

Date of Document:

STORMWATER CONTROL FACILITY MAINTENANCE AGREEMENT

Whereas, the Town of Somers ("Town") located at 335 Route 202 Somers, New York 10589 located in the Town of Somers, County of Westchester, State of New York and Veolia Water New York, Inc. ("Facility Owner") located at 162 Old Mill Road, West Nyack, New York 10994 for the address 405 Route 202, Somers, New York 10589, Town of Somers, County of Westchester, State of New York, Section 6.20, Block 10, Lot 13, want to enter into an agreement to provide for the long term maintenance and continuation of stormwater control measures approved by the Town for the below named project, and Whereas, the Town and the Facility Owner desire that the stormwater control measures be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the components. Therefore, the Town and the Facility Owner agree as follows:

1. This agreement binds the Town and the Facility Owner, its successors and assigns, to the maintenance provisions depicted in the approved project plans which are attached as Schedule A of this agreement.
2. The Facility Owner shall maintain, clean, repair, replace and continue the stormwater control measures depicted in Schedule A as necessary to ensure optimum performance of the measures to design specifications. The stormwater control measures shall include, but shall not be limited to, the following: drainage ditches, swales, dry wells, infiltrators, drop inlets, pipes, culverts, soil absorption devices and retention ponds.
3. The Facility Owner shall be responsible for all expenses related to the maintenance of the stormwater control measures and shall establish a means for the collection and distribution of expenses among parties for any commonly owned facilities.
4. The Facility Owner shall provide for the periodic inspection of the stormwater control measures, not less than once in every five year period, to determine the condition and integrity of the measures. Such inspection shall be performed by a Professional Engineer licensed by the State of New York. The inspecting engineer shall prepare and submit to the Town within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the stormwater control measures.
5. The Facility Owner shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the stormwater control measures except in accordance with written approval of the Town.
6. The Facility Owner shall undertake necessary repairs and replacement of the stormwater control measures at the direction of the Town or in accordance with the recommendations of the inspecting engineer.
7. This agreement shall be recorded in the Office of the County Clerk, County of Westchester together with the deed for the common property and shall be included in the offering plan and/or prospectus approved pursuant to _____.

8. This agreement is effective _____ .

Printed Name

TOWN OF SOMERS

Date of Signature:_____

By: _____
Signature of Mayor

By: _____
Printed Name

Date of Signature:_____

VEOLIA WATER NEW YORK, INC.

By: _____
President / Owner

By: _____

Schedule A:

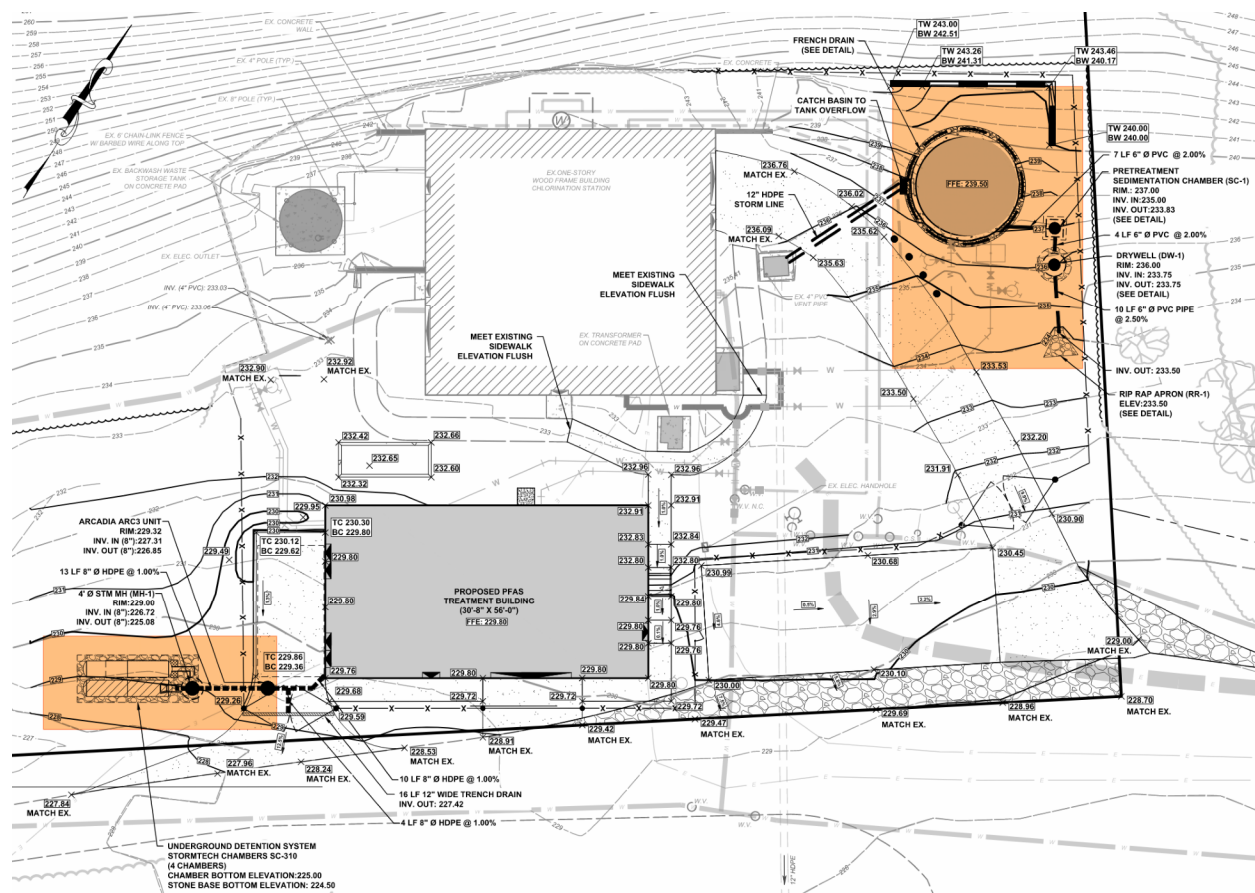
STORMWATER CONTROL FACILITY

INSPECTION AND MAINTENANCE SCHEDULE

Stormwater Management Structures:

- Vegetated areas tributary to the French drain
- Pretreatment Sediment Chamber (SC-1)
- Drywell (DW-1)
- Riprap Apron (RR-1)
- Manufactured Treatment Device (MTD-1)
- Underground Infiltration Basin (BSN-1)

Location of Subject BMPs:



Inspection & Maintenance Notes:

1. Proper routine maintenance of the post-construction stormwater management system (SWS) is required to ensure it continues to function as designed and permitted. Maintenance activities shall be performed as outlined in Table 1.
2. Periodic inspections of the entire stormwater system (SWS) by the owner's personnel specifically assigned to this task, or duly authorized representative of the owner, should occur at a minimum frequency of **once per month**, with additional inspections within 24 hours of the end of significant weather events (e.g snow, ice, rain). For purposes of this SWM Agreement, a significant weather event is defined as any storm event resulting in one (1) inch or greater of rainfall during a consecutive 24-hour period.
3. The stormwater management system conditions during the inspection should be recorded, and a log of inspection dates shall be maintained by the owner.

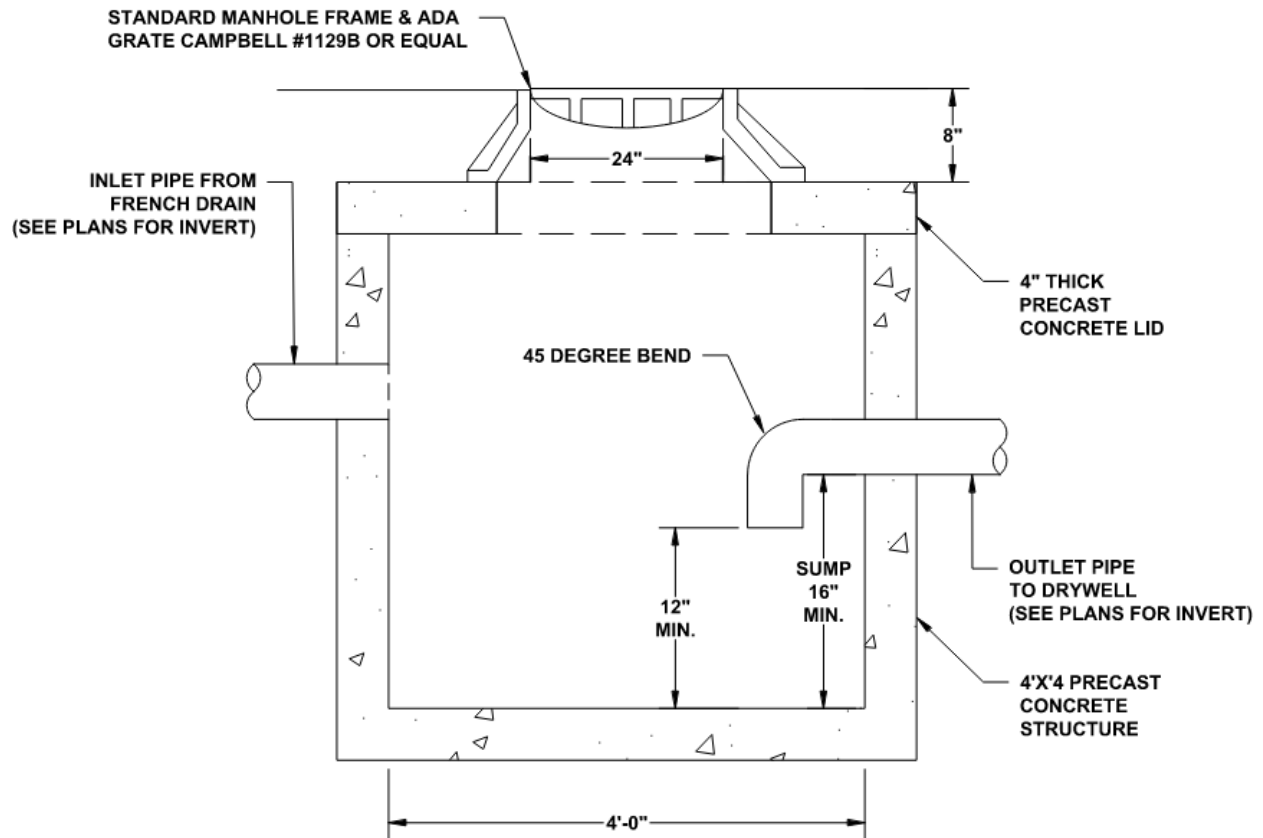
Maintenance Requirements and Frequency:

TABLE 1:

SYSTEM COMPONENT	MAINTENANCE REQUIREMENTS	MAINTENANCE FREQUENCY
VEGETATED AREAS	1. Mow Grass 2. Remove all liter and debris 3. Remove and replace dead or diseased vegetation 4. Remove weeds	1. Monthly 2. Monthly 3. Semi-Annually 4. Semi-Annually
FRENCH DRAIN	1. Remove all debris and litter from stone cover. 2. Remove any vegetation growth	1. Monthly 2. Monthly
PRETREATMENT SEDIMENTATION CHAMBER	1. Remove accumulated sediment	1. Every 5 years, or when storage volume has been reduced by 33% of the height of the basin sump.
RIPRAP APRON	1. Remove all liter and debris 2. Remove weeds and vegetation	1. Semi-Annually 2. Semi-Annually
MANUFACTURED TREATMENT DEVICE (MTD)	Refer to attached Manufacturer Recommendation for Inspection and Maintenance Requirements	
UNDERGROUND INFILTRATION BASIN	Refer to attached Manufacturer Recommendation for Inspection and Maintenance Requirements	

Stormwater BMP Details:

Pretreatment Sedimentation Basin:



NOTES:

1. SEDIMENTATION CHAMBER SUMP SHALL PROVIDE A MINIMUM OF TWENTY ONE (21) CUBIC FEET OF SEDIMENT STORAGE BELOW THE INVERT OF THE OUTLET PIPE.

PRETREATMENT SEDIMENTATION CHAMBER DETAIL

N.T.S.

Drywell (DW-1):

DRY WELL SIZING CALCULATIONS

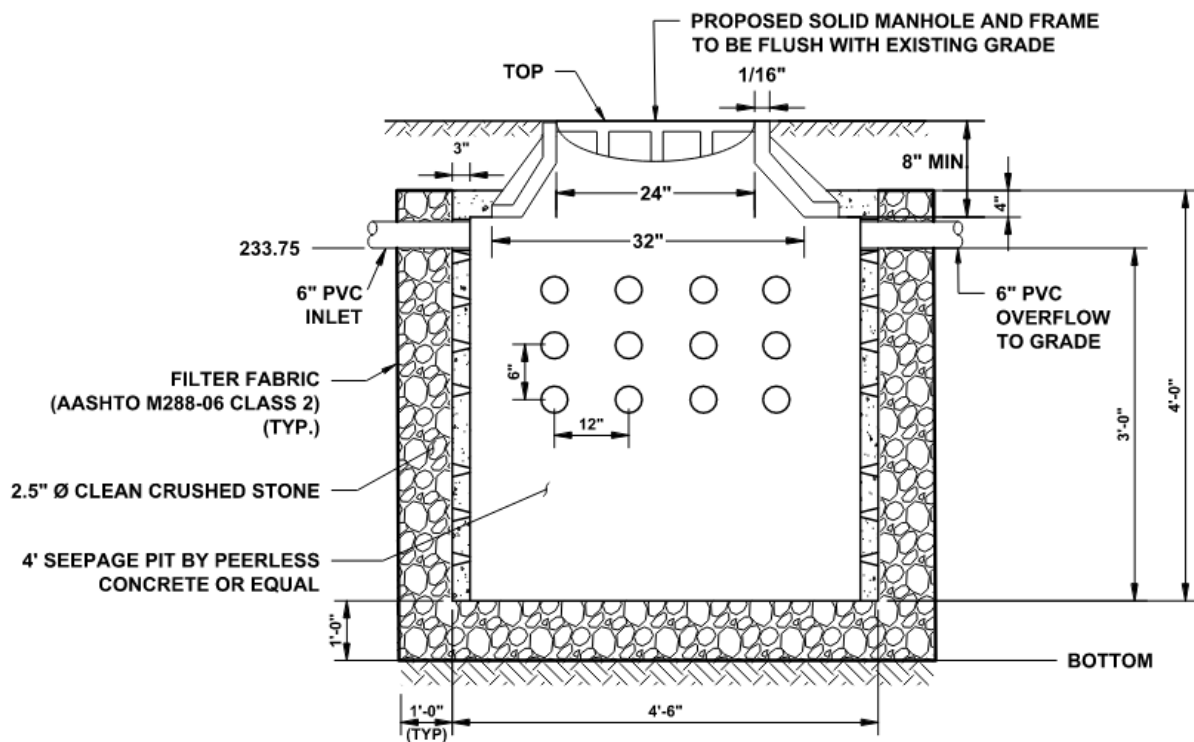
REQUIRED STORAGE:
WATER QUALITY VOLUME = 42 CF

