VOLUME I OF I

PRELIMINARY ENGINEER'S REPORT

COMMUNITY WASTEWATER MANAGEMENT PROGRAM
FOR THE

HAMLET OF WEST CONESVILLE

TOWN OF CONESVILLE
SCHOHARIE COUNTY, NEW YORK

New York City Watershed Memorandum of Agreement (MOA)
Identified Community No. 19

DRAFT ISSUED December 29, 2015
FINAL ISSUED July 2017

A Program of the Catskill Watershed Corporation

Prepared By:

Lamont Engineers
ENGINEERS • PLANNERS • FACILITY OPERATIONS

P.O. Box 610, 548 Main Street
Cobleskill, New York 12043
www.lamontengineers.com
(518) 234-4028

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AMENDMENT #1

to the
PRELIMINARY ENGINEER'S REPORT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
for the
Hamlet of West Conesville
Town of Conesville
Schoharie County, New York

November 4, 2016

AMENDMENT #1

to the
PRELIMINARY ENGINEER'S REPORT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
for the
Hamlet of West Conesville
Town of Conesville
Schoharie County, New York

November 4, 2016

The Draft Preliminary Engineer's Report (Draft PER) of December 29, 2015 concluded that a Septic Maintenance District was not adequate for the Hamlet of West Conesville because 97.5% of the properties in the Hamlet are not able to support a properly functioning, up-to-standards conventional septic system even without the required 100% reserve area (see Draft PER pages 16-20 and 36).

The Draft PER also concluded that a community-wide septic system with subsurface disposal is the best option and that Site B has the best siting characteristics and is the most economical option for a community septic system for the Hamlet of West Conesville (See Draft PER pages 20, 22-25, and 36-37). However, the property owner of Site B is New York City and, at the time, it was unknown if the area needed could be acquired without having to go through eminent domain procedures. Regardless of the potential property acquisition complications, Site B was still the preferred site.

The Draft PER therefore concluded that a small diameter gravity sewer system with shallow cut-and-fill absorption beds on Site B for the wastewater treatment system was the recommended option at a capital cost of $6.670M and an annual operation & maintenance (O&M) cost of $52,000.

The Draft PER was submitted to the Catskill Watershed Corporation (CWC) and the New York City Department of Environmental Protection (NYCDEP) for review and discussion. Subsequent meetings focused on attempting to further evaluate the potential of a Septic Maintenance District and discussions on the potential use of the New York City property for a community septic system. Initially, NYCDEP would not agree to the use of its property for a Community Septic System and requested that pumping wastewater to the Prattsville WWTP be evaluated.

Subsequent to the NYCDEP request, Lamont Engineers (Lamont) prepared cost estimates for pumping the Hamlet of West Conesville's wastewater to the Prattsville WWTP. Lamont evaluated two different pumping scenarios.

The first pumping scenario included the construction of a large diameter gravity sewer and the pumping of raw sewage to the Prattsville WWTP for treatment. This option resulted in a capital cost of $10.034M and an annual O&M cost of $97,000.

The second pumping scenario included the construction of a septic tank effluent pump (STEP) system and the pumping of septic tank effluent to the Prattsville WWTP for treatment. This option resulted in a capital cost of $9.734M and an annual O&M cost of $64,000.

Both pumping scenarios resulted in significantly higher capital costs and annual O&M costs compared to the capital cost and annual O&M cost for the small diameter gravity sewer system with shallow cut-and-fill absorption beds on Site B. Please see attached e-mail from Nick Warner of Lamont Engineers dated September 16, 2016 in which a summary and detailed cost estimates of the pumping scenarios were presented.

Subsequent to the submission of the pumping scenario cost estimates, CWC, NYCDEP, and Lamont Engineers were unable to agree to a final conclusion. As a result, a meeting was held on September 27, 2016 at CWC with the NYCDEP Deputy Commissioner, CWC, and Lamont Engineers to try and work out a solution. After review and discussion of the Draft PER and the pumping scenarios, it was agreed by all that a solution would be worked out to find a way to lease the City land to the West Conesville Sewer District for the Town's use as a community septic system site. The NYCDEP Deputy Commissioner was going back to the City Attorney's to have them review the possibility of a land lease agreement between the City and the Town for a Community Septic System.

As a result, a small diameter gravity sewer system with shallow cut-and-fill absorption beds on Site B remains the recommended option for the Hamlet of West Conesville.

In addition to the pumping scenarios evaluated above, there are also some additional changes that need to occur throughout the Draft PER. These changes amend the Draft PER as follows:

1. Section 3.2.a. should be replaced with the following paragraph:

   "*Since the Hamlet of West Conesville has no centrally managed sewer system, wastewater system records are scarce. NYCDEP and the CWC were contacted to obtain any information on past or current reports of failures of septic systems in the Hamlet of West Conesville. See Exhibit 3.2.a.A for a map indicating the lots in the West Conesville Planning Area with known septic failures or violations based on information obtained from the CWC and NYCDEP. There are 9 documented failures in the Planning Area consisting of parcels 208.-1-16, 208.-1-28, 208.-2-20, 208.-1-18, 208.-3-3, 208.-3-13, 208.-3-12, 208.-1-9, and 208.-3-5. Some of the properties identified have participated in the CWC Septic System Program. Although, some of these properties have participated in the CWC Septic System Program, many of these systems are being managed where only portions of their septic system have been repaired or replaced. Very few properties within the EFC service area have had complete replacements of their septic system. Systems that have been repaired or replaced through the CWC Septic System Program only comply with current standards to the extent possible. Most of the managed septic systems cannot meet the current standards and/or are still failing but for on-going septic pump-outs reimbursed through CWC. The managed septic systems are*

awaiting a permanent solution to their various problems through the CWC Community Wastewater Management Program."

2. Please find enclosed new Exhibit 3.2.a.A – Septic Failures Map

3. Please replace Exhibit 5.2.B – Wastewater Flow Estimate with the attached revised Wastewater Flow Estimate. Revisions made are as follows:

   Based on the review of the flow estimate for the Masonic Lodge and per the NYSDEC design manual, the estimated flow of 1,750 gpd is correct.

   Based on the review of the flow estimate for Nick's Waterfall House, it was determined that an error existed in the original calculation. The original report calculated the flows based on 30 seats at 16 gallons per seat (Tavern). Per the NYSDEC design manual, the estimated flow should be based on 30 seats at 20 gallons per seat (Tavern). Therefore the commercial portion of Nick's Waterfall House should actually be 600 gpd. This slight increase in flow does not change the overall daily flow calculations. The Total Wastewater Flow For West Conesville remains 13,000 gpd.

4. Please add the following paragraph…Section 6.2.b.i – *Pumping to An Existing Nearby Wastewater Treatment Facility* as follows:

   "Some communities are located relatively near a neighboring community's existing wastewater collection system and treatment system. If that neighbor is willing to take on the responsibility for treating the wastewater for a reasonable cost or for other considerations, such as annexation in the case of a town hamlet or a village, then pumping wastewater to the existing system could prove to be the best option. When a community proposes such a deal to its neighbor, it must remember that the neighbor has no legal or moral oblig ation to provide the service requested and that therefore the proposal must be financially advantageous to the neighbor. Indeed, if the deal were not in the interest of the neighbor, then the neighbor would have an obligation to its citizens to reject the idea."

   "One disadvantage to the option of pumping to a neighboring community's wastewater system is that the availability of future additional wastewater treatment capacity is entirely within the power of the neighbor to grant or deny."

5. Please add the following sentence to end of Section 10.3 Permits and Approvals Needed as follows:

   "A lease agreement will be needed between the Town of Conesville and New York City for the Town's use of Site B as a community septic system. For purposes of this report, it will be assumed that there will be no fee for the lease agreement."

6. Please replace Exhibit 10.3.A – Permits and Approvals Inventory with the attached revised Permits and Approvals Inventory which now includes the lease

agreement/land acquisition, necessary utility easements and lateral access agreements from landowners.

7. Delete Section 10.4 – Identify Additional Funding Sources. This section does not apply to this project.

Chris Yacobucci

From: Nick Warner
Sent: Friday, September 16, 2016 4:26 PM
To: Tom Stalter (tstalter@dep.nyc.gov); jmathiesen@cwconline.org; alrosa@cwconline.org
Cc: timothycox@cwconline.org; Kevin Young; Henry Lamont; Mike Harrington; Judy Pangman; Chris Yacobucci
Subject: West Conesville CWMP - Pump to Prattsville Evaluation
Attachments: Pump to Prattsville with LDGS.pdf; Pump to Prattsville with STEP System.pdf; West Conesville - Project Cost Estimate Summary.pdf; Community Subsurface Treatment with SDGS.pdf; Flow Schematics for Pump to Prattsville Options.pdf

All,

Per the meeting with Lamont Engineers, CWC and DEP on March 10, 2016, Lamont has evaluated two additional options for the West Conesville CWMP Project. Below (also attached) is a summary of all options evaluated, including the original Community Subsurface Treatment System with SDGS (Option 1) as found in the Preliminary Engineers Report submitted on 12/29/15:

	Community Subsurface Treatment System with SDGS Option 1	Pump to Prattsville with LDGS Option 2	Pump to Prattsville WWTP with STEP System Option 3
Capital Cost – Construction			
Treatment	$2,798,000	$6,052,000	$5,746,000
Collection System	$2,137,000	$1,637,000	$1,703,000
TOTAL CONSTRUCTION=	$4,935,000	$7,689,000	$7,449,000
TOTAL NON-CONSTRUCTION=	$1,734,000	$2,344,500	$2,284,500
TOTAL COST =	**$6,669,000**	**$10,033,500**	**$9,733,500**
O&M Cost (Yearly)	$52,000	$97,000	$64,000

Option 2 in the evaluation consists of a Large Diameter Gravity Sewer Collection System with a Main Pump Station consisting of two solids handling pumps capable of pumping Average Day Flows as well as Peak Flows through a 4 inch force main from the Hamlet of West Conesville approximately 4.6 miles south, by

way of Prattsville Road, to the Prattsville WWTP. Other items of significance in this option are a 400 sf facility for equipment storage and office materials, 13,000 gallon Emergency Storage Tank (to be located in West Conesville), and a Receiving/EQ Structure with pumps located in Prattsville.

Option 3 consists of a Septic Tank Effluent Pump (STEP) system. In this system each property will be provided a new septic tank, each equipped with a septic tank effluent pump. Each septic tank effluent pump shall be sized to pump effluent from their respective septic tanks to a common 3 inch force main which will convey effluent from the Hamlet of West Conesville approximately 4.6 miles south, by way of Prattsville Road, to the Prattsville WWTP. Other items of significance in this option are a 250 sf facility for equipment storage and office materials, 13,000 gallon Emergency Storage Tank (to be located in West Conesville), and a Receiving/EQ Structure with pumps located in Prattsville.

Sincerely,

Nick Warner, P.E.
Project Engineer
Lamont Engineers, P.C.
Dedicated to Service. . . Committed to Excellence

Phone: (518) 234-4028, Ext. 104
Fax: (518) 234-4613
Cell: (518) 701-6189

www.lamontengineers.com

	Community Subsurface Treatment System with SDGS Option 1	Pump to Prattsville with LDGS Option 2	Pump to Prattsville WWTP with STEP System Option 3
Capital Cost – Construction			
Treatment	2,798,000	6,052,000	5,746,000
Collection System	2,137,000	1,637,000	1,703,000
TOTAL CONSTRUCTION=	4,935,000	7,689,000	7,449,000
TOTAL NON-CONSTRUCTION=	1,734,000	2,344,500	2,284,500
TOTAL COST =	**6,669,000**	**10,033,500**	**9,733,500**
O&M Cost (Yearly)	52,000	97,000	64,000

West Conesville CWMP
Opinion of Probable Cost
Pump to Prattsville
with Large Diameter Gravity Sewers

	Item	Description	Amount
1	**LDGS Collection System**		$ 1,637,000
2	**Pump Station and Force Main to Prattsville**		$ 6,052,000
		Total Construction Cost	**$ 7,689,000**
1	**Non-Construction**	Includes administrative, legal, SEQRA Compliance, permitting, engineering (design & construction), easement acquisition, etc.	$ 1,922,000
2	**Property Acquisition**		$ 250,000
3	**Capacity Purchase/ Connection Fee***		$ 122,500
4	**Engineer and Attorney Review**		$ 50,000
		Total Non-Construction Cost	**$ 2,344,500**
		Total Project Cost	**$ 10,033,500**

* Note: Capacity Purchase/Connection Fee is based on the Prattsville Sewer District Sewer Use Law. The Sewer Use Law allows the Sewer Dristrict to charge higher rates above and beyond what is stated in the Sewer Use Law. This line item will remain unknown until negotiations can begin with the Prattsville Sewer District.

West Conesville CWMP
Opinion of Probable Cost
Pump to Prattsville Option
with Large Diameter Gravity Sewers

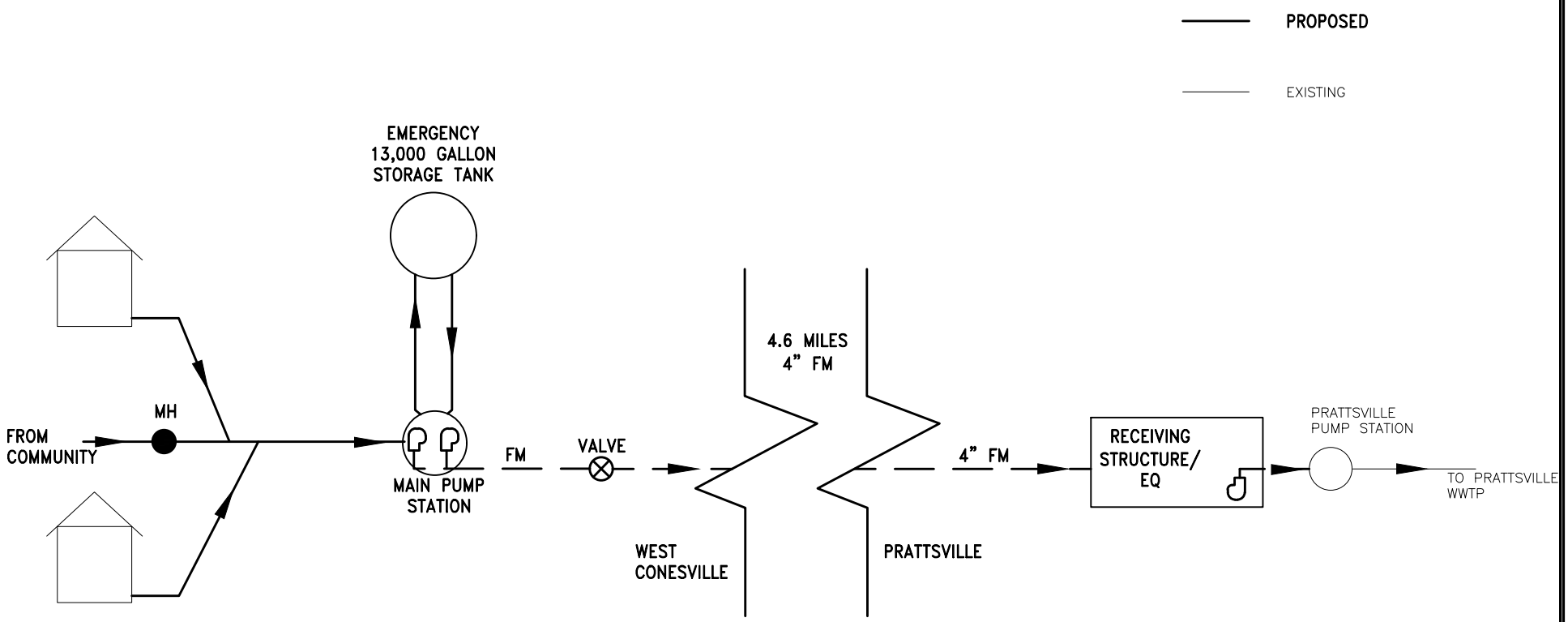
SDGS Collection System				
Item	Quantity	Units	Unit Price*	Amount
8" Sewer Main	4,400	LF	$ 185.00	$ 814,000
2" HDPE FM	1,300	LF	$ 75.00	$ 97,500
Stream Crossing No. 1 - 4" HDPE FM	200	LF	$ 300.00	$ 60,000
Stream Crossing No. 2 - 8" Sewer Main	60	LF	$ 300.00	$ 18,000
Highway Crossing No. 1 - 2" HDPE FM	50	LF	$ 300.00	$ 15,000
Highway Crossing No. 2 - 8" Sewer Main	40	LF	$ 300.00	$ 12,000
Highway Crossing No. 3 - 8" Sewer Main	50	LF	$ 300.00	$ 15,000
4" Lateral Stubs (35)	700	LF	$ 125.00	$ 87,500
Manholes	30	EA	$ 3,500.00	$ 105,000
Individual Effluent Pump Station	1	EA	$ 70,000.00	$ 70,000
				$ 1,294,000
			Inflation 10%	$ 129,400
			Subtotal	$ 1,423,400
			Contingency (15%)	$ 213,510
			Construction Total	**$ 1,636,910**
*Unit Prices based on previous CWMP project cost estimates and bidding results.				

West Conesville CWMP
Opinion of Probable Cost
Pump to Prattsville
with Large Diameter Gravity Sewers

	Item	Description	Units	Quantity	Unit Price*	Amount	
Site Preparation							
	Environmental Protection		LS	1	$ 10,000.00	$ 10,000.00	
	Site Preparation		LS	1	$ 10,000.00	$ 10,000.00	
	Mobilization/Demobilization		LS	1	$ 20,000.00	$ 20,000.00	
	Survey and Stakeout		LS	1	$ 10,000.00	$ 10,000.00	
	Restoration		LS	1	$ 25,000.00	$ 25,000.00	
	Site Work		LS	1	$ 25,000.00	$ 25,000.00	
	Subtotal Site Preparation						$ 100,000
Pump Station and Force main to Prattsville							
	Pump Station		EA	1	$ 160,000.00	$ 160,000.00	
	Flow Meter and Vault		EA	1	$ 15,000.00	$ 15,000.00	
	Valve Vault with Valves		EA	1	$ 15,000.00	$ 15,000.00	
	Dosing Pumps		EA	2	$ 20,000.00	$ 40,000.00	
	4" Solids Handling Forcemain to Prattsville		LF	24,250	$ 110.00	$ 2,667,500.00	
	Rock Removal		CY	4,700	$ 200.00	$ 940,000.00	
	Force main cleanouts/air release		EA	50	$ 3,500.00	$ 175,000.00	
	Wet Weather Storage Tank(s)		EA	1	$ 100,000.00	$ 100,000.00	
	Prattsville WWTP Modifications		EA	1	$ 200,000.00	$ 200,000.00	
	Subtotal Pump Station and Force Main to Prattsville						$ 4,312,500
Other Facility Equipment							
	Odor Control System		EA	1	$ 20,000.00	$ 20,000.00	
	O&M Manuals		EA	1	$ 12,000.00	$ 12,000.00	
	Spare Parts		LS	1	$ 20,000.00	$ 20,000.00	
	Misc. Treatment Facility Equip		LS	1	$ 75,000.00	$ 75,000.00	
	Subtotal Other Treatment Facility Equipment						$ 127,000
Storage/Equipment Building							
	Wood Frame Building (incl. Foundation)		SF	400	$ 200.00	$ 80,000.00	
	Misc. Bldg.		LS	1	$ 15,000.00	$ 15,000.00	
	Driveway and Parking Area		LS	1	$ 20,000.00	$ 20,000.00	
	Water Service		LS	1	$ 5,000.00	$ 5,000.00	
	Office Furniture/ Lab Equipment		LS	1	$ 10,000.00	$ 10,000.00	
	Subtotal Storage/Equipment Building						$ 130,000
Electrical			LS	1	$ 35,000.00	$ 35,000.00	$ 35,000
HVAC			LS	1	$ 10,000.00	$ 10,000.00	$ 10,000
Utilities			LS	1	$ 20,000.00	$ 20,000.00	$ 20,000
Potential Extra Costs for Additional Requirements from NYCDEP			LS	1	$ 50,000.00	$ 50,000.00	$ 50,000
						SUBTOTAL	$ 4,784,500
						Inflation (10%)	$ 478,450
						Subtotal	$ 5,262,950
						Contingency (15%)	$ 789,443
						Construction Total	**$ 6,052,393**
*Unit Prices based on previous CWMP project cost estimates and bidding results.							

West Conesville CWMP
Operation and Maintenance Cost
Pump to Prattsville Option
with Large Diameter Gravity Sewers

Line Item Description	Budget	COMMENTS
Utilities		
Electricity Cost	$ 2,000	Includes costs for collection system
Generator Fuel	$ 500	Diesel Fuel for Generator
Utilities Subtotal	**$ 2,500**	
Chemicals		
De-greasers and De-odorizers	$ 500	For use in pump chambers and wet-wells if needed.
Chemicals Subtotal	**$ 500**	
Personnel		
O&M Operator	$35,587	Based on one operator 1.5 hours a day @ $65.00 per hour
O&M Engineering	$ 2,000	Itemized cost. Trouble-shooting operations-related issues.
Personnel Subtotal	**$37,587.00**	
Administration		
O&M Legal	$ 2,000	Itemized cost. From Hamden budgeted amount.
Administrative Services/Contract	$ 1,750	Based on EFC recommendation from their Strategic Planning Study, of $50.00 per user account.
Force Account/Clerical	$ 500	Record keeping and reporting including assistance in preparing reconciliation, monthly reports, annual reports, and other obligations under the O&M Agreement.
Office Supplies	$ 500	Record keeping and reporting.
Lateral Installation Inspections	$ 3,500	Assumes $100 per lateral x 35 laterals
Insurance	$ 2,000	
Administration Subtotal	**$ 10,250**	
O&M		
Preventive Maintenance/Service Contracts	$ 1,200	Estimated service contract for Emergency Generator. Based on amount from Hamden.
Telephone/Fax/Internet	$ 1,000	Based on estimated amount from Hamden
Building Maintenance -- includes grounds maintenance	$ 1,000	Assumes grounds keeping to be sub-contracted by West Conesville and to include lawn mowing, and summer grounds care, as well as snow plowing and removal in winter.
Equipment/Spare Parts/Repairs	$ 1,000	Based on estimated amount from Hamden
Training & Travel	$ -	
Maintenance Supplies	$ 500	Cleaning Supplies, shovels, portable pumps etc,.
Instrumentation Spare Parts	$ 500	
Laboratory Contract and Supplies/Testing	$ -	**None required.**
O&M Subtotal	**$ 5,200**	
Collection System O&M		
General O&M	**$ 2,000**	Periodic manhole and sewer cleaning and inspection
Pump to Prattsville Cost	**$ 25,000**	*Note: This cost is estimated. Actual Cost is to be determined based on future negotiations with the Prattsville Sewer District.
Total O&M Budget Subtotal	**$ 83,037**	
Contingency	$ 8,304	10% of the budget before contingency.
Total O&M Budget Subtotal w/ Contingency	**$ 91,341**	
Additional Start-up Costs		
O&M Cold Start-up/Training	$ 2,080	Assumes 16 hrs. x 2 operators @ 65.00 per hour for operator training and familiarization with the system.
Engineering Start-up	$ 3,500	
TOTAL	**$ 96,921**	
TOTAL PROPOSED O&M BUDGET	**$ 97,000**	



DATE 8/25/16	PROJECT NO. 2014044_W.CONESVILLE	LDGS COLLECTION SYSTEM PROCESS FLOW SCHEMATIC	Lamont Engineers ENGINEERS • PLANNERS • FACILITY OPERATIONS
SCALE NOT TO SCALE	DRAWN MB		

West Conesville CWMP
Opinion of Probable Cost
Pump to Prattsville WWTP
with Septic Tank Effluent Pump (STEP) System

	Item	Description	Amount
1	**STEP Collection System**		$ 1,703,000
2	**Sewer Building and Force Main to Prattsville**		$ 5,746,000
		Total Construction Cost	**$ 7,449,000**
1	**Non-Construction**	Includes administrative, legal, SEQRA Compliance, permitting, engineering (design & construction), easement acquisition, etc.	$ 1,862,000
2	**Property Acquisition**	Includes land acquisition & purchase of capacity at Prattsville ($5,000 x 50)	$ 250,000
3	**Capacity Purchase/ Connection Fee**		$ 122,500.00
4	**Engineer and Attorney Review**		$ 50,000.00
		Total Non-Construction Cost	**$ 2,284,500**
		Total Project Cost	**$ 9,733,500**

* Note: Capacity Purchase/Connection Fee is based on the Prattsville Sewer District Sewer Use Law. The Sewer Use Law allows the Sewer Dristrict to charge higher rates above and beyond what is stated in the Sewer Use Law. This line item will remain unknown until negotiations can begin with the Prattsville Sewer District.

West Conesville CWMP
Opinion of Probable Cost
Pump to Prattsville WWTP
with Septic Tank Effluent Pump (STEP) System

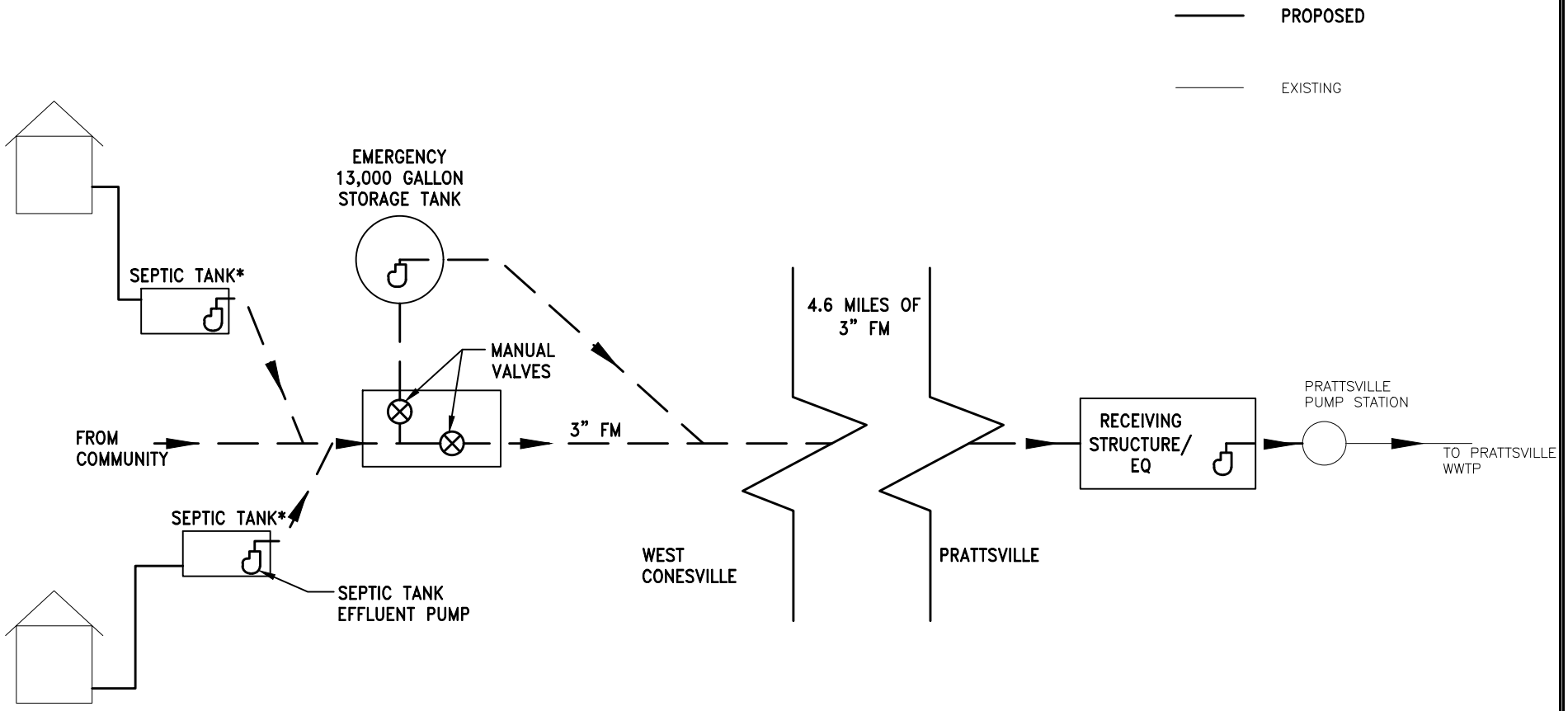
STEP Collection System				
Item	Quantity	Units	Unit Price*	Amount
2" HDPE FM	7,050	LF	$ 75.00	$ 528,750
1 1/4" HDPE Lateral Stubs (35)	700	LF	$ 75.00	$ 52,500
Stream Crossing No. 1	200	LF	$ 300.00	$ 60,000
Stream Crossing No. 2	60	LF	$ 300.00	$ 18,000
Highway Crossing No. 1	50	LF	$ 300.00	$ 15,000
Highway Crossing No. 2	40	LF	$ 300.00	$ 12,000
Highway Crossing No. 3	50	LF	$ 300.00	$ 15,000
Cleanout	50	EA	$ 1,000.00	$ 50,000
Sewer Lateral Connection and All Appurtenances	35	EA	$ 17,000.00	$ 595,000
				$ 1,346,250
			Inflation 10%	$ 134,625
			Subtotal	$ 1,480,875
			Contingency (15%)	$ 222,131
			Grand Total	**$ 1,703,006**
*Unit Prices based on previous CWMP project cost estimates and bidding results.				

West Conesville CWMP
Opinion of Probable Cost
Pump to Prattsville WWTP
with Septic Tank Effluent Pump (STEP) System

	Item	Description	Units	Quantity	Unit Price*	Amount	
Site Preparation							
	Environmental Protection		LS	1	$ 10,000.00	$ 10,000.00	
	Site Preparation		LS	1	$ 10,000.00	$ 10,000.00	
	Mobilization/Demobilization		LS	1	$ 20,000.00	$ 20,000.00	
	Survey and Stakeout		LS	1	$ 10,000.00	$ 10,000.00	
	Restoration		LS	1	$ 25,000.00	$ 25,000.00	
	Site Work		LS	1	$ 25,000.00	$ 25,000.00	
	Subtotal Site Preparation						$ 100,000
Main Force Main to Prattsville							
	Flow Meter and Vault		EA	1	$ 15,000.00	$ 15,000.00	
	3" Effluent Force Main to Prattsville		LF	24,500	$ 110.00	$ 2,695,000.00	
	Rock Removal		CY	4,700	$ 200.00	$ 940,000.00	
	Force main cleanouts/air release		EA	50	$ 3,500.00	$ 175,000.00	
	Wet Weather Storage Tank(s)		EA	1	$ 100,000.00	$ 100,000.00	
	Diurnal EQ at Prattsville WWTP		EA	1	$ 200,000.00	$ 200,000.00	
	Pumps and Controls for Wet Weather Storage		EA	1	$ 10,000.00	$ 10,000.00	
	Subtotal Pump Station						$ 4,135,000
Other Facility Equipment							
	Odor Control System		EA	1	$ 20,000.00	$ 20,000.00	
	O&M Manuals		EA	1	$ 12,000.00	$ 12,000.00	
	Spare Parts		LS	1	$ 20,000.00	$ 20,000.00	
	Misc Treatment Facility Equip		LS	1	$ 75,000.00	$ 75,000.00	
	Subtotal Other Treatment Facility Equipment						$ 127,000
Storage/Equipment Building							
	Wood Frame Building (incl. Foundation)		SF	250	$ 200.00	$ 50,000.00	
	Driveway and Parking Area		LS	1	$ 20,000.00	$ 20,000.00	
	Water Service		LS	1	$ 5,000.00	$ 5,000.00	
	Office Furniture/ Lab Equipment		LS	1	$ 5,000.00	$ 5,000.00	
	Subtotal Storage/Equipment Building						$ 80,000
Electrical			LS	1	$ 20,000.00	$ 20,000.00	$ 20,000
HVAC			LS	1	$ 10,000.00	$ 10,000.00	$ 10,000
Utilities			LS	1	$ 20,000.00	$ 20,000.00	$ 20,000
Potential Extra Costs for Additional Requirements from NYCDEP			LS	1	$ 50,000.00	$ 50,000.00	$ 50,000
						SUBTOTAL	$ 4,542,000
						Inflation (10%)	$ 454,200
						Subtotal	$ 4,996,200
						Contingency (15%)	$ 749,430
						Construction Total	**$ 5,745,630**
*Unit Prices based on previous CWMP project cost estimates and bidding results.							

West Conesville CWMP
Opinion of Probable Cost
Pump to Prattsville WWTP
with Septic Tank Effluent Pump (STEP) System

Line Item Description	Budget	COMMENTS
Utilities		
Electricity Cost	$ 630	Includes 35 STEPS @ $1.50/month per connection
Utilities Subtotal	**$ 630**	
Chemicals		
De-greasers and De-odorizers	$ 500	For use in pump chambers and wet-wells if needed.
Chemicals Subtotal	**$ 500**	
Personnel		
O&M Operator	$ 6,760	Based on one operator 2 hours per week @ $65.00 per hour
O&M Engineering	$ 2,000	Itemized cost. Trouble-shooting operations-related issues.
Personnel Subtotal	**$ 8,760**	
Administration		
O&M Legal	$ 2,000	Itemized cost. From Hamden budgeted amount.
Administrative Services/Contract	$ 1,750	Based on EFC recommendation from their Strategic Planning Study, of $50.00 per user account.
Force Account/Clerical	$ 500	Record keeping and reporting including assistance in preparing reconciliation, monthly reports, annual reports, and other obligations under the O&M Agreement.
Office Supplies	$ 500	Record keeping and reporting.
Lateral Installation Inspections	$ 455	Assumes 1 hr @ $65/hr per lateral inspection, 35 inspections to be completed over 5 years
Insurance	$ 2,000	
Administration Subtotal	**$ 7,205**	
O&M		
Preventive Maintenance/Service Contracts	$ 1,200	Estimated service contract for Emergency Generator. Based on amount from Hamden.
STEP O&M, Equipment Repair & Replacement, & Pump Tanks	$ 3,360	$8/month/connection, per Orenco Fact Sheet NFS-EF-OM-1, with inflation; tanks pumped every 5 years @ $300/each (labor in Personnel line, above).
Telephone/Fax/Internet	$ 1,000	Based on estimated amount from Hamden. For emergency alarm on Pump Station.
Building Maintenance -- includes grounds maintenance	$ 1,000	Assumes grounds keeping to be sub-contracted by West Conesville and to include lawn mowing, and summer grounds care, as well as snow plowing and removal in winter.
Equipment/Spare Parts/Repairs	$ 1,000	Based on estimated amount from Hamden
Training & Travel	$ -	
Maintenance Supplies	$ 500	Cleaning Supplies, shovels, portable pumps etc,.
Instrumentation Spare Parts	$ 500	
Laboratory Contract and Supplies/Testing	$ -	**None required.**
O&M Subtotal	**$ 8,560**	
Collection System O&M		
General O&M	**$ 2,000**	Periodic sewer cleaning and inspection
Pump to Prattsville Cost	**$ 25,000**	*Note: This cost is estimated. Actual Cost is to be determined based on future negotiations with the Prattsville Sewer District.
Total O&M Budget Subtotal	$ 52,655	
Contingency	$ 5,266	10% of the budget before contingency.
Total O&M Budget Subtotal w/ Contingency	**$ 57,921**	
Additional Start-up Costs		
O&M Cold Start-up/Training	$ 2,080	Assumes 16 hrs. x 2 operators @ 65.00 per hour for operator training and familiarization with the system.
Engineering Start-up	$ 3,500	
TOTAL	**$ 63,501**	
TOTAL PROPOSED O&M BUDGET	**$ 64,000**	



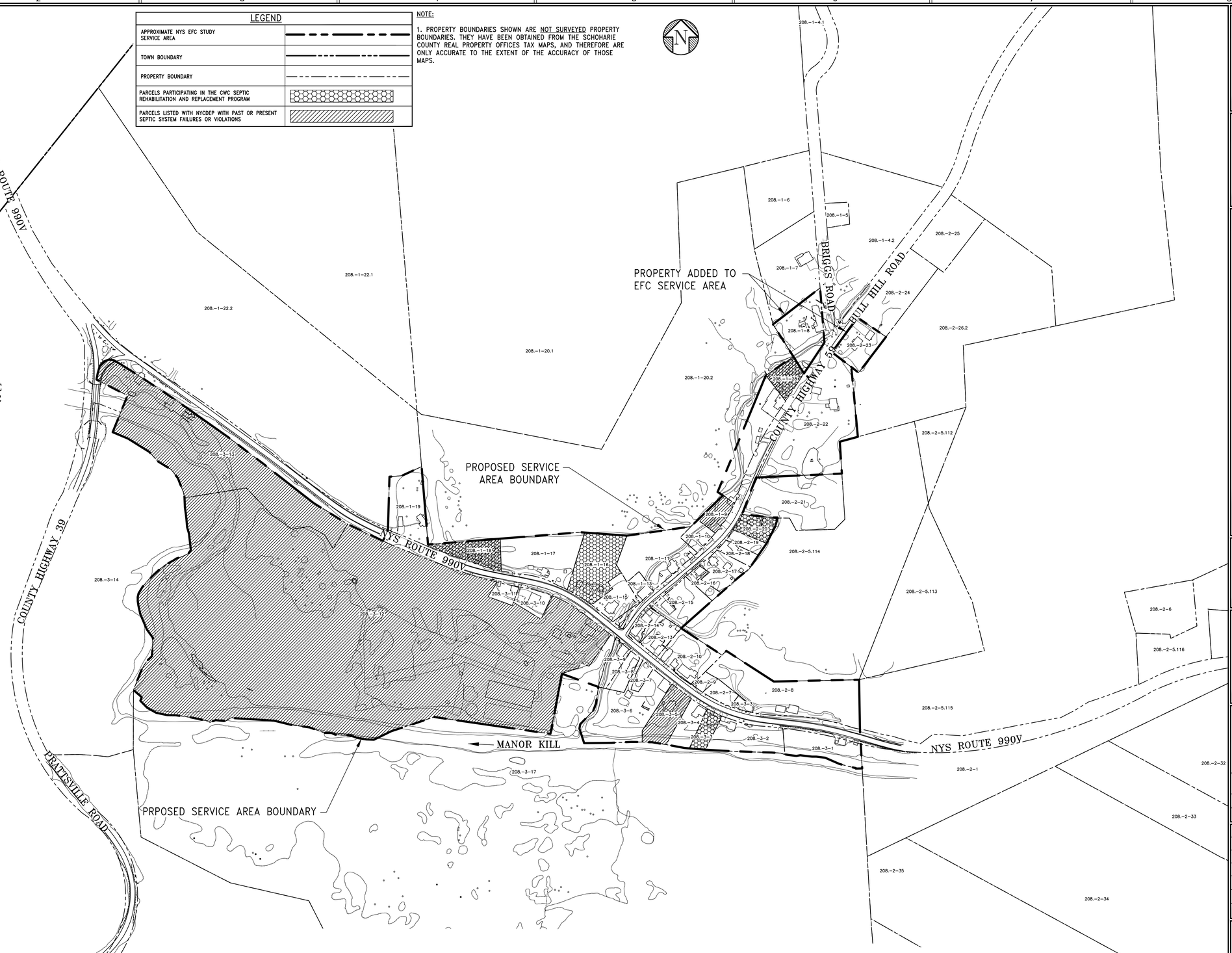
*NOTE:
SEPTIC TANKS SHALL BE SIZED FOR 24 HOURS OF EMERGENCY STORAGE WITHIN THE TANK BETWEEN PUMP ON FLOAT AND INFLUENT PIPE INVERT.

DATE 8/25/16	PROJECT NO. 2014044_W.CONESVILLE	STEP SYSTEM PROCESS FLOW SCHEMATIC	Lamont Engineers ENGINEERS • PLANNERS • FACILITY OPERATIONS
SCALE NOT TO SCALE	DRAWN AHJ		

LEGEND	
APPROXIMATE NYS EFC STUDY SERVICE AREA	
TOWN BOUNDARY	
PROPERTY BOUNDARY	
PARCELS PARTICIPATING IN THE CWC SEPTIC REHABILITATION AND REPLACEMENT PROGRAM	
PARCELS LISTED WITH NYCDEP WITH PAST OR PRESENT SEPTIC SYSTEM FAILURES OR VIOLATIONS	

NOTE:

1. PROPERTY BOUNDARIES SHOWN ARE NOT SURVEYED PROPERTY BOUNDARIES. THEY HAVE BEEN OBTAINED FROM THE SCHOHARIE COUNTY REAL PROPERTY OFFICES TAX MAPS, AND THEREFORE ARE ONLY ACCURATE TO THE EXTENT OF THE ACCURACY OF THOSE MAPS.



PARCELS PARTICIPATING IN THE CWC SEPTIC REHABILITATION AND REPLACEMENT PROGRAM		
PARCEL #	ACREAGE	OWNER
208.-1-16	1.15	LABAN, JEFFERY M.
208.-1-28	0.36	KILMER, MURIEL H
208.-2-20	0.34	BURCH, BENJAMIN
208.-1-18	0.55	LASHER, RAYMOND
208.-3-3	0.27	GREEN, VERNON R.

PARCELS LISTED WITH NYCDEP WITH PAST OR PRESENT SEPTIC SYSTEM FAILURES OR VIOLATIONS		
PARCEL #	ACREAGE	OWNER
208.-3-13	5.36	WATERFALL HOUSE
208.-1-18	0.55	CORNELL, DAWN
208.-3-12	32.17	ZUNIGA, LORELEI
208.-1-9	0.28	POTTER, LYNDEN
208.-1-28	0.36	KILMER, MURIEL
208.-3-5	0.65	SPANHANKE, CHRISTOPHER

Lamont Engineers
ENGINEERS - PLANNERS
FACILITY OPERATIONS
197 ELM ST., COBLESKILL, NY 12043
(518) 234-4028
www.lamontengineers.com

Consultant

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue Rev.	Date	Remarks

Project Number	2014044
Drawn By	AHJ
Designed By	CJY
Checked By	CJY
Date	10/31/16
Scale	1"=200'
File Name	SEPTIC FAILURES

Sheet Title

SEPTIC FAILURES MAP

Sheet No.

3.2.a.A

Town of Conesville
Hamlet of West Conesville

Proposed Service Area
Wastewater Flow Estimate

Facility Type	No. of Units	Flow Calculation Basis	Average Household Size	Flow (gpd)	Source	Total Flow (gpd)
Residential						
Single Family Homes	32	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	8,320
Two Family Homes	0	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	0
Apartments	0	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	0
Commercial/Institutional w/ Apartment	3	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	780
					Residential Total =	**9,100**
Commercial/Institutional (w/ parcel number)						
Masonic Lodge (208.-1-13)	n/a	50 seats	n/a	1,750	NYSDEC - Food Service - 35 gallons per seat	1,750
Auto Shop (208.-2-8)	n/a	1 employee	n/a	25	NYSDEC - Factory - 25 gallons per employee	25
					Commercial/Industrial Subtotal =	**1,775**
Mixed Use (with parcel number)						
Nick's Waterfall House (w/ 3 res.(208.-3-13))	n/a	30 Seats	n/a	600	NYSDEC - Tavern - 20 gallons per seat	600
					Mixed Use Subtotal =	**600**
					Commercial/Industrial/Mixed Use Subtotal =	**2,375**
					WASTEWATER FLOW - WEST CONESVILLE =	11,475
					10% GROWTH =	1,148
					TOTAL =	12,623
					TOTAL WASTEWATER FLOW FOR WEST CONESVILLE =	**13,000**

Hamlet of West Conesville
Permits and Approvals Inventory

Agency	Application or Submission	Reason
NYSDEC	SPDES Permit - Stormwater	Stormwater discharge from a construction site
	Article 15 Permit - Stream Crossing	Stream bed or bank disturbance
	SPDES Permit - Wastewater	Wastewater surface discharge
	Facility Plan Submission	
	Final Design Submission	
ACOE	Nationwide Permit 12	Utility installation in a wetland or stream
	Nationwide Permit 33	Stream/ Wetland Dewatering for utility installation
NYCDEP	Stormwater Permit/ SWPPP	Stormwater discharge
	Facility Plan Submission	
	Plan approval	
SHPO	Submission	Assess archeological impacts
Town	Floodplain Work Permit	Installation of piping in the floodplain/floodway
	Building Permit Review	
County DPW	Highway Work Permit	Pipe Installation within the County Highway ROW
NYSDOT	Utility Work Permit	Pipe Installation within the State Highway ROW
	Non-utility work permit	WWTP or Pump station access drives
NYSDOH	Plan Review and Approval	
NYC	Lease Agreement	For the Town's use of City Property as a community
		septic system on Site B.
West Conesville	Utility Easements	For installation of SDGS on Private Property
Landowners	Lateral Access Agreements	For installation of SDGS laterals on Private Property

AMENDMENT #2

to the
PRELIMINARY ENGINEER'S REPORT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
for the
Hamlet of West Conesville
Town of Conesville
Schoharie County, New York

June 23, 2017

AMENDMENT #2

to the
PRELIMINARY ENGINEER'S REPORT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
for the
Hamlet of West Conesville
Town of Conesville
Schoharie County, New York

June 23, 2017

The Draft Preliminary Engineer's Report (Draft PER) of December 29, 2015 concluded that a Septic Maintenance District could not be recommended for the Hamlet of West Conesville because 97.5% of the properties in the Hamlet are not able to support a properly functioning, up-to-standards conventional septic system even without the required 100% reserve area (see Draft PER pages 16-20 and 36).

The Draft PER also concluded that a community-wide septic system with subsurface disposal is the best option and that Site B has the best siting characteristics and is the most economical option for a community septic system for the Hamlet of West Conesville (See Draft PER pages 20, 22-25, and 36-37). However, the property owner of Site B is New York City and, at the time, it was unknown if the area needed could be acquired without having to go through eminent domain procedures. Regardless of the potential property acquisition complications, Site B was still the preferred site.

The Draft PER therefore concluded that a small diameter gravity sewer system with shallow cut-and-fill absorption beds on Site B for the wastewater treatment system was the recommended option at a capital cost of $6.670M and an annual operation & maintenance (O&M) cost of $52,000.

