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SWPPP

Stormwater Pollution Prevention Plan Prepared in accordance with NYS DEC General Permit GP-0-20-001

for:

KOA Riverside

Owner/Operator(s):

Kampgrounds of America 550 N 31st Street Billings, MT 59101

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- A Notice of Intent (NOI) & MS4 Acceptance Form
- B Stormwater Management Report and Hydro CAD
- **C** Map Set Location Map and Construction Drawing
- **D SWPPP Inspection Forms** –SWPPP Inspection Report
- **E Other SWPPP Forms** Construction Sequence, SWPPP Plan Changes, Spill Response Form, Stormwater Management Practice Maintenance Log
- F SPDES General Permit GP-0-20-001
- **G** Historic Preservation/Endangered Species Documentation
- H Deep Ripping and De-compaction (DEC, 2008)

1.0 PERMIT OVERVIEW AND REQUIREMENTS

1.1 Permit Overview

This Stormwater Pollution Prevention Plan (SWPPP) is prepared to inform the landowner and construction personnel of the measures to be implemented for controlling runoff and pollutants from the site during and after construction activities. The objective of this plan is to comply with the New York Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities, Permit No. GP-0-20-001 requirements. Any material conflicts between this plan and the site plans, specification or instructions, must be brought to the attention of the design professional. The project may have other permits and it is the responsibility of the owner and contractor to know and understand all permits.

The operator will be issued a bill from New York State for a one hundred and ten dollar (\$110.00) <u>annual</u> fee for the open GP-0-20-001 permit. The operator will also be billed by New York State for a one time one hundred and ten dollar (\$110.00) per acre fee for the proposed disturbed soil area listed in the NOI, and finally a one time six hundred and seventy five (\$675.00) per acre fee for the proposed increased impervious area listed in the NOI.

The operator is responsible to maintain onsite in a secure location that is accessible during normal working hours to an individual performing a compliance inspection, the following information:

- \checkmark the Notice of Intent (NOI),
- ✓ the NYS Department of Environmental Conservation NOI Acknowledgement Letter,
- \checkmark the SWPPP,
- ✓ a copy of the General Permit (included in the SWPPP),
- ✓ MS4 SWPPP Acceptance Form (where applicable), and
- ✓ all inspection reports.

Technical standards are detailed in the "New York State Standards and Specifications for Sediment and Erosion and Sediment Control (November 2016)", as well as illustrated on the Construction Drawings included in **Appendix C**. The design of post-construction stormwater control practices follow the guidance provided by "New York State Stormwater Management Design Manual."



2.0 SWPPP REVIEW, UPDATE

2.1 SWPPP Review

Applicable Federal, State, and local regulatory agencies that have jurisdiction may elect to review this SWPPP and notify the permittee in writing that the SWPPP does not meet the requirements of their regulations. If the SWPPP needs to be revised, the permittee and the site contractor will make the required modifications within seven days of such notification and submit written certification to the notifying agency that the changes have been implemented. A copy of the SWPPP will be kept available on site for review by regulatory agencies, engineers, and subcontractors.

This Project is in the Town of Wilmington which is not a regulated Traditional Land Use Control MS4 Community.

2.2 SWPPP Update

The permittee identified in this SWPPP shall amend the SWPPP under the following conditions:

- ✓ Whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater discharge from the site
- ✓ Whenever there is a change in design, construction or operation that could have an effect on the discharge of pollutants
- ✓ To address issues or deficiencies identified during an inspection by the qualified inspector, the Department or other regulatory authority
- ✓ To identify a new subcontractor that will implement any part of the SWPPP.

If modifications are required to the post-stormwater management practices and the Project is within a regulated, traditional land use control MS4, the owner or operator of the Project must notify the MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP. Unless otherwise notified by the MS4, the owner or operator shall have the SWPPP amendments or modifications reviewed and accepted by the MS4 prior to commencing construction of the post-construction stormwater management practice. The SWPPP PLAN CHANGES, AUTHORIZATION, AND CHANGE CERTIFICATION form (Appendix E) must be filled out and a copy retained onsite during construction.

If modifications are required to the post-stormwater management practices and the Project is not within a Regulated, Traditional Land Use Control MS4, the changes shall be documented in the SWPPP kept onsite.



3.0 SITE ASSESSMENT, EVALUATION AND PLANNING

3.1 **Project Location**

The Project is located at the existing North Pole Camping Resort at 5644 NYS Route 86 in the Town of Wilmington, Essex County, NY 12997. See **Appendix C** for a general site location map.

3.2 **Pre-Development Conditions**

The site currently holds the North Pole Camping Resort which consist of motel, general store, several maintenance buildings, cabins, RV campsites with gravel pads, two pools, asphalt drives, and parking lots. The cover type in the proposed area of disturbance is a mixture impervious, forested, and grass cover.

3.3 Project Type

This project is a mixture of new development and redevelopment and has been designed in accordance with Chapter 4 and 9 of the NYSDEC Stormwater Management Design Manual and NYSDEC's General Permit (GP-0-20-001) for construction activities.

3.4 Project Scope

The Project includes the construction of a new registration building, bath house, maintenance and laundry building, 50 campsites, a pool, asphalt drives, and parking lots. The remainder of the proposed site improvements includes construction of site lighting, landscaping, stormwater controls, and utility connections. The Project Site represents the area that will be disturbed as a result of the Project.

3.5 Historic Preservation Determination/Endangered Species

According to the NYS CRIS mapper the project is not located at or near an archeological or historic resource. Therefore, this project is not anticipated to negatively impact those resources. A copy of the CRIS map can be found in **Appendix G**.

The NYSDEC Environmental Resource Mapper shows that this project is not within an area of state regulated wetlands, significant natural communities, or rare plants or animaSWPIs. A wetland delineation was performed by the LA Group and determined boundaries of wetlands along the Ausable River on the east side of the site. The NYSDEC Environmental Mapper map and Wetland Delineation Report is included in **Appendix G**.



3.6 Receiving Waters

Site runoff discharges to the Ausable River.

3.7 Soils

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the area including and surrounding the Project Site is comprised of Colton very gravelly loamy sand. The hydrological soil group classification for this soil is 'A'.

Deep hole test pits and falling head permeability test were conducted by The LA Group on June 6, 2022. The Soils Report along with the Deep Hole Test Pit Report can be found in **Attachment A** of the Stormwater Management Report.

4.0 EROSION AND SEDIMENT CONTROL

4.1 Erosion and Sediment Control Practices

Temporary Structural Practices

- ✓ Silt Fence
- ✓ Stabilized Construction Entrance
- ✓ Concrete Washout
- ✓ Inlet Protection

Permanent Structural Controls

- ✓ Grading
- ✓ Rock Outlet Protection

Temporary Stabilization Practices (including vegetative practices)

 Stabilization shall be initiated by the end of the next business day and be completed within 14 days.

Permanent Stabilization Practices (including vegetative practices)

✓ Seed and mulch all disturbed areas. Slopes that are 3:1 or steeper should receive a Rolled Erosion Control Product (RECP), sodding, and or hydroseeding a homogenous mixture of wood fiber mulch with tackifying agent.

Refer to Construction Drawings attached in **Appendix C** for detailed information on each practice.

4.2 Erosion and Sediment Control Drawings

Erosion and Sediment Control practices are shown on Construction Drawings included in **Appendix C**.



4.3 Construction Phasing Plan and Sequence of Operations

The project will not disturb less than five acres at a single time.

- Temporary structural erosion controls will be installed prior to earthwork as per the attached plans.
- ✓ Areas to be undisturbed for more than 14 days will be temporarily stabilized by seeding.
- Disturbed areas will be reseeded and mulched immediately after final contours are re-established and no more than 14 days after the completion of construction at that site.
- Temporary erosion control devices will not be removed until the area served is stabilized by the growth of vegetation and the area is certified as being stabilized by the Erosion Control Superintendent.

| Construction Activities | Start → Stop | |
|--|------------------------|--|
| Sequence must include major items such as, but not limited to, clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity resulting in soil disturbance. Include installation of erosion and sediment control practices and timing of installation. | | |
| Install silt fence and construction entrance | Week 1 | |
| Clear site and rough grade | Weeks 2-5 | |
| Begin utility installation | Weeks 5-8 | |
| Begin building construction | Weeks 9- completion | |
| Begin parking lot and campsite construction | Weeks 8-15 | |
| Monitor/maintain erosion and sediment control measures | Ongoing | |
| Remove erosion and sediment control measures upon stabilization of contributing areas | Ongoing | |

4.4 Erosion and Sediment Control Practice Maintenance

✓ Silt fence – maintenance shall be performed as needed and material removed when "bulges" develop in the silt fence.



- ✓ Stabilized construction entrance entrance shall be maintained in a condition which shall prevent tracking. This may require periodic top dressing with additional aggregate. All sediment tracked onto or spilled on public rights of way shall be removed immediately. When necessary, wheels must be cleaned to remove sediment prior to entrance on public rights of way. When washing is required, it shall be done in an area stabilized with aggregate and wash water shall be directed away from streams or wetlands preferably to a broad grassed area or a stormwater pond.
- Rock outlet protection once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap. Repair should be immediate.
- $\checkmark\,$ Replace top-soil, mulch and seed where seeding has been disturbed.

4.5 Erosion and Sediment Control Inspection

- It is recommended that a rain gage be installed at the site.
- A qualified inspector shall conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP and required by GP-0-20-001 have been adequately installed to ensure overall preparedness of the site for commencement of construction.
- This qualified inspector must be a Licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received 4 hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the qualified inspector shall receive 4 hours of training every 3 years.
- The day-to-day erosion control activities on the site will be monitored by the construction manager. The qualified inspector (as defined by the NYS DEC SPDES regulations) and his crews will make *at least one inspection every seven (7) days* of erosion control devices, and non-stabilized areas during construction. A maintenance inspection report will be completed by the qualified inspector after each inspection. The report form to be completed by the inspector is attached in **Appendix D.** Reports should be compiled and maintained on-site in the SWPPP 3-ring binder.
- All measures will be maintained in good working order; if repair is necessary, it will be initiated within 24 hours of report. The qualified inspector shall take photographs of any needed repairs and also photograph when the repairs are completed. These photographs will



be time and date stamped and attached to the weekly inspection report.

- Seeded and planted areas will be inspected for bare spots, washouts, and healthy growth. If necessary, spot reseeding or sodding will be implemented.
- A trained contractor will be an employee from the contracting company responsible for the implementation of the SWPPP. This person will be onsite when any soil disturbing activities are being conducted. The trained contractor must have received 4 hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the qualified inspector shall receive 4 hours of training every 3 years. This trained contractor cannot conduct the regular SWPPP compliance inspections unless they meet the qualified inspector qualifications.

4.6 Contractor Sequence Form

The operator shall prepare a summary of construction status using the Construction Sequence Form (included in **Appendix E**) once every month. Significant deviations to the sequence and reasons for those deviations (i.e. weather, subcontractor availability, etc.), shall be noted by the contractor. The schedule shall be used to record the dates for initiation of construction, implementation of erosion control measures, stabilization, etc. A copy of this table will be maintained at the construction site and updated.

5.0 POST CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

5.1 Stormwater Management Controls

The proposed Post Construction Stormwater Management controls on this project are listed below:

- ✓ Porous Pavement
- ✓ Stormwater Planter
- ✓ Bioretention Basin
- ✓ Infiltration Trench
- ✓ Underground Detention Pipes

5.2 Green Infrastructure Practices/Runoff Reduction Techniques

The proposed Green Infrastructure practices or Standard Management practices with Runoff Reduction capabilities on this project are listed below:

- ✓ Porous Pavement
- ✓ Stormwater Planter



- ✓ Bioretention Basin
- ✓ Infiltration Trench

The provided runoff reduction volume (RRv) is 0.139 ac-ft, which is greater than the minimum water quality volume (WQv), 0.130 ac-ft.

Soil Restoration

Excessively compacted areas and areas of cut and fill on the Project Site will have soil restoration applied as needed and as specified in the table below. Attached in Appendix H is "Deep Ripping and De-compaction, (DEC 2008)." This methodology should be followed for soil restoration as specified in the table below:

| Type of Soil Disturbance | Soil Restoration Requirement | | Comments/Examples |
|--|---|---------------------------------------|---|
| Minimal Soil Disturbance | Restoration not permitted | | Preservation of Natural Features |
| Areas where topsoil is stripped only-no change in grade | Restoration not required | | Clearing and Grubbing |
| | HSG A& B | HSG C & D | |
| Areas of cut and fill | apply 6 inches of topsoil | Aerate* and apply 6 inches of topsoil | |
| Heavy traffic areas onsite (especially in a zone 5-25 feet | HSG A& B | HSG C & D | |
| around buildings, but not within a 5 foot perimeter around foundation walls) | Aerate and apply 6 inches of topsoil | Apply full Soil Restoration** | |
| Areas where Runoff Reduction and/or infiltration practices are applied | Restoration not required, but may be applied to enhance the reduction specified for appropriate practices | | Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area. |
| | | | |

*Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler **Per "Deep Ripping and Decompaction, DEC 2008"

- If compost amendment is required, 2 to 4 inches of screened compost will be incorporated into the soil.
- Prior to application of the deep-ripping and de-compaction, the depth to bedrock or naturally occurring hardpan should be known so that the depth of tillage be adjusted according to those restrictive depths.
- Soils with a slope that exceeds 10% will not have full soil restoration with deep-ripping and de-compaction due to potential for erosion from tilled soil.
- Any soil tillage (deep or shallow) will not be done on soils that are excessively wet, as this will damage the soil.



- Any tillage will not be done within approximately 10' of the drip-line of any existing established trees.
- Any large stones that are unearthed during tillage should be removed from the surface prior to final surface preparation and vegetation establishment.

5.3 Post Construction Stormwater Management Drawings

Post construction stormwater management controls are shown on Construction Drawings included in **Appendix C**.

5.4 Hydraulic and Hydrologic Analysis

The program utilized for quantifying stormwater runoff rates and volumes was *HydroCAD* software, produced by Applied Microcomputer Systems of Chocorua, NH. The SCS 24-hour Type II design storms for 1, 10, and 100-year frequency rainfall were analyzed.

- ✓ Hydrologic/hydraulic analysis for all structural components of the stormwater control system for the applicable design storms (see Appendix B).
- Comparison of post-development stormwater runoff conditions with predevelopment conditions (see Appendix B).
- Dimensions, material specifications and installation details for each postconstruction stormwater control practice (see Appendix B and C).

5.5 Comparison of Pre and Post Construction Stormwater Runoff

Stormwater Quantity. These calculations are based on the HydroCAD analysis.

| | Pre Development | Post Development |
|------------------------------|-----------------|------------------|
| 10 year, 24 hour storm (Qp) | 0.50 CFS | 0.49 CFS |
| 100 year, 24 hour storm (Qf) | 5.77 CFS | 5.77 CFS |

Water Quality Volume Calculations

The following was utilized to determine water quality volume:

 $WQ_V = (P) (R_V)(A)$ 12

Where:

WQv= Water Quality Volume (acre/feet)

P = 90% Rainfall Event

 $R_V = 0.05 + 0.009(I)$ where I is impervious cover in percent

A = Subcatchment area in acres



| | Required | Provided |
|----------------------------|-------------|-------------|
| Water Quality Volume (WQv) | 0.130 AC FT | 0.175 AC FT |

6.0 POST CONSTRUCTION STORMWATER MAINTENANCE

6.1 Maintenance to be Performed

Kampgrounds of America will be responsible for long term maintenance of all post construction stormwater management facilities.

Post-construction maintenance for this project will consist of regular inspections of permanent stormwater management facilities and steep slopes. These maintenance procedures are essential to assure continual performance of the stormwater management practices on your site. During the inspection and any maintenance activity to the stormwater management practices, the responsible party should fill out an inspection and maintenance log (Appendix E) to record that it was done.

Catch Basins (All)

- Sediment removal with a vacuum truck should be done at least once a year, preferably after spring runoff and then in early fall, or when they are at 50% capacity, whichever comes first.
- Any mechanical valves should be operated for inspection every two months.

Underground Detention Pipes

- The systems should be inspected quarterly for the first year and if there are no problems, the system can be inspected annually after the first year.
- If sediment is accumulating on the bottom of the system, pump in water via a flushing port or observation well and then pump the sediment laden water out via the flushing port or the inlet. This can be done with a vacuum truck. The system may have to be flushed multiple times until it is clean of sediment.
- Also, the manifold feeding the pipe storage should be flushed by pumping water in the manhole access and out the flushing port. This should be done during the routine inspection.

Stormwater Planter / Bioretention Basin

- Clean trash and debris out of system as necessary
- Dead or diseased vegetation should be replaced
- When the filtering capacity of the filter diminishes substantially (when water ponds for more than 48 hours), the top few inches of discolored material shall be removed and be replaced with fresh material. The removed sediments shall be disposed of in an acceptable manner (i.e. landfill).



- Silt and sediment should be removed from the filter bed when the accumulation exceeds one inch.
- Areas devoid of mulch shall be re-mulched on an annual basis

Tree Planting

- During the first three years, mulching, watering and protection of young trees may be necessary and should be included in the inspection list.
- Inspections should be performed every three months and within one week of ice storms, within one week of high wind events that reach speeds of 20 mph until trees have reached maturity, and according to established tree inspection requirements as identified within the design manual.
- As a minimum, the following items should be included in the regular inspection list:

-Assess tree health

-Determine survival rate; replace any dead trees.

-Inspect tree for evidence of insect and disease damage; treat as necessary -Inspect tree for damages or dead limbs; prune as necessary

7.0 CONSTRUCTION WASTE

Waste Materials: All waste materials generated during construction will be disposed at a suitable landfill, or transfer station.

Hazardous Waste: The project will not be a generator of hazardous waste and it is not anticipated that any hazardous waste will be generated during construction. If there are any materials generated, a licensed hazardous waste carrier will be contracted to dispose the hazardous material at a suitable disposal site. If hazardous materials are discovered during construction, the work will be stopped until the issue is resolved.

Waste: Portable sanitary facilities will be made available to construction personnel and will be serviced regularly.

8.0 OFFSITE VEHICLE TRACKING

Excavation equipment involved with the construction will remain on the project site and will not regularly egress or ingress the site. Any trucks used to bring in materials or remove materials via municipal paved roads will do so over a stabilized construction entrance. If any off-site vehicle tracking occurs, the contractor will be directed to initiate, street sweeping program in the immediate vicinity of the site.

9.0 TEMPORARY STABILIZATION FOR FROZEN CONDITIONS



The following temporary stabilization measures **MUST** be performed when construction is occurring during winter/frozen ground conditions. The following requirements do not supercede any other requirements of this SWPPP as they apply to non-frozen ground conditions.

- Perimeter erosion control **MUST** still be installed prior to earthwork disturbance as per this SWPPP.
- Any areas that cannot be seeded to turf by October 1 or earlier will receive a temporary seeding. The temporary seeding will consist of winter rye seeded at the rate of 120 pounds per acre (2.5 pounds per 1,000 square feet) or stabilized as per the temporary stabilization for winter construction/frozen conditions.
- Any area of disturbance that will remain inactive for a period of 14 consecutive days **MUST** be mulched. This includes any previously disturbed areas that are covered with snow.
- Mulch MUST consist of loose straw applied at the rate of 2 to 3 bales (90 to 100 pounds) per thousand square feet.
- Mulch MUST be applied uniformly over the area of bare soil or bare soil that is covered with snow. For the latter condition, mulch MUST be applied on top of snow.
- Using a tracked vehicle, mulch MUST be crimped into the bare soil/snow. The tracked vehicle MUST be driven across the mulched areas in at least two directions to maximize crimping of mulch into the soil/snow.
- If mulch gets blown off an area to a significant degree, the site inspector WILL require that an area be re-mulched in accordance with Items 2 through 5 above, and this area WILL be included on the inspection checklist for the next inspection.
- If a particular area repeatedly experiences loss of mulch due to wind, then the inspector WILL require that an alternative method be used to secure the mulch in place. Such alternatives may include the use of netting, tackifier or other methods deemed appropriate by the inspector.
- During periods when snow is melting and/or surface soils are thawing during daytime hours, mulched areas **MUST** be re-tracked (crimped) as per Item 5 above at least once every seven days, more frequently if directed by the inspector. Additional mulch may be required to obtain complete coverage of an area. Biodegradable erosion control matting may be required on steeper slopes.
- Additional stabilization measures for non-frozen ground conditions described in this SWPPP WILL be implemented at the time deemed appropriate by the inspector.

During the winter season, if a site has been stabilized and soil disturbing activities have been suspended for the winter, weekly inspections can be suspended. However, monthly inspections must still be conducted. All normal weekly inspections must resume when soil disturbing activities resume.



10.0 SPILL PREVENTION PRACTICES

Good Housekeeping and Material Management Practices

The following good housekeeping and material management practices will be followed on site during the construction project to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

- Materials will be brought on site in the minimum quantities required.
- All materials stored on site will be stored in a neat, orderly manner in their appropriate containers, and if possible, under a roof or other enclosure.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used up before disposal.
- Manufacturer's recommendations for proper use and disposal will be followed.
- The construction manager or his designee will inspect regularly to ensure proper use and disposal of materials on site.
- The contractor shall prohibit washing of tools, equipment, and machinery in or within 100 feet of any watercourse or wetland.
- All above grade storage tanks are to be protected from vehicle damage by temporary barriers.

Inventory for Pollution Prevention Plan

The materials and substances listed below are expected to be on-site during construction.

- Petroleum for fueling vehicles will be stored in above ground storage tanks. Tanks will either be steel with an enclosure capable of holding 110% of the storage tank volume or of a Con-Store, concrete encased type typically employed by NYSDOT. Hydraulic oil and other oils will be stored in their original containers. Concrete and asphalt will be stored in the original delivery trucks.
- Fertilizer may be stored on site in its original container for a short period of time prior to seeding. Original containers will be safely piled on pallets or similar devices to protect from moisture.
- Paints and other similar materials will be stored in their original containers and all empty containers will be disposed of in accordance with label directions.
- Portable sanitary facilities, which contain chemical disinfectants (deodorants) will be located on-site, with the disinfectants held in the tank of the toilet.



Hazardous Products

These practices are used to reduce the risks associated with hazardous materials.

- Products will be kept in original containers unless they are not resealable.
- Original labels and material safety data sheets will be retained; they contain important product information.
- If surplus product must be disposed of, manufacturers' or local and State recommended methods for proper disposal will be followed.

Spill Prevention

The following product specific practices will be followed on site. **Petroleum Products:**

- Construction personnel should be made aware that emergency telephone numbers are located in this SWPPP.
- The contractor shall immediately contact NYSDEC in the event of a spill, and shall take all appropriate steps to contain the spill, including construction of a dike around the spill and placing absorbent material over this spill.
- The contractor shall instruct personnel that spillage of fuels, oils, and similar chemicals must be avoided and will have arranged with a qualified spill remediation company to serve the site.
- Fuels, oils, and chemicals will be stored in appropriate and tightly capped containers. Containers shall not be disposed of on the project site.
- Fuels, oils, chemicals, material, equipment, and sanitary facilities will be stored/located away from trees and at least 100 feet from streams, wells, wet areas, and other environmentally sensitive sites.
- Dispose of chemical containers and surplus chemicals off the project site in accordance with label directions.
- Use tight connections and hoses with appropriate nozzles in all operations involving fuels, lubricating materials or chemicals.
- Use funnels when pouring fuels, lubricating materials or chemicals.
- Refueling and cleaning of construction equipment will take place in parking areas to provide rapid response to emergency situations.
- All on-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Any vehicle leaking fuel or hydraulic fuel will be immediately scheduled for repairs and use will be discontinued until repairs are made.

Fertilizers:



- Fertilizer will be stored in its original containers on pallets with water resistant coverings.
- Proper delivery scheduling will minimize storage time.
- Any damaged containers will be repaired immediately upon discovery and any released fertilizer recovered to the fullest extent practicable.

Paints:

- All containers will be tightly sealed and stored when not required for use.
- Excess paint will not be discharged to the storm water system or wastewater system, but will be properly disposed of according to manufacturers' instructions or State and local regulations.

Concrete Trucks:

 Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water only at designated locations on site.

Asphalt Trucks:

• Asphalt trucks shall not discharge surplus asphalt on the site.

Spill Control Practices

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup. The construction manager or site superintendent responsible for the day-to-day site operations will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel will be posted in the material storage area and in the onsite construction office or trailer.

- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies. Any spill in excess or suspected to be in excess of two gallons will be reported to the NYSDEC Regional Spill Response Unit. Notification to the NYSDEC (1-800-457-7362) must be completed within two hours of the discovery of the spill.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to absorbent pads, brooms, dust pans, mops, rags, gloves, goggles, activated clay, sand, sawdust, and plastic and metal trash containers specifically for this purpose.



- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with spilled substance.
- Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size



11.0 CERTIFICATIONS

Preparer Certification of Compliance with Federal, State, and Local Regulations

This Stormwater Pollution Prevention Plan was prepared in accordance with the New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-20-001), pursuant to Article 17, Titles 7, 8 and Article 70 of the Environmental Conservation Law. This SPDES General Permit implements the Federal Clean Water Act pertaining to stormwater discharges.

| Name: | Doug Heller | Title: | Civil Engineer |
|---------------|------------------|--------|----------------|
| Signature: | | Date: | |
| Company Name: | The LA Group, PC | | |

Owner Pollution Prevention Plan Certification

The LA GROUP

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who are directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

I understand that GP-0-20-001 requires site inspections be conducted by a qualified professional once every seven (7) days and when approved in writing by the NYSDEC, disturbances of greater than five (5) acres at one time require site inspections two (2) times every seven (7) days. These inspections shall be performed by a qualified professional as defined by the General Permit.

The Owner/Operator will be held financially responsible for any and all fines related to work tasks that are not specified by the Contractor(s)/Subcontractor(s) below.

| Name: | Title: | Owner/Operator |
|---------------|------------|----------------|
| Signature: | Date: | |
| Company Name: | | |
| | | |

| Name | Title |
|---|------------------------|
| Signature | Date |
| Company Name Address City, State, Zip Phone Number | |
| SWPPP Components You Are Responsible For | 1. 2. 3. 4. 5. |
| Name of Trained Individual Responsible for SWPPP Implementation Signature of Trained Individual Responsible for SWPPP Implementation | Title Date |



| Name | Title |
|---|-----------------------------|
| Signature | Date |
| Company Name Address City, State, Zip Phone Number | |
| SWPPP Components You Are Responsible For | 1. 2. 3. 4. 5. 6. |
| Name of Trained Individual Responsible for SWPPP Implementation Signature of Trained Individual Responsible for | Title |
| | |



| Name | Title |
|---|-----------------------------|
| Signature | Date |
| Company Name Address City, State, Zip Phone Number | |
| SWPPP Components You Are Responsible For | 1. 2. 3. 4. 5. 6. |
| Name of Trained Individual Responsible for SWPPP Implementation Signature of Trained Individual Responsible for SWPPP Implementation | Title Date |



| Name | Title |
|---|-----------------------------|
| Signature | Date |
| Company Name Address City, State, Zip Phone Number | |
| SWPPP Components You Are Responsible For | 1. 2. 3. 4. 5. 6. |
| Name of Trained Individual Responsible for SWPPP Implementation Signature of Trained Individual Responsible for SWPPP Implementation | Title Date |



12.0 DEFINITIONS

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition, or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, tree removal, stump removal and/or brush removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Phasing Plan - a plan designed to construct particular portions of an individual project at different times. Phasing is often used when a project is very large to limit the disturbance at a single time to 5 acres per phase.

Erosion and Sediment Control Practices – temporary measures installed prior to construction and maintained during construction to temporarily treat any stormwater runoff. Once construction is completed and post-construction stormwater management practices are installed and the site is stabilized, the erosion and sediment control practices are removed from the site.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete pavement.