CAPACITY OF ONE 4' CONC. SEEPAGE TANKS:
 $(2)^2 \times 3.14 \times 3 = 37.70$ CUFT

WITH 12" OF 2 1/2" CLEAN CRUSHED STONE AROUND PERIMETER @ 40% VOID RATIO:
 $((3.25)^2 \times 3.14 \times 3) - [(2.25)^2 \times 3.14 \times 3] \times 0.40 = 20.71$ CUFT

WITH 12" OF 2 1/2" CLEAN CRUSHED STONE BELOW @ 40% VOID RATIO:
 $((3.25)^2 \times 3.14 \times 1) = 13.27$ CUFT

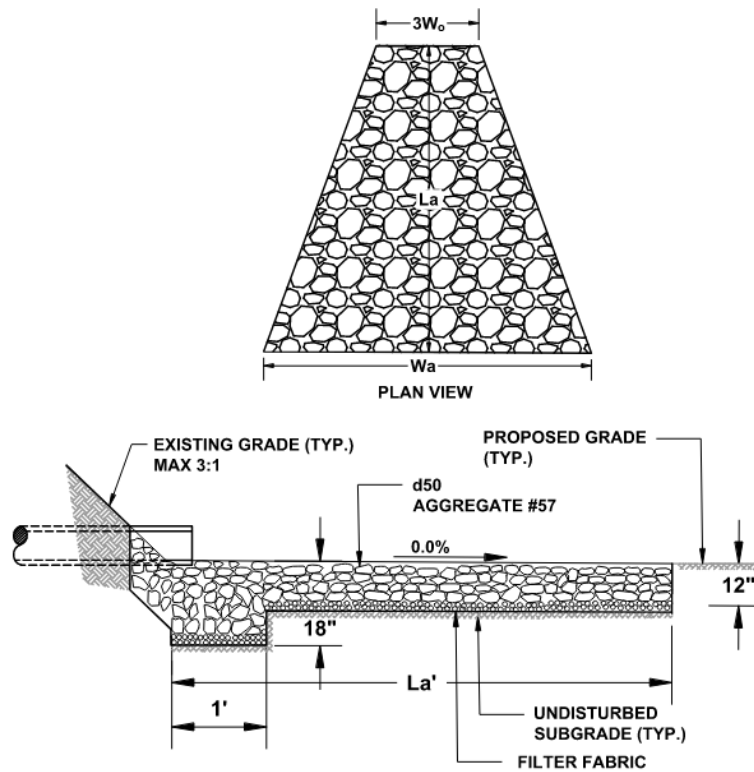
37.70 CUFT + 20.71 CUFT + 13.27 CUFT = 71.68 CF STORAGE > 42 CF



DRYWELL DETAIL

N.T.S.