The Draft PER was submitted to the Catskill Watershed Corporation (CWC) and the New York City Department of Environmental Protection (NYCDEP) for review and discussion. Subsequent meetings focused on attempting to further evaluate the potential of a Septic Maintenance District and discussions on the potential use of the New York City property for a Community Septic System. Initially, NYCDEP would not agree to the use of its property for a Community Septic System and requested that pumping wastewater to the Prattsville WWTP be evaluated.

Subsequent to NYCDEP request, Lamont Engineers (Lamont) prepared cost estimates for pumping the Hamlet of West Conesville's wastewater to the Prattsville WWTP. Lamont evaluated two different pumping scenarios as summarized in Amendment #1 dated November 4, 2016. Amendment #1 concluded that a small diameter gravity sewer system with shallow cut-and-fill absorption beds on Site B remained the recommended option for the Hamlet of West Conesville.

Subsequent to the submission of Amendment #1, NYCDEP was still reluctant to allow use of its land (Site B), acquired under the land acquisition program for protection of the watershed, for a community septic system for the Hamlet of West Conesville. NYCDEP requested the evaluation of another property for a potential community septic system

located approximately 1 mile east of the hamlet. This latest property has been given the designation of Site F. Please see attached revised Exhibit 8.1.a.B – Potential Subsurface Treatment Site Map for the location of Site F.

The landowners of Site F were contacted to see if they would be willing sellers and if they would allow geotechnical testing on their property. The landowners signed an access agreement and non-binding indication of willingness to sell letter on April 18, 2017. Please see attached Attachment A for a copy of the signed letter.

On April 21, 2017, geotechnical testing was performed on Site F. See Attachment B for Stage 1 Site Testing Location Map and the test results.

Results of the soils testing revealed that Site F is viable for a community septic system.

Due to the fast percolation rates found on Site F, a cut-and-fill system would be required for a community septic system. The deep test pit performed did not reveal any bedrock or fragipan. No groundwater was observed in the deep test pit. However, a nearby well casing on the property was observed and static water level measurements showed water at 11.36 feet below grade.

Discussions with the property owners for Site F regarding options for purchasing the property have been initiated. The owners of Site F have stated that they had plans to mine Site F for gravel. The owners are in the gravel and topsoil business and currently operate a nearby mine for these commodities. The owners will be looking to be compensated for the value of the gravel as part of the sale of Site F to the project. An appraisal of Site F is the next step in the negotiations.

Furthermore, the owners of Site F require that any land deal contain an agreement to include their other nearby properties within the West Conesville Sewer District and that sewer laterals be provided to serve all of their properties (and their sons property). These properties include Tax Map #'s 209.-1-10.21 and 209.-1-10.22.

In addition to the above condition outlined by the owners of Site F, the Town of Conesville requires that if Site F is utilized as the community septic system site, then all of the properties between the Hamlet of West Conesville and Site F need to be included within the West Conesville Sewer District.

Based on the conditions stated by the Town of Conesville and the owners of Site F, the West Conesville Sewer District will need to be expanded to include an additional twelve (12) residential parcels as well as four (4) vacant parcels which are now labeled as Alternate Supplemental Service Area I (ASSAI). See Attachment C for a detailed list of the properties included in ASSAI and a revised Exhibit 4.A – Proposed Service Area Map.

See attached revised Exhibit 5.2.B for an updated Wastewater Flow Estimate which takes into account the additional properties within ASSAI. The new Average Daily Flow is now 16,000 gallons per day.

The Wastewater Load Summary found under Section 9.2 - Wastewater Treatment Facility Organic, Solids and Nutrient Loadings of the Preliminary Engineers Report has been revised to include the loadings from ASSAI as follows:

SEPTIC TANK EFFLUENT WASTEWATER LOAD SUMMARY	
West Conesville Community Wastewater System Proposed Service Area	
Hydraulic Loads:	
Proposed Design Average Flow	16,000 gpd*
Proposed Design Maximum Day Flow	32,000 gpd
Proposed Design Peak Hourly Flow	48 gpm (68,730 gpd)
Organic and Solids Loads	
Proposed Design Average BOD_5	15 lbs BOD_5 /day (110 mg/L)
Proposed Design Maximum Day BOD_5	30 lbs BOD_5 /day
Proposed Design Peak Hour BOD_5	64 lbs BOD_5 /day
Proposed Design Average Total Suspended Solids	11 lbs TSS/day (80 mg/L)
Proposed Design Maximum Day Total Suspended Solids	22 lbs TSS/day
Proposed Design Peak Hour Total Suspended Solids	47 lbs TSS/day
Nutrient Loads	
Proposed Design Average NH_3-N	3.3 lbs/day of NH_3-N
Proposed Design Average TKN	5.3 lbs/day of TKN
Proposed Design Average Phosphorus	1.3 lbs/day Phosphorus

*(High 30-Day Mean, anticipated SPDES permitted flow based on Lexington CWMP)

As described in Section 6 of the PER, the preferred wastewater treatment solution for the Hamlet of West Conesville is a community subsurface wastewater treatment facility located on Site B. However, New York City as the owner of Site B is reluctant to allow use of the site for this project. Therefore, based on the site evaluation and due to no other properties having willing sellers, a small diameter gravity sewer (SDGS) system with shallow cut-and-fill absorption beds on Site F for the Main Service Area and ASSAI is the recommended option for the Hamlet of West Conesville. See Attachment D, Community Septic System Site F Layout (Note that NYSDEP West of Hudson Engineering Section has decided that for this project, separation by 500' of two fields for a project flow over 10,000 gpd will not be required).

With a small diameter gravity sewer collection system, preliminary treatment of the wastewater will occur in the septic tanks located at each property. Each septic tank would be equipped with an effluent filter to minimize the solids entering into the collection system. Because of the minimal solids in the influent to the community wastewater facility, additional primary settling tanks are not required there.

At the treatment facility site, final treatment and disposal will occur through shallow cut-and-fill absorption beds. The WWTF will consist of a receiving manhole, a flow meter, an absorption bed dosing pump station and shallow cut-and-fill absorption beds. As required on other CWMP project subsurface treatment systems, the subsurface system will be constructed in 3 sections each capable of handling 50% of the design flow and will be dosed with a pressure distribution system. The application rate of the absorption beds will be 0.5625 gpd/sf (0.6 gpd/sf for a fill with a 30 minute percolation rate, reduced by 25% for using absorption beds and then increased by 25% for constructing 150% of the required absorption area). Also a 28' x 28' building will be provided for equipment and spare parts storage, to house the permanent standby backup generator for use in case of a power outage and to provide a space for the operator to do paperwork and perform maintenance duties. Odor control will also be provided where necessary.

The recommended wastewater treatment solution involves servicing the Service Area with approximately 15,800 LF of small diameter gravity sewers, force main and lateral stubs, eight (8) septic tank effluent pumps (STEP), one (1) individual effluent pump station and one (1) main effluent pumping station. The system will also include approximately 46 lateral connections. Each connection would receive a new septic tank equipped with an effluent filter (or effluent screen in the case of STEP's). See attached revised Exhibit 9.1.e.A for the Preliminary SDGS Collection System Layout.

See Attachment E Opinion of Probable Cost – SDGS to Community Subsurface Treatment System on Site F.

Capital Cost SDGS to Community Subsurface Treatment System on Site F	
Capital Cost – Construction	
Shallow Cut-and-Fill Absorption Beds	$ 2,841,000
SDGS Collection System	$ 3,397,000
TOTAL CONSTRUCTION=	$ 6,238,000
TOTAL NON-CONSTRUCTION=	$ 2,060,000
TOTAL COST	**$ 8,298,000**
O&M Cost (Yearly)	$ 59,000

Attachment A

Access Agreement and Non-Binding Indication of Willingness to Sell Land

Town of Conesville
1306 State Route 990V
Gilboa, New York 12076
Phone: (607) 588-7211 Fax: (607) 588-6832

April 18, 2017

Walter and Nancy Carman
1015 State Route 990V
Gilboa, New York 12076

RE: Access Agreement and non-binding indication of willingness to sell land for community wastewater facilities
Tax Map Parcel No. 209.-1-10.12; L 809, P 139
Town of Conesville, Schoharie County, NYS
Wastewater Facilities Site Identification and Testing Phase
Preliminary Engineering Studies
West Conesville Community Wastewater Management Program

Dear Walter and Nancy Carman:

The Catskill Watershed Corporation (CWC) was established as a local development corporation to, in part, develop and administer various programs aimed at enhancing water quality and local community economies. It is funded primarily by New York City Watershed program funds. CWC has established a Community Wastewater Management Program to assist the Town of Conesville (and certain other watershed communities) improve the management and treatment of sewage within the hamlet area by funding the cost of studying, designing and constructing a community wastewater management system. A copy of the agreement between the CWC and the Town of Conesville, which explains the Project more fully, is available for public review at the Town Hall.

The initial phase of the Project involves conducting a study to assess the wastewater needs of the hamlet of West Conesville (the "Study Phase"). This assessment will involve many tasks including identifying the area to be serviced by the community wastewater management system(s), analyzing the various wastewater management options available, and selecting the best wastewater management system(s) to serve the designated area. To assist it in this process, CWC has retained the professional engineering services of Lamont Engineers, P.C. (the "Engineer").

To conduct the study phase, the Engineer needs access to various properties in the Town of Conesville, including yours. Your property has been identified as a potential cluster/community leach field site. The initial activities to be conducted on your property include a general walk over, the taking of photographs, soil percolation tests, deep soil test pits, and/or soil borings. Depending upon the results of these initial activities, further investigations may occur. A more detailed outline of the scope of the investigation is

attached. Before any of this work can begin, it is necessary that you, the property owner, grant access to your property to the Engineer. Your cooperation in granting access is vital to a successful study. The Engineer will notify you prior to visiting your property, and conduct their study at reasonable times and will repair and/or restore any area disturbed by the study.

Furthermore, as a condition to you granting us access, CWC and the Town of Conesville will defend you against and pay any legitimate claims for damages, losses, liabilities or expenses made against you as a result of the Engineers' use of the property as provided in this letter, including damage to your property. CWC and the Town will not require the property owner to pay for any damages, losses, or injuries sustained or suffered by any persons or property as a result of the Engineers' use of the property as provided in this letter. If you feel that your property has been damaged or not adequately restored, CWC and the Town will endeavor to have the problem rectified. CWC and the Town will only pay for damage to your property and any consequential out-of-pocket expenses you incur as a result of the damage.

To assure that your property is restored to the condition it was in prior to commencement of work, photographs will be taken prior to commencement of work and after work is completed. Copies of the photographs will be kept at CWC and the Town Hall and will be available for your inspection.

The investigation on your property will begin this spring but may occur over a one-year or two-year period. As set forth in the attached schedule, the work will involve various stages. The decision whether to do work under a specific task will depend upon the results of the previous task.

In order to allow the Engineers to begin their study, please sign this letter and return it to Town of Conesville, 1306 State Route 990V, Gilboa, NY 12076 and keep one copy for your records. Your signature below certifies and acknowledges that you are the owner of the property at the listed address, that you have read and understand the content of this authorization letter, and that by this letter, you are granting your permission for Lamont Engineers, P.C., to perform the necessary studies on your property.

Your signature also indicates that at the present time, you have an interest in selling your property to the Town for the project. Your willingness to sell is conditional upon you and the Town agreeing upon a price and terms based upon an independent appraisal of the property's fair market value. If during the course of this study, you decide not to sell your property, you should notify the Town as soon as possible. The Town does not want to spend funds studying a site that is not available for purchase.

The specific activities the Engineers will undertake on your property are described on the attached schedule.

If you are <u>not</u> interested in making your property available for soil testing, do not sign this letter, but inform the Town of that fact. Any future questions regarding this letter or the study should be directed to this office.

Very truly yours,

William A. Federice, Supervisor
Town of Conesville

2014044\Corr\West Conesville\0151

Owner: Walter and Nancy Carman

By: Walter Carman Nancy Carman
Print Name of Property Owner

Walter Carman Nancy Carman
Signature of Property Owner

_____
Address

_____
Address

_____
Telephone Number

West Conesville CWMP Project Contacts

The following is a list of contacts for your reference.

William Federice
Supervisor
1306 State Route 990V
Gilboa, New York 12076
Ph: (607) 588-7211
federicbill@gmail.com

John Mathiesen
Catskill Watershed Corporation
PO Box 569
905 Main Street
Margaretville, NY 12455
Phone (845) 586-1400
jmathiesen@cwconline.org

Christopher J. Yacobucci
Lamont Engineers
PO Box 610
197 Elm Street

Cobleskill, NY 12043
Phone (518) 234-4028
cyacobucci@lamontengineers.com

SCHEDULE OF WORK
ACCESS AGREEMENT
TOWN OF CONESVILLE and
CATSKILL WATERSHED CORPORATION
WEST CONESVILLE COMMUNITY WASTEWATER MANAGEMENT PROGRAM

A. Initial Investigations

1. Photograph property
2. Walk-over property

Duration: 2 to 4 weeks

B. Preliminary Soils Investigations

1. Deep soil test pits (with backhoe)
2. Soil borings (with drill rig)
3. Soil percolations tests (with hand tools)
4. Site restoration

Duration: 4 to 8 weeks

C. Continued Soils Investigations

1. Additional soil test pits
2. Additional soil borings
3. Additional soil percolation tests
4. Groundwater mounding studies including installation and use of monitoring wells
5. Site restoration

Duration: 8 weeks to 12 months

D. Potential Environmental Review Work

1. Wetlands delineation and survey
2. Archeological investigations
3. Wildlife and endangered species investigations
4. Environmental assessment including groundwater and soils investigations which may involve soil borings, soil sampling and testing, groundwater sampling and testing, deep soil test pits, installation and use of monitoring wells.

Duration: 4 to 12 months

E. Potential Property Acquisition

1. Property Survey
2. Appraisal

Duration: 2 to 6 months

Attachment B

Site Testing Location Map – Site F

LEGEND

REAL PROPERTY TAX MAP PROPERTY LINES

FEMA AREAS OF 100 YEAR FLOOD

100' WATERWAY SETBACK

PT TP

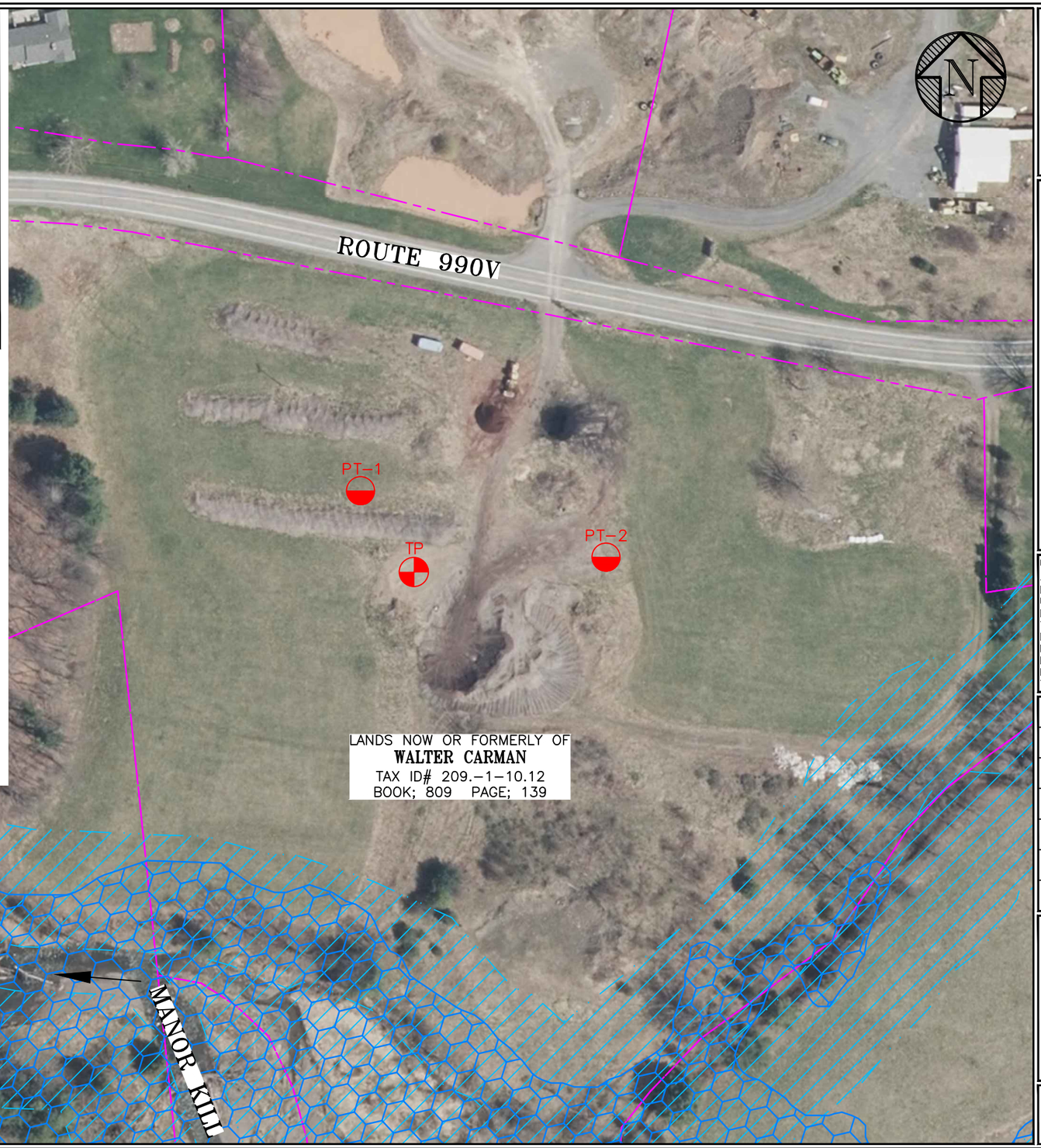
PERCULATION TEST AND DEEP TEST PIT LOCATIONS

RESULTS OF DEEP TEST PITS

HOLE #	DEPTH	DESCRIPTION
DTP-1		
	0'-0" TO 1'-9"	TOPSOIL - LOAM WITH GRAVEL
	1'-9" TO 3'-1"	SANDY GRAVEL
	3'-1" TO 4'-2"	SANDY GRAVEL WITH SOME COBBLES
	4'-2' TO 5'-8"	GRAVEL
	5'-8" TO 7'-1"	SAND AND FINE GRAVEL
	7'-1" TO 7'-4"	CLAY WITH MOTTLING
		ROOTS @ 5'-8"
		NO GROUNDWATER OBSERVED

RESULTS OF PERC TESTS

HOLE #	FINAL PERC RESULT
1	01:00
2	01:40



Lamont Engineers
COBLESKILL NEW YORK
(518) 234-4028

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER
MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Project Number	2014044
Drawn By	NW
Designed By	NW
Checked By	CY
Date	6/20/17
Scale	1"=100'
File Name	ATTACHMENT B

Sheet Title

SITE TESTING
LOCATION MAP
SITE F

Sheet No.

ATTACHMENT B

Attachment C

West Conesville Service District Property Owner List
Alternative Supplemental Service Area I

ATTACHMENT C
WEST CONESVILLE SERVICE DISTRICT PROPERTY OWNER LIST
ALTERNATIVE SUPPLEMENTAL SERVICE AREA I

TAX NUMBER	PROPERTY ADDRESS	OWNER	TYPE	DESCRIPTION
208.-2-6	887 State Route 990V	Cherry, Patrick W	RSF	
208.-2-5.116	973 State Route 990V	Lloyd, Stephen	RSF	
208.-2-4	State Route 990V	Wiseman, Partrick	V	
208.-2-3	915 State Route 990V	Simonetti, Ricci	RSF	
209.-1-10.21	1015 State Route 990V	Carmen, Walter	RSF	With Large Shop/Garage
209.-1-10.22	1013 State Route 990V	Haemmerle, William	RSF	
209.-1-7	1032 State Route 990V	Harrick, Holly Potter	RSF	
209.-1-8	997 State Route 990V	Laban, Jacob	RSF	
209.-1-10.12	State Route 990V	Carmen, Walter	V	
208.-2-29	948 State Route 990V	Nikac, Paska	RSF	
208.-2-5.111	State Route 990V	Hughes, Jill p	V	
208.-2-5.21	939 State Route 990V	Holdridge, Nathan	RSF	
208.-2-5.22	793 State Route 990V	Palmer, Shawn	V	
208.-2-2	919 State Route 990V	Palmer, Shawn	RSF	
208.-2-30	922 State Route 990V	Hughes, Jill p	RSF	
208.-2-31	111 Pangman Rd	Hughes, Jerry	RSF	

	TOTAL CALCULATIONS	
RSF	TOTAL Res. Single Family	12
RTF	TOTAL Res. Two Family	0
C	TOTAL Commercial Businesses	0
CA	TOTAL Commercial Apartments	0
M	TOTAL Municipal	0
V	TOTAL Vacant lots / lands	4
I	TOTAL Institutional	0
IA	TOTAL Institutional w/ Apartments	0
RA	TOTAL Residential Apartments	0
N/A	TOTAL NOT ASSESSED	0
	TOTAL # of items	16

Attachment D

Community Septic System
Site F Layout

LEGEND

= REAL PROPERTY TAX MAP PROPERTY LINES

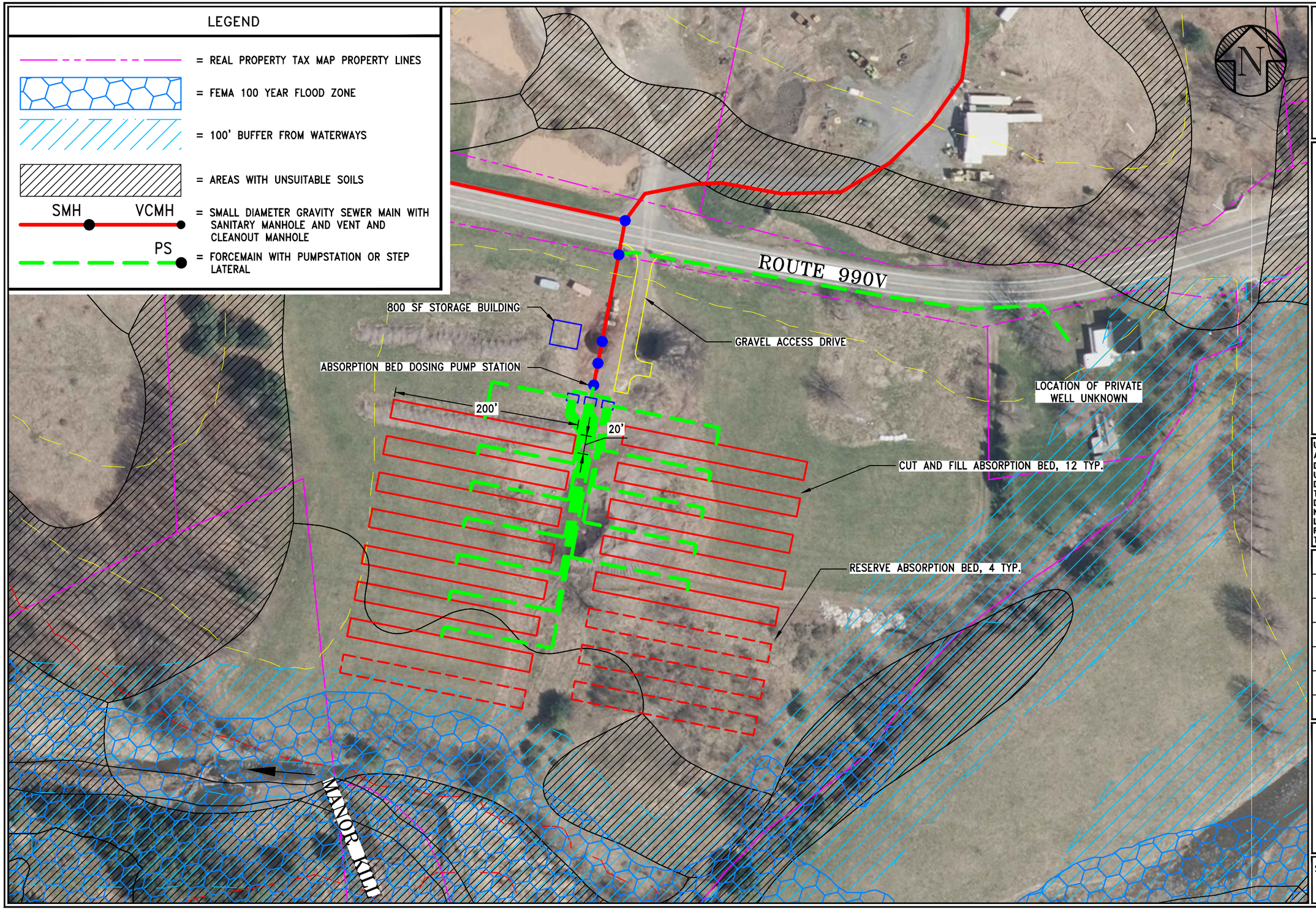
= FEMA 100 YEAR FLOOD ZONE

= 100' BUFFER FROM WATERWAYS

= AREAS WITH UNSUITABLE SOILS

SMH — VCMH = SMALL DIAMETER GRAVITY SEWER MAIN WITH SANITARY MANHOLE AND VENT AND CLEANOUT MANHOLE

PS = FORCEMAIN WITH PUMPSTATION OR STEP LATERAL



Lamont Engineers

COBLESKILL NEW YORK
(518) 234-4028

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Project Number	2014044
Drawn By	NW
Designed By	NW
Checked By	CY
Date	3/31/17
Scale	1"=100'
File Name	9.3.A

Sheet Title

COMMUNITY SEPTIC SYSTEM SITE F LAYOUT

Sheet No.

ATTACHMENT D

Attachment E

Opinion of Probable Cost
SDGS to Community Subsurface Treatment System on Site F

Attachment E
West Conesville CWMP
Opinion of Probable Cost
SDGS to Community Subsurface Treatment System on Site F

	Item	Description	Amount
1	**SDGS Collection System**		$ 3,397,000.00
2	**Shallow Cut-and-Fill Absorption Beds**		$ 2,841,000.00
		Total Construction Cost	**$ 6,238,000.00**
1	**Non-Construction (25%)**	Includes administrative, legal, SEQRA Compliance, permitting, engineering (design & construction), easement acquisition, etc.	$ 1,560,000.00
2	**Property Acquisition**		$ 500,000.00
		Total Non-Construction Cost	**$ 2,060,000.00**
		Total Project Capital Cost	**$ 8,298,000.00**

Attachment E
West Conesville CWMP
Opinion of Probable Cost
SDGS to Community Subsurface Treatment System on Site F

SDGS Collection System				
Item	Quantity	Units	Unit Price*	Amount
4" HDPE SDGS Main	5,600	LF	$ 110.00	$ 616,000
6" HDPE SDGS Main	750	LF	$ 110.00	$ 82,500
4" HDPE FM	5,350	LF	$ 110.00	$ 588,500
2" HDPE FM	2,850	LF	$ 75.00	$ 213,750
Stream Crossing No. 1 - 4" HDPE FM	200	LF	$ 300.00	$ 60,000
Stream Crossing No. 2 - 4" HDPE SDGS	60	LF	$ 300.00	$ 18,000
Highway Crossing No. 1 - 2" HDPE FM	50	LF	$ 300.00	$ 15,000
Highway Crossing No. 2 - 4" HDPE SDGS	40	LF	$ 300.00	$ 12,000
Highway Crossing No. 3 - 4" HDPE SDGS	50	LF	$ 300.00	$ 15,000
Highway Crossing No. 3 - 6" HDPE SDGS	50	LF	$ 300.00	$ 15,000
Highway Crossing No. 5 - 4" HDPE FM	50	LF	$ 300.00	$ 15,000
4" HDPE Lateral Stubs (35)	760	LF	$ 110.00	$ 83,600
Inspection Port	16	EA	$ 1,000.00	$ 15,875
Cleanout	42	EA	$ 1,000.00	$ 42,333
Manholes	5	EA	$ 3,500.00	$ 17,500
End Line Vent and Cleanout Manholes	4	EA	$ 5,000.00	$ 20,000
Main Effluent Pump Station 1	1	EA	$ 95,000.00	$ 95,000
Individual Effluent Pump Station 2	1	EA	$ 70,000.00	$ 70,000
Sewer Lateral Connection and All Appurtenances	46	EA	$ 15,000.00	$ 690,000
				$ 2,685,058
			Inflation 10%	$ 268,506
			Subtotal	$ 2,953,564
			Contingency (15%)	$ 443,035
			Construction Total	**$ 3,396,599**
*Unit Prices based on previous CWMP project cost estimates and bidding results.				

Attachment E
West Conesville CWMP
Opinion of Probable Cost
SDGS to Community Subsurface Treatment System on Site F

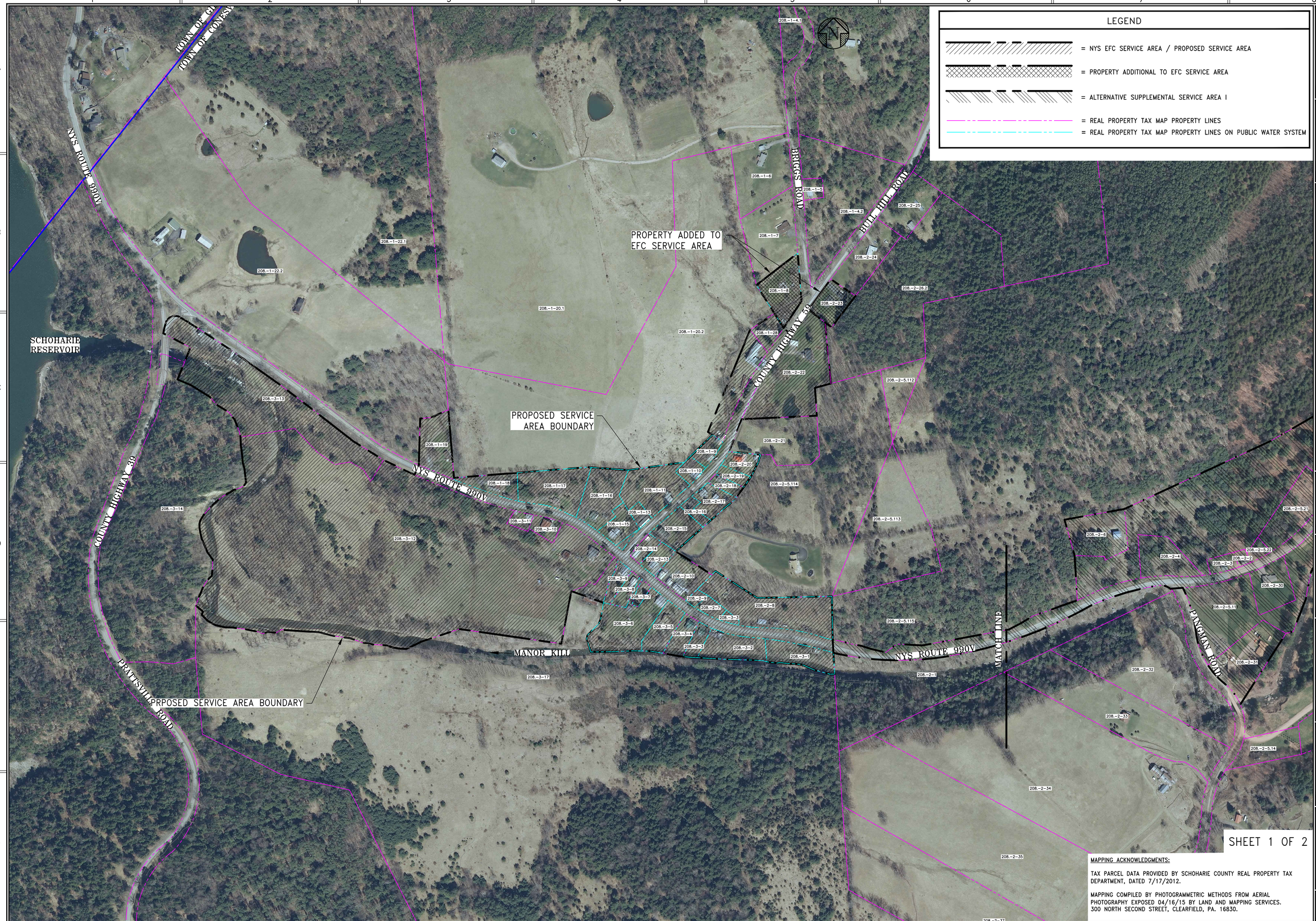
	Item	Description	Units	Quantity	Unit Price*	Amount	
Site Preparation							
	Environmental Protection		LS	1	$ 20,000.00	$ 20,000.00	
	Site Preparation		LS	1	$ 20,000.00	$ 20,000.00	
	Mobilization/Demobilization		LS	1	$ 50,000.00	$ 50,000.00	
	Survey and Stakeout		LS	1	$ 10,000.00	$ 10,000.00	
	Access Road Construction		LS	1	$ 200,000.00	$ 200,000.00	
	Restoration		LS	1	$ 50,000.00	$ 50,000.00	
	Site Work		LS	1	$ 50,000.00	$ 50,000.00	
	Subtotal Site Preparation						$ 400,000
Absorption Beds							
	Receiving Structure		EA	1	$ 7,500.00	$ 7,500.00	
	Flow Meter and Metering Manhole		EA	1	$ 25,000.00	$ 25,000.00	
	Absorption Bed Dosing Pump Station		EA	1	$ 100,000.00	$ 100,000.00	
	Dosing Pumps		EA	3	$ 15,000.00	$ 45,000.00	
	Valve Vault with Valves		EA	3	$ 20,000.00	$ 60,000.00	
	3" HDPE Forcemain to Leach Beds		LF	3,000	$ 50.00	$ 150,000.00	
	1' of Topsoil Removal, Stockpile, Installation, and Seeding	12 leach beds at 200' (+10') x 20' (+10') x 1' of removal	CY	2,800	$ 35.00	$ 98,000.00	
	2' Excavation and Disposal of Material	12 leach beds at 200' (+10') x 20' (+10') x 2' of removal	CY	5,600	$ 25.00	$ 140,000.00	
	Installation of Fill Material	12 leach beds at 200' (+10') x 20' (+10') x 2' of installation + 10' wide outisde perimeter of bed x 1'	CY	6,622	$ 40.00	$ 264,888.89	
	Crushed Stone Bedding	12 leach beds at 200' x 20 x 1' of removal	CY	1,778	$ 40.00	$ 71,111.11	
	Leach Field Absorption Bed Piping		LF	9,360	$ 20.00	$ 187,200.00	
	Separation Material - Geotextile Fabric		SF	90,720	$ 0.50	$ 45,360.00	
	Subtotal Absorption Beds						$ 1,194,060
Other Treatment Facility Equipment							
	Odor Control System		EA	1	$ 20,000.00	$ 20,000.00	
	O&M Manuals		EA	1	$ 12,000.00	$ 12,000.00	
	Spare Parts		LS	1	$ 15,000.00	$ 15,000.00	
	Misc Treatment Facility Equip		LS	1	$ 115,000.00	$ 115,000.00	
	Subtotal Other Treatment Facility Equipment						$ 162,000
Utility Shed							
	Wood Frame Building (incl. Foundation)		SF	800	$ 150.00	$ 120,000.00	
	Misc. Bldg.		LS	1	$ 15,000.00	$ 15,000.00	
	Driveway and Parking Area		LS	1	$ 20,000.00	$ 50,000.00	
	Water Supply Well		LS	1	$ 15,000.00	$ 15,000.00	
	Office Furniture/ Lab Equipment		LS	1	$ 10,000.00	$ 10,000.00	
	Subtotal Utility Shed						$ 210,000
Electrical			LS	1	$ 75,000.00	$ 75,000.00	$ 75,000
Plumbing			LS	1	$ 35,000.00	$ 35,000.00	$ 35,000
HVAC			LS	1	$ 35,000.00	$ 35,000.00	$ 35,000
Utilities			LS	1	$ 35,000.00	$ 35,000.00	$ 35,000
Potential Extra Costs for Additional Requirements from NYCDEP			LS	1	$ 100,000.00	$ 100,000.00	$ 100,000
						SUBTOTAL	$ 2,246,060
						inflation (10%)	$ 224,606
						Subtotal	$ 2,470,666
						Contingency (15%)	$ 370,600
						Construction Total	**$ 2,841,266**
*Unit Prices based on previous CWMP project cost estimates and bidding results.							

Attachment E
West Conesville CWMP
Opinion of Probable Cost
SDGS to Community Subsurface Treatment System on Site F

Line Item Description	Budget	COMMENTS
Utilities		
Fuel	$ 500	Based on current Trout Creek Budget
Electricity Cost	$ 3,000	Based on current Trout Creek Budget
Utilities Subtotal	**$ 3,500**	
Chemicals		
De-greasers and De-odorizers	$ 300	Based on current Trout Creek Budget
Chemicals Subtotal	**$ 300**	
Personnel		
O&M Operator	$ 27,040	Based on one operator 8 hours per week @ $65.00 per hour
O&M Engineering	$ 1,500	Itemized cost. Trouble-shooting operations-related issues.
Personnel Subtotal	**$ 28,540**	
Administration		
O&M Legal	$ 2,000	Itemized cost. From Hamden budgeted amount.
Administrative Services/Contract	$ 2,300	Based on EFC recommendation from their Strategic Planning Study, of $50.00 per user account.
Force Account/Clerical	$ 500	Record keeping and reporting including assistance in preparing reconciliation, monthly reports, annual reports, and other obligations under the O&M Agreement.
Office Supplies	$ 500	Record keeping and reporting.
Insurance	$ 2,000	
Administration Subtotal	**$ 7,300**	
O&M		
Preventive Maintenance/Service Contracts	$ 1,200	Estimated service contract for Emergency Generator. Based on amount from Hamden.
Telephone/Fax/Internet	$ 2,200	Based on current Trout Creek Budget
Building Maintenance -- includes grounds maintenance	$ 5,000	Assumes grounds keeping to be sub-contracted by Conesville and to include lawn mowing, and summer grounds care, as well as snow plowing and removal in winter.
Equipment/Spare Parts/Repairs	$ 1,000	Based on estimated amount from Hamden
Sludge Hauling	$ 2,000	Budget pumping 10,000 gals @ .20 per gallon
Maintenance Supplies	$ 500	Cleaning Supplies, shovels, portable pumps etc,.
Instrumentation Spare Parts	$ 500	
O&M Subtotal	**$ 12,400**	
Collection System O&M		
General O&M	**$ 2,000**	Periodic sewer cleaning and inspection
Total O&M Budget Subtotal	$ 54,040	
Contingency	$ 5,404	10% of the budget before contingency.
TOTAL	**$ 59,444**	
TOTAL PROPOSED O&M BUDGET	**$ 59,000**	

Exhibit 4.A

Proposed Service Area Map and
Table Summary of Parcels - REVISED



SHEET 1 OF 2

MAPPING ACKNOWLEDGMENTS:

TAX PARCEL DATA PROVIDED BY SCHOHARIE COUNTY REAL PROPERTY TAX DEPARTMENT, DATED 7/17/2012.

MAPPING COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY EXPOSED 04/16/15 BY LAND AND MAPPING SERVICES. 300 NORTH SECOND STREET, CLEARFIELD, PA. 16830.

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Consultant

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue	Rev. Date	Remarks
1	6/22	ADDITION OF ASSA I

Project Number	2014044
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	12/12/15
Scale	1"=200'
File Name	WINDSHIELD SURVEY

Sheet Title

PROPOSED SERVICE AREA MAP
WEST CONESVILLE

Sheet No.

EX 4.A

SHEET 2 OF 2

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SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue	Rev. Date	Remarks
1	6/22	ADDITION OF ASSA I

Project Number	2014044
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	12/12/15
Scale	1"=200'
File Name	WINDSHIELD SURVEY

Sheet Title

PROPOSED SERVICE AREA MAP
WEST CONESVILLE

Sheet No.

EX 4.A

Exhibit 5.2.B

Wastewater Flow Estimate - REVISED

Town of Conesville
Hamlet of West Conesville

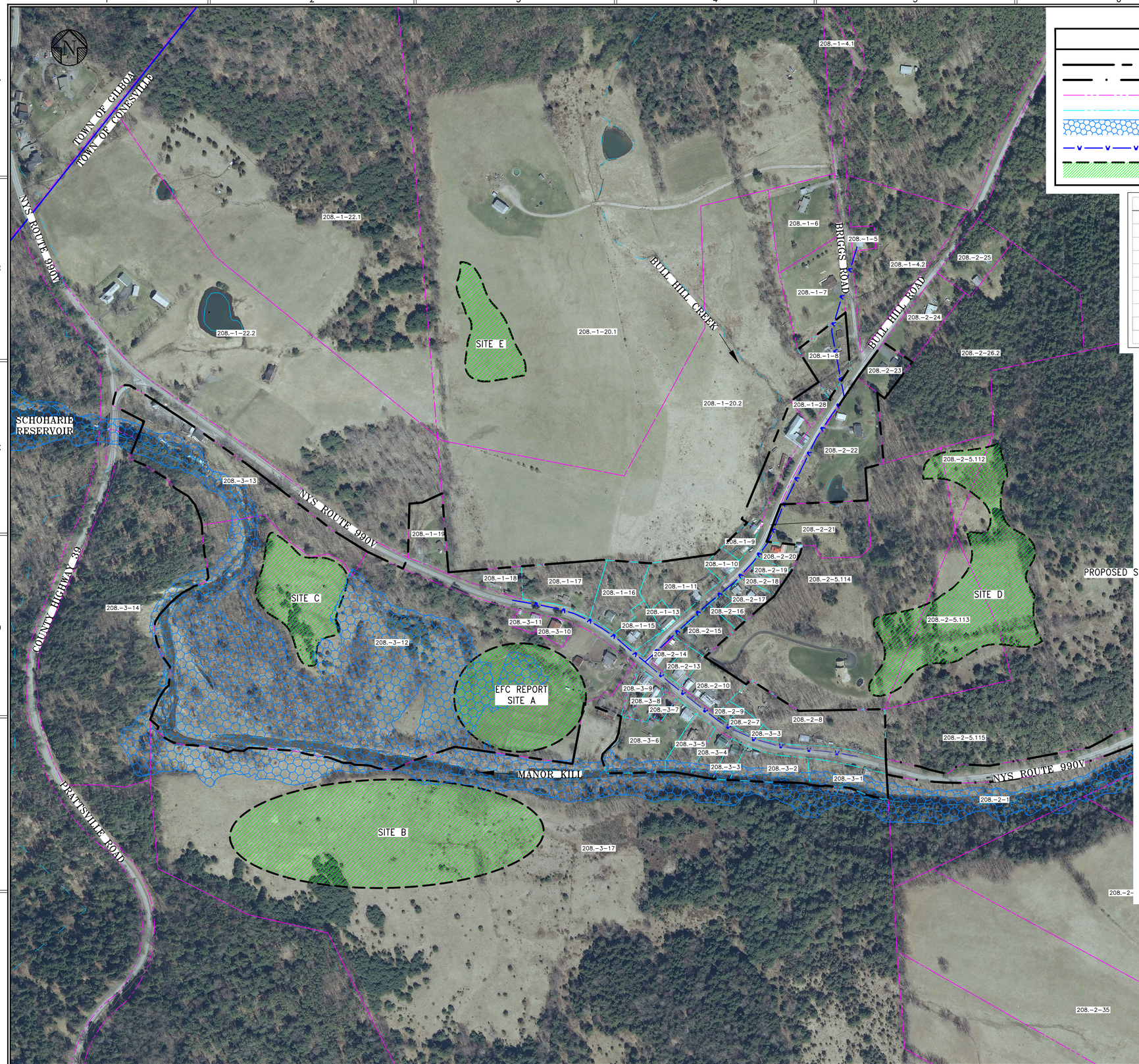
Proposed Service Area
Wastewater Flow Estimate

Facility Type	No. of Units	Flow Calculation Basis	Average Household Size	Flow (gpd)	Source	Total Flow (gpd)
Residential						
Single Family Homes	44	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	11,440
Two Family Homes	0	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	0
Apartments	0	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	0
Commercial/Institutional w/ Apartment	3	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	780
					Residential Total =	**12,220**
Commercial/Institutional (w/ parcel number)						
Masonic Lodge (208.-1-13)	n/a	50 seats	n/a	1,750	NYSDEC - Food Service - 35 gallons per seat	1,750
Auto Shop (208.-2-8)	n/a	1 employee	n/a	25	NYSDEC - Factory - 25 gallons per employee	25
					Commercial/Industrial Subtotal =	**1,775**
Mixed Use (with parcel number)						
Nick's Waterfall House (w/ 3 res.(208.-3-13))	n/a	30 Seats	n/a	600	NYSDEC - Tavern - 20 gallons per seat	600
					Mixed Use Subtotal =	**600**
					Commercial/Industrial/Mixed Use Subtotal =	**2,375**
					WASTEWATER FLOW - WEST CONESVILLE =	14,595
					10% GROWTH =	1,460
					TOTAL =	16,055
					TOTAL WASTEWATER FLOW FOR WEST CONESVILLE =	**16,000**

R:\2014044\Report\West Conesville\Carmen Site Exhibits\West Conesville Wastewater Flow Estimate to Carmen Site 5-30-2017

Exhibit 8.1.a.B

Potential Subsurface Treatment
Site Map - REVISED



LEGEND

- = NYS EFC SERVICE AREA
- = ALTERNATIVE SUPPLEMENTAL SERVICE AREA I
- = REAL PROPERTY TAX MAP PROPERTY LINES
- = REAL PROPERTY TAX MAP PROPERTY LINES ON PUBLIC WATER SYSTEM
- = 100' YEAR FLOOD BOUNDARY
- = EXISTING WATER LINES
- = PROPOSED SUBSURFACE TREATMENT SITE

LIST OF POTENTIAL SUBSURFACE DISPOSAL SITES

SITE	TAX MAP NO.	OWNER
A	208.-3-12	LORELEI ZUNIGA
B	208.-3-17	CITY OF NEW YORK
C	208.-3-12	LORELEI ZUNIGA
D	208.-2-5.112	DONNA NICHOLAS
D	208.-2-5.114	DONNA NICHOLAS
D	208.-2-5.113	DONNA NICHOLAS
D	208.-2-5.115	CITY OF NEW YORK
E	208.-1-20.1	LINDA JOHNSON
F	209.-1-10.12	WALTER CARMAN

NOTE:

1. PROPERTY BOUNDARIES SHOWN ARE NOT SURVEYED PROPERTY BOUNDARIES. THEY HAVE BEEN OBTAINED FROM THE SCHOHARIE COUNTY REAL PROPERTY OFFICE TAX MAPS, AND THEREFORE ARE ONLY ACCURATE TO THE EXTENT OF THE ACCURACY OF THOSE MAPS.

