yellow Warbler	*Dendroica petechia*	FY	//2000	Protected
Gray Catbird	*Dumetella carolinensis*	NY	//2000	Protected
Willow Flycatcher	*Empidonax traillii*	FL	7/12/2001	Protected
Common Yellowthroat	*Geothlypis trichas*	FY	//2000	Protected
American Oystercatcher	*Haematopus palliatus*	NE	//2001	Protected
Barn Swallow	*Hirundo rustica*	NY	//2002	Protected
Wood Thrush	*Hylocichla mustelina*	FL	6/22/2001	Protected
Baltimore Oriole	*Icterus galbula*	NY	//2000	Protected
Orchard Oriole	*Icterus spurius*	NY	//2000	Protected
Least Bittern	*Ixobrychus exilis*	T2	//2000	Threatened
Herring Gull	*Larus argentatus*	D2	//2000	Protected
Great Black-backed Gull	*Larus marinus*	NE	//2000	Protected
Belted Kingfisher	*Megaceryle alcyon*	X1	//2000	Protected
Eastern Screech-Owl	*Megascops asio*	S2	//2004	Protected
Red-bellied Woodpecker	*Melanerpes carolinus*	NY	//2000	Protected
Wild Turkey	*Meleagris gallopavo*	FL	//2000	Game Species
Swamp Sparrow	*Melospiza georgiana*	FY	//2000	Protected
Song Sparrow	*Melospiza melodia*	FL	//2000	Protected
Northern Mockingbird	*Mimus polyglottos*	FY	7/7/2001	Protected
Brown-headed Cowbird	*Molothrus ater*	FL	//2000	Protected
	Myiarchus crinitus	FY	//2002	Protected

Great Crested Flycatcher				
Yellow-crowned Night-Heron	*Nyctanassa violacea*	X1	//2004	Protected
Black-crowned Night-Heron	*Nycticorax nycticorax*	X1	//2004	Protected
Osprey	*Pandion haliaetus*	NY	//2000	Protected-Special Concern
House Sparrow	*Passer domesticus*	NY	//2000	Unprotected
Indigo Bunting	*Passerina cyanea*	FL	7/3/2002	Protected
Ring-necked Pheasant	*Phasianus colchicus*	FL	7/10/2002	Game Species
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	FL	//2004	Protected
Downy Woodpecker	*Picoides pubescens*	NY	//2000	Protected
Hairy Woodpecker	*Picoides villosus*	ON	//2000	Protected
Eastern Towhee	*Pipilo erythrophthalmus*	FL	//2000	Protected
Black-capped Chickadee	*Poecile atricapillus*	FL	//2000	Protected
Blue-gray Gnatcatcher	*Polioptila caerulea*	NY	//2004	Protected
Purple Martin	*Progne subis*	N2	//2004	Protected
Common Grackle	*Quiscalus quiscula*	FL	//2000	Protected
King Rail	*Rallus elegans*	T2	//2002	Threatened
Virginia Rail	*Rallus limicola*	FL	6/16/2002	Game Species
Clapper Rail	*Rallus longirostris*	FL	8/19/2002	Protected
Eastern Phoebe	*Sayornis phoebe*	X1	//2004	Protected
American Woodcock	*Scolopax minor*	D2	//2000	Game Species
American Redstart	*Setophaga ruticilla*	FY	//2000	Protected
Eastern Bluebird	*Sialia sialis*	P2	6/13/2005	Protected
White-breasted Nuthatch	*Sitta carolinensis*	ON	//2002	Protected
American Goldfinch	*Spinus tristis*	FL	//2000	Protected
Chipping Sparrow	*Spizella passerina*	FL	//2000	Protected
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	ON	5/20/2001	Protected
Forster's Tern	*Sterna forsteri*	D2	//2004	Protected
Common Tern	*Sterna hirundo*	NE	//2000	Threatened
European Starling	*Sturnus vulgaris*	NY	//2000	Unprotected
Tree Swallow	*Tachycineta bicolor*	NY	//2001	Protected

Carolina Wren	*Thryothorus ludovicianus*	FL	//2000	Protected
Brown Thrasher	*Toxostoma rufum*	FL	//2004	Protected
House Wren	*Troglodytes aedon*	NY	//2000	Protected
Winter Wren	*Troglodytes troglodytes*	FY	6/13/2005	Protected
American Robin	*Turdus migratorius*	NY	//2000	Protected
Eastern Kingbird	*Tyrannus tyrannus*	NE	//2004	Protected
Blue-winged Warbler	*Vermivora pinus*	X1	//2004	Protected
Warbling Vireo	*Vireo gilvus*	FL	//2000	Protected
White-eyed Vireo	*Vireo griseus*	FL	7/2/2002	Protected
Red-eyed Vireo	*Vireo olivaceus*	NE	//2000	Protected
Mourning Dove	*Zenaida macroura*	NE	//2000	Protected

Current Date: 3/18/2019

Hampshire Country Club Tree Inventory

The following list provides an inventory of trees observed during field surveys of the Project Site conducted on July 24 and July 31, 2018. This list is not intended to be an all-inclusive inventory of the tree species present at the Project Site. Also see Appendix C, Figures 13, 14a, and 14b.