Riprap Apron (RR-1):



CALCULATIONS:

$$Tw < \frac{1}{4} D_o \quad La = 1.8(q/D_o^{0.5}) + 7D_o \quad Wa = 3W_o + L_a$$

$$d_{50} = \frac{0.02}{Tw} q^{1.33} \quad \text{Where } q = \frac{Q}{W_o}$$

Where Tw cannot be computed, use $Tw = 0.2 D_o$

$W_o = 0.5'$
 $D_o = 0.5'$
 $Q = 0.10$ cfs
 $q = 0.2$ cfs/ft
 $L_a = 4.0'$
 $W_a = 5.5'$ (USE 6')
 $d_{50} = 0.5'$

$3W_o$	1.5'
L_a	4'
W_a	6'

RIPRAP APRON

N.T.S

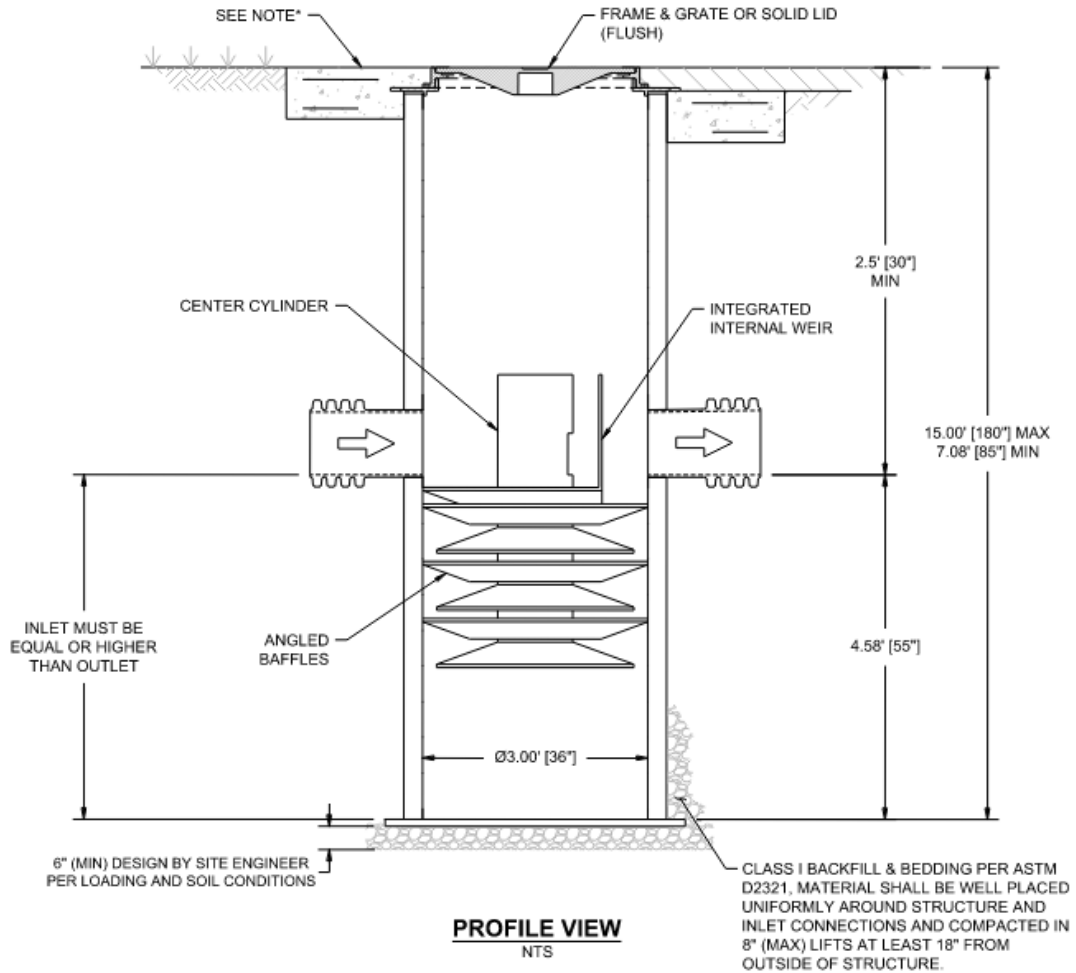
Manufactured Treatment Device (MTD-1):

ATTENTION:

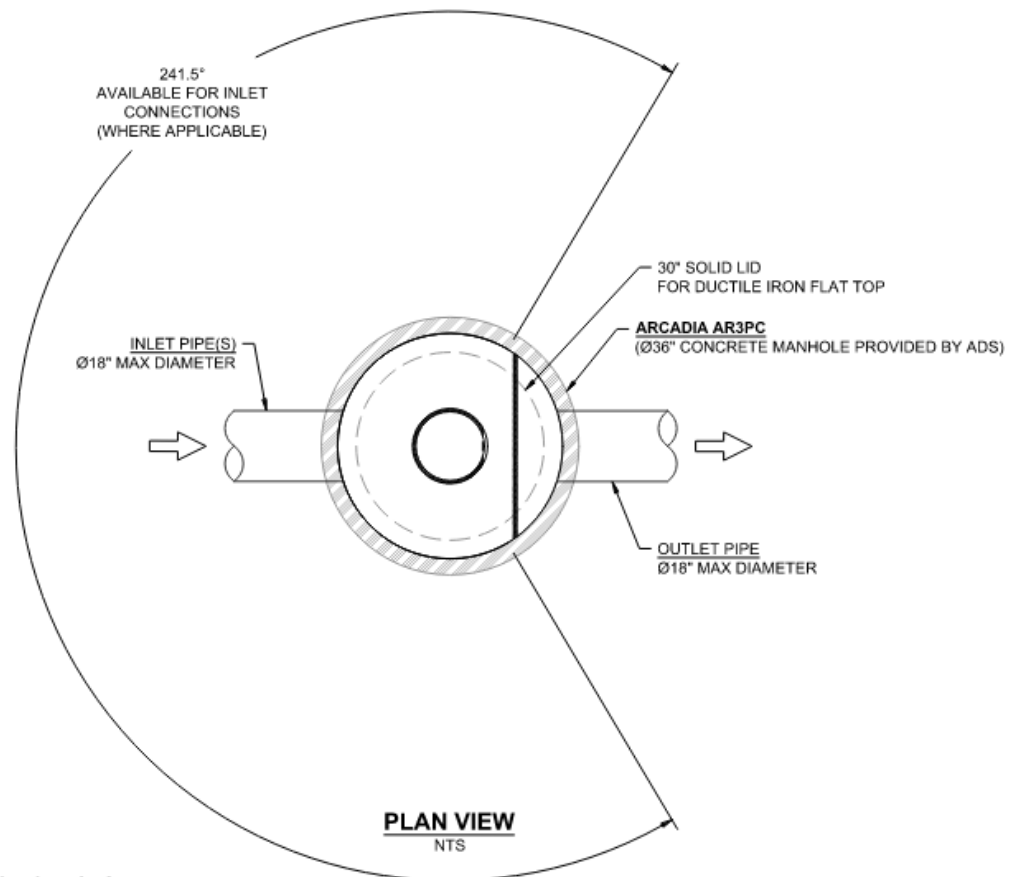
THIS TREATMENT UNIT WAS DESIGNED BASED ON THE GEOTECHNICAL INVESTIGATION FINDING NO EVIDENCE OF GROUNDWATER. IF THE GROUNDWATER DEPTH ABOVE THE BOTTOM OF THE SUMP EXCEEDS ONE-THIRD THE DEPTH OF THE UNIT, CONTACT ADS FOR SOLUTIONS.

* CONCRETE SLAB DIMENSIONS ARE FOR GUIDELINE PURPOSES ONLY. ACTUAL CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, & OTHER APPLICABLE DESIGN FACTORS.

** SUPPLIED BY ADS FOR LOADS NOT TO EXCEED HL-93; SEE STD-414 FOR FURTHER DETAILS OF FRAME & COVER. ALTERNATE LID & FRAME BY OTHERS AS ALLOWED PER DESIGN ENGINEER. FRAME TO BE SUPPORTED BY CONCRETE COLLAR.



Manufactured Treatment Device (MTD-1) (Cont.)



PRODUCT SPECIFICATIONS

- THE STORMWATER TREATMENT UNIT HAS BEEN DESIGNED TO BE AS AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW.
- THE ARCADIA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS ON AN ANNUAL AGGREGATE REMOVAL BASIS. SAID REMOVAL SHALL BE BASED ON FULL-SCALE THIRD PARTY VERIFIED TESTING USING OK-110 MEDIA GRADATION OR EQUIVALENT AND 300 MG/L INFLUENT CONCENTRATION. FULL SCALE TESTING SHALL HAVE INCLUDED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT.

NOTES:

- ENGINEER / CONTRACTOR TO CONFIRM PIPE MATERIALS AND APPLICABLE ADAPTERS.
- CONTRACTOR IS RESPONSIBLE FOR MATERIAL AND LABOR TO BRING CASTINGS TO FINISHED GRADE.
- CONTRACTOR TO MEASURE HEIGHT OF STRUCTURE TO ENSURE THAT DEPTH OF EXCAVATION IS CORRECT.
- UNIT SHALL CONFORM TO HS20-44 LOAD RATINGS.

Manufactured Treatment Device (MTD-1) (Cont.)