MAPPING ACKNOWLEDGMENTS:

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FEMA FLOOD ZONE INFORMATION DIGITIZED FROM FEMA FIRM MAP NUMBER 36095C0418E. EFFECTIVE DATE APRIL 2, 2004.

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WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue	Rev.	Date	Remarks
2	4	6/23/17	ADDED SITE F
		10/12/15	ADDED SITES C, D & E

Project Number	2014044
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	12/12/15
Scale	1"=200'
File Name	TREATMENT SITE

Sheet Title

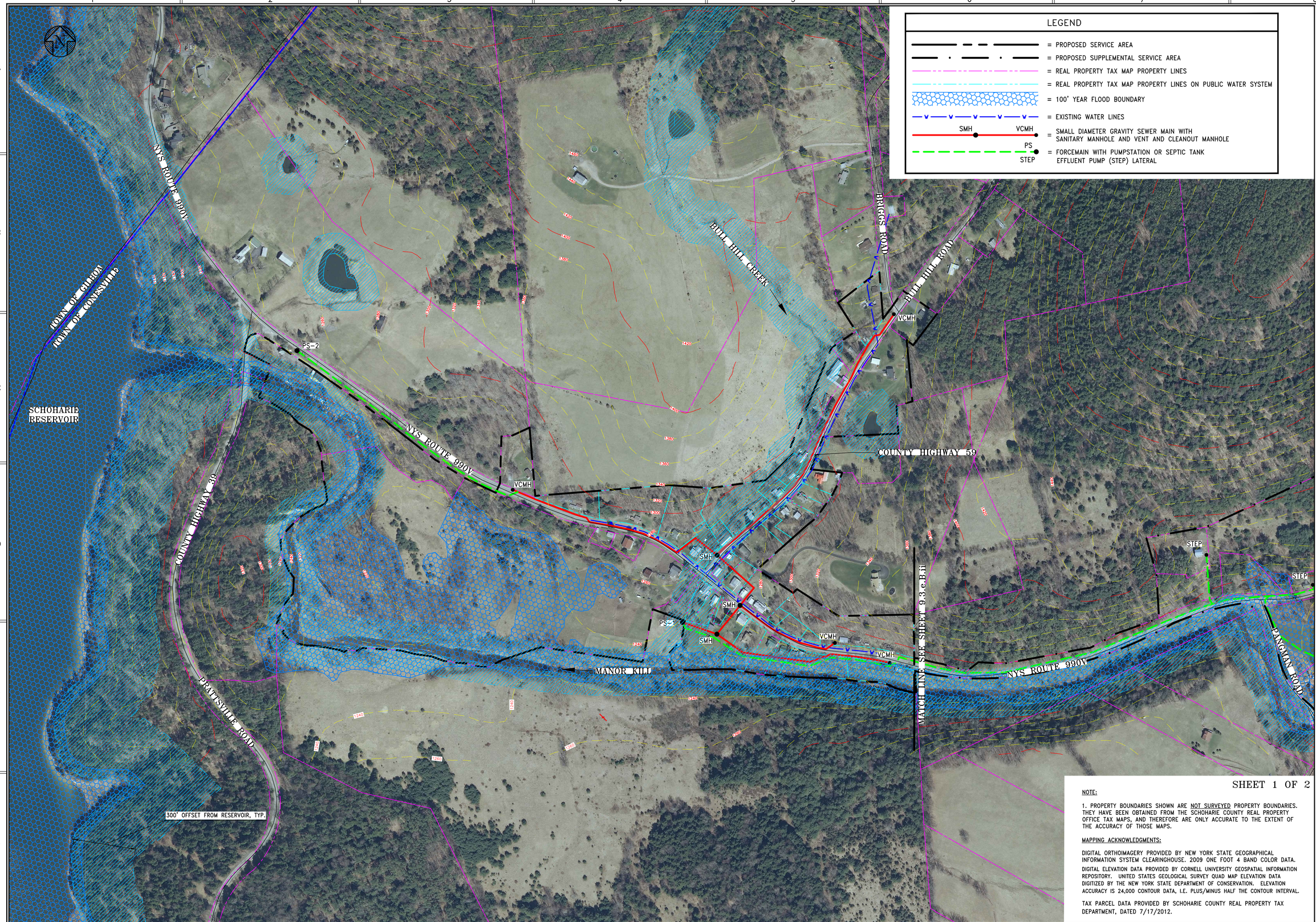
POTENTIAL SUBSURFACE TREATMENT SITE MAP

Sheet No.

8.1.a.B

Exhibit 9.1.e.A

Preliminary SDGS Collection System Layout - REVISED



SHEET 1 OF 2

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MAPPING ACKNOWLEDGMENTS:

DIGITAL ORTHOIMAGERY PROVIDED BY NEW YORK STATE GEOGRAPHICAL INFORMATION SYSTEM CLEARINGHOUSE. 2009 ONE FOOT 4 BAND COLOR DATA.

DIGITAL ELEVATION DATA PROVIDED BY CORNELL UNIVERSITY GEOSPATIAL INFORMATION REPOSITORY. UNITED STATES GEOLOGICAL SURVEY QUAD MAP ELEVATION DATA DIGITIZED BY THE NEW YORK STATE DEPARTMENT OF CONSERVATION. ELEVATION ACCURACY IS 24,000 CONTOUR DATA, I.E. PLUS/MINUS HALF THE CONTOUR INTERVAL.

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WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue No.	Date	Remarks
1	6/7/17	ADDED SITE F

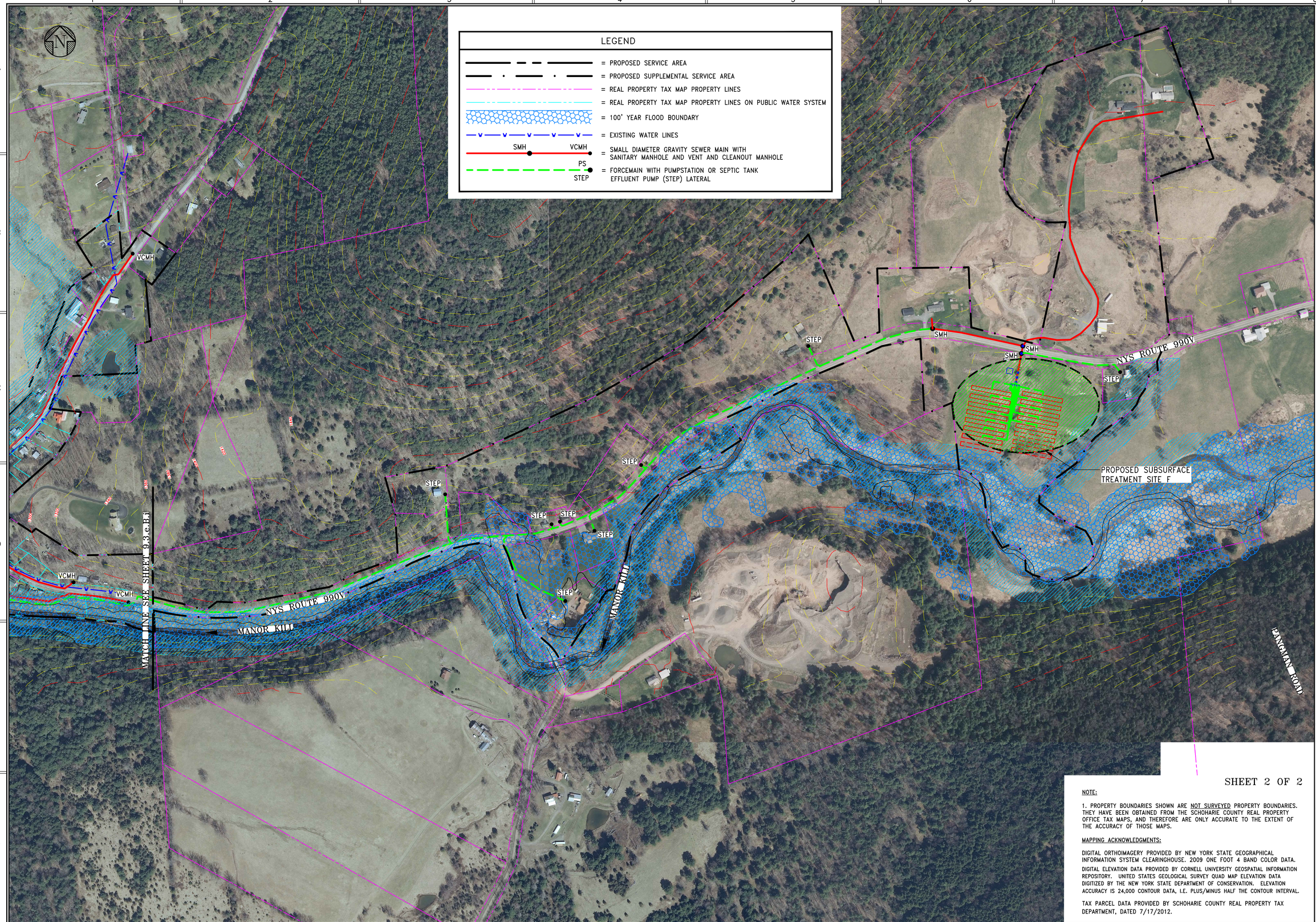
Project Number	2014044
Drawn By	NW
Designed By	NW
Checked By	HL
Date	5/24/17
Scale	1"=200'
File Name	COLLECTION SYSTEM

Sheet Title

PRELIMINARY SDGS COLLECTION SYSTEM MAP WEST CONESVILLE

Sheet No.

9.1.e.A



SHEET 2 OF 2

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Issue Rev.	Date	Remarks

Project Number	2014044
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Scale	1"=200'
File Name	COLLECTION SYSTEM

Sheet Title

PRELIMINARY SDGS COLLECTION SYSTEM MAP WEST CONESVILLE

Sheet No.

9.1.e.A

AMENDMENT #3

to the
PRELIMINARY ENGINEER'S REPORT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
for the
Hamlet of West Conesville
Town of Conesville
Schoharie County, New York

July 21, 2017

AMENDMENT #3

to the
PRELIMINARY ENGINEER'S REPORT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
for the
Hamlet of West Conesville
Town of Conesville
Schoharie County, New York

July 21, 2017

Subsequent to the submission of Amendment #2, NYCDEP provided comments that required revisions to various Exhibits and Attachments found in Amendment #2 (See attached e-mail dated 7/17/2017). These revisions amend the Draft PER, Amendment #1, and Amendment #2 as follows:

1. Amendment #2, Exhibit 4.A mislabeled parcel 208.-2-29 as 208.-2-5.115. Please see attached revised Exhibit 4.A.

2. NYCDEP requested that the flow estimate for the Masonic Lodge (Tax Parcel 208.-1-13) be based on the NYSDEC 2014 Design Standards rather than the NYSDEC 1988 Design Standards. As a result, the Masonic Lodge flow estimate has been reduced from 1,750 gpd (35 gpd per seat) to 500 gpd (10 gpd per seat).

3. The revised flow estimate for the Masonic Lodge results in a change in the overall flow estimate for the Hamlet of West Conesville. Please see attached revised Exhibit 5.2.B (7/21/2017). The Total Wastewater Flow Estimate for West Conesville is now 15,000 gpd.

4. The revised Total Wastewater Flow Estimate of 15,000 gpd for West Conesville results in a revised Septic Tank Effluent Wastewater Load Summary as follows:

SEPTIC TANK EFFLUENT WASTEWATER LOAD SUMMARY	
West Conesville Community Wastewater System Proposed Service Area	
Hydraulic Loads:	
Proposed Design Average Flow	15,000 gpd*
Proposed Design Maximum Day Flow	30,000 gpd
Proposed Design Peak Hourly Flow	44 gpm (62,850 gpd)
Organic and Solids Loads	
Proposed Design Average BOD_5	14 lbs BOD_5 /day (110 mg/L)
Proposed Design Maximum Day BOD_5	28 lbs BOD_5 /day
Proposed Design Peak Hour BOD_5	58 lbs BOD_5 /day
Proposed Design Average Total Suspended Solids	10 lbs TSS/day (80 mg/L)
Proposed Design Maximum Day Total Suspended Solids	20 lbs TSS/day
Proposed Design Peak Hour Total Suspended Solids	42 lbs TSS/day
Nutrient Loads	
Proposed Design Average NH_3-N	3.1 lbs/day of NH_3-N
Proposed Design Average TKN	5.0 lbs/day of TKN
Proposed Design Average Phosphorus	1.3 lbs/day Phosphorus

*(High 30-Day Mean, anticipated SPDES permitted flow based on Lexington CWMP)

5. The revised Total Wastewater Flow Estimate of 15,000 gpd for West Conesville also results in a reduction of the size of each absorption bed. Each absorption bed is now sized at 170' x 20'. In addition to the revised absorption bed size, the arrangement of the absorption beds has been revised to achieve the greatest possible separation distance between groups of absorption beds. Additionally, as requested by NYCDEP, a reserve area has been designated for a pre-treatment system should one be required in the future. Please see attached revised Amendment #2, Attachment D (7/21/2017) Community Septic System Site F Layout. Further detailed site analysis (including but not limited to soils testing, wetland delineations, archeological investigations, etc.) will be required during design to determine if the proposed layout is feasible.

6. The revisions to the Wastewater Flow Estimate, absorption bed sizing, and absorption bed layout results in an increase in Total Project Cost:

See Amendment #3, Attachment E Revised 7/21/2017 Opinion of Probable Cost – SDGS to Community Subsurface Treatment System on Site F.

Capital Cost SDGS to Community Subsurface Treatment System on Site F	
Capital Cost – Construction	
Shallow Cut-and-Fill Absorption Beds	$ 2,932,000
SDGS Collection System	$ 3,397,000
TOTAL CONSTRUCTION=	$ 6,329,000
TOTAL NON-CONSTRUCTION=	$ 2,082,000
TOTAL COST	**$ 8,411,000**
O&M Cost (Yearly)	$ 59,000

Nick Warner

From: Stalter, Thomas <TStalter@dep.nyc.gov>
Sent: Monday, July 17, 2017 10:59 AM
To: jmathiesen@cwconline.org; Chris Yacobucci
Cc: Meyer, Michael; Costello, Christopher; Sadler, Nicholas; Nick Warner; Henry Lamont; Mike Harrington
Subject: DEP comments on Amendment #2 for West Conesville CWMP

John/Chris,

Please see the following comments reflecting our conversation this morning. Please provide responses as appropriate.

Thanks, Tom

Masonic Lodge

Based on the meeting with CWC and Lamont Engineers, it was agreed to adjust the flow estimate from Masonic Lodge to reflect use as a banquet hall (500 gpd) and not a restaurant (1,750 gpd). Please adjust the flow for the Masonic Lodge and adjust the total flow accordingly.

Service Area

DEP agrees to the inclusion in the service area of the additional 16 properties listed in Attachment C.

Proposed layout

The revised layout demonstrates that the parcel can satisfactorily support a community septic, however DEP has concerns about the proposed layout as depicted in Attachment D. The layout does not maximize separation distances between the beds, does not show space set aside for future pretreatment for the community septic, and encroaches on a setback to the stream.

- During a site visit on April 21, 2017 DEP and Lamont discussed the required separation distance between the absorption beds since flow will be greater than 10,000 gpd. DEP indicated it would not require a 500 foot separation between the absorption fields however, would like to see the greatest possible separation distance provided. The community septic layout in Attachment D shows approximately a 50 foot separation distance between the two rows of absorption beds. It appears additional separation could be provided by moving the beds east and west.
- An email from DEP to Lamont Engineers on May 4, 2017 indicated DEP would not require pretreatment for the community septic. However, DEP requested space be allocated for pretreatment in the event it is required in the future. The community septic layout in Amendment #2 does not discuss this requirement nor does Attachment D indicate where the future pretreatment would be located.

- A reserve area in the south western corner of the community septic encroaches on the 100 foot setback to the Manor Kill.
- When the PER community septic layout (Exhibit 9.3.A) is compared with the layout in amendment 2 (Attachment D) there has been a significant increase in the absorption bed size beyond what would be required for the 3,000 gpd flow increase. The design for Exhibit 9.3.A included 12 beds 145 feet long by 20 feet wide. With 8 beds in service at a time the flow capacity based on a 0.5625 gpd/sf application rate was 13,050 gpd. The revised design in Attachment D includes 12 beds however the size has been increased to 200 feet long by 20 feet wide. With 8 beds in service and the same application rate the flow capacity is now 18,000 gpd.

Please revise Attachment D to the extent possible to address the comments above. Please provide assurance that during design the separation distance between the beds will be maximized to the extent possible.

Miscellaneous

Parcel 208.-2-29 is mislabeled on exhibit 4.A as 208.-2-5.115.

From: Costello, Christopher
Sent: Wednesday, May 10, 2017 3:03 PM
To: 'Chris Yacobucci' <CYacobucci@lamontengineers.com>
Cc: Mike Harrington <MHarrington@lamontengineers.com>; Henry Lamont <HLamont@lamontengineers.com>; Nick Warner <NWarner@lamontengineers.com>; jmathiesen@cwconline.org; Kevin Young <KYoung@youngsommer.com>; Betsy Wykes <BWykes@youngsommer.com>; Stalter, Thomas <TStalter@dep.nyc.gov>; Meyer, Michael <MMeyer@dep.nyc.gov>; Degraw, Deborah <DDegraw@dep.nyc.gov>; Sadler, Nicholas <NSadler@dep.nyc.gov>; 'Timothy Cox' <timothycox@cwconline.org>
Subject: RE: West Conesville CWMP - Walter Carman

Hi Chris,

DEP agrees that the water feature will have to be redirected so it does not flow onto the absorption fields. DEP does not have a preference as to how it is accomplished. Diverting the water with open drainage or with piping or with a combination of open drainage and piping are all acceptable methods.

The separation distances that would be applicable to this water feature are Open Drainage, Culvert, Culvert Opening, and Catch Basin. The separation distances required for Surface Water and Watercourses (100 feet to absorption fields) do not apply to this water feature and will not apply even after the drainage improvements are made.

Thanks for asking.

Christopher C.

(O) 845 340 7235 | (F) 845 338 1371 | ccostello@dep.nyc.gov

SHEET 2 OF 2

MAPPING ACKNOWLEDGMENTS:

TAX PARCEL DATA PROVIDED BY SCHOHARIE COUNTY REAL PROPERTY TAX DEPARTMENT, DATED 7/17/2012.

MAPPING COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY EXPOSED 04/16/15 BY LAND AND MAPPING SERVICES. 300 NORTH SECOND STREET, CLEARFIELD, PA. 16830.

Lamont Engineers
ENGINEERS - PLANNERS
FACILITY OPERATIONS
548 MAIN ST., COBLESKILL, NY 12043
(518) 234-4028
www.lamontengineers.com

Consultant

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue Rev.	Date	Remarks
1	6/22	ADDITION OF ASSA I

Project Number	2014044
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	12/12/15
Scale	1"=200'
File Name	WINDSHIELD SURVEY

Sheet Title

PROPOSED SERVICE AREA MAP
WEST CONESVILLE

Sheet No.

EX 4.A

Town of Conesville
Hamlet of West Conesville

Proposed Service Area
Wastewater Flow Estimate
Revised 7/21/2017

Facility Type	No. of Units	Flow Calculation Basis	Average Household Size	Flow (gpd)	Source	Total Flow (gpd)
Residential						
Single Family Homes	44	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	11,440
Two Family Homes	0	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	0
Apartments	0	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	0
Commercial/Institutional w/ Apartment	3	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	780
					Residential Total =	**12,220**
Commercial/Institutional (w/ parcel number)						
Masonic Lodge (208.-1-13)	n/a	50 seats	n/a	500	NYSDEC - Banquet Hall - 10 gallons per seat*	500
Auto Shop (208.-2-8)	n/a	1 employee	n/a	25	NYSDEC - Factory - 25 gallons per employee	25
					Commercial/Industrial Subtotal =	**525**
Mixed Use (with parcel number)						
Nick's Waterfall House (w/ 3 res.(208.-3-13))	n/a	30 Seats	n/a	600	NYSDEC - Tavern - 20 gallons per seat	600
					Mixed Use Subtotal =	**600**
					Commercial/Industrial/Mixed Use Subtotal =	**1,125**
					WASTEWATER FLOW - WEST CONESVILLE =	13,345
					10% GROWTH =	1,335
					TOTAL =	14,680
					TOTAL WASTEWATER FLOW FOR WEST CONESVILLE =	**15,000**

* 10 gallons per seat for a Banquet Hall from New York State Design Standards for Intermediate Sized Wastewater Treatment Systems, 2014, per the request of NYCDEP on 7/17/17

LEGEND

= REAL PROPERTY TAX MAP PROPERTY LINES

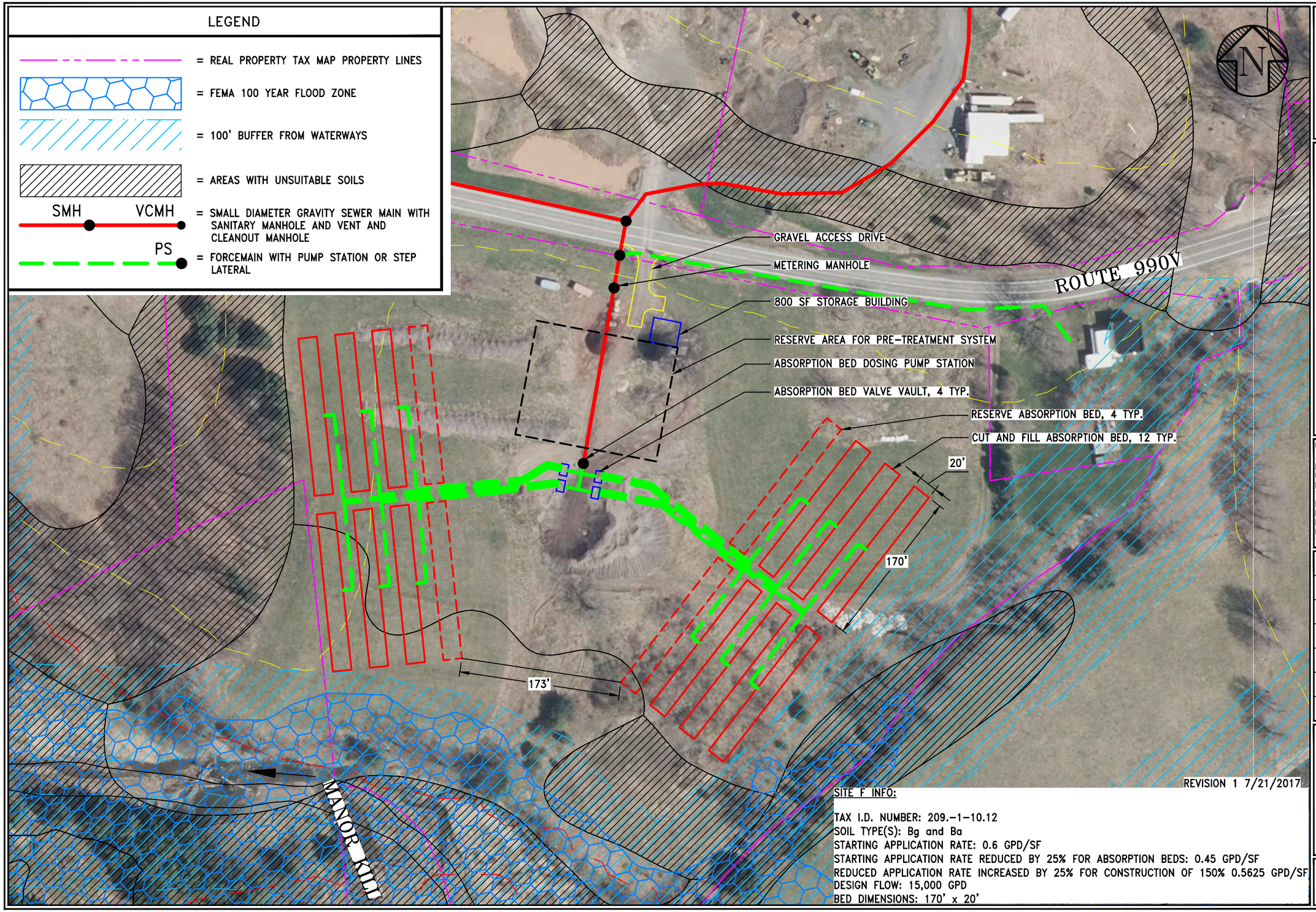
= FEMA 100 YEAR FLOOD ZONE

= 100' BUFFER FROM WATERWAYS

= AREAS WITH UNSUITABLE SOILS

SMH — VCMH = SMALL DIAMETER GRAVITY SEWER MAIN WITH SANITARY MANHOLE AND VENT AND CLEANOUT MANHOLE

PS = FORCEMAIN WITH PUMP STATION OR STEP LATERAL



REVISION 1 7/21/2017

SITE F INFO:

TAX I.D. NUMBER: 209.-1-10.12
SOIL TYPE(S): Bg and Ba
STARTING APPLICATION RATE: 0.6 GPD/SF
STARTING APPLICATION RATE REDUCED BY 25% FOR ABSORPTION BEDS: 0.45 GPD/SF
REDUCED APPLICATION RATE INCREASED BY 25% FOR CONSTRUCTION OF 150% 0.5625 GPD/SF
DESIGN FLOW: 15,000 GPD
BED DIMENSIONS: 170' x 20'

Lamont Engineers
COBLESKILL NEW YORK
(518) 234-4028

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Project Number	2014044
Drawn By	NW
Designed By	NW
Checked By	CY
Date	3/31/17
Scale	1"=100'
File Name	9.3.A

Sheet Title

COMMUNITY SEPTIC SYSTEM SITE F LAYOUT

Sheet No.

ATTACHMENT D

Attachment E
Revised 7/21/2017
West Conesville CWMP
Opinion of Probable Cost
SDGS to Community Subsurface Treatment System on Site F

	Item	Description	Amount
1	**SDGS Collection System**		$ 3,397,000.00
2	**Shallow Cut-and-Fill Absorption Beds**		$ 2,932,000.00
		Total Construction Cost	**$ 6,329,000.00**
1	**Non-Construction (25%)**	Includes administrative, legal, SEQRA Compliance, permitting, engineering (design & construction), easement acquisition, etc.	$ 1,582,000.00
2	**Property Acquisition**		$ 500,000.00
		Total Non-Construction Cost	**$ 2,082,000.00**
		Total Project Capital Cost	**$ 8,411,000.00**

Attachment E
Revised 7/21/2017
West Conesville CWMP
Opinion of Probable Cost
SDGS to Community Subsurface Treatment System on Site F

SDGS Collection System				
Item	Quantity	Units	Unit Price*	Amount
4" HDPE SDGS Main	5,600	LF	$ 110.00	$ 616,000
6" HDPE SDGS Main	750	LF	$ 110.00	$ 82,500
4" HDPE FM	5,350	LF	$ 110.00	$ 588,500
2" HDPE FM	2,850	LF	$ 75.00	$ 213,750
Stream Crossing No. 1 - 4" HDPE FM	200	LF	$ 300.00	$ 60,000
Stream Crossing No. 2 - 4" HDPE SDGS	60	LF	$ 300.00	$ 18,000
Highway Crossing No. 1 - 2" HDPE FM	50	LF	$ 300.00	$ 15,000
Highway Crossing No. 2 - 4" HDPE SDGS	40	LF	$ 300.00	$ 12,000
Highway Crossing No. 3 - 4" HDPE SDGS	50	LF	$ 300.00	$ 15,000
Highway Crossing No. 3 - 6" HDPE SDGS	50	LF	$ 300.00	$ 15,000
Highway Crossing No. 5 - 4" HDPE FM	50	LF	$ 300.00	$ 15,000
4" HDPE Lateral Stubs (38)	760	LF	$ 110.00	$ 83,600
Inspection Port	16	EA	$ 1,000.00	$ 15,875
Cleanout	42	EA	$ 1,000.00	$ 42,333
Manholes	5	EA	$ 3,500.00	$ 17,500
End Line Vent and Cleanout Manholes	4	EA	$ 5,000.00	$ 20,000
Main Effluent Pump Station 1	1	EA	$ 95,000.00	$ 95,000
Individual Effluent Pump Station 2	1	EA	$ 70,000.00	$ 70,000
Sewer Lateral Connection and All Appurtenances	46	EA	$ 15,000.00	$ 690,000
				$ 2,685,058
			Inflation 10%	$ 268,506
			Subtotal	$ 2,953,564
			Contingency (15%)	$ 443,035
			Construction Total	**$ 3,396,599**
*Unit Prices based on previous CWMP project cost estimates and bidding results.				

Attachment E
Revised 7/21/2017
West Conesville CWMP
Opinion of Probable Cost
SDGS to Community Subsurface Treatment System on Site F

	Item	Description	Units	Quantity	Unit Price*	Amount	
Site Preparation							
	Environmental Protection		LS	1	$ 20,000.00	$ 20,000.00	
	Site Preparation		LS	1	$ 20,000.00	$ 20,000.00	
	Mobilization/Demobilization		LS	1	$ 50,000.00	$ 50,000.00	
	Survey and Stakeout		LS	1	$ 10,000.00	$ 10,000.00	
	Access Road Construction		LS	1	$ 200,000.00	$ 200,000.00	
	Restoration		LS	1	$ 50,000.00	$ 50,000.00	
	Site Work		LS	1	$ 50,000.00	$ 50,000.00	
	Relocate Ex. Utility Poles and Overhead Power		LS	1	$ 100,000.00	$ 100,000.00	
	Subtotal Site Preparation						$ 500,000
Absorption Beds							
	Receiving Structure		EA	1	$ 7,500.00	$ 7,500.00	
	Flow Meter and Metering Manhole		EA	1	$ 25,000.00	$ 25,000.00	
	Absorption Bed Dosing Pump Station		EA	1	$ 100,000.00	$ 100,000.00	
	Dosing Pumps		EA	3	$ 15,000.00	$ 45,000.00	
	Valve Vault with Valves		EA	4	$ 20,000.00	$ 80,000.00	
	3" HDPE Forcemain to Leach Beds		LF	3,800	$ 50.00	$ 190,000.00	
	1' of Topsoil Removal, Stockpile, Installation, and Seeding	12 leach beds at 170' (+10') x 20' (+10') x 1' of removal	CY	2,400	$ 35.00	$ 84,000.00	
	2' Excavation and Disposal of Material	12 leach beds at 170' (+10') x 20' (+10') x 2' of removal	CY	4,800	$ 25.00	$ 120,000.00	
	Installation of Fill Material	12 leach beds at 170' (+10') x 20' (+10') x 2' of installation + 10' wide outisde perimeter of bed x 1'	CY	5,689	$ 40.00	$ 227,555.56	
	Crushed Stone Bedding	12 leach beds at 170' x 20 x 1' of removal	CY	1,511	$ 40.00	$ 60,444.44	
	Leach Field Absorption Bed Piping		LF	9,360	$ 20.00	$ 187,200.00	
	Separation Material - Geotextile Fabric		SF	77,760	$ 0.50	$ 38,880.00	
	Subtotal Absorption Beds						$ 1,165,580
Other Treatment Facility Equipment							
	Odor Control System		EA	1	$ 20,000.00	$ 20,000.00	
	O&M Manuals		EA	1	$ 12,000.00	$ 12,000.00	
	Spare Parts		LS	1	$ 15,000.00	$ 15,000.00	
	Misc Treatment Facility Equip		LS	1	$ 115,000.00	$ 115,000.00	
	Subtotal Other Treatment Facility Equipment						$ 162,000
Utility Shed							
	Wood Frame Building (incl. Foundation)		SF	800	$ 150.00	$ 120,000.00	
	Misc. Bldg.		LS	1	$ 15,000.00	$ 15,000.00	
	Driveway and Parking Area		LS	1	$ 20,000.00	$ 50,000.00	
	Water Supply Well		LS	1	$ 15,000.00	$ 15,000.00	
	Office Furniture/ Lab Equipment		LS	1	$ 10,000.00	$ 10,000.00	
	Subtotal Utility Shed						$ 210,000
Electrical			LS	1	$ 75,000.00	$ 75,000.00	$ 75,000
Plumbing			LS	1	$ 35,000.00	$ 35,000.00	$ 35,000
HVAC			LS	1	$ 35,000.00	$ 35,000.00	$ 35,000
Utilities			LS	1	$ 35,000.00	$ 35,000.00	$ 35,000
Potential Extra Costs for Additional Requirements from NYCDEP			LS	1	$ 100,000.00	$ 100,000.00	$ 100,000
						SUBTOTAL	$ 2,317,580
						inflation (10%)	$ 231,758
						Subtotal	$ 2,549,338
						Contingency (15%)	$ 382,401
						Construction Total	**$ 2,931,739**
*Unit Prices based on previous CWMP project cost estimates and bidding results.							

Attachment E
Revised 7/21/2017
West Conesville CWMP
Opinion of Probable Cost
SDGS to Community Subsurface Treatment System on Site F

Line Item Description	Budget	COMMENTS
Utilities		
Fuel	$ 500	Based on current Trout Creek Budget
Electricity Cost	$ 3,000	Based on current Trout Creek Budget
Utilities Subtotal	**$ 3,500**	
Chemicals		
De-greasers and De-odorizers	$ 300	Based on current Trout Creek Budget
Chemicals Subtotal	**$ 300**	
Personnel		
O&M Operator	$ 27,040	Based on one operator 8 hours per week @ $65.00 per hour
O&M Engineering	$ 1,500	Itemized cost. Trouble-shooting operations-related issues.
Personnel Subtotal	**$ 28,540**	
Administration		
O&M Legal	$ 2,000	Itemized cost. From Hamden budgeted amount.
Administrative Services/Contract	$ 2,300	Based on EFC recommendation from their Strategic Planning Study, of $50.00 per user account.
Force Account/Clerical	$ 500	Record keeping and reporting including assistance in preparing reconciliation, monthly reports, annual reports, and other obligations under the O&M Agreement.
Office Supplies	$ 500	Record keeping and reporting.
Insurance	$ 2,000	
Administration Subtotal	**$ 7,300**	
O&M		
Preventive Maintenance/Service Contracts	$ 1,200	Estimated service contract for Emergency Generator. Based on amount from Hamden.
Telephone/Fax/Internet	$ 2,200	Based on current Trout Creek Budget
Building Maintenance -- includes grounds maintenance	$ 5,000	Assumes grounds keeping to be sub-contracted by Conesville and to include lawn mowing, and summer grounds care, as well as snow plowing and removal in winter.
Equipment/Spare Parts/Repairs	$ 1,000	Based on estimated amount from Hamden
Sludge Hauling	$ 2,000	Budget pumping 10,000 gals @ .20 per gallon
Maintenance Supplies	$ 500	Cleaning Supplies, shovels, portable pumps etc,.
Instrumentation Spare Parts	$ 500	
O&M Subtotal	**$ 12,400**	
Collection System O&M		
General O&M	**$ 2,000**	Periodic sewer cleaning and inspection
Total O&M Budget Subtotal	$ 54,040	
Contingency	$ 5,404	10% of the budget before contingency.
TOTAL	**$ 59,444**	
TOTAL PROPOSED O&M BUDGET	**$ 59,000**	

TABLE OF CONTENTS

LIST OF EXHIBITS

EXECUTIVE SUMMARY

Pursuant to the January 1997 New York City Watershed Memorandum of Agreement (MOA), the November 2002 EPA Filtration Avoidance Determination (2002 FAD), as amended, and the July 2007 EPA Filtration Avoidance Determination (2007 FAD), New York City (NYC) provided funding for the Community Wastewater Management Program (CWMP), to be administered by the Catskill Watershed Corporation (CWC).

The Community Wastewater Management Program is currently intended to fund the planning, design and construction of community septic systems and/or the creation of septic maintenance districts or wastewater treatment plants if community septic systems or septic maintenance districts are not practicable due to site conditions, and there is a demonstrable water quality problem due to failing septic systems for the remaining communities identified in the MOA in the New York City Watershed West of the Hudson (Catskill and Delaware System).

The Hamlet of West Conesville is Identified Community No. 19 among 22 named in the priority list of communities lacking community wide wastewater treatment which was included in the 1997 New York City Watershed Memorandum of Agreement (MOA).

This Preliminary Engineer's Report is a preliminary step in development of community wastewater management facilities for the Hamlet of West Conesville.

The primary objectives of the Preliminary Engineer's Report are (1) to determine the existing wastewater needs, (2) to determine an estimated wastewater flow, (3) to consider various alternative methods for managing those wastewater needs, (4) to recommend a method or methods for managing those wastewater needs, and (5) to estimate the costs involved with the recommended method.

Based on review of existing engineering, planning, GIS mapping, USGS quadrangle topographic mapping and tax mapping, a planning area was identified where further consideration of wastewater needs was warranted. Detailed new topographic mapping was obtained for that area.

In that area existing wastewater problems were reviewed through identification of potential wastewater problems including small lot sizes, flooding areas, proximity to waterways, high groundwater table, steep slopes, records of existing wastewater system failures, and poor soils, and through a community survey questionnaire and a windshield survey.

Wastewater load estimates were developed for the main service area, as follows:

SEPTIC TANK EFFLUENT WASTEWATER LOAD SUMMARY	
West Conesville Community Wastewater System Service Area	
Hydraulic Loads:	
Proposed Design Average Flow	13,000 gpd*
Proposed Design Maximum Day Flow	26,000 gpd
Proposed Design Peak Hourly Flow	38 gpm (54,730 gpd)
Organic and Solids Loads	
Proposed Design Average BOD_5	12 lbs BOD_5 /day (110 mg/L)
Proposed Design Maximum Day BOD_5	24 lbs BOD_5 /day
Proposed Design Peak Hour BOD_5	50 lbs BOD_5 /day
Proposed Design Average Total Suspended Solids	9 lbs TSS/day (80 mg/L)
Proposed Design Maximum Day Total Suspended Solids	18 lbs TSS/day
Proposed Design Peak Hour Total Suspended Solids	37 lbs TSS/day
Nutrient Loads	
Proposed Design Average NH_3-N	2.7 lbs/day of NH_3-N
Proposed Design Average TKN	4.3 lbs/day of TKN
Proposed Design Average Phosphorus	1.1 lbs/day Phosphorus

*(High 30-Day Mean, anticipated SPDES permitted flow based on Lexington CWMP)

Wastewater Management Options were identified and reviewed, including a Septic Maintenance District (SMD) and a Community Septic System.

The Service Area is comprised of properties with significant limitations relative to developing proper on-site systems due to lot size, soil types, steep slopes, and proximity to water bodies (only 1 of 40 properties (2.5 % of total) could maintain an individual on-site septic system even without the required 100% leach field reserve area available), so a community system is required.

There are very few large parcels of undeveloped land in or in reasonable proximity to the Hamlet of West Conesville that have suitable soils, are out of the 100-year flood plain and are not on steep slopes. There is a potential subsurface treatment site located near the Hamlet with suitable soils and enough open space to accommodate the flow of the community. This site has enough room to split the flow of the community into two

separate treatment areas 500' apart with each area treating less than 10,000 gpd, so pretreatment is not required.

A shallow cut-and-fill system is assumed to be needed because testing of the site has not been performed yet and the soils on this site are similar to soils at other CWMP community subsurface system sites where cut-and-fill systems have been required.

Wastewater Collection System alternatives were reviewed including conventional gravity sewers, small diameter gravity sewers (SDGS), septic tank effluent pump (STEP) systems, grinder pump pressure sewers, and vacuum sewers. This review concluded that a small diameter gravity sewer system is the best alternative for wastewater collection system because it could be installed at a reasonable depth and can be easily routed around above and below grade physical features. Therefore an SDGS can be installed at a lower capital cost and causes less disturbance.

Therefore, it is recommended that the Hamlet of West Conesville pursue the development of a small diameter gravity sewer system with shallow cut-and-fill absorption beds for the wastewater treatment.

The anticipated total project costs and the operation and maintenance costs of the recommended alternative are as follows:

Summary of Wastewater Treatment with Total Project Costs and O&M Costs			
	Capital Cost	O&M Cost	
SDGS to Community Subsurface Treatment System on Site B	$6.670 M	$51,300 per year	

INTRODUCTION

The January 1997 New York City Watershed Memorandum of Agreement (MOA) established a program for development of community wastewater treatment facilities in 22 communities located in the New York City Water Supply watersheds west of the Hudson River. These communities were listed by priority in the MOA.

The first seven (7) of these communities were addressed by a program called the New Sewage Treatment Infrastructure Program (NIP) administered by the New York State Environmental Facilities Corporation (NYSEFC).

Pursuant to the November 2002 EPA Filtration Avoidance Determination (2002 FAD), as amended, and the July 2007 Filtration Avoidance Determination (2007 FAD), New York City (NYC) provided funding for the Community Wastewater Management Program (CWMP), administered by the Catskill Watershed Corporation (CWC).

The CWMP is currently intended to fund the planning, design and construction of community septic systems and/or the creation of septic maintenance districts (or wastewater treatment plants if community septic systems or septic maintenance districts are not practicable due to site conditions, and there is a demonstrable water quality problem due to failing septic systems) for the remaining communities identified in the MOA in the New York City Watershed west of the Hudson River (the Catskill and Delaware Systems). Depending on the type of wastewater management system chosen for each hamlet, property owners may be required to pay for laterals, which are hook-ups from their homes or businesses to the collection mains, if other funds are not available.

So far the governing boards of fourteen (14) identified communities, numbered 8 through 13, 15 through 17, and now 18 through 22, have been invited to participate in this program. (Haines Falls (H), Identified Community No. 14 was connected to the Village of Tannersville WWTP owned and operated by New York City Department of Environmental Protection). All fourteen (14) of these communities have entered into agreements with CWC to proceed toward the development of a community wastewater management program. In order of priority these fourteen (14) communities are Bloomville, Boiceville, Hamden, DeLancey, Bovina Center, Ashland, Trout Creek, Lexington, South Kortright, Shandaken, West Conesville, Claryville, Halcottsville, and New Kingston.

The Hamlet of West Conesville is Identified Community No. 19 among the 22 communities named in the priority list of communities lacking community-wide wastewater treatment which was included in the MOA.

The Catskill Watershed Corporation (CWC) selected Lamont Engineers, P.C. of Cobleskill to coordinate, evaluate and design the projects for these fourteen (14) hamlets.

Under the program, the basic wastewater management options are:

- Septic Maintenance District: Homes and businesses retain individual on-site septic systems that are inspected and pumped on a regular cycle and repaired or replaced when necessary using district funds (assuming availability).
- Community Septic System: Functions like an individual septic system, only on a larger scale. Wastewater is carried from occupied structures through lateral pipes and collection mains to tanks where the solids settle out, and the liquids are dispersed to leach fields for treatment and filtration back into the ground.
- Cluster Septic Systems: Similar to above but serving smaller pockets of homes and businesses.
- Combination Community/Cluster Septic System and Septic Maintenance District.
- If a Community Septic System or Septic Maintenance District is not practicable due to site conditions, and there is a demonstrable water quality problem due to failing septic systems, NYCDEP, in consultation with the CWC and the Town of Conesville, may elect to allocate program funds to study and construct a new wastewater treatment plant (WWTP), including the related sewage collection system.

This Preliminary Engineer's Report is part of the third step of about 14 major steps involved in development of a wastewater management system for the Hamlet of West Conesville.

The other steps are:

1. Project Conception (done)
2. Project Organization (done)
3. Project Development including the Preliminary Engineer's Report (started)
4. Environmental Review (started)
5. Sewer District Establishment
6. Bonding (if applicable; not applicable for West Conesville CWMP)
7. Funding
8. Design
9. Permits and Approvals
10. Land Acquisition
11. Construction Bids
12. Construction
13. Completion and Start-Up
14. Operation and Maintenance

The primary objectives of the Preliminary Engineer's Report are (1) to determine the existing wastewater needs, (2) to determine an estimated wastewater flow, (3) to consider various alternative methods for managing those wastewater needs, (4) to recommend a

method or methods for managing those wastewater needs, and (5) to estimate the costs involved with the recommended method.

The Preliminary Engineer's Report scope of work is included herewith as Exhibit A.
A Participant's List that identifies the Town, County, Regulatory agency, and funding agency participants for this project is included herewith as Exhibit B.

Previous Study

In December 2000, the New York State Environmental Facilities Corporation (NYSEFC), working for the New York City Department of Environmental Protection (NYCDEP) and the Identified Communities, issued the Strategic Wastewater Planning Study: A Report of the New Sewage Treatment Infrastructure Program for Communities 8-22 (NYSEFC Report) which included a chapter on each Identified Community. That report analyzed wastewater needs, estimated flows, proposed service areas and solutions for those service areas. These studies were reviewed in the development of this Preliminary Engineer's Report and are referred to herein. Chapter 6, Report for Community #19, Hamlet of West Conesville from the NYSEFC Report is included herewith as Exhibit C. The NYSEFC Report for Community #19 recommends one (1) community subsurface system using small diameter gravity sewers for West Conesville.

SECTION 1
Overview of Hamlet of West Conesville

(Much of this information is quoted from NYSEFC Report, Exhibit C, edited and updated where possible)

1.1. Description of Area

The Hamlet of West Conesville is located on NYS Route 990V and County Route 59 within the Town of Conesville in Schoharie County, New York. The Hamlet of West Conesville was identified by the New York City Watershed Memorandum of Agreement (MOA) as Identified Community No. 19. The center of the Hamlet of West Conesville is approximately 1/2 mile due east of the New York City Schoharie Reservoir in the NYC watershed. The Town of Conesville is sparsely developed. The primary land uses found within the Town are Agriculture, Low Density Residential, and Vacant land.