Scientific Name	Common Name
Acer plantanoides	Norway maple
Acer rubrum	red maple
Acer saccharinum	silver maple
Acer saccharum	sugar maple
Ailanthus altissima	tree-of-heaven
Betula nigra	river birch
Carya glabra	pignut hickory
Carya ovata	shagbark hickory
Carya tomentosa	mockernut hickory
Fagus grandifolia	American beech
Fraxinus americana	white ash
Fraxinus nigra	black ash
Gleditsia triacanthos	honey locust
Ilex opaca	American holly
Juglans nigra	black walnut
Liquidambar styraciflua	sweetgum
Liriodendron tulipifera	tulip poplar
Malus sp.	crabapple
Morus alba	white mulberry
Nyssa sylvatica	blackgum
Picea pungens	blue spruce
Picea rubens	red spruce
Pinus rigida	pitch pine
Pinus strobus	eastern white pine
Populus deltoides	eastern cottonwood
Populus grandidentata	big-tooth aspen
Prunus cerasifera	cherry plum
Prunus serotina	black cherry
Pyrus calleryana	callery pear
Quercus alba	white oak
Quercus coccinea	scarlet oak
Quercus montana	chestnut oak
Quercus palustris	pin oak
Quercus stellata	post oak
Quercus velutina	black oak
Robinia pseudoacacia	black locust
Salix alba	white willow
Salix babylonica	weeping willow
Sassafras albidum	sassafras

Scientific Name	Common Name
Taxodium sp.	cypress
Thuja occidentalis	northern white cedar
Tilia americana	American basswood

Hamshire Country Club

Planned Residential Redevelopment - Village of Mamaroneck, New York

Basal Area Calculations

Date: 04/09/2019

Trees to be removed

Size (inch)	Area (Square Feet)	Count	Basal Tree Area (Square Feet)
8	0.349	5	1.745
9	0.442	7	3.093
9.5	0.492	2	0.984
10	0.545	11	6.000
10.5	0.601	2	1.203
11	0.660	18	11.879
11.5	0.721	2	1.443
12	0.785	16	12.566
12.5	0.852	4	3.409
13	0.922	14	12.905
13.5	0.994	3	2.982
14	1.069	14	14.966
14.5	1.147	1	1.147
15	1.227	14	17.181
15.5	1.310	1	1.310
16	1.396	13	18.151
16.5	1.485	1	1.485
17	1.576	15	23.644
17.5	1.670	1	1.670
18	1.767	15	26.507
19	1.969	6	11.814
20	2.182	20	43.633
20.5	2.292	2	4.584
21	2.405	9	21.648
22	2.640	13	34.318
23	2.885	14	40.393
23.5	3.012	3	9.036
24	3.142	18	56.549
25	3.409	7	23.862
26	3.687	18	66.366
27	3.976	10	39.761
28	4.276	13	55.589
29	4.587	10	45.869
30	4.909	19	93.266

31	5.241	7	36.690
32	5.585	10	55.851
33	5.940	7	41.577
33.5	6.121	1	6.121
34	6.305	13	81.965
35	6.681	8	53.451
36	7.069	16	113.097
37	7.467	4	29.867
38	7.876	9	70.882
39	8.296	3	24.887
40	8.727	9	78.540
41	9.168	0	0.000
42	9.621	3	28.863
43	10.085	4	40.339
44	10.559	4	42.237
44.5	10.801	1	10.801
45	11.045	4	44.179
46	11.541	2	23.082
47	12.048	0	0.000
48	12.566	1	12.566
49	13.095	0	0.000
50	13.635	2	27.271
51	14.186	0	0.000
52	14.748	1	14.748
53	15.321	0	0.000
54	15.904	0	0.000
55	16.499	2	32.998
TOTAL		**432**	**1,580.968**

Proposed Trees

Size (inch)	Area (Square Feet)	Count	Basal Tree Area (Square Feet)	
2.5	0.034	62	2.113	Evergreen Trees
2.5	0.034	370	12.613	Shade Tree
TOTAL		**432**	**14.726**	

Proposed Trees after 10 years of growth*

Size (inch)	Area (Square Feet)	Count	Basal Tree Area (Square Feet)	
7.5	0.307	62	19.021	Evergreen Trees
7.5	0.307	370	113.515	Shade Tree
TOTAL		**432**	**132.536**	

* first two years no growth (coming out of transplantation stress)

growth rate 0.5" per year

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M Preliminary Stormwater Pollution Prevention Plan

Preliminary Stormwater Pollution Prevention Plan

Hampshire Country Club

Prepared for **Hampshire Recreation, LLC**
1500 Broadway, 25th Floor
New York, NY 10036
646-723-4750

Prepared By **Kimley Horn of New York**
1 North Lexington Avenue, Suite 1575
White Plains, NY 10601
914 368 9193

June 2015

Revised: ~~August 2018~~ April 2019

Michael W. Junghans, P.E.

New York License # 072072

Table of Contents

Attachments .....