Green Infrastructure – in the context of stormwater management, the term green infrastructure includes a wide array of practices at multiple scales to manage and treat stormwater, maintain and restore natural hydrology and ecological function by infiltration, evapotranspiration, capture and reuse of stormwater, and establishment of natural vegetative features. On a regional scale, green infrastructure is the preservation and restoration of natural landscape features, such as forests, floodplains and wetlands, coupled with policies such as infill and redevelopment that reduce overall imperviousness in a watershed or ecoregion. On the local scale green infrastructure consist of site and neighborhood specific practices and runoff reduction techniques. Such practices essentially result in runoff reduction and or establishment of habitat areas with significant utilization of soils, vegetation, and engineered media rather than traditional hardscape collection, conveyance and storage structures. Some examples include green roofs, trees and tree boxes, pervious pavement, rain gardens, vegetated swales, planters, reforestation and protection and enhancement of riparian buffers and floodplains.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways, and sidewalks); building rooftops, and miscellaneous impermeable structures such as patios, pools, and sheds.



Municipal Separate Storm Sewer (MS4) – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- i. Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State.
- ii. Designed or used for collecting or conveying stormwater
- iii. Which is not a combined sewer
- iv. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

Notice of Intent – a standardized format notification sent to the NYSDEC to inform them of the proposed activity to be sent after the SWPPP has been completed.

Owner or Operator – means the person, persons or legal entity which owns or leases the property on which the construction activity is occurring; and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications.

Post-Construction Stormwater Management Practices – permanent devices constructed or installed onsite to treat stormwater from a site when construction is completed.

Qualified Inspector – means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or other Department endorsed individual(s). It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years. It can also mean a person that meets the Qualified Professional qualifications in addition to the Qualified Inspector qualifications.

Qualified Professional – means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional



Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed ot practice in the State of New York.

Regulated, Traditional Land Use Control MS4 - means a city, town, or village with land use control authority that is required to gain coverage under New York State DEC's SPDES General Permit for Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s).

Sequence of Operations – the individual steps and their specific order which are undertaken in order to construct a project or a given phase of a project from beginning to end. (i.e. clearing, grading, foundation work, landscaping, etc.)

State Pollutant Discharge Elimination System (SPDES) – means the system established pursuant to Article 17 of the Environmental Conservation Law (ECL) and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Stormwater Pollution Prevention Plan (SWPPP) - a report that is compiled providing detailed information about the proposed activity and the specifics to how the stormwater will be managed during construction and after construction is completed.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean, within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800-941.

Temporary Stabilization – means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Trained Contractor – means an employee from a contracting (construction) company responsible for the day to day implementation of the SWPPP. The trained contractor must have received 4 hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other



Department endorsed entity. After receiving the initial training, the qualified inspector shall receive 4 hours of training every 3 years.

It can also mean an employee from the contracting (construction) company that meets the qualified inspector qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received 4 hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity.

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Appendix A

Notice of Intent (NOI) & MS4 Acceptance Form

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.35

(Submission #: HPM-PF4K-YAKPY, version 1)

Details

| Submission Alias | 2021110.02 KOA Riverside |
|-----------------------|--------------------------|
| Originally Started By | Cole LaFleche |
| Alternate Identifier | KOA Riverside |
| Submission ID | HPM-PF4K-YAKPY |
| Submission Reason | New |
| Status | Draft |
| Active Steps | Form Submitted |

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.) Kampgrounds of America

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

Owner/Operator Contact Person First Name Jeff

Owner/Operator Mailing Address 550 N 31st Street

City Billings

State MT

Zip 59101

Phone 5094401104

Email jpriest@koa.net

Federal Tax ID 80-0292967

Project Location

Project/Site Name KOA Riverside

Street Address (Not P.O. Box) 5644 NYS Route 86

Side of Street East

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

State NY

Zip 12866

DEC Region 5

County ESSEX

Name of Nearest Cross Street **Brook Wood Way**

Distance to Nearest Cross Street (Feet) 10

Project In Relation to Cross Street South

Tax Map Numbers Section-Block-Parcel NONE PROVIDED

Tax Map Numbers 23.6-5-79.100, 26.6-5-80.03, 26.6-5-39.001

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:

- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.

- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates 44.38660670545789,-73.82315870273969

Project Details

2. What is the nature of this project?

Redevelopment with increase in impervious area

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse

Other: Campground

Post-Development Future Land Use

Other: Campground

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots. NONE PROVIDED

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres) 13.8

Total Area to be Disturbed (acres) 11.3

Existing Impervious Area to be Disturbed (acres) 3.6

Future Impervious Area Within Disturbed Area (acres) 4.9

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

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

A (%) 100 B (%) 0 C (%) 0 D (%)

0

7. Is this a phased project? Yes

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

Start Date

03/06/2023

End Date

10/13/2023

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

West Branch Ausable River

9a. Type of waterbody identified in question 9? River Off Site Wetland/State Jurisdiction On Site (Answer 9b)

Other Waterbody Type Off Site Description NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified? Delineated by Consultant
10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?

Yes

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 D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey? No

If Yes, what is the acreage to be disturbed? NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?

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

16. What is the name of the municipality/entity that owns the separate storm sewer system? NONE PROVIDED

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? No

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

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

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

Required SWPPP Components

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

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

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

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

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by: Professional Engineer (P.E.)

SWPPP Preparer The LA Group

Contact Name (Last, Space, First) Heller Douglas

Mailing Address

40 Long Alley

City Saratoga Springs

State

Zip 12866

Phone 5085878100

Email dheller@thelagroup.com

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form

2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document
<u>Download SWPPP Preparer Certification Form</u>

Please upload the SWPPP Preparer Certification NONE PROVIDED Comment NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared? Yes

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

Temporary Structural Silt Fence

Stabilized Construction Entrance Storm Drain Inlet Protection

Biotechnical None

Vegetative Measures Seeding Mulching Topsoiling

Permanent Structural Land Grading Rock Outlet Protection

Other NONE PROVIDED

Post-Construction Criteria

* 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.

Reduction of Clearing and Grading Preservation of Undisturbed Area

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).

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

0.130

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing 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 the Post-Construction SMP Identification section 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.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet) 0.139

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

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)] (acre-feet) NONE PROVIDED

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)? NONE PROVIDED

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; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section 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. (acre-feet)

NONE PROVIDED

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 - 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). NONE PROVIDED

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? NONE PROVIDED

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, 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) NONE PROVIDED

CPv Provided (acre-feet) NONE PROVIDED

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

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS) 0.50

Post-Development (CFS) 5.77

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS) 0.49

Post-Development (CFS) 5.77

37a. The need to meet the Qp and Qf criteria has been waived because: NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? Yes

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

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. NONE PROVIDED

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing 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.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1) NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1) NONE PROVIDED Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2) NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2) NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3) NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3) NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4) NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4) NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5) NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6) NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7) 0.1

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8) NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9) 1.3

Total Contributing Impervious Acres for Green Roof (RR-10) NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1) 0.2

Total Contributing Impervious Acres for Infiltration Basin (I-2) NONE PROVIDED **Total Contributing Impervious Acres for Dry Well (I-3)** NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4) NONE PROVIDED

Total Contributing Impervious Acres for Bioretention (F-5) 0.6

Total Contributing Impervious Acres for Dry Swale (O-1) NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1) NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2) NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3) NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4) NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5) NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1) NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2) NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3) NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4) NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1) NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2) NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3) NONE PROVIDED **Total Contributing Impervious Acres for Pocket Wetland (W-4)** NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2) NONE PROVIDED

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

Total Contributing Impervious Area for Hydrodynamic NONE PROVIDED

Total Contributing Impervious Area for Wet Vault NONE PROVIDED

Total Contributing Impervious Area for Media Filter NONE PROVIDED

"Other" Alternative SMP? NONE PROVIDED

Total Contributing Impervious Area for "Other" NONE PROVIDED

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

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.

Manufacturer of Alternative SMP NONE PROVIDED

Name of Alternative SMP NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility. None

If SPDES Multi-Sector GP, then give permit ID NONE PROVIDED If Other, then identify NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit? No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth NONE PROVIDED

42. 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. No

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?

No

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? NONE PROVIDED

MS4 SWPPP Acceptance Form Download Download form from the link below. Complete, sign, and upload. <u>MS4 SWPPP Acceptance Form</u>

MS4 Acceptance Form Upload

NONE PROVIDED Comment NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form. <u>Owner/Operator Certification Form (PDF, 45KB)</u>

Upload Owner/Operator Certification Form

NONE PROVIDED Comment NONE PROVIDED

Status History

| | User | Processing Status |
|----------------------|---------------|-------------------|
| 9/14/2022 1:47:13 PM | Cole LaFleche | Draft |

Processing Steps

| Step Name | Assigned To/Completed By | Date Completed |
|----------------|--------------------------|----------------|
| Form Submitted | | |
| Under Review | DAVID GASPER | |
| Under Review | Daniel von Schilgen | |

Appendix B

Stormwater Management Report Hydro CAD



40 Long Alley p: 518-587-8100 Saratoga Springs f: 518-587-0180 NY 12866 www.thelagroup.com

Stormwater Management Report

for:

KOA Riverside at 5644 NYS Route 86 Wilmington, NY 12997 Essex County

Owner/Operator(s):

Kampgrounds of America 550 N 31st Street Billings, MT 59101

SWM Report Contact(s):

The LA Group, PC 40 Long Alley Saratoga Springs, NY 12866 1-518-587-8100 Project No. 2018121

Preparation Date:

September 16, 2022

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1.0 INTRODUCTION

The following is a Stormwater Management Report (SWM Report) developed for the Operator, Kampgrounds of America, for the KOA Riverside Project, herein referred to as the "Project." It is prepared in accordance with the New York State Department of Environmental Conservation (NYSDEC) Stormwater Management Design Manual, dated January, 2015.

The Project has been designed in accordance with Chapter 4 and Chapter 9 of the NYSDEC Stormwater Management Design Manual (SWMDM), and NYSDEC's General Permit GP-0-20-001 for construction activities. Stormwater calculations were performed utilizing widely accepted engineering methodologies, including TR-55, and the stormwater modeling computer program HydroCAD (version 10.00) produced by HydroCAD Software Solutions, LLC.

2.0 **PROJECT DESCRIPTION**

2.1 Site Location

The Project is located at the existing North Pole Camping Resort at 5644 NYS Route 86 in the Town of Wilmington, Essex County, NY 12997.

2.2 **Project Description**

The Project includes the construction of a new registration building, bath house, maintenance and laundry building, 50 campsites, a pool, asphalt drives, and parking lots. The remainder of the proposed site improvements includes construction of site lighting, landscaping, stormwater controls, and utility connections. The Project Site represents the area that will be disturbed as a result of the Project.

2.3 Soil Conditions/Soil Testing

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the area including and surrounding the Project Site is comprised of Colton very gravelly loamy sand. The hydrological soil group classification for this soil is 'A'.

Deep hole test pits and falling head permeability test were conducted by The LA Group on June 6, 2022. The Soils Report along with the Deep Hole Test Pit Report can be found in **Attachment A** of the Stormwater Management Report.



2.4 Curve Numbers and Rainfall Data

The surface cover for the project area is a mixture of grass pasture, trees, and impervious areas (driveway, building, walkways, etc.). The curve numbers utilized in the modeling were assigned based on cover type and HSG soil classification.

The design storms used for the pre-development versus post-development comparison were the 1, 10, and 100-year, 24-hour duration, SCS Type II events. The rainfall amounts for these storms are 1.90, 3.35, and 5.30 inches, respectively.

3.0 EXISTING CONDITIONS

The Project area existing condition, for which this stormwater management plan is based, consists of the existing North Pole Camping Resort which has a mixture of impervious, forest, and grass cover. Under the watershed's Existing Condition, site runoff discharges east to the Ausable River which has been labeled Analysis Point 1 (AP-1) for the purposes of this study. AP-1 was utilized in comparing all pre- versus post-runoff conditions. Refer to drawing "W-1 Existing Conditions Watershed Map," located in Attachment B for more information.

Table 3-1 below provides a summary of the existing conditions peak discharge rates for the Project's watershed.

| Table 3-1Existing Conditions Peak Discharge Rates | | |
|---|-------|--|
| Analysis Point | AP-1 | |
| Design Storm | (cfs) | |
| 10-Year | 0.50 | |
| 100-Year | 5.77 | |

Refer to Attachment B for more information on the existing conditions watershed modeling.

4.0 PROPOSED CONDITIONS

Under the watershed's Proposed Condition, all stormwater from the Project will continue to discharge to the same point as in the Existing Condition (AP-1). The total watershed has generally remained unchanged, as is shown on the drawing "W-2 Proposed Conditions Watershed Map" contained in Attachment C. To meet NYSDEC requirements (see Section 5.0 NYSDEC Design Criteria of this report) porous pavement, infiltration trenches, a stormwater planter, a bioretention basin, and underground detention pipes have been incorporated into the stormwater management design to mitigate the quality and quantity of stormwater runoff discharged from the Project Site.



Table 4-1 below provides a summary of the existing conditions versus proposed conditions peak discharge rates for the Project's watershed.

| Table 4-1Existing Conditions Versus Proposed Conditions Peak Discharge Rates | | |
|--|----------|----------|
| Analysis Point | AP-1 | |
| | Existing | Proposed |
| Design Storm | (cfs) | (cfs) |
| 10-Year | 0.50 | 0.49 |
| 100-Year | 5.77 | 5.77 |

Refer to Attachment C for more information on the proposed conditions watershed modeling.

5.0 NYSDEC DESIGN CRITERIA

The New York State Stormwater Management Design Manual, dated January 2015 (The Manual) has been utilized to develop the stormwater management plan. The Manual includes a five-step process that involves site planning and stormwater management practice selection. The five steps include;

- Site planning to preserve natural features and reduce impervious cover,
- Calculation of the Water Quality Volume (WQv) for the Site,
- Incorporation of green infrastructure techniques and standard SMPs with Runoff Reduction Volume (RRv) capacity,
- Use of standard SMPs where applicable, to treat the portion of WQv not addressed by green infrastructure techniques and standard SMPs with RRv capacity, and
- Design of volume and peak rate control (where required)

The approach of the stormwater management plan was to address the stormwater requirements separately. The five steps were reduced to Site Planning to Preserve Natural Features, Water Quality Volume, Runoff Reduction Volume, Channel Protection Volume, and Overbank Flood and Extreme Storm Attenuation, as discussed in the following sections.

Attachment D of this report contains detailed calculations for determining and summarizing the required and provided volumes for Water Quality and Runoff Reduction. In general, the required design criteria (WQv and RRv) were calculated for all areas where site disturbance or green infrastructure techniques are proposed.



5.1 Site Planning to Preserve Natural Features

Within Chapter 3 of The Manual, Table 3.1 Green Infrastructure Planning General Categories and Specific Practices includes a list of planning practices utilized in the planning and design of a project. There are two categories, Preservation of Natural Resources and Reduction of Imperious Cover.

Preservation of Natural Resources includes:

- Preservation of Undisturbed Areas
- Preservation of Buffers
- Reduction of Clearing and Grading
- Locating Development in Less Sensitive Areas
- Open Space Design
- Soil Restoration

Reduction of Impervious Cover includes:

- Roadway Reduction
- Sidewalk Reduction
- Driveway Reduction
- Cul-de-sac Reduction
- Building Footprint Reduction
- Parking Reduction

A Natural Resource Map for Green Infrastructure Planning has been developed which indicates natural resource areas and critical environmental areas to be protected (where feasible). As required in Section 3.6 of The Manual, the map includes (where applicable):

- Jurisdictional Wetlands
 - There are wetlands along the Ausable River on the east edge of the project site.
- Waterways
 - No waterways are impacted by the Project.
- Wetland Adjacent Area
 - There are wetland adjacent areas along the Ausable River on the east edge of the project site.
- Floodplains
 - The project is not within the flood plain.
- Forest, vegetative cover
 - Project is designed to maintain as much of the woods as feasible.
- Topography/Steep slopes
 - There are no steep slopes located throughout the project.
- Existing soils, including hydrologic soil groups and soil erodibility



- See Section 2.3 of this Report.
- Drainage Patterns
 - See Section 3.0 of this Report.
- Bedrock/Significant geological features
 - See Section 2.3 of this Report.

The Natural Resource Plan indicates the areas to be avoided and depicts the area most suitable for development.

5.2 Water Quality Volume (WQv)

The Water Quality Volume (WQv) requirement is designed to improve water quality sizing to capture and treat 90% of the average annual stormwater runoff volumes. The WQv is directly related to the amount of impervious cover created at a site. The following equation is used to determine the water quality storage volume.

| WQv | = | <u>(P)(Rv)(A)</u> |
|-------|---|---|
| | | 12 |
| Where | • | |
| WQv | = | Water quality volume (acre/feet) |
| Р | = | 90% Rainfall Event (1.00" for Wilmington) |
| Rv | = | 0.05 + 0.009(I) where I is percent impervious cover |
| А | = | Site area in acres |

The required WQv will be provided by porous pavement, infiltration trenches, a stormwater planter and a bioretention basin designed in accordance with the SWMDM. The total required WQv for the project is 0.132 ac-ft. Refer to Table 5-1 for a summary of the provided water quality volumes for the Project.

| Table 5-1 Water Quality Volume (WQv) Summary | | |
|---|-----------------------------------|----------|
| SMP | Туре | Provided |
| | | (ac-ft) |
| SMP-1 | Porous Pavement | 0.102 |
| SMP-2 | Infiltration Trench (Drip Strips) | 0.014 |
| SMP-3 | Stormwater Planter | 0.007 |
| SMP-4 | Bioretention Basin | 0.052 |
| | TOTAL | 0.175 |

Refer to Attachment D for detailed WQv calculations.



5.3 Runoff Reduction Volume (RRv)

Section 4.3 of the Manual states, "Runoff reduction shall be achieved by infiltration, groundwater recharge, reuse, recycle, evaporation/evapotranspiration of 100 percent of the post-development water quality volumes to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge volume, as well as minimizing concentrated flow by using runoff control techniques to provide treatment in a distributed manner before runoff reaches the collection system."

The Project achieves 100% runoff reduction utilizing green infrastructure and stormwater management practices with RRv capabilities throughout the project. The total required RRv for the project is 0.055 ac-ft.

According to Table 3.5 of the NYS Stormwater Design Manual, bioretention practices with an underdrain have an RRv capacity equal to 40% of the WQv provided by the practice. This 40% is applied to SMP-3 and SMP-4. See Table 5-2 for a summary of the provided runoff reduction volumes for each green infrastructure practice.

| Table 5-2 | | |
|---|---------------|--|
| Runoff Reduction Volume (RRv) Summary | | |
| SMP | Provided | |
| | (unit) | |
| 5.3.1 Conservation of Natural Areas | - | |
| 5.3.2 Sheetflow to Riparian Buffers/Filter Strips | - | |
| 5.3.3 Vegetated Open Swales | - | |
| 5.3.4 Tree Planting/Tree Box | - | |
| 5.3.5 Disconnection of Rooftop Runoff | - | |
| 5.3.6 Stream Daylighting | - | |
| 5.3.7 Rain Garden | - | |
| 5.3.8 Green Roof | - | |
| 5.3.9 Stormwater Planters, SMP-3 | 0.003 | |
| 5.3.10 Rain Tanks/Cisterns | - | |
| 5.3.11 Porous Pavement, SMP-1 | 0.102 | |
| Infiltration Trench (Drip Strips), SMP-2 | 0.014 | |
| Bioretention Basin, SMP-4 | 0.021 | |
| TOTAL | 0.139 (ac-ft) | |



Refer to Attachment D for detailed RRv calculations.

5.4 Channel Protection Volume (CPv)

The channel protection volume is reduced through the use of green infrastructure practices.

5.5 Overbank Flood (Qp) and Extreme Flood (Qf) Attenuation

The primary purpose of the Overbank Flood (Qp) control sizing criterion is to prevent an increase in the frequency and magnitude of out-of-bank flooding generated by urban development. It requires storage and attenuation of the 10-year, 24-hour storm to ensure post-development peak discharge rates do not exceed the pre-development condition.

The intent of the Extreme Flood (Qf) criteria is to (a) prevent the increased risk of flood damage from large storm events, (b) maintain the boundaries of the pre-development 100-year floodplain, and (c) protect the physical integrity of stormwater management practices. It requires storage and attenuation of the 100-year, 24-hour storm to ensure post-development peak discharge rates do not exceed the pre-development condition.

During the 10-year and 100-year 24-hour storm the post-development peak discharge rates do not exceed the pre-development rates. See Table 4-1 of this Report for detailed comparison of preand post-development peak rates.

6.0 PROPOSED STORMWATER FACILITIES

The Project is proposing the installation of porous pavement (SMP-1), infiltration trenches (SMP-2) in the form of drip strips along the proposed cabins, a stormwater planter (SMP-3), and a bioretention basin (SMP-4), to collect runoff from the campground for treatment. Underground detention pipes (SMP-5) have been proposed to meet pre-development runoff discharge rates. The stormwater management facilities are indicated on the watershed maps (W1 & W2).

6.1 Pretreatment

Pretreatment of runoff to SMP-1 and SMP-2 will be provided via the stone media in the porous pavement and infiltration trenches respectively. SMP-3 is taking exclusively clean roof runoff and therefore requires no pre-treatment. Pretreatment for SMP-4 is provided via a forebay.



6.2 Treatment

Treatment for runoff entering SMP-1 and SMP-2 is provided via infiltration into underlying soils. Treatment for runoff entering SMP-3 and SMP-4 is provided via filtration through the specified filter media.

7.0 POST-CONSTRUCTION MAINTENANCE REQUIREMENTS

Kampgrounds of America will be responsible for the continuous upkeep and maintenance of all stormwater management facilities. Maintenance includes, but is not limited to, cleaning of sediment from drainage inlet sumps, removal of sediment from SMPs, cleaning conveyance piping and channels of obstructions, inspection and repair as required of any outlet control mechanisms, and repairing any other detriments in the design that is resulting in the facilities to not function as intended in the design.

SW

8.0 **REFERENCES**

- 1. Urban Hydrology for Small Watersheds. Published by the U.S. Soil Conservation Service, Washington, D.C., June 1986.
- 2. HydroCAD 10.00 Computer Program, by HydroCAD Software Solutions, LLC.
- 3. NYSDEC Stormwater Management Design Manual. Published by the New York State Department of Environmental Conservation, Updated January 2015.

 $G: \label{eq:constraint} G: \label{eq:constraint} G: \label{eq:constraint} O2SWPP \label{eq:constrain$



Attachment A

Soil Investigations Soil Survey Natural Resource Map



United States Department of Agriculture

Natural Resources Conservation

Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Essex County, New York



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/? cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


| Ν | IAP LEGEND | | MAP INFORMATION | |
|------------------------|----------------|--------------------|--|--|
| Area of Interest (AOI) | Spo | il Area | The soil surveys that comprise your AOI were mapped at | |
| Area of Interest | (AOI) 👌 Stor | ny Spot | 1:24,000. | |
| Soils | M Very | y Stony Spot | Warning: Soil Man may not be valid at this scale | |
| Soil Map Unit P | olygons 🖤 Wet | t Spot | Warning. Son Map may not be valid at this scale. | |
| 🛹 Soil Map Unit L | ines 🔮 | er | Enlargement of maps beyond the scale of mapping can cause | |
| Soil Map Unit P | oints Spe | cial Line Features | line placement. The maps do not show the small areas of | |
| Special Point Features | Water Features | | contrasting soils that could have been shown at a more detailed | |
| Blowout | Stre | eams and Canals | scale. | |
| Borrow Pit | Transportation | | Please rely on the bar scale on each map sheet for map | |
| 💥 Clay Spot | +++ Rail | s | measurements. | |
| Closed Depress | sion 🛹 Inte | rstate Highways | Source of Map. Natural Pasauroes Conservation Service | |
| Gravel Pit | 🥪 US I | Routes | Web Soil Survey URL: | |
| Gravelly Spot | 🤝 Maje | or Roads | Coordinate System: Web Mercator (EPSG:3857) | |
| 🚯 Landfill | Loca | al Roads | Maps from the Web Soil Survey are based on the Web Mercator | |
| 👗 🛛 Lava Flow | Background | | projection, which preserves direction and shape but distorts | |
| لا الله Marsh or swam | p Aeri | ial Photography | Albers equal-area conic projection, should be used if more | |
| Mine or Quarry | | | accurate calculations of distance or area are required. | |
| Miscellaneous | Water | | This product is generated from the USDA-NRCS certified data as | |
| Perennial Wate | r | | of the version date(s) listed below. | |
| Rock Outcrop | | | Soil Survey Area: Essex County New York | |
| Saline Spot | | | Survey Area Data: Version 21, Sep 1, 2021 | |
| Sandy Spot | | | Soil man units are labeled (as snace allows) for man scales | |
| Severely Erode | d Spot | | 1:50,000 or larger. | |
| Sinkhole | | | Data(s) parial images were photographed: Jup 18, 2020 Jup | |
| 🚡 Slide or Slip | | | 20, 2020 | |
| Sodic Spot | | | The set of the first of the first of the set of the set of the | |
| <i>~</i> | | | compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident. | |

Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|-----------------------------|--|--------------|----------------|
| CsA | Colton very gravelly loamy sand, 0 to 3 percent slopes | 3.2 | 20.8% |
| CsB | Colton very gravelly loamy sand, 3 to 8 percent slopes | 12.3 | 79.2% |
| W | Water | 0.0 | 0.0% |
| Totals for Area of Interest | · | 15.5 | 100.0% |

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Essex County, New York

CsA—Colton very gravelly loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: bm9f Elevation: 510 to 3,030 feet Mean annual precipitation: 34 to 50 inches Mean annual air temperature: 37 to 45 degrees F Frost-free period: 100 to 130 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Colton and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Colton

Setting

Landform: Kame terraces, outwash plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Convex Across-slope shape: Convex Parent material: Gravelly outwash derived from gneiss

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material *Oe - 1 to 2 inches:* moderately decomposed plant material *E - 2 to 3 inches:* very gravelly loamy sand *Bhs - 3 to 6 inches:* very gravelly loamy sand *Bs - 6 to 13 inches:* very gravelly loamy sand *BC - 13 to 21 inches:* very gravelly loamy sand *C - 21 to 72 inches:* extremely gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3s Hydrologic Soil Group: A Ecological site: F143XY601ME - Dry Sand Hydric soil rating: No

Minor Components

Adams

Percent of map unit: 5 percent Hydric soil rating: No

Duxbury

Percent of map unit: 3 percent Hydric soil rating: No

Unnamed

Percent of map unit: 3 percent Hydric soil rating: No

Croghan

Percent of map unit: 2 percent Hydric soil rating: No

Monadnock

Percent of map unit: 2 percent Hydric soil rating: No

CsB—Colton very gravelly loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: bm9g Elevation: 510 to 3,030 feet Mean annual precipitation: 34 to 50 inches Mean annual air temperature: 37 to 45 degrees F Frost-free period: 100 to 130 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Colton and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Colton

Setting

Landform: Kame terraces, outwash plains Landform position (two-dimensional): Summit, shoulder Landform position (three-dimensional): Tread Down-slope shape: Convex Across-slope shape: Convex Parent material: Gravelly outwash derived from gneiss

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material *Oe - 1 to 2 inches:* moderately decomposed plant material *E - 2 to 3 inches:* very gravelly loamy sand *Bhs - 3 to 6 inches:* very gravelly loamy sand *Bs - 6 to 13 inches:* very gravelly loamy sand *BC - 13 to 21 inches:* very gravelly loamy sand *C - 21 to 72 inches:* extremely gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3s Hydrologic Soil Group: A Ecological site: F143XY601ME - Dry Sand Hydric soil rating: No

Minor Components

Adams

Percent of map unit: 5 percent Hydric soil rating: No

Duxbury

Percent of map unit: 4 percent Hydric soil rating: No

Unnamed

Percent of map unit: 3 percent Hydric soil rating: No

Monadnock

Percent of map unit: 2 percent Hydric soil rating: No

Croghan

Percent of map unit: 1 percent Hydric soil rating: No

W-Water

Map Unit Composition

Water: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Water

Setting

Landform: Lakes

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40 Long Alley Saratoga Springs NY 12866

p: 518-587-8100 *f*: 518-587-0180 www.thelagroup.com

To: Kevin Franke From: Brett Strom Date 6-23-2022

Subject: KOA Riverside Deep Hole Test Pits & Percolation Test/Infiltration Test Results

Today, I conducted 2 deep hole test pits at the KOA Riverside site in Wilmington, NY. Percolation tests and falling head infiltration tests were completed at each test pit. Below are the results from the soil testing. See attached maps for test pit locations.