The Hamlet of West Conesville is the largest hamlet area in the Town of Conesville. West Conesville is approximately 6 miles north of Prattsville, NY. See Exhibit 1.1.A for the Location Maps of the area.

The Hamlet of West Conesville has a tavern, an auto shop and a Masonic Hall. The main streets of the Hamlet are NYS Route 990V and Schoharie County Route 59. The Hamlet's center is at the intersection of these two roads.

1.2. Population

According to the 2010 Census, the population of the Town of Conesville is 734 persons. The Hamlet of West Conesville is not identified in the 2010 Census as a Census Designated Place (CDP) which would further break down information from the town level to the hamlet level, so there is no census population for the Hamlet of West Conesville.

See Exhibit 1.2.A for the 2010 US Census Bureau information for the Town of Conesville.

1.3. Housing

The 2010 Census reports a total of 787 housing units within the Town of Conesville (339 occupied units and 305 vacant units). Based on 734 persons in 339 occupied units, the average number of persons per household in 2010 was 2.2.

The Hamlet of West Conesville population primarily uses a public water system for drinking water. All units within the Town dispose of wastewater onsite.

1.4. Local Economy

According to the 2010 American Community Survey, the median household income in the Town of Conesville was $57,386, compared to the state median household income of $55,603.

There are several businesses and institutions currently in operation in and around the Hamlet of West Conesville including a tavern, auto repair shop and a Masonic Hall.

1.5. Land Use

The Hamlet of West Conesville developed around the intersection of NYS Route 990V and County Route 59.

The total land area of the Town of Conesville is estimated to be 39 square miles. The predominant land uses are low density residential >10 acres (31%), vacant land (26%), agriculture (18%) and open space (17%).

The following table breaks down the area by land use category found within the Town of Conesville as presented in the Environmental Impact Statement for the NYC Watershed Regulations.

Land Use	**Acres**	**Percentage**
Agriculture	4,136	18%
Low Density Residential (<10 Acres)	1,397	6%
Low Density Residential (10 acres +)	7,205	31%
High Density Residential	1	0%
Commercial	6	0%
Government Institutions	621	3%
Industrial / Manufacturing	15	0%
Vacant Land	6,126	26%
Open Space	4,078	17%

1.6. Local Planning

The Town of Conesville has a Comprehensive Plan and Subdivision Regulations. Conesville has its own codes enforcement officer, who administers the NYS Building Code.

SECTION 2
Planning Area

An area encompassing the Hamlet of West Conesville and the immediate surrounding area of the Town of Conesville was flown for aerial photography and topographic maps were obtained at 1"=40' scale, 1-foot contour intervals for use in eventual site design work for the project.

The Hamlet of West Conesville, MOA Identified Community No. 19, indicated in the NYSEFC Report as the "Preliminary Service Area", and herein called the EFC Service Area, is the central objective of the aerial photo area chosen.

The area that was photographed was chosen in an attempt to include all properties that might ultimately be placed within a Septic Maintenance District or a Sewer District plus possible community septic or wastewater treatment facility sites within a reasonable distance from the Hamlet area. (See Section 6 for further description.) This photo area was therefore inclusive of most areas of relatively higher population density and smaller lot size and areas that might have significant wastewater disposal needs. The area that was photographed was based on the information obtained from existing available large scale aerial photography and the USGS Quadrangle map.

The area chosen for new, detailed topographical mapping is smaller than the aerial photography limit due to cost constraints, but is somewhat larger than the EFC Service Area so that (1) areas with significantly problematic sanitary problems would be mapped and (2) potential reasonable cluster or community septic system sites or wastewater treatment sites would not be left out. This area is identified as the project detailed Mapping Limit and Planning Area.

See Exhibit 2.A, Aerial Photography and Mapping Limit for the areas mapped for West Conesville.

SECTION 3
Identify, Assess and Plan for Wastewater Needs

3.1. Identify Existing Wastewater Problems

3.1.a. Identify Limiting Property Lot Size

The most fundamental feature of a property relative to establishing an up-to-standard, adequate on-site leach field is the available area. The smaller the area available for construction of a leach field, the less likely that an up-to-standard, adequate leach field can be constructed on the property.

After review of the site information through site visits, tax maps and Schoharie County GIS information, the potential for adequate on-site wastewater systems was determined based on size and other constraints such as proximity to streams, wetlands, steep slopes, property line setbacks, etc. pertaining to the New York State Department of Environmental Conservation Design Standards for Wastewater Treatment Works, 1988 (1988 NYSDEC Standards) and the Rules and Regulations for the Protection from the Contamination, Degradation and Pollution of the New York City Water Supply and its Resources, 2002 (NYCWRR).

There are several different soil types found in the Hamlet of West Conesville. Alluvial (Al) soils are found to the west of County Route 59, along the tributary to the Manor Kill while Tunckhannock and Chenango (ThD) and Volusia (VcB) soils generally are found on the east side of County Route 59. Along both sides of NYS Route 990V, Schoharie (SoE) and Tunkhannock and Chenango (ThC and TnF) soils are predominantly found along with a small section of Morris (Me) soils to the west of the intersection of NYS Route 990V and County Route 59.

The range of soil permeability is given in the soil survey information in units of micrometers per sec. This can be converted to percolation rate in minutes per inch by dividing 423.3 by the permeability. A summary of the permeability, percolation and the corresponding application rate for sewage as given in the 1988 NYSDEC Standards, Table 10 – Recommended Sewage Application Rates, is shown in the table on the second page of Exhibit 3.2.b.A. (Note: The soils on the very steep areas around the Hamlet (those soil types that are proceeded with a D, E or an F, indicating very steep soils with a percent grade of 15% or greater) are automatically not suitable for on-site septic systems because of the slope. Therefore they were not reviewed in the soils analysis). Detailed soils data can be found in Exhibit 3.2.b.A.

Based on a typical parcel, a layout of a single family residence with 3 bedrooms, a garage, a driveway, miscellaneous landscaping and a public water service will occupy an area of approximately 8,000 square feet without the septic system.

Based on a typical parcel, a layout of a single family residence with 3 bedrooms, a garage, a driveway, miscellaneous landscaping and an on-site private well (which requires a 100' buffer from absorption field) will occupy an area of approximately 13,000 square feet without the septic system.

The areas required for on-site septic systems, inclusive of the required 100% reserve area, and the resulting required lot size, derived from the sample septic system design shown in Exhibit 3.1.a.A, Sample Conventional Septic System Layout and Design (0.6 gal/day/sf), are summarized in the table below.

Location in Hamlet	Primary Soil Type	Per-meability (µm/sec)	Percolation Rate (min/in)	Application Rate (gal/day/sf)	Septic System Size (sf)	Required Lot Size (sf)	Required Lot Size (acres)
NYS Route 990V, east of CR 59	Tunk-Hannock (ThC)	14	30	0.6	10,000	18,000 (w/o well) 23,000 (w/ well)	0.4 acres (w/o well) 0.5 acres (w/ well)
South of NYS Route 990V	Barbour (Ba, Bg)	42	30 imported (10 actual)	0.6 imported (0.9 actual)	10,000 imported	18,000 (w/o well) 23,000 (w/ well)	0.4 acres (w/o well) 0.5 acres (w/ well)

The slower percolation rate in the range was used to be conservative in the evaluation. However, even the slow range for the Barbour soils is very fast and is likely to have areas of excessive permeability, thereby warranting importing fill to slow down the permeability of the soil and provide better treatment though that will significantly increase the cost of the septic system. That fill will have a maximum percolation rate of 30 minutes/inch. While the permeability of Tunkhannok soils is fast enough for a subsurface system, there may be cases within this soil type where excessive permeability could be a problem as well. However, the size of the septic system and resulting lot size would not change since the imported fill would have a maximum percolation rate of 30 min/in.

Depending on site specifics, it may or may not be possible to site a properly functioning leach field on a smaller site than listed in the table above. However, for purposes of identifying which parcels may have issues siting a properly functioning conventional septic system, all parcels located within the EFC Service Area not meeting the required lot size within their respective soil types have been identified as being limited for on-site subsurface wastewater disposal. Additionally, properties whose lot sizes are larger than the areas listed in the table above but whose useable area (i.e. not encumbered by steep slopes, water way buffers, unsuitable soils, and the 100 year flood plain) is less than the areas listed

in the table above have also been identified as being limited for on-site subsurface wastewater disposal. See Exhibit 3.1.a.B, Septic Limitation Map.

3.1.b. Identify Areas Susceptible to Flooding and High Groundwater Table

Based on the floodplain mapping obtained from FEMA for the Hamlet of West Conesville, areas along the Manor Kill, south of NYS Route 990V and east of County Route 59 are susceptible to flooding. See Exhibit 3.1.b.A, Flood Insurance Study Map. See Exhibit 3.1.a.B, Septic Limitation Map to view the 100-year flood plain boundaries and 100 foot buffer boundaries from waterways.

3.1.c. Identify Areas on 15% Slope or Greater

The NYSDEC Standards states that trenches for absorption fields should not be placed on slopes greater than 20 percent. NYCWRR Part 75 and Appendix 75A requirements call for avoidance of slopes greater than 15%. Therefore, a slope of 15% or greater will be considered a limiting factor for on-site subsurface wastewater disposal for this wastewater study.

Using the digital elevation model created by NYSDEC from the USGS Quad maps, in conjunction with functions of AutoCAD software that identify slopes chosen by the user, areas with slopes greater than 15% were identified.

These identified slopes were located predominately on the north side of NYS Route 990V and on both the east and west sides of County Route 59. However there were some areas along the Manor Kill that did not have slopes greater than 15%, and were generally at slopes of 5% or less. See Exhibit 3.1.a.B, Septic Limitation Map.

3.2. Assess Potential Wastewater Disposal Issues

3.2.a. Existing Wastewater System Information

Since West Conesville has no centrally managed sewer system, wastewater system records are scarce. However, two (2) systems in the Hamlet area are known to have had problems and or have been replaced. Per the NYSEFC Report, presented in Exhibit C, there was one known system on record with the Catskill Watershed Corporation as having problems, tax map parcel number 208.-1-18, and Lamont Engineers was involved in the repair/replacement of the system at Nick's Waterfall House, tax map parcel number 208.-3-13

3.2.b. Soil Data

Soil interpretations were based on data from the "Soil Survey of Schoharie County, New York", published by the USDA – Soil Conservation Service in 1993

and the information published on the Natural Resources Conservation Service, United States Department of Agriculture, Web Soil Survey, available online at *http://websoilsurvey.nrcs.usda.gov/*.

The Soil Survey data indicates that the majority of the soil unit types situated within the more populated portions of the EFC Service Area are generally not suited and are rated 'severe' for septic systems because of shallow groundwater or bedrock.

Catskill Watershed Corporation staff advised that the CWC Septic Program does not have any soil testing data available for the hamlet.

The NYSEFC Report, presented in Exhibit C, recommended a community subsurface system on Site A for the entire EFC Service Area. The soil type, Ba – Basher, for the identified site is suitable for subsurface system. However, the area identified in the NYSEFC Report for Site A is now developed.

See Exhibit 3.2.b.A Soils Mapping and Soils Descriptions and Exhibit 3.1.a.B Septic Limitation Map.

3.2.c. Property Surveys

3.2.c.i. Property Use Windshield Survey

A property use survey was conducted to observe and ascertain what the existing property uses were for each property located within the Planning Area. The survey was conducted along public streets and roads. Landowners were not contacted during the survey.

Based on observations, designations of use were assigned to each property based on the following categories:

RSF - Residential Single Family
RTF - Residential Two Family
C - Commercial
CA - Commercial with Apartment
M - Municipal
V - Vacant
I - Institutional
IA - Intuitional with Apartment
RA - Residential Apartment

Exterior features such as number of mailboxes, number of electric meters, or number of satellite dishes were observed and used to help estimate the number

of occupied spaces for residential properties or non-residential properties with apartments.

Non-residential (commercial, municipal, or institutional) properties were further evaluated to determine the sub category such as a restaurant, Town Hall, church, etc.

The property use survey is helpful because the information obtained is used to help develop flow estimates for the eventual Proposed Service Area (see Sections 4 and 5).

The property uses were recorded on data sheets entitled “Property Use Windshield Survey”. See Exhibit 3.2.c.A, Property Use Windshield Survey.

The Hamlet of West Conesville consists of many single-family dwellings and a few non-residential establishments. Most dwellings and businesses in the center of the Hamlet are located very close together on very small lots. The character and makeup of the Hamlet area is similar to many small rural villages and hamlets found throughout the region.

The majority of properties located within the Planning Area are served by the West Conesville Water District. On-site private wells were observed on a small portion of properties located within the Planning Area.

It was observed that a large majority of the lots in the Hamlet of West Conesville are small and are in close proximity to the Manor Kill and associated tributaries. These lots may not be large enough to host up-to-standard septic systems.

A more detailed "Septic System Windshield Survey" will be needed during design efforts in the future to observe site-specific factors and to discuss site specific issues with landowners.

3.2.c.ii. Septic System Survey

A survey questionnaire was sent to all property owners in the Planning Area. The survey questionnaire is presented in Exhibit 3.2.c.B along with a tabulation of the results. Survey questionnaires were completed and returned by owners representing 13 properties out of 40 properties (or about 30% of properties) in the service area.

Questionnaires were completed representing 12 residential, and 1 vacant properties.

Of 12 questionnaires reporting age of septic systems, 8 reported an age greater than 25 years.

Of 12 questionnaires reporting on recent problems with septic systems, 10 reported no problems and 2 reported problems.

Of 12 questionnaires reporting on the frequency of pump outs of their septic systems, 9 reported that they pump their septic tanks out less frequently than once every three years, and of those, 6 reported that their tanks are never pumped out.

Of 12 questionnaires reporting on drainage on the property, 7 property owners reported that the drainage on their property is "good'; 3 "okay"; 2 "poor" and no one reported "terrible" drainage.

No one reported using a garbage disposal.

1. We are in need of a septic system, but would not want to see a community system or a treatment plant due to the additional cost to the residents.
2. Water and sewer lines extended for new home, after house burnt in 2014.
3. I know nothing about the septic system—as far as I know it works ok. (rental property)
4. Works fine and always has worked good.

3.2.d. Stormwater Disposal

Stormwater runoff from the Hamlet of West Conesville flows to the Manor Kill. The stormwater system is comprised of mainly road side ditches. There are a few catch basins along NYS Route 990V that discharge to the Manor Kill. The Town of Conesville plans to investigate the existing stormwater conditions and submit an application to the Catskill Watershed Corporation Stormwater Retrofit Grant Program for funding assistance for needed improvements to improve water quality in the hamlet.

3.2.e. Water System

The majority of the Hamlet of West Conesville is served by the West Conesville Water District. A handful of properties are not connected to the water system. The lack of a community water system for these properties and the reliance on an on-site well has an impact on the lot size needed for on-site septic systems due to the requirement of 100 feet horizontal separation from well to a leach field.

3.3. Summary of Wastewater Disposal Issues

Based on the reviewed materials, it is clear that developing up-to-standard, properly functioning on-site individual septic systems would be difficult in the Hamlet of West Conesville. It is possible that there may be many inadequate septic systems that will lead to failures in the future. The Proposed Service Area delineation in Section 4 is based on the compilation of the observations on existing wastewater needs as discussed above.

SECTION 4

Delineate Proposed Wastewater Service Area

The wastewater service areas identified in the development of the MOA were used by NYSEFC in their preliminary engineer's reports, and therefore, the area defined in the NYSEFC Report was the initial area considered for service for the current report. Based on the property use windshield survey and the site limitations mapping, two additional properties were added to the service area defined in the NYSEFC report. Parcel 208.-1-8 and 208.-2-23 are both situated adjacent to the EFC Service Area along County Highway 59. Both parcels are single family residential parcels with small lots encumbered by unsuitable soils and steep slopes. Therefore, we propose changing the EFC Service Area boundary to include these two additional parcels

See Exhibit 4.A for the Proposed Service Area Map and Table Summary of Parcels.

SECTION 5
Determine Wastewater Flows for Proposed Service Area

5.1. Equivalent Dwelling Units and Population Equivalents

The concepts of equivalent dwelling units (EDU's) and population equivalents are commonly used to simplify wastewater generation estimating. Non-residential units are converted to equivalent dwelling units (EDU's) based on the amount of wastewater generation. The EDU concept converts all wastewater usage proportionally to that equivalent to a typical single family residence. Then an engineering estimate of the wastewater generation per population equivalent is used to calculate an estimated Average Daily Wastewater load or flow.

During the property use windshield inspection survey, an EDU count was completed within the Planning Area for the Hamlet of West Conesville. Each parcel was evaluated to determine its current use (Residential Single Family, Residential Two Family, Residential Apartment, Commercial, Institutional, Municipal, Commercial with Apartment, Institutional with Apartment, or Vacant). If it was determined that the parcel was residential, it was then given an EDU count depending on how many housing units were located on the parcel, based on the number of utility meters, number of mailboxes, etc.

When a parcel was determined to be used for other than residential use, an evaluation of the site was performed to the extent possible with the information obtained through the property use windshield survey. The 1988 NYSDEC Standards, Table 3, Expected Hydraulic Loading Rates, was used during the site evaluation to determine the flow rates for a particular facility. See Exhibit 3.2.c.A to review the property use windshield survey conducted for the Hamlet of West Conesville.

5.2. Estimate Wastewater Flow for Proposed Service Area

The MOA states "Upon agreement of the City and an Identified Community, the maximum permitted flow may be adjusted to equal the existing flow within the agreed-upon service area plus ten percent (10%)." The Hamlet of West Conesville's maximum permitted flow as estimated in the MOA was 15,000 gpd (30-day average).

The NYSEFC Report estimated the Hamlet of West Conesville wastewater flow at 9,000 gpd based on an inventory of residential and non-residential facilities, an estimated population of 73 persons and current estimating standards. See Exhibit C for Table 6.1 NYSEFC Wastewater Flow Estimate. However, the NYSEFC Report inventory was performed 15 years ago, and this current study proposes to add two properties to the service area originally proposed in the NYSEFC Report. Therefore, the Hamlet of West Conesville's wastewater flow was recalculated.

The Recommended Standards for Wastewater Facilities – 2004 Edition (Ten States Standards) requires that the sizing of wastewater facilities receiving flows from new wastewater collection systems shall be based on an average daily flow of 100 gallons per capita plus wastewater flow from industrial plants and major institutional and commercial facilities unless water use data or other justification upon which to better estimate flow is provided.

According to the U.S Census Bureau, 2010 Census data for the Town of Conesville, the number of persons per household is 2.2. The 2010 Census data indicates the New York State number of persons per household is 2.65 and that the Nation's (United States of America) number of persons per household is 2.59. To be cautious, for this study a figure of 2.60 persons per household (same as the NYSEFC Report) was used to determine the flow per residence. See Exhibit 5.2.A for the 2010 U.S. Census Bureau information for New York State.

Using the 2.60 persons per household times 100 gallons per capita, as recommended by the Ten States Standards, results in a total of 260 gallons per residence (or EDU). Observations made during the site evaluations conducted during the property use windshield survey were used to determine the flows of all potentially large users. The flow estimate was then divided by the average residential use of 260 gallons to determine the EDU count for those properties.

This most current inventory of the properties in the Proposed Service Area suggests that the existing wastewater load for the Proposed Service Area for West Conesville is approximately 11,000 gpd. The estimated residential EDU count is 35 EDU's and the estimated EDU count for the entire Proposed Service Area is 44 EDU's. With the 10% allotment added for growth, the West Conesville Total Wastewater Flow Estimate is 13,000 gpd, or 50 EDU's.

See Exhibit 5.2.B for the Wastewater Flow Estimate for the Hamlet of West Conesville Proposed Service Area.

SECTION 6
Identification and Review of Wastewater Management Options

6.1. Septic Maintenance District

When soil conditions are favorable and lot sizes are adequate, rather than implement some form of centralized sewage disposal, a town can form a district to take responsibility for individual septic systems serving private property. This is called a Wastewater Disposal District or Septic Maintenance District. The town board is authorized to exercise all powers with respect to Wastewater Disposal Districts, which are provided for Sewer Districts, to the extent that such powers are consistent with the purposes of a Wastewater Disposal District. The charges for all Wastewater Disposal District services shall be sufficient to pay all estimated annual costs of operation and maintenance and all annual installments of principal and interest on obligations issued on behalf of the Wastewater Disposal District. To the extent that revenue in any year is insufficient, the excess cost over the revenues may be assessed against the real property of the district in the following year. A Wastewater Disposal District cannot include any portion of a Sewer District. However, a Sewer District can include the maintenance of individual on-site septic systems (from Guide to Developing a Municipal Wastewater Project by Lamont Engineers, P.C. and Young, Sommer…LLC (Guidance Manual), Chapter 5, Paragraph 5.12)

The services of a Septic Maintenance District are defined locally. The services can be as basic as a town providing awareness and information about how to properly maintain a private septic system, inventorying the systems, and reminding homeowners of maintenance at the appropriate intervals. However, services of a Septic Maintenance District can also be as involved as the town operating and maintaining the on-site system still owned by the private individual, including providing repairs to the system or even full replacement by construction of entirely new on-site septic systems.

On-site septic tank and subsurface treatment and disposal systems, if properly applied to adequate site(s), and if properly operated and maintained, are effective, and these systems are the least costly wastewater management option in initial capital costs, on-going operation and maintenance costs and future replacement or rehabilitation costs.

The key issue is whether the individual lots are adequate in size, hydrogeologic and physical characteristics. The sites must be evaluated with caution. If a significantly large majority of the community sites can support an adequate, properly sized and designed system meeting current regulatory requirements including the 100% reserve requirement, and if the balance of the community's sites can support specially engineered systems, then the community can pursue the development of this option with reasonable confidence. If a significant number of sites are insufficient, then the septic maintenance district option should be rejected in favor of an option with more

potential for full and long-term success (from Alternatives for Municipal Wastewater Management Systems, by Lamont Engineers, P.C., Chapter 10, Paragraph 1).

6.2. Sewer District

A district is an area of a town that receives a service from the town that benefits only the properties within the district. A Sewer District is a legal formation of properties within a town that are benefited by and pay for sewage treatment and disposal. The district ensures that households within the municipality that are not benefited by the sewer system are not unfairly burdened with its cost. Different types of Sewer Districts may be comprised of a portion of a town or a portion of a town and village within the same town, with the village's approval. A Sewer District may not cross town lines. Sewer districts do not have to be contiguous; sewer districts can have separate sections or areas that are not contiguous (from Guidance Manual, Chapter 5, Paragraph 5.11). The typical Sewer District is served by a sewage collection system, a wastewater treatment plant, and a permitted surface discharge to a stream.

Sewer Districts can be developed that implement alternative approaches to the wastewater collection and treatment systems typical of larger municipalities. A district may be comprised of properties joined to one community septic system or to multiple cluster systems, or a district may be a combination of a community septic system and one or more cluster systems. In these cases the charges imposed within the sewer district can vary in direct proportion to the benefit of the service provided.

6.2.a. Community Septic System

The flow strength and volume of a small rural community is typically lower than that of a city and therefore simpler methods of treating and discharging of the wastewater may be implemented. A community septic system is a wastewater collection and treatment system that is intermediate in scale and complexity. A community septic system may have a collection system that collects raw sewage and conveys it to a central location. Solids are collected in a tank, and liquid is discharged to a large leach field, where it is treated and discharged. The treated effluent is discharged below the ground, as opposed to a wastewater treatment plant where the discharge is usually to surface waters. The extent and complexity of treatment of the wastewater in a community septic system is typically less than in a wastewater treatment plant.

6.2.a.i. Cluster System

Cluster systems are a method of wastewater treatment and disposal where two or more homes may be connected to a common septic tank and disposal system. These systems may be located on public or private property. This type of multi-home septic system is more suitable for small rural communities than for large, densely populated areas.

6.2.b. Wastewater Treatment Plant System

A wastewater treatment plant system refers to the type of sewage treatment and disposal typical of larger municipalities, villages and cities. A wastewater treatment plant may be necessary even in a small community if adequate subsurface treatment and disposal sites are unavailable. Typically large diameter gravity collection system pipes carry raw sewage directly from the homes and businesses to pump stations, where necessary, but ultimately to a central location where the sewage is treated and disposed of directly to a stream as a surface discharge. Wastewater treatment plants treat the sewage through biological, mechanical and chemical processes in order to prepare the wastewater to be legally discharged to a body of water (i.e. without posing a health threat to the public or creating an environmental problem). If community septic systems or septic maintenance districts are not practicable due to site conditions, and if there is a demonstrable water quality problem due to failing septic systems, NYCDEP, in consultation with the CWC and the Town of Conesville, may elect to allocate program funds to construct a new wastewater treatment plant (WWTP), including the related sewage collection system. However, the capital costs and operational costs, a significant portionof which would be borne by the local commercial and institutional properties, could prove prohibitively high. Evaluation of the wastewater treatment plant option is outside the scope of this report.

6.3. Practical Wastewater Management Options for the Hamlet of West Conesville

6.3.a. Septic Maintenance District for Proposed Service Area

The Proposed Service Area for the Hamlet of West Conesville contains 40 properties as shown in Exhibit 4.A. Site features inhibiting or prohibiting the development of adequate conventional, on-site septic systems were found on many of these properties. As shown on the Septic Limitation Map in Exhibit 3.1.a.B, these features are:

1. location too close to waterways (minimum 100’ setback)
2. location within the FEMA 100-year flood zone boundary
3. too steep (>15% slopes)
4. insufficient lot size
5. unsuitable soils
6. location too close to private wells (minimum 100’ setback) (Note, the location of private wells was only evaluated for two properties. This was needed to determine if the remaining area with suitable soils was impacted by the private well buffer).

The properties located within the Service Area were reviewed to determine if an individual on-site septic system meeting Chapter 10 of the New York Codes, Rules, and Regulations Part 75 and Appendix 75-A (10 NYCWRR Part 75 and Appendix 75-A) could be sited on the property while avoiding the limiting septic system site features.

To do this, the Sample Conventional Septic System Layout and Design in Exhibit 3.1.a.A, were used for the locations described in Chapter 3. The sample conventional septic system was based on a flow rate of 400 gpd, per the 1988 NYSDEC Standards, Table 3 – Expected Hydraulic Loading Rates, for a 3 bedroom housing unit.

Based on this review, it was determined that only 1 of 40 properties (2.5% of total) could maintain an individual on-site septic system with the required 100 percent leach field reserve area. In addition, it was also discovered that only 1 of 40 properties (2.5% of total) could maintain an individual on-site septic system without the required 100 percent leach field reserve area available. Of the remaining thirty-nine (39 or 97.5% of total) properties, six (6) properties (15%) were located on unsuitable soils. Thirteen (13) properties (33%) were located on unsuitable soils and would not meet the NYCWRR Part 75 and Appendix 75-A requirement avoiding slopes greater than 15%. Four (4) properties (10%) were located on unsuitable soils and were also within the 100' offset from streams. Two (2) properties (5%) were located on unsuitable soils and were there were suitable soils, they were within the 100' offset from private wells. Fourteen (14) properties (36%) were located on unsuitable soils, would not meet the NYCWRR Part 75 and Appendix 75-A requirement avoiding slopes greater than 15%, and were also within the 100' offset from streams. As a comparison to the West Conesville percentages above, see below table that outlines the percentages for previous CWMP projects:

CWMP II Septic Maintenance District Evaluation				
CWMP Hamlet	Number of Lots (Main Service Area Only)	Percentage of Properties that can Maintain a Conventional Septic System with 100% Reserve Area	Percentage of Properties that can Maintain a Conventional Septic System with and without 100% Reserve Area	Percentage of Properties that require an Engineered System
DeLancey	59	58%	73%	27%
Hamden	82	39%	56%	44%
Bloomville	108	13%	32%	68%
Boiceville	104	13%	32%	68%
Ashland	87	9%	17%	83%
Trout Creek	51	12%	24%	76%
Lexington	66	15%	15%	85%
South Kortright	48	6%	19%	81%
West Conesville	40	2.5%	2.5%	97.5%

The properties with site constraints could be fitted with specially engineered systems utilizing advanced treatment systems. An engineered system would include some type of advanced treatment system ahead of the subsurface system, like a peat biofilter, sand filter, trickling filter, or aerobic treatment unit. Because the effluent from these advanced treatment systems is cleaner than the effluent from a septic tank, the subsurface system size could be reduced to fit on a smaller lot, or could be sited with a reduced separation distance to groundwater, surface water or bedrock, or be designed in a fill system, thereby possibly allowing these lots with soil, slope, and other site constraints to support their own on-site treatment systems. A potential Hamlet of West Conesville Septic Maintenance District for the Proposed Service Area would require extensive site testing and analysis of each property during the preconstruction phase. Furthermore, given the significant site constraints in the Hamlet, these types of systems may not have a long life expectancy, leaving the Town with a liability for replacing these systems when they fail.

To further evaluate the potential of an SMD for the Hamlet of West Conesville, on-site testing was performed to verify the NRCS Soil Survey information shown in Exhibit 3.2.b.A.

Based on the NRCS Soil Survey, there are fourteen (14) predominant soil types (AL, Ba, Bm, Ha, McC, MeE, SnD3, SoE, ThC, ThD, TnF, VcB, VcC, and LRF) found within the Hamlet of West Conesville. Many of these soil types have similar characteristics.

Several of the predominant soils adjoin one another near the center of the Hamlet. Performing soil testing in this location would provide a good representation of the soils within the Hamlet.

On November 11, 2015, soil testing in the Hamlet of West Conesville commenced near soil types SnD3, Schoharie and Hudson silt clay loams, 12-20% slope and SoE, Schoharie soils, 20-40% slopes. Two percolation tests were performed and one deep test hole was excavated on tax parcel 208.-1-16.

One percolation test was performed at a depth of 24" while the other percolation test was performed at a depth of 12". The 24" percolation test would not perc as the water depth only changed ¼" in one hour. The 12" percolation test stabilized at a rate of 29 minutes per inch. The first percolation test run resulted in a rate of 50 minutes per inch but the following two percolation test runs were 27 minutes per inch and 29 minutes per inch. Only three percolation test runs were performed. The two percolation tests were performed only a few feet away from one another.

The deep test pit was excavated to a depth of 4'-9". No water was found in the deep test pit. Mottling was observed at a depth of 2'-4". Roots extended to a depth of 2'-4". A clay hardpan extended from 2'-4" to the bottom of the excavation at 4'-9".

See Exhibit 6.3.a.A, Septic Maintenance District Soil Testing for a sketch of the soil testing performed and a summary of the results.

Based on the failed 24" percolation test and the slow 12" percolation test combined with the restrictive hard pan and the evidence of the presence of groundwater from the mottling observed, the soils in this area are not favorable to the conditions required for an on-site septic system. Should an on-site septic system be constructed in these soils, it is likely to fail in a relatively short period of time. This testing reveals there is a potential that many existing on-site septic systems in the Hamlet of West Conesville could be failing or that failure is imminent.

Due to the significant site constraints in the Proposed Service Area for the Hamlet of West Conesville, the overwhelming majority (97.5%) of the properties in the Hamlet of West Conesville are not able to support a properly functioning, up-to-standards septic system even without the 100% reserve area. In addition, based on the soil testing performed, the soils in the Hamlet of West Conesville are not favorable for on-site septic systems. Any system sited on these lots in West Conesville has a high probability of being ineffective or failing. Therefore, a Septic Maintenance District for the Hamlet of West Conesville cannot be recommended.

In addition to the issues listed above for a Septic Maintenance District, there is also the issue of growth for the community. The NYCWRR gives NYCDEP authority to regulate septic systems, including substantial alterations or modifications to an existing septic system (see NYCWRR Sections 18-23 "substantial alteration or modification", 18-27 "substantially altered or modified"). NYCDEP interprets substantial alteration or modification as including such matters as adding a bedroom, changing the use of but not the amount of septic generated by a facility, adding kitchenette units to motel rooms, adding a business to a home, adding seats to a restaurant floor plan/deck, etc. This applies to both septic systems that existed prior to the NYCWRR being promulgated as well as new septic systems constructed since 1997. If a "change in use" of a property is planned, the septic system must be upgraded to meet the current NYCWRR. This is even true if the "change in use" would reduce the wastewater flow. Other than one property, all properties in the Hamlet of West Conesville are unable to construct a NYCWRR compliant septic system. Therefore, with a Septic Maintenance District, landowners would not be allowed to add a bedroom, add a business to their home, or make any other "change in use" to their property. The "change in use" issue would be a significant restriction to property owners within a Septic Maintenance District for the Hamlet of West Conesville.

6.3.b. Community Septic System / Subsurface Disposal

The Hamlet requires some form of centralized wastewater treatment and disposal system. The simplest and least expensive form of this is a community septic system.

The NYSEFC Report identified one site, Site A, tax map parcel number 208.-3-12, for a community septic system, as the preferred wastewater treatment option for the Hamlet. However that site has since been developed and is no longer available for a community subsurface treatment system. Therefore a new community subsurface system site needs to be identified.

SECTION 7
Proposed Hydraulic Loading

7.1. Design Average Day Wastewater Flow

7.1.a. Proposed Service Area Average Day Wastewater Flow

Providing for the 10% growth allowed by the MOA, the Design Average Wastewater Flow is calculated as follows:

Wastewater Flow Estimate for the Hamlet of West Conesville =	11,135 gpd
Add 10% for growth	+ 1,114gpd
	12,249 gpd

Rounding upward, the Proposed Design Average Day Wastewater Flow for the Proposed Service Area for the Hamlet of West Conesville is 13,000 gpd (High 30-Day Mean, anticipated SPDES permitted flow based on Lexington CWMP). This compares to the MOA estimated flow of 15,000 gpd.

7.2. Design Maximum Day Wastewater Flow

The Hamlet of West Conesville has a municipal water system. However the water system is in need of repair due to many leaks in the system. Therefore the water records cannot be used to evaluate the relationship of maximum day to average day water usage and the relationship is unknown. Since hamlets of this size usually have a ratio of maximum day usage to average day usage of about 2 to 1, the Design Maximum Day Wastewater Flow is calculated by multiplying the Design Average Day Wastewater Flow by a factor of 2.

7.2.a. Proposed Service Area Maximum Day Wastewater Flow

13,000 gpd x 2 = 26,000 gpd.

7.3. Design Peak Hour Wastewater Flow

The proposed Design Average Day Wastewater Flow for the Hamlet of West Conesville Service Area indicates a population equivalent of 130 (13,000 gpd Design Average Day Wastewater Flow ÷ 100 gallons per capita per day). Per Ten States Standards, Chapter 10, Figure 1, the expected ratio of peak hourly flow to design average flow for a population equivalent of 130 persons is 4.21.

7.3.a. Proposed Service Area Design Peak Hour Wastewater Flow

13,000 gpd x 4.21 = 54,730 gpd or 38 gallons per min (gpm).

SECTION 8
Screening and Selection of Potentially Suitable Sites

8.1. Subsurface Disposal

8.1.a. Identify Potential Sites

Site Selection Criteria were developed to assist in the process of identifying, screening, and selecting potentially suitable sites for subsurface disposal of wastewater for cluster systems and to identify where a Community Septic System could be sited in the vicinity of the Proposed Service Area. The Site Selection Criteria are broken up into five different phases. Each phase moves progressively closer toward final site selection while eliminating more problematic sites along the way. See Exhibit 8.1.a.A for the Site Selection Criteria for Subsurface Disposal.

Based on previous projects of this nature and size, it was determined that a minimum subsurface treatment site size of ten (10) acres is required for a community septic system.

In Phase I, a cursory review of the parcels in the Planning Area was initiated to develop a list of potentially suitable sites for a community subsurface system. This review was based on visual observation and local knowledge from the Town officials and members of the community. See Exhibit 8.1.a.B for a list and map of the potential treatment sites.

In Phase II, a desktop study was performed on the preliminarily identified properties from Phase I. During the desktop study, available existing data and mapping was compiled and analyzed as presented herein to further assess the potential suitability of the sites identified from Phase I. In addition, permitting or regulatory issues that may be associated with a particular site were also identified.

Site A

As discussed in Section 6.3.b, Site A (identified in the NYSEFC Report) is no longer viable for a community subsurface treatment system because the property owner has constructed a new barn in this location. This portion of the property is in full use.

Site B

Site B is an old farm field that is in early succession. It is relatively level with a gentle slope toward the north. As a result of these features, very little grading work will be required to prepare the site. Based on our experience

and knowledge of past projects, the Barbour soils located on this site are well suited for a community septic system. Site B is well over the minimum acreage of 10 acres needed. The site is large enough to accommodate the entire community septic system while also maintaining a 500 foot separation as required by NYCDEP when flows exceed 10,000 gpd (NYCDEP will require pretreatment of the wastewater if more than 10,000 gpd are sent to a community septic system. However, if 10,000 gpd or less is sent to one area of the system and there is 500 feet between that and 10,000 gpd or less that is sent to another area of the system, NYCDEP will not require pretreatment of the wastewater. There is a significant savings by not having to provide pretreatment). This site is easily accessible from an existing driveway off Prattsville Road. In addition, utilities such as power and telephone are in close proximity. Construction at this site would be the most economical of all the sites. Site B is the best site out of all the identified sites for a community septic system.

Site C

This site is located on the same property as Site A. The property is being operated as a fully functional farm. Site C is an open farm field that is relatively level. Out of all the sites, this site has the closest proximity to the Manor Kill and the Schoharie Reservoir. As with Site B, Site C also has the Barbour soils which are conducive to a community septic system. Site C is not large enough alone to accept flows from the entire Hamlet of West Conesville. Therefore, other sites would be required to offset the area needed. Coordination with multiple property owners will prove difficult. Since additional sites would be required, capital costs would be higher due to separate site construction needed such as roads, utilities, additional pump stations, force mains, etc. Operation and maintenance costs would also be higher because of the multiple facilities that would have to be maintained. Site C is not readily accessible from any nearby roads. Site access will be difficult and expensive to achieve.

Site D

Site D is located uphill of the Hamlet of West Conesville. Site D is comprised of four different properties with two separate property owners. Coordination with multiple property owners will prove difficult. Site D is made up of open fields, early successional fields, and forested areas. The site is also segmented by multiple fence/hedge rows. The site is located on hilly terrain which may require terracing of the landscape for the absorption beds. The hilly terrain will require significant and expensive grading work. The soils on Site D are Tunkhannock and Chenango soils. Although the site is large enough to accommodate the entire community septic system, a pretreatment system would be required by NYCDEP because the flows at this one location would

exceed 10,000 gpd and the site is not large enough to provide the needed separation to split the flow. Site D is not readily accessible from any nearby roads. Site access will be difficult and expensive to achieve.

Site E

Site E is located uphill from the Hamlet of West Conesville. Site E is an open field utilized for farming. The site is relatively level in the immediate area but drops off to the south with slopes greater than 15 percent. The soils on Site D are Tunkhannock and Chenango soils. As with Site C, Site E is not large enough alone to accept flows from the entire Hamlet of West Conesville. Therefore, other sites would be required to offset the area needed. Coordination with multiple property owners will be difficult. Since additional sites would be required, capital costs would be higher due to separate site construction needed such as roads, utilities, additional pump stations, force mains, etc. Operation and maintenance costs would also be higher because of the multiple facilities that would have to be maintained. Site E is not readily accessible from any nearby roads. Site access will be difficult and expensive to achieve.

In Phase III, the property owners were contacted to confirm their willingness to allow testing to be performed on the identified site and their willingness to sell the site to the project at fair market value.

Because Site B is the best property for siting a community septic system, NYCDEP was contacted in January 2015 by CWC to determine if they would allow testing on their property. After multiple internal discussions, NYCDEP told CWC that all other alternatives would need to be sought prior to considering that their property be used for a community septic system. Due to NYCDEP's response, the property owners of the other potential treatment sites were contacted.

The property owner of Site C who also happens to be the property owner of Site A (EFC Site) has attended multiple Town Board Meetings to express her stance against the project. This landowner has spoken out adamantly against the West Conesville CWMP. As a result of this landowner's vocal protest against the project, the Town Board decided that it would be best not to aggravate her with a request for site access to her property.

Excluding the City of New York, due to the NYCDEP and CWC discussions described above, the property owners of Site D and Site E were sent letters in the summer of 2015 to determine if they would be interested in allowing soil testing on their property and their willingness to potentially sell the site to the project. A sample access/willingness to sell letter is located in Exhibit 8.1.a.C. One of the owners of Site D contacted the Town and stated that she was not interested in allowing access and that she was not interested in selling any of her property. The

Town made several failed attempts at trying to contact the property owner of Site E. She was never reached.

Unfortunately, not one property owner would agree to allow testing on their property.

Although testing was not performed on Site B, based on the Soils Mapping and Soils Descriptions in Exhibit 3.2.b.A and experience with these types of soils in other projects in the NYC Watershed, it is nearly certain that this site will be suitable for a community subsurface treatment system. Based on our evaluation of all the identified sites, Site B has the best siting characteristics and is the most economical option for a community septic system for the Hamlet of West Conesville.

SECTION 9
Wastewater System Alternatives and Discussion

9.1. Collection Options for Proposed Service Area

9.1.a. Conventional Gravity Sewers

Conventional collection systems are typically constructed of gravity flow sewer pipe of 8-inch diameter or larger. Polyvinyl chloride (PVC) pipe is typically used under normal service conditions while ductile iron pipe is used where additional pipe strength is needed, or the collection system will be within 50 feet horizontal from a private well. In the areas of the Hamlet where there is a public water supply, ductile iron pipe is required within 10 feet horizontal and 18" vertical from the water mains. Conventional sewers must be installed at slopes sufficient to maintain the flow velocities necessary to transport solids. For maintenance purposes, conventional sewers must be installed in straight horizontal and vertical alignment between manholes no farther than 400 feet apart. The critical alignment of conventional sewers increases installation costs by requiring installation accuracy and by requiring deeper sewer installation in areas where the ground surface rises between manholes.

Conventional collection systems are designed for gravity flow wherever possible. However, in some flat terrain, due to minimum sewer grade requirements or excessive sewer depth, pumping or lift stations may be necessary or more economical.

Advantages to conventional collection systems include applicability to all types of treatment processes, flexibility for expansion, reliability of service, and minimal operating and maintenance costs.

A disadvantage of conventional collection systems is significant construction and restoration cost when deep sewers (greater than 10 feet) are required.

9.1.b. Small Diameter Gravity Sewers

Small Diameter Gravity Sewer (SDGS) systems consist of septic tanks for each service connection and small diameter (4 and 6-inch) HDPE collection sewers. The collection sewers are installed at varying (and sometimes uphill) grades at or just below the frost line. Smaller diameter pipe can be used because the septic tanks trap solids and greases which tend to clog sewers, leaving only septic tank effluent (liquid) to be transported in the pipes. Cleanouts and flush connections are used instead of manholes for maintenance purposes.

Where services are too low for connecting to the mainline sewer by gravity, small effluent pump stations may be required. These can either be for single or multiple services. When several effluent pump stations are connected to a common pressure pipe, a septic tank effluent pump (STEP) system is created. Where entire service areas are too low for connection to the rest of the sewer system, larger effluent pump stations are required.

Advantages to such a system include a potential reduction in construction and restoration costs, reduction of waste loading, and elimination of primary settling at the wastewater treatment facility due to the use of on-site septic tanks. Construction and restoration costs are reduced because alignments of SDGS systems can be easily routed around above- and below-ground obstacles and/or directional drilled.

Disadvantages to such a system include potential limited flexibility for future expansion, due to small diameter piping, if expansion needs are not considered during the design of the system, and the maintenance requirements and sludge disposal costs required for the septic tanks at each service connection. Also, when collection systems which carry only septic tank effluent are used in conjunction with other types of collection systems which require primary settling, the advantage of the septic tanks is lost. Additionally, measures to control odors must be taken since septic tank effluent when aerated by flowing through pipes or dropping into pump stations can be odorous.

9.1.c. Grinder Pump Pressure Sewers

Grinder pump pressure sewers can be used for entire collection systems or just for lower elevation service areas where connection to the collection system is not feasible by gravity. However, since grinder pumps only grind up solids and do not remove them from the sewage, as does a septic tank, such systems are typically only used when connected to conventional sewers or a complete system of pressure sewers. They should not be pumped into a SDGS system. By eliminating the need for a septic tank (as required with effluent pumping systems), grinder pump systems may be cost effective in some applications.

Advantages to grinder pump pressure sewers include applicability to all types of treatment processes, the cost and maintenance advantages of eliminating septic tanks, and a potential reduction in construction and restoration costs.

Disadvantages include the maintenance of a solids-handling pump at each home or group of homes.

9.1.d. Vacuum Sewers

Like grinder pump pressure sewers, vacuum sewers can be used for an entire collection system or just for lower elevation service areas. Vacuum sewers consist

of one or more central vacuum sources and 4-inch or greater vacuum lines, which are capable of handling all solids in normal wastewater. "Wet well" wastewater collectors are located such that they serve from 1 to 4 homes. When the waste in the wet well reaches a certain level, a valve in the wet well is actuated and the wastewater in the wet well is ejected to the central vacuum station. Wastewater from the central vacuum station either flows by gravity or is pumped to the treatment location.

As with grinder pump pressure sewers, the advantages to vacuum sewers include the applicability to all types of treatment processes and the maintenance advantages of eliminating septic tanks.

Disadvantages include the cost and maintenance of the central vacuum station(s) and the mechanical valve units at each of the collection wells. Also, the available 'lift' provided by vacuum sewers is limited to about 20 feet.

9.1.e. Selection of Collection System Alternative

Review of existing topography and service requirements (existing building densities) of the Proposed Service Area indicates that either a small diameter gravity sewer (SDGS) collection system or a conventional gravity sewer can be designed and built for the Hamlet of West Conesville. Vacuum sewers were ruled out because many air valves would be needed throughout the vacuum system, resulting in additional installation, maintenance and pumping costs for this type of system. A grinder pump sewer system was ruled out because an SDGS or a conventional sewer can be designed at a reasonable depth, thereby eliminating the need to install and maintain grinder pumps at every property.