Introduction and Instruction to Owner/Operator

This Erosion and Sediment Control / Pollution Prevention Manual has been developed as a base for the Stormwater Pollution Prevention Plan (SWPPP) to be prepared by the Owner/Operator as required under New York's State Pollutant Discharge Elimination System (SPDES) Permit for Construction Activites (GP-0-15-002). This manual provides the following information, as required for the SWPPP by the SPDES Permit:

- Site Description
- Development Description
- Drainage Characteristics
- Soil Characteristics
- Construction Phasing Information
- Pollution Prevention Practices
- Erosion and Sediment Control BMPs
- Operations and Maintenance Plans
- Grading, Drainage and Erosion Control Plans
- SPDES Permit and Fact Sheet
- Notice of Intent (NOI) Form (to be finalized and Certified by the Owner/Operator)
- Notice of Termination (NOT) Form
- Inspection Forms, Monitoring and Reporting Requirements
- Contractor Certification Form

The SWPPP must be prepared prior to filing of the Notice of Intent (NOI). If the SWPPP conforms to the Department's technical standards and the activities will not discharge a pollutant of concern to an impaired water or a TMDL watershed, authorization to discharge under this permit may occur five (5) business days after the date on which the NOI is received by the Department. For activities which do not comply with the technical standards or for construction site activities subject to a TMDL, authorization to discharge begins no sooner than sixty (60) business days from receipt of the NOI by the DEC unless notified otherwise. NOI forms can be found on the NYS DEC website (http://www.dec.ny.gov/) and must be mailed to the NYSDEC Central Office in Albany (Division of Water, 625 Broadway, 4th Floor, Albany, NY 12233-3505).

In order to complete the pre-construction SWPPP, the Owner/Operator must complete the following:

- Certify that they have read and understand the terms of the SPDES Permit.

- Review this manual and update and/or revise as necessary.
- Update location and types of erosion and sediment control materials as required by the site.
- Include designation letters to authorize implementation of the SWPPP.
- Designate areas for stockpiles, sanitary facilities, dumpsters, wash-down, lay-down and construction trailers and appropriate erosion and sediment control features (these can be hand drawn on a copy of the site plan).
- Designate project contact person(s) and include contact information.

The SWPPP is a dynamic document, and must be continually updated by the Owner/Operator throughout construction. This manual does not comprise a complete SWPPP. It is the responsibility of the Owner/Operator to update this manual and perform the activities herein, including, but not limited to:

- Post a sign at the site construction entrance that includes a copy of the Notice of Intent and a brief description of the project, location of the SWPPP, and a person to contact should the public want to review the SWPPP.
- Perform inspections and maintenance as designated in this manual, and as required as the project phases change.
- Prepare and certify inspection reports and include reports in the SWPPP.
- Update plans, as necessary, to denote major site changes and/or changes in the site BMPs.
- Update Plans to reflect changes in stockpile, sanitary facility, lay-down and other site areas.
- Maintain schedule of dates of major earthwork, stabilization and/or erosion control installations.
- Document any spills.
- Document off-site sedimentation resulting from this construction.

The Owner/Operator completed SWPPP must be updated throughout construction, until a Notice of Termination (NOT) Form has been submitted to the DEC. From the date of submital of the NOT form, the SWPPP documents must be maintained by the Site operator for a period of five years.

I

Notice of Intent (NOI) Form

The Department of Enivronmental Conservation must receive the completed NOI at least five (5) business days prior to the start of construction. Kimley Horn has supplied some of the information necessary for portions of this form. The remainder of the information must be completely filled out, reviewed, and submitted by the owner and construction site operator. The completed NOI Form must be certified and submitted by the owner/operator in order for it to take effect.

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-15-002

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
HAMPSHIRE RECREATION, LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
NAPPI

Owner/Operator Contact Person First Name
TOM

Owner/Operator Mailing Address
1500 BROADWAY 25TH FLOOR

City
NEW YORK

State
NY

Zip
10036 - ____

Phone (Owner/Operator)
917 - 547 - 2987

Fax (Owner/Operator)
___ - ___ - ____

Email (Owner/Operator)
TNAPPI@NWRADVISORS.COM

FED TAX ID
__ - _____ (not required for individuals)

Project Site Information

Project/Site Name
HAMPSHIRE COUNTRY CLUB

Street Address (NOT P.O. BOX)
1025 COVE ROAD

Side of Street
○ **North** ● **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
MAMARONECK

State: NY
Zip: 10543 -
County: WESTCHESTER
DEC Region: 3

Name of Nearest Cross Street
EAGLE KNOLLS ROAD

Distance to Nearest Cross Street (Feet)
100

Project In Relation to Cross Street
○ **North** ○ **South** ○ **East** ● **West**

Tax Map Numbers
Section-Block-Parcel
9-42-568

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting): 606273

Y Coordinates (Northing): 4532441

2. What is the nature of this construction project?

○ **New Construction**

● **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ● OTHER

Golf Course

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots
- ● TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
106.5	57.8	2.0	13.6

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ● **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	30 %	%	70 %

7. Is this a phased project? ● **Yes** ○ **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date / / - **End Date** / /

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name: Long Island Sound

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ● Other Type Off Site: Tidal