KOA Riverside

Test Pit 1 (TP-1)

0"-8" Topsoil
8"-27" 10 YR 6/8 brownish yellow fine sand, large stones
27"-72" 10 YR 6/2 light brownish gray sand, stones

Mottling noted, SHWT @42"

| Percolation Test-1 | Falling Head Test-1 |
|-----------------------|----------------------|
| Test completed at 8" | Test Completed at 8' |
| | |
| Trial 1 – 1:31 min/in | 1- >120 in/hr |
| Trial 2 – 1:44 min/in | 2- 90 in/hr |
| Trial 3 – 2:12 min/in | 3- 60 in/hr |
| Trial 4 – 2:07 min/in | 4- 60 in/hr |
| Trial 5 – 2:15 min/in | 5- 60 in/hr |

Test Pit 2 (TP-2)

0"-8" Topsoil/Forest Floor 8"-20" 10 YR 6/8 brownish yellow fine sand, large stones 20"-64" 10 YR 6/2 light brownish gray sand, large stones 64"-72" Clay

Mottling noted, SHWT @56"



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Percolation Test-2

Test completed at 20"

Trial 1 – 1:20 min/in Trial 2 – 1:30 min/in Trial 3 – 1:36 min/in Trial 4 – 1:45 min/in Trial 5 – 1:42 min/in

Falling Head Test-2 Test Completed at 20"

1->120 in/hr 2->120 in/hr 3->120 in/hr 4->120 in/hr 5->120 in/hr





Attachment B

Existing Conditions Watershed Map and HydroCAD Calculations



North Pole KOA Holiday - Riverside

5644 NYS Route 86, Wilmington, New York

W1 - Existing Condition Watershed Map

Date: 9/19/2022









Area Listing (all nodes)

| Area | CN | Description |
|---------|----|-----------------------------------|
| (sq-ft) | | (subcatchment-numbers) |
| 211,664 | 39 | >75% Grass cover, Good, HSG A (1) |
| 158,833 | 98 | Paved parking, HSG A (1) |
| 231,589 | 30 | Woods, Good, HSG A (1) |
| 602,085 | 51 | TOTAL AREA |

Soil Listing (all nodes)

| Area | Soil | Subcatchment |
|---------|-------|--------------|
| (sq-ft) | Group | Numbers |
| 602,085 | HSG A | 1 |
| 0 | HSG B | |
| 0 | HSG C | |
| 0 | HSG D | |
| 0 | Other | |
| 602,085 | | TOTAL AREA |

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| HSG-A | HSG-B | HSG-C | HSG-D | Other | Total | Ground | Sub |
|---------|---|--|---|--|--|---|--|
| (sq-ft) | (sq-ft) | (sq-ft) | (sq-ft) | (sq-ft) | (sq-ft) | Cover | Nur |
| 211,664 | 0 | 0 | 0 | 0 | 211,664 | >75% Grass | |
| | | | | | | cover, Good | |
| 158,833 | 0 | 0 | 0 | 0 | 158,833 | Paved parking | |
| 231,589 | 0 | 0 | 0 | 0 | 231,589 | Woods, Good | |
| 602,085 | 0 | 0 | 0 | 0 | 602,085 | TOTAL AREA | |
| | HSG-A (sq-ft) 211,664 158,833 231,589 602,085 | HSG-A HSG-B (sq-ft) (sq-ft) 211,664 0 158,833 0 231,589 0 602,085 0 | HSG-A (sq-ft) HSG-B (sq-ft) HSG-C (sq-ft) 211,664 0 0 158,833 0 0 231,589 0 0 602,085 0 0 | HSG-A (sq-ft) HSG-B (sq-ft) HSG-C (sq-ft) HSG-D (sq-ft) 211,664 0 0 0 158,833 0 0 0 231,589 0 0 0 602,085 0 0 0 | HSG-A (sq-ft) HSG-B (sq-ft) HSG-C (sq-ft) HSG-D (sq-ft) Other (sq-ft) 211,664 0 0 0 0 158,833 0 0 0 0 231,589 0 0 0 0 602,085 0 0 0 0 | HSG-A (sq-ft) HSG-B (sq-ft) HSG-C (sq-ft) HSG-D (sq-ft) Other (sq-ft) Total (sq-ft) 211,664 0 0 0 0 211,664 158,833 0 0 0 0 158,833 231,589 0 0 0 0 231,589 602,085 0 0 0 0 602,085 | HSG-A (sq-ft) HSG-B (sq-ft) HSG-C (sq-ft) HSG-D (sq-ft) Other (sq-ft) Total (sq-ft) Ground Cover 211,664 0 0 0 0 211,664 >75% Grass cover, Good 158,833 0 0 0 0 158,833 Paved parking 231,589 0 0 0 0 602,085 TOTAL AREA |

Ground Covers (all nodes)

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

> Runoff Area=13.822 ac 26.38% Impervious Runoff Depth=0.00" Flow Length=858' Slope=0.0200 '/' Tc=43.2 min CN=51 Runoff=0.00 cfs 0 cf

Link AP-1: Ausable River

Subcatchment1: Subcat1

Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf

Total Runoff Area = 602,085 sf Runoff Volume = 0 cf Average Runoff Depth = 0.00" 73.62% Pervious = 443,252 sf 26.38% Impervious = 158,833 sf

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Runoff Area=13.822 ac 26.38% Impervious Runoff Depth>0.14" Subcatchment1: Subcat1 Flow Length=858' Slope=0.0200 '/' Tc=43.2 min CN=51 Runoff=0.50 cfs 7,086 cf

Link AP-1: Ausable River

Inflow=0.50 cfs 7,086 cf Primary=0.50 cfs 7,086 cf

Total Runoff Area = 602,085 sf Runoff Volume = 7,086 cf Average Runoff Depth = 0.14" 73.62% Pervious = 443,252 sf 26.38% Impervious = 158,833 sf

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Subcat 1 Runoff Area=13.822 ac 26.38% Impervious Runoff Depth>0.75" Flow Length=858' Slope=0.0200 '/' Tc=43.2 min CN=51 Runoff=5.77 cfs 37,437 cf

Link AP-1: Ausable River

Inflow=5.77 cfs 37,437 cf Primary=5.77 cfs 37,437 cf

Total Runoff Area = 602,085 sf Runoff Volume = 37,437 cf Average Runoff Depth = 0.75" 73.62% Pervious = 443,252 sf 26.38% Impervious = 158,833 sf

Summary for Subcatchment 1: Subcat 1

Runoff = 5.77 cfs @ 12.51 hrs, Volume= 37,437 cf, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs Type II 24-hr 100 Year Rainfall=5.30"

| Area | (ac) (| CN [| Desc | ription | | |
|-------|--------|-------|-------|------------|------------|--|
| 4. | 859 | 39 > | >75% | 6 Grass co | over, Good | , HSG A |
| 3. | 646 | 98 F | Pave | d parking | , HSG A | |
| 5. | 317 | 30 V | Noo | ds, Good, | HSG A | |
| 13. | 822 | 51 V | Neig | hted Aver | age | |
| 10. | 176 | 7 | 73.62 | 2% Pervio | us Area | |
| 3. | 646 | 2 | 26.38 | 8% Imperv | ious Area | |
| | | | | | | |
| Tc | Length | Slo | pe | Velocity | Capacity | Description |
| (min) | (feet) |) (ft | t/ft) | (ft/sec) | (cfs) | |
| 25.3 | 100 | 0.02 | 200 | 0.07 | | Sheet Flow, |
| | | | | | | Woods: Light underbrush n= 0.400 P2= 2.30" |
| 17.9 | 758 | 0.02 | 200 | 0.71 | | Shallow Concentrated Flow, |
| | | | | | | Woodland Kv= 5.0 fps |
| 43.2 | 858 | Tota | al | | | |

Summary for Link AP-1: Ausable River

| Inflow A | rea = | 602,085 sf, | 26.38% Im | npervious, | Inflow Depth > | 0.75" | for 10 | 0 Year event |
|----------|-------|-------------|------------|------------|----------------|-----------|--------|--------------|
| Inflow | = | 5.77 cfs @ | 12.51 hrs, | Volume= | 37,437 (| of | | |
| Primary | = | 5.77 cfs @ | 12.51 hrs, | Volume= | 37,437 0 | of, Atter | ו= 0%, | Lag= 0.0 min |

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Attachment C

Proposed Conditions Watershed Map and HydroCAD Calculations



North Pole KOA Holiday - Riverside

5644 NYS Route 86, Wilmington, New York

W2 - Proposed Condition Watershed Map

Date: 9/14/2022









Area Listing (all nodes)

| Are | a CN | Description |
|--------|------|---|
| (sq-fi | t) | (subcatchment-numbers) |
| 264,90 | 2 39 | >75% Grass cover, Good, HSG A (1, 1a, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12) |
| 213,85 | 4 98 | Paved parking, HSG A (1, 1a, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12) |
| 123,32 | 9 30 | Woods, Good, HSG A (1a, 3, 5, 8, 10, 11) |
| 602,08 | 5 58 | TOTAL AREA |

Soil Listing (all nodes)

| Area | Soil | Subcatchment |
|---------|-------|---|
| (sq-ft) | Group | Numbers |
| 602,085 | HSG A | 1, 1a, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 |
| 0 | HSG B | |
| 0 | HSG C | |
| 0 | HSG D | |
| 0 | Other | |
| 602,085 | | TOTAL AREA |

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| HSG-A (sq-ft) | HSG-B (sq-ft) | HSG-C (sq-ft) | HSG-D (sq-ft) | Other (sq-ft) | Total (sq-ft) | Ground Cover | Sub Nur |
|------------------|---|--|---|---|--|---|--|
| 264,902 | 0 | 0 | 0 | 0 | 264,902 | >75% Grass | |
| | | | | | | cover, Good | |
| 213,854 | 0 | 0 | 0 | 0 | 213,854 | Paved parking | |
| 123,329 | 0 | 0 | 0 | 0 | 123,329 | Woods, Good | |
| 602,085 | 0 | 0 | 0 | 0 | 602,085 | TOTAL AREA | |
| | HSG-A (sq-ft) 264,902 213,854 123,329 602,085 | HSG-A HSG-B (sq-ft) (sq-ft) 264,902 0 213,854 0 123,329 0 602,085 0 | HSG-A (sq-ft) HSG-B (sq-ft) HSG-C (sq-ft) 264,902 0 0 213,854 0 0 123,329 0 0 602,085 0 0 | HSG-A (sq-ft) HSG-B (sq-ft) HSG-C (sq-ft) HSG-D (sq-ft) 264,902 0 0 0 213,854 0 0 0 123,329 0 0 0 602,085 0 0 0 | HSG-A (sq-ft) HSG-B (sq-ft) HSG-C (sq-ft) HSG-D (sq-ft) Other (sq-ft) 264,902 0 0 0 0 213,854 0 0 0 0 123,329 0 0 0 0 602,085 0 0 0 0 | HSG-A (sq-ft) HSG-B (sq-ft) HSG-C (sq-ft) HSG-D (sq-ft) Other (sq-ft) Total (sq-ft) 264,902 0 0 0 0 264,902 213,854 0 0 0 0 213,854 123,329 0 0 0 0 123,329 602,085 0 0 0 0 602,085 | HSG-A (sq-ft) HSG-B (sq-ft) HSG-C (sq-ft) HSG-D (sq-ft) Other (sq-ft) Total (sq-ft) Ground Cover 264,902 0 0 0 0 264,902 >75% Grass cover, Good 213,854 0 0 0 0 213,854 Paved parking 123,329 0 0 0 0 123,329 Woods, Good 602,085 0 0 0 0 602,085 TOTAL AREA |

Ground Covers (all nodes)

| 2021110.02_Post-Development Prepared by The LA Group | Type II 24-hr 1 | Year Rainfall=1.90" Printed 9/16/2022 |
|--|---|--|
| Time span=0.00- Runoff by SCS TR Reach routing by Dyn-Stor-Ind | -24.00 hrs, dt=0.05 hrs, 481 points -20 method, UH=SCS, Weighted-CN method - Pond routing by Dyn-Stor-Ind r | nethod |
| Subcatchment1: Subcat1 | Runoff Area=1.043 ac 42.67% Impervious Tc=6.0 min CN=64 F | s Runoff Depth>0.09" Runoff=0.03 cfs 354 cf |
| Subcatchment1a: Subcat1a Flow Length=4 | Runoff Area=1.723 ac 8.77% Impervious 111' Slope=0.0300 '/' Tc=27.5 min CN=39 | Runoff Depth=0.00" Runoff=0.00 cfs 0 cf |
| Subcatchment 2: Subcat 2 Flow Length=13 | Runoff Area=0.386 ac 29.29% Impervious 30' Slope=0.0300 '/' Tc=10.2 min CN=56 | Runoff Depth>0.01" Runoff=0.00 cfs 18 cf |
| Subcatchment3: Subcat3 | Runoff Area=1.753 ac 71.86% Impervious Tc=6.0 min CN=81 Ru | s Runoff Depth>0.54" noff=1.62 cfs 3,444 cf |
| Subcatchment4: Subcat4 | Runoff Area=0.173 ac 99.99% Impervious Tc=6.0 min CN=98 Ru | s Runoff Depth>1.67" noff=0.44 cfs 1,051 cf |
| Subcatchment 5: Subcat 5 Flow Length=7 | Runoff Area=2.667 ac 14.50% Impervious 730' Slope=0.0300 '/' Tc=33.6 min CN=44 | Runoff Depth=0.00" Runoff=0.00 cfs 0 cf |
| Subcatchment 6: Subcat 6 Flow Length= | Runoff Area=0.458 ac 23.14% Impervious 155' Slope=0.0400 '/' Tc=9.5 min CN=53 | s Runoff Depth>0.00" Runoff=0.00 cfs 3 cf |
| Subcatchment7: Subcat7 | Runoff Area=0.234 ac 77.61% Impervious Tc=6.0 min CN=85 F | s Runoff Depth>0.72" Runoff=0.29 cfs 613 cf |
| Subcatchment8: Subcat8 | Runoff Area=1.536 ac 44.24% Impervious Tc=6.0 min CN=65 F | s Runoff Depth>0.11" Runoff=0.08 cfs 607 cf |
| Subcatchment9: Subcat9 | Runoff Area=38,644 sf 47.17% Impervious Tc=6.0 min CN=67 F | s Runoff Depth>0.14" Runoff=0.10 cfs 460 cf |
| Subcatchment10: Subcat10 | Runoff Area=61,040 sf 40.26% Impervious Tc=6.0 min CN=62 F | Runoff Depth>0.07" Runoff=0.01 cfs 338 cf |
| Subcatchment11: Subcat11 | Runoff Area=64,133 sf 23.26% Impervious Tc=6.0 min CN=48 | Runoff Depth=0.00" Runoff=0.00 cfs 0 cf |
| Subcatchment12: Subcat12 | Runoff Area=3,855 sf 100.00% Impervious Tc=6.0 min CN=98 F | s Runoff Depth>1.67" Runoff=0.23 cfs 538 cf |
| Pond CB-5: Catch Basin 12.0" Roun | Peak Elev=1,008.16' d Culvert_n=0.012_L=202.0'_S=0.0100 '/'_O | Inflow=0.14 cfs 399 cf utflow=0.14 cfs 399 cf |
| Pond CB-8: Catch Basin 12.0" Roun | Peak Elev=1,002.29' d Culvert_n=0.012_L=241.0'_S=0.0162 '/'_O | Inflow=0.14 cfs 564 cf utflow=0.14 cfs 564 cf |
| Pond FB-1: Forebay | Peak Elev=1,007.51' Storage=686 cf | Inflow=0.31 cfs 967 cf utflow=0.01 cfs 283 cf |

| 2021110.02_Post-Development Prepared by The LA Group | Type II 24-hr 1 Year Rainfall=1.90" Printed 9/16/2022 |
|---|--|
| HydroCAD® 10.00-26 s/n 00439 © 2020 HydroCAD | Software Solutions LLC Page 6 |
| Pond HDS-1: Hydrodynamic Separator 18.0" Round Cu | Peak Elev=991.35' Inflow=0.31 cfs 1,969 cf Ilvert n=0.012 L=5.0' S=0.0100 '/' Outflow=0.31 cfs 1,969 cf |
| Pond SMP-1: Porous Pavement | Peak Elev=1,009.00' Storage=0 cf Inflow=1.62 cfs 3,444 cf Outflow=1.62 cfs 3,444 cf |
| Pond SMP-2: Drip Strips | Peak Elev=999.00' Storage=0 cf Inflow=0.44 cfs 1,051 cf Outflow=0.44 cfs 1,051 cf |
| Pond SMP-3: Stormwater Planter | Peak Elev=1,019.21' Storage=222 cf Inflow=0.23 cfs 538 cf Outflow=0.14 cfs 378 cf |
| Pond SMP-4: Bioretention Basin | Peak Elev=1,006.11' Storage=118 cf Inflow=0.01 cfs 283 cf Outflow=0.01 cfs 164 cf |
| Pond SMP-5: Detention Pipes | Peak Elev=989.21' Storage=220 cf Inflow=0.31 cfs 1,969 cf Outflow=0.09 cfs 1,887 cf |
| Link AP-1: Ausable River | Inflow=0.09 cfs 1,887 cf Primary=0.09 cfs 1,887 cf |

Total Runoff Area = 602,085 sf Runoff Volume = 7,426 cf Average Runoff Depth = 0.15" 64.48% Pervious = 388,231 sf 35.52% Impervious = 213,854 sf
| 2021110.02_Post-Development | Type II 24-hr 10 Year Rainfall=3.35" |
|---|--|
| Prepared by The LA Group HydroCAD® 10.00-26 s/n 00439 © 2020 HydroC | CAD Software Solutions LLC Printed 9/16/2022 |
| Time span=0.00-2 Runoff by SCS TR-2 Reach routing by Dyn-Stor-Ind r | 24.00 hrs, dt=0.05 hrs, 481 points 20 method, UH=SCS, Weighted-CN nethod - Pond routing by Dyn-Stor-Ind method |
| Subcatchment 1: Subcat 1 | Runoff Area=1.043 ac 42.67% Impervious Runoff Depth>0.63" Tc=6.0 min CN=64 Runoff=1.03 cfs 2,382 cf |
| Subcatchment 1a: Subcat 1a Flow Length=41 | Runoff Area=1.723 ac 8.77% Impervious Runoff Depth>0.00" 1' Slope=0.0300 '/' Tc=27.5 min CN=39 Runoff=0.00 cfs 17 cf |
| Subcatchment 2: Subcat 2 Flow Length=130' | Runoff Area=0.386 ac 29.29% Impervious Runoff Depth>0.33" Slope=0.0300 '/' Tc=10.2 min CN=56 Runoff=0.11 cfs 458 cf |
| Subcatchment 3: Subcat 3 | Runoff Area=1.753 ac 71.86% Impervious Runoff Depth>1.59" Tc=6.0 min CN=81 Runoff=4.80 cfs 10,092 cf |
| Subcatchment4: Subcat 4 | Runoff Area=0.173 ac 99.99% Impervious Runoff Depth>3.11" Tc=6.0 min CN=98 Runoff=0.80 cfs 1,956 cf |
| Subcatchment 5: Subcat 5 Flow Length=730' | Runoff Area=2.667 ac 14.50% Impervious Runoff Depth>0.05" Slope=0.0300 '/' Tc=33.6 min CN=44 Runoff=0.01 cfs 443 cf |
| Subcatchment 6: Subcat 6 Flow Length=15 | Runoff Area=0.458 ac 23.14% Impervious Runoff Depth>0.24" 5' Slope=0.0400 '/' Tc=9.5 min CN=53 Runoff=0.06 cfs 394 cf |
| Subcatchment7: Subcat7 | Runoff Area=0.234 ac 77.61% Impervious Runoff Depth>1.88" Tc=6.0 min CN=85 Runoff=0.75 cfs 1,600 cf |
| Subcatchment 8: Subcat 8 | Runoff Area=1.536 ac 44.24% Impervious Runoff Depth>0.67" Tc=6.0 min CN=65 Runoff=1.65 cfs 3,756 cf |
| Subcatchment9: Subcat9 | Runoff Area=38,644 sf 47.17% Impervious Runoff Depth>0.77" Tc=6.0 min CN=67 Runoff=1.12 cfs 2,466 cf |
| Subcatchment 10: Subcat 10 | Runoff Area=61,040 sf 40.26% Impervious Runoff Depth>0.55" Tc=6.0 min CN=62 Runoff=1.14 cfs 2,775 cf |
| Subcatchment11: Subcat11 | Runoff Area=64,133 sf 23.26% Impervious Runoff Depth>0.12" Tc=6.0 min CN=48 Runoff=0.03 cfs 620 cf |
| Subcatchment 12: Subcat 12 | Runoff Area=3,855 sf 100.00% Impervious Runoff Depth>3.11" Tc=6.0 min CN=98 Runoff=0.41 cfs 1,001 cf |
| Pond CB-5: Catch Basin 12.0" Round C | Peak Elev=1,008.33' Inflow=0.50 cfs 1,688 cf Culvert n=0.012 L=202.0' S=0.0100 '/' Outflow=0.50 cfs 1,688 cf |
| Pond CB-8: Catch Basin 12.0" Round C | Peak Elev=1,002.46' Inflow=0.50 cfs 3,566 cf culvert n=0.012 L=241.0' S=0.0162 '/' Outflow=0.50 cfs 3,566 cf |
| Pond FB-1: Forebay | Peak Elev=1,007.67' Storage=870 cf Inflow=1.78 cfs 3,982 cf Outflow=1.75 cfs 3,292 cf |

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|--|--|
| Pond HDS-1: Hydrodynamic Separator 18.0" Roun | ۔ Peak Elev=992.30' Inflow=4.38 cfs 12,563 cf d Culvert n=0.012 L=5.0' S=0.0100 '/' Outflow=4.38 cfs 12,563 cf |
| Pond SMP-1: Porous Pavement | Peak Elev=1,009.00' Storage=0 cf Inflow=4.80 cfs 10,092 cf Outflow=4.80 cfs 10,092 cf |
| Pond SMP-2: Drip Strips | Peak Elev=999.25' Storage=111 cf Inflow=0.80 cfs 1,956 cf Outflow=0.51 cfs 1,966 cf |
| Pond SMP-3: Stormwater Planter | Peak Elev=1,019.35' Storage=267 cf Inflow=0.41 cfs 1,001 cf Outflow=0.37 cfs 837 cf |
| Pond SMP-4: Bioretention Basin | Peak Elev=1,007.10' Storage=1,511 cf Inflow=1.75 cfs 3,292 cf Outflow=0.09 cfs 1,877 cf |
| Pond SMP-5: Detention Pipes | Peak Elev=990.40' Storage=3,338 cf Inflow=4.38 cfs 12,563 cf Outflow=0.47 cfs 12,300 cf |
| Link AP-1: Ausable River | Inflow=0.49 cfs 13,380 cf Primary=0.49 cfs 13,380 cf |

Total Runoff Area = 602,085 sf Runoff Volume = 27,960 cf Average Runoff Depth = 0.56" 64.48% Pervious = 388,231 sf 35.52% Impervious = 213,854 sf

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|--|--|
| Time span=0.00- Runoff by SCS TR- Reach routing by Dyn-Stor-Ind i | 24.00 hrs, dt=0.05 hrs, 481 points 20 method, UH=SCS, Weighted-CN method - Pond routing by Dyn-Stor-Ind method |
| Subcatchment1: Subcat1 | Runoff Area=1.043 ac 42.67% Impervious Runoff Depth>1.78" Tc=6.0 min CN=64 Runoff=3.21 cfs 6,722 cf |
| Subcatchment1a: Subcat1a Flow Length=411' | Runoff Area=1.723 ac 8.77% Impervious Runoff Depth>0.26" Slope=0.0300 '/' Tc=27.5 min CN=39 Runoff=0.09 cfs 1,622 cf |
| Subcatchment2: Subcat 2 Flow Length=130' | Runoff Area=0.386 ac 29.29% Impervious Runoff Depth>1.20" Slope=0.0300 '/' Tc=10.2 min CN=56 Runoff=0.63 cfs 1,676 cf |
| Subcatchment3: Subcat 3 | Runoff Area=1.753 ac 71.86% Impervious Runoff Depth>3.25" Tc=6.0 min CN=81 Runoff=9.66 cfs 20,671 cf |
| Subcatchment4: Subcat4 | Runoff Area=0.173 ac 99.99% Impervious Runoff Depth>5.06" Tc=6.0 min CN=98 Runoff=1.27 cfs 3,177 cf |
| Subcatchment 5: Subcat 5 Flow Length=730' | Runoff Area=2.667 ac 14.50% Impervious Runoff Depth>0.48" Slope=0.0300 '/' Tc=33.6 min CN=44 Runoff=0.48 cfs 4,653 cf |
| Subcatchment6: Subcat6 Flow Length=155' | Runoff Area=0.458 ac 23.14% Impervious Runoff Depth>1.00" Slope=0.0400 '/' Tc=9.5 min CN=53 Runoff=0.61 cfs 1,664 cf |
| Subcatchment7: Subcat7 | Runoff Area=0.234 ac 77.61% Impervious Runoff Depth>3.64" Tc=6.0 min CN=85 Runoff=1.42 cfs 3,093 cf |
| Subcatchment8: Subcat8 | Runoff Area=1.536 ac 44.24% Impervious Runoff Depth>1.85" Tc=6.0 min CN=65 Runoff=4.94 cfs 10,338 cf |
| Subcatchment9: Subcat9 | Runoff Area=38,644 sf 47.17% Impervious Runoff Depth>2.01" Tc=6.0 min CN=67 Runoff=3.11 cfs 6,480 cf |
| Subcatchment 10: Subcat 10 | Runoff Area=61,040 sf 40.26% Impervious Runoff Depth>1.62" Tc=6.0 min CN=62 Runoff=3.91 cfs 8,262 cf |
| Subcatchment 11: Subcat 11 | Runoff Area=64,133 sf 23.26% Impervious Runoff Depth>0.70" Tc=6.0 min CN=48 Runoff=1.40 cfs 3,748 cf |
| Subcatchment 12: Subcat 12 | Runoff Area=3,855 sf 100.00% Impervious Runoff Depth>5.06" Tc=6.0 min CN=98 Runoff=0.65 cfs 1,625 cf |
| Pond CB-5: Catch Basin 12.0" Round C | Peak Elev=1,008.72' Inflow=1.81 cfs 4,797 cf Culvert n=0.012 L=202.0' S=0.0100 '/' Outflow=1.81 cfs 4,797 cf |
| Pond CB-8: Catch Basin 12.0" Round Cu | Peak Elev=1,003.93' Inflow=4.36 cfs 12,450 cf ulvert n=0.012 L=241.0' S=0.0162 '/' Outflow=4.36 cfs 12.450 cf |
| Pond FB-1: Forebay | Peak Elev=1,007.82' Storage=1,050 cf Inflow=4.62 cfs 9,815 cf Outflow=4.53 cfs 9,118 cf |