Due to the flexibility of the layout of an SDGS, the elimination of the need for manholes and the elimination of primary treatment facilities at the wastewater treatment facility, all of which result in a reduction of the overall project cost, an SDGS system is the preferred collection system for the Hamlet of West Conesville. Areas that are too low for gravity sewers will be augmented with septic tank effluent pump stations. The system will consist of approximately 8,150 LF of small diameter gravity sewers, force main and lateral stubs, one (1) individual effluent pump system needed for a low-lying business, and one (1) main effluent pump station. The system will also include approximately 35 lateral connections. Odor control measures and expansion of the SDGS system will be taken into consideration during final design.

See Exhibit 9.1.e.A, Preliminary SDGS Collection System Layout.

9.1.f. Subsurface Conditions Along Proposed Collection Route

Since a community system is being considered for West Conesville, a main collection system will need to be constructed to convey the sewage from the residences and properties to the main treatment site. The approximate depth of the collection system will be between 6' and 10' deep. Rock outcroppings were observed during the property use windshield survey discussed in Section 3. Also a review of the soils mapping and descriptions indicates that some of the soils along the main corridors of County Route 990V and Bull Hill Road have a depth to bedrock less than 1'. If the Town continues development of the project, soil borings and rock probes would be scheduled to obtain subsurface conditions.

9.2. Wastewater Treatment Facility Organic, Solids and Nutrient Loadings

A community subsurface wastewater treatment facility (WWTF) can be designed to treat both the residential population of the Hamlet of West Conesville and the few non-residential properties located in the Hamlet. In a rural, predominately residential, non-industrial community like West Conesville, standard municipal wastewater organic and solids loadings are expected. In the case of a small diameter gravity sewer as has been selected as the preferred collection system (see Section 9.1.b.), solids are settled out in the septic tank before entering the SDGS collection system, thereby removing some of the organics and solids from the wastewater. As a result, the standard organic and solids loadings for raw sewage, as listed in Ten States Standards, Section 11.253, cannot be used.

Based on testing and experience with other community wastewater systems with SDGS's, the concentration of BOD and TSS in the septic tank effluent is 110 mg/L 80mg/L respectively. There is generally no reduction in Ammonia, Nitrogen and Phosphorus concentrations as a result of the septic tank pretreatment. As a result the concentrations listed in Ten States Standards, Section 11.253 will be used.

The Maximum Day and Peak Hourly factors will be 2 times and 4.21 times the Design Average Day values respectively, as described in Section 7, paragraphs 7.2 and 7.3.

9.2.a. Design Average Day, Maximum Day and Peak Hour BOD_5

Septic tank effluent domestic waste treatment design shall be based on 110 mg/L BOD_5 per day.

Proposed Design Average BOD_5 =
110 mg/L x 8.34 lbs/gallon x .013 MGD = 12 lbs BOD_5/day

Proposed Design Maximum BOD_5 =
Proposed Design Average BOD_5 x 2 = 24 lbs BOD_5 /day

Proposed Design Peak Hourly BOD_5 =
Proposed Design Average BOD_5 x 4.21 = 50 lbs BOD_5 /day

9.2.b. Design Average Day, Maximum Day and Peak Hour Total Suspended Solids (TSS).

Septic tank effluent domestic waste treatment design shall be based on 80 mg/L TSS per day.

Proposed Design Average Total Suspended Solids (TSS) =
80 mg/L x 8.34 lbs/gallon x .013 MGD = 9 lbs TSS/day

Proposed Design Maximum Day Total Suspended Solids (TSS) =
Proposed Design Average TSS x 2 = 18 lbs TSS/day

Proposed Design Peak Hour Total Suspended Solids (TSS) =
Proposed Design Average TSS x 4.21 = 37 lbs TSS/day

9.2.c. Design Average Day Ammonia, Nitrogen and Phosphorus

From Ten States Standards, Appendix, Table No. 2, the estimates of the design average ammonia and nitrogen using concentrations of 25 ppm (or Mg/L) of NH_3-N (ammonia nitrogen) and 40 ppm (or mg/L) of TKN (Total Kjeldahl Nitrogen) shall be used to estimate the nutrient loadings of wastewater. Table 2 also states that the estimate of the design average phosphorus is 7 ppm (or mg/L); however, we will use a concentration of 10 ppm (or mg/L) of phosphorus to be conservative:

9.2.c.i. Design Average Day Ammonia NH_3-N

Proposed Design Average Ammonia Nitrogen (NH_3-N)
25 ppm x 8.34 lbs/gallon x .013 MGD = 2.7 lbs/day of NH_3-N

9.2.c.ii. Design Average Day Nitrogen TKN

Proposed Design Average Total Kjeldahl Nitrogen (TKN)
40 ppm x 8.34 lbs/gallon x .013 MGD = 4.3 lbs/day of TKN

9.2.c.iii. Design Average Day Phosphorus

Proposed Design Average Phosphorus
10 ppm x 8.34 lbs/gallon x .013 MGD = 1.1 lbs/day of Phosphorus

9.2.d. Seasonal Loading Considerations

Most of the residences and apartments in the Proposed Service Area appear to be occupied all year, so no correction for seasonal, part-time or weekend occupancy is needed.

9.2.e. Wastewater Load Summary

SEPTIC TANK EFFLUENT WASTEWATER LOAD SUMMARY	
West Conesville Community Wastewater System Proposed Service Area	
Hydraulic Loads:	
Proposed Design Average Flow	13,000 gpd*
Proposed Design Maximum Day Flow	26,000 gpd
Proposed Design Peak Hourly Flow	38 gpm (54,730 gpd)
Organic and Solids Loads	
Proposed Design Average BOD_5	12 lbs BOD_5 /day (110 mg/L)
Proposed Design Maximum Day BOD_5	24 lbs BOD_5 /day
Proposed Design Peak Hour BOD_5	50 lbs BOD_5 /day
Proposed Design Average Total Suspended Solids	9 lbs TSS/day (80 mg/L)
Proposed Design Maximum Day Total Suspended Solids	18 lbs TSS/day
Proposed Design Peak Hour Total Suspended Solids	37 lbs TSS/day
Nutrient Loads	
Proposed Design Average NH_3-N	2.7 lbs/day of NH_3-N
Proposed Design Average TKN	4.3 lbs/day of TKN
Proposed Design Average Phosphorus	1.1 lbs/day Phosphorus

*(High 30-Day Mean, anticipated SPDES permitted flow based on Lexington CWMP)

9.3. Wastewater Treatment Facility Preferred Solution

As described in Section 6, the preferred wastewater treatment solution for the Hamlet of West Conesville is a community subsurface wastewater treatment facility, located on Site B. Based on previous CWMP projects, pretreatment (i.e secondary wastewater treatment before subsurface disposal) will not be required by NYCDEP engineering if the community subsurface system is treating flows smaller than 10,000 gpd, and if the system is treating more than 10,000 gpd, the community system can be

divided into to two separate treatment areas, each treating less than 10,000 gpd and a minimum of 500' apart. The Design Average Day flow of the West Conesville WWTF is 13,000 gpd. Therefore in order to avoid the pretreatment requirement, the system will need to be separated into two systems, each treating 6,500 gpd of flow. Because Site B is quite large, it is possible to have these two subsurface treatment systems 500' apart.

With a small diameter gravity sewer collection system, preliminary treatment of the wastewater will occur in the septic tanks located at each property. Each septic tank would be equipped with an effluent filter to minimize the solids entering into the collection system. Because of the minimal solids in the influent to the community wastewater facility, additional primary settling tanks are not required there.

At the treatment facility site, final treatment and disposal will occur through shallow cut-and-fill absorption beds. Although soil testing has not been performed on this site, the soils on this site are typical of soils found and used for subsurface systems in other CWMP communities, where cut-and-fill systems have generally been required. The WWTF will consist of a receiving manhole, a flow meter, an absorption bed dosing pump station and shallow cut-and-fill absorption beds. As required on other CWMP project subsurface treatment systems, the subsurface system will be constructed in 3 sections each capable of handling 50% of the design flow and will be dosed with a pressure distribution system. The application rate of the absorption beds will be 0.5625 gpd/sf (0.6 gpd/sf for a fill with a 30 minute percolation rate, reduced by 25% for using absorption beds and then increased by 25% for constructing 150% of the required absorption area). Also a 28' x 28' building will be provided for equipment and spare parts storage, to house the permanent standby backup generator for use in case of a power outage and to provide a space for the operator to do paperwork and perform maintenance duties. Odor control will also be provided where necessary.

See Exhibit 9.3.A, Subsurface Wastewater Treatment Facility Process Flow Schematic and Site Layout.

SECTION 10
Evaluate Preferred Solution

10.1. SDGS to Community Subsurface Treatment System on Site B Capital Cost

The preferred wastewater treatment solution involves servicing the Service Area with approximately 8,150 LF of small diameter gravity sewers, force main and lateral stubs, one (1) individual effluent pump station and one (1) main effluent pumping station. The system will also include approximately 35 lateral connections. Each lateral connection would receive a new septic tank equipped with an effluent filter. The treatment system is a shallow cut-and-fill absorption bed subsurface treatment system.

See Exhibit 10.1.A Opinion of Probable Capital Cost Estimate Breakdown – SDGS to Community Subsurface Treatment System on Site B.

Capital Cost SDGS to Community Subsurface Treatment System on Site B	
Capital Cost – Construction	
Shallow Cut-and-Fill Absorption Beds	$ 2,798,000
SDGS Collection System	$ 2,137,000
TOTAL CONSTRUCTION=	$ 4,935,000
TOTAL NON-CONSTRUCTION=	$ 1,735,000
TOTAL COST	**$ 6,670,000**
O&M Cost (Yearly)	$ 51,300

10.2. Operation and Maintenance Costs to Users

The Operation and Maintenance Agreement that the Town would enter into with NYCDEP caps the cost to the residential users at $100 per year (for the first three years at which point the cost per year would increase by inflation). For instance, if the average flow per residence is 260 gallons per day and the cost of the operation and maintenance is $2.00 per gallon per day per year, then the actual cost to operate and maintain the flow from that residence is $520 per year. However, with the NYCDEP subsidy for residences, the homeowner only has to pay $100 per year and NYCDEP pays the remainder of the cost per year ($420).

The estimated average daily flows in Section 5 include estimates of the flows produced by the non-residential properties in the Proposed Service Area. These

estimates are based on 1988 NYSDEC Standards, Table 3, which are conservatively high. Businesses could lower their costs by upgrading their toilets and plumbing fixtures and installing water meters on their water services and thereby only paying for what was actually used instead of the estimated wastewater flow. If the project goes forward, it is recommended that the project install water meters for all non-residential users.

10.3. Permits and Approvals Needed

As typical with a project of this size, many different regulatory and approval agencies would be involved in the project. The State Environmental Quality Review process (also known as SEQR) is required to be completed. In complicated cases, SEQR and permitting can take over a year to complete. A community wastewater management system in general should be viewed as a net environmental benefit to the community and should avoid, wherever possible, permanent negative impacts on the environment. A final design that takes these issues into consideration would likely shorten the SEQR and permitting process.

Permits from the Army Corps of Engineers (ACOE), NYSDEC, NYSDOT, NYCDEP, the County and Town are required. Design approvals are required from NYSDEC, NYSDOH, NYCDEP, the Town and CWC. See Exhibit 10.3.A for the required permit and approvals inventory and the list of associated agencies.

10.4. Identify Additional Funding Sources

The Governor's Office of Small Cities has grants available for low to moderate income service areas and individual homeowners. If a service area is comprised of a majority of low to moderate income eligible property owners, then the municipality may apply for a grant to assist with the capital costs of the project. Even if the service area does not meet this requirement, a municipality may still apply to Small Cities to assist individual homeowners who are eligible with the cost of the installation of their laterals. This is a competitive grant program with an annual funding round and the maximum requested amount for a single focus application is $400,000.

Lastly, the USDA RD has loans available for income-eligible senior citizens. These are individual applications to be completed and submitted by the homeowner.

10.5. Timeframe to Complete

The preconstruction phase deadline is December 31, 2016. This includes facility planning and final design, permitting, property acquisitions, easement acquisition, environmental review, design approval from NYCDEP and NYSDEC, and the development of construction drawings and documents for bidding. The deadline to start construction is December 31, 2016. The deadline to complete construction of

the system is June 30, 2018, including final restoration, startup and closeout. The costs presented in this section are based on this schedule. Therefore, any significant delays could cause these costs to escalate due to inflation. Typically, once we have approval to begin design, the preconstruction phase takes 12 to 18 months to design, approve, and the project can be bid.

SECTION 11
Recommendations and Conclusions

A Septic Maintenance District is not recommended for West Conesville for the following reason:

- There is an overwhelming predominance in the number of small and otherwise problematic lots in the Hamlet that could not meet design standards for individual on-site septic systems (39 of 40 or 97.5%) even without the required 100% reserve area.

In addition, there are these disadvantages with a Septic Maintenance District for West Conesville:

- Due to the overwhelming number of lots not capable of meeting the current standard, the Town may be taking on a significant liability arising from its responsibility in an SMD to provide adequate wastewater treatment. However some legal remedies could be incorporated to help protect the Town.

- Change of use for properties may prove impossible or impractical under an SMD.

- Unless the SMD could be delineated and budgeted to include vacant lots, no provisions for community growth could be incorporated.

- Vacant lots may prove unbuildable under an SMD.

A community subsurface treatment system is a viable alternative because there is a potential subsurface treatment site located near the Hamlet that has suitable soils and enough open space to accommodate the flow of the community. Because there is enough room to split the flow of the community into two separate treatment areas 500' apart, with each area treating less than 10,000 gpd, pretreatment (i.e. secondary wastewater treatment) of the wastewater prior to discharge is not required by NYCDEP Engineering. A shallow cut-and-fill system is assumed to be needed because testing of the site has not been performed yet and the soils on this site are similar to soils at other CWMP community subsurface system sites where cut-and-fill systems have been required.

Therefore, it is recommended that the Hamlet of West Conesville pursue the development of a small diameter gravity sewer system with shallow cut-and-fill absorption beds for the wastewater treatment system. The yearly O&M costs for this type of system are affordable, especially considering a very high percentage of the operation and maintenance of the system is subsidized by NYCDEP ($100/year/household with non-residential users paying a minimum fee plus nominal rate times their annual average daily usage).

One potential significant complication of the proposed wastewater treatment facility site is that the property is currently owned by NYCDEP. It is unknown at this time if the area needed could be acquired without having to go to through eminent domain procedures. Site B is still the preferred site despite the potential property acquisition complications.

Summary of Wastewater Treatment with Total Project Costs and O&M Costs			
	Capital Cost	O&M Cost	
SDGS to Community Subsurface Treatment System on Site B	$6.670 M	$51,300 per year	

Exhibit A

Scope of Work

SECTION I. SCOPE OF SERVICES
B. RFP SECTION 2.2 STUDY PHASE
2. WEST CONESVILLE CWMP

WEST CONESVILLE CWMP

During preparation of this proposal, Lamont staff Chris Yacobucci and Judy Pangman conducted a condensed windshield survey of the Hamlet to confirm the number of residential and non-residential units, and to identify possible wastewater treatment sites. Julie Barown, P.E. reviewed the results of the windshield survey and available GIS and other mapping to become familiar with the Hamlet of West Conesville, and to identify potential issues and treatment sites. There appears to be numerous small and problematic lots in the Hamlet. Should the Septic Maintenance District option not be feasible, there is a potential subsurface treatment site located near the Hamlet that has suitable soils and enough open space to accommodate the potential flow of the community. Also, as the site is large enough to separate the subsurface system into two systems, each less than 10,000 gpd, it is likely that DEP engineering will not require pre-treatment (i.e. secondary wastewater treatment) of wastewater prior to subsurface discharge.

2.2 STUDY PHASE

During this phase, the Consultant shall examine the technical feasibility, cost, planning and implementation issues for each Participating Community, using the Environmental Facilities Corporation's (EFC) Strategic Wastewater Planning Study, December 2000 and the Environmental Protection Agency's (EPA) Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems and the NYSDEC Design Standards for Intermediate Sized Wastewater Treatment Systems updated March 5, 2014 as a basis. The Consultant shall produce a written report for the CWC, DEP, and the Participating Communities detailing the findings of the Study Phase portion of the Scope of Work. The written report shall include the following.

1. Overall Task – The CWC and the Consultant shall develop an overall master plan for allocating Program Funds, along with recommended Block Grant Amount(s) for each of the five (5) Participating Communities, such that all recommended Projects can be accomplished within the limits of the Program Funds.

   Deliverables:
   - *Attendance at a total of 10 monthly CWC meetings to review the project status for each community and coordinate projects (see Section II. Fees, Task 7).*
   - *Development and Presentation of overall Master Plan and Block Grant Amounts to the Conesville Town Board and residents of the Hamlet of West Conesville (see Section 2.2.3.I).*

2. The service area for the Study Phase for each identified community is delineated in EFC's December 2000, Strategic Wastewater Planning Study. If the project includes a community septic system, identify associated existing flow. The flow from the delineated service area may be adjusted from the flow estimated in Paragraph 122(c) of the Watershed MOA to equal existing flow within the agreed upon service area plus ten percent (10%).

Deliverables:

- *Flow Estimates (see Section II. Fees, Task 1).*

3. The Study Phase shall determine the preferred project for each community. In order to determine the preferred project, the Consultant will meet with the Communities, to insure their continuous involvement. The following describes the minimum services to be provided as part of this project that shall form the basis of the Consultant's cost proposal. The Consultant shall identify in the proposal any other services, tasks, steps, or phases that the Consultant proposes to provide as part of this project. The Consultant shall also identify any mandatory or required task that will need to be performed that may not already be in this Scope of Work.

Cost Savings Item

The Public Kick-Off Meeting and the interim meeting proposed in Section 2.2.3.B. below could be combined as Lamont has a preliminary Septic Limitations Map and other data ready for presentation.

A. The Consultant shall proceed and cooperate with CWC, DEP, its contractors and subcontractors with respect to all program work.

Deliverables:

- *At CWC's discretion, attend one (1) Public Kick-off Meeting with the Conesville Town Board, residents, and CWC at the beginning of the Study Phase to introduce the program and project team. (As the Public Kick-Off Meeting was not mentioned in the Project Scope, it has been included in the Contingency line item (see Section II. Fees, Task 11)).*
- *Project Management and Administration, including budget review and updates, Lamont team meetings, and ongoing communications (see Section II. Fees, Task 9).*

B. Identify and evaluate alternate areas of service for Community Wastewater Management. This will include:

1. Meet with the communities to obtain input on areas along and adjacent to the areas to be potentially serviced.

Deliverable:

- *1 Interim meeting with the Conesville Town Board to review the preliminary findings and to get input on the Service Area (see Section II. Fees, Task 1).*

2. Meet with DEP and local Code Enforcement Officer to determine septic failures and replacement data.

Deliverable:

- *We propose calling DEP and the local Code Enforcement Officer to obtain this information, as this has been successful on past projects (see Section II. Fees, Task 1).*

3. Meet/contact the New York State Department of Transportation (NYSDOT) and County Highway Superintendent to verify ability to run infrastructure within State and County road rights-of-way. Identify issues/conditions that would have to be addressed in the construction and operation of infrastructure in State and County right-of -ways.

   Deliverable:
   - *Phone calls with NYSDOT and County Highway Superintendent (see Section II. Fees, Task 1).*

C. Develop GIS (Geographic Information System) Data layers for the identified study areas and detail limiting site conditions which may include lot size, structures, soils, groundwater depth, DEP/DOH non-compliance issues, wetlands, floodplain, required setbacks (wells, property line, etc.), public water district.

Deliverable:
- *Septic Limitations Map including the GIS Data layers (see Section II. Fees, Task 1).*

D. Subcontract the services of a qualified geotechnical testing type firm to obtain soil borings, percolation tests and deep test pits in areas of proposed infrastructure routes or at proposed sites of leach fields to verify existing subsurface conditions. Include an allowance, using unit rates for type of soil test used.

Lamont Engineers' proposed approach for geotechnical testing is described in the Geotechnical Protocol in Section VIII. Other Information, Tab E.

We propose the following initial Stage 1 site testing for the Hamlet of West Conesville CWMP during the Study Phase: four (4) percolation tests and two (2) deep test pits (one set of two (2) perc tests and one (1) deep test pit on each of two (2) soil types on two (2) SMD lots, or one community subsurface system site). The deep test pits would also include the installation of groundwater elevation monitoring wells so that groundwater fluctuations could be observed throughout the course of the study. Depending on the results of the Stage 1 testing, Stage 2 and Stage 3 testing may be required by NYCDEP. We recommend that Stage 2 and Stage 3 testing (if required) be performed in the Pre-Construction Phase of the project and that the testing follow the Field Work Protocol for a Community Subsurface System Site (see Section VIII. Other Information, E. Geotechnical Protocol). (Nonetheless, the cost proposal for these stages of geotechnical testing is included in the Allowance section of our fee proposal in Section II. Fees.)

Deliverable: (see Section II. Fees, Geotechnical Allowance)
- *Stage 1 Site Testing including four (4) percolation tests and two (2) deep test pits.*
- *Install groundwater elevation monitoring well in deep test pit when it is being backfilled.*
- *Two (2), fifteen (15) foot deep soil borings per Community, if CWC deems necessary during the Study Phase.*

E. Prepare a cost estimate to design and construct infrastructure along proposed routes, as applicable.

Deliverable:

- *Cost Estimate for the West Conesville CWMP (see Section II. Task 3).*

F. Compare and evaluate alternate routes and alternate service areas. Evaluations should include at a minimum, the following factors:

1. Number of properties serviced
2. Length of route for proposed infrastructure, if applicable.
3. Total cost to install lines and treatment systems, as applicable
4. Subsurface conditions along route
5. Timeframe to complete
6. Permits/approvals needed
7. Potential issues/problems
8. Identify additional funding sources or grant potential of project
9. Other factors

Deliverable:

- *Evaluation of alternate routes and service areas (see Section II. Fees, Task 4).*

G. Prepare a map showing location of each proposed service area.

Deliverable:

- *Proposed Service Area Map (see Section II. Fees, Task 5).*

H. Prepare a questionnaire and interview property owners in the proposed area detailing realistic options and anticipated costs. Determine resident and business interest as well as potential market value of undeveloped land. Develop a cost benefit analysis of the proposed project.

Deliverables (See Section II. Fees, Task 6):

- *Questionnaire and property owner interviews*
- *Potential market value of undeveloped land*
- *Cost benefit analysis*

I. Prepare and submit to the individual towns, the CWC, and the DEP a letter report summarizing the Engineer's findings and recommendations on the preferred service areas and recommended wastewater management plan. This report should include an estimate to complete engineering design and oversight, construction and operation and maintenance.

Deliverables:

- *Letter Report (copies and digital copies to be provided as needed) (see Section II. Fees, Task 8).*
- *Development and presentation of overall Master Plan and Block Grant amounts. At CWC's discretion, attend one (1) Meeting with the Conesville Town Board to present the Final Letter Report. (As this meeting was not included in the Project Scope, it has been included in the Contingency line item (See Section II. Fees, Task 11)).*

4. There are two sub-categories in the Study Phase for wastewater management plans, the two primary project options are *Community Septic System(s)* and *Septic Maintenance Districts.* The conditions for a third possible option, a treatment plant, are described in the Introduction of the RFP.

   A. *Community Septic System(s)***,** the Study Phase shall:

   1. Identify possible sites for the construction of the community septic system(s);
   2. Determine its feasibility by investigating available land and performing soil tests, percolation rate tests, and a groundwater mounding analysis;
   3. Estimate the design and construction costs for each community septic system identified, including costs for the acquisition of necessary property, as well as legal and administrative fees;
   4. Propose a draft annual operation and maintenance plan so that the community septic system(s), and the related sewerage collection system, continues to function properly for its projected useful life;
   5. Project an annual budget for the costs of such operation and maintenance with a proposal for assessing charges to property owners (residential, business and municipal) within the proposed service area. Develop a sewer use fee schedule to provide adequate funding to implement such operation and maintenance plan;
   6. Propose a project schedule with milestones for the design and construction.
   7. Propose a plan for connecting existing houses and other structures within the service area to the community septic system(s), and estimate the costs, if any, to be paid for pursuant to the Participating Community Agreement; and
   8. Identify any and all necessary permits and regulatory requirements that will need to be obtained or satisfied as a condition prior to the design, construction, installation, and operation and maintenance, including, compliance with the State Environmental Quality Review Act.

      Deliverable:
      - *Community Septic System Option Evaluation (see Section II. Fees, Task 8).*

   B. *Septic Maintenance District*, the Study Phase shall:

   1. Determine project's technical feasibility;
   2. Propose a plan for pump outs and inspections of subsurface sewage treatment systems located within the district;
   3. Propose a project schedule with milestones for the formation of the district and construction;
   4. Estimate the costs to establish operate and maintain such district, including legal and administrative fees;
   5. Estimate, to the extent feasible, the number of failing septic systems and substandard systems located within the district, and the costs of design and construction to rehabilitate, replace or upgrade the failing and substandard systems;
   6. Propose a draft annual operation and maintenance plan so that subsurface sewage treatment systems located within the district, whether found initially to be functioning properly or whether rehabilitated, repaired or upgraded by the

district following inspection, continue to function properly for the length of their useful life; and

7. Project the annual operation and maintenance costs of such plan and propose an amount for the Septic District Maintenance Allocation.

Deliverable:

- *Septic Maintenance District Option Evaluation (see Section II. Fees, Task 8).*

5. The CWC and the Consultant shall establish a project schedule which is a general outline for project development addressing public information and participation activities; special use district formation actions to include public notices, municipal board resolutions, public hearings and referendums or petitions, as appropriate; SEQR, SHPO, DEP, DOH, DEC regulatory review, and permit actions associated with wetlands, road or stream crossings, and other needed permits; proposed schedule for project design, bidding, construction and development of an Operation and Maintenance Plan.

Deliverable:

- *Project Schedule (see Section II. Fees, Task 9).*

SECTION I. SCOPE OF SERVICES
C. RFP SECTION 2.3 – SECTION 2.6

2.3 PRE-CONSTRUCTION PHASE

We understand that on completion of the Study Phase, there will be a change order(s) for the Pre-Construction and Construction Phase engineering services. At that time, we will be very willing to enter into price negotiations for our services, as has been shown recently with our willingness to negotiate our price for completing the Lexington CWMP re-design services which were as a result of property acquisition.

This phase shall begin after the DEP and the CWC approve a planned Project(s) and associated Block Grant Amount(s). The Pre-Construction Phase shall consist of the following items completed by the Town(s) and Consultant in cooperation with the CWC, and is scheduled to be completed for each approved Project:

1. Design final engineering plans for all approved Project(s) for each Participating Community consisting of complete plans and specifications for the planned projects, including, without limitation, complete final design, final cost estimate, bid documents for construction of the Project(s), all required regulatory approvals for the Project(s) under all applicable regulations (except those customarily obtained by the construction contractor during the course of construction);

   Lamont understands that this task will also include completing SEQR prior to the district creation, as well as submitting a Facility Plan, 65% design and 95% design to DEP and finalizing an Operation and Maintenance Agreement between the Town and DEP in order for the project to move into the Construction Phase.

2. Prepare a Map, Plan and Report for the creation of a Community Wastewater Service District in accordance with and meeting the requirements of New York State Town Law §209-d and the requirements of DEC, DEP, and New York State Department of Audit and Control for the legal formation of each wastewater management district for the purpose of collecting rates and charges, if necessary, on district users to operate and maintain the project. In each Map, Plan and Report the Consultant shall:

   A. Describe the boundaries of the proposed district in a manner sufficient to identify the lands included therein as in a deed of conveyance.
   B. Detail the improvements proposed.
   C. Detail the maximum amount of the proposed expenditure for the improvement.
   D. Estimate the cost of hook-up fees, if any, and the cost of the district to the typical property and if different, for the typical one or two family home.
   E. Describe the proposed method of financing to be employed.
   F. Assist in filing with the Town Clerk's office for public inspection the Map, Plan and Report describing the same area, specifying the time and the place where the Town Board will meet and hold a public hearing to hear all persons interested in the subject.
   G. State the maximum amount to be expended annually for such services.

3. Meet with the Individual Communities, as needed, to obtain input and direction on the form and content of the Map, Plan and Report.
4. The Map and Plan for the Community Wastewater Service District shall be consistent with, as far as possible, a comprehensive plan for wastewater developed pursuant to Section 17-1901 of the NYS Environmental Conservation Law.

5. If the Report shall contain recommendations for the establishment of two or more zones of assessment within the District, the Map and Plan shall show the boundaries of each zone and the estimated initial allocation of the cost of construction for the facilities recommended to be charged to each of the zones.
6. Prepare a draft final report that addresses all the requirements of Article 209-d of NYS Town Law and the requirements of the individual communities. Submit twenty (20) copies of each draft final report to CWC for distribution to the Communities, and DEP.
7. Present the Project at a Town public hearing to explain the Project and determine public interest. Each of the individual communities as required by §209-d of NYS Town Law, will hold a Public Hearing during this Phase.
8. Prepare and submit a Final Report that includes the final Plan and Map for the creation of the Community Wastewater Service District. Submit fifty (50) copies of the final Report to CWC.
9. Present findings of Final Report to each Town Board.
10. If the project includes a Community Septic System, the Participating Community must adopt a sewer use law that is at least as stringent as the model sewer use law then in use by New York State Department of Environmental Conservation to determine eligibility of a project for financing under the New York State Revolving Loan Fund Program; The Sewer Use Law shall be prepared by the Consultant for the Participating Communities Town Board(s).
11. Acquisition of land options, on behalf of the Participating Community, for all property interests, including easement interests, necessary for the completion, operation and maintenance of the project;

    Land acquisition begins during the site identification and testing phase with a willingness to sell /access letter sent to property owners in the Hamlets. Lamont suggests continuing the land acquisition process and obtaining property as soon as the Pre-Construction Phase has started.

12. Assist the Town in management of the bid process on behalf of the Participating Communities for the construction of the Project(s);
13. Revision of the Final Engineering Plan, subject to CWC and DEP approval, if the bid(s) received for the Construction Phase exceed available funds under the Block Grant Amount for the Participating Community;
14. Revision, if necessary, of the final annual operation and maintenance plans and budgets developed during the Study Phase, as well as revision, if necessary, of the schedule.
15. A written commitment by the Participating Community in the form of a Town Board resolution to complete the Construction Phase; and
16. An accounting of the remaining Block Grant(s) balance(s) for each Participating Community.
17. If the project includes a Community Septic System, adoption by the Participating Community of an Operation and Maintenance contract with the DEP.

2.4 CONSTRUCTION PHASE

This phase shall begin only after the CWC and the DEP have received a written commitment from the Participating Community that it will complete the Construction Phase, in accordance with the Participating Community Agreement. During the Construction Phase, the Consultant shall facilitate, in cooperation with the Participating Community and the CWC, performance of the following work:

1. Assist the Participating Community in awarding contracts based upon bids received for construction of the project, in conformance with the Final Engineering Plan;

2. For Septic Maintenance Districts, require that during the Construction Phase an initial pump-out and inspection will take place and, if necessary, the rehabilitation, replacement or upgrade of failing septic or substandard system as detailed in the Final Engineering Plan;
3. Assist in processing invoices for the disbursement of Program Funds.
4. Conduct construction inspection and oversight at the Project sites.

Lamont understands that this Phase will also include the dirty water start-up, clean water start-up, Functional Completion submittal to DEP, contract close-out, and completion of as-built drawings and an Operation and Maintenance Manual.

2.5 Operation and Maintenance Phase (per Section 2.1 Assigments)

Lamont understands this phase to include:

- *Assist with operator training.*
- *Finalize Operation and Maintenance Budget, submit to DEP for approval*
- *Other tasks as determined by CWC.*

2.6 PROPOSED TIMETABLE

Pre-Bid Meeting	**Wednesday, April 9, 2014, 10 AM**
Proposals Due:	Friday, May 2, 2014, 2 PM Consultant
Hired:	Friday, June 6, 2014

	First two	Remaining three
Complete Study Phase:	June 30, 2015	June 30, 2017
Complete Pre-Construction Phase	June 30, 2016	June 30, 2018
Complete Construction	June 30, 2018	June 30, 2020

Lamont will ensure that the Pre-Construction and Construction Phase schedules are met. If desired by CWC, we will accelerate the schedule to complete the Study Phase for all five (5) communities in ten (10) months from the date of contract execution. This will allow CWC to evaluate the project program as a whole in relation to the allotted Program Funds to complete all five (5) CWMPs.

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October 16, 2015

Mr. Alan Rosa
Executive Director
Catskill Watershed Corporation
PO Box 569
Main Street
Margaretville, New York 12455

RE: Request for Amendment to the
Community Wastewater Management Program III (CWMP III) Consultant Agreement of July 28, 2014

Dear Mr. Rosa:

We write to request an amendment to our engineering contract for the Community Wastewater Management Program III (CWMP III) Consultant Agreement for the Study Phase Engineering Services.

The approach utilized successfully in the previous eight (8) CWMP projects, based on the 2004 and 2014 CWMP Requests for Proposals (RFPs), is summarized as follows:

1. Based on the fact that the on-site septic system alternative offers the most cost effective solution, both in capital costs and in operations and maintenance (O&M) costs, for rural community wastewater management, the Septic Maintenance District (SMD) is the first option considered in the study process. This is done through an analysis of constraining factors for on-site systems as illustrated on a septic limitations map for the community. If (and only if) lot size, soil characteristics, stream offsets and other constraining physical community-specific site attributes are favorable enough to allow utilization of an SMD with a low level of risk of failure, then the SMD is recommended, and study work is concentrated on development of the details of the SMD including concept design, capital cost estimates, O&M cost estimates and projected user fees. No work on other options is pursued.

2. On the other hand, if the risk of failure for an SMD, as expressed in the number and percentage of lots in the community that cannot support an adequate, up-to-standard on-site system (even without the normally required reserve area), then the SMD is not recommended, and the detailed study work for the SMD is not done, and the study instead progresses to the study of the community septic system option, which is the second most cost-effective solution. This is done primarily through a search for a suitable site for a community septic system, preferably owned by a willing seller (or condemnable by the Town). If such a suitable site is found, then the community septic system is recommended and study work is concentrated on development of the details of the community septic system including concept design, capital cost estimates, O&M cost estimates and projected user fees. No more work on other options is pursued.

☑ PO Box 610
Cobleskill, NY 12043
Tel: 518-234-4028
Fax: 518-234-4613

www.lamontengineers.com
lamont@lamontengineers.com

☐ PO Box 486
Roxbury, NY 12474
Tel: 607-326-3341
Fax: 607-326-3346

3. If a suitable site cannot be found and obtained, then the community septic system cannot be recommended, and the detailed study work for that option is not done, and the study progresses to the study of a wastewater treatment plant (WWTP) option. As a WWTP is relatively easy to site, this effort involves identifying and comparing suitable sites, reviewing receiving stream requirements, and developing the details of the WWTP including concept design, capital cost estimates, O&M cost estimates and projected user fees. No more work on other options is pursued.

The need for a study scope change first began after draft reports had been prepared and at the time of a request for access to a NYC-owned land with a determination by NYCDEP and CWC that the cost of community septic systems (or wastewater treatment plants) for the last five (5) CWMP communities would be unreasonably high on a per household or per property basis, running into the $150,000 to $180,000 per property range as revealed in our draft study. The study assignment at that point changed from the previous approach to an effort to show what could be done with on-site or small cluster systems in all five (5) communities by conceptual design of engineered alternative on-site systems for sub-standard lots, and development of the details of the SMD including concept design, capital cost estimates, O&M cost estimates, and projected user fees.

In addition, an SMD may not accommodate future growth or changes of use. Under the New York City Watershed Regulations, a substantial alteration to a building's use may require the upgrade of a septic system to current standards for the new use. Most lots in the hamlets cannot support a fully compliant septic system for the current use, and certainly cannot accommodate a septic system for a different use. As a result, an SMD may not allow for future growth of a community. Where local zoning and land acquisition exemptions allow for growth and commercial businesses in the hamlets, an SMD may result in only the current uses being sewered, with no ability to provide for change or growth as provided for in the Watershed MOA Paragraph 122.

In the current situation, it will be necessary in the Study to develop three (3) options fully in order to provide the stakeholders and decision-makers a full understanding of the advantages and disadvantages as well as the detailed costs of more than one alternative system.

Our amendment addresses this issue by changing the scope of the study to include full development of three (3) options – the SMD, the community septic, and a WWTP rather than one (1) option. We have made a preliminary determination that this affects only West Conesville, Halcottsville, and New Kingston.

Also, we were directed by the Catskill Watershed Corporation to provide separate cost estimates for community system options where pretreatment may be required, and to revise the draft reports accordingly.

Please see the Scope of Work, Manpower and Cost Estimate for this work attached. ~~$65,600~~ $40,240

The original agreement is $213,955. The total request for this amendment is ~~$65,600~~ $40,240. This amendment would make the total Study Phase Budget ~~$279,455~~ $254,195

If you have any questions or comments, please do not hesitate to call me.

Sincerely,

Henry Lamont

Henry Lamont, P.E.
Principal Engineer
Lamont Engineers

cc: Timothy Cox, Corporate Counsel, CWC
John Mathiesen, Environmental Engineering Specialist, CWC
Judy Pangman, Lamont Engineers
Mike Harrington, Lamont Engineers

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CWMP III Amendment #1

Consultant Fees for Study Phase Amendment for Revisions to Recommend SMD and Cluster Systems

Catskill Watershed Corporation

CWMP III's - Combined Total			Principal Engineer HL $145		Principal Engineer MDH $145		Project Manager JP $108		Project Manager CY $108		Project Engineer NW $87		Sr. Eng. Tech MKS $81		Engineering Tech MVC $72		Jr. CAD Operator MB $54		Admin Asst KS $60		Subs	DE's	Total
			Hours	Total	Hours	Total																	
1. Expanded SMD			12	$1,740	12	$1,740	60	$6,480	180	$19,440	0	$0	60	$4,860	0	$0	0	$0	0	$0	$0	$0	$34,260
2. WWTP Option?			12	$1,740	12	$1,740	24	$2,592	36	$3,888	120	$10,440	60	$4,860	0	$0	0	$0	0	$0	$0	$0	$25,260
3. Pretreatment		Separate Pretreatment in Reports	4	$580	0	$0	44	$4,752	0	$0	0	$0	8	$648	0	$0	0	$0	0	$0	$0	$0	$5,980
Total Amendment (Not to Exceed)			28	4060	24	3480	128	13824	216	23328	120	10440	128	10368	0	0	0	0	0	0	0	0	$65,500

$0.00

$40,240

Notes:
1. No changes to Shandaken or Claryville options (other than addressing pretreatment for Shandaken)

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CWMP III Amendment #1

Consultant Fees for Study Phase Amendment for Detailed SMD and Cluster Analysis

Catskill Watershed Corporation

Shandaken CWMP			HL	$145	MDH	$145	JP	$108	CY	$108	NW	$87	MKS	$81	MVC	$72	MB	$54	KS	$60	Subs	DE's	Total
			Hours	Total	Hours	Total																	
1. SMD & Comm System																							
2. WWTP Option																							
3. Pretreatment Revisions to Reports		Separate Pretreatment in Reports and Cost Estimates	2	$290		$0	26	$2,808		$0			4	$324		$0		$0		$0			$3,422
Total Amendment (Not to Exceed)			2	290	0	0	26	2808	0	0	0	0	4	324	0	0	0	0	0	0	0	0	3422

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CWMP III Amendment #1

Consultant Fees for Study Phase Amendment for Revisions to Recommend SMD and Cluster Systems

Catskill Watershed Corporation

West Conesville CWMP			HL	$145	MDH	$145	JP	$108	CY	$108	NW	$87	MKS	$81	MVC	$72	MB	$54	KS	$60	Subs	DE's	Total
			Hours	Total	Hours	Total																	
1. SMD & Comm System			4	$580	4	$580	20	$2,160	60	$6,480		$0	20	$1,620		$0		$0		$0			$11,420
~~2. WWTP Option~~			~~4~~	~~$580~~	~~4~~	~~$580~~	~~8~~	~~$864~~	~~12~~	~~$1,296~~	~~40~~	~~$3,480~~	~~20~~	~~$1,620~~		~~$0~~		~~$0~~		~~$0~~			~~$18,420~~
3. Pretreatment Revisions to Reports		Separate Pretreatment in Reports and Cost Estimates		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
Total Amendment (Not to Exceed)			8	1160	8	1160	28	3024	72	7778	40	3480	40	3240	0	0	0	0	0	0	0	0	~~19640~~

-8000

$11,420

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CWMP III Amendment #1

Consultant Fees for Study Phase Amendment for Revisions to Recommend SMD and Cluster Systems

Catskill Watershed Corporation

Claryville CWMP			HL	$145	MDH	$145	JP	$108	CY	$108	NW	$87	MKS	$81	MVC	$72	MB	$54	KS	$50	Subs	DE's	Total
			Hours	Total	Hours	Total																	
1. SMD & Comm System																							
2. WWTP Option																							
3. Pretreatment Revisions to Reports		Separate Pretreatment in Reports and Cost Estimates		$0		$0		$0		$0				$0		$0		$0		$0			$0
Total Amendment (Not to Exceed)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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CWMP III Amendment #1

Consultant Fees for Study Phase Amendment for Revisions to Recommend SMD and Cluster Systems

Catskill Watershed Corporation

Hallcottsville CWMP			HL	$145	MDH	$145	JP	$108	CY	$108	NW	$87	MKS	$81	MVC	$72	MB	$54	KS	$60	Subs	DE's	Total
			Hours	Total	Hours	Total																	
1. SMD & Comm System			4	580	4	580	20	2160	60	6480		0	20	1620		0		0		0			
~~2. WWTP Option~~			~~4~~	~~580~~	~~4~~	~~580~~	~~8~~	~~864~~	~~12~~	~~1296~~	~~40~~	~~3480~~	~~20~~	~~1620~~		~~0~~		~~0~~		~~0~~			~~$11,420~~
3. Pretreatment Revisions to Reports		Separate Pretreatment in Reports and Cost Estimates	2	$290		$0	18	$1,944		$0			4	$324		$0		$0		$0			$2,558
Total Amendment (Not to Exceed)			10	1450	8	1160	46	4968	72	7776	40	3480	44	3564	0	0	0	0	0	0	0	0	~~22398~~

~~$8,420~~ + 0.00

$13,978

Lamont Engineers
ENGINEERS • PLANNERS • FACILITY OPERATIONS

CWMP III Amendment #1

Consultant Fees for Study Phase Amendment for Revisions to Recommend SMD and Cluster Systems

Catskill Watershed Corporation

New Kingston CWMP			HL	$145	MDH	$145	JP	$108	CY	$108	NW	$87	MKS	$81	MVC	$72	MB	$54	KS	$60	Subs	DE's	Total
			Hours	Total	Hours	Total																	
1. SMD & Comm System			4	580	4	580	20	2160	60	6480		$0	20	1620		0		0		0			
~~2. WWTP Option~~			~~4~~	~~580~~	~~4~~	~~580~~	~~8~~	~~864~~	~~12~~	~~1296~~	~~40~~	~~3480~~	~~20~~	~~1620~~		~~0~~		~~0~~		~~0~~			~~$11,420~~
3. Pretreatment Revisions to Reports		Separate Pretreatment in Reports and Cost Estimates		$0		$0		$0		$0				$0		$0		$0		$0			$0
Total Amendment (Not to Exceed)			8	1160	8	1160	28	3024	72	7776	40	3480	40	3240	0	0	0	0	0	0	0	0	~~19340~~

~~$11,420~~ $0.00

$11,420

Exhibit B

Participants List

Latest revision: 12/23/15

List of Participants / Hamlet of West Conesville
Conesville (T) / Schoharie (C)
Catskill Watershed Corporation
Community Wastewater Management Program III

I. Catskill Watershed Corporation
1st – Tuesday – 1:00 PM - CWC Board Meeting – 15 day right to object
PO Box 569
905 Main Street
Margaretville, New York 12455
Phone: (845) 586-1400
Fax: (845) 586-1401
Website: www.cwconline.org

1. Alan Rosa, Executive Director
Office Cell: (845) 532-6880
Home: (845) 586-3983
Personal Cell: (845) 399-9885
alrosa@cwconline.org

2. John Mathiesen, Environmental Engineering Specialist
Office Extension: 308
Office Cell: (845) 399-5144
jmathiesen@cwconline.org

3. Timothy Cox, Corporate Counsel
Office Extension: 304
Office Cell: (845) 853-6079
timothycox@cwconline.org

4. Barbara Puglisi, Economic Development Director
Office Extension: 317
puglisi@cwconline.org

5. Jim Martin, Finance Director
Office Extension: 315
jimmartin@cwconline.org

II. Town of Conesville
1306 State Route 990V
Gilboa, NY 12076
Phone: (607) 588-7211
Fax: (607) 588-6832
E-mail: conesvilletownclerk@yahoo.com

Population: 734
Fed ID: 14-6002140

Board Meetings:
2nd Wednesday of month at 7:30 pm
Hours: M, W, Thurs 9-2pm
Friday: 4 – 7 pm Sat 10 to noon

Officials:

1. William Federice, Supervisor
   Email: federicebill@gmail.com
   Home Phone: (607) 588-8170
   Cell: (607) 353-2110

2. Nancy Sweatman, Town Clerk/Registrar Hours: M,W 9 – 1, F 4-7 S 8-noon
   Email: conesvilletownclerk@yahoo.com
   Home Phone: (607) 588-7391
   Work Phone: (607) 588-7211

3. David Porter, Superintendent of Highways
   Email: porter52552@gmail.com
   Phone: (607) 588-6663 (office/fax)
   Home: (607) 588-6134

4. Town Council
   a. Kelly Smith (re-elected effective 1/2016)
      Phone: (607) 588-6177
   b. Robert Proudman
      Phone: (607) 588-9469
   d. John Sweatman
      Phone: (607) 588-7391
   e. Kraig Nolte (term starts 1/2016)
   f. Paul Tubiolo (term expires 12/2015)
      Phone: (607) 588-7737

5. Building Inspector
   Ronald Barry
   Phone: (607) 588-9491

6. Town Historian
   Beatrice Mattice
   Phone: (607) 588-9487

7. Assessor
   Mark Los
   Phone: (607) 652-2241

8. Town Justice
   David Merwin, Jr.
   Phone: (607) 588-7211

9. Planning Board
   a. Howard Mattsson

b. Eric Dahlberg
c. Jeffrey Laban
d. Thomas Buel
e. Stephen Young

10. Attorney for Town
Michael West
2668 State Route 7 – Suite 12
Cobleskill, New York 12043
Phone: (518) 296-8844
Fax: (518) 296-8855