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-15-002? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-15-002? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ○ **Yes** ● **No** ○ **Unknown**

16. What is the name of the municipality/entity that owns the separate storm sewer system?

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ **Yes** ● **No** ○ **Unknown**

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ **Yes** ● **No**

19. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ● **No**

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ **Yes** ● **No**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● **Yes** ○ **No**

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● **Yes** ○ **No**
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● **Yes** ○ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
KIMLEY HORN OF NEW YORK

Contact Name (Last, Space, First)
JUNGHANS, MICHAEL

Mailing Address
1 N LEXINGTON AVENUE

City
WHITE PLAINS

State NY Zip 10601 -

Phone 914 - 368 - 9200

Fax - -

Email
MIKE.JUNGHANS@KIMLEY-HORN.COM

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-15-002. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
MICHAEL

MI
W

Last Name
JUNGHANS

Signature

Date / /

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ✓ Silt Fence
- ✓ Stabilized Construction Entrance
- ✓ Storm Drain Inlet Protection
- ✓ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ✓ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ✓ Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ○ **Preservation of Undisturbed Areas**
- ○ **Preservation of Buffers**
- ☑ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

		1	.	7	2	7	**acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)		and/or	
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
☑ Infiltration Basin (I-2)	12.305		
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
☑ Bioretention (F-5)	1.723		
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
○ Pocket Pond (P-5)			
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ **Hydrodynamic**	
○ **Wet Vault**	
○ **Media Filter**	
○ **Other**	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

1.6 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.666 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

0.127 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).

1.727

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required . **acre-feet**

CPv Provided . **acre-feet**

36a. The need to provide channel protection has been waived because:

● Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development . **CFS**

Post-development . **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development . **CFS**

Post-development . **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- (●) Site discharges directly to tidal waters or a fifth order or larger stream.
- ( ) Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? (●) **Yes** ( ) **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Home Owner Association

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ○ None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ◉ **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ◉ **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: TOM

MI:

Print Last Name: NAPPI

Owner/Operator Signature:

Date: / /

II

Contractor Certifications and Designation Letters

It is a requirement of the SPDES Permit that all those implementing the SWPPP certify that they have read and understand the permit. Certification Forms are included in this manual.

In addition, those implementing the SWPPP must be certified as designees of the contract firm's owner as described in Part III, Subsection A of the SPDES Permit. A copy of the New York State SPDES Permit GP-0-15-002 is included in Section XII of this manual.

CERTIFICATION OF PROJECT CONSTRUCTION CONTRACTORS

Hampshire Recreation, LLC
1500 Broadway, 25th Floor
New York, NY 10036

The following certification shall be signed by each contractor and subcontractor responsible for on-site activities, or any other subcontractor who will perform any action that may reasonably be expected to cause or have the potential to cause pollution of the waters of New York.

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings. "

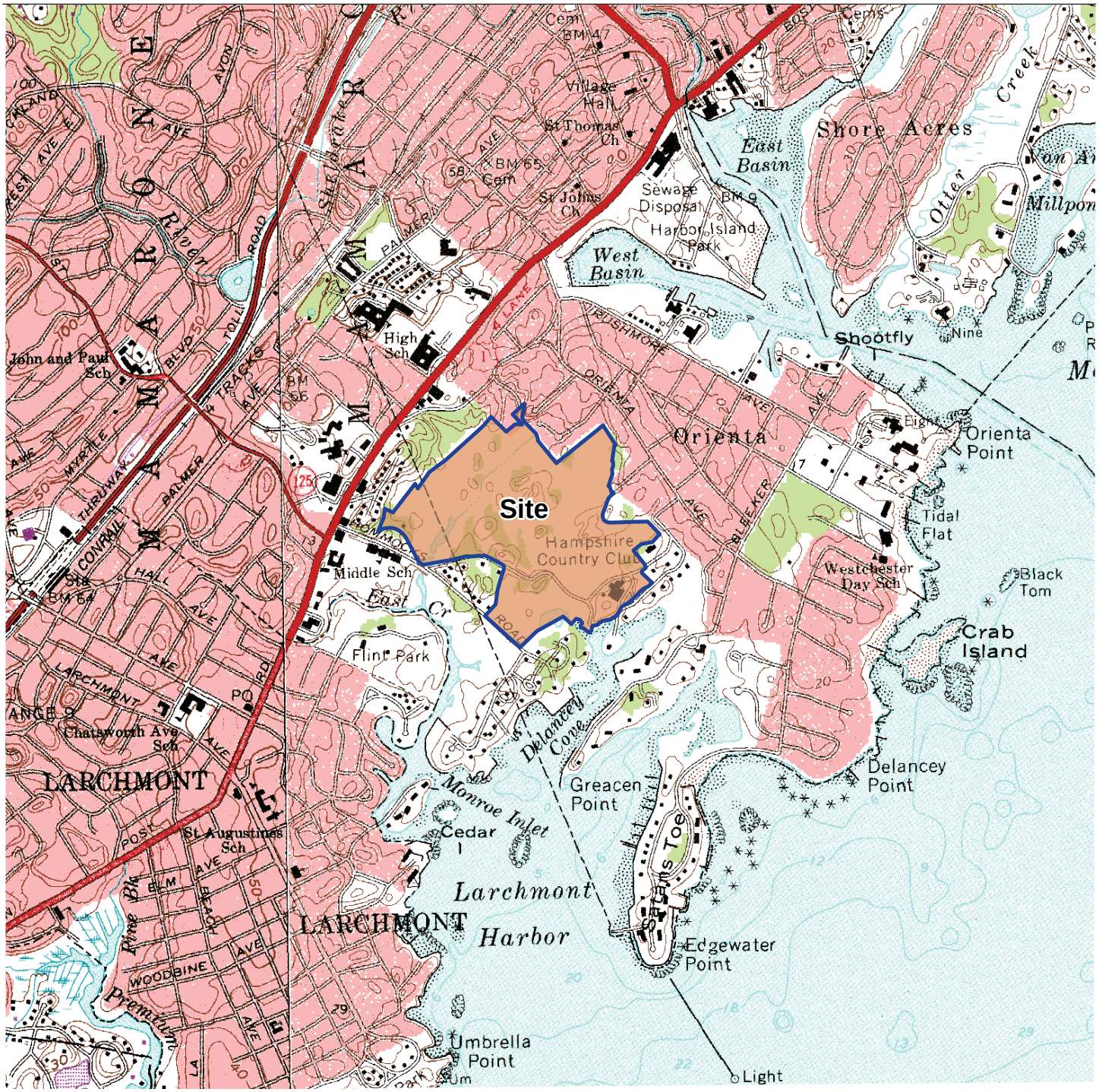
Owner/Operator	**Contractor**	**Subcontractor**
_____	_____	_____
Signature and Date	Signature and Date	Signature and Date
_____	_____	_____
Title	Title	Title
_____	_____	_____
_____	_____	_____
_____	_____	_____
Company and Address	Company and Address	Company and Address