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|---|---|
| Pond HDS-1: Hydrodynamic Separator 18.0" Round | Peak Elev=994.77' Inflow=14.62 cfs 37,530 cf Culvert n=0.012 L=5.0' S=0.0100 '/' Outflow=14.62 cfs 37,530 cf |
| Pond SMP-1: Porous Pavement | Peak Elev=1,009.00' Storage=0 cf Inflow=9.66 cfs 20,671 cf Outflow=9.66 cfs 20,671 cf |
| Pond SMP-2: Drip Strips | Peak Elev=999.98' Storage=429 cf Inflow=1.27 cfs 3,177 cf Outflow=0.51 cfs 3,209 cf |
| Pond SMP-3: Stormwater Planter | Peak Elev=1,019.46' Storage=303 cf Inflow=0.65 cfs 1,625 cf Outflow=0.60 cfs 1,458 cf |
| Pond SMP-4: Bioretention Basin | Peak Elev=1,007.60' Storage=2,501 cf Inflow=4.53 cfs 9,118 cf Outflow=2.68 cfs 7,653 cf |
| Pond SMP-5: Detention Pipes | Peak Elev=992.70' Storage=10,309 cf Inflow=14.62 cfs 37,530 cf Outflow=5.17 cfs 36,411 cf |
| Link AP-1: Ausable River | Inflow=5.77 cfs 46,435 cf Primary=5.77 cfs 46,435 cf |

Total Runoff Area = 602,085 sf Runoff Volume = 73,730 cf Average Runoff Depth = 1.47" 64.48% Pervious = 388,231 sf 35.52% Impervious = 213,854 sf

Summary for Subcatchment 1: Subcat 1

Runoff = 3.21 cfs @ 11.98 hrs, Volume= 6,722 cf, Depth> 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type II 24-hr 100 Year Rainfall=5.30"

| Area | (ac) | CN | Desc | cription | | |
|-------|------|-----|---------|-------------|------------|---------------|
| 0. | 598 | 39 | >75% | 6 Grass co | over, Good | , HSG A |
| 0. | 445 | 98 | Pave | ed parking, | HSG A | |
| 1. | 043 | 64 | Weig | hted Aver | age | |
| 0. | 598 | | 57.3 | 3% Pervio | us Area | |
| 0. | 445 | | 42.6 | 7% Imperv | vious Area | |
| Tc | Leng | th | Slope | Velocity | Capacity | Description |
| (min) | (fee | et) | (ft/ft) | (ft/sec) | (cfs) | • |
| 6.0 | | | | | | Direct Entry, |
| | | | | | | • · |

Summary for Subcatchment 1a: Subcat 1a

Runoff = 0.09 cfs @ 12.58 hrs, Volume= 1,622 cf, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type II 24-hr 100 Year Rainfall=5.30"

| A | rea (| ac) | CN | Desc | cription | | |
|----|-------|--------|-----|---------|-------------|-------------|--|
| | 0.5 | 583 | 39 | >75% | 6 Grass co | over, Good, | , HSG A |
| | 0.1 | 151 | 98 | Pave | ed parking, | HSG A | |
| | 0.9 | 988 | 30 | Woo | ds, Good, | HSG A | |
| | 1.7 | 723 | 39 | Weig | hted Aver | age | |
| | 1.5 | 571 | | 91.2 | 3% Pervio | us Area | |
| | 0.1 | 151 | | 8.77 | % Impervie | ous Area | |
| | | | | | | | |
| | Тс | Length | ı S | lope | Velocity | Capacity | Description |
| (m | nin) | (feet) |) (| (ft/ft) | (ft/sec) | (cfs) | |
| 2 | 1.5 | 100 | 0.0 | 0300 | 0.08 | | Sheet Flow, |
| | | | | | | | Woods: Light underbrush n= 0.400 P2= 2.30" |
| (| 6.0 | 311 | 0.0 | 0300 | 0.87 | | Shallow Concentrated Flow, |
| | | | | | | | Woodland Kv= 5.0 fps |
| 2 | 7 5 | 111 | To | tal | | | |

27.5 411 Total

Summary for Subcatchment 2: Subcat 2

Runoff = 0.63 cfs @ 12.04 hrs, Volume= 1,676 cf, Depth> 1.20"

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 Type II 24-hr
 100 Year Rainfall=5.30"

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| Area | (ac) (| CN Des | cription | | | |
|----------------------------|------------------|------------------|----------------------|-------------------|---|--|
| 0.2 | 273 | 39 >75 | % Grass co | over, Good, | HSG A | |
| 0. | 113 | 98 Pav | ed parking | , HSG A | | |
| 0.3 | 386 | 56 Wei | ghted Aver | age | | |
| 0.273 70.71% Pervious Area | | | | | | |
| 0. | 113 | 29.2 | 9% Imper | ∕ious Area | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description | |
| 9.8 | 100 | 0.0300 | 0.17 | | Sheet Flow, | |
| 0.4 | 30 | 0.0300 | 1.21 | | Grass: Short n= 0.150 P2= 2.30" Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps | |
| 10.2 | 130 | Total | | | | |

Summary for Subcatchment 3: Subcat 3

| Runoff = | = | 9.66 cfs @ | 11.97 hrs, | Volume= | 20,671 cf, | Depth> | 3.25" |
|----------|---|------------|------------|---------|------------|--------|-------|
|----------|---|------------|------------|---------|------------|--------|-------|

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type II 24-hr 100 Year Rainfall=5.30"

| Area (| ac) | CN | Desc | cription | | |
|--------|-------|----|---------|----------------|------------|---------------|
| 0.4 | 193 | 39 | >75% | 6 Grass co | over, Good | I, HSG A |
| 1.2 | 260 | 98 | Pave | ed parking, | HSG A | |
| 0.0 | 000 | 30 | Woo | ds, Good, | HSG A | |
| 1.7 | 753 | 81 | Weig | hted Aver | age | |
| 0.4 | 193 | | 28.1 | , 4% Pervio | us Area | |
| 1.2 | 260 | | 71.8 | 6% Imperv | vious Area | |
| Тс | Lengt | h | Slope | Velocity | Capacity | Description |
| (min) | (fee | t) | (ft/ft) | (ft/sec) | (cfs) | |
| 6.0 | | | | | | Direct Entry, |
| | | | | | | - |

Summary for Subcatchment 4: Subcat 4

Runoff = 1.27 cfs @ 11.96 hrs, Volume= 3,177 cf, Depth> 5.06"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.000 | 39 | >75% Grass cover, Good, HSG A |
| 0.173 | 98 | Paved parking, HSG A |
| 0.173 | 98 | Weighted Average |
| 0.000 | | 0.01% Pervious Area |
| 0.173 | | 99.99% Impervious Area |

| Prepare | d by The | LA Gro | up . | | Pr | inted 9/16/2022 | | | | |
|-------------------------------|---|--------------------------------|--------------------------------------|-------------------|---|-----------------|--|--|--|--|
| HydroCA | HydroCAD® 10.00-26 s/n 00439 © 2020 HydroCAD Software Solutions LLC | | | | | | | | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description | | | | | |
| 6.0 | х <i>г</i> | · · · · | . | ``` | Direct Entry, | | | | | |
| | | | Summ | ary for S | ubcatchment 5: Subcat 5 | | | | | |
| Runoff | = | 0.48 cfs | s@ 12.4 | 4 hrs, Volu | ume= 4,653 cf, Depth> 0.48" | | | | | |
| Runoff b Type II 2 Area | y SCS TF 4-hr 100 (ac) C | R-20 meth Year Ra N Deso | nod, UH=S infall=5.30 cription | SCS, Weigh " | nted-CN, Time Span= 0.00-24.00 hrs, dt= 0 |).05 hrs | | | | |
| 1. | 228 3 | 9 >759 | % Grass c | over, Good | I, HSG A | | | | | |
| 0. | 387 9 | 8 Pave | ed parking | , HSG A | | | | | | |
| 1. | 051 3 | 0 Woo | ds, Good, | HSG A | | | | | | |
| 2. | 667 4 | 4 Weig | ghted Aver | age | | | | | | |
| 2. | 387 | 14.5 | 0% Fervio 0% Imperv | vious Area | | | | | | |
| 0. | | 1110 | o /o impor | | | | | | | |
| Тс | Length | Slope | Velocity | Capacity | Description | | | | | |
| (min) | (feet) | <u>(ft/ft)</u> | (ft/sec) | (cts) | | | | | | |
| 21.5 | 100 | 0.0300 | 0.08 | | Sheet Flow, | - 2 20" | | | | |
| 12.1 | 630 | 0.0300 | 0.87 | | Shallow Concentrated Flow, | 2.30 | | | | |
| | | | | | Woodland Kv= 5.0 fps | | | | | |
| 33.6 | 730 | Total | | | | | | | | |
| | | | Summ | ary for Si | ubcatchment 6: Subcat 6 | | | | | |
| Runoff | = | 0.61 cfs | s@ 12.0 | 3 hrs, Volu | ume= 1,664 cf, Depth> 1.00" | | | | | |
| D (() | | | | | | | | | | |

Type II 24-hr 100 Year Rainfall=5.30"

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| Area (| (ac) (| CN Des | cription | | |
|--------|--------|---------|------------|------------|---------------------------------|
| 0.3 | 352 | 39 >75 | % Grass co | over, Good | , HSG A |
| 0. | 106 | 98 Pav | ed parking | , HSG A | |
| 0.4 | 458 | 53 Wei | ghted Aver | age | |
| 0.3 | 352 | 76.8 | 6% Pervio | us Area | |
| 0. | 106 | 23.1 | 4% Imperv | /ious Area | |
| | | | | | |
| Tc | Length | Slope | Velocity | Capacity | Description |
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) | |
| 8.8 | 100 | 0.0400 | 0.19 | | Sheet Flow, |
| | | | | | Grass: Short n= 0.150 P2= 2.30" |
| 0.7 | 55 | 0.0400 | 1.40 | | Shallow Concentrated Flow, |
| | | | | | Short Grass Pasture Kv= 7.0 fps |
| 9.5 | 155 | Total | | | |
| | | | | | |

Summary for Subcatchment 7: Subcat 7

Runoff = 1.42 cfs @ 11.97 hrs, Volume= 3,093 cf, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type II 24-hr 100 Year Rainfall=5.30"

| Area | (ac) | CN | Desc | cription | | |
|-------------|---------------|-----------|------------------------|----------------------|-------------------|---------------|
| 0. | 052 | 39 | >75% | 6 Grass co | over, Good | , HSG A |
| 0. | 182 | 98 | Pave | ed parking, | HSG A | |
| 0. | 234 | 85 | Weig | hted Aver | age | |
| 0. | 052 | | 22.3 | 9% Pervio | us Area | |
| 0. | 182 | | 77.61% Impervious Area | | | |
| Tc (min) | Lengt (fee | th :t) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
| 6.0 | | | | | | Direct Entry, |
| | | | | | | |

Summary for Subcatchment 8: Subcat 8

Runoff = 4.94 cfs @ 11.98 hrs, Volume= 10,338 cf, Depth> 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type II 24-hr 100 Year Rainfall=5.30"

| | Area | (ac) | CN | Desc | ription | | | |
|---|-------|------|-----|---------|------------|------------|---------------|--|
| | 0. | 810 | 39 | >75% | 6 Grass co | over, Good | , HSG A | |
| | 0. | 680 | 98 | Pave | d parking, | HSG A | | |
| | 0. | 047 | 30 | Woo | ds, Good, | HSG A | | |
| | 1. | 536 | 65 | Weig | hted Aver | age | | |
| | 0. | 857 | | 55.7 | 5% Pervio | us Area | | |
| | 0. | 680 | | 44.24 | 4% Imperv | vious Area | | |
| | | | | | | | | |
| | Тс | Leng | th | Slope | Velocity | Capacity | Description | |
| _ | (min) | (fee | et) | (ft/ft) | (ft/sec) | (cfs) | | |
| | 6.0 | | | | | | Direct Entry, | |

Summary for Subcatchment 9: Subcat 9

Runoff = 3.11 cfs @ 11.98 hrs, Volume= 6,480 cf, Depth> 2.01"

| Area (sf) | CN | Description |
|-----------|----|-------------------------------|
| 20,415 | 39 | >75% Grass cover, Good, HSG A |
| 18,228 | 98 | Paved parking, HSG A |
| 38,644 | 67 | Weighted Average |
| 20,415 | | 52.83% Pervious Area |
| 18,228 | | 47.17% Impervious Area |

| Tc (min) | Length | Slope | Velocity | Capacity (cfs) | Description | | | | |
|--|--|----------------------|------------------------------------|--|---------------|------------------------|--|--|--|
| 6.0 | 6.0 Direct Entry, | | | | | | | | |
| | Summary for Subcatchment 10: Subcat 10 | | | | | | | | |
| Runoff | = | 3.91 cfs | s@ 11.9 | 8 hrs, Volu | ime= | 8,262 cf, Depth> 1.62" | | | |
| Runoff by Type II 2 | Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Гуре II 24-hr 100 Year Rainfall=5.30" | | | | | | | | |
| A | 34,234 24,574 2.232 | 39 > 98 P 30 W | 75% Gras aved park loods. Go | s cover, Go ing, HSG A od. HSG A | ood, HSG A | | | | |
| 61,040 62 Weighted Average 36,466 59.74% Pervious Area 24,574 40.26% Impervious Area | | | | | | | | | |
| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description | | | | |
| 6.0 | | | | | Direct Entry, | | | | |

Summary for Subcatchment 11: Subcat 11

Runoff = 1.40 cfs @ 12.00 hrs, Volume= 3,748 cf, Depth> 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type II 24-hr 100 Year Rainfall=5.30"

| A | rea (sf) | CN | Description | | |
|-------|-----------------------------|--------|-------------|--------------|---------------|
| | 19,009 | 39 | >75% Gras | s cover, Go | ood, HSG A |
| | 14,917 | 98 | Paved park | ing, HSG A | \mathcal{A} |
| | 30,207 | 30 | Woods, Go | od, HSG A | |
| | 64,133 | 48 | Weighted A | verage | |
| | 49,216 76.74% Pervious Area | | | | 3 |
| | 14,917 | | 23.26% Imp | pervious Are | rea |
| | | | | | |
| Тс | Length | Slope | e Velocity | Capacity | Description |
| (min) | (feet) | (ft/ft |) (ft/sec) | (cfs) | |
| 6.0 | | | | | Direct Entry, |
| | | | | | - |

Summary for Subcatchment 12: Subcat 12

Runoff = 0.65 cfs @ 11.96 hrs, Volume= 1,625 cf, Depth> 5.06"

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| Area (sf) | CN | Description |
|--------------|------|----------------------------------|
| 0 | 39 | >75% Grass cover, Good, HSG A |
| 3,855 | 98 | Paved parking, HSG A |
| 3,855 | 98 | Weighted Average |
| 0 | | 0.00% Pervious Area |
| 3,855 | | 100.00% Impervious Area |
| | | |
| Tc Length | Slop | pe Velocity Capacity Description |
| (min) (feet) | (ft/ | ft) (ft/sec) (cfs) |

6.0

Direct Entry,

Summary for Pond CB-5: Catch Basin

| Inflow Area | = | 40,640 sf, | 32.98% Impervious, | Inflow Depth > 1 | .42" for 100 Year event |
|-------------|---|------------|--------------------|------------------|-------------------------|
| Inflow | = | 1.81 cfs @ | 12.02 hrs, Volume= | 4,797 cf | |
| Outflow | = | 1.81 cfs @ | 12.02 hrs, Volume= | 4,797 cf, | Atten= 0%, Lag= 0.0 min |
| Primary | = | 1.81 cfs @ | 12.02 hrs, Volume= | 4,797 cf | - |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 1,008.72' @ 12.02 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|-----------|--|
| #1 | Primary | 1,007.98' | 12.0" Round Culvert L= 202.0' Ke= 0.500 |
| | | | Inlet / Outlet Invert= 1,007.98' / 1,005.96' S= 0.0100 '/' Cc= 0.900 |
| | | | n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf |

Primary OutFlow Max=1.75 cfs @ 12.02 hrs HW=1,008.70' TW=1,003.55' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 1.75 cfs @ 2.89 fps)

Summary for Pond CB-8: Catch Basin

| Inflow Are | a = | 96,248 sf, | 42.27% Impervious, | Inflow Depth > 1 | 1.55" fo | r 100 Year event |
|------------|-----|------------|--------------------|------------------|----------|------------------|
| Inflow | = | 4.36 cfs @ | 12.06 hrs, Volume= | 12,450 cf | | |
| Outflow | = | 4.36 cfs @ | 12.06 hrs, Volume= | 12,450 cf, | Atten= (|)%, Lag= 0.0 min |
| Primary | = | 4.36 cfs @ | 12.06 hrs, Volume= | 12,450 cf | | - |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 1,003.93' @ 12.06 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|-----------|---|
| #1 | Primary | 1,002.11' | 12.0" Round Culvert L= 241.0' Ke= 0.500 Inlet / Outlet Invert= 1,002.11' / 998.20' S= 0.0162 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf |

Primary OutFlow Max=4.20 cfs @ 12.06 hrs HW=1,003.85' TW=993.56' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 4.20 cfs @ 5.35 fps)

Summary for Pond FB-1: Forebay

| Inflow Area | a = | 55,608 sf, | 49.07% Impervious, | Inflow Depth > 2 | 2.12" for 100 Year event |
|-------------|-----|------------|--------------------|------------------|--------------------------|
| Inflow | = | 4.62 cfs @ | 11.98 hrs, Volume= | 9,815 cf | |
| Outflow | = | 4.53 cfs @ | 11.99 hrs, Volume= | 9,118 cf, | Atten= 2%, Lag= 1.0 min |
| Primary | = | 4.53 cfs @ | 11.99 hrs, Volume= | 9,118 cf | - |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 1,007.82' @ 11.99 hrs Surf.Area= 1,334 sf Storage= 1,050 cf

Plug-Flow detention time= 53.4 min calculated for 9,099 cf (93% of inflow) Center-of-Mass det. time= 15.9 min (854.5 - 838.6)

| Volume | Inve | ert Avai | I.Storage | Storage Description | on | | |
|--|---------|-----------------------------|------------------------------------|--|--|--|---|
| #1 | 1,006.0 | 0' | 1,312 cf | Custom Stage Da | ata (Irregular) Liste | ed below (Recalc) | |
| Elevation (feet) | | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft <u>)</u> | |
| 1,006.00 1,007.00 1,007.50 1,008.00 | | 25 650 1,010 1,540 | 25.0 180.0 190.0 240.0 | 0 267 412 633 | 0 267 679 1,312 | 25 2,556 2,864 4,579 | |
| Device F | Routing | In | vert Outle | et Devices | | | |
| #1 F | Primary | 1,007 | .50' 10.0 ' Head Coef | ' long x 10.0' brea d (feet) 0.20 0.40 f. (English) 2.49 2. | Operation Operation <t< td=""><td>ed Rectangular Weir 1.20 1.40 1.60 58 2.69 2.67 2.64</td><td>,</td></t<> | ed Rectangular Weir 1.20 1.40 1.60 58 2.69 2.67 2.64 | , |

Primary OutFlow Max=4.43 cfs @ 11.99 hrs HW=1,007.81' TW=1,007.36' (Dynamic Tailwater) **1=Broad-Crested Rectangular Weir** (Weir Controls 4.43 cfs @ 1.42 fps)

Summary for Pond HDS-1: Hydrodynamic Separator

| Inflow A | rea = | 262,859 sf | , 43.03% Impervious, | Inflow Depth > 1 | 1.71" for 100 \ | /ear event |
|----------|-------|-------------|----------------------|------------------|-----------------|------------|
| Inflow | = | 14.62 cfs @ | 12.00 hrs, Volume= | 37,530 cf | | |
| Outflow | = | 14.62 cfs @ | 12.00 hrs, Volume= | 37,530 cf, | Atten= 0%, La | g= 0.0 min |
| Primary | = | 14.62 cfs @ | 12.00 hrs, Volume= | 37,530 cf | | - |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 994.77' @ 12.00 hrs

| Device | Routing | Invert | Outlet Devices |
|--------|---------|---------|---|
| #1 | Primary | 991.07' | 18.0" Round Culvert L= 5.0' Ke= 0.500 Inlet / Outlet Invert= 991.07' / 991.02' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf |

Primary OutFlow Max=14.47 cfs @ 12.00 hrs HW=994.71' TW=991.48' (Dynamic Tailwater) -1=Culvert (Inlet Controls 14.47 cfs @ 8.19 fps)

Summary for Pond SMP-1: Porous Pavement

| Inflow Area | . = | 76,361 sf, | 71.86% Impervious, | Inflow Depth > 3 | 3.25" for 100 | Year event |
|-------------|-----|------------|--------------------|------------------|---------------|-------------|
| Inflow | = | 9.66 cfs @ | 11.97 hrs, Volume= | 20,671 cf | | |
| Outflow | = | 9.66 cfs @ | 11.97 hrs, Volume= | 20,671 cf, | Atten= 0%, La | ag= 0.0 min |
| Discarded | = | 9.66 cfs @ | 11.97 hrs, Volume= | 20,671 cf | | - |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 1,009.00' @ 11.95 hrs Surf.Area= 32,000 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 0.0 min (812.9 - 812.9)

| ,, , , , | | 1,000.00 | 20.00 | | | | | |
|-----------|-----------|-----------|---|-----------------------|-----------------|--|--|--|
| | Discarded | 1 009 00' | 20.00 | 0 in/hr Ex | filtration over | r Surface area | | |
| Device I | Routing | Invert | Outlet | t Devices | | | | |
| 1,010.00 | | 32,000 | 32 | 2,000 | 32,000 | | | |
| 1,009.00 | | 32,000 | | 0 | 0 | | | |
| (feet) | | (sq-ft) | (cubic- | -feet) | (cubic-feet) | | | |
| Elevation | Su | urf.Area | Inc.S | Store | Cum.Store | | | |
| #1 | 1,009.00' | 12,80 | 0 cf Custom Stage Data (Pri 32,000 cf Overall x 40.0 | | | rismatic) Listed below (Recalc) 0% Voids | | |
| Volume | Invert | Avail.Sto | rage | e Storage Description | | | | |

Discarded OutFlow Max=14.81 cfs @ 11.97 hrs HW=1,009.00' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 14.81 cfs)

Summary for Pond SMP-2: Drip Strips

| Inflow Area | a = | 7,537 sf, | 99.99% Impervious | , Inflow Depth > | 5.06" | for 100 | Year event |
|-------------|-----|------------|--------------------|------------------|----------|---------|--------------|
| Inflow | = | 1.27 cfs @ | 11.96 hrs, Volume= | 3,177 c | f | | |
| Outflow | = | 0.51 cfs @ | 11.80 hrs, Volume= | 3,209 c | f, Atten | = 60%, | Lag= 0.0 min |
| Discarded | = | 0.51 cfs @ | 11.80 hrs, Volume= | 3,209 c | f | | |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 999.98' @ 12.08 hrs Surf.Area= 1,100 sf Storage= 429 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 2.9 min (745.3 - 742.4)

| Volume | Invert | Avail.Storage | Storage | e Description | |
|---------------------|------------|------------------------|--------------------------|---|---|
| #1 | 999.00' | 440 cl | Custon 1,100 c | n Stage Data (Pris f Overall x 40.0% | smatic) Listed below (Recalc) Voids |
| Elevation (feet) | Surf. (| Area Ir sq-ft) (cul | nc.Store bic-feet) | Cum.Store (cubic-feet) | |
| 999.00 1,000.00 | , | I,100 I,100 | 0 1,100 | 0 1,100 | |

2021110.02_Post-Development

| Prepared by The L | A Group | | | |
|--------------------|-----------|-----------------|----------|-------------|
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| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|---|
| #1 | Discarded | 999.00' | 20.000 in/hr Exfiltration over Surface area |

Discarded OutFlow Max=0.51 cfs @ 11.80 hrs HW=999.01' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.51 cfs)

Summary for Pond SMP-3: Stormwater Planter

| Inflow Area | a = | 3,855 sf, | 100.00% Im | pervious, | Inflow Depth > | 5.06" | for 10 | 0 Year event |
|-------------|-----|------------|--------------|-----------|----------------|-----------|--------|--------------|
| Inflow | = | 0.65 cfs @ | 11.96 hrs, \ | Volume= | 1,625 | cf | | |
| Outflow | = | 0.60 cfs @ | 12.00 hrs, \ | Volume= | 1,458 | cf, Atter | ı= 8%, | Lag= 2.1 min |
| Primary | = | 0.60 cfs @ | 12.00 hrs, \ | Volume= | 1,458 | cf | | |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 1,019.46' @ 12.00 hrs Surf.Area= 315 sf Storage= 303 cf

Plug-Flow detention time= 95.1 min calculated for 1,455 cf (90% of inflow) Center-of-Mass det. time= 42.2 min (784.6 - 742.4)

| Volume | Inve | ert Avail | .Storage | Storage Description | n | | |
|--------------------|-----------|----------------------|-----------------------------------|--|--|---|------------|
| #1 | 1,018.5 | 50' | 315 cf | Custom Stage Da | ata (Irregular)Listed | d below (Recalc) | |
| Elevatio (fee | on et) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft <u>)</u> | |
| 1,018.9 1,019.9 | 50 50 | 315 315 | 108.0 108.0 | 0 315 | 0 315 | 315 423 | |
| Device | Routing | Inv | vert Outle | et Devices | | | |
| #1 | Device 3 | 1,018. | 50' 0.25 | 0 in/hr Exfiltration | over Surface area | a | |
| #2 | Device 3 | 1,019. | 00' 8.0'' | Vert. Orifice/Grate | e C= 0.600 | | |
| #3 | Primary | 1,016. | 00' 6.0'' Inlet n= 0 | Round Culvert L / Outlet Invert= 1,0 .012 Corrugated P | = 50.0' Ke= 0.500 16.00' / 1,015.50' P. smooth interior. | S= 0.0100 '/' Cc= Flow Area= 0.20 st | 0.900 F |

Primary OutFlow Max=0.60 cfs @ 12.00 hrs HW=1,019.46' TW=1,008.70' (Dynamic Tailwater) **3=Culvert** (Passes 0.60 cfs of 1.33 cfs potential flow)

1=Exfiltration (Exfiltration Controls 0.00 cfs)

-2=Orifice/Grate (Orifice Controls 0.59 cfs @ 2.31 fps)

Summary for Pond SMP-4: Bioretention Basin

| Inflow Are | ea = | 55,608 sf, 49.07% Impervious, | Inflow Depth > 1.97" for 100 Year event | |
|------------|------|-------------------------------|---|---|
| Inflow | = | 4.53 cfs @ 11.99 hrs, Volume= | 9,118 cf | |
| Outflow | = | 2.68 cfs @ 12.08 hrs, Volume= | 7,653 cf, Atten= 41%, Lag= 5.3 mir | ۱ |
| Primary | = | 2.68 cfs @ 12.08 hrs, Volume= | 7.653 cf | |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 1,007.60' @ 12.08 hrs Surf.Area= 2,179 sf Storage= 2,501 cf

Plug-Flow detention time= 108.6 min calculated for 7,637 cf (84% of inflow) Center-of-Mass det. time= 35.7 min (890.2 - 854.5) 2021110.02_Post-Development Prepared by The LA Group

Type II 24-hr 100 Year Rainfall=5.30" Printed 9/16/2022 Page 12

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| Volume | Inve | ert Avai | I.Storage | Storage Description | on | | |
|----------|----------|-----------|-------------------|----------------------|------------------------------|-------------------------|--|
| #1 | 1,006.0 |)0' | 3,431 cf | Custom Stage Da | ata (Irregular) Liste | d below (Recalc) | |
| Elevatio | n | Surf.Area | Perim. | Inc.Store | Cum.Store | Wet.Area | |
| (fee | t) | (sq-ft) | (feet) | (cubic-feet) | (cubic-feet) | <u>(sq-ft)</u> | |
| 1,006.0 | 0 | 1,000 | 140.0 | 0 | 0 | 1,000 | |
| 1,007.0 | 0 | 1,700 | 180.0 | 1,335 | 1,335 | 2,031 | |
| 1,007.5 | 0 | 2,100 | 200.0 | 948 | 2,283 | 2,643 | |
| 1,008.0 | 0 | 2,500 | 210.0 | 1,149 | 3,431 | 2,985 | |
| Device | Routing | In | vert Outle | et Devices | | | |
| #1 | Device 2 | 1,006 | .00' 0.25 | 0 in/hr Exfiltration | over Surface are | а | |
| #2 | Device 4 | 1,003 | .00' 4.0'' | Round Culvert L | .= 10.0' Ke= 0.500 |) | |
| | | | Inlet | / Outlet Invert= 1,0 | 03.00' / 1,002.90' | S= 0.0100 '/' Cc= 0.900 | |
| | | | n= 0 | .012 Corrugated P | P, smooth interior, | Flow Area= 0.09 sf | |
| #3 | Device 4 | 1,007 | .00' 36.0 | " Vert. Orifice/Gra | te C= 0.600 | | |
| #4 | Primary | 1,002 | .90' 12.0 | " Round Culvert | L= 50.0' Ke= 0.50 | 00 | |
| | | | Inlet | / Outlet Invert= 1,0 | 02.90' / 1,002.40' | S= 0.0100 '/' Cc= 0.900 | |
| | | | n= 0 | .012 Corrugated P | P, smooth interior, | Flow Area= 0.79 sf | |