Table 1: Arcadia Hydrodynamic Separator Models and Associated MTRs

Arcadia Hydrodynamic Separator Model	Diameter (ft)	Maximum Treatment Flow Rate (cfs)	Treatment Area (sq. ft.)	Hydraulic Loading Rate (gpm/sq. ft.)
Arcadia ARC3	3	0.95	7.07	60.0
Arcadia ARC4	4	1.68	12.57	60.0
Arcadia ARC5	5	2.63	19.63	60.0
Arcadia ARC6	6	3.78	28.27	60.0
Arcadia ARC8	8	6.72	50.27	60.0
Arcadia ARC10	10	10.5	78.54	60.0

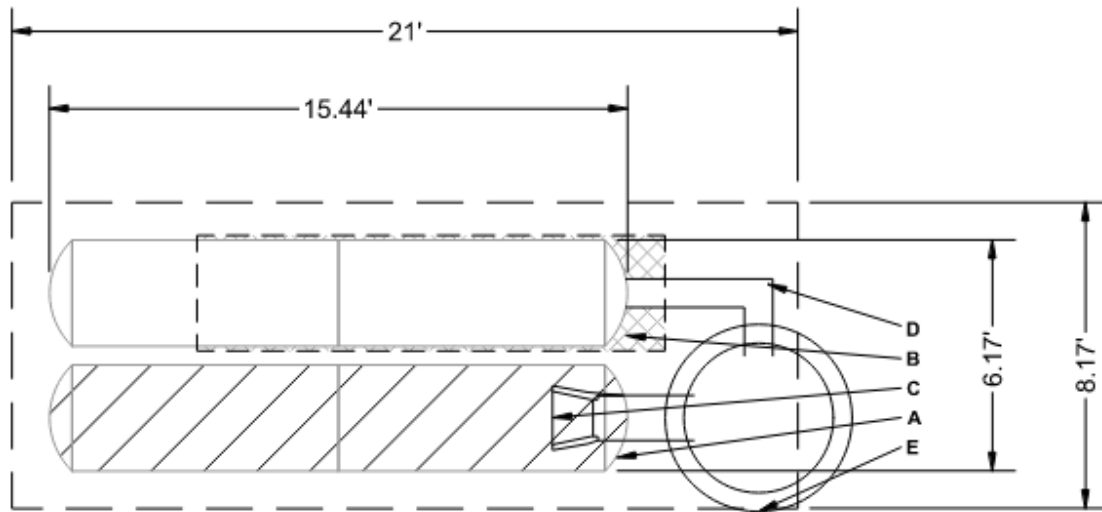
Arcadia Storage Capacities

Model	Manhole Diameter in (mm)	Total System Volume Gallons (Liters)	Treatment Chamber Capacity Gallons (Liters)	Standard Sediment Capacity (18" depth) Yards ³ (m ³)	NJDEP Sediment Capacity (50% of Standard Depth) Yards ³ (m ³)
AR3	36 (914)	242 (917)	203 (767)	0.39 (0.30)	0.19 (0.15)
AR4	48 (1219)	635 (2402)	564 (2135)	0.70 (0.53)	0.35 (0.27)
AR5	60 (1524)	991 (3753)	881 (3336)	1.09 (0.83)	0.55 (0.42)
AR6	72 (1829)	1428 (5404)	1269 (4804)	1.57 (1.20)	0.79 (0.60)
AR8	96 (2438)	4136 (15656)	3854 (14588)	2.79 (2.14)	1.40 (1.07)
AR10	120 (3048)	7931 (30022)	7490 (28354)	4.36 (3.34)	2.18 (1.67)

ARCADIA ARC3 WATER QUALITY UNIT **N.T.S.**

Underground Infiltration Basin (BSN-1):

PROPOSED LAYOUT		PROPOSED ELEVATIONS	
4	STORMTECH SC-310 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	234.33
4	STORMTECH SC-310 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	228.17
12	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	227.67
6	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	227.67
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	227.67
230	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	227.33
		TOP OF SC-310 CHAMBER:	226.33
		8" x 8" TOP MANIFOLD INVERT:	225.29
		12" ISOLATOR ROW PLUS INVERT:	225.07
171	SYSTEM AREA (SF)	BOTTOM OF SC-310 CHAMBER:	225.00
58.3	SYSTEM PERIMETER (ft)	BOTTOM OF STONE:	224.50



ISOLATOR ROW PLUS
(SEE DETAIL)



PLACE MINIMUM 12.50' OF ADSPLUS625 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

— — BED LIMITS

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*
PREFABRICATED EZ END CAP	A	12" BOTTOM PREFABRICATED EZ END CAP, PART#: SC310ECEZ / TYP OF ALL 12" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	0.90"
PRE-CORED END CAP	B	8" TOP PRE-CORED END CAP, PART#: SC310EPE08TPC / TYP OF ALL 8" TOP CONNECTIONS	3.50"
FLAMP	C	INSTALL FLAMP ON 12" ACCESS PIPE / PART#: SC31012RAMP	
MANIFOLD	D	8" x 8" TOP MANIFOLD, MOLDED FITTINGS	3.50"
CONCRETE STRUCTURE	E	(DESIGN BY ENGINEER / PROVIDED BY OTHERS)	