Subcontractor	**Subcontractor**	**Subcontractor**
_____	_____	_____
Signature and Date	Signature and Date	Signature and Date
_____	_____	_____
Title	Title	Title
_____	_____	_____
_____	_____	_____
_____	_____	_____
Company and Address	Company and Address	Company and Address

III
Project Figures

Figure 1. Site Location Map

Figure 2. FEMA Floodplain Map

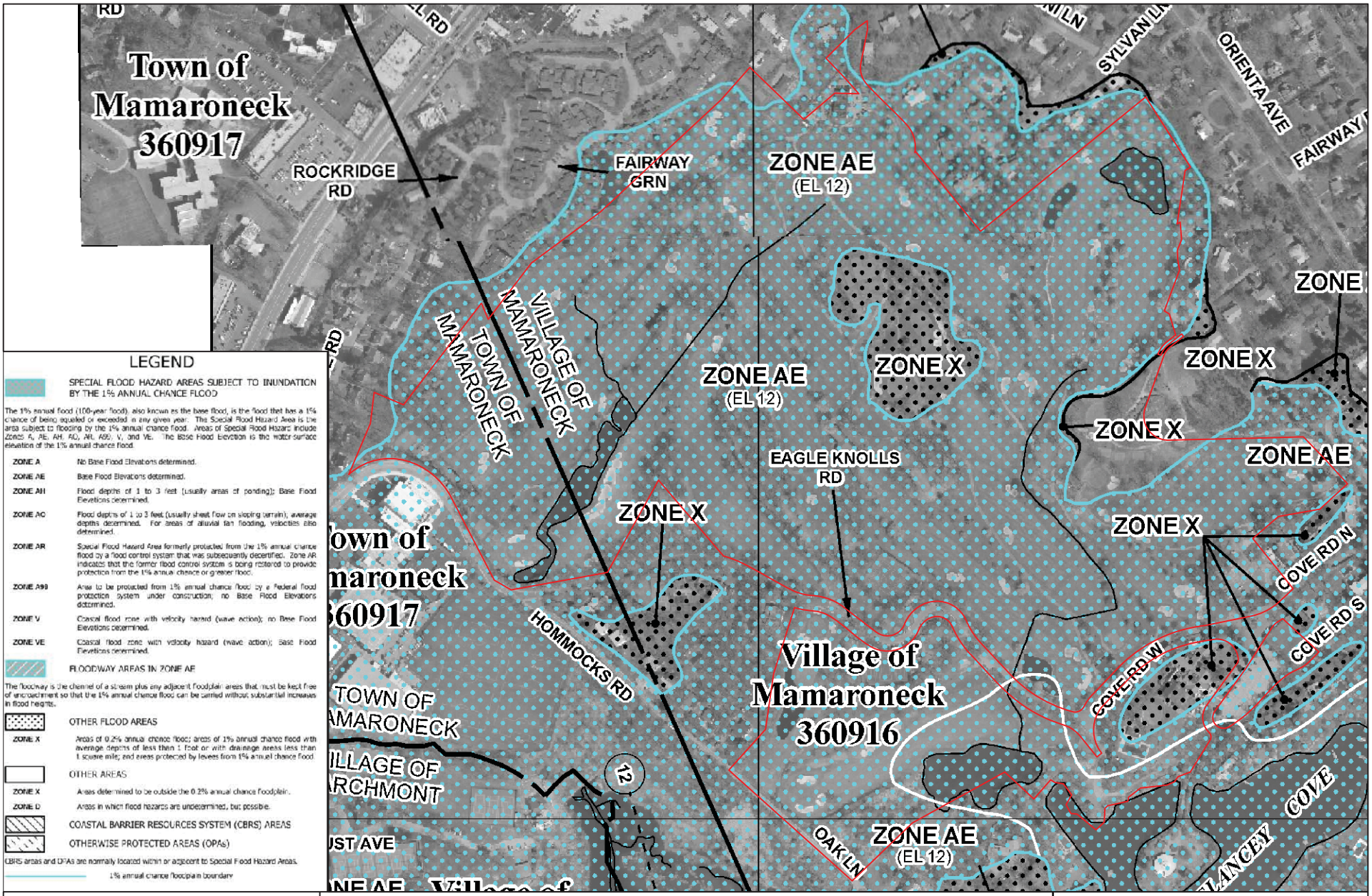


SOURCE: USGS Mamaroneck, New York

HAMPSHIRE COUNTRY CLUB
Village of Mamaroneck, New York

Site Location Map

Figure
1



NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

Figure 2

FEMA FLOOD MAP

Source: FEMA Flood Map
Scale: 1" = 450'

NORTH

Hamshire Country Club

IV
Project Description

Site Location and Summary

The site is located in the southern portion of the Westchester County in the Town of Mamaroneck and Village of Mamaroneck, NY. It's also situated just north of the Long Island Sound. The project is not located within a Total Maximum Daily Load (TMDL) watershed nor does it discharge into a 303(d) listed waterbody. The site location is shown on Figures 1 and 2. As outlined in Chapter 3P, Historic and Cultural Resources, no significant cultural resource sites, buildings, structures, or objects were identified within the Project Site and therefore the Proposed Action would not impact historic properties, in accordance with Part I.F.8 of the SPDES General Permit

Existing Conditions

Currently, the subject site consists of a golf course and a club house. The site is approximately 94.5 acres (R-20 zone) of which approximate 2.7 acres is impervious. The rest are golf course, overgrown and grass areas.

Existing on the Project Site is a system of seven ponds, two vegetated marshlands, drainage pipes, and several drainage ditches that channel runoff away from the property and toward the Long Island Sound. Ponds are located across the Project Site, including two ponds to the northeast; one long pond in the Town of Mamaroneck portion of the Project Site; one pond at the border between the existing golf course and the Fairway Green townhomes; and several ponds at the southern end of the Project Site that connect directly to the Long Island Sound. Two drainage ditches are located on the northwest portion of the Project Site, connecting the northeast ponds. Another series of ditches are located on the eastern and southern portions of the Project Site. The southern ponds discharge to an existing drainage ditch the to the west through a culvert under the existing Eagle Knolls Road ultimately to the tide gates in Delancey Cove. Under the proposed condition the culvert under the Existing Eagle Knolls Road will remain and the vacated portion of Eagle Knolls Road will be converted to a pathway. The ponds and man-made drainage ditches have well defined, rock-lined edges, and serve a dual function as drainage infrastructure and water hazards for the golf course. A network of underground pipes connects the surface water features described above.