III. Schoharie County

1. Schoharie County Planning & Development Agency
276 Main Street – Suite 2
PO Box 396
Schoharie, New York 12157
Phone: (518) 295-8770
Fax: (518) 295-8788

a. Alicia Terry, Senior Planner
Email: aliciaterry@co.schoharie.ny.us
b. Shane Nickle, Senior Planner
Email: shanenickle@co.schoharie.ny.us
c. Brian Fleury, GIS Specialist
Email: brianfleury@co.schoharie.ny.us
d. Zachary Thompson, Planner
Email: zacharythompson@co.schoharie.ny.us

2. Schoharie County Public Works
Dan R. Crandell, P.E., Commissioner/Administration
John DeMis, Deputy Commissioner/Engineering
Ben Cooper, Public Works Administrator
Phone: (518) 295-2330
Fax: (518) 295-2331
PO Box 249
Schoharie, New York 12157

3. Schoharie County Department of Economic Development
William Cherry, Economic Development Coordinator
284 Main Street – 1st Floor – PO Box 9
Schoharie, New York 12157
Phone: (518) 295-8386
Fax: (518) 295-8364

4. Schoharie County Real Property Tax Services
   Marjorie Troidl, Director
   284 Main Street – 1st Floor, PO Box 308
   Schoharie, New York 12157
   Phone: (518) 295-8349
   Fax: (518) 295-8486

5. Schoharie County Soil & Water Conservation District
   Stephen Hoerz, District Manager
   Peter Nichols, Stream Program Manager
   173 South Grand Street, Suite 3
   Cobleskill, New York 12043
   Phone: (518) 823-4535
   Email: district@schohariesoilandwater.org

IV. Engineer / Project Attorney

1. Lamont Engineers, P.C.
   548 Main Street
   PO Box 610
   Cobleskill, New York 12043
   Phone: (518) 234-4028
   Fax: (518) 234-4613
   e-mail: generally 1st initial + last name@lamontengineers.com

   a. Michael D. Harrington, P.E., Principal Engineer, Principal-in-Charge
   b. Henry Lamont, P.E., Principal Engineer and Client Manager
      (518) 234-2757 (H)
      (518) 231-3052 (cell)
   c. Judy Pangman, Project Manager, Overall CWMP Project Manager
   d. Chris Yacobucci, Project Manager, Collection and Treatment Systems, Wetlands Delineation
   e. Jeff Laban, Project Manager
   f. Jodie Barker, P.E., Project Engineer, Stormwater, Structural
   g. François Vedier, P.E., Principal Engineer, Hydraulics, Pumping and Process
   h. Maureen Seymour, Senior Engineering Technician, Collection System Design-Drafting
   i. Debi Christman, Administrative Assistant, Reports, Specifications, Project Management
   j. Mark Christman, Engineering Technician
   k. Nick Warner, Assistant Project Engineer

2. Young, Sommer ... LLC
Attorneys at Law
Executive Woods
5 Palisades Drive
Albany, New York 12205
Phone: (518) 438-9907
Fax: (518) 438-9914

a. Kevin M. Young, Attorney, ext. 225,
Email: kyoung@youngsommer.com
b. Betsy Wykes
Email: bwykes@youngsommer.com

V. Regulatory, Approval and Permitting Agencies

1. NYCDEP - New York City Department of Environmental Protection
Bureau of Water Supply, Quality & Protection
Address: 71 Smith Avenue
Kingston, New York 12401

Web Site: http://www.nyc.gov/dep

a. Tom Stalter, Project Manager, West of Hudson Comm. Plng.
Watershed Planning & Community Affairs
Bureau of Water Supply, Quality & Protection
Phone: (845) 340-7833
Fax: (845) 338-1371
Email: tstalter@dep.nyc.gov

Jeff Graf
Phone: (845) 340-7808
Email: jgraf@dep.nyc.gov

b. Brenda K. Drake, P.E., Supervisor
WOH Engineering Design Review Group
Bureau of Water Supply, Quality & Protection
Phone: (845) 340-7215
Fax: (845) 338-1371
Email: bdrake@dep.nyc.gov

Chris Costello, P.E., Supervisor
Phone: (845) 340-7235
Fax: (845) 338-1371
Email: ccostello@dep.nyc.gov

Joe Fabiano, Regulatory Review & Engineering
Phone: (845)-340-7848
jfabiano@dep.nyc.gov

Joe Damrath, Environmental Analyst, Stormwater & Wetlands
Phone: (845) 340-7234
Email: jdamrath@dep.nyc.gov
Kathleen Steen, Secretary -- (845) 340-7230

2. NYSDEC- New York State Department of Environmental Conservation
www.dec.state.ny.us

a. Martha Bellinger
Deputy Regional Permit Administrator
Phone: (607) 652-7741
Email: mabellin@gw.dec.state.ny.us

NYSDEC
Region 4 Environmental Permits
65561 State Highway 10, Suite 1
Stamford, New York 12167
Fax: (607) 652-2342

OR

NYSDEC Region 4 Office
1130 North Westcott Road
Schenectady, New York 12306
Phone: (518) 357-2069 or (518) 357-2234 Sue = Secretary
Fax: (518) 357-2398

b. Ken Kosinski, P.E.
NYSDEC Central Office
625 Broadway
Albany, NY 12233-3506
Phone: (518) 402-8110
Fax: (518) 402-9029
Email: kakosins@gw.dec.state.ny.us

3. Schoharie County Department of Health

4. New York State Department of Transportation
   Bob Richter, Resident Engineer
   10 Mineral Springs Road
   Cobleskill, New York 12043
   Phone: (518) 234-3411

5. New York State Department of Agriculture and Markets
   Darrel J. Aubertine, Commissioner
   10B Airline Drive
   Albany, NY 12235
   Phone: (800) 554-4501

6. United States Army Corps of Engineers
   P.O. Box 209
   Troy, NY 12182

R:\Participant Lists\West Conesville

Exhibit C

Strategic Wastewater Planning Study: A Report of the New Sewage Treatment Infrastructure Program for Communities 8-22, Chapter 6, Report for Community #19
Hamlet of West Conesville

Strategic Wastewater Planning Study:
A Report of the New Sewage Treatment Infrastructure Program
For Communities 8 - 22
December 2000

Chapter 6
Report For Community # 19
Hamlet of West Conesville

Prepared for the
New York City Department of
Environmental Protection and the
Identified Communities

Prepared by the
New York State
Environmental Facilities Corporation

CHAPTER 6: REPORT FOR COMMUNITY #19, HAMLET OF WEST CONESVILLE

List of Tables, Figures, and Appendices

Chapter 6 Report for Community #19, Hamlet of West Conesville

Overview

This Chapter characterizes the existing conditions found within the Hamlet of West Conesville. It consists of a general description of the area, the existing wastewater problems and needs, a preliminary service area and associated wastewater flow, a range of potential solutions to consider in solving the existing need, and a range of costs for those solutions. Portions of the information presented below were based on the 1990 Census. Since the Census data is now somewhat outdated, it may be necessary to update this information in order to demonstrate project eligibility for certain funding sources.

Description of Area

The Hamlet of West Conesville can be found in Schoharie County within the Town of Conesville on 990V. The Town of Conesville is sparsely developed. The Hamlet of West Conesville is situated to the east and roughly a mile from the Schoharie Reservoir. The main street (990V) is physically defined with residential units in a linear fashion. There is one intersection which is 990V and County Route 59 (Bull Hill Road).

Population

According to the 1990 Census, the population count for the Town of Conesville was 684. The Hamlet of West Conesville is not depicted in the 1990 Census as a Census Designated Place (CDP) which would break down information from the Town level to the Hamlet level. However, based upon a house count within the Preliminary Service Area and an assumption of 2.6 residents per household, the estimated population for this area is 73 (See **Figure 6.A** for **Preliminary Service Area**).

Housing

The 1990 Census reports a total of 558 housing units for the Town of Conesville. The Hamlet of West Conesville does not have a public water system and disposes of wastewater onsite.

The housing count performed for this community consists of an estimated 28 residential units, 1 commercial/institutional unit, and 1 vacant structure within the Preliminary Service Area (See **Table 6.1 Wastewater Flow Estimate**).

It may also be helpful for the local government to identify a total average monthly cost associated with running a house within the potential service area (particularly the winter months due to heating costs). While this information was not available at the time of this report, it may be useful in determining the affordability of certain wastewater alternatives or technologies.

Local Economy

The median household income for the Town of Conesville was $22,407 in 1989 dollars. At the time of this report sales tax totals for the Hamlet had not been obtained, therefore, the dollar amount spent within the Hamlet or Town per capita could not be described. However, it is suggested that this information be generated to show an approximation of how many dollars were spent concurrently within the Town of Conesville and the Hamlet of West Conesville and what type of goods and services were purchased. The time of year should also be noted in order to gauge the impact that the tourism industry might have on the community.

The business present within the Hamlet of West Conesville is an auto repair shop, however, just outside of the hamlet area to the west are two restaurants. These businesses may be indicators of potential complimentary niches to consider for economic growth. The majority of workers travel to their place of employment by personal vehicle. This may result in dollars being spent outside the local economy on their way to and from work. The lack of public services in this hamlet may or may not limit future economic growth due to its nature being primarily agricultural and residential.

Land Use

The land use pattern within the Hamlet of West Conesville has been developed in a linear fashion along it's main street (990V). The Manor Kill which is a tributary of the Schoharie Reservoir runs to the south and parallel to the hamlet on 990V. There may be impacts to siting a community-wide or cluster system within the hamlet are due to existing agricultural district lands.

The total land area for the Town of Conesville is estimated to be 39 square miles. The predominant land uses are low density residential >10 acres at (31%), vacant land (26%), agriculture (18%), and vacant land (26%). Additionally, the New York Natural Heritage Program's data base was researched and did not identify any threatened or endangered species in the potential service area. The Town of Conesville does not have zoning however administers the New York State Building Code.

The data featured further breaks down the Town of Conesville's acreage by land use category (see next page).

Land Use	Acres	Percentage (rounded to nearest whole percent)
Agriculture	4,136	18%
Low Density Residential (<10 acres)	1,397	6%
Low Density Residential (10 acres +)	7,205	31%
High Density Residential	1	0%
Commercial	6	0%
Government/Institutions	621	3%
Industrial/Manufacturing	15	0%
Vacant Land	6,126	26%
Open Space	4,078	17%

Current Projects and Existing Reports

At the time of this report, investigations did not identify any current or proposed projects for the hamlet or existing reports pertaining to community infrastructure projects. It is suggested that if the community seeks to pursue a wastewater project or other community infrastructure projects that it coordinate its efforts with local, county, regional, state and federal agencies. The placement of sewer lines should be considered in conjunction with future community infrastructure improvements.

Existing Wastewater Problems and Needs

According to the Catskill Watershed Corporation Septic Rehabilitation Program database, one individual septic system was on record as having problems (Parcel 208-1-18).

A preliminary review of the existing conditions and environmental constraints within the Preliminary Service Area indicates there may be wastewater issues. Problems may exist due to the fact that many of the Hamlet properties are located either within 100 feet of a watercourse, or where slopes exceed 15%. There may also be difficulties in identifying suitable subsurface treatment sites due to existing flood plains, particularly in the areas near the Manor Kill. Floodplain determinations and mapping (FEMA) were not available at the time of this report which need to be considered in future disposal site selection activities. Lots in the floodplain are inadequate for the proper functioning or replacement of septic systems and would not be permissible as new development sites under

current regulations. Both individual septic systems and off-site community wastewater systems (community or cluster septic systems) are often considered viable alternatives for communities such as West Conesville. There may be the potential for a "Hybrid" system which would take advantage of the ability to collect, treat, dispose, and manage wastewater systems both individually onsite and collectively off-site.

Conversations with community leaders indicate an interest in pursuing the study of a wastewater project, however, they have also suggested that locally funding such a project would be problematic, and the need to consult with community members. If funding were not available from other sources implementation of a project would be difficult.

Preliminary Service Area and Flow

A site visit was performed to define a potential service area for the Hamlet of West Conesville and to estimate a wastewater flow for the area. Information was collected by NYCDEP prior to the Watershed Memorandum of Agreement and provided to NYSEFC. The preliminary service area defined by NYSEFC nearly matches the community's initial service study area provided to NYSEFC by NYCDEP.

The preliminary service area found in **Figure 6.A Preliminary Service** shows those parcels which might be serviced by a wastewater collection, treatment, and disposal system. The preliminary service area shown in this figure is a starting point which the locality may consider in further defining those lots it wishes to serve with a system. This preliminary service area does not consider a proposed growth scheme for the hamlet, rather it addresses the existing wastewater needs. **Figure 6.Aa Lots with Potential Construction Constraints** also shows those lots which may be constrained due to small lot size (<15,000 sf), proximity to waterways (100 ft buffer), and topography(Slopes>15%).

During the site visit, a structure count was conducted along with identification of any major construction constraints. An estimated wastewater flow was developed for the hamlet using the structure count (number and type of structures in service area), an average of 2.6 individuals per household, and a wastewater generation rate of 100 gpd per capita (consistent with 10 State Standards). Thus an estimated average daily wastewater flow for the Hamlet of West Conesville generated was 9000 gpd (see **Table 6.1 Wastewater Flow Estimate**). This estimate does not take into account peak flows.

Based on the 1990 census the average household size in the Catskill Watershed counties of Greene, Delaware, and Ulster was 2.6. The average household size in the United States was 3.37 in 1950 and has been declining ever since. If

average household size in the coming decades returned to 1950 levels due to economics and cultural trends, a substantial flow increase could result.

Possible Effluent Discharge Points

The Hamlet of West Conesville is in the Schoharie Reservoir watershed. A new surface discharge to the Manor Kill is regulated per Section 18-36(b) of the NYC Watershed Regulations. However, it is preferred that treatment systems for this community be designed to discharge treated effluent subsurface.

Treatment Options for West Conesville

The level of effort and site data available for this study is not intended to conform with engineering reports or facility plans as required by NYCDEP for New Infrastructure Communities 1-7, nor does this work approach the work and documentation of data that would be derived from a consultant. A more in-depth planning study may result in treatment options and estimated construction costs which may differ considerably from what is presented below.

Individual Septic System Treatment Option With a Management Component

To evaluate sewage disposal options for the Hamlet of West Conesville, the first step was to determine the properties that may not be suitable for individual septic systems using tax maps and NYCDEP GIS information. These properties were considered based on their size or other site constraints (proximity to streams, wetlands, steep slopes, or property line setback) per Watershed regulations. A site visit was conducted in order to analyze the existing conditions within the Hamlet. The properties with site constraints are identified on **Figure 6.Aa Lots with Potential Construction Constraints**.

In the mid-1990's preliminary information identified 4 of 40 lots which appear to be unable to meet the required 100 foot setback from streams for new systems as required by NYSDOH regulations. Additionally, 14 of 40 lots were too small to site leach fields with required separations (from wells, lots lines, etc.) required by NYSDOH regulations. Finally, the soil suitability for individual septic systems in this community is generally rated "severe", meaning that the depth to groundwater or percolation rates may limit septic system placement.

A sanitary survey with soil evaluations for every lot in the hamlet will be necessary to determine where septic systems may be suitable. For this community, a likely first goal in planning and implementing a wastewater disposal system would be to investigate the feasibility of low cost appropriate technologies such as septic systems and cluster treatment systems. If these technologies are determined to be unworkable after an investigation, then a

remaining option is to construct a sewer system with a conventional treatment plant to serve all or a portion of the hamlet.

Cluster Systems Treatment Option

During the site visit, potential disposal areas for cluster or community-wide systems were identified as meriting investigation (see **Figure 6.D Conceptual Layout Plan**). This identification was made primarily on a visual examination of the land, assumed percent slope of the land, and proximity to the potential service area. The area identified was on the south side of 990V and slightly west of Bull Hill Road. However, verification of existing agricultural district lands and suitable uses for these lands must also occur prior to finalizing the selection of a site. The soils here are either a Barbour and Tioga fine sandy loam or a Tunkhannock and Chenango soil. These soils are typically well drained gravely soils. While permeability may be good wastewater may move too quickly through the soil impeding treatment. Depending on future soils and site investigation work, this site may or may not be suitable for a subsurface disposal system. The site appears to be above the 100-year floodplain.

A potential community-wide sewer and cluster system alternative layout is shown on **Figure 6.D Conceptual Layout Plan**. The description and relative merits of conventional sewer systems versus small diameter gravity sewer systems is discussed in Chapter 2 of this report. Pump stations may be required due to the terrain constraints, and due to site constraints, the sewer system may need to be placed in rear lots for some locations. This may result in a more efficient, economical sewer layout that will accommodate existing plumbing configurations.

For this hamlet the sewers for the properties on the south side of Route 990V could be located either in the front lots or in the rear lots where the existing plumbing likely exits to the onsite systems. The proposed sewer layout is shown on **Figure 6.D Conceptual Layout Plan** (plan of small diameter gravity sewer system to site A). One sewage pump station may be required, to convey the wastewater to the disposal system.

To determine the wastewater disposal area requirements and estimate costs for this study, the assumed percolation rate is 60 minutes per inch, this value is the slowest percolation rate suitable for conventional subsurface absorption systems. This results in the most conservative approach (largest system) to sizing and estimating costs for the systems. For Site A, the required area including the 100 percent reserve area requirement is 2.75 acres. Buffer zones would add acreage to this number. **Appendix 6.1,** entitled "**Wastewater Disposal System Sizing**" contains a summary of the disposal system sizing for each of the hamlets.

Sewers and Wastewater Treatment Option

As previously stated, the Hamlet of West Conesville is in the Schoharie Reservoir watershed. A new surface discharge to the Manor Kill is regulated per Section 18-36(b) of the NYC Watershed Regulations. However, it is preferred that treatment systems for this community be designed to discharge treated effluent subsurface.

Summary of Options

For the Hamlet of West Conesville, the following collection sewer and treatment options were investigated:

- Community-wide septic system treatment with conventional sewer system, Site A.
- Community-wide septic system treatment with small diameter gravity sewer system, Site A.

Construction Cost Estimates

Construction limitations were also taken into consideration in this review. The lack of state highways running through the hamlet lessens the cost of sewer pipe crossings of area roads. The hamlet is fairly compact so that a sewer collection system may be cost-effective to construct. The design and construction of a sewer collection treatment facility within the Hamlet should take into account any future proposals to construct other community infrastructure projects. The sewer system should be aligned to minimize conflict with existing or proposed infrastructure improvements. During the walking tour little evidence of bedrock or surface boulders was observed within the hamlet. Several of the lots appeared to have insufficient space for individual septic systems.

Least Cost Alternative

The summary of project costs for the treatment options analyzed is presented in **Table 6.2,** entitled "**Project Cost Summary**". **Table 6.3**, entitled "**Construction Cost Estimate**" provides more detail regarding sewer system construction costs and wastewater disposal system construction costs for the likely alternatives for the community. The least cost alternative is perceived to be Cluster system treatment at Site A with small diameter gravity sewer system. The construction cost of this community-wide cluster system treatment system for 30 equivalent dwelling units at Site A is estimated to total $470,900. Allowing for approximately a 25% increase ($177,00) for non-construction costs the Total Estimated Project Cost is $588,600. Based on the preliminary nature of this report (see note 3 of Table 6.2), the probable project cost of this system is between $441,400 and $735,800 (+ / - 25%).

The estimated annual operation and maintenance cost for the components of this wastewater disposal system is presented in **Table 6.4**, entitled "**Annual Operation & Maintenance Cost Estimate**". If individual septic systems in various locations of the hamlet become part of the solution, the above listed costs may be reduced, but probably not significantly. Based on an annual Operation and Maintenance cost of $12,105 (from Table 6.4), the annual operation and maintenance cost per user is estimated to be $403.

Further Study

A detailed site investigation, which is beyond the scope of this study, will determine which option is most feasible. Also beyond the scope of this study, the annual operation and maintenance cost for each alternate option needs to be further developed and incorporated into a present worth analysis for selection of the most cost effective alternative based on project construction costs, annual operation and maintenance costs, and any recurring capital costs over a 20 year period.

TABLES

TABLE 6.1
WASTEWATER FLOW ESTIMATE
Hamlet of West Conesville

Facility Type	No. of units (note 1)	Flow Calculation Basis	Average Household Size (note 2)	Flow (gpd) (note 3)	Source (note 4)	Total Flow (gpd)
RESIDENTIAL						
Single Family Home	28	equivalent residential	2.6	100	Ten State Standards - chap. 10, sect. 11.243	7,280
COMMERCIAL/INSTITUTIONAL						
Auto Shop	1		n/a	100	Ten State Standards - chap. 10, sect. 11.243	260
OTHER						
Vacant Structure	1		2.6	100	Ten State Standards	260
Total Units (Equivalent Residential)	30				Subtotal	7,800
					10 % increase due to new residential or commercial development	8,580
					Total Estimated Flow (rounded)	9,000
					This flow estimation is 0.60 of the MOA flow (15,000)	

Notes:

1. The number of units is based on equivalent residential units.
2. The average household size (population) was calculated by averaging the 1990 census population for each of the hamlet towns and determined to be 2.6.
3. gpd is gallons per day
4. Ten State Standards & NYSDEC - see Chapter 1 Acronyms and References.

TABLE 6.2 (Sheet 1 of 2)
PROJECT COST SUMMARY
Hamlet of West Conesville

I. CONSTRUCTION COSTS (In January, 1999 dollars)	Total Costs
Individual Sewage Treatment Systems	
flow = 0 gpd	
No. = 0 @ $10,000 per each (see note 1)	**$0**
Cluster System Treatment with Conventional Sewer System	
Site A system, services, gpd design flow	
Sewer construction cost	$0
Wastewater disposal system construction cost	$0
Sub-total	**$0**
Site B system, services, gpd design flow	
Sewer construction cost	$0
Wastewater disposal system construction cost	$0
Sub-total	$0
Total System Cost	**$0**
Cluster System Treatment with Small Diameter Gravity Sewer (SDGS)	
Site A system, services, gpd design flow	
Sewer construction cost	$0
Wastewater disposal system construction cost	$0
Sub-total	**$0**
Site B system, services, gpd design flow	
Sewer construction cost	$0
Wastewater disposal system construction cost	$0
Sub-total	$0
Total System Cost	**$0**
COMMUNITY-WIDE SEPTIC SYSTEM (A & B COMBINED, TREATMENT AT SITE A)	
1. with conventional sewer system, 30 services, 9,000 gpd flow	
Sewer construction cost (See Table 6.3, Sheet 1 of 4)	$344,400
Wastewater disposal system construction cost (See Table 6.3, Sheet 2 of 4)	$155,800
	$500,200
2. with small diameter gravity system, 30 services, 9,000 gpd flow	
Sewer construction cost (See Table 6.3, Sheet 3 of 4)	$329,500
Wastewater disposal system construction cost (See Table 6.3, Sheet 4 of 4)	$141,400
	$470,900
II. PROJECT COSTS	
Construction cost of least cost alternate	$470,900
Non-construction costs including engineering (planning, hydrological/soils investigations, design, construction), land/easement acquisition, fiscal services, legal services, administration costs, permits (approx. 25% of construction)	$117,700
Total Estimated Project Cost (See note 2)	**$588,600**

TABLE 6.2 (Sheet 2 of 2)

Notes for Table 6.2:

1. Individual Septic Systems average cost per site of $10,000 is derived from the Catskill Watershed Corporation database on replacement or repairs to 666 individual septic systems through December 1998. There were 479 new or replacement individual septic systems including conventional design, modified conventional design, or alternative design systems. The average cost of the 479 new or replacement was $7,556 with 243 conventional designs averaging just under $4,000; 56 modified conventional designs averaging under $10,000; and 180 alternative designs averaging just under $12,000.

2. A more detailed study may result in a different alternate selected as the least cost alternate. Lacking detailed soils analysis, subsurface borings, disposal site analysis with hydrological/soils investigations, vertical and horizontal control survey, and detailed cost estimating with vendor quotes the above cost estimates may be considered to be accurate to plus or minus 25 percent.

TABLE 6.3 (Sheet 1 of 4)
CONSTRUCTION COST ESTIMATE
CLUSTER SYSTEM TREATMENT WITH CONVENTIONAL SEWER SYSTEM
Site A Sewer Construction Cost
Hamlet of West Conesville

Item No.	Description	Quantity	Unit	Unit Price	Total Price
2	8" sewer - PVC SDR35, 0-8' depth - B	3148	LF	$33	$103,884
3	4" or 6" sewer laterals - PVC SDR35- C	1450	LF	$27	$39,150
4	Manholes, 4' dia., - 8' depth, w/cover/frame	13	Ea.	$1,500	$19,500
5	Rock excavation - D	272	CY	$40	$10,880
6	Highway boring, rock, complete	60	LF	$300	$18,000
7	Stream crossing, environmental protection	2	Ea.	$4,500	$9,000
8	Road restoration, subbase and pavement	300	LF	$16	$4,800
9	DOT ROW work, extra conditions - E	0	LF	$32	$0
10	Pump Station, complete with electrical	1	Ea.	$60,000	$60,000
11	2" or 4" Force Main, DIP or PVC SDR 26	842	LF	$17	$14,314
12	Grinder pump w/ sump & electrical	0	Ea.	$6,000	$0
	Sub-total without items 1 & 13				**$279,528**
1	Mobilization, insurance, clearing/grubbing - A		LS	6%	$16,772
13	Landscape/restoration - F		LS	6%	$16,772
	Estimated Cost				$313,071
	Construction Contingencies, 10%				$31,307
	Total Estimated Construction Cost, 1999$				**$344,400**

A - equals 6 % of sub total costs
B - includes excavation, bedding, pipe installation, wyes/tees, backfill, testing,
C - laterals, average L = 50 feet to within 5 feet of foundation
D - low rock estimate,CY= trench L x 0.05 x 1CY/ft.; high rock estimate, CY= trench L x 0.25 x 1
E - LF = road L affected x $32/LF including sidewalks restoration, DOT inspection, etc.
F - equals 6 % of sub-total costs

TABLE 6.3 (Sheet 2 of 4)
CONSTRUCTION COST ESTIMATE
CLUSTER SYSTEM TREATMENT WITH CONVENTIONAL SEWER SYSTEM
Site A Wastewater Disposal System Construction Cost
Hamlet of West Conesville

Item No	Description	Quantity	Unit	Unit Price	Total Price
1	Septic tank, 10,500 gal size, concrete, in place				$13,100
	cost per 1000 gal. = $1250				
2A	Dosing tank with alternating siphons		Ea.		$4,400
	tank size = 25% design flow & cost = $1.50/gal. plus $1000				
2B	Pump station, if required for dosing field			$50,000.00	not
	cost =$50,000				needed
3	4"PVC gravity dosing line to field or 4" pres. PVC	225		$12.00	$2,700
	(dual lines in common trench)				
4	Absorption field site clearing, grubbing, grading	59800	SF	$0.20	$11,960
	59800 SF area				
5	Fencing enclosure, woven wire, 800'/1acre to 1700'/4acre	950		$10.00	$9,500
6	Access road, 12' wide gravel		LS		$10,000
	Sub-total				**$51,660**
7	Absorption field quantities per 1000 feet of trench				
	(=2000 SF of absorption trench & 6000 SF of area)				
	7a) trench excavation, 1000 LF = 148, say 150 CY		LF	$1.00	$1,000
	7b) crushed stone, 74 CY , say 75 CY		CY	$20.00	$1,500
	7c) 4" PVC perf. or 2" pres. PVC perf. pipe, set to grade		LF	$4.00	$4,000
	7d) PVC solid wall pipe within absorption field area		LF	$4.00	$400
	(approx. 100 feet of 4" gravity or 3" pres. PVC pipe)				
	7e) distribution box, concrete with speed levelers		Ea.	$300.00	$300
	(not required with pressure system)				
	7f) permeable geotextile, 2000 SF		SF	$0.25	$500
	7g) backfill soil, 74 CY, say 75 CY		CY	$3.00	$225
	7h) monitoring well or absorption field corner markers		LS	$250.00	$250
	7i) valving with valve box, typical per 1000' of trench		Ea.	$250.00	$250
	7j) grading & seeding, 6000 SF		SF	$0.10	$600
	Sub-total for 1000' of Absorption Trench				$9,025
8	Absorption field cost for this site				
	equals 59800SF/6000SF($9025)				**$89,949**
	Estimated Cost				$141,609
	Construction Contingencies, 10%				$14,161
	Total Estimated Construction Cost, 1999$				**$155,800**

Design basis: 9,000 gpd design flow with a percolation rate of 60 min/inch will need 59,800 SF of area.

TABLE 6.3 (Sheet 3 of 4)
CONSTRUCTION COST ESTIMATE
CLUSTER SYSTEM TREATMENT WITH SMALL DIAMETER GRAVITY SYSTEM
Site A Sewer Construction Cost
Hamlet of West Conesville

Item No.	Description	Quantity	Unit	Unit Price	Total Price
2	4" sewer - PVC SDR35, 0-6' depth - B	3148	LF	$27	$84,996
3	2" or 4" sewer laterals - PVC SDR35 - C	1160	LF	$24	$27,840
4	Septic Tanks, concrete, 1000 gal. installed	29	Ea.	$1,500	$43,500
5	Septic Tanks, concrete, 2000 gal. installed	0	Ea.	$2,000	$0
6	Manholes, 4' dia., - 4' depth, w/cover/frame	3	Ea.	$1,200	$3,600
7	Cleanouts, 4"	9	Ea.	$250	$2,250
8	Rock excavation - D	103	CY	$40	$4,120
9	Highway boring, rock, complete	60	LF	$300	$18,000
10	Stream crossing, environmental protection	2	Ea.	$4,500	$9,000
11	Road restoration, subbase and pavement	300	LF	$16	$4,800
12	DOT ROW work, extra conditions - E	0	LF	$32	$0
13	Pump Station, complete with electrical	1	Ea.	$55,000	$55,000
14	2" or 4" Force Main, DIP or PVC SDR 26	842	LF	$17	$14,314
15	Effluent pump w/ sump & electrical	0	Ea.	$5,500	$0
	Sub-total without items 1 & 16				**$267,420**
1	Mobilization, insurance, clearing/grubbing - A		LS	6%	$16,045
16	Landscape/restoration - F		LS	6%	$16,045
	Estimated Cost				$299,510
	Construction Contingencies, 10%				$29,951
	Total Estimated Construction Cost, 1999$				**$329,500**

A - equals 6 % of sub total costs
B - includes excavation, bedding, pipe installation, wyes/tees, backfill, testing,
C - laterals, average L = 40 feet to septic tank connection including cleanout
D - low rock estimate, CY= trench L x 0.02 x 1CY/ft.; high rock estimate, CY= trench L x 0.10 x 1
E - LF = road L affected x $32/LF including sidewalks restoration, DOT inspection, etc.
F - equals 6 % of sub-total costs

TABLE 6.3 (Sheet 4 of 4)
CONSTRUCTION COST ESTIMATE
CLUSTER SYSTEM TREATMENT WITH SMALL DIAMETER GRAVITY SYSTEM
Site A Wastewater Disposal System Construction Cost
Hamlet of West Conesville

Item No	Description	Quantity	Unit	Unit Price	Total Price
1	Septic tank, concrete, in place				
	cost per 1000 gal. = $1250				
2A	Dosing tank with alternating siphons		Ea.		$4,400
	tank size = 25% design flow & cost = $1.50/gal. plus $1000				
2B	Pump station, if required for dosing field			$50,000.00	not
	cost =$50,000				needed
3	4"PVC gravity dosing line to field or 4" pres. PVC	225		$12.00	$2,700
	(dual lines in common trench)				
4	Absorption field site clearing, grubbing, grading	59800	SF	$0.20	$11,960
	59800 SF area				
5	Fencing enclosure, woven wire, 800'/1acre to 1700'/4acre	950		$10.00	$9,500
6	Access road, 12' wide gravel		LS		$10,000
	Sub-total				**$38,560**
7	Absorption field quantities per 1000 feet of trench				
	(=2000 SF of absorption trench & 6000 SF of area)				
	7a) trench excavation, 1000 LF = 148, say 150 CY		LF	$1.00	$1,000
	7b) crushed stone, 74 CY , say 75 CY		CY	$20.00	$1,500
	7c) 4" PVC perf. or 2" pres. PVC perf. pipe, set to grade		LF	$4.00	$4,000
	7d) PVC solid wall pipe within absorption field area		LF	$4.00	$400
	(approx. 100 feet of 4" gravity or 3" pres. PVC pipe)				
	7e) distribution box, concrete with speed levelers		Ea.	$300.00	$300
	(not required with pressure system)				
	7f) permeable geotextile, 2000 SF		SF	$0.25	$500
	7g) backfill soil, 74 CY, say 75 CY		CY	$3.00	$225
	7h) monitoring well or absorption field corner markers		LS	$250.00	$250
	7i) valving with valve box, typical per 1000' of trench		Ea.	$250.00	$250
	7j) grading & seeding, 6000 SF		SF	$0.10	$600
	Sub-total for 1000' of Absorption Trench				$9,025
8	Absorption field cost for this site				
	equals 59800SF/6000SF($9025)				**$89,949**
	Estimated Cost				$128,509
	Construction Contingencies, 10%				$12,851
	Total Estimated Construction Cost, 1999$				**$141,400**

Design basis: 9,000 gpd design flow with a percolation rate of 60 min/inch will need 59,800 SF of area.

TABLE 6.4 (Sheet 1 of 2)
ANNUAL OPERATION & MAINTENANCE COST ESTIMATE
LOWEST COST ALTERNATE1
Hamlet of West Conesville

	Annual Cost $
A. Individual Sewage Treatment Systems	
No. = 0	
Annual cost @ $100/yr. per each	$0
B. Collection system O & M	
0.75 mile @ $1500/yr/mile pipe (excluding laterals)	$1,125
effluent pumps, 0 @ $50/yr.	$0
C. Pump stations O & M, 1 each, 9,000 gpd capacity	
labor @ 2 hr/week @ $25/hr. including benefits	$2,600
contract expenses	$250
electric power	$500
less credit if SDGS system	-$670
D. Subsurface Disposal System O & M, 9,000 gpd	
labor @ 3 hr./week @ $25/hr.	$3,900
E. Administration and management expenses of Sewer District	
30 users (connections) @ $50/account	$1,500
F. Estimated Septage Hauling and Disposal, 29,000gal@.10/gal (see footnote 2)	$2,900
Total Estimated Annual Operation & Maintenance	$12,105

Footnote 1. Community-wide septic system (Treatment at Site A, SDGS, 30 services)

Footnote 2. This cost represents 1 system pump out. It may only be necessary to pump once every three years.

TABLE 6.4 (Sheet 2 of 2)
ANNUAL OPERATION & MAINTENANCE COST ESTIMATE
LOWEST COST ALTERNATIVE
Hamlet of West Conesville

Collection Sewers
Estimate sewer line maintenance at $1500/yr/mile of pipe including appurtenances. Annual O & M is assumed to be approximately equal for gravity, pressure, vacuum, and SDGS systems.

Pump Stations O & M labor @ 5hr/week for flows over 25,000 gpd and 2 hr/week for flows under 25,000 gpd. Use labor cost including benefits of $25/hr.

Add contract expenses for electrical and pump repairs, etc. say $500/yr over 25,000 gpd and $250/yr under 25,000 gpd

Add electric power expenses say $1000/yr over 25,000 gpd and $500/yr. under 25,000 gpd

For SDGS system pump stations O & M expense is estimated to be 80 % of O & M for conventional design pump station due to 1) pumping a liquid waste devoid of large solids, 2) less grease and other nuisance floatables in wet well, 3) use of more energy efficient pumps, and 4) shallow depth wetwells due to SDGS design.

Grinder pumps @ $60/unit/yr. to include annual service calls (3 to 5 % of units per year, 10-15 year major overhaul of each unit (replace seals, bearings, motor, etc), other service requirements such as electrical failures, grease build-up, clogging of pumps or pump air lock, preventive maintenance check annually, and electric power consumption ($10-12 per year).

Effluent Pumps @ $50/unit/yr - similar to grinder pump O & M except effluent pump units are smaller, less expensive, and generally require less energy.

Individual Septic Systems @ $100 or more per unit per year to include Wastewater Management District (WWMD) inspections, septage disposal every 3 to 7 years, maintenance/repairs (typical system may require this major work every 10 to 25 years), administration and management expenses of WWMD. Annual system inspection work would include septic tank (uncover and inspect, measure depth of scum and sludge), distribution box/device (uncover and inspect), and leach field for evidence of pending or overt hydraulic failure. For systems with pump stations check semi-annually for pump and back-up alarm function. Use these inspections to educate system users reviewing appropriate water use practices.

Subsurface Disposal - Cluster or Community-wide System O & M labor @ 5hr/week for flows over 15,000 gpd and 3hr/week for flows under 15,000 gpd. Duties include checking system using a checklist, resting alternate absorption beds, grass cutting, etc.

Administrative and Management Expense of Sewer District or WWMD
Estimate $50 per account per year. Services to include supervision of staff, record keeping, accounting, billing, filling reports, etc.

FIGURES

FIGURE 6.A

Preliminary Service Area

New
Sewage
Treatment
Infrastructure
Program

Strategic
Wastewater
Planning
Study

Town of Conesville
Hamlet of West Conesville
Schoharie County

The following diagram was prepared by NYSEFC using NYCDEP GIS Data. This information is for discussion purposes only and makes no representation of accuracy

Prepared for:
Town of Conesville
NYCDEP
Prepared By:
ASM NYSEFC
Date:
5/18/00

N

Not to Scale

Fig. 6.

Topography

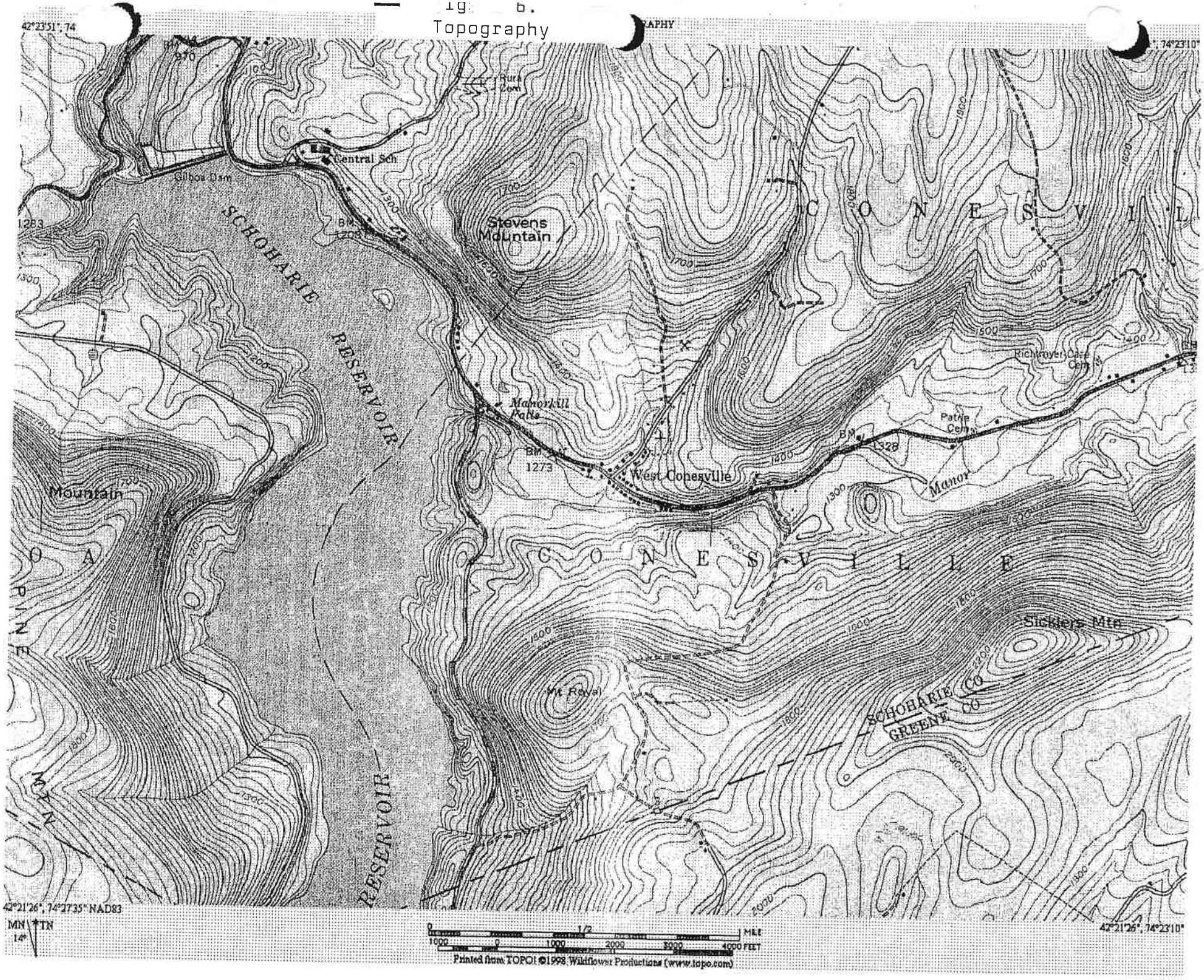


FIGURE 6.C
FLOODPLAIN MAPPING (FEMA)
HAMLET OF WEST CONESVILLE
TOWN OF CONESVILLE

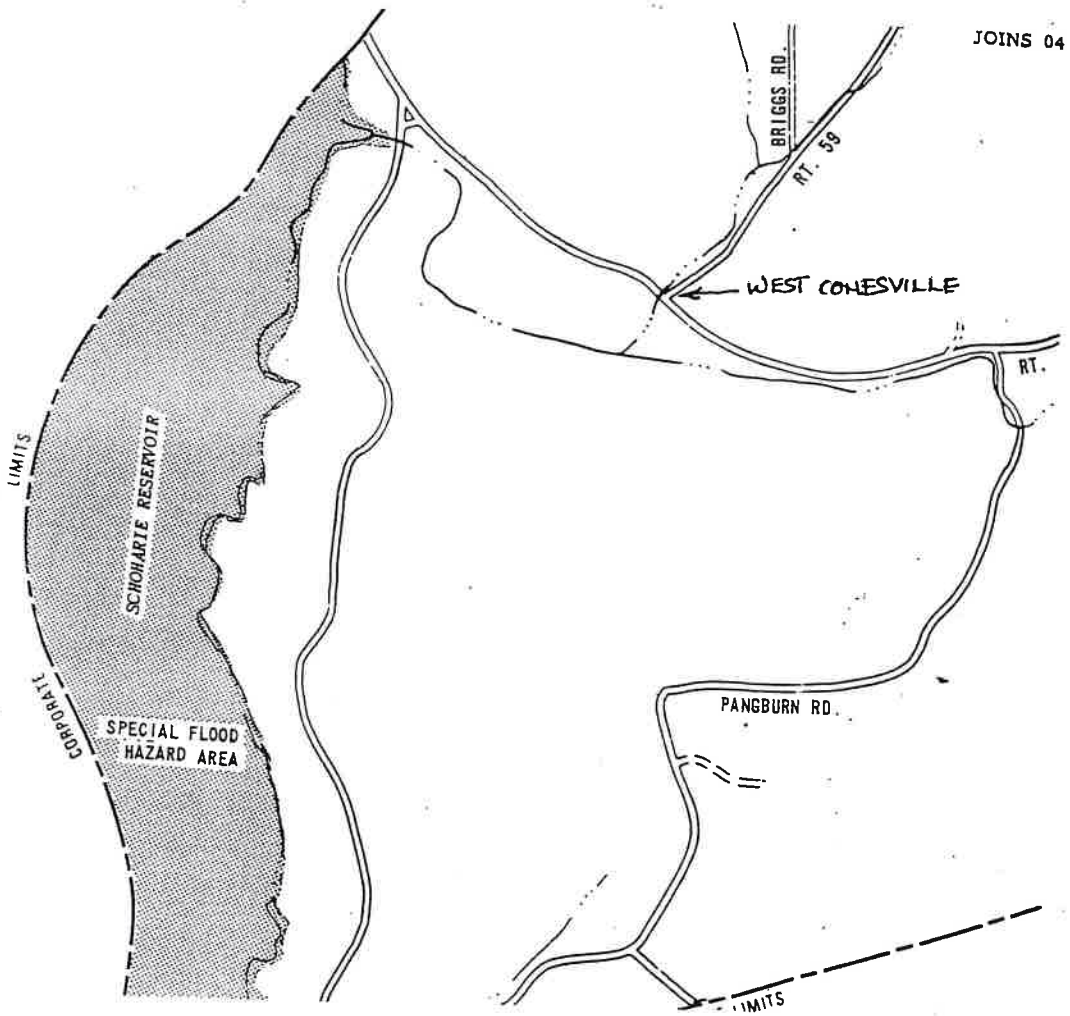


FIGURE 6.D

Conceptual Layout Plan

DRAFT

Town of Conesville
Hamlet of West Conesville
Schoharie County

New Sewage Treatment Infrastructure Program

Strategic Wastewater Planning Study

- Pump Station
- Clean Out
- Manhole
- Force Main
- Small Diameter Gravity Sewer

The following diagram was prepared by NYSEFC using NYCDEP GIS Data. This information is for discussion purposes only and makes no representation of accuracy