Primary OutFlow Max=2.60 cfs @ 12.08 hrs HW=1,007.59' TW=1,003.77' (Dynamic Tailwater) **4=Culvert** (Passes 2.60 cfs of 7.31 cfs potential flow)

2=Culvert (Passes 0.01 cfs of 0.82 cfs potential flow) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

-3=Orifice/Grate (Orifice Controls 2.59 cfs @ 2.62 fps)

Summary for Pond SMP-5: Detention Pipes

| Inflow A | vrea = | 262,859 sf, | 43.03% Impervious, | Inflow Depth > | 1.71" fo | r 100 Year event |
|----------|--------|-------------|--------------------|----------------|------------|--------------------|
| Inflow | = | 14.62 cfs @ | 12.00 hrs, Volume= | 37,530 cf | | |
| Outflow | = | 5.17 cfs @ | 12.17 hrs, Volume= | 36,411 cf, | , Atten= 6 | 65%, Lag= 10.3 min |
| Primary | = | 5.17 cfs @ | 12.17 hrs, Volume= | 36,411 cf | | - |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 992.70' @ 12.17 hrs Surf.Area= 1,805 sf Storage= 10,309 cf

Plug-Flow detention time= 66.8 min calculated for 36,336 cf (97% of inflow) Center-of-Mass det. time= 50.3 min (912.3 - 862.0)

| Volume | Invert | Avail.Stor | age | Storage Description |
|--------|----------|------------|---------------|---|
| #1 | 989.00' | 10,68 | 1 cf | 48.0" Round Pipe Storage x 5 L= 170.0' |
| Device | Routing | Invert | Outle | et Devices |
| #1 | Device 4 | 989.00' | 4.0" | Vert. Orifice/Grate C= 0.600 |
| #2 | Device 4 | 990.40' | 15.0 | "W x 4.0" H Vert. Orifice/Grate C= 0.600 |
| #3 | Device 4 | 992.00' | 15.0 | "W x 4.0" H Vert. Orifice/Grate C= 0.600 |
| #4 | Primary | 988.90' | 12.0 | " Round Culvert L= 100.0' Ke= 0.500 |
| | | | Inlet n= 0 | / Outlet Invert= 988.90' / 988.40' S= 0.0050 '/' Cc= 0.900 .012 Corrugated PP, smooth interior, Flow Area= 0.79 sf |

Primary OutFlow Max=5.12 cfs @ 12.17 hrs HW=992.67' TW=0.00' (Dynamic Tailwater) **4=Culvert** (Passes 5.12 cfs of 5.58 cfs potential flow)

1=Orifice/Grate (Orifice Controls 0.79 cfs @ 9.02 fps)

-2=Orifice/Grate (Orifice Controls 2.91 cfs @ 6.99 fps)

-3=Orifice/Grate (Orifice Controls 1.42 cfs @ 3.42 fps)

Summary for Link AP-1: Ausable River

| Inflow A | Area = | = | 518,187 sf, | , 29.23% Impervious, | Inflow Depth > | 1.08" | for 100 Year event |
|----------|--------|---|-------------|----------------------|----------------|---------|---------------------|
| Inflow | = | = | 5.77 cfs @ | 12.17 hrs, Volume= | 46,435 cf | | |
| Primary | y = | = | 5.77 cfs @ | 12.17 hrs, Volume= | 46,435 cf | , Atter | n= 0%, Lag= 0.0 min |

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Attachment D

Storm Data

| Stormwater Practice Sizing | | | | | | | |
|--|---------------------------|---|--|--|--|--|--|
| Job Name and # KOA Riverside 2021110.02 | | | | | | | |
| Water Ouality Volume Cal | culation | | | | | | |
| 9/16/2022 | | | | | | | |
| WQv = [(P)(Rv)(A)]/12 | | | | | | | |
| | | | | | | | |
| Where: | | | | | | | |
| Rv = 0.05 + 0.009(I) | | | | | | | |
| I = impervious cover in perP = 90% rainfall (see Figure 1) | ercent re 4.1 in NVS S | Stormwater Management Design Manual) | | | | | |
| A = Area in acres | uc 4.1 III N 15 5 | Stormwater inanagement Design inanuar) | | | | | |
| | | | | | | | |
| Required WQv New Impervious | | | | | | | |
| 1 | | | | | | | |
| % Impervious | 100.00% | | | | | | |
| RV 90% Rainfall | 1.00 |) | | | | | |
| Area in Square Feet | 55,021 | | | | | | |
| WQv Required = | 4356 | 6 ft ³ 0.100 ac-ft | | | | | |
| Evisting Disturbed Impervi | ana (259/ Tuaa) | Amo (m. 4) | | | | | |
| Existing Disturbed Impervi | ous (2370 1 real | ument <i>i</i> | | | | | |
| % Impervious | 100.00% | Ď | | | | | |
| Rv | 0.95 | 5 | | | | | |
| 90% Rainfall Area in Square Feet | 1.00 66 739 | 1 | | | | | |
| WOv Calculated = | 5284 | 6 ft ³ 0.121 ac-ft | | | | | |
| WQv Required = | 1321 | 0.030 | | | | | |
| Total = | 5677 | 7 ft ³ 0.130 ac-ft | | | | | |
| Calculated WQv | | | | | | | |
| Porous Pave (SMP-1) | | | | | | | |
| | -1.0.001 | | | | | | |
| % Impervious Ry | 71.86% | <mark>)</mark> | | | | | |
| 90% Rainfall | 1.00 |) | | | | | |
| Area in Square Feet | 76,361 | | | | | | |
| WQv Calculated = | 4434 | 4 ft ³ 0.102 ac-ft | | | | | |
| RRv Calculated = | 4434 | 4 0.102 | | | | | |
| Drip Strips (SMP-2) | | | | | | | |
| 0/ 1 | 00.000/ | | | | | | |
| % Impervious Rv | 0.95 | 5 | | | | | |
| 90% Rainfall | 1.00 |) | | | | | |
| Area in Square Feet | 7,537 | | | | | | |
| WQv Calculated = | 597 | 7 ft ³ 0.014 ac-ft | | | | | |
| RRv Calculated = | 597 | 7 0.014 | | | | | |
| Stormwater Planter (SMP-3 | 3) | | | | | | |
| 0/ Interneticone | 100.009/ | | | | | | |
| Rv | 0.95 | 5 | | | | | |
| 90% Rainfall | 1.00 |) | | | | | |
| Area in Square Feet | 3,855 | , <u> </u> | | | | | |
| WQv Calculated = | 305 | 5 ft ³ 0.007 ac-ft | | | | | |
| RRv Calc. (40% WQv) = | 122 | 2 0.003 | | | | | |
| Bioretention Basin (SMP-4) | | | | | | | |
| 9/ Importions | 40.07% | | | | | | |
| Rv | 49.07% |) | | | | | |
| 90% Rainfall | 1.00 |) | | | | | |
| Area in Square Feet | 55,608 | | | | | | |
| WQv Calculated = | 2278 | 0.052 ac-ft | | | | | |
| RRv Calc. (40% WOv)= | 911 | 0.021 | | | | | |
| | | | | | | | |
| Total WQv Provided = | 7614 | 4 ft ³ 0.175 ac-ft | | | | | |
| Total RRv Provided = | 6064 | 0.139 ac-ft | | | | | |

BIORETENTION WORKSHEET

(See Section 6.4.4 of the NYSDEC Stormwater Management Design Manual 2015)

| 1. | Underlying soil permeability (<i>if no underdrains proposed, must infiltrate within 48 hours,</i> <i>A and B Soils</i>) | = HSG | 0.50 | in/hr |
|----|--|----------|-------------|-----------------|
| 2. | Calculate WQv: | | | |
| | DA (maximum 5 acres) | = | 55,608 | ft ² |
| | Percent Impervious Area, I | = | 49% | % |
| | Rv = .05 + .009 (I) | = | 0.49 | |
| | P (90% Rainfall) | = | 1.00 | in. |
| | WQv = P Rv A/12 | = | 2,278 | ft ³ |
| 3. | Bioretention Details: | | | |
| | Material | | Planting So | oil Mix |
| | Filter bed depth (d_f) (2.5 - 4.0 ft) | = | 2.50 | ft |
| | Coefficient of permeability of filter media (k) | = | 1.00 | ft/day |
| | Avg. height of water above filter media (h _f) (max. 0.5 ft) | = | 0.50 | ft |
| | Design filter bed drain time (t_f) | = | 2 | days |
| | | | | |

4. Calculate required bioretention surface area (A_f):

| Surface area $(A_i) =$ | WQv x d _f |
|------------------------|-----------------------|
| | $k (h_f + d_f) (t_f)$ |

| | | Required Surface Area (A _f) | = | 949 ft ² |
|----|-------------------------------|---|---|----------------------|
| 5. | Bioretention surface area pro | ovided | = | 1000 ft ² |
| 6. | Water Quality Volume provide | ed | = | 2400 ft3 |
| 7. | Volume of Water Quality Volu | ume at Designed Bioretention | | 2278 ft3 (design) |
| 8. | Is Bioretention Basin Lined o | r in HSG C/D Soils | | Yes |
| 9. | Runoff Reduction Volume pro | ovided | = | 911 ft3 (design) |

Appendix C

Map Set

Appendix D

SWPPP Inspection Form

KOA Riverside WEEKLY SWPPP INSPECTION REPORT

| Inspector Name: | Date: |
|--|---------------|
| Signature (required): | Time: |
| Weather: | Inspection #: |
| Soil Conditions (dry, saturated, etc): | |

Note: Digital photos, with date stamp required for all practices requiring corrective action, before and after, to be attached to the inspection report.

| | YES | NO | N/A | L | |
|------|--------------|------------|-------------|---|--|
| 1. | | | | Routine Inspection. | Date of last inspection: |
| 2. | | | | Inspection following rain event. | Date/time of storm ending: |
| | | | | | Rainfall amount: |
| | | | | | Recorded by: |
| 3. | | | | Is this a final site inspection? | |
| 4. | | | | Has site undergone final stabiliz | ation? |
| | | | | If so, have all temporary erosior | and sediment controls been removed? |
| Site | Distu YES | rban NO | ce (N/A | Indicate Locations on Plan) | |
| 1. | | | | Areas previously disturbed, but | have not undergone active site work in the last 14 days? |
| 2. | | | | Areas disturbed within last 14 da | ays? |
| 3. | | | | Areas expected to be disturbed | in next 14 days? |
| 4. | | | | Do areas of steep slopes or con If "YES" explain: | nplex stabilization issues exist? |
| 5. | | | | Are there currently more than 5 approval letter from NYS DEC. | acres of disturbed soil at the site? If so make sure there is an |
| Addi | tional | Com | mer | nts: | |

| Ty | n of Erosion and Sedime /pe of Control Device | ent Control Devices Accumulation (if any) in % | Repairs/Maintenance Needed |
|----|--|---|----------------------------|
| 1. | - | | - |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |

Stabilization/Runoff

- **1.** \Box \Box Are all existing disturbed areas contained by control devices? Type of devices:
- **2.** \Box \Box Are there areas that require stabilization within the next 14 days? Specify Area:
- 3.
 Have stabilization measures been initiated in inactive areas?
- 4.
 Is there current snow cover or frozen ground conditions?
- **5.** \Box \Box Rills or gullies?
- **7.** \Box \Box Loss of vegetation?
- 8.
 Lack of germination?
- **9.** \Box \Box Loss of mulching?

Receiving Structures/Water Bodies (Indicate locations where runoff leaves the project site on the site plan) YES NO N/A

- Surface water swale or natural surface waterbody? If natural waterbody: Is waterbody located
 onsite, or
 adjacent to property boundary? Description of condition:
- **a.** \Box \Box Rills or gullies?
- **b. D**
 Slumping/deposition?
- **c.** \Box \Box Loss of vegetation?
- **d.** \Box \Box Undermining of structures?
- e.
 Was there a discharge into the receiving water on the day of inspection?
- f. \Box Is there evidence of turbidity, sedimentation, or oil in the receiving waters?

Additional Comments:

Inspection of Post-Construction Stormwater Management Control Devices Type of Control Device Phase of Construction Repairs/Maintenance Needed 1. 2. 3. 4.

General Site Condition

| Jell | Jeneral Sile Condition | | | | |
|------|------------------------|----|-----|---|--|
| | YES | NO | N/A | | |
| 1. | | | | Have action items from previous reports been addressed? | |
| 2. | | | | Does routine maintenance of protection components occur on a regular basis? | |
| 3. | | | | Does cleaning and/or sweeping affected roadways occur, at minimum, daily? | |
| 4. | | | | Is debris and litter removed on a monthly basis, or as necessary? | |
| - | _ | _ | _ | | |

5.
 Is the site maintained in an orderly manner?

Describe the condition of all natural waterbodies within or adjacent to the Project that receive runoff from the site:

Contractors progress over last 7 days:

Anticipated work to be begun in the next 7 days:

Additional Comments:

| Visua | al Ob YES | serv NO | vations) N/A | |
|-------|--------------|------------|--|--|
| 1. | | | All erosion and sediment control measures have been installed/constructed? | |
| 2. | | | All erosion and sediment control measures are being maintained properly? | |
| SUM | MAR | Y OF | F ACTION ITEMS TO REPAIR/REPLACE/MAINTAIN/CORRECT DEFICIENCIES | |

Action Reported To (no signature required):

Company:

Appendix E

Other SWPPP Forms

Construction Sequence SWPPP Plan Changes Spill Response Form Stormwater Management Practice Maintenance Log

The operator shall prepare a summary of construction status using the Construction Sequence Form below once every month. Significant deviations to the sequence and reasons for those deviations (i.e. weather, subcontractor availability, etc.), shall be noted by the contractor. The schedule shall be used to record the dates for initiation of construction, implementation of erosion control measures, stabilization, etc. A copy of this table will be maintained at the construction site and updated in addition to the individual Inspection Reports completed for each inspection.

Construction Sequence Form

| (| Construction Activities Identify name of planned practices) | Date Complete |
|-----|--|------------------|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |
| 6. | | |
| 7. | | |
| 8. | | |
| 9. | | |
| 10. | | |
| 11. | | |
| 12. | | |

STORM WATER POLLUTION PREVENTION PLAN PLAN CHANGES, AUTHORIZATION, AND CHANGE CERTIFICATION

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN:

| REASONS FOR CH | ANGES: | |
|----------------|--------|--|
| | | |
| | | |
| | | |
| | | |
| REQUESTED BY: | | |
| DATE: | | |
| AUTHORIZED BY: | | |
| DATE: | | |
| | | |

CERTIFICATION OF CHANGES:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the penal code.

SIGNATURE:

DATE:

SPILL RESPONSE REPORT

Within 1 hour of a spill discovery less than 2 gallons in volume the following must be notified:

Jeff Priest (509) 440-1104

Within 1 hour of a spill discovery greater than 2 gallons the following must be notified: Jeff Priest NYSDEC Spill Response Hotline 1-800-457-7362 Spill Response Contractor

Material Spilled:

Approximate Volume:

Location:

Distance to nearest down gradient drainage:

Distance to nearest down gradient open water:

Temporary control measures in place:

Appendix F

SPDES General Permit GP-0-20-001



Department of Environmental Conservation

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson Chief Permit Administrator

Authorized Signature

1-23-20 Date

Address:

NYS DEC Division of Environmental Permits 625 Broadway, 4th Floor Albany, N.Y. 12233-1750

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater discharges from certain construction activities are unlawful unless they are authorized by a National Pollutant Discharge Elimination System ("NPDES") permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An owner or operator of a construction activity that is eligible for coverage under this permit must obtain coverage prior to the commencement of construction activity. Activities that fit the definition of "construction activity", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the owner or operator must have coverage under a SPDES permit prior to commencing construction activity. The owner or operator cannot wait until there is an actual discharge from the construction site to obtain permit coverage.

*Note: The italicized words/phrases within this permit are defined in Appendix A.

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater discharges to surface waters of the State from the following construction activities identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met

- 1. Construction activities involving soil disturbances of one (1) or more acres: including disturbances of less than one acre that are part of a larger common plan of development or sale that will ultimately disturb one or more acres of land: excluding routine maintenance activity that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;
- 2. Construction activities involving soil disturbances of less than one (1) acre where the Department has determined that a SPDES permit is required for stormwater discharges based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to surface waters of the State.
- Construction activities located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land

B. Effluent Limitations Applicable to Discharges from Construction Activities

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available

1. Erosion and Sediment Control Requirements - The owner or operator must select, design, install, implement and maintain control measures to minimize the discharge of pollutants and prevent a violation of the water quality standards. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) - (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the owner or operator must include in the Stormwater Pollution Prevention Plan ("SWPPP") the reason(s) for the

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(Part I.B.1.b)

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of Temporarily Ceased.

- c. Dewatering. Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, must be managed by appropriate control measures.
- d. Pollution Prevention Measures. Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants and prevent a violation of the water quality standards. At a minimum, such measures must be designed, installed, implemented and maintained to:
 - Minimize the discharge of pollutants from equipment and vehicle (i) washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;
 - (ii) Minimize the exposure of building materials, building products construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and
 - (iii) Prevent the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.
- e. Prohibited Discharges. The following discharges are prohibited:
 - (i) Wastewater from washout of concrete:
 - Wastewater from washout and cleanout of stucco, paint, form release (ii) oils, curing compounds and other construction materials;

- a. Erosion and Sediment Controls. Design, install and maintain effective erosion and sediment controls to minimize the discharge of pollutants and prevent a violation of the water quality standards. At a minimum, such controls must be designed, installed and maintained to:
 - Minimize soil erosion through application of runoff control and soil (i) stabilization control measure to minimize pollutant discharges
 - (ii) Control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of the discharge points;
 - (iii) Minimize the amount of soil exposed during construction activity,
 - (iv) Minimize the disturbance of steep slopes;
 - (v) Minimize sediment discharges from the site:
 - (vi) Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce pollutant discharges, unless infeasible;
 - (vii) Minimize soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;
 - (viii) Unless infeasible, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and
 - (ix) Minimize dust. On areas of exposed soil, minimize dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site
- b. Soil Stabilization. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that directly discharge to one of the 303(d) segments

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(Part I.B.1.e.iii)

- (iii) Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
- (iv) Soaps or solvents used in vehicle and equipment washing; and
- (v) Toxic or hazardous substances from a spill or other release.
- f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

- 1. The owner or operator of a construction activity that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the performance criteria in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the performance criteria in the Design Manual, the owner or operator must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is equivalent to the technical standard.
- 2. The owner or operator of a construction activity that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable sizing criteria in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

- Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.
- (ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

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(Part I.C.2.a.ii)

(Part I.C.2.c)

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:

 Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 The site discharges directly to tidal waters, or fifth order or larger

- (2) The site discharges directly to tidal waters, or fifth order or larger streams.
- (iv) Overbank Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.
- (v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

b. Sizing Criteria for New Development in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

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c. Sizing Criteria for Redevelopment Activity

- Water Quality Volume (WQv): The WQv treatment objective for redevelopment activity shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other redevelopment activities shall calculate the WQv in accordance with Section 4.2 of the Design Manual.
 - (1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or
 - (2) Capture and treat a minimum of 25% of the WQv from the disturbed, impervious area by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, impervious area by the application of RR techniques or standard SMPs with RRv capacity., or
 - (3) Capture and treat a minimum of 75% of the WQv from the disturbed, impervious area as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual, or
 - (4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the impervious area that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 - 4 above.

- Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iii) Overbank Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

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calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed *impervious* areas be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 (1) Reduction of the entire Cpv is achieved by application of runoff
 - reduction techniques or infiltration systems, or (2) The site *discharges* directly to tidal waters, or fifth order or larger streams.
- (iv) Overbank Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 (1) the site discharge directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that overbank control is not required.
- (v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that overbank control is not required.

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(Part I.C.2.d)

(Part I.C.2.b.i)

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control discharges necessary to meet applicable water quality standards. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of water quality standards as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

- There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;
- There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and
- There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

(Part I.E)

- This permit may authorize all discharges of stormwater from construction activity to surface waters of the State and groundwaters except for ineligible discharges identified under subparagraph F. of this Part.
- Except for non-stormwater discharges explicitly listed in the next paragraph, this permit only authorizes stormwater discharges; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from construction activities.
- 3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.
- 4. The owner or operator must maintain permit eligibility to discharge under this permit. Any discharges that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the owner or operator must either apply for a separate permit to cover those ineligible discharges or take steps necessary to make the discharge eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are not authorized by this permit:

- Discharges after construction activities have been completed and the site has undergone final stabilization;
- Discharges that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;
- Discharges that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;
- Construction activities or discharges from construction activities that may adversely affect an endangered or threatened species unless the owner or

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(Part I.F.8)

- 8. Construction activities that have the potential to affect an historic property, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:
 - a. Documentation that the construction activity is not within an archeologically sensitive area indicated on the sensitivity map, and that the construction activity is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the construction site within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the construction site within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.
 - 1-5 acres of disturbance 20 feet
 - 5-20 acres of disturbance 50 feet
 - 20+ acres of disturbance 100 feet, or
 - b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
 - the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
 - (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
 - (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
 - (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or
 - Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

- Discharges which either cause or contribute to a violation of water quality standards adopted pursuant to the ECL and its accompanying regulations;
- 6. Construction activities for residential, commercial and institutional projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*, and
 - c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.
- Construction activities for linear transportation projects and linear utility projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing impervious cover; and

c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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(Part I.F.8.c)

- (i) No Affect(ii) No Adverse Affect
- (iii) Executed Memorandum of Agreement, or
- d. Documentation that:
- (i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.
- Discharges from construction activities that are subject to an existing SPDES individual or general permit where a SPDES permit for construction activity has been terminated or denied; or where the owner or operator has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

- An owner or operator of a construction activity that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.
- 2. An owner or operator of a construction activity that is subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the regulated, traditional land use control MS4 prior to submitting the NOI to the Department. The owner or operator shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.
- 3. The requirement for an owner or operator to have its SWPPP reviewed and accepted by the regulated, traditional land use control MS4 prior to submitting the NOI to the Department does not apply to an owner or operator that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of Owner or Operator) or where the owner or operator of the construction activity is the regulated, traditional land use control MS4. This exemption does not apply to construction activities subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

(Part II.B)

 Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

NOTICE OF INTENT NYS DEC, Bureau of Water Permits 625 Broadway, 4th Floor Albany, New York 12233-3505

- Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the owner or operator must submit the NOI electronically using the *Department*'s online NOI.
- The owner or operator shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.
- 4. As of the date the NOI is submitted to the Department, the owner or operator shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

- An owner or operator shall not commence construction activity until their authorization to discharge under this permit goes into effect.
- Authorization to discharge under this permit will be effective when the owner or operator has satisfied <u>all</u> of the following criteria:
 - project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (<u>http://www.dec.ny.gov/</u>) for more information,
 - b. where required, all necessary Department permits subject to the Uniform Procedures Act ("UPA") (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). Owners or operators of construction activities that are required to obtain UPA permits

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(Part II.C.3.b)

- b. For *construction activities* that are subject to the requirements of a regulated, traditional land use *control MS4*:
 - Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "MS4 SWPPP Acceptance" form, or
 - (ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.
- 4. Coverage under this permit authorizes stormwater discharges from only those areas of disturbance that are identified in the NOI. If an owner or operator wishes to have stormwater discharges from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The owner or operator shall not commence construction activity on the future or additional areas until their authorization to discharge under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

- The owner or operator shall ensure that the provisions of the SWPPP are implemented from the commencement of construction activity until all areas of disturbance have achieved final stabilization and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.
- 2. The owner or operator shall maintain a copy of the General Permit (GP-0-20-001), NOI, NOI, Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the construction site until all disturbed areas have achieved final stabilization and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.
- The owner or operator of a construction activity shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a regulated, traditional land

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary UPA permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit.

- c. the final SWPPP has been prepared, and
- a complete NOI has been submitted to the Department in accordance with the requirements of this permit.
- An owner or operator that has satisfied the requirements of Part II.C.2 above will be authorized to discharge stormwater from their construction activity in accordance with the following schedule:
 - For construction activities that are <u>not</u> subject to the requirements of a regulated, traditional land use control MS4:
 - (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for construction activities with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the performance criteria in the technical standard referenced in Parts III.B., 2 or 3, for construction activities that require post-construction stormwater management practices pursuant to Part III.C.; or
 - (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for construction activities with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for construction activities that require post-construction stormwater management practices pursuant to Part III.C., the performance criteria in the technical standard referenced in Parts III.B.2 or 3, or;
 - (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

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(Part II.D.3)

use control MS4, the regulated, traditional land use control MS4 (provided the regulated, traditional land use control MS4 is not the owner or operator of the construction activity). At a minimum, the owner or operator must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

- a. The owner or operator shall have a qualified inspector conduct at least two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
- b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.
- c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.
- The owner or operator shall install any additional site-specific practices needed to protect water quality.
- e. The owner or operator shall include the requirements above in their SWPPP.
- 4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an owner's or operator's coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K...
- 5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the owner or operator.
- For construction activities that are subject to the requirements of a regulated, traditional land use control MS4, the owner or operator shall notify the

(Part II.D.6)

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the regulated, traditional land use control MS4, the owner or operator shall have the SWPPP amendments or modifications reviewed and accepted by the regulated, traditional land use control MS4 prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

 Upon renewal of SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-15-002), an owner or operator of a construction activity with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to discharge in accordance with GP- 0-20-001, unless otherwise notified by the Department.

An owner or operator may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

- 1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original owner or operator must notify the new owner or operator, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For construction activities subject to the requirements of a regulated, traditional land use control MS4, the original owner or operator must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.
- 2. Once the new owner or operator obtains permit coverage, the original owner or operator shall then submit a completed NOT with the name and permit identification number of the new owner or operator to the Department at the address in Part II.B.1. of this permit. If the original owner or operator maintains ownership of a portion of the construction activity and will disturb soil, they must maintain their coverage under the permit.
- Permit coverage for the new owner or operator will be effective as of the date the Department receives a complete NOI, provided the original owner or

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(Part III.A.4.b)

- whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants;
- c. to address issues or deficiencies identified during an inspection by the qualified inspector, the Department or other regulatory authority; and
- d. to document the final construction conditions.
- 5. The Department may notify the owner or operator at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the owner or operator shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the owner or operator does not respond to the Department's comments in the specified time frame, the Department may suspend the owner's or operator's coverage under this permit or require the owner or operator to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.
- 6. Prior to the commencement of construction activity, the owner or operator must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, replaring, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The owner or operator shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The owner or operator shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

The owner or operator shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*.