There are two sets of existing tide gates on the Project Site. At the southwestern end of the Project Site near Hommocks Road, there are two existing flood gates and at the southeastern end of the Project Site near the intersection of Cove Road and Eagle Knolls Road there are three existing tide gates. These tide gates control the input and output of water between the Project Site and Delancey Cove which is tributary to the Long Island Sound. During high tide, the tide gates will close to prevent tidal water from entering the Project Site. After the tidal waters recede, the tide gates will open to release any flooding within the Project Site. The tide gates are sized for a typical tide, not a tidal storm event. Both sets of tide gates were inspected and documented.

The two tidal gates at the southwestern end of the Project Site near Hommocks Road were inspected from the southwestern-most pond on the Project Site to two chambers that are adjacent to the Hommock's School sports fields, to the outfall at Delancey Cove that is adjacent to the Larchmont Flint Park. Both tidal gates, which are located in a subgrade vault, appear to be in fair condition and function properly per the golf course manager in both the low and high tide conditions. The applicant performs routine maintenance and upkeep of the flood gates to assure that that the gates are fully functional at all times.

The three tidal gates at the southeastern end of the Project Site near the intersection of Cove Road and Eagle Knolls Road were inspected from the southeastern-most pond on the Project Site to the outfall at Delancey Cove which is located southwest of the existing Clubhouse. All three tidal gates appear to be in fair condition and function properly per the golf course manager in both the low and high tide conditions. The applicant performs routine maintenance and upkeep of the flood gates to assure that that the gates are fully functional at all times.
In general, the site rainfall runoff drains toward the golf course and then drain to two discharge points (Point A and B) before eventually drain to the Long Island Sound. Discharge point A is at the existing pond where Hommocks Road and Eagle Knolls Road intersect. Discharge point B is at existing pond located at southeast of the property next to Delancey Cove. Refer to Attachment D1 for existing drainage map.