Prepared for:
Town of Conesville
NYCDEP
Prepared By:
ASM NYSEFC
Date:
5/18/00

N

Not to Scale

APPENDICES

APPENDIX 6.1 (Sheet 1 of 2)
WASTEWATER DISPOSAL SYSTEM SIZING

No.	Community Name	Hamlet Design Flow (gpd)	On-Site System Flows (gpd)	Cluster System Flow Site A (gpd)	Cluster System Flow Site B (gpd)	Site A-Area Required (SF) Absorption Trench System for Perc Rates of min/in.: 30	45	60	Site B-Area Required (SF) Absorption Trench System for Perc Rates of min/in.: 30	45	60	WWTP Capacity (gpd)
8	Bloomville	28,000	0	24,300	3,700	121,500	145,400	161,750	18,200	21,800	24,400	Not
			Approximate no.of properties:			with 100% Reserve Area			with 100% Reserve Area			Allowed
			0	78	12	243,000	290,800	323,500	36,400	43,600	48,800	
9	Boiceville	45,000	8,000	1,600	0	7,600	9,200	10,300				35,400
	see note 2		Approximate no.of properties:			with 100% Reserve Area						note 2
			28	6	0	15,200	18,400	20,600				
10	Hamden	20,000	3,400	16,600		82,700	99,300	110,600				Not
			Approximate no.of properties:			with 100% Reserve Area						Allowed
			13	46		165,400	198,600	221,200				
11	DeLancey	17,000	15,250	1,000	750	4,920	5,900	6,608	3,648	4,408	4,920	Not
	see note 1		Approximate no.of properties:			with 100% Reserve Area			with 100% Reserve Area			Allowed
			50	4	3	9,840	11,800	13,200	7,300	8,820	9,840	
12	Bovina Center	23,000	0	22,000	1,000	109,900	131,600	146,700	4,900	5,900	6,600	Not
	see note 1		Approximate no.of properties:			with 100% Reserve Area			with 100% Reserve Area			Allowed
			0	66	3	219,800	263,200	293,400	9,800	11,800	13,200	
13	Ashland	28,000	900	14,500	12,600	72,400	86,700	96,600	62,700	75,500	83,900	28,000
			Approximate no.of properties:			with 100% Reserve Area			with 100% Reserve Area			
			3	46	40	144,800	173,400	193,200	125,400	151,000	167,800	
15	Trout Creek	16,000	500	4,600	10,900	22,700	27,200	30,400	54,200	65,000	72,450	Not
			Approximate no.of properties:			with 100% Reserve Area			with 100% Reserve Area			Allowed
			2	14	33	45,400	54,400	60,800	108,400	130,000	144,900	
16	Lexington	20,000	2,400	12,000	5,600	59,700	71,800	79,850	27,800	33,400	37,150	
			Approximate no. of properties			with 100% Reserve Area			with 100% Reserve Area			
			9	29	19	119,400	143,600	159,700	55,600	66,800	74,300	

APPENDIX 6.1 (Sheet 2 of 2)
WASTEWATER DISPOSAL SYSTEM SIZING

No.	Community Name	Hamlet Design Flow (gpd)	On-Site System Flows (gpd)	Cluster System Flow Site A (gpd)	Cluster System Flow Site B (gpd)	Site A-Area Required (SF) Absorption Trench System for Perc Rates of min/in.: 30	45	60	Site B-Area Required (SF) Absorption Trench System for Perc Rates of min/in.: 30	45	60	WWTP Capacity (gpd)
17	S.Kortright	17,000	0	17,000	0	84,700	101,700	113,300				Not
			Approximate no.of properties:			with 100% Reserve Area						Allowed
				38	0	169,400	203,400	226,600				
18	Shandaken	26,000	19,600	6,400		31,800	38,200	42,500				26,000
			Approximate no. of properties			with 100% Reserve Area						
			58	19		63,600	76,400	85,000				
19	W. Conesville	9,000	0	9,000		44,775	53,650	59,800				
			Approximate no. of properties			with 100% Reserve Area						
			0	30		89,550	170,300	119,600				
20	Claryville	29,000										
			Approximate no. of properties			with 100% Reserve Area			with 100% Reserve Area			
21	Halcottsville	17,000	3,100	3,700	10,200	18,200	21,800	24,400	50,750	60,800	67,800	16,000
			Approximate no. of properties			with 100% Reserve Area			with 100% Reserve Area			
			10	12	33	36,400	43,600	48,800	101,500	121,600	135,600	
22	New Kingston	9,000	1,750	7,250		36,000	43,300	48,100				Not
			Approximate no.of properties:			with 100% Reserve Area						Allowed
			7	23		72,000	86,600	96,200				

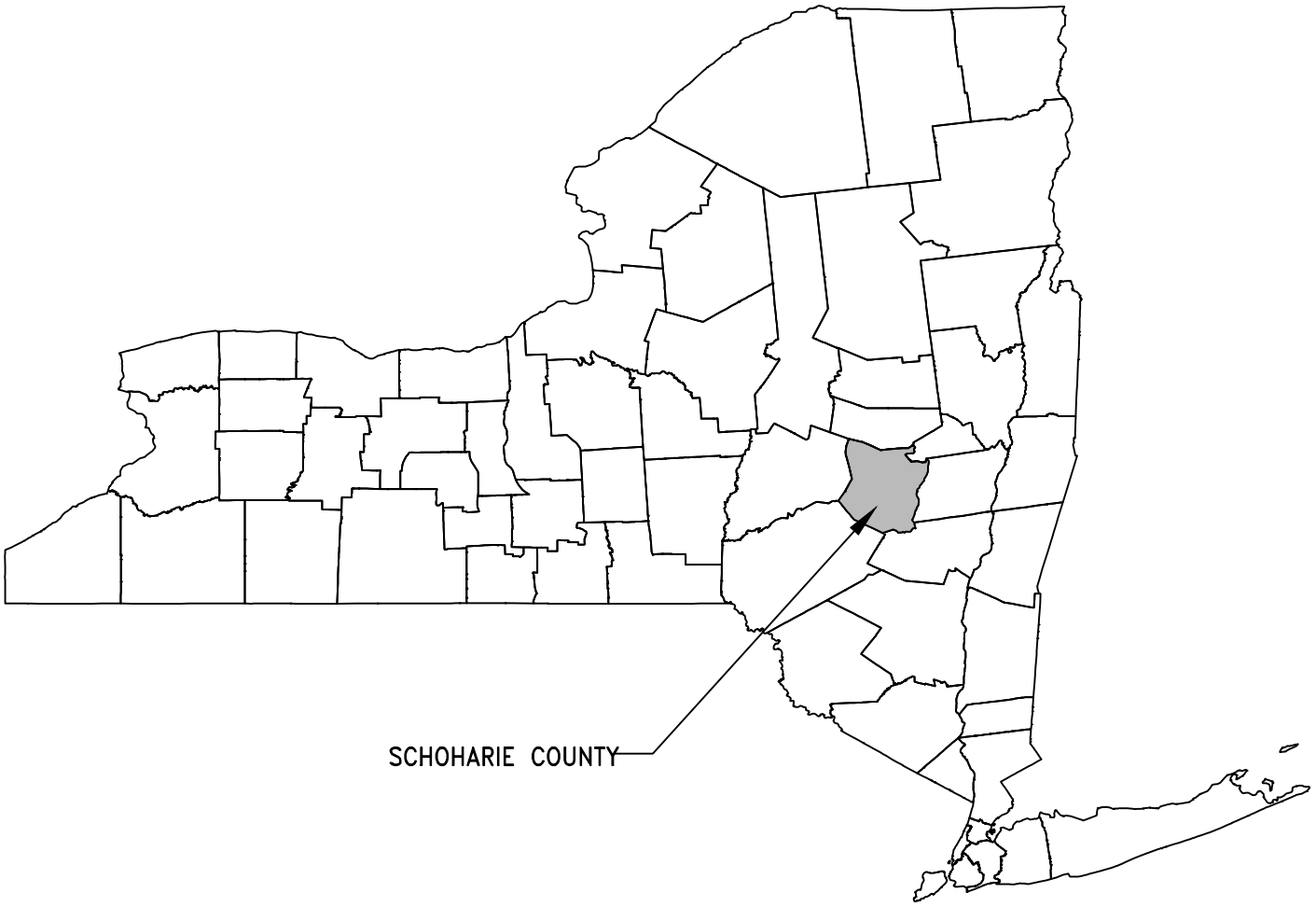
Note 1: If cluster system serves 3 or less homes the design flow will be based on the number of bedrooms. For cluster systems serving 4 or more properties, the design flow is based on actual flow estimate. This table based on estimated flows.

Note 2: WWTP to serve hamlet less Beechford Dr. area. Design flow =35,400, and with Onteora Central School = 62,400 gpd.

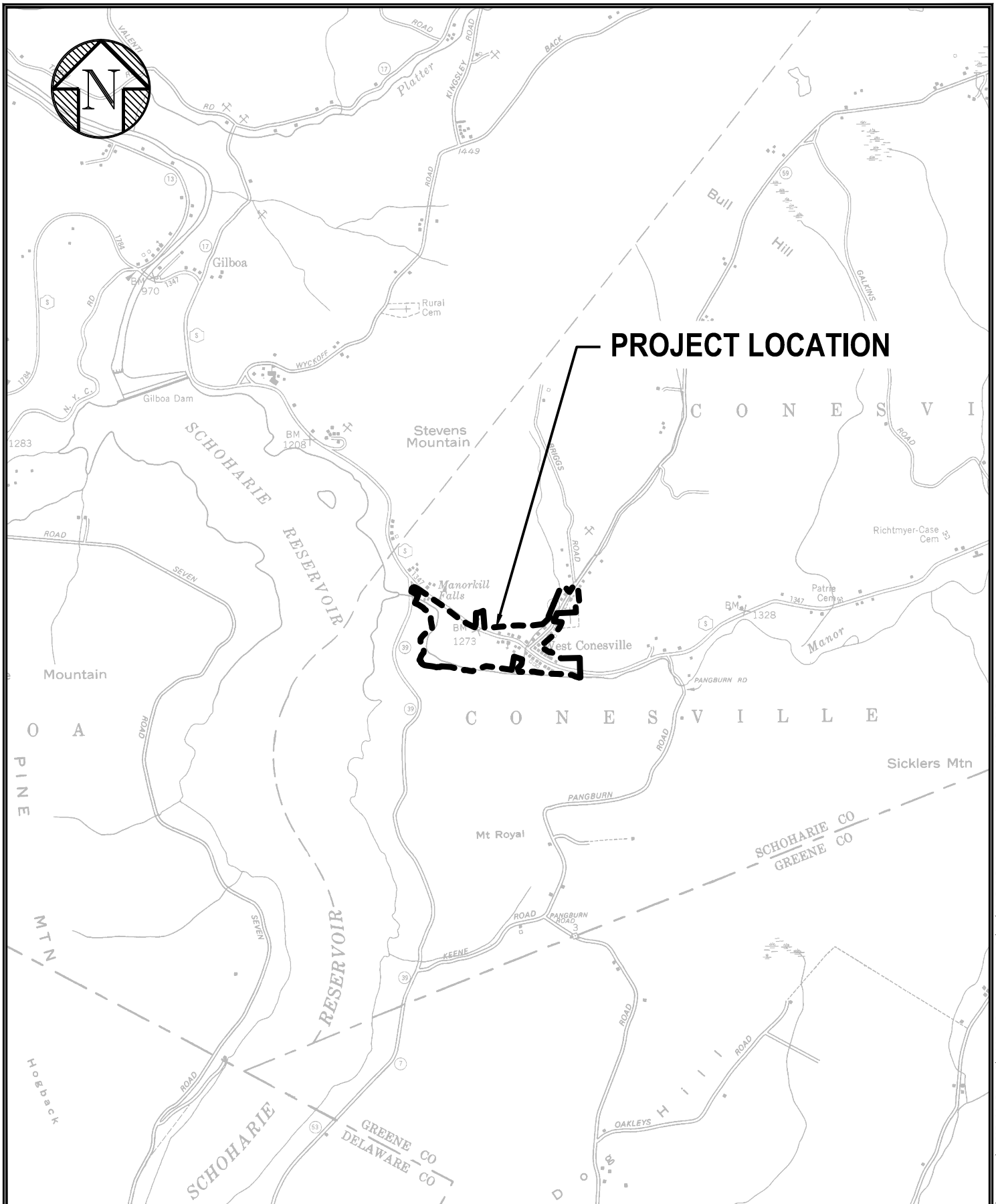
Note 3: Last Updated 9/23/99

Exhibit 1.1.A

Location Maps



DATE	PROJECT NO.	WEST CONESVILLE LOCATION MAP EXHIBIT 1.1.A	Lamont Engineers ENGINEERS • PLANNERS • FACILITY OPERATIONS
10/18/12	2012002		
SCALE NONE	DRAWN MKS	SCHOHARIE COUNTY NEW YORK STATE	



DATE	PROJECT NO.	WEST CONESVILLE LOCATION MAP EXHIBIT 1.1.A	Lamont Engineers ENGINEERS • PLANNERS • FACILITY OPERATIONS
10/18/12	2012002_WCONE		
SCALE 1"=2,500'	DRAWN MKS	SCHOHARIE COUNTY NEW YORK STATE	

K:\APPS\SDSKPROJ\20140444\WEST CONESVILLE\LOC MAP_1.1.A.dwg, 12/18/2015 8:51:01 AM, MSeymour, DWG To PDF.pc3

Exhibit 1.2.A

2010 U.S. Census Information Town of Conesville

Map View: 2010 Census Interactive Population Map

2010 Census Interactive Population Search

NY - Conesville town

Population	
Total Population	734

Housing Status (in housing units unless noted)	
Total	787
Occupied	339
Owner-occupied	305
Population in owner-occupied (number of individuals)	658
Renter-occupied	34
Population in renter-occupied (number of individuals)	76
Households with individuals under 18	70
Vacant	448
Vacant: for rent	4
Vacant: for sale	7

Population by Sex/Age

Male	360
Female	374
Under 18	126
18 & over	608
20 - 24	26
25 - 34	61
35 - 49	145
50 - 64	189
65 & over	170

Population by Ethnicity

Hispanic or Latino	20
Non Hispanic or Latino	714

Population by Race

White	711
African American	7
Asian	2
American Indian and Alaska Native	2
Native Hawaiian and Pacific Islander	0
Other	0
Identified by two or more	12

QT-H1

General Housing Characteristics: 2010

2010 Census Summary File 1

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see http://www.census.gov/prod/cen2010/doc/sf1.pdf.

Geography: Conesville town, Schoharie County, New York

Subject	Number	Percent
OCCUPANCY STATUS		
Total housing units	787	100.0
Occupied housing units	339	43.1
Vacant housing units	448	56.9
TENURE		
Occupied housing units	339	100.0
Owner occupied	305	90.0
Owned with a mortgage or loan	158	46.6
Owned free and clear	147	43.4
Renter occupied	34	10.0
VACANCY STATUS		
Vacant housing units	448	100.0
For rent	4	0.9
Rented, not occupied	0	0.0
For sale only	7	1.6
Sold, not occupied	1	0.2
For seasonal, recreational, or occasional use	422	94.2
For migratory workers	0	0.0
Other vacant	14	3.1
TENURE BY HISPANIC OR LATINO ORIGIN OF HOUSEHOLDER BY RACE OF HOUSEHOLDER		
Occupied housing units	339	100.0
Owner-occupied housing units	305	90.0
Not Hispanic or Latino householder	298	87.9
White alone householder	290	85.5
Black or African American alone householder	3	0.9
American Indian and Alaska Native alone householder	1	0.3
Asian alone householder	0	0.0
Native Hawaiian and Other Pacific Islander alone householder	0	0.0
Some Other Race alone householder	0	0.0
Two or More Races householder	4	1.2
Hispanic or Latino householder	7	2.1
White alone householder	7	2.1
Black or African American alone householder	0	0.0
American Indian and Alaska Native alone householder	0	0.0
Asian alone householder	0	0.0
Native Hawaiian and Other Pacific Islander alone householder	0	0.0
Some Other Race alone householder	0	0.0
Two or More Races householder	0	0.0
Renter-occupied housing units	34	10.0
Not Hispanic or Latino householder	34	10.0
White alone householder	33	9.7
Black or African American alone householder	0	0.0

Subject	Number	Percent
American Indian and Alaska Native alone householder	0	0.0
Asian alone householder	0	0.0
Native Hawaiian and Other Pacific Islander alone householder	0	0.0
Some Other Race alone householder	0	0.0
Two or More Races householder	1	0.3
Hispanic or Latino householder	0	0.0
White alone householder	0	0.0
Black or African American alone householder	0	0.0
American Indian and Alaska Native alone householder	0	0.0
Asian alone householder	0	0.0
Native Hawaiian and Other Pacific Islander alone householder	0	0.0
Some Other Race alone householder	0	0.0
Two or More Races householder	0	0.0

X Not applicable.
Source: U.S. Census Bureau, 2010 Census.
Summary File 1, Tables H3, H4, H5, and HCT1.

DP03

SELECTED ECONOMIC CHARACTERISTICS

2006-2010 American Community Survey 5-Year Estimates

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Data and Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, for 2010, the 2010 Census provides the official counts of the population and housing units for the nation, states, counties, cities and towns. For 2006 to 2009, the Population Estimates Program provides intercensal estimates of the population for the nation, states, and counties.

Subject	Conesville town, Schoharie County, New York			
	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
EMPLOYMENT STATUS				
Population 16 years and over	765	+/-148	765	(X)
In labor force	450	+/-129	58.8%	+/-10.9
Civilian labor force	450	+/-129	58.8%	+/-10.9
Employed	418	+/-116	54.6%	+/-10.3
Unemployed	32	+/-31	4.2%	+/-3.7
Armed Forces	0	+/-123	0.0%	+/-4.5
Not in labor force	315	+/-95	41.2%	+/-10.9
Civilian labor force	450	+/-129	450	(X)
Percent Unemployed	(X)	(X)	7.1%	+/-5.9
Females 16 years and over	380	+/-73	380	(X)
In labor force	222	+/-62	58.4%	+/-11.5
Civilian labor force	222	+/-62	58.4%	+/-11.5
Employed	220	+/-62	57.9%	+/-11.7
Own children under 6 years	31	+/-20	31	(X)
All parents in family in labor force	11	+/-10	35.5%	+/-33.2
Own children 6 to 17 years	91	+/-54	91	(X)
All parents in family in labor force	82	+/-54	90.1%	+/-18.1
COMMUTING TO WORK				
Workers 16 years and over	400	+/-112	400	(X)
Car, truck, or van -- drove alone	335	+/-108	83.8%	+/-9.3
Car, truck, or van -- carpooled	43	+/-30	10.8%	+/-7.3
Public transportation (excluding taxicab)	0	+/-123	0.0%	+/-8.4
Walked	0	+/-123	0.0%	+/-8.4
Other means	0	+/-123	0.0%	+/-8.4
Worked at home	22	+/-22	5.5%	+/-5.9
Mean travel time to work (minutes)	36.1	+/-9.2	(X)	(X)
OCCUPATION				
Civilian employed population 16 years and over	418	+/-116	418	(X)
Management, business, science, and arts occupations	149	+/-61	35.6%	+/-11.0
Service occupations	49	+/-41	11.7%	+/-9.3
Sales and office occupations	67	+/-35	16.0%	+/-7.6
Natural resources, construction, and maintenance occupations	79	+/-40	18.9%	+/-7.6

Subject	Conesville town, Schoharie County, New York			
	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
Production, transportation, and material moving occupations	74	+/-38	17.7%	+/-8.6
INDUSTRY				
Civilian employed population 16 years and over	418	+/-116	418	(X)
Agriculture, forestry, fishing and hunting, and mining	0	+/-123	0.0%	+/-8.0
Construction	50	+/-35	12.0%	+/-7.2
Manufacturing	72	+/-38	17.2%	+/-7.9
Wholesale trade	18	+/-18	4.3%	+/-4.3
Retail trade	60	+/-35	14.4%	+/-7.5
Transportation and warehousing, and utilities	5	+/-8	1.2%	+/-1.8
Information	0	+/-123	0.0%	+/-8.0
Finance and insurance, and real estate and rental and leasing	17	+/-17	4.1%	+/-4.0
Professional, scientific, and management, and administrative and waste management services	31	+/-25	7.4%	+/-6.1
Educational services, and health care and social assistance	88	+/-50	21.1%	+/-9.8
Arts, entertainment, and recreation, and accommodation and food services	47	+/-30	11.2%	+/-6.8
Other services, except public administration	10	+/-15	2.4%	+/-3.6
Public administration	20	+/-21	4.8%	+/-4.8
CLASS OF WORKER				
Civilian employed population 16 years and over	418	+/-116	418	(X)
Private wage and salary workers	281	+/-88	67.2%	+/-12.2
Government workers	104	+/-57	24.9%	+/-11.6
Self-employed in own not incorporated business workers	33	+/-29	7.9%	+/-6.4
Unpaid family workers	0	+/-123	0.0%	+/-8.0
INCOME AND BENEFITS (IN 2010 INFLATION-ADJUSTED DOLLARS)				
Total households	399	+/-69	399	(X)
Less than $10,000	14	+/-17	3.5%	+/-4.2
$10,000 to $14,999	32	+/-27	8.0%	+/-6.3
$15,000 to $24,999	56	+/-31	14.0%	+/-7.4
$25,000 to $34,999	20	+/-18	5.0%	+/-4.5
$35,000 to $49,999	50	+/-35	12.5%	+/-9.0
$50,000 to $74,999	99	+/-44	24.8%	+/-10.3
$75,000 to $99,999	85	+/-41	21.3%	+/-9.7
$100,000 to $149,999	34	+/-26	8.5%	+/-6.4
$150,000 to $199,999	9	+/-14	2.3%	+/-3.5
$200,000 or more	0	+/-123	0.0%	+/-8.4
Median household income (dollars)	57,386	+/-9,177	(X)	(X)
Mean household income (dollars)	57,733	+/-7,346	(X)	(X)
With earnings	254	+/-62	63.7%	+/-11.3
Mean earnings (dollars)	60,539	+/-9,985	(X)	(X)
With Social Security	177	+/-59	44.4%	+/-11.8
Mean Social Security income (dollars)	17,190	+/-2,969	(X)	(X)
With retirement income	137	+/-53	34.3%	+/-11.0
Mean retirement income (dollars)	17,177	+/-8,365	(X)	(X)
With Supplemental Security Income	22	+/-24	5.5%	+/-5.8
Mean Supplemental Security Income (dollars)	9,295	+/-1,732	(X)	(X)
With cash public assistance income	0	+/-123	0.0%	+/-8.4
Mean cash public assistance income (dollars)	-	**	(X)	(X)
With Food Stamp/SNAP benefits in the past 12 months	22	+/-23	5.5%	+/-5.6
Families	274	+/-60	274	(X)
Less than $10,000	0	+/-123	0.0%	+/-12.0
$10,000 to $14,999	19	+/-21	6.9%	+/-7.2
$15,000 to $24,999	12	+/-15	4.4%	+/-5.5
$25,000 to $34,999	19	+/-17	6.9%	+/-6.2
$35,000 to $49,999	37	+/-27	13.5%	+/-9.7
$50,000 to $74,999	86	+/-39	31.4%	+/-12.6

Subject	Conesville town, Schoharie County, New York			
	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
$75,000 to $99,999	58	+/-33	21.2%	+/-11.1
$100,000 to $149,999	34	+/-26	12.4%	+/-9.1
$150,000 to $199,999	9	+/-14	3.3%	+/-5.1
$200,000 or more	0	+/-123	0.0%	+/-12.0
Median family income (dollars)	60,000	+/-9,051	(X)	(X)
Mean family income (dollars)	65,800	+/-7,952	(X)	(X)
Per capita income (dollars)	27,031	+/-2,902	(X)	(X)
Nonfamily households	125	+/-45	125	(X)
Median nonfamily income (dollars)	19,766	+/-9,197	(X)	(X)
Mean nonfamily income (dollars)	37,022	+/-13,498	(X)	(X)
Median earnings for workers (dollars)	35,833	+/-10,046	(X)	(X)
Median earnings for male full-time, year-round workers (dollars)	52,685	+/-11,091	(X)	(X)
Median earnings for female full-time, year-round workers (dollars)	39,236	+/-4,939	(X)	(X)
HEALTH INSURANCE COVERAGE				
Civilian noninstitutionalized population	(X)	(X)	(X)	(X)
With health insurance coverage	(X)	(X)	(X)	(X)
With private health insurance	(X)	(X)	(X)	(X)
With public coverage	(X)	(X)	(X)	(X)
No health insurance coverage	(X)	(X)	(X)	(X)
Civilian noninstitutionalized population under 18 years	(X)	(X)	(X)	(X)
No health insurance coverage	(X)	(X)	(X)	(X)
Civilian noninstitutionalized population 18 to 64 years	(X)	(X)	(X)	(X)
In labor force:	(X)	(X)	(X)	(X)
Employed:	(X)	(X)	(X)	(X)
With health insurance coverage	(X)	(X)	(X)	(X)
With private health insurance	(X)	(X)	(X)	(X)
With public coverage	(X)	(X)	(X)	(X)
No health insurance coverage	(X)	(X)	(X)	(X)
Unemployed:	(X)	(X)	(X)	(X)
With health insurance coverage	(X)	(X)	(X)	(X)
With private health insurance	(X)	(X)	(X)	(X)
With public coverage	(X)	(X)	(X)	(X)
No health insurance coverage	(X)	(X)	(X)	(X)
Not in labor force:	(X)	(X)	(X)	(X)
With health insurance coverage	(X)	(X)	(X)	(X)
With private health insurance	(X)	(X)	(X)	(X)
With public coverage	(X)	(X)	(X)	(X)
No health insurance coverage	(X)	(X)	(X)	(X)
PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL				
All families	(X)	(X)	6.9%	+/-7.2
With related children under 18 years	(X)	(X)	10.7%	+/-16.0
With related children under 5 years only	(X)	(X)	39.1%	+/-43.7
Married couple families	(X)	(X)	7.8%	+/-8.1
With related children under 18 years	(X)	(X)	17.0%	+/-25.2
With related children under 5 years only	(X)	(X)	39.1%	+/-43.7
Families with female householder, no husband present	(X)	(X)	0.0%	+/-67.2
With related children under 18 years	(X)	(X)	0.0%	+/-67.2
With related children under 5 years only	(X)	(X)	-	**
All people	(X)	(X)	9.8%	+/-6.5
Under 18 years	(X)	(X)	7.4%	+/-11.5
Related children under 18 years	(X)	(X)	7.4%	+/-11.5
Related children under 5 years	(X)	(X)	29.0%	+/-37.3
Related children 5 to 17 years	(X)	(X)	0.0%	+/-30.9
18 years and over	(X)	(X)	10.2%	+/-6.5
18 to 64 years	(X)	(X)	12.4%	+/-8.7

Subject	Conesville town, Schoharie County, New York			
	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
65 years and over	(X)	(X)	5.0%	+/-7.4
People in families	(X)	(X)	7.3%	+/-7.3
Unrelated individuals 15 years and over	(X)	(X)	19.2%	+/-15.3

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

There were changes in the edit between 2009 and 2010 regarding Supplemental Security Income (SSI) and Social Security. The changes in the edit loosened restrictions on disability requirements for receipt of SSI resulting in an increase in the total number of SSI recipients in the American Community Survey. The changes also loosened restrictions on possible reported monthly amounts in Social Security income resulting in higher Social Security aggregate amounts. These results more closely match administrative counts compiled by the Social Security Administration.

Workers include members of the Armed Forces and civilians who were at work last week.

Industry codes are 4-digit codes and are based on the North American Industry Classification System 2007. The Industry categories adhere to the guidelines issued in Clarification Memorandum No. 2, "NAICS Alternate Aggregation Structure for Use By U.S. Statistical Agencies," issued by the Office of Management and Budget.

Occupation codes are 4-digit codes and are based on the Standard Occupational Classification (SOC) 2010. The 2010 Census occupation codes were updated in accordance with the 2010 revision of the SOC. To allow for the creation of 2006-2010 and 2008-2010 tables, occupation data in the multiyear files (2006-2010 and 2008-2010) were recoded to 2010 Census occupation codes. We recommend using caution when comparing data coded using 2010 Census occupation codes with data coded using previous Census occupation codes. For more information on the Census occupation code changes, please visit our website at http://www.census.gov/hhes/www/ioindex/.

While the 2006-2010 American Community Survey (ACS) data generally reflect the December 2009 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Explanation of Symbols:

1. An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

DP04

SELECTED HOUSING CHARACTERISTICS

2006-2010 American Community Survey 5-Year Estimates

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Subject	Conesville town, Schoharie County, New York			
	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
HOUSING OCCUPANCY				
Total housing units	882	+/-69	882	(X)
Occupied housing units	399	+/-69	45.2%	+/-6.2
Vacant housing units	483	+/-59	54.8%	+/-6.2
Homeowner vacancy rate	5.1	+/-3.7	(X)	(X)
Rental vacancy rate	0.0	+/-60.4	(X)	(X)
UNITS IN STRUCTURE				
Total housing units	882	+/-69	882	(X)
1-unit, detached	674	+/-82	76.4%	+/-6.5
1-unit, attached	4	+/-5	0.5%	+/-0.6
2 units	9	+/-14	1.0%	+/-1.6
3 or 4 units	0	+/-123	0.0%	+/-3.9
5 to 9 units	0	+/-123	0.0%	+/-3.9
10 to 19 units	0	+/-123	0.0%	+/-3.9
20 or more units	0	+/-123	0.0%	+/-3.9
Mobile home	195	+/-57	22.1%	+/-6.3
Boat, RV, van, etc.	0	+/-123	0.0%	+/-3.9
YEAR STRUCTURE BUILT				
Total housing units	882	+/-69	882	(X)
Built 2005 or later	31	+/-21	3.5%	+/-2.4
Built 2000 to 2004	25	+/-20	2.8%	+/-2.3
Built 1990 to 1999	91	+/-38	10.3%	+/-4.3
Built 1980 to 1989	265	+/-62	30.0%	+/-7.0
Built 1970 to 1979	157	+/-46	17.8%	+/-5.2
Built 1960 to 1969	30	+/-22	3.4%	+/-2.5
Built 1950 to 1959	54	+/-30	6.1%	+/-3.3
Built 1940 to 1949	39	+/-23	4.4%	+/-2.5
Built 1939 or earlier	190	+/-53	21.5%	+/-5.6
ROOMS				
Total housing units	882	+/-69	882	(X)
1 room	10	+/-12	1.1%	+/-1.4
2 rooms	28	+/-19	3.2%	+/-2.2
3 rooms	109	+/-44	12.4%	+/-4.7
4 rooms	166	+/-52	18.8%	+/-5.9
5 rooms	191	+/-53	21.7%	+/-5.7

Subject	Conesville town, Schoharie County, New York			
	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
6 rooms	126	+/-40	14.3%	+/-4.4
7 rooms	138	+/-49	15.6%	+/-5.5
3 rooms	73	+/-28	8.3%	+/-3.1
9 rooms or more	41	+/-25	4.6%	+/-2.8
Median rooms	5.2	+/-0.3	(X)	(X)
BEDROOMS				
Total housing units	882	+/-69	882	(X)
No bedroom	10	+/-12	1.1%	+/-1.4
1 bedroom	44	+/-23	5.0%	+/-2.7
2 bedrooms	287	+/-62	32.5%	+/-6.0
3 bedrooms	374	+/-66	42.4%	+/-6.9
4 bedrooms	130	+/-40	14.7%	+/-4.6
5 or more bedrooms	37	+/-22	4.2%	+/-2.4
HOUSING TENURE				
Occupied housing units	399	+/-69	399	(X)
Owner-occupied	373	+/-67	93.5%	+/-4.7
Renter-occupied	26	+/-19	6.5%	+/-4.7
Average household size of owner-occupied unit	2.07	+/-0.22	(X)	(X)
Average household size of renter-occupied unit	3.27	+/-0.80	(X)	(X)
YEAR HOUSEHOLDER MOVED INTO UNIT				
Occupied housing units	399	+/-69	399	(X)
Moved in 2005 or later	58	+/-30	14.5%	+/-7.8
Moved in 2000 to 2004	77	+/-35	19.3%	+/-7.8
Moved in 1990 to 1999	110	+/-43	27.6%	+/-10.2
Moved in 1980 to 1989	57	+/-29	14.3%	+/-7.2
Moved in 1970 to 1979	40	+/-27	10.0%	+/-6.7
Moved in 1969 or earlier	57	+/-36	14.3%	+/-8.0
VEHICLES AVAILABLE				
Occupied housing units	399	+/-69	399	(X)
No vehicles available	10	+/-16	2.5%	+/-3.9
1 vehicle available	126	+/-41	31.6%	+/-8.6
2 vehicles available	124	+/-51	31.1%	+/-11.2
3 or more vehicles available	139	+/-47	34.8%	+/-11.2
HOUSE HEATING FUEL				
Occupied housing units	399	+/-69	399	(X)
Utility gas	0	+/-123	0.0%	+/-8.4
Bottled, tank, or LP gas	20	+/-21	5.0%	+/-5.0
Electricity	27	+/-24	6.8%	+/-6.2
Fuel oil, kerosene, etc.	190	+/-59	47.6%	+/-11.1
Coal or coke	5	+/-8	1.3%	+/-2.1
Wood	126	+/-49	31.6%	+/-11.1
Solar energy	0	+/-123	0.0%	+/-8.4
Other fuel	31	+/-28	7.8%	+/-7.2
No fuel used	0	+/-123	0.0%	+/-8.4
SELECTED CHARACTERISTICS				
Occupied housing units	399	+/-69	399	(X)
Lacking complete plumbing facilities	10	+/-16	2.5%	+/-3.9
Lacking complete kitchen facilities	0	+/-123	0.0%	+/-8.4
No telephone service available	22	+/-20	5.5%	+/-5.0
OCCUPANTS PER ROOM				
Occupied housing units	399	+/-69	399	(X)
1.00 or less	399	+/-69	100.0%	+/-8.4
1.01 to 1.50	0	+/-123	0.0%	+/-8.4
1.51 or more	0	+/-123	0.0%	+/-8.4
VALUE				
Owner-occupied units	373	+/-67	373	(X)
Less than $50,000	37	+/-28	9.9%	+/-7.5
$50,000 to $99,999	83	+/-42	22.3%	+/-9.8
$100,000 to $149,999	104	+/-42	27.9%	+/-10.8

Subject	Conesville town, Schoharie County, New York			
	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
$150,000 to $199,999	33	+/-28	8.8%	+/-7.3
$200,000 to $299,999	49	+/-28	13.1%	+/-7.1
$300,000 to $499,999	42	+/-27	11.3%	+/-7.1
$500,000 to $999,999	25	+/-17	6.7%	+/-4.8
$1,000,000 or more	0	+/-123	0.0%	+/-9.0
Median (dollars)	124,400	+/-19,333	(X)	(X)
MORTGAGE STATUS				
Owner-occupied units	373	+/-67	373	(X)
Housing units with a mortgage	236	+/-61	63.3%	+/-11.7
Housing units without a mortgage	137	+/-49	36.7%	+/-11.7
SELECTED MONTHLY OWNER COSTS (SMOC)				
Housing units with a mortgage	236	+/-61	236	(X)
Less than $300	0	+/-123	0.0%	+/-13.8
$300 to $499	0	+/-123	0.0%	+/-13.8
$500 to $699	26	+/-23	11.0%	+/-9.8
$700 to $999	94	+/-42	39.8%	+/-14.3
$1,000 to $1,499	68	+/-39	28.8%	+/-14.8
$1,500 to $1,999	35	+/-23	14.8%	+/-9.1
$2,000 or more	13	+/-16	5.5%	+/-7.2
Median (dollars)	996	+/-139	(X)	(X)
Housing units without a mortgage	137	+/-49	137	(X)
Less than $100	0	+/-123	0.0%	+/-22.3
$100 to $199	12	+/-16	8.8%	+/-11.3
$200 to $299	38	+/-25	27.7%	+/-16.0
$300 to $399	31	+/-26	22.6%	+/-16.4
$400 or more	56	+/-30	40.9%	+/-17.5
Median (dollars)	358	+/-76	(X)	(X)
SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI)				
Housing units with a mortgage (excluding units where MOCAPI cannot be computed)	236	+/-61	236	(X)
Less than 20.0 percent	107	+/-48	45.3%	+/-14.3
20.0 to 24.9 percent	39	+/-34	16.5%	+/-14.1
25.0 to 29.9 percent	11	+/-14	4.7%	+/-5.8
30.0 to 34.9 percent	38	+/-26	16.1%	+/-11.2
35.0 percent or more	41	+/-27	17.4%	+/-11.6
Not computed	0	+/-123	(X)	(X)
Housing unit without a mortgage (excluding units where SMOCAPI cannot be computed)	137	+/-49	137	(X)
Less than 10.0 percent	69	+/-38	50.4%	+/-18.7
10.0 to 14.9 percent	11	+/-11	8.0%	+/-8.8
15.0 to 19.9 percent	4	+/-6	2.9%	+/-4.1
20.0 to 24.9 percent	11	+/-16	8.0%	+/-11.3
25.0 to 29.9 percent	10	+/-16	7.3%	+/-11.3
30.0 to 34.9 percent	6	+/-9	4.4%	+/-6.5
35.0 percent or more	26	+/-24	19.0%	+/-15.5
Not computed	0	+/-123	(X)	(X)
GROSS RENT				
Occupied units paying rent	23	+/-19	23	(X)
Less than $200	0	+/-123	0.0%	+/-64.2
$200 to $299	0	+/-123	0.0%	+/-64.2
$300 to $499	0	+/-123	0.0%	+/-64.2
$500 to $749	17	+/-17	73.9%	+/-38.2
$750 to $999	6	+/-8	26.1%	+/-38.2
$1,000 to $1,499	0	+/-123	0.0%	+/-64.2
$1,500 or more	0	+/-123	0.0%	+/-64.2
Median (dollars)	619	+/-83	(X)	(X)
No rent paid	3	+/-5	(X)	(X)
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI)				

Subject	Conesville town, Schoharie County, New York			
	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
Occupied units paying rent (excluding units where GRAPI cannot be computed)	23	+/-19	23	(X)
Less than 15.0 percent	5	+/-7	21.7%	+/-33.1
15.0 to 19.9 percent	6	+/-8	26.1%	+/-38.2
20.0 to 24.9 percent	0	+/-123	0.0%	+/-64.2
25.0 to 29.9 percent	0	+/-123	0.0%	+/-64.2
30.0 to 34.9 percent	0	+/-123	0.0%	+/-64.2
35.0 percent or more	12	+/-15	52.2%	+/-47.7
Not computed	3	+/-5	(X)	(X)

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

The median gross rent excludes no cash renters.

In prior years, the universe included all owner-occupied units with a mortgage. It is now restricted to include only those units where SMOCAPI is computed, that is, SMOC and household income are valid values.

In prior years, the universe included all owner-occupied units without a mortgage. It is now restricted to include only those units where SMOCAPI is computed, that is, SMOC and household income are valid values.

In prior years, the universe included all renter-occupied units. It is now restricted to include only those units where GRAPI is computed, that is, gross rent and household Income are valid values.

The 2009 and 2010 plumbing data for Puerto Rico will not be shown. Research indicates that the questions on plumbing facilities that were introduced in 2008 in the stateside American Community Survey and the 2008 Puerto Rico Community Survey may not have been appropriate for Puerto Rico.

While the 2006-2010 American Community Survey (ACS) data generally reflect the December 2009 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

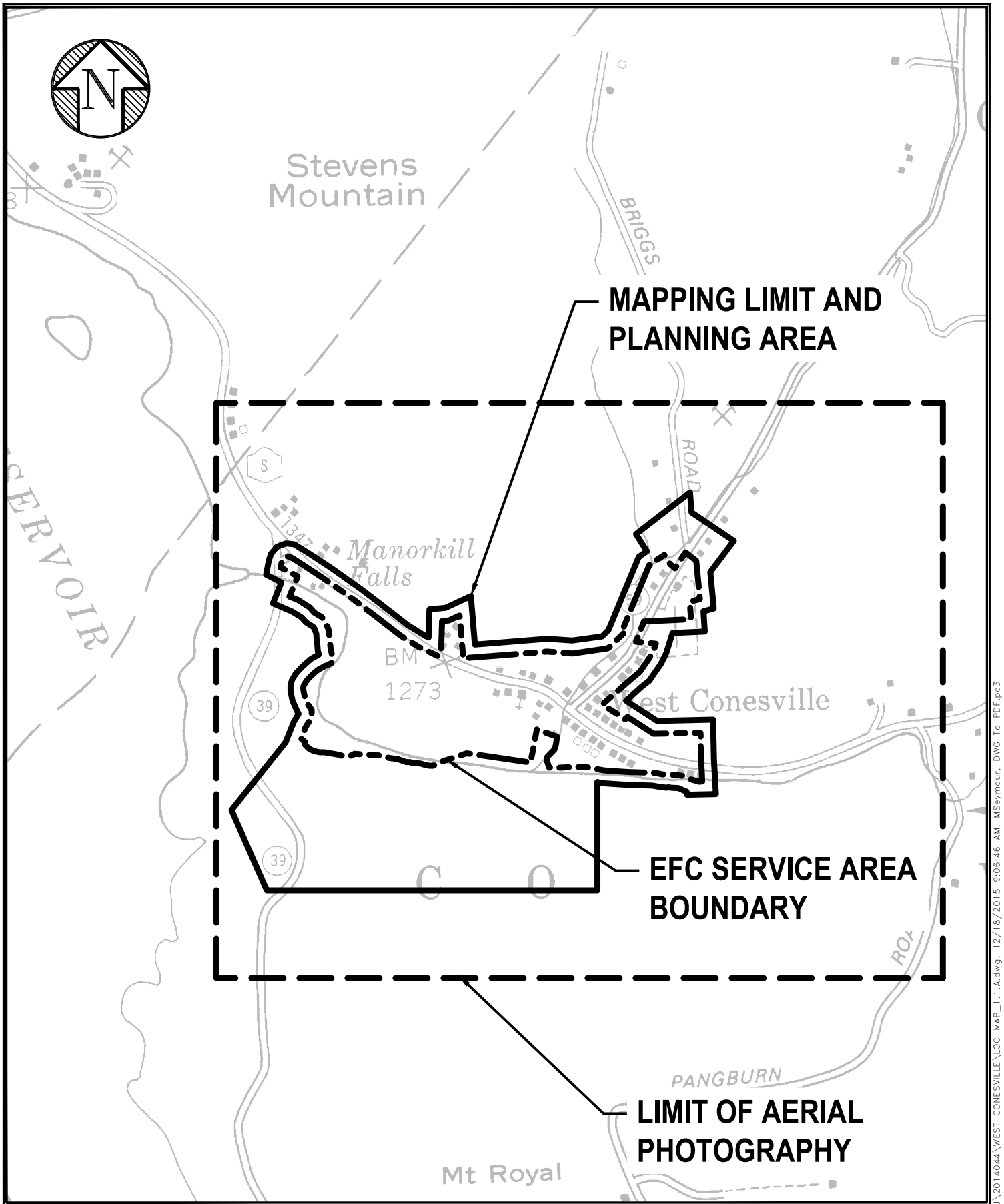
Source: U.S. Census Bureau, 2006-2010 American Community Survey

Explanation of Symbols:

1. An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

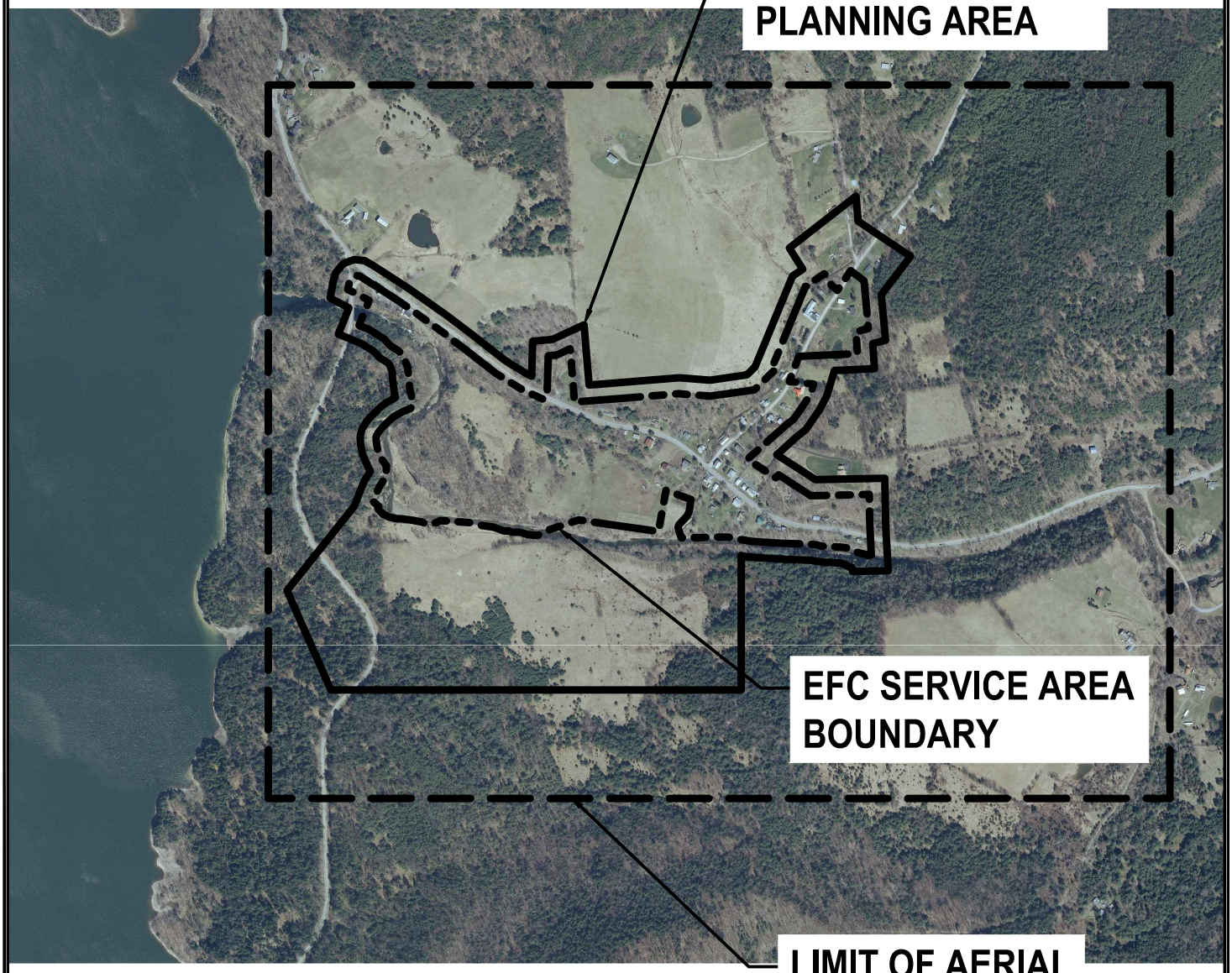
Exhibit 2.A

Aerial Photography and Mapping Limit



DATE	PROJECT NO.	WEST CONESVILLE AERIAL PHOTOGRAPHY AND MAPPING LIMIT	Lamont Engineers
5/2/2014	2014044		ENGINEERS • PLANNERS • FACILITY OPERATIONS
SCALE 1"=1,000'	DRAWN MKS	SCHOHARIE COUNTY NEW YORK STATE	