"I hereby certify under penalty of law 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 operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new owner or operator.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

- A SWPPP shall be prepared and implemented by the owner or operator of each construction activity covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction* activity. A copy of the completed, final NOI shall be included in the SWPPP.
- 2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.
- All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.
- 4. The owner or operator must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the owner or operator shall amend the SWPPP, including construction drawings:
 - a. whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater discharges from the site;

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(Part III.A.6)

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 am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

 For projects where the Department requests a copy of the SWPPP or inspection reports, the owner or operator shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

- Erosion and sediment control component All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:
 - Background information about the scope of the project, including the location, type and size of project

- b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*, existing and final contours; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge(s*);
- A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);
- d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;
- e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;
- f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;
- g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;
- h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;
- A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

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(Part III.B.2.b)

- A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;
- c. A Stormwater Modeling and Analysis Report that includes:
 (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;
 - Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;
 - (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and postdevelopment runoff rates and volumes for the different storm events;
 - (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;
 - (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and
 - (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;
- d. Soil testing results and locations (test pits, borings);
- e. Infiltration test results, when required; and
- f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

Sediment Control, dated November 2016;

- k. A description and location of any stormwater discharges associated with industrial activity other than construction at the site, including, but not limited to, stormwater discharges from asphalt plants and concrete plants located on the construction site, and
- Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
- 2. Post-construction stormwater management practice component The owner or operator of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable sizing criteria in Part I.C.2.a., c. or d. of this permit and the performance criteria in the technical standard, New York State Stormwater Management Design Manual dated January 2015

Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

The post-construction stormwater management practice component of the SWPPP shall include the following:

 Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

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(Part III.B.3)

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable sizing criteria in Part I.C.2. b., c. or d. of this permit and the performance criteria, Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, owners or operators of construction activities identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. Owners or operators of the construction activities identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

- The owner or operator must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.
- 2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

 The owner or operator of each construction activity identified in Tables 1 and 2 of Appendix B shall have a trained contractor inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

- 2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the trained contractor can stop conducting the maintenance inspections. The trained contractor shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.
- 3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The owner or operator shall have a qualified inspector conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].
- A qualified inspector shall conduct site inspections for all construction activities identified in Tables 1 and 2 of Appendix B, with the exception of:
 - a. the construction of a single family residential subdivision with 25% or less impervious cover at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is <u>not</u> located

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(Part IV.C.2.d)

- d. For construction sites where soil disturbance activities have been shut down with partial project completion, the qualified inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The owner or operator shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the regulated, traditional land use control MS4 (provided the regulated, traditional land use control MS4 is not the owner or operator of the construction activity) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the owner or operator shall have the qualified inspector perform a final inspection and certify that all disturbed areas have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The owner or operator shall then submit the completed NOT form to the address in Part II.B.1 of this permit.
- e. For construction sites that directly discharge to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the qualified inspector shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
- 3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.
- 4. The qualified inspector shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

- b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E;
- c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and
- construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
- 2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:
 - For construction sites where soil disturbance activities are on-going, the qualified inspector shall conduct a site inspection at least once every seven (7) calendar days.
 - b. For construction sites where soil disturbance activities are on-going and the owner or operator has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the qualified inspector shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
 - c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The owner or operator shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the regulated, traditional land use control MS4 (provided the regulated, traditional land use control MS4 is not the owner or operator of the construction activity) in writing prior to reducing the frequency of inspections.

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(Part IV.C.4.a)

(Part IV.C.1.a)

- a. Date and time of inspection;
- b. Name and title of person(s) performing inspection;
- c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
- d. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody;
- Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;
- g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;
- Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
- j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the postconstruction stormwater management practice(s):
- Identification and status of all corrective actions that were required by previous inspection; and

(Part IV.C.4.I)

- I. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The qualified inspector shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
- 5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
- All inspection reports shall be signed by the *qualified inspector*. Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

- An owner or operator that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.
- An owner or operator may terminate coverage when one or more the following conditions have been met:
 - a. Total project completion All construction activity identified in the SWPPP has been completed; and all areas of disturbance have achieved *final* stabilization; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

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(Part V.A.5.b)

- b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),
- c. for post-construction stormwater management practices that are privately owned, the owner or operator has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record,
- d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the owner or operator has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The owner or operator shall retain a copy of the NOI, NOI

Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The owner or operator must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

- b. Planned shutdown with partial project completion All soil disturbance activities have ceased; <u>and</u> all areas disturbed as of the project shutdown date have achieved final stabilization; <u>and</u> all temporary, structural erosion and sediment control measures have been removed; <u>and</u> all postconstruction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;
- c. A new owner or operator has obtained coverage under this permit in accordance with Part II.F. of this permit.
- The owner or operator obtains coverage under an alternative SPDES general permit or an individual SPDES permit.
- 3. For construction activities meeting subdivision 2a. or 2b. of this Part, the owner or operator shall have the qualified inspector perform a final site inspection prior to submitting the NOT. The qualified inspector shall, by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.
- 4. For construction activities that are subject to the requirements of a regulated, traditional land use control MS4 and meet subdivision 2a. or 2b. of this Part, the owner or operator shall have the regulated, traditional land use control MS4 sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The regulated, traditional land use control MS4 official, by signing this statement, has determined that it is acceptable for the owner or operator to submit the NOT in accordance with the requirements of this Part. The regulated, traditional land use control MS4 can make this determination by performing a final site inspection themselves or by accepting the qualified inspector's final site inspection certification(s) required in Part V.A.3. of this permit.
- For construction activities that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the owner or operator must, prior to submitting the NOT, ensure one of the following:
- the post-construction stormwater management practice(s) and any right-ofway(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

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(Part VII.A)

Act (CWA) and the ECL and is grounds for an enforcement action against the owner or operator and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all construction activity at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the owner or operator.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the owner or operator, its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to \$37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The owner or operator and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The owner or operator shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the owner or operator must make available for review and copying by any person within five (5) business days of the owner or operator receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the owner or operator becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit, or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or impervious area), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

- 1. All NOIs and NOTs shall be signed as follows:
 - For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
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(Part VII.H.2.b)

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

- c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.
- 3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.
- 4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated*, *traditional land use control MS4*, or by a duly authorized representative of that person.

It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

 The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

- a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
- (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
- b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or
- c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
 - (i) the chief executive officer of the agency, or
 - a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
- The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - The authorization is made in writing by a person described in Part VII.H.1. of this permit;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

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(Part VII.K.1)

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to discharge under a general SPDES permit for the same discharge(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The owner or operator shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the owner or operator to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The owner or operator shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

- Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
- Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

(Part VII.M.3)

- Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.
- Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

- If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.
- Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

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APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer BMP – Best Management Practice CPESC – Certified Professional in Erosion and Sediment Control Cpv – Channel Protection Volume CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq) DOW - Division of Water EAF – Environmental Assessment Form ECL - Environmental Conservation Law EPA – U. S. Environmental Protection Agency HSG – Hydrologic Soil Group MS4 – Municipal Separate Storm Sewer System NOI - Notice of Intent NOT – Notice of Termination NPDES – National Pollutant Discharge Elimination System OPRHP – Office of Parks, Recreation and Historic Places Qf – Extreme Flood Qp – Overbank Flood RRv – Runoff Reduction Volume RWE – Regional Water Engineer SEQR – State Environmental Quality Review SEQRA - State Environmental Quality Review Act SHPA – State Historic Preservation Act SPDES – State Pollutant Discharge Elimination System SWPPP – Stormwater Pollution Prevention Plan TMDL – Total Maximum Daily Load UPA - Uniform Procedures Act USDA - United States Department of Agriculture WQv - Water Quality Volume

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

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Definitions

All definitions in this section are solely for the purposes of this permit. Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, agricultural building, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the postdevelopment peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "Construction Activity(ies)" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where construction activity(ies) will occur. See definition for "Commence (Commencement of) Construction Activities" and "Larger Common Plan of Development or Sale" also.

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a construction site by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a construction site to a separate storm sewer system Appendix A

and the first point of discharge from the separate storm sewer system is the specific surface waterbody

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or point source.

Embankment -means an earthen or rock slope that supports a road/highway

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

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Appendix A

New York State Erosion and Sediment Control Certificate Program - a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from construction activity.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the construction activity is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seg

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction* activities may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Minimize - means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
- (ii) Designed or used for collecting or conveying stormwater;(iii) Which is not a *combined sewer*; and
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer - means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.)

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

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Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years

It can also mean a person that meets the Qualified Professional qualifications in addition to the Qualified Inspector qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater Individuals preparing SWPPPs that require the post-construction somewater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licenced to practice of the Chet of New York licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890)

Routine Maintenance Activity - means construction activity that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch, Cleaning and shaping of existing roadside ditches that does not maintain the
- approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch).
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or embankment.
- · Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- · Long-term use of equipment storage areas at or near highway maintenance
- Removal of sediment from the edge of the highway to restore a previously
 existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*, Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations - means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria - means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), Overbank Flood (Qp), and Extreme Flood (Qf)

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

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training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) vears

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The trained contractor is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

Steep Slope - means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank - as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) - means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941

Temporarily Ceased - means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

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APPENDIX B - Required SWPPP Components by Project Type

Table 1

Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not directly discharging to one of the 303(d) segments listed in Appendix E
 Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- · Construction of a barn or other agricultural building, silo, stock yard or pen

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV electric, telephone, sewer mains, and water mains • Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and
- stream restoration projects Pond construction
- · Linear bike paths running through areas with vegetative cover, including bike paths surfaced with ar
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover Cross-country ski trails and walking/hiking trails Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development; Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path .
- bike path or walking path. Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Appendix B

Appendix R

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP

THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of

and

Spoil areas that will be covered with vegetation Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that alter hydrology from pre to post development conditions

- excluding projects that after hydrology from pre to post development conditions, Athletic fields (natural grass) that do not include the construction or reconstruction of impervious area and do not after hydrology from pre to post development conditions Demolition project where vegetation will be established, and no redevelopment is planned Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with impervious cover Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of oreater than five acress and construction activities that include the construction or construction or greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E Single family home that disturbs five (5) or more acres of land Single family residential subdivisions located in one of the watersheds listed in Appendix C or

- Single family residential subdivisions located in one of the watersheds listed in Appendix C or directly discharging to one of the 303(d) segments listed in Appendix E Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, and ment complexes, and mobile home parks
- housing complexes, apartment complexes, and mobile home parks Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Breweries, cideries, and wineries, including establishments constructed on agricultural land Campgrounds Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or alter the hydrology from pre to post development conditions Commercial developments Churches and other places of worship Constructions of a party active a construction building (a.g. eile) and structural profilees as identified

- Churches and other places of Worship Construction of a barn or other agricultural building (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges

- Institutional development, includes nospitals, prisons, schools and colleges Industrial facilities; includes industrial parks Landfills Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Sports complexes Racetracks; includes racetracks with earthen (dirt) surface Road construction or reconstruction, including roads constructed as part of the construction activities itset of I Table 1

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APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where owners or operators of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River Figure 1
- Onondaga Lake Watershed Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed Figure 4
- Kinderhook Lake Watershed Figure 5

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of and

- · Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1

- construction activities listed in Table 1 Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or after the hydrology from pre to post development conditions Athletic fields with artificial turt Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sever or water main project or other linear utility project Sidewalk, bite path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project All other construction activities that include the construction or reconstruction of *impervious area* or
- alter the hydrology from pre to post development conditions, and are not listed in Table 1



Figure 5 - Kinderhook Lake Watershed



Appendix C

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APPENDIX E - 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

| COUNTY | WATERBODY | POLLUTANT |
|-------------|--|---------------|
| Albany | Ann Lee (Shakers) Pond, Stump Pond | Nutrients |
| Albany | Basic Creek Reservoir | Nutrients |
| Allegany | Amity Lake, Saunders Pond | Nutrients |
| Bronx | Long Island Sound, Bronx | Nutrients |
| Bronx | Van Cortlandt Lake | Nutrients |
| Broome | Fly Pond, Deer Lake, Sky Lake | Nutrients |
| Broome | Minor Tribs to Lower Susquehanna (north) | Nutrients |
| Broome | Whitney Point Lake/Reservoir | Nutrients |
| Cattaraugus | Allegheny River/Reservoir | Nutrients |
| Cattaraugus | Beaver (Alma) Lake | Nutrients |
| Cattaraugus | Case Lake | Nutrients |
| Cattaraugus | Linlyco/Club Pond | Nutrients |
| Cayuga | Duck Lake | Nutrients |
| Cayuga | Little Sodus Bay | Nutrients |
| Chautauqua | Bear Lake | Nutrients |
| Chautauqua | Chadakoin River and tribs | Nutrients |
| Chautauqua | Chautauqua Lake, North | Nutrients |
| Chautauqua | Chautauqua Lake, South | Nutrients |
| Chautauqua | Findley Lake | Nutrients |
| Chautauqua | Hulburt/Clymer Pond | Nutrients |
| Clinton | Great Chazy River, Lower, Main Stem | Silt/Sediment |
| Clinton | Lake Champlain, Main Lake, Middle | Nutrients |
| Clinton | Lake Champlain, Main Lake, North | Nutrients |
| Columbia | Kinderhook Lake | Nutrients |
| Columbia | Robinson Pond | Nutrients |
| Cortland | Dean Pond | Nutrients |

APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

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303(d) Segments Impaired by Construction Related Pollutant(s)

| Dutchess | Fall Kill and tribs | Nutrients |
|------------|---|---------------|
| Dutchess | Hillside Lake | Nutrients |
| Dutchess | Wappingers Lake | Nutrients |
| Dutchess | Wappingers Lake | Silt/Sediment |
| Erie | Beeman Creek and tribs | Nutrients |
| Erie | Ellicott Creek, Lower, and tribs | Silt/Sediment |
| Erie | Ellicott Creek, Lower, and tribs | Nutrients |
| Erie | Green Lake | Nutrients |
| Erie | Little Sister Creek, Lower, and tribs | Nutrients |
| Erie | Murder Creek, Lower, and tribs | Nutrients |
| Erie | Rush Creek and tribs | Nutrients |
| Erie | Scajaquada Creek, Lower, and tribs | Nutrients |
| Erie | Scajaquada Creek, Middle, and tribs | Nutrients |
| Erie | Scajaquada Creek, Upper, and tribs | Nutrients |
| Erie | South Branch Smoke Cr, Lower, and tribs | Silt/Sediment |
| Erie | South Branch Smoke Cr, Lower, and tribs | Nutrients |
| Essex | Lake Champlain, Main Lake, South | Nutrients |
| Essex | Lake Champlain, South Lake | Nutrients |
| Essex | Willsboro Bay | Nutrients |
| Genesee | Bigelow Creek and tribs | Nutrients |
| Genesee | Black Creek, Middle, and minor tribs | Nutrients |
| Genesee | Black Creek, Upper, and minor tribs | Nutrients |
| Genesee | Bowen Brook and tribs | Nutrients |
| Genesee | LeRoy Reservoir | Nutrients |
| Genesee | Oak Orchard Cr, Upper, and tribs | Nutrients |
| Genesee | Tonawanda Creek, Middle, Main Stem | Nutrients |
| Greene | Schoharie Reservoir | Silt/Sediment |
| Greene | Sleepy Hollow Lake | Silt/Sediment |
| Herkimer | Steele Creek tribs | Silt/Sediment |
| Herkimer | Steele Creek tribs | Nutrients |
| Jefferson | Moon Lake | Nutrients |
| Kings | Hendrix Creek | Nutrients |
| Kings | Prospect Park Lake | Nutrients |
| Lewis | Mill Creek/South Branch, and tribs | Nutrients |
| Livingston | Christie Creek and tribs | Nutrients |
| Livingston | Conesus Lake | Nutrients |
| Livingston | Mill Creek and minor tribs | Silt/Sediment |
| Monroe | Black Creek, Lower, and minor tribs | Nutrients |
| Monroe | Buck Pond | Nutrients |
| Monroe | Cranberry Pond | Nutrients |

| Monroe | Lake Ontario Shoreline, Western | Nutrients |
|----------|--|---------------|
| Monroe | Long Pond | Nutrients |
| Monroe | Mill Creek and tribs | Nutrients |
| Monroe | Mill Creek/Blue Pond Outlet and tribs | Nutrients |
| Monroe | Minor Tribs to Irondequoit Bay | Nutrients |
| Monroe | Rochester Embayment - East | Nutrients |
| Monroe | Rochester Embayment - West | Nutrients |
| Monroe | Shipbuilders Creek and tribs | Nutrients |
| Monroe | Thomas Creek/White Brook and tribs | Nutrients |
| Nassau | Beaver Lake | Nutrients |
| Nassau | Camaans Pond | Nutrients |
| Nassau | East Meadow Brook, Upper, and tribs | Silt/Sediment |
| Nassau | East Rockaway Channel | Nutrients |
| Nassau | Grant Park Pond | Nutrients |
| Nassau | Hempstead Bay | Nutrients |
| Nassau | Hempstead Lake | Nutrients |
| Nassau | Hewlett Bay | Nutrients |
| Nassau | Hog Island Channel | Nutrients |
| Nassau | Long Island Sound, Nassau County Waters | Nutrients |
| Nassau | Massapequa Creek and tribs | Nutrients |
| Nassau | Milburn/Parsonage Creeks, Upp, and tribs | Nutrients |
| Nassau | Reynolds Channel, west | Nutrients |
| Nassau | Tidal Tribs to Hempstead Bay | Nutrients |
| Nassau | Tribs (fresh) to East Bay | Nutrients |
| Nassau | Tribs (fresh) to East Bay | Silt/Sediment |
| Nassau | Tribs to Smith/Halls Ponds | Nutrients |
| Nassau | Woodmere Channel | Nutrients |
| New York | Harlem Meer | Nutrients |
| New York | The Lake in Central Park | Nutrients |
| Niagara | Bergholtz Creek and tribs | Nutrients |
| Niagara | Hyde Park Lake | Nutrients |
| Niagara | Lake Ontario Shoreline, Western | Nutrients |
| Niagara | Lake Ontario Shoreline, Western | Nutrients |
| Oneida | Ballou, Nail Creeks and tribs | Nutrients |
| Onondaga | Harbor Brook, Lower, and tribs | Nutrients |
| Onondaga | Ley Creek and tribs | Nutrients |
| Onondaga | Minor Tribs to Onondaga Lake | Nutrients |
| Onondaga | Ninemile Creek, Lower, and tribs | Nutrients |
| Onondaga | Onondaga Creek, Lower, and tribs | Nutrients |
| Onondaga | Onondaga Creek, Middle, and tribs | Nutrients |

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303(d) Segments Impaired by Construction Related Pollutant(s)

| Onondaga | Onondaga Lake, northern end | Nutrients | |
|------------|--|---------------|--|
| Onondaga | Onondaga Lake, southern end | Nutrients | |
| Ontario | Great Brook and minor tribs | Silt/Sediment | |
| Ontario | Great Brook and minor tribs | Nutrients | |
| Ontario | Hemlock Lake Outlet and minor tribs | Nutrients | |
| Ontario | Honeoye Lake | Nutrients | |
| Orange | Greenwood Lake | Nutrients | |
| Orange | Monhagen Brook and tribs | Nutrients | |
| Orange | Orange Lake | Nutrients | |
| Orleans | Lake Ontario Shoreline, Western | Nutrients | |
| Orleans | Lake Ontario Shoreline, Western | Nutrients | |
| Oswego | Lake Neatahwanta | Nutrients | |
| Oswego | Pleasant Lake | Nutrients | |
| Putnam | Bog Brook Reservoir | Nutrients | |
| Putnam | Boyd Corners Reservoir | Nutrients | |
| Putnam | Croton Falls Reservoir | Nutrients | |
| Putnam | Diverting Reservoir | Nutrients | |
| Putnam | East Branch Reservoir | Nutrients | |
| Putnam | Lake Carmel | Nutrients | |
| Putnam | Middle Branch Reservoir | Nutrients | |
| Putnam | Oscawana Lake | Nutrients | |
| Putnam | Palmer Lake | Nutrients | |
| Putnam | West Branch Reservoir | Nutrients | |
| Queens | Bergen Basin | Nutrients | |
| Queens | Flushing Creek/Bay | Nutrients | |
| Queens | Jamaica Bay, Eastern, and tribs (Queens) | Nutrients | |
| Queens | Kissena Lake | Nutrients | |
| Queens | Meadow Lake | Nutrients | |
| Queens | Willow Lake | Nutrients | |
| Rensselaer | Nassau Lake | Nutrients | |
| Rensselaer | Snyders Lake | Nutrients | |
| Richmond | Grasmere Lake/Bradys Pond | Nutrients | |
| Rockland | Congers Lake, Swartout Lake | Nutrients | |
| Rockland | Rockland Lake | Nutrients | |
| Saratoga | Ballston Lake | Nutrients | |
| Saratoga | Dwaas Kill and tribs | Silt/Sediment | |
| Saratoga | Dwaas Kill and tribs Nutrients | | |
| Saratoga | Lake Lonely | Nutrients | |
| Saratoga | Round Lake | Nutrients | |
| Saratoga | Tribs to Lake Lonely Nutrients | | |

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303(d) Segments Impaired by Construction Related Pollutant(s)

| Schenectady | Collins Lake | Nutrients |
|-------------|---|---------------|
| Schenectady | Duane Lake | Nutrients |
| Schenectady | Mariaville Lake | Nutrients |
| Schoharie | Engleville Pond | Nutrients |
| Schoharie | Summit Lake | Nutrients |
| Seneca | Reeder Creek and tribs | Nutrients |
| St.Lawrence | Black Lake Outlet/Black Lake | Nutrients |
| St.Lawrence | Fish Creek and minor tribs | Nutrients |
| Steuben | Smith Pond | Nutrients |
| Suffolk | Agawam Lake | Nutrients |
| Suffolk | Big/Little Fresh Ponds | Nutrients |
| Suffolk | Canaan Lake | Silt/Sediment |
| Suffolk | Canaan Lake | Nutrients |
| Suffolk | Flanders Bay, West/Lower Sawmill Creek | Nutrients |
| Suffolk | Fresh Pond | Nutrients |
| Suffolk | Great South Bay, East | Nutrients |
| Suffolk | Great South Bay, Middle | Nutrients |
| Suffolk | Great South Bay, West | Nutrients |
| Suffolk | Lake Ronkonkoma | Nutrients |
| Suffolk | Long Island Sound, Suffolk County, West | Nutrients |
| Suffolk | Mattituck (Marratooka) Pond | Nutrients |
| Suffolk | Meetinghouse/Terrys Creeks and tribs | Nutrients |
| Suffolk | Mill and Seven Ponds | Nutrients |
| Suffolk | Millers Pond | Nutrients |
| Suffolk | Moriches Bay, East | Nutrients |
| Suffolk | Moriches Bay, West | Nutrients |
| Suffolk | Peconic River, Lower, and tidal tribs | Nutrients |
| Suffolk | Quantuck Bay | Nutrients |
| Suffolk | Shinnecock Bay and Inlet | Nutrients |
| Suffolk | Tidal tribs to West Moriches Bay | Nutrients |
| Sullivan | Bodine, Montgomery Lakes | Nutrients |
| Sullivan | Davies Lake | Nutrients |
| Sullivan | Evens Lake | Nutrients |
| Sullivan | Pleasure Lake | Nutrients |
| Tompkins | Cayuga Lake, Southern End | Nutrients |
| Tompkins | Cayuga Lake, Southern End | Silt/Sediment |
| Tompkins | Owasco Inlet, Upper, and tribs | Nutrients |
| Ulster | Ashokan Reservoir | Silt/Sediment |
| Ulster | Esopus Creek, Upper, and minor tribs | Silt/Sediment |
| Warren | Hague Brook and tribs | Silt/Sediment |

303(d) Segments Impaired by Construction Related Pollutant(s)

| Warren | Huddle/Finkle Brooks and tribs | Silt/Sediment |
|-------------|--|---------------|
| Warren | Indian Brook and tribs | Silt/Sediment |
| Warren | Lake George | Silt/Sediment |
| Warren | Tribs to L.George, Village of L George | Silt/Sediment |
| Washington | Cossayuna Lake | Nutrients |
| Washington | Lake Champlain, South Bay | Nutrients |
| Washington | Tribs to L.George, East Shore | Silt/Sediment |
| Washington | Wood Cr/Champlain Canal and minor tribs | Nutrients |
| Wayne | Port Bay | Nutrients |
| Westchester | Amawalk Reservoir | Nutrients |
| Westchester | Blind Brook, Upper, and tribs | Silt/Sediment |
| Westchester | Cross River Reservoir | Nutrients |
| Westchester | Lake Katonah | Nutrients |
| Westchester | Lake Lincolndale | Nutrients |
| Westchester | Lake Meahagh | Nutrients |
| Westchester | Lake Mohegan | Nutrients |
| Westchester | Lake Shenorock | Nutrients |
| Westchester | Long Island Sound, Westchester (East) | Nutrients |
| Westchester | Mamaroneck River, Lower | Silt/Sediment |
| Westchester | Mamaroneck River, Upper, and minor tribs | Silt/Sediment |
| Westchester | Muscoot/Upper New Croton Reservoir | Nutrients |
| Westchester | New Croton Reservoir | Nutrients |
| Westchester | Peach Lake | Nutrients |
| Westchester | Reservoir No.1 (Lake Isle) | Nutrients |
| Westchester | Saw Mill River, Lower, and tribs | Nutrients |
| Westchester | Saw Mill River, Middle, and tribs | Nutrients |
| Westchester | Sheldrake River and tribs | Silt/Sediment |
| Westchester | Sheldrake River and tribs | Nutrients |
| Westchester | Silver Lake | Nutrients |
| Westchester | Teatown Lake | Nutrients |
| Westchester | Titicus Reservoir | Nutrients |
| Westchester | Truesdale Lake | Nutrients |
| Westchester | Wallace Pond | Nutrients |
| Wyoming | Java Lake | Nutrients |
| Wyoming | Silver Lake | Nutrients |

APPENDIX F – List of NYS DEC Regional Offices

| <u>Region</u> | COVERING THE FOLLOWING COUNTIES: | DIVISION OF ENVIRONMENTAL PERMITS (DEP) <u>Permit Administrators</u> | DIVISION OF WATER (DOW) <u>Water (SPDES) Program</u> |
|---------------|---|--|--|
| 1 | NASSAU AND SUFFOLK | 50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365 | 50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405 |
| 2 | BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND | 1 HUNTERS POINT PLAZA, 47-40 21st St. Long Island City, Ny 11101-5407 Tel. (718) 482-4997 | 1 Hunters Point Plaza, 47-40 21st St. Long Island City, Ny 11101-5407 Tel. (718) 482-4933 |
| 3 | DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER | 21 South Putt Corners Road New Paltz, Ny 12561-1696 Tel. (845) 256-3059 | 100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505 |
| 4 | ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE | 1150 North Westcott Road Schenectady, Ny 12306-2014 Tel. (518) 357-2069 | 1130 North Westcott Road Schenectady, Ny 12306-2014 Tel. (518) 357-2045 |
| 5 | CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON | 1115 STATE ROUTE 86, PO BOX 296 Ray Brook, Ny 12977-0296 Tel. (518) 897-1234 | 232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200 |
| 6 | HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE | STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245 | STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554 |
| 7 | BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS | 615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438 | 615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500 |
| 8 | CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES | 6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466 | 6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466 |
| 9 | ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING | 270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165 | 270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070 |

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Appendix G

Historic Preservation/Endangered Species Documentation











KOA Riverside



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

FEDERAL WETLAND DELINEATION REPORT and REQUEST FOR APPROVED JD For The KOA RIVERSIDE PROJECT

TOWN OF WILMINGTON ESSEX COUNTY, NY

PREPARED FOR Kampgrounds of America Inc. 550 North 31st Sreet Billings, MT 59101

September 2022

FEDERAL WETLAND DELINEATION REPORT and REQUEST FOR APPROVED JD

FOR THE

KOA RIVERSIDE PROJECT TOWN OF WILMINGTON ESSEX COUNTY, NY

PREPARED FOR KAMPGROUNDS OF AMERICA INC. 550 NORTH 31ST STREET BILLINGS, MT 59101

PREPARED BY

THE LA GROUP, P.C. 40 Long Alley Saratoga Springs, New York 12866

> PROJECT STAFF ROBERT FRASER, PWS. Cell Phone (518) 222-0034 RFRASER@THELAGROUP.COM

> > SEPTEMBER 2022

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| 2.3 Veg | etation1 | |
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| 2.5 2.4 | 1ydrology |) |
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APPENDICES

| Appendix A | Existing Conditions Survey |
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| Appendix B | Wetland Determination Summary Forms |
| Appendix C | Wetland Photos |
| Appendix D | USACOE Approved Jurisdictional Determination Form |

1. INTRODUCTION

This report describes Waters of the US (WOUS) located on an +/- 13.8 acre site in the Town of Wilmington, Essex County, New York that Kampgrounds of America, Inc. is proposing to develop (see Figure 1). Personnel of the LA Group, P.C., delineated a palustrine wetland boundary on the proposed project site on June 15, 2022. Identifying and delineating the wetland boundary involved following the methods of the US Army Corps of Engineers (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual Northcentral and Northeast Region (Environmental Laboratory, 2012).