According to the Flood Insurance Rate Map (FIRM) prepared by Federal Emergency Management Agency (FEMA) includes as Figure 2, the project site is located within the 100-year tidal floodplain. [FIRM map number 36119C0361F, effective date September 28, 2007].

According to the NRCS soil survey for Westchester County, NY, majority of the golf course (59%) is hydrology soil group D. The rest of the site is hydrologic soil group B. USDA soils report is included in attachment C.

Proposed Conditions

The property is intended to be developed into a planned residential development (PRD) containing 44 unit of single family subdivision and 61 unit carriage homes. The existing club house will be remained under proposed conditions.

The proposed project will consist of approximately 13.56 ac. of impervious area of which 12.18 ac is new impervious area. The total disturbance area of the development is approximate 57.8 acres.

Runoff from the proposed development will be collected via the proposed drainage system along the proposed roads. The runoff will then be discharged to the proposed two infiltration basins and three bioretention basins for water quality treatment. The two infiltration basins range from approximately 9,900 square feet to 16,100 square feet. The three bioretention basins range from approximately 700 square feet to 3,500 square feet. Continuous deflective system (CDS) units are proposed as pre-treatment for the infiltration basins. Stone diaphragms are proposed as pre-treatment for the bioretention basins.

Bottom of the infiltration basins are not located on fill soil and have at least three feet of vertical separation from ground water.

Refer to attachment D2 for details water quality calculations.

Runoff from proposed development will drain toward the same discharge point A and B as under existing conditions. Refer to attachment D1 for proposed drainage map. There is a reduction in contribution drainage area to discharge point A under proposed conditions which offset the increase in peak rates of runoff due to the development. Thus, resulting in decreases of 100-year peak rate at discharge point A from 116 cfs (existing) to 113 cfs (proposed).

Increase in contribution drainage area to discharge point B under proposed development will increase the peak rate runoff to discharge point B. The 100-year peak rate increases from 189 cfs (existing) to 222 cfs (proposed). The drainage channel draining from the site to Delancey Cove would have to be modified to have minimum 10 feet wide by 4 feet deep in order conveyed the increase in peak flowrate. Refer to Attachment H for channel improvement details. The existing culvert under the Eagle Knolls Road will be ~~evaluated for its capacity to handle the increase of runoff from the proposed development. If found to be undersized, it will be~~ replaced with 10 feet wide by 4 feet deep box culvert matching the proposed channel size. Two 5'W by 3'H box culverts are proposed across the realigned Cove Road to make sure runoff can flow freely between the low laying area within drainage area draining toward Study Point B. (Refer to Proposed Drainage Area Map in Attachment D1 for illustration.

Since the onsite runoff is discharging into the tidal water (Long Island Sound), channel protection volume (CPv), overbank flood control (Qp) and extreme flood control (Qf) are not required as per Chapter 4 of New York State Stormwater Management Design Manual (NYS-SMDM).

Six Step Process for Stormwater Site Planning and Practices Selection

The NYS Stormwater Management Design Manual (SMDM) required a six-step process that integrates site planning, usage of green infrastructure practices and standard stormwater management practices to treat stormwater. The stormwater management design is based on the NYSDEC design guideline. The six steps process are:

1. Site Planning to preserve natural area and reduce impervious cover,
2. Calculate initial required Water Quality Volume for the site,
3. Provide Runoff Reduction by incorporating green infrastructure technique and standard stormwater management practice (SMP) with Runoff Reduction Volume (RRv) capacity,
4. Calculate minimum RRv required,
5. Provide standard SMP's to treat remaining portion of water quality volume (WQv) not addressed by green infrastructure and stanrdard SMP's with RRv capacity, and
6. Provide volume and peak rate control practices where required.

Following further discuss each of the six steps process in details.

Step 1: Site Planning

During site planning process, the designer try to conserve natural resources and reduce proposed impervious coverage to reduce the impact of water quality from proposed development.

Preservation of Natural Resources includes:

- Preservation of undisturbed areas
- Minimizing site clearing and grading
- Avoiding sensitive area
- Open space design

Reduction of impervious coverage includes:

- Roadway reduction
- Sidewalk reduction
- Driveway reduction
- Building footprint reduction
- Parking reduction

Step 2: Required Water Quality Volume (WQv)

Required WQv was calculated for the site based on 90% rule as per Chapter 4 of New York State Stormwater Management Design Manual (NYS-SMDM). Following equation is used to calculate the water quality volume:

$$WQv\ (ac\text{-}ft) = \frac{(P)(Rv)(A)}{12}$$

Where: P = 90% Rainfall Event = 1.5 inches
Rv = 0.05 + 0.009(I)
I = Percentage of impervious cover
A = Drainage area in acres

Step 3: Runoff Reduction Volume (RRv)

RRv requirement can be achieved through application of green infrastructure and standard SWM with runoff reduction capacity. If RRv provided by these techniques is greater than the required WQv, the RRv requirement is met. However if the RRv is less than the required WQv, the designer must at a minimum, reduce a percentage of the runoff from impervious areas to be constructed on site.