*INVERT ABOVE BASE OF CHAMBER

Pretreatment Sedimentation Basin (SC-1)

Management Inspection Checklist

Project: Veolia Water New York, Inc. – Heritage Hills

Location: Section 6.20, Block 10, Lot 13

Address: 405 Route 202, Town of Somers, County of Westchester County, State of New York

Site Status: Post Construction

Date: _____

Time: _____

Inspector: _____

** Note: Annual Inspections must be performed by a Professionally Engineer licensed by the State of New York and report shall be submitted to Town of Somers Engineer within 30 days of inspection.*

REASON FOR INSPECTION:				
☐ Routine - Monthly ☐ Routine - Annual ☐ Following Significant Rain Event ☐ Other				
ITEM	INSPECTION RESULTS	YES	NO	COMMENTS
1	Frame and/or grate damaged/displaced			
2	Concrete structure damaged/cracking			
3	Inlet pipe damaged/cracked			
4	Outlet pipe damaged cracked			
5	Litter/debris observed in basin			
6	Sediment accumulated on basin bottom			
Is maintenance required at this time?				

Drywell (DW-1)

Management Inspection Checklist

Project: Veolia Water New York, Inc. – Heritage Hills

Location: Section 6.20, Block 10, Lot 13

Address: 405 Route 202, Town of Somers, County of Westchester County, State of New York

Site Status: Post Construction

Date: _____

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REASON FOR INSPECTION:				
☐ Routine - Monthly ☐ Routine - Annual ☐ Following Significant Rain Event ☐ Other				
ITEM	INSPECTION RESULTS	YES	NO	COMMENTS
1	Frame and/or grate damaged/displaced			
2	Concrete structure damaged/cracking			
3	Inlet pipe damaged/cracked			
4	Outlet pipe damaged cracked			
5	Litter/debris observed in basin			
6	Sediment accumulated on basin bottom			
7	Standing water observed 48 hours after major storm event			
Is maintenance required at this time?				

Riprap Apron (RR-1)

Management Inspection Checklist

Project: Veolia Water New York, Inc. – Heritage Hills

Location: Section 6.20, Block 10, Lot 13

Address: 405 Route 202, Town of Somers, County of Westchester County, State of New York

Site Status: Post Construction

Date: _____

Time: _____

Inspector: _____

** Note: Annual Inspections must be performed by a Professionally Engineer licensed by the State of New York and report shall be submitted to Town of Somers Engineer within 30 days of inspection.*

REASON FOR INSPECTION:				
☐ Routine - Monthly ☐ Routine - Annual ☐ Following Significant Rain Event ☐ Other				
ITEM	INSPECTION RESULTS	YES	NO	COMMENTS
1	Outlet pipe cracked/damaged			
2	Erosion visible			
3	Riprap displaced/missing			
4	Vegetation/Weeds visible			
5	Litter/debris observed in apron			
6	Standing water observed 48 hours after major storm event			
Is maintenance required at this time?				

Manufactured Treatment Device (MTD-1)

Management Inspection Checklist

Project: Veolia Water New York, Inc. – Heritage Hills

Location: Section 6.20, Block 10, Lot 13

Address: 405 Route 202, Town of Somers, County of Westchester County, State of New York

Site Status: Post Construction

Date: _____

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REASON FOR INSPECTION:				
☐ Routine - Monthly ☐ Routine - Annual ☐ Following Significant Rain Event ☐ Other				
ITEM	INSPECTION RESULTS	YES	NO	COMMENTS
1	Frame and/or grate damaged/displaced			
2	Concrete structure damaged/cracking			
3	Inlet pipe damaged/cracked			
4	Outlet pipe damaged cracked			
5	Litter/debris observed in basin			
6	Sediment accumulated on basin bottom			
Is maintenance required at this time?				

Underground Infiltration Basin (BSN-1)

Management Inspection Checklist

Project: Veolia Water New York, Inc. – Heritage Hills

Location: Section 6.20, Block 10, Lot 13

Address: 405 Route 202, Town of Somers, County of Westchester County, State of New York

Site Status: Post Construction

Date: _____

Time: _____

Inspector: _____

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ITEM	INSPECTION RESULTS	YES	NO	COMMENTS
1	Frame and/or grate damaged/displaced			
2	Concrete structure damaged/cracking			
3	Inlet pipe damaged/cracked			
4	Outlet pipe damaged cracked			
5	Litter/debris observed in basin			
6	Sediment accumulated on basin bottom			
7	Standing water observed 48 hours after major storm event			
Is maintenance required at this time?				