2. SITE DESCRIPTION

2.1. General

The site tax map parcels numbers are 79.1-56-36, 80.003-56-44 and 39.001-56-46. The site is located between NYS Route 86 and the West Branch Ausable River in the Town of Wilmington, Essex County.

There is approximately 0.02 acres of palustrine, scrub shrub, emergent wetland located on the site bordering the western bank of the West Branch Ausable River. The West Branch Ausable River is a Relatively Permanent Waterways (RPW) that is a DEC Class AA-S-(TS) water and a tributary to Lake Champlain a Traditional Navigable Waterway (TNW).

A delineation of the wetland boundary was performed on this site as part of planning for a proposed campground project.

2.2. Vegetation

Vegetation at the site includes Sugar Maple (Acer saccharum), Striped Maple (Acer pensylvanicum), White Pine (Pinus strobus), White Oak (Quercus alba), Eastern Hemlock (Tsuga canadensis), Speckled Alder (Alnus incana), Steeplebush (Spiraea tomentosa), Japanese honeysuckle (Lonicera japonica), Virginia Creeper (Parthenocissus quinquefolia), Garlic Mustard (Alliaria petiolate), Jewelweed (Impatiens pallida), Sensitive Fern (Onoclea sensibilis), Cinnamon Fern (Osmundastrum cinnamo), Cattail (Typha latifolia), Soft Rush (Juncus effusus), Nodding Sedge (Carex gynandra), Rye Grass (Lolium perenne), White Clover (Trifolium repens).

2.3. Soils

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey of Essex County, soil on the site is Colton very gravelly loamy sand. This soil type (see Figure 2) consists of very deep, excessively drained soils on outwash plains, outwash terraces, and high stream terraces in the Adirondack upland, consistent with the soil identified during the wetland delineation.

2.4. Hydrology

Seasonal flooding of the Ausable River and groundwater from snowmelt and stormwater contribute to the wetland hydrology that supports a predominance of wetland vegetation within the wetland area.

The US Fish and Wildlife Service National Wetlands Inventory (NWI) map for the area of the site (Figure 3) show WOUS located on or adjacent to the site bordering the Ausable River.

3. DELINEATION METHODS

The wetland delineation on the project site was performed using the routine wetland determination method (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual Northcentral and Northeast Region (Environmental Laboratory, 2012).

Positions of the wetland boundary were determined through observation of changes in slope, vegetation changes, variations in soil characteristics, and evidence of hydrology. To mark points on the wetland boundary, pieces of plastic flagging tape marked with an identification number and tied to trees and shrubs at intervals of 20 to 40 feet. The positions of the flags were located by a professional surveyor and shown on the attached existing conditions survey under Appendix A.

The wetland indicator categories of the dominant plants, which are those listed by Reed (1988, 1996), were used to determine whether the vegetation is hydrophytic. Sample plot data is presented in Appendix B, Wetland Determination Summary Forms. Photographs of the wetland are presented in Appendix C.

4. DELINEATED WETLANDS

The palustrine scrub shrub, emergent wetland boundary covers approximately 0.02 acres bordering the west bank of the West Branch of the Ausable River and is shown on the survey under Appendix A. Approximately 400 feet of the West Branch Ausable River's western bank borders the project site's property boundary. The Ausable River flows northeast and enters Lake Champlain in the Town of Peru, NY. Wetland data forms for the wetland are provided under Appendix B.

5. REFERENCES

- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Miss.
- Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. 2016 Regional Wetland Plant List The National Wetland Plant List. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X
- U. S. Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0). ERDC/EL TR-12-1. U.S. Army Engineer Research and Development Center, Environmental Laboratory, 3909 Halls Ferry Road Vicksburg, MS 39180-6199. (Available on the internet at http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/ NCNE_suppv2.pdf.)
- Weldy, Troy and David Werier. 2012. New York Flora Atlas. [S. M. Landry and K. N. Campbell (original application development)

FIGURES

| Figure 1 | USGS Site Location Map |
|----------|-------------------------------------|
| Figure 2 | NRCS Soils Map |
| Figure 3 | DEC/NWI Environmental Resources Map |





USDA Natural Resources Conservation Service Web Soil Survey National Cooperative Soil Survey

| Μ | AP LEGEND | MAP INFORMATION |
|--|---|---|
| Area of Interest (AOI) Area of Interest (| AOI) Stony Spot | The soil surveys that comprise your AOI were mapped at 1:24,000. |
| Soils Soil Map Unit Po | ygons () Very Stony Spot | Warning: Soil Map may not be valid at this scale. Enlargement of maps beyond the scale of mapping can cal |
| Soil Map Unit Lin | es Other nts Special Line Features | misunderstanding of the detail of mapping and accuracy of line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more det |
| Special Point Features UBlowout Borrow Pit | Water Features | Please rely on the bar scale on each map sheet for map measurements. |
| — ऑ Clay Spot ⊘ Closed Depressio | Transportation +++ Rails on Interstate Highways | Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857) |
| Gravel Pit Gravelly Spot | US Routes Major Roads | Maps from the Web Soil Survey are based on the Web Me projection, which preserves direction and shape but distort distance and area. A projection that preserves area, such a Albers equal area conic projection, should be used if more |
| ▲ Lava Flow | Background Aerial Photography | accurate calculations of distance or area are required. This product is generated from the USDA-NRCS certified of the version date(s) listed below. |
| Mine or Quarry Miscellaneous W | ater | Soil Survey Area: Essex County, New York Survey Area Data: Version 21, Sep 1, 2021 |
| Perennial WaterRock Outcrop | | Soil map units are labeled (as space allows) for map scales 1:50,000 or larger. |
| Saline Spot | | Date(s) aerial images were photographed: Jun 18, 2020– 20, 2020 |
| Severely Eroded Sinkhole | Spot | compiled and digitized probably differs from the backgroun imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident. |
| Slide or Slip | | |



Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|-----------------------------|---|--------------|----------------|
| CsA | Colton very gravelly loamy sand, 0 to 3 percent slopes | 3.1 | 20.5% |
| CsB | Colton very gravelly loamy sand, 3 to 8 percent slopes | 12.1 | 79.5% |
| Totals for Area of Interest | | 15.3 | 100.0% |



KOA Lake Placid Riverside.



August 12, 2022

| | | 1:9,028 | |
|---|------|---------|--------|
| 0 | 0.07 | 0.15 | 0.3 mi |
| 0 | 0.13 | 0.25 | 0.5 km |

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

NYS Department of Environmental Conservation Not a legal document

Environmental Resource Mapper



The coordinates of the point you clicked on are:

| UTM 18 | Easting: | 593977.6332281957 | Northing: | 4915463.941402311 |
|--------------------|------------|--------------------|-----------|--------------------|
| Longitude/Latitude | Longitude: | -73.82015082697478 | Latitude: | 44.386374410012046 |

The approximate address of the point you clicked on is: Town of Wilmington, New York

County: Essex Town: Wilmington USGS Quad: WILMINGTON

National Wetands Inventory

Attribute: PSS1/EM1E Type: Freshwater Forested/Shrub Wetland Acres: 3.339217816

For more information about the National Wetands Inventory wetlands visit http://www.fws.gov/wetlands/

If your project or action is within or near an area with a rare animal, a permit may be required if the species is listed as endangered or threatened and the department determines the action may be harmful to the species or its habitat.

If your project or action is within or near an area with rare plants and/or significant natural communities, the environmental impacts may need to be addressed.

The presence of a unique geological feature or landform near a project, unto itself, does not trigger a requirement for a

Appendix A

Existing Conditions Survey



Drawing Name: Z:\PROJECTS\2021\21-3079\dwg\21-3079-S1.dwg Xref's Attached: Date Printed: Aug 31, 2022, 1:11pm



Appendix B

Wetland Determination Summary Form
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

| City/County: <u>Wilmingt</u> | on / Essex Samplin | ng Date: <u>6-15-22</u> |
|--------------------------------|---|--|
| | State: <u>NY</u> Samp | oling Point: <u>A7 WL</u> |
| Section, Township, Range | | |
| Local relief (concave, convex, | none): | Slope (%): <u>5</u> |
| 44.3863 Long: | -73.8201 | |
| | NWI classification: | PSS/EM1E |
| year? Yes X No | (If no, explain in Remarks.) | |
| tly disturbed? Are "Nor | mal Circumstances" present? | Yes X No |
| problematic? (If neede | d, explain any answers in Ren | narks.) |
| | _ City/County: <u>Wilmingt</u> _ Section, Township, Range .ocal relief (concave, convex, 44.3863 Long: | _ City/County: <u>Wilmington / Essex</u> Samplin State: <u>NY</u> Samp _ Section, Township, Range: .ocal relief (concave, convex, none): 44.3863 Long: <u>-73.8201</u> www.classification: year? Yes X No (If no, explain in Remarks.) ly disturbed? Are "Normal Circumstances" present? problematic? (If needed, explain any answers in Rem |

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | | | | - |
|--|--------------------|------------------------|----------------------|-------------------|-----------------|-------------------------------|
| Hydrophytic Vegetation Present? | Yes X | No | Is the Sample | ed Area | | |
| Hydric Soil Present? | Yes X | No | within a Wetl | and? | Yes <u>X</u> | _ No |
| Wetland Hydrology Present? | Yes X | No | If yes, optiona | I Wetland Site | ID: | |
| Remarks: (Explain alternative proc | edures here or in | a separate report.) | | | | |
| HYDROLOGY | | | | | | |
| Wetland Hydrology Indicators: | | | | Sec | ondary Indicate | ors (minimum of two required) |
| Primary Indicators (minimum of one | is required; chec | k all that apply) | | | Surface Soil C | cracks (B6) |
| Surface Water (A1) | | Water-Stained Lea | ves (B9) | | Drainage Patte | erns (B10) |
| High Water Table (A2) | | Aquatic Fauna (B1 | 3) | | Moss Trim Lin | es (B16) |
| \underline{X} Saturation (A3) | | Marl Deposits (B15 | 5) | | Dry-Season W | /ater Table (C2) |
| Water Marks (B1) | | Hydrogen Sulfide (| Ddor (C1) | | Crayfish Burro | ows (C8) |
| Sediment Deposits (B2) | | Oxidized Rhizosph | eres on Living Ro | ots (C3) | Saturation Visi | ible on Aerial Imagery (C9) |
| Drift Deposits (B3) Presence of Reduced Iron (C4) | | | | | Stunted or Stre | essed Plants (D1) |
| Algal Mat or Crust (B4) | | Recent Iron Reduc | tion in Tilled Soils | (C6) <u>X</u> | Geomorphic P | Position (D2) |
| Iron Deposits (B5) | | Shallow Aquita | ard (D3) | | | |
| Inundation Visible on Aerial Ima | agery (B7) | Other (Explain in R | Remarks) | | Microtopograp | hic Relief (D4) |
| Sparsely Vegetated Concave S | urface (B8) | | | | FAC-Neutral T | est (D5) |
| Field Observations: | | | | | | |
| Surface Water Present? Yes | <u>X</u> No | _ Depth (inches): | 6 | | | |
| Water Table Present? Yes | NoX | Depth (inches): | | | | |
| Saturation Present? Yes (includes capillary fringe) | <u>X</u> No | _ Depth (inches): | 6 V | Vetland Hydro | ology Present | ? Yes <u>X</u> No |
| Describe Recorded Data (stream ga | auge, monitoring v | well, aerial photos, p | previous inspection | ns), if available | 9: | |
| | | | | | | |
| Remarks: | | | | | | |
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VEGETATION – Use scientific names of plants.

| | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|------------------|-----------------|--|
| <u>Tree Stratum</u> (Plot size:) | % Cover | <u>Species</u> ? | Status | Number of Dominant Species |
| 1 | | | | That Are OBL, FACW, or FAC: (A) |
| 2 | | | . <u> </u> | Total Number of Dominant |
| 3 | | | | Species Across All Strata: (B) |
| 4 | | | | Percent of Dominant Species |
| 5. | | | | That Are OBL, FACW, or FAC: (A/B) |
| 6 | | | | |
| | | | | Prevalence Index worksheet: |
| 1 | <u> </u> | | | Total % Cover of: Multiply by: |
| | | = Total Cov | er | OBL species x 1 = |
| Sapling/Shrub Stratum (Plot size: 30') | | | | FACW species x 2 = |
| 1. Black Willow (Salix nigra) | 30 | Y | OBL | FAC species x 3 = |
| 2 Speckled Alder (Alnus incana) | 30 | Y | FACW | FACU species x 4 = |
| | | | <u>1110 (</u>) | UPL species x 5 = |
| 3 | | | | Column Totals: (A) (B) |
| 4 | | | | Decusiones Index - D/A - |
| 5 | | | | Prevalence Index = B/A = |
| 6 | | | | Hydrophytic Vegetation Indicators: |
| 7. | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| | 60 | - Total Cov | or | \underline{X} 2 - Dominance Test is >50% |
| 30' | | - 10181 000 | CI | 3 - Prevalence Index is ≤3.0 ¹ |
| <u>Herb Stratum</u> (Plot size: <u>50</u>) 1 Nodding Sedge (Carex gynandra) | 10 | Y | OBL | 4 - Morphological Adaptations ¹ (Provide supporting |
| 2 Soft Rush (Juncus effusus) | 10 | v | OPI | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 2. Soft Rush (Juneus entusus) | | V | | |
| 3. Cattaii (Typha latitolia) | | <u> </u> | <u>OBL</u> | Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 5. | | | | Definitions of Vegetation Strata: |
| 6 | | | | Tree – Woody plants 3 in (7.6 cm) or more in diameter |
| 7 | | | | at breast height (DBH), regardless of height. |
| /: | | | | Sapling/abrub Woody plants loss than 2 in DPH |
| 8 | | | | and greater than or equal to 3.28 ft (1 m) tall. |
| 9 | · | | <u> </u> | |
| 10 | | | | Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall |
| 11 | | | | |
| 12 | | | | Woody vines – All woody vines greater than 3.28 ft in height |
| | 70 | - Total Cav | | neight. |
| | 10 | | er | |
| Woody Vine Stratum (Plot size:) | | | | |
| 1 | | | | |
| 2 | | | | Hydrophytic Vegetation |
| 3. | | | | Present? Yes <u>X</u> No |
| 4 | | | | |
| * | | = Total Cov | or | |
| Remarks: (Include photo numbers here or on a separate | sheet) | | CI | |
| Remarks. (include photo numbers here of on a separate | Sheet.) | | | |
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| Profile Desc | ription: (Describe | to the deptl | n needed to docu | ment the i | ndicator | or confirn | n the absence of inc | dicators.) |
|----------------------------|--|--------------------|---------------------------------|--------------------------|--------------------|------------|------------------------------|---|
| Depth | Matrix | | Redo | x Features | <u>s</u> Turu 1 | 1 - 2 | T 4 | Demonto |
| (inches) | $\frac{\text{Color (moist)}}{2.5 \text{ V} 3/2}$ | <u> </u> | Color (moist) | % | Type | LOC | | Remarks |
| 12 20 | 10VD 4/C | 100 | | | | | <u>11 1</u> | 1 |
| <u> 12 - 20 </u> | <u>10YK 4/6</u> | 100 | | | | | gravelly loam | y sand |
| | | | | | | | | |
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| ¹ Type: C=Co | oncentration, D=Dep | letion, RM=I | Reduced Matrix, M | S=Masked | Sand Gra | ains. | ² Location: PL= | Pore Lining, M=Matrix. |
| Hydric Soil I | ndicators: | | | . . | | _ | Indicators for P | roblematic Hydric Soils ³ : |
| Histosol Histic En | (A1) bipedon (A2) | - | Polyvalue Belo MLRA 149B | w Surface | (S8) (LRF | К К, | 2 cm Muck (Coast Prairie | A10) (LRR K, L, MLRA 149B) Redox (A16) (LRR K, L, R) |
| Black His | stic (A3) | _ | Thin Dark Surfa | , ace (S9) (L | .RR R, MI | LRA 149B | 5 cm Mucky | Peat or Peat (S3) (LRR K, L, R) |
| Hydroge | n Sulfide (A4) | - | Loamy Mucky I | Mineral (F1 |) (LRR K | , L) | Dark Surface | e (S7) (LRR K, L, M) |
| Stratified Depleted | l Layers (A5) I Below Dark Surfaci | e (A11) | Loamy Gleyed Depleted Matrix | Matrix (F2 |) | | Polyvalue Be Thin Dark Si | elow Surface (S8) (LRR K, L) |
| XThick Da | rk Surface (A12) | | Redox Dark Su | rface (F6) | | | Iron-Mangan | nese Masses (F12) (LRR K, L, R) |
| Sandy M | lucky Mineral (S1) | - | Depleted Dark | Surface (F | 7) | | Piedmont Flo | oodplain Soils (F19) (MLRA 149B) |
| Sandy G Sandy R | edox (S5) | - | Redox Depress | sions (F8) | | | Red Parent I | C (TA6) (MLRA 144A, 145, 149B) Material (F21) |
| Stripped | Matrix (S6) | | | | | | Very Shallov | v Dark Surface (TF12) |
| Dark Sur | face (S7) (LRR R, N | ILRA 149B) |) | | | | Other (Expla | in in Remarks) |
| ³ Indicators of | bydrophytic vegetat | tion and wet | land hydrology mu | st he prese | ant unless | disturbed | l or problematic | |
| Restrictive L | ayer (if observed): | | and nyurology mu | st be prese | int, unicoe | | | |
| Туре: | | | | | | | | |
| Depth (inc | ches): | | | | | | Hydric Soil Prese | ent? Yes X No |
| Remarks: | | | | | | | | |
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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

| Project/Site: KOA Lake Placid Riverside | City/County: | Wilmingto | on / Essex | Sampling Date: 6 | -15-22 |
|---|---------------------------|---------------|------------------------|------------------|---------------|
| Applicant/Owner: <u>Terramor Outdoor Resort</u> | | | State: <u>NY</u> | Sampling Point: | A7 UPL |
| Investigator(s):RGF | _ Section, Towr | nship, Range: | | | |
| Landform (hillslope, terrace, etc.): <u>Streambank</u> L | ∟ocal relief (conc | ave, convex, | none): | Slope | (%): <u>5</u> |
| Subregion (LRR or MLRA): Lat: | 44.3863 | Long: | -73.8201 | Datum: | UTM 18 |
| Soil Map Unit Name: <u>Colton Very Gravely Sand</u> | | | NWI classific | ation: | |
| Are climatic / hydrologic conditions on the site typical for this time of y | year? Yes \underline{X} | No | _ (If no, explain in R | emarks.) | |
| Are Vegetation, Soil, or Hydrology significant | tly disturbed? | Are "Norr | mal Circumstances" p | present? Yes X | No |
| Are Vegetation, Soil, or Hydrology naturally p | problematic? | (If neede | d, explain any answe | rs in Remarks.) | |

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes No X Yes No X Yes No X | Is the Sampled Area within a Wetland? Yes No X If yes, optional Wetland Site ID: |
|---|--------------------------------------|--|
| Remarks: (Explain alternative procee | lures here or in a separate report.) | |
| | | |
| | | |

HYDROLOGY

| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
|---|---|
| Primary Indicators (minimum of one is required; check all that apply) | Surface Soil Cracks (B6) |
| Surface Water (A1) Water-Stained Leaves (B9) | Drainage Patterns (B10) |
| High Water Table (A2) Aquatic Fauna (B13) | Moss Trim Lines (B16) |
| Saturation (A3) Marl Deposits (B15) | Dry-Season Water Table (C2) |
| Water Marks (B1) Hydrogen Sulfide Odor (C1) | Crayfish Burrows (C8) |
| Sediment Deposits (B2) Oxidized Rhizospheres on Living | Roots (C3) Saturation Visible on Aerial Imagery (C9) |
| Drift Deposits (B3) Presence of Reduced Iron (C4) | Stunted or Stressed Plants (D1) |
| Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Sc | Dils (C6) Geomorphic Position (D2) |
| Iron Deposits (B5) Thin Muck Surface (C7) | Shallow Aquitard (D3) |
| Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) | Microtopographic Relief (D4) |
| Sparsely Vegetated Concave Surface (B8) | FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface Water Present? Yes No \underline{X} Depth (inches): | |
| | |
| Water Table Present? Yes <u>No X</u> Depth (inches): | 77 |
| Water Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): (includes capillary fringe) Yes No X Depth (inches): | Wetland Hydrology Present? Yes No $ ^{ m X}$ |
| Water Table Present? Yes No _X Depth (inches): Saturation Present? Yes No _X Depth (inches): (includes capillary fringe) No _X Depth (inches): Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspective) | Wetland Hydrology Present? Yes No X |
| Water Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): (includes capillary fringe) Ves No X Depth (inches): Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspective) | Wetland Hydrology Present? Yes No X |
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| Water Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): (includes capillary fringe) | Wetland Hydrology Present? Yes No X |
| Water Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspective Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspective | Wetland Hydrology Present? Yes No X tions), if available: |
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| Water Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): (includes capillary fringe) Depth (inches): Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspective Remarks: | Wetland Hydrology Present? Yes No X |
| Water Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): (includes capillary fringe) | Wetland Hydrology Present? Yes <u>No</u> X |
| Water Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): (includes capillary fringe) | Wetland Hydrology Present? Yes <u>No</u> X |
| Water Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): (includes capillary fringe) | Wetland Hydrology Present? Yes <u>No</u> X tions), if available: |
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| Water Table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): (includes capillary fringe) | Wetland Hydrology Present? Yes <u>No</u> X tions), if available: |

VEGETATION – Use scientific names of plants.

| | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|--|-------------|-------------|-------------|---|
| Tree Stratum (Plot size:) | % Cover | Species? | Status | Number of Dominant Species |
| 1. White Pine (Pinus strobus) | 30 | Y | <u>FACU</u> | That Are OBL, FACW, or FAC: (A) |
| 2. Gray Birch (Betula populifolia) | 20 | Y | FAC | Total Number of Dominant |
| 3 | | | · | Species Across All Strata: (B) |
| 4. | | | | Percent of Dominant Species |
| 5 | | | | That Are OBL, FACW, or FAC: (A/B) |
| 6 | | | | |
| 7 | | | | Prevalence Index worksheet: |
| / | 50 | | · | Total % Cover of: Multiply by: |
| 201 | | = Total Cov | ver | OBL species x 1 = |
| Sapling/Shrub Stratum (Plot size: 30) | | | | FACW species x 2 = |
| 1Japanese Honeysuckle (Lonicera japonica | <u>) 30</u> | <u> </u> | FACU | FAC species x 3 = |
| 2 | | | . <u> </u> | FACU species x 4 = |
| 3. | | | | UPL species x 5 = |
| 4 | | | | Column Totals: (A) (B) |
| 5 | | | | Prevalence Index = B/A = |
| 6 | | | | Hydrophytic Vegetation Indicators: |
| 7 | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| /: | 20 | - Total Ca | | 2 - Dominance Test is >50% |
| 20' | | | ei | 3 - Prevalence Index is ≤3.0 ¹ |
| <u>Herb Stratum</u> (Plot size: <u>50</u>) 1. Rye Grass (Lolium perenne) | 70 | Y | FACU | 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) |
| 2. White Clover (Trifolium repens) | 10 | Y | FACU | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 3 | | | | ¹ Indicators of hydric soil and wotland hydrology must |
| 0 | | | | be present, unless disturbed or problematic. |
| 4 | | | · | Definitions of Vagatation Strata |
| 5 | | | · | Deminions of Vegetation Strata. |
| 6 | · | . <u></u> | · | Tree – Woody plants 3 in. (7.6 cm) or more in diameter |
| 7 | . <u> </u> | . <u></u> | | at breast height (DDH), regardless of height. |
| 8 | | | · | Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. |
| 9 | | | · | Harb All herbaceous (non woody) plants regardless of |
| 10 | | | | size, and woody plants less than 3.28 ft tall. |
| 11 | | - | | Woody vines All woody vines greater than 2.29 ft in |
| 12 | | | | height. |
| | 80 | = Total Cov | ver | |
| Woody Vine Stratum (Plot size:) | | | | |
| 1 | | | | |
| 2 | | | | Hydrophytic |
| 2 | | | · | Vegetation Present? Ves X No |
| 3 | | | · | |
| 4 | | | · | |
| | | = Total Cov | ver | |
| Remarks: (Include photo numbers here or on a separate s | sheet.) | | | |
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| Profile Desc | ription: (Describe | to the dep | th needed to docur | nent the i | ndicator | or confirn | n the absence of indicators.) |
|----------------------------|----------------------|-------------|---------------------|------------------|-------------------|------------------|--|
| Depth | Matrix | | Redo | x Feature | <u>s</u> | | |
| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture Remarks |
| 0-4 | 10YR 4/4 | 100 | | | | | loose sand |
| 4 - 20 | 10YR 4/6 | 100 | | | | | gravelly loamy sand |
| | | 100 | | | | | <u>B</u> <u></u> . |
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| 'Type: C=Co | oncentration, D=Dep | letion, RM= | Reduced Matrix, M | S=Masked | Sand Gra | ains. | ² Location: PL=Pore Lining, M=Matrix. |
| Hydric Soli I | indicators: | | | o (| | | Indicators for Problematic Hydric Solls : |
| HISTOSOI | (A1) | | Polyvalue Belo | w Surrace | (58) (LRF | КК, | 2 CM MUCK (A10) (LRR K, L, MLRA 149B) |
| Black Hi | stic (A3) | | Thin Dark Surfa |) ace (S9) (L | RR R. MI | RA 149B | 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| Hydroge | n Sulfide (A4) | | Loamy Mucky | Mineral (F | 1) (LRR K | , L) | Dark Surface (S7) (LRR K, L, M) |
| Stratified | Layers (A5) | | Loamy Gleyed | Matrix (F2 |) | , , | Polyvalue Below Surface (S8) (LRR K, L) |
| Depleted | d Below Dark Surfac | e (A11) | Depleted Matrix | (F3) | | | Thin Dark Surface (S9) (LRR K, L) |
| Thick Da | ark Surface (A12) | | Redox Dark Su | rface (F6) | | | Iron-Manganese Masses (F12) (LRR K, L, R) |
| Sandy M | lucky Mineral (S1) | | Depleted Dark | Surface (F | 7) | | Piedmont Floodplain Soils (F19) (MLRA 149B) |
| Sandy G | Bieyed Matrix (54) | | Redox Depress | sions (F8) | | | Mesic Spoalc (TA6) (MLRA 144A, 145, 149B) Rod Paront Matorial (E21) |
| Sanuy R | Matrix (S6) | | | | | | Very Shallow Dark Surface (TE12) |
| Dark Su | rface (S7) (LRR R. I | MLRA 149E | 3) | | | | Other (Explain in Remarks) |
| | | | , | | | | |
| ³ Indicators of | f hydrophytic vegeta | tion and we | tland hydrology mus | st be prese | ent, unless | disturbed | d or problematic. |
| Restrictive L | _ayer (if observed): | : | | | | | |
| Туре: | | | | | | | |
| Depth (inc | ches): | | | | | | Hydric Soil Present? Yes No X |
| Remarks: | | | | | | | |
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Appendix C

Wetland Photos





Appendix D

USACOE Approved JD Form

APPROVED JURISDICTIONAL DETERMINATION FORM U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): August 15, 2022

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: NY District CENAN-OP-R Upstate Regulatory Field Office

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State:NY County/parish/borough: Essex City: Willmington Center coordinates of site (lat/long in degree decimal format): Lat. 44.3863° N, Long. -73.8201° E. Universal Transverse Mercator: 18

Name of nearest waterbody: West Branch Ausable River

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Lake Champlain Name of watershed or Hydrologic Unit Code (HUC): 04070007

- Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- Office (Desk) Determination. Date:
- Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Pick List** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

- Waters subject to the ebb and flow of the tide.
- Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There Pick List "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

- a. Indicate presence of waters of U.S. in review area (check all that apply): ¹
 - TNWs, including territorial seas
 - Wetlands adjacent to TNWs
 - Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
 - Non-RPWs that flow directly or indirectly into TNWs
 - Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
 - Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
 - Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
 - Impoundments of jurisdictional waters
 - Isolated (interstate or intrastate) waters, including isolated wetlands
- b. Identify (estimate) size of waters of the U.S. in the review area: Non-wetland waters: 800 linear feet: 50 width (ft) and/or acres. Wetlands: +/- 0.02 acres.
- c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual Elevation of established OHWM (if known):
- Non-regulated waters/wetlands (check if applicable):³
 Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain:

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWS AND WETLANDS ADJACENT TO TNWS

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW:

Summarize rationale supporting determination:

2. Wetland adjacent to TNW Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

- (i) General Area Conditions: Watershed size: 512square miles Drainage area: 104 square miles Average annual rainfall: 17 inches Average annual snowfall: 102 inches
- (ii) Physical Characteristics:
 - (a) <u>Relationship with TNW:</u>
 ☑ Tributary flows directly into TNW.
 ☑ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are 25-30 river miles from TNW.
Project waters are 1 (or less) river miles from RPW.
Project waters are 25-30 aerial (straight) miles from TNW.
Project waters cross or serve as state boundaries. Explain: N/A.