Step 4: Minimum Runoff Reduction Volume (RRv)

The percent reduction is based on the Hydrologic Soil Groups present on the site, and is determined by the Specific Reduction Factor (S). The following equation is used to determine the minimum runoff reduction volume:

$$RRv\ (ac\text{-}ft) = \frac{(P)(Rv^*)(Ai)}{12}$$

Where: P = 90% Rainfall Event in inches
Rv* = 0.05 + 0.009(I) = 0.95 where I is 100% impervious
Ai = (S)(Aic) = impervious cover targeted for runoff reduction
(Aic) = total area of new impervious cover
S = hydrologic soil ground (HSG) specific reduction factor (S)

The hydrologic soil ground for the site consists of HSG B and D. The Specific Reduction Factor (S) is 0.4 and 0.2 for HSG B and HSG D respectively.

Below are the list of green infrastructure techniques and or standard SMP with runoff reduction capacity and an evaluation of its use for this project.

Conservation of Natural Area

Conserving the natural area can avoid the unnecessary disturbance of the natural soil and maintain the water quality. The proposed development is located at the existing golf course which the natural soil has already been disturbed. This method is not applicable for runoff reduction calculation

Sheetflow to Riparian Buffers / Filter Strips

The wetlands and surrounding area will remain undisturbed to allow runoff sheet flow toward the wetlands.

Vegetated Open Swales

Most of the runoff from proposed building surrounding pervious area is sheet flowing toward the proposed road which encourage the runoff reduction. These areas might consist of minor vegetated swales. However no RRv credit was taken for this green infrastructure technique to be conservative.

Tree Planting/Tree Box

There are many trees that will be planted for the site however the no RRv credit was taken due to its minor contribution to the calculation and is a more conservative approach.

Disconnection of Rooftop Runoff

The proposed buildings roof runoff will be drained to drywells for runoff reduction..

Stream Daylighting

RRv is not applied for this green infrastructure technique because there is no onsite stream to be daylight.
Infiltration Basin/Dry WellInfiltration basins and dry wells are proposed to treat the entire required WQv for the proposed development. Roof runoff will be drained to the drywells; driveways and roadway runoff will be drained to the infiltration basins. The runoff is temporarily stored and infiltrated through the soil within the infiltration basins and dry wells.

Green Roof

This green infrastructure technique is not applied for the project because the disconnection of rooftop runoff method has been applied for the RRv.

Stormwater Planters

This green infrastructure technique are typically suitable for urban redevelopment site which is not the case for this project site. There are many tree will be planted for the site however no RRv credit was taken due to its minor contribution to the calculation and is a more conservative approach.

Rain Barrels/Cisterns

Since the proposed development is a subdivision project. The usage of rain barrels are very dependable to the preference of the building future owner. Therefore this green infrastructure is not applied for RRv.

Porous Pavement

Porous pavement will be considered at the proposed building driveways and parking lot next time lot 3 depending on their feasibility.

Step 5: Water Quality Volume by Standard Stormwater Management Practice

Required water quality volume is treated by standard stromwater management practices or stormwater management manufactured treatment device certified by NYSDEC. Following are the stormwater management practices applied to the project.

i Infiltration Basin

Infiltration basin are infiltration practices to temporarily store and infiltrate the WQv into the soil.

ii Bioretention Basin

Bioretention basin is a filtering practices to temporarily store the WQv and filter it through a special engineering soil mixture.

Step 6: Volume and Peak Rate Control Practices

Since the onsite runoff is discharging into the tidal water (Long Island Sound), channel protection volume (CPv), overbank flood control (Qp) and extreme flood control (Qf) are not required as per Chapter 4 of New York State Stormwater Management Design Manual (NYS-SMDM).

General Project Construction Stages

Site development will occur in three overlapping stages:

1. Site Preparation,
2. Construction, and
3. Final grading and Stabilization.

On site soil disturbance shall be limited to 5-acres at any time. Authorization will be obtained from the Village or NYSDEC if soil disturbance of more than 5-acres is needed. Refer to Attachment G for phasing plan.

Site Preparation Stage

Prior to beginning any construction activities, construction fences will be installed as shown on the attached project plans. Silt fencing and/or hay bale barriers will be entrenched to eliminate sediment underflow. Fencing will be placed around trees to be protected and will be at a minimum at the drip line of the longest branches. The erosion control barriers will be inspected and maintained routinely throughout the duration of the project. Following the installation of erosion and sediment controls, the site grading and excavation will occur.

The following steps will be followed to ensure that the controls are installed correctly and will be effective.

Resource Protection

- Evaluate, mark and protect important trees and associated rooting zones, wetlands, on-site septic systems absorption fields, etc.
- Fencing will be placed around trees to be protected and will be at a minimum at the drip line of the longest branches.
- Protect existing vegetated areas suitable for filter strips, especially in perimeter areas.
- Protect stream buffers and phasing lines as neccessary.

Surface Water Protection

- Identify the drainage area in the plan. Divide the site into natural drainage areas.
- Divert the off-site clean runoff from entering disturbed areas.
- Identify bodies of water located either on site or in the vicinity of the site.
- Plan appropriate practices to protect on-site or downstream surface water and its buffer.