Identify flow route to TNW⁵: Ausable River flows East into Lake Champlain in the Town of Peru, NY. Tributary stream order, if known: 4.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

| (b) | General Tributary Characteristics (check all that apply): Tributary is: Natural |
|-----|--|
| | Tributary properties with respect to top of bank (estimate): Average width: 80 feet Average depth: 3 feet Average side slopes: 3:1. |
| | Primary tributary substrate composition (check all that apply): Silts Sands Concrete Cobbles Gravel Muck Bedrock Vegetation. Type/% cover: Muck |
| | Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Stable. Presence of run/riffle/pool complexes. Explain: Tributary geometry: Meandering Tributary gradient (approximate average slope): 5 % |
| (c) | Flow: Tributary provides for: Pick List Estimate average number of flow events in review area/year: Pick List Describe flow regime: Other information on duration and volume: Perennial. |
| | Surface flow is: Confined. Characteristics: |
| | Subsurface flow: Unknown. Explain findings: . Dye (or other) test performed: . |
| | Tributary has (check all that apply): Bed and banks OHWM ⁶ (check all indicators that apply): clear, natural line impressed on the bank changes in the character of soil shelving vegetation matted down, bent, or absent leaf litter disturbed or washed away sediment deposition water staining other (list): |
| | |
| | If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply): High Tide Line indicated by: oil or scum line along shore objects fine shell or debris deposits (foreshore) physical markings/characteristics tidal gauges other (list): High Tide Line indicated by: Mean High Water Mark indicated by: Survey to available datum; physical markings; vegetation lines/changes in vegetation types. |
| Che | emical Characteristics: |

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain: Clear.

Identify specific pollutants, if known:

(iii)

.

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break. ⁷Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- Riparian corridor. Characteristics (type, average width): rock bottom / 80 avg width.
- Wetland fringe. Characteristics: PSSEM1E. \boxtimes
- Habitat for:
 - Federally Listed species. Explain findings:
 Fish/spawn areas. Explain findings:

 - Other environmentally-sensitive species. Explain findings:

Aquatic/wildlife diversity. Explain findings: Supports Trout.

Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW 2.

(i) Physical Characteristics:

- General Wetland Characteristics: (a)
 - Properties: Wetland size:+/- 0.02 acres Wetland type. Explain:PSSEM1E. Wetland quality. Explain: Undisturbed. Project wetlands cross or serve as state boundaries. Explain: N/A.
- (b) General Flow Relationship with Non-TNW:
 - Flow is: Perennial flow. Explain: Ausable River has continuous flow.

Surface flow is: Confined Characteristics:

Subsurface flow: Unknown. Explain findings: Dye (or other) test performed:

- (c) Wetland Adjacency Determination with Non-TNW:
 - Directly abutting
 - ☐ Not directly abutting
 - Discrete wetland hydrologic connection. Explain:
 - Ecological connection. Explain:
 - Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are 20-25 river miles from TNW. Project waters are 10-15 aerial (straight) miles from TNW. Flow is from: Wetland to navigable waters. Estimate approximate location of wetland as within the Pick List floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: clear.

Identify specific pollutants, if known: unknown.

(iii) Biological Characteristics. Wetland supports (check all that apply):

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:Wetlands are 30% Shrub and 30% Emergent. \boxtimes
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings: The Ausable River is a Blue Ribbon Trout Stream.
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings: frogs and snakes were present during site visit.

Characteristics of all wetlands adjacent to the tributary (if any) 3.

All wetland(s) being considered in the cumulative analysis: 1 Approximately (+/-0.02) acres in total are being considered in the cumulative analysis. For each wetland, specify the following:

Directly abuts? (Y/N) Wetland A Y <u>Size (in acres)</u> +/- 0.02 Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed: Flood water detention, nutrient cycling and export and wildlife habitat.

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

- 1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
- Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
- 3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

- TNWs and Adjacent Wetlands. Check all that apply and provide size estimates in review area: TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
- 2. RPWs that flow directly or indirectly into TNWs.
 - Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: Class Class AA-S-(TS).
 - Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

acres.

- Tributary waters: 1,400 linear feet 80 width (ft).
- Other non-wetland waters:
 - Identify type(s) of waters:

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
 - Identify type(s) of waters:

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: The wetland flows directly into the Ausable River.
- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area: 0.5 acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

- 7. Impoundments of jurisdictional waters.⁹
 - As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
 - Demonstrate that impoundment was created from "waters of the U.S.," or
 - Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 - Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain:
- Other factors. Explain:

⁸See Footnote # 3.

⁹ To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
 - Identify type(s) of waters:
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.

Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).

- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:
- Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource:
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: 0.66 acres. List type of aquatic resource:
- Wetlands: acres.

SECTION IV: DATA SOURCES.

- A. SUPPORTING DATA. Data reviewed for JD (check all that apply checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
 Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
 - Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
 - Data sheets prepared by the Corps:
 - Corps navigable waters' study:
 - U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
 - U.S. Geological Survey map(s). Cite scale & quad name: 1:25,000 Willmington, NY.
 - USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey.
 - National wetlands inventory map(s). Cite name:DEC Environmental Resource Mapper.
 - State/Local wetland inventory map(s):DEC Environmental Resource Mapper.
 - FEMA/FIRM maps:
 - 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
 - Photographs: 🗌 Aerial (Name & Date):
 - or 🛛 Other (Name & Date):6-15-22 The LA Group, P.C.
 - Previous determination(s). File no. and date of response letter:
 - Applicable/supporting case law:
 - Applicable/supporting scientific literature:
 - Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD:

<u>Appendix H</u>

Deep Ripping and De-compaction (DEC, 2008)



Division of Water

Deep-Ripping and Decompaction

April 2008

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New York State Department of Environmental Conservation

Alternative Stormwater Management Deep-Ripping and Decompaction

Description

The two-phase practice of 1) "Deep Ripping;" and 2) "Decompaction" (deep subsoiling), of the soil material as a step in the cleanup and restoration/landscaping of a construction site, helps mitigate the physically induced impacts of soil compression; i.e.: soil compaction or the substantial increase in the bulk density of the soil material.

Deep Ripping and Decompaction are key factors which help in restoring soil pore space and permeability for water infiltration. Conversely, the physical actions of cut-and-fill work, land grading, the ongoing movement of construction equipment and the transport of building materials throughout a site alter the architecture and structure of the soil, resulting in: the mixing of layers (horizons) of soil materials, compression of those materials and diminished soil porosity which, if left unchecked, severely impairs the soil's water holding capacity and vertical drainage (rainfall infiltration), from the surface downward.

In a humid climate region, compaction damage on a site is virtually guaranteed over the duration of a project. Soil in very moist to wet condition when compacted, will have severely reduced permeability. Figure 1 displays the early stage of the deep-ripping phase (Note that all topsoil was stripped prior to construction access, and it remains stockpiled until the next phase – decompaction – is complete). A heavy-duty tractor is pulling a three-shank ripper on the first of several series of incrementally deepening passes through the construction access coridor's densely compressed subsoil material. Figure 2 illustrates the approximate volumetric composition of a loam surface soil when conditions are good for plant growth, with adequate natural pore space for fluctuating moisture conditions.



Recommended Application of Practice

The objective of Deep Ripping and Decompaction is to effectively fracture (vertically and laterally) through the thickness of the physically compressed subsoil material (see Figure 3), restoring soil porosity and permeability and aiding infiltration to help reduce runoff. Together with topsoil stripping, the "two-phase" practice of Deep Ripping and Decompaction first became established as a "best management practice" through ongoing success on commercial farmlands affected by heavy utility construction right-of-way projects (transmission pipelines and large power lines).

Soil permeability, soil drainage and cropland productivity were restored. For broader



are, 5. Construction site with significant compaction of the deep basal till subsoil extends 24 inches below this exposed cutand-fill work surface.

construction application, the two-phase practice of Deep Ripping and Decompaction is best adapted to areas impacted with significant soil compaction, on contiguous open portions of large construction sites and inside long, open construction corridors used as temporary access over the duration of construction. Each mitigation area should have minimal above-and-below-ground obstructions for the easy avoidance and maeuvering of a large tractor and ripping/decompacting implements. Conversely, the complete two-phase practice is not recommended in congested or obstructed areas due to the limitations on tractor and implement movement.

Benefits

Aggressive "deep ripping" through the compressed thickness of exposed subsoil before the replacement/respreading of the topsoil layer, followed by "decompaction," i.e.: "sub-soiling," through the restored topsoil layer down into the subsoil, offers the following benefits:

- Increases the project (larger size) area's direct surface infiltration of rainfall by
 providing the open site's mitigated soil condition and lowers the demand on
 concentrated runoff control structures
- Enhances direct groundwater recharge through greater dispersion across and through a broader surface than afforded by some runoff-control structural measures
- Decreases runoff volume generated and provides hydrologic source control
- May be planned for application in feasible open locations either alone or in

conjunction with infiltration basin) serving the same or contiguous areas plans for structural practices (e.g., subsurface drain line or

trees, shrubs and deep rooted ground cover, minimizing plant drowning during wet water holding capacity for healthy (rather than restricted) root-system development of Promotes successful long-term revegetation by restoring soil permeability, drainage and periods and burnout during dry periods.

Feasibility/Limitations

more notable site-related factors include: selection and operation of tractor and implements (explained below in Design Guidance). The maneuverability (noted above in Recommended Application of Practice), and by the proper (soil moisture) for implementation; the space-related freedom of equipment/implement the original (undisturbed) soil's hydrologic characteristics; the general slope; local weather/timing The effectiveness of Deep Ripping and Decompaction is governed mostly by site factors such as:

soils in Group D have exceptionally slow of soil-water and a moderately high runoff potential influenced by soil texture and slope; while depending somewhat on slope. Soils in Group C have slow rates of infiltration and transmission are moderate in infiltration and the transmission of soil-water with a moderate runoff potential, undisturbed soil layers for Group A is "high" with a low runoff potential while soils in Group B to water table. The natural rates of infiltration and transmission of soil-water through the range of characteristics including soil texture, drainage capability when thoroughly wet, and depth four categories of soil hydrology, Hydrologic Soil Group A, B, C or D, determined primarily by a In the undisturbed condition, each identified soil type comprising a site is grouped into one of

water, and high runoff potential.

establishment of an appropriate, deep taproot decompaction, followed by the permanent two-phase practice of deep ripping and mixing and compression of such subsoil amount of macro pores, e.g.: natural subsoi topsoil horizon (30 cm), due to the limited of infiltration begins immediately below the Soil Group C and the naturally slow rate of undisturbed horizons of a soil in Hydrologic restored back to this natural level with the material is virtually absent; but can be Infiltration after the construction-induced fractures, worm holes and root channels. infiltration through the subsoil. The slow rate In Figure 4, the profile displays the



horizons of a soil in Hydrologic Soil Group C.

for all rehabilitated soils Deep Ripping and Decompaction practice, which prepares the site for the appropriate long-term lawn/ground cover mix including deep taproot plants such as clover, fescue or trefoil, etc. needed induced mixing and compression of such subsoil material can be notably rehabilitated with the lawn/ground cover to help maintain the restored subsoil structure. Infiltration after construction-

fostering infiltration to a level equal to that of pre-disturbance. and Decompaction practice, it can greatly benefit such affected areas by reducing the runoff and Hydrologic Soil Group C do require a somewhat more carefully applied level of the Deep Ripping fragipan zone, beginning about 12 to 18 inches (30 - 45cm), below surface. Although soils in the many different soils in Hydrologic Soil Group C are those unique glacial tills having a natural the easier ones to restore permeability and infiltration, by deep ripping and decompaction. Among drained, sandy-gravelly materials or deep, moderately well-drained basal till materials, are among Generally, soils in Hydrologic Soil Groups A and B, which respectively may include deep, well-

subsoil material, the bulk density is so naturally high that heavy trafficking has little or no added Decompaction should be considered impact on infiltration; and structural runoff control practices rather than Deep Ripping and influenced by a clay or other highly impervious layer of material. In many locations with clay Soils in Hydrologic Soil Group D typically have a permanent high water table close to the surface

into account. analyzed subsoil horizons' materials referred to in the county soil survey) should always be taken translocation of deeper, unconsolidated substratum or consolidated bedrock materials (unlike the subsoil materials (as analyzed in the county soil survey) or, conversely, the excavation and such as limited depths of cut-and-fill grading with minimal removal or translocation of the inherent The information about Hydrologic Soil Groups is merely a general guideline. Site-specific data

practical. are not conducive to deep ripping and decompation (subsoiling); and other measures may be more Sites made up with significant quantities of large rocks, or having a very shallow depth to bedrock,

moderately steep or steep slopes, the practice is generally not used slope should be reviewed for safety and practicality. In broad construction areas predominated by relative alignment of the potential ripping and decompaction work in relation to the lay of the instances of moderate steepness on other projects, however, the post-construction land use and the otherwise gentle or moderate slope may also be deep ripped and decompacted. For limited temporary construction access corridors, inclusion areas that are moderately steep along a project's practical on flat, gentle and moderate slopes. In some situations, such as but not limited to The two-phase application of 1) deep ripping and 2) decompaction (deep subsoiling), is most

Local Weather/Timing/Soil Moisture

dry to moderately moist. Neither one of the two-phases, deep ripping nor decompaction (deep Effective fracturing of compressed subsoil material from the exposed work surface, laterally and vertically down through the affected zone is achieved only when the soil material is moderately

subsoiling), can be effectively conducted when the soil material (subsoil or replaced topsoil) is in either a "plastic" or "liquid" state of soil consistency. Pulling the respective implements legs through the soil when it is overly moist only results in the "slicing and smearing" of the material or added "squeezing and compression" instead of the necessary fracturing. Ample drying time is needed for a "rippable" soil condition not merely in the material close to the surface, but throughout the material located down to the bottom of the physically compressed zone of the subsoil.

topsoil is low enough in moisture for deep ripping (or material before respreading on the site.) If the obtained from the planned bottom depth of subsoiling). Using a sample of soil material material is low enough for: not the moisture level of the affected soil sample stretches out in increments greater than Conversely, as shown in Figure 5, if the rolled the time it is rolled down to 1/8 inch diameter, it segments no greater than 3/8 of an inch long, by respective soil sample crumbles apart in thread. (Use the same test for stored topsoil between the palms down to a 1/8-inch diameter subsoil surface, the sample is hand rolled ripping, e.g.: 20 friable state; and final decompaction (deep ripping of subsoil; respreading of topsoil in a plasticity is a simple "hand-roll" method used for quick, on-site determination of whether or The "poor man's Atterberg field test" for soil replacement), 24 inches below exposed and effective decompaction. deep



3/8 of an inch long before crumbling, it is in a "plastic" state of soil consistency and is too wet for subsoil ripping (as well as topsoil replacement) and final decompaction.

Design Guidance

Beyond the above-noted site factors, a vital requirement for the effective Deep Ripping and Decompaction (deep subsoling), is implementing the practice in its distinct, two-phase process:

 Deep rip the affected thickness of exposed subsoil material (see Figure 10 and 11), aggressively fracturing it before the protected topsoil is reapplied on the site (see Figure 12); and

2) Decompact (deep subsoil), simultaneously through the restored topsoil layer and the upper half of the affected subsoil (Figure 13). The second phase, "decompaction," mitigates the partial recompaction which occurs during the heavy process of topsoil spreading/grading. Prior to deep ripping and decompacting the site, all construction activity, including construction equipment and material storage, site cleanup and trafficking (Figure 14), should be finished; and the site closed off to further disturbance. Likewise, once the practice is underway and the area's soil permeability and

rainfall infiltration are being restored, a policy limiting all further traffic to permanent travel lanes is maintained.

The other critical elements, outlined below, are: using the proper implements (deep, heavy-duty rippers and subsoilers), and ample pulling-power equipment (tractors); and conducting the practice at the appropriate speed, depth and pattern(s) of movement.

Note that an appropriate plan for the separate practice of establishing a healthy perennial ground cover, with deep rooting to help maintain the restored soil structure, should be developed in advance. This may require the assistance of an agronomist or landscape horticulturist.

Implements

Avoid the use of all undersize implements. The small-to-medium, light-duty tool will, at best, only "scarify" the uppermost surface portion of the mass of compacted subsoil material. The term "chisel plow" is commonly but incorrectly applied to a broad range of implements. While a few may be adapted for the moderate subsoiling of non-impacted soils, the majority are less durable and used for only lighter land-fitting (see Figure 6).





agricultural ripper. This unit has long, rugged shanks mounted on a steel V-frame for deep, aggressive fracturing through Phase 1.

Use a "heavy duty" agricultural-grade, deep ripper (see Figures 7,9,10 and 11) for the first phase: the lateral and vertical fracturing of the mass of exposed and compressed subsoil, down and through, to the bottom of impact, prior to the replacement of the topsoil layer. (Any oversize rocks which are uplifted to the subsoil surface during the deep ripping phase are picked and removed.) Like the heavy-duty class of implement for the first phase, the decompaction (deep subsoiling) of Phase 2 is conducted with the heavy-duty version of the deep subsoiler. More preferable is the angled-leg variety of deep subsoiler (shown in Figures 8 and 13). It minimizes the inversion of the previously ripped subsoil layer and all of the topsoil layer by delivering a momentary, wave-like "lifting and shattering" action up through the soil layers as it is pulled.

Pulling-Power of Equipment

Use the following rule of thumb for tractor horsepower (hp) whenever deep ripping and decompacting a significantly impacted site: For both types of implement, have at least 40 hp of tractor pull available for each mounted shank/ leg.

Using the examples of a 3-shank and a 5-shank implement, the respective tractors should have 120 and 200 hp available for fracturing down to the final depth of 20-to-24 inches per phase. Final depth for the deep ripping in Phase 1 is achieved incrementally by a progressive series of passes (see Depth and Patterns of Movement, below); while for Phase 2, the full operating depth of the deep subsoiler is applied from the beginning.

more maneuverable. areas of Phase 1) Deep Ripping, a medium-size topsoil and the upper 12 inches of the simultaneously through 11 inches of replaced unobstructed, former construction access area angled-leg subsoiler. Its two outside legs are The operating speed for pulling both types of implement should not exceed 2 to 3 mph. At Figure 9 pulling a 3-shank deep ripper, may be tractor with adequate hp, previously deep-ripped subsoil. In constricted Figure 8 is 174 hp. It will be decompacting this The 4-wheel drive, articulated-frame tractor in engaged (at the maximum depth), requiring no implement is the 6-leg version of the deep soil fracturing. by the tractor and the implement performing the maximum functional performance is sustained this slow and managed rate of operating speed, less than 160 hp, (rather than 240 hp) of pull. "chained up" so that only four legs will be Referring to Figure 8, such as the one in the

necessary to restore soil permeability and achieve the well-distributed type of lateral and bulldozers. Although highly durable, they are Some industrial-grade variations of ripping bulldozers, as pullers, are far less maneuverable vertical and stout; and they are mounted too far apart to shanks or "teeth" of these rippers are too short generally implements are attached to power graders and for turns and patterns than the tractor. infiltration. In addition, the power graders and fracturing of the not recommended. Typically, the soil materials





Frig. 9. This meduum tractor is pulling a 5shank deep ripper. The severely compacted construction access corridor is narrow, and the 120 hp tractor is more maneuverable for Phase 1 deep ripping (subsoil fracturing), here.

Depth and Patterns of Movement

As previously noted both Phase 1 Deep Ripping through significantly compressed, exposed subsoil and Phase 2 Decompaction (deep subsoiling) through the replaced topsoil and upper subsoil need to be performed at maximum capable depth of each implement. With an implement's guide wheels attached, some have a "normal" maximum operating depth of 18 inches, while others may go deeper. In many situations, however, the tractor/implement operator must first remove the guide wheels and other non essential elements from the implement. This adapts the ripper or the deep subsoiler for skillful pulling with its frame only a few inches above surface, while the shanks or legs, fracture the soil material 20-to-24 inches deep.

There may be construction sites where the depth of the exposed subsoil's compression is moderate, e.g.: 12 inches, rather than deep. This can be verified by using a ¾ inch cone penetrometer and a shovel to test the subsoil for its level of compaction, incrementally, every three inches of increasing depth. Once the full thickness of the subsoil's compacted zone is finally "pieced" and there is a significant drop in the psi measurements of the soil penetrometer, the depth/thickness of compaction is determined. This is repeated at several representative locations of the construction site. If the thickness of the site's subsoil compaction is verified as, for example, ten inches, then the Phase 1 Deep Ripping can be correspondingly reduced to the implement's minimum operable depth of 12 inches. However, the Phase 2 simultaneous Decompation (subsoiling) of an 11 inch thick layer of replaced topsoil and the upper subsoil should run at the subsoiling implements full operating depth.





Typically, three separate series (patterns) are used for both the Phase 1 Deep Ripping and the Phase 2 Decompaction on significantly compacted sites. For Phase 1, each series begins with a moderate depth of rip and, by repeat-pass, continues until full depth is reached. Phase 2 applies the

Every separate series (pattern) consists of parallel, forward-and-return runs, with each progressive

full depth of Decompation (subsoiling), from the beginning

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actuated every 12 to 15 inches across the densely compressed soil mass. between each shank or leg. The staggered return pass ensures lateral and vertical fracturing This compensates for the shank or leg-spacing on the implement, e.g., with 24-to-30 inches pass of the implement's legs or shanks evenly staggered between those from the previous pass.

Large, Unobstructed Areas

For larger easy areas, use the standard patterns of movement:

- successive pass. spread of the site; gradually progressing across the site's width, with each • The first series (pattern) of passes is applied lengthwise, parallel with the longest
- about 45 degrees. • The second series runs obliquely, crossing the first series at an angle of

may be optional, depending on how thoroughly the first two series loosen the unbroken blocks of compressed soil material. (In certain instances, the third series material and eliminate large chunks/blocks of material as verified by tests with a 3/4the fracturing and shattering on severely compacted sites, and avoid leaving large • The third series runs at right angle (or 90 degrees), to the first series to complete inch cone penetrometer.)



Corridors

are used. compacted areas used as temporary construction access, a modified series of pattern passes In long corridors of limited width and less maneuverability than larger sites, e.g.: along

• First, apply the same initial lengthwise, parallel series of passes described above.

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• A second series of passes makes a broad "S" shaped pattern of rips, continually and gradually alternating the "S" curves between opposite edges inside the compacted corridor.

• The third and final series again uses the broad, alternating S pattern, but it is centerline. This final series of the S pattern curves back along the edge areas skipped by the second series. "flip-flopped" to continually cross the previous S pattern along the corridor's

Maintenance and Cost

Figure 15); and keeping the site free of traffic or other weight loads. and maintaining the appropriate ground cover with deep roots to maintain the soil structure (see essential for maintaining a site's soil porosity and permeability for infiltration. They are: planting Once the two-phase practice of Deep Ripping and Decompation is completed, two items are

generally limited to the successful perennial (long-term) landscape ground cover; as long as no proper seeding ratio of one or more perennial species with a deep taproot system and the proper Note that site-specific choice of an appropriate vegetative ground-cover seed mix, including the weight-bearing force of soil compaction is applied. mulching is applied. The "maintenance" of an effectively deep-ripped and decompacted area is practice of landscaping, i.e: surface tillage, seeding/planting/fertilizing and culti-packing or amount of lime and soil nutrients (fertilizer mix) adapted to the soil-needs, are basic to the final



decompaction. before deep ripping, topsoil replacement, and



tillage and revegetation to maintain soil topsoil and upper subsoil and final surface replacement, decompaction through the permeability and infiltration. ripping of the exposed subsoil, topsoil

The Deep Ripping and Decompaction practice is, by necessity, more extensive than periodic subsoiling of farmland. The cost of deep ripping and decompacting (deep subsoiling), will vary according to the depth and severity of soil-material compression and the relative amount of tractor and implement time that is required. In some instances, depending on open maneuverability, two-to-three acres of compacted project area may be deep-ripped in one day. In other situations of more severe compaction and - or less maneuverability, a slittle as one acce may be fully ripped in a day. Generally, if the Phase 1) Deep Ripping is fully effective, the Phase 2) Decompaction should be completed in 2/3 to 3/4 of the time required for Phase 1.

Using the example of two acres of Phase 1) Deep Ripping in one day, at \$1800 per day, the net cost is \$900 per acre. If the Phase 2) Decompacting or deep subsoiling takes 3/4 the time as Phase 1, it costs \$675 per acre for a combined total of \$1575 per acre to complete the practice (these figures do not include the cost of the separate practice of topsoil stripping and replacement). Due to the many variables, it must be recognized that cost will be determined by the specific conditions or constraints of the site and the availability of proper equipment.

Resources

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- Union Gas Limited, Ontario, Canada. 1984. Rehabilitation of Agricultural Lands, Dawn-Kerwood Loop Pipeline; Technical Report. Ecological Services for Planning, Ltd.; Robinson, Merritt & Devries, Ltd. and Smith, Hoffman Associates, Ltd.
- US Department of Agriculture in cooperation with Cornell University Agricultural Experiment Station. Various years. Soil Survey of <u>(various names)</u> County, New York. USDA.

Internet Access:

Examples of implements:

V-Rippers. Access by internet search of John Deere Ag -New Equipment for 915 (larger-frame model) V-Rippe; and, for 913 (smaller-frame model) V-Ripper. Deep. angled-leg subsoiler. Access by internet search of: Bigham Brothers Shear Bolt Paratill-Subsoiler.

http://salesmanual.deere.com/sales/salesmanual/en_NA/primary_tillage/2008/feature/rippers/915v_pattern_frame.htm2sbu=a g&link=prodcat_Last_visited_March 08.

- Soils data of USDA Natural Resources Conservation Service. NRCS Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/ and USDA-NRCS Official Soil Series Descriptions; View by Name. http://wrb.clin.urs.usda.gov/app/ and USDA-NRCS Official Soil Series Descriptions; View by Name. http://wrb.clin.urs.usda.gov/app/ and USDA-NRCS Official Soil Series Descriptions; View by Name. http://wrb.clin.urs.usda.gov/cgibin/osd/osdname.cgi. Last visited Jan. 08.
- Soil penetrometer information. Access by internet searches of: Diagnosing Soil Compaction using a Penetrometer (soil compaction tester), PSU Extension; as well as Dickey-john Soil Compaction Tester. http://www.dickey-johnproducts.com/pdf/SollCompactionTest.pdf and http://cropsoll.psu.edu/Extension/Facts/uc178pdf Last visited Sept. 07