K:\APPS\SDSKPROJ\2014044\WEST CONESVILLE\LOC MAP_1.1.A.dwg, 12/18/2015 9:06:46 AM, MSeymour, DWG To PDF.pc3



DATE 1/22/13	PROJECT NO. 2012002_WCONE	WEST CONESVILLE AERIAL PHOTOGRAPHY AND MAPPING LIMIT SCHOHARIE COUNTY NEW YORK STATE	Lamont Engineers ENGINEERS • PLANNERS • FACILITY OPERATIONS
SCALE 1"=1,000'	DRAWN MKS		

Exhibit 3.1.a.A

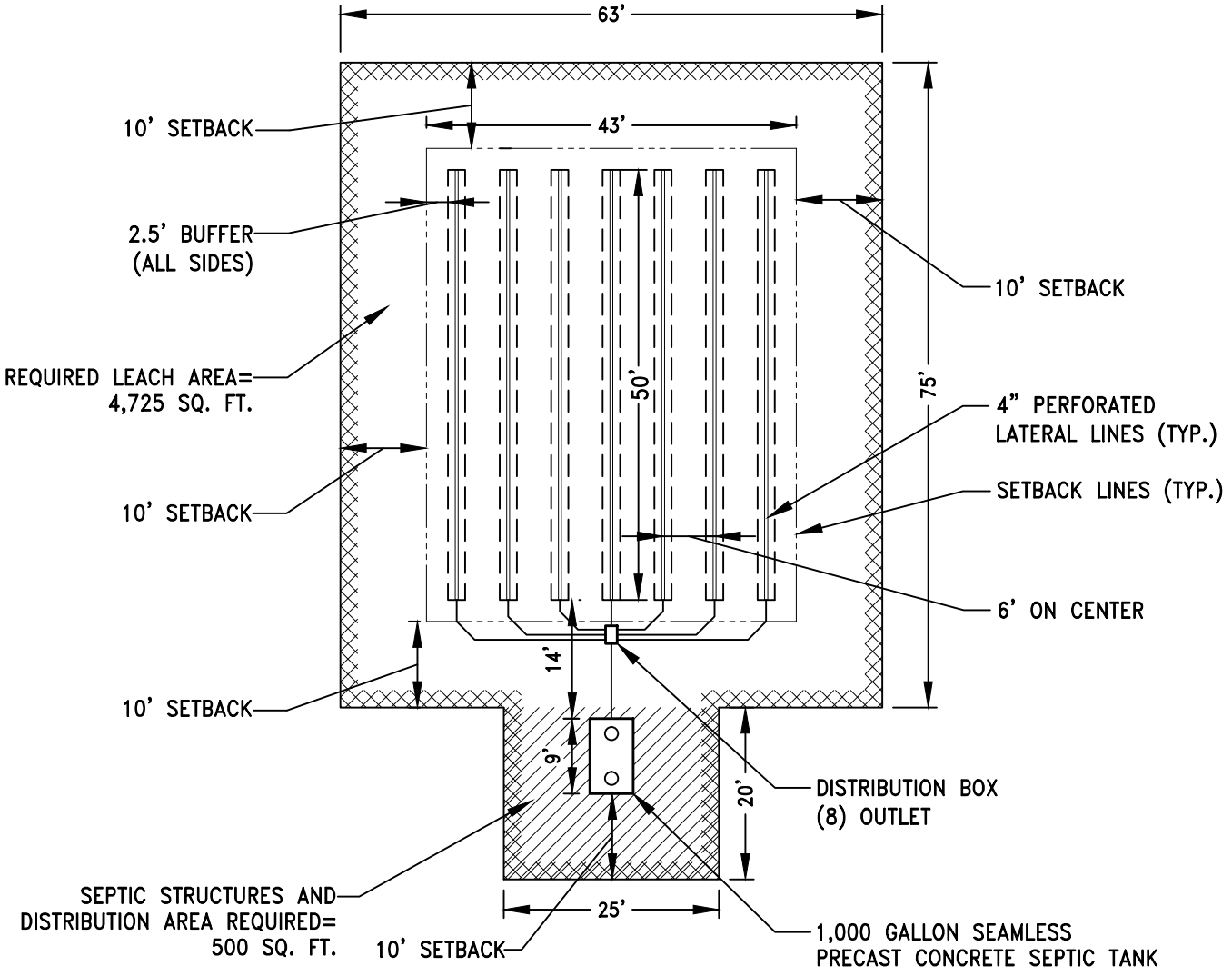
Sample Conventional Septic System Layout and Design
(0.6 gal/day/sf)

Typical Conventional Septic System Design - 0.6 gpd/sf Application Rate			
Notes			
1	flow rate	400	GPD (Gallons per Day)
2	Application rate	0.6	GPD per Sq. Ft.
	trench width	2	Feet
	lateral length	50	Feet
	lateral spacing	6	Feet on center
	setback	10	Feet minimum
	area required for structures	500	Sq. Ft. (constant)
	basal area	2.5	Feet
	flow rate / appl rate	667	Treatment Area
	treatment area / trench width	333	Lineal feet of pipe
	Feet of pipe / lateral length	7	# of laterals
	# of laterals Lateral spacing	43	Treatment area width
	required leach field area with setbacks and basal area	4,725	Sq. Ft. Leach area
	Leach area x 2	9,450	100% reserve
	Leach area w/reserve + structures area	9,950	Area required with septic structures and distribution lines
	Req'd area rounded up	10,000	Total conventional septic system area required

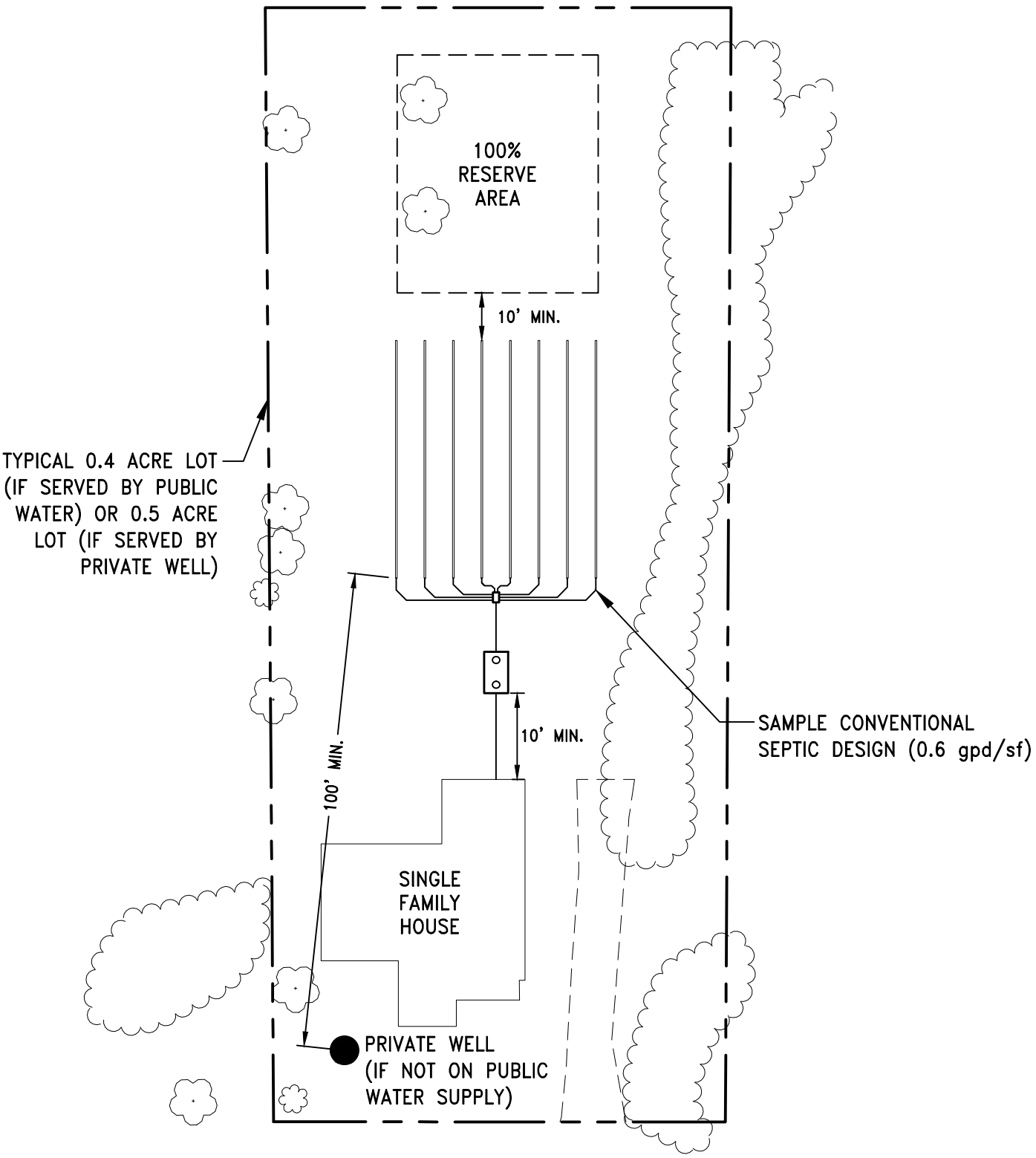
1 Based on "NYSDEC Design Standards for Wastewater Treatment Works, 1988" for a 3 bedroom home

2 Based on soil permeability and percolation rate

DESIGN CRITERIA	
FLOW RATE	400 GALLONS PER DAY
APPLICATION RATE	0.60 GALLONS PER DAY PER SQUARE FOOT



DATE	PROJECT NO.	HAMLET OF WEST CONESVILLE SAMPLE CONVENTIONAL SEPTIC SYSTEM DESIGN 0.6 GPD/SF EXHIBIT 3.1a.A	Lamont Engineers ENGINEERS • PLANNERS • FACILITY OPERATIONS
5/4/13	2012002		
SCALE	DRAWN		
1"=20'	JRB		

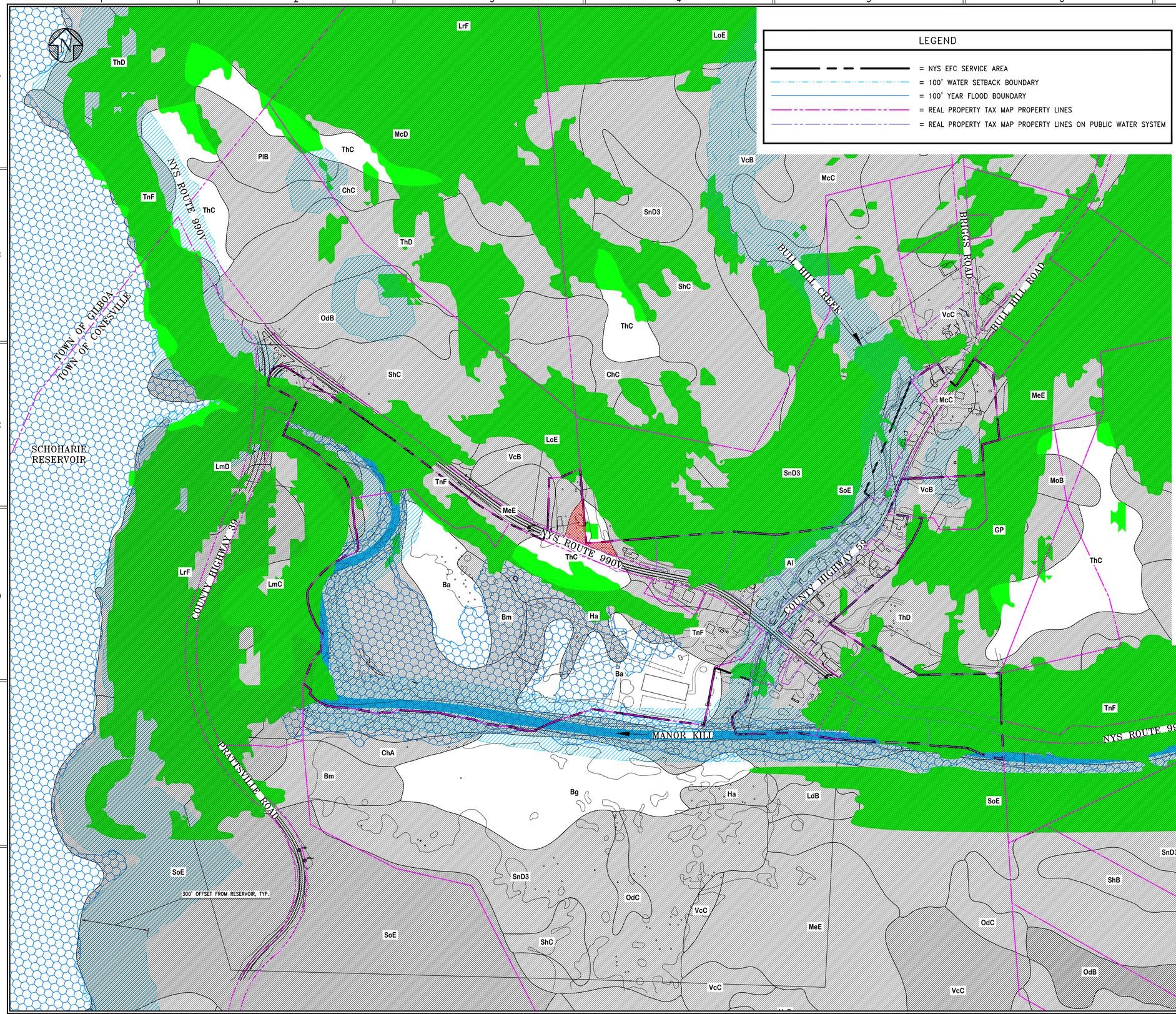


DATE	PROJECT NO.	HAMLET OF WEST CONESVILLE TYPICAL LOT LAYOUT EXHIBIT 3.1a.A	Lamont Engineers ENGINEERS • PLANNERS • FACILITY OPERATIONS
5/4/13	2012002		
SCALE	DRAWN		
1"=30'	JRB		

K:\APPS\SDSKPROJ\2012002_CWMP3\W CONESVILLE\EX_CON_SEPTIC.dwg, 12/18/2015 9:14:53 AM, MSeymour, DWG To PDF.pc3

Exhibit 3.1.a.B

Septic Limitation Map



LEGEND

= NYS EFC SERVICE AREA

= 100' WATER SETBACK BOUNDARY

= 100' YEAR FLOOD BOUNDARY

= REAL PROPERTY TAX MAP PROPERTY LINES

= REAL PROPERTY TAX MAP PROPERTY LINES ON PUBLIC WATER SYSTEM

LEGEND

GRADES ≥ 15% SLOPES	
UNSUITABLE SOILS (ALL BUT BARBOUR AND TUNKHANNOCK)	
PORTION OF PARCELS WITH USABLE AREA UNDER 23,000 SF WITH PRIVATE WATER SERVICE, CONTAINING BARBOUR OR TUNKHANNOCK SOILS	
WATERWAYS	
100' BUFFER FROM WATERWAYS	
FEMA AREAS OF 100 YEAR FLOOD, BASE FLOOD ELEVATIONS AND FLOOD HAZARDS NOT DETERMINED	

*USABLE AREA IS THE AREA OF THE PARCEL NOT ELIMINATED BY STEEP SLOPES, WATERWAY BUFFERS, UNSUITABLE SOILS AND THE 100 YEAR FLOOD PLAIN

NOTE:

1. PROPERTY BOUNDARIES SHOWN ARE NOT SURVEYED PROPERTY BOUNDARIES. THEY HAVE BEEN OBTAINED FROM THE SCHOHARIE COUNTY REAL PROPERTY OFFICE TAX MAPS, AND THEREFORE ARE ONLY ACCURATE TO THE EXTENT OF THE ACCURACY OF THOSE MAPS.

MAPPING ACKNOWLEDGMENTS:

TAX PARCEL DATA PROVIDED BY SCHOHARIE COUNTY REAL PROPERTY TAX DEPARTMENT, DATED 7/17/2012.

MAPPING COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY EXPOSED 04/16/15 BY LAND AND MAPPING SERVICES. 300 NORTH SECOND STREET, CLEARFIELD, PA. 16830.

FEMA FLOOD ZONE INFORMATION DIGITIZED FROM FEMA FIRM MAP NUMBER 36095C0418E. EFFECTIVE DATE APRIL 2, 2004.

SOIL TYPE LEGEND

ALLUVIAL LAND = Al
BARBOUR = Ba, Bg
BASHER = Bm
CHIPPEWA AND NORWICH = ChA, ChC
CHIPPEWA AND NORWICH = CnC
CULVERS = CuB, CuC
GRAVEL PITS = GP
HOLLY AND PAPAKATING = Ha
LAKEMONT AND MADALIN = LdB
LORDSTOWN CHANNERY = LmC, LmD
LORDSTOWN AND OQUAGA = LoE, LrF
MARDIN = McB, McC, McD, McE, MdF, MeE
MORRIS = MoB
ODESSA = OdB, OdC
OQUAGA = OsC
PHELPS = PlB
SCHOHARIE = ShB, ShC, SnD3, SoE
TUNKHANNOCK AND CHENANGO = TcA, TcC, ThA, ThA, ThC, ThCK, ThD, TnF, TuA
VOLUSIA = VcB, VcC, VmC

Lamont Engineers
ENGINEERS - PLANNERS
FACILITY OPERATIONS
548 MAIN ST., COBLESKILL, NY 12043
(518) 234-4028
www.lamontengineers.com

Consultant

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue/Rev.	Date	Remarks

Project Number	2014044
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	12/12/15
Scale	1"=200'
File Name	SEPTIC LIMITATIONS

Sheet Title

SEPTIC LIMITATION MAP

WEST CONESVILLE

Sheet No.

3.1.a.B

Exhibit 3.1.b.A

Flood Insurance Study Map

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the New York State Department of Environmental Conservation. The information was derived from data developed by the New York State Office for Technology Center for Geographic Information for the New York State Statewide Orthoimagery Program. The data were developed at 1-foot (urban areas) and 2-foot Ground Sample Distance (GSD) from aerial photography flown in April 2001. Areas collected at 2-foot GSD were resampled to 1-foot GSD for consistency. For information about the New York State Statewide Orthoimagery Program visit the NYS GIS Clearinghouse at http://www.nysgis.state.ny.us/orthoprogram.htm.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at www.fema.gov/msc.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- (A) — (A) Cross section line
- (23) — (23) Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4276000 M — 1000-meter Universal Transverse Mercator grid values, zone 18
- 600000 FT — 5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- ● M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
APRIL 2, 2004

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0418E

FIRM
FLOOD INSURANCE RATE MAP

for Schoharie County, New York
All Jurisdictions

CONTAINS:

COMMUNITY	NUMBER
CONESVILLE, TOWN OF	361606
GILBOA, TOWN OF	361433

PANEL 418 OF 510
MAP SUFFIX: E
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
36095C0418E

EFFECTIVE DATE
APRIL 2, 2004

Federal Emergency Management Agency

Exhibit 3.2.b.A

Soils Mapping and Soils Descriptions

West Conesville CWMP
Perc & Permeability of Various Soil Types

Soil Name and Map Symbol	Depth (In)	Range of Permeability (µm/sec)		Range of Percolation* Rate (min./In)		Application Rate (gpd/sf)
Al	0 to 5	1.4	141	302	3	Not suitable
(Alluvial Land)	**5 to 70**	**0.42**	**141**	**1008**	**3**	**Not suitable**
Ba, Bg	0 to 8	4	14	106	30	0.2
(Barbour and Tioga)	8 to 24	14	42	30	10	0.6
	24 to 65	**42**	**141**	**10**	**3**	**0.9**
McC	0 to 6	4	14	106	30	Not suitable
(Mardin)	6 to 18	4	14	106	30	Not suitable
	18 to 22	0.42	1.4	1008	302	Not suitable
	22 to 56	**0.42**	**1.4**	**1008**	**302**	**Not suitable**
ThC	0 to 8	14	42	30	10	0.6
(Tunkhannock and Chenango)	5 to 21	14	42	30	10	0.6
	21 to 60	**14**	**141**	**30**	**3**	**0.6**
VcB, VcC	0 to 7	4	14	106	30	Not suitable
(Volusia)	7 to 11	4	14	106	30	Not suitable
	11 to 15	4	14	106	30	Not suitable
	15-46	**0.42**	**1.4**	**1008**	**302**	**Not suitable**
	46 to 60	0.42	1.4	1008	302	Not suitable
ShC, SnD3	0 to 10	1.4	14	302	30	Not suitable
(Schoharie and Hudson)	9 to 14	0.42	1.4	1008	302	Not suitable
	14 to 36	**0.42**	**1.4**	**1008**	**302**	**Not suitable**
	36 to 60	0.42	1.4	1008	302	Not suitable
SoE	0-10	1.4	4	302	106	0.2
(Schoharie soils)	**10-44**	**0.42**	**1.4**	**1008**	**302**	**Not suitable**
	44-60	0.42	1.4	1008	302	Not suitable

*µm/sec $(hr/423.3min)^{-1}$ = min/inch

Table 10. Recommended Sewage Application Rates

Percolation Rate (min/inch)	Soil Type	Application Rate (gal/day/sq. ft.)
< 1	Gravel, Coarse Sand	Not suitable [a]
1-5	Coarse-Medium Sand	1.20
6-7		1.00
8-10	Fine Sand, Loamy Sand	0.90
11-15		0.80
16-20		0.70
21-30	Sandy Loam, Loam	0.60
31-45		0.50
46-60	Loam, Porous Silt Loam	0.45
61-120	Silty Clay Loam, Clay Loam	0.20 [b]
> 120	Clay	Not Suitable

a) May be suitable if either a modified absorption system or enhanced treatment prior to discharge is utilized.

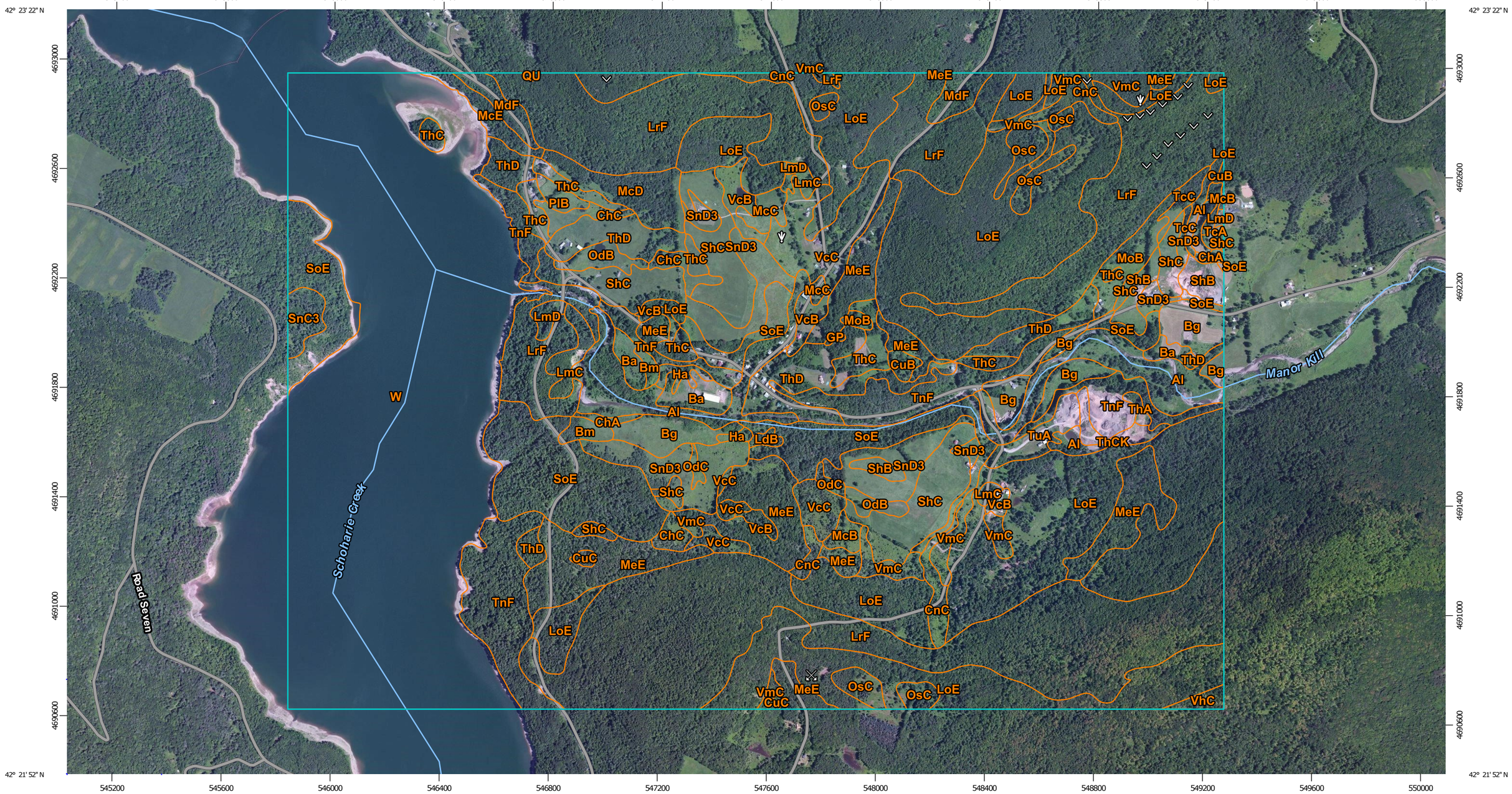
b) Careful site analysis is necessary to show that these soils will transmit the flow of wastewater. Extreme caution must be used to avoid damage to the site during construction or the system will fail. Surface discharge of the wastewater may be preferable in many cases.

Conventional absorption systems preceded solely by septic tanks should not be used for rapidly permeable soils with percolation rates faster than 1 min/inch as treatment provided may not be sufficient to protect nearby water supplies from contamination by nitrates, detergents, or other chemicals. Information submitted by the engineer must demonstrate that a modified absorption system will provide the degree of treatment necessary for the target compound(s). Also, conventional absorption systems should be avoided if the percolation rate is slower than 60 min/inch, especially if other difficult factors are present such as steep slopes, depressions, or high groundwater or bedrock. Conventional absorption systems shall not be permitted if the percolation rate is slower than 120 min/inch.

If it can be reasonably expected that the site will be served by public sewers within five years, higher application rates may be allowed. This allowance will be judged on a case-by-case basis by the reviewing engineer.

ADVISORY FOR FAST SOILS IN SPECIFIC AQUIFER AREAS

The application rates given in Table 10 may not be sufficient to protect groundwater in soils with percolation rates faster than 10 min/inch which overlie aquifers designated by New York State as Primary Water Supply Aquifers and Principal Aquifers. In these areas, extra protection may be required to prevent degradation of groundwater quality. When the design population density exceeds 2 to 4 dwelling units/acre (6 to 11



Map Scale: 1:13,600 if printed on B landscape (17" x 11") sheet.

N

0 200 400 800 1200 Meters

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,800 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Greene County, New York
Survey Area Data: Version 14, Sep 21, 2015

Soil Survey Area: Schoharie County, New York
Survey Area Data: Version 11, Sep 24, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2010—Oct 9, 2010

The orthophoto or other base map on which the soil lines were 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

Greene County, New York (NY039)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
VhC	Vly-Halcott complex, strongly sloping, very rocky	2.6	0.1%
Subtotals for Soil Survey Area		**2.6**	**0.1%**
Totals for Area of Interest		**1,978.9**	**100.0%**

Schoharie County, New York (NY095)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Al	Alluvial land	58.8	3.0%
Ba	Barbour and Tioga fine sandy loams	13.1	0.7%
Bg	Barbour and Tioga loams	33.6	1.7%
Bm	Basher and Middlebury silt loams	4.8	0.2%
ChA	Chippewa and Norwich stony silt loams, 0 to 3 percent slopes	2.5	0.1%
ChC	Chippewa and Norwich stony silt loams, 3 to 15 percent slopes	10.5	0.5%
CnC	Chippewa and Norwich soils, 0 to 15 percent slopes, extremely stony	12.9	0.7%
CuB	Wellsboro stony silt loam, 2 to 8 percent slopes	2.7	0.1%
CuC	Wellsboro stony silt loam, 8 to 15 percent slopes	1.6	0.1%
GP	Gravel pits	0.5	0.0%
Ha	Holly and Papakating silt loams	3.4	0.2%
LdB	Lakemont and Madalin silty clay loams, 2 to 6 percent slopes	1.3	0.1%
LmC	Lordstown channery silt loam, 5 to 15 percent slopes	9.3	0.5%
LmD	Lordstown channery silt loam, 15 to 25 percent slopes	3.7	0.2%
LoE	Lordstown and Oquaga very stony soils, 0 to 35 percent slopes	371.5	18.8%
LrF	Lordstown, Oquaga, and Nassau soils, 35 to 70 percent slopes	364.1	18.4%
McB	Mardin channery silt loam, 2 to 8 percent slopes	3.3	0.2%

Schoharie County, New York (NY095)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
McC	Mardin channery silt loam, 8 to 15 percent slopes	5.4	0.3%
McD	Mardin channery silt loam, 15 to 25 percent slopes	16.0	0.8%
McE	Bath channery silt loam, 25 to 35 percent slopes	6.5	0.3%
MdF	Bath and Lackawanna soils, 35 to 65 percent slopes	11.9	0.6%
MeE	Mardin and Wellsboro soils, 0 to 35 percent slopes, very stony	92.3	4.7%
MoB	Morris stony silt loam, 2 to 8 percent slopes	11.5	0.6%
OdB	Odessa and Rhinebeck silt loams, 2 to 6 percent slopes	8.4	0.4%
OdC	Odessa and Rhinebeck silt loams, 6 to 12 percent slopes	2.5	0.1%
OsC	Oquaga stony silt loam, 3 to 15 percent slopes	19.4	1.0%
PlB	Phelps gravelly silt loam, clay substratum, 2 to 8 percent slopes	3.2	0.2%
QU	Quarries	0.3	0.0%
ShB	Schoharie and Hudson silt loams, 2 to 6 percent slopes	12.5	0.6%
ShC	Schoharie and Hudson silt loams, 6 to 12 percent slopes	64.7	3.3%
SnC3	Schoharie and Hudson silty clay loams, 6 to 12 percent slopes, eroded	6.5	0.3%
SnD3	Schoharie and Hudson silty clay loams, 12 to 20 percent slopes, eroded	53.5	2.7%
SoE	Schoharie soils, 20 to 40 percent slopes	110.8	5.6%
TcA	Tunkhannock and Chenango gravelly loams, fans, 0 to 5 percent slopes	1.3	0.1%
TcC	Tunkhannock and Chenango gravelly loams, fans, 5 to 15 percent slopes	5.3	0.3%
ThA	Tunkhannock and Chenango gravelly silt loams, 0 to 5 percent simple slopes	1.4	0.1%
ThC	Tunkhannock and Chenango gravelly silt loams, 5 to 15 percent simple slopes	23.6	1.2%
ThCK	Tunkhannock and Chenango gravelly silt loams, 3 to 15 percent complex slopes	5.2	0.3%

Schoharie County, New York (NY095)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
ThD	Tunkhannock and Chenango gravelly silt loams, 15 to 25 percent slopes	54.5	2.8%
TnF	Tunkhannock and Chenango soils, 25 to 60 percent slopes	81.4	4.1%
TuA	Tunkhannock cobbly sandy loam, 0 to 5 slopes	8.1	0.4%
VcB	Volusia channery silt loam, 3 to 8 percent slopes	14.2	0.7%
VcC	Volusia channery silt loam, 8 to 15 percent slopes	36.2	1.8%
VmC	Volusia, Morris, and Erie soils, 0 to 15 percent slopes, very stony	21.6	1.1%
W	Water	400.0	20.2%
Subtotals for Soil Survey Area		**1,976.3**	**99.9%**
Totals for Area of Interest		**1,978.9**	**100.0%**

Soil Features

This table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage, or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Report—Soil Features

Soil Features– Schoharie County, New York									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	*In*		*In*	*In*			
AI—Alluvial land									
Fluvaquents		—	—		—	—	High	High	High
Udifluvents		—	—		—	—	Moderate	High	High
Ba—Barbour and Tioga fine sandy loams									
Barbour		—	—		—	—	Moderate	Low	Moderate
Tioga		—	—		—	—	Moderate	Low	Moderate
Bg—Barbour and Tioga loams									
Barbour		—	—		—	—	Moderate	Low	Moderate
Tioga		—	—		—	—	Moderate	Low	Moderate
Bm—Basher and Middlebury silt loams									
Basher		—	—		—	—	High	Moderate	Moderate
Middlebury		—	—		—	—	High	Moderate	Low
ChA—Chippewa and Norwich stony silt loams, 0 to 3 percent slopes									
Chippewa	Fragipan	12-20	—		—	—	High	High	Moderate
Norwich	Fragipan	10-24	—		—	—	High	High	Moderate

Soil Features– Schoharie County, New York									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	*In*		*In*	*In*			
ChC—Chippewa and Norwich stony silt loams, 3 to 15 percent slopes									
Chippewa	Fragipan	12-20	—		—	—	High	High	Moderate
Norwich	Fragipan	10-24	—		—	—	High	High	Moderate
GP—Gravel pits									
Gravel pits		—	—		—	—			
Ha—Holly and Papakating silt loams									
Holly		—	—		—	—	High	High	Low
Papakating		—	—		—	—	High	High	Low
LdB—Lakemont and Madalin silty clay loams, 2 to 6 percent slopes									
Lakemont		—	—		—	—	Moderate	High	Low
Madalin		—	—		—	—	High	High	Low
LmC—Lordstown channery silt loam, 5 to 15 percent slopes									
Lordstown	Lithic bedrock	20-40	—	Indurated	—	—	Moderate	Low	High
LmD—Lordstown channery silt loam, 15 to 25 percent slopes									
Lordstown	Lithic bedrock	20-40	—	Indurated	—	—	Moderate	Low	High

Soil Features– Schoharie County, New York									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	*In*		*In*	*In*			
LoE—Lordstown and Oquaga very stony soils, 0 to 35 percent slopes									
Lordstown	Lithic bedrock	20-40	—	Indurated	—	—	Moderate	Low	High
Oquaga	Lithic bedrock	20-40	—	Indurated	—	—	Moderate	Low	Moderate
LrF—Lordstown, Oquaga, and Nassau soils, 35 to 70 percent slopes									
Lordstown	Lithic bedrock	20-40	—	Indurated	—	—	Moderate	Low	High
Nassau	Lithic bedrock	10-20	—	Indurated	—	—	Moderate	Low	High
Oquaga	Lithic bedrock	20-40	—	Indurated	—	—	Moderate	Low	Moderate
McC—Mardin channery silt loam, 8 to 15 percent slopes									
Mardin	Fragipan	18-30	—		—	—	Moderate	Moderate	Low
MeE—Mardin and Culvers very stony soils, 0 to 35 percent slopes									
Mardin	Fragipan	18-30	—		—	—	Moderate	Moderate	Low
Culvers	Fragipan	16-24	—		—	—	High	High	Moderate
MoB—Morris stony silt loam, 2 to 8 percent slopes									
Morris	Fragipan	12-18	—		—	—	High	High	Moderate

Soil Features– Schoharie County, New York									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	*In*		*In*	*In*			
OdB—Odessa and Rhinebeck silt loams, 2 to 6 percent slopes									
Odessa		—	—		—	—	High	High	Low
Rhinebeck		—	—		—	—	High	High	Low
OdC—Odessa and Rhinebeck silt loams, 6 to 12 percent slopes									
Odessa		—	—		—	—	High	High	Low
Rhinebeck		—	—		—	—	High	High	Low
PlB—Phelps gravelly silt loam, clay substratum, 2 to 8 percent slopes									
Phelps		—	—		—	—	High	Moderate	Low
ShB—Schoharie and Hudson silt loams, 2 to 6 percent slopes									
Schoharie		—	—		—	—	Moderate	High	Low
Hudson		—	—		—	—	High	High	Low
ShC—Schoharie and Hudson silt loams, 6 to 12 percent slopes									
Schoharie		—	—		—	—	Moderate	High	Low
Hudson		—	—		—	—	High	High	Low

Soil Features-- Schoharie County, New York									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	*In*		*In*	*In*			
SnD3—Schoharie and Hudson silty clay loams, 12 to 20 percent slopes, eroded									
Schoharie		—	—		—	—	Moderate	High	Low
Hudson		—	—		—	—	High	High	Low
SoE—Schoharie soils, 20 to 40 percent slopes									
Schoharie		—	—		—	—	Moderate	High	Low
ThC—Tunkhannock and Chenango gravelly silt loams, 5 to 15 percent simple slopes									
Tunkhannock		—	—		—	—	Low	Low	High
Chenango		—	—		—	—	Moderate	Low	Moderate
ThD—Tunkhannock and Chenango gravelly silt loams, 15 to 25 percent slopes									
Tunkhannock		—	—		—	—	Low	Low	High
Chenango		—	—		—	—	Moderate	Low	Moderate

Soil Features– Schoharie County, New York									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	*In*		*In*	*In*			
TnF—Tunkhannock and Chenango soils, 25 to 60 percent slopes									
Tunkhannock		—	—		—	—	Low	Low	High
Chenango		—	—		—	—	Moderate	Low	Moderate
VcB—Volusia channery silt loam, 3 to 8 percent slopes									
Volusia	Fragipan	10-18	—		—	—	High	High	Moderate
VcC—Volusia channery silt loam, 8 to 15 percent slopes									
Volusia	Fragipan	10-18	—		—	—	High	High	Moderate
W—Water									
Water		—	—		—	—			

Data Source Information

Soil Survey Area: Schoharie County, New York
Survey Area Data: Version 8, Dec 20, 2011

Report—Physical Soil Properties

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
Al—Alluvial land														
Fluvaquents	0-5	0-30- 50	50-56- 80	0-14- 27	1.10-1.50	1.40-141.00	0.06-0.18	0.0-2.9	0.0-5.0	.24	.32		3	86
	5-72	0-30- 91	0-56- 80	0-14- 40	1.20-1.60	0.42-141.00	0.03-0.16	0.0-2.9	0.0-3.0	.28				
Udifluvents	0-4	24-43- 52	28-40- 50	7-17- 27	1.10-1.50	1.40-141.00	0.03-0.15	0.0-2.9	0.0-3.0	.20	.28		3	86
	4-70	0-43-100	0-40- 73	0-17- 40	1.20-1.70	0.42-141.00	0.03-0.16	0.0-2.9	0.0-1.0					
Ba—Barbour and Tioga fine sandy loams														
Barbour	0-8	44-69- 85	0-22- 49	0-10- 17	1.15-1.40	4.00-14.00	0.16-0.21	0.0-2.9	1.0-5.0	.24	.24	3	5	56
	8-24	15-45- 85	0-43- 80	0-12- 17	1.15-1.45	14.00-42.00	0.10-0.19	0.0-2.9	0.0-3.0	.32	.43			
	24-65	15-84-10 0	0-10- 80	0- 7- 17	1.25-1.55	42.00-141.00	0.02-0.07	0.0-2.9	0.0-2.0	.17	.37			
Tioga	0-9	44-69- 85	0-22- 49	0-10- 17	1.15-1.40	4.00-42.00	0.15-0.21	0.0-2.9	2.0-6.0	.24	.24	5	5	56
	9-18	15-45- 85	0-43- 80	0-12- 17	1.15-1.45	4.00-42.00	0.07-0.20	0.0-2.9	0.0-3.0	.28	.43			
	18-27	15-45- 85	0-43- 80	0-12- 17	1.15-1.45	4.00-42.00	0.07-0.20	0.0-2.9	0.0-2.0	.28	.43			
	27-60	15-97-10 0	0- 2- 80	0- 2- 17	1.25-1.55	4.00-141.00	0.02-0.20	0.0-2.9	0.0-1.0	.28				

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
Bg—Barbour and Tioga loams														
Barbour	0-8	32-45-52	28-43-50	7-12-17	1.15-1.40	4.00-14.00	0.16-0.21	0.0-2.9	1.0-5.0	.24	.24	3	5	56
	8-24	15-45-85	0-43-80	0-12-17	1.15-1.45	14.00-42.00	0.10-0.19	0.0-2.9	0.0-3.0	.32	.43			
	24-65	15-84-100	0-9-80	0-7-17	1.25-1.55	42.00-141.00	0.02-0.07	0.0-2.9	0.0-2.0	.17	.37			
Tioga	0-9	32-45-52	28-43-50	7-12-17	1.15-1.40	4.00-42.00	0.15-0.21	0.0-2.9	2.0-6.0	.24	.24	5	5	56
	9-18	15-45-85	0-43-80	0-12-17	1.15-1.45	4.00-42.00	0.07-0.20	0.0-2.9	0.0-3.0	.28	.43			
	18-27	15-45-85	0-43-80	0-12-17	1.15-1.45	4.00-42.00	0.07-0.20	0.0-2.9	0.0-2.0	.28	.43			
	27-60	15-97-100	0-2-80	0-2-17	1.25-1.55	4.00-141.00	0.02-0.20	0.0-2.9	0.0-1.0	.28				
Bm—Basher and Middlebury silt loams														
Basher	0-11	15-32-50	50-56-80	0-12-17	1.15-1.40	4.00-14.00	0.15-0.21	0.0-2.9	2.0-6.0	.37	.37	4	5	56
	11-15	15-32-85	0-56-80	0-12-17	1.15-1.45	4.00-14.00	0.10-0.19	0.0-2.9	0.0-3.0	.32	.43			
	15-24	15-64-85	0-26-80	0-10-17	1.25-1.55	1.40-14.00	0.10-0.19	0.0-2.9	0.0-2.0	.32	.43			
	24-70	15-78-100	0-16-80	0-6-17	1.25-1.55	4.00-42.00	0.02-0.07	0.0-2.9	0.0-2.0	.17	.32			
Middlebury	0-7	15-32-50	50-56-80	0-12-17	1.15-1.40	4.00-14.00	0.14-0.21	0.0-2.9	3.0-7.0	.37	.37	5	5	56
	7-18	15-32-85	0-56-80	0-12-17	1.15-1.45	4.00-14.00	0.10-0.20	0.0-2.9	0.0-3.0	.28	.32			
	18-24	15-45-85	0-43-80	0-12-17	1.15-1.45	4.00-14.00	0.10-0.20	0.0-2.9	0.0-2.0	.28	.32			
	24-60	15-67-85	0-23-80	0-10-17	1.25-1.55	14.00-141.00	0.01-0.10	0.0-2.9	0.0-2.0	.20	.37			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
ChA—Chippewa and Norwich stony silt loams, 0 to 3 percent slopes														
Chippewa	0-1	-60-	-30-	-10-	0.30-0.60	1.40-141.00	0.35-0.45	—	50.0-95.0			2	5	56
	1-4	15-26-32	50-52-80	18-22-27	1.10-1.40	4.00-14.00	0.14-0.20	0.0-2.9	3.0-10.0	.24	.32			
	4-16	15-26-52	28-52-80	18-22-35	1.20-1.50	4.00-14.00	0.10-0.17	0.0-2.9	0.0-3.0	.32	.32			
	16-26	15-26-52	28-52-80	18-22-35	1.70-2.00	0.42-1.40	0.01-0.02	0.0-2.9	0.0-1.0	.24	.32			
	26-60	15-41-52	28-37-80	18-22-35	1.65-1.95	0.42-1.40	0.01-0.02	0.0-2.9	0.0-1.0	.24	.32			
Norwich	0-3	15-26-32	50-52-80	18-22-27	1.10-1.40	4.00-14.00	0.12-0.18	0.0-2.9	3.0-10.0	.24	.32	2	5	56
	3-13	15-26-52	28-52-80	18-22-27	1.20-1.50	4.00-14.00	0.11-0.18	0.0-2.9	0.0-3.0	.24	.37			
	13-23	15-41-52	28-37-80	18-22-27	1.70-2.00	0.42-1.40	0.02-0.04	0.0-2.9	0.0-1.0	.24	.55			
	23-60	15-41-52	28-37-80	18-22-27	1.70-2.00	0.42-1.40	0.02-0.04	0.0-2.9	0.0-1.0	.24	.55			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
ChC—Chippewa and Norwich stony silt loams, 3 to 15 percent slopes														
Chippewa	0-1	-60-	-30-	-10-	0.30-0.60	1.40-141.00	0.35-0.45	—	50.0-95.0			2	5	56
	1-4	15-26- 32	50-52- 80	18-22- 27	1.10-1.40	4.00-14.00	0.14-0.20	0.0-2.9	3.0-10.0	.24	.32			
	4-16	15-26- 52	28-52- 80	18-22- 35	1.20-1.50	4.00-14.00	0.10-0.17	0.0-2.9	0.0-3.0	.32	.32			
	16-26	15-26- 52	28-52- 80	18-22- 35	1.70-2.00	0.42-1.40	0.01-0.02	0.0-2.9	0.0-1.0	.24	.32			
	26-60	15-41- 52	28-37- 80	18-22- 35	1.65-1.95	0.42-1.40	0.01-0.02	0.0-2.9	0.0-1.0	.24	.32			
Norwich	0-3	15-26- 32	50-52- 80	18-22- 27	1.10-1.40	4.00-14.00	0.12-0.18	0.0-2.9	3.0-10.0	.24	.32	2	5	56
	3-13	15-26- 52	28-52- 80	18-22- 27	1.20-1.50	4.00-14.00	0.11-0.18	0.0-2.9	0.0-3.0	.24	.37			
	13-23	15-41- 52	28-37- 80	18-22- 27	1.70-2.00	0.42-1.40	0.02-0.04	0.0-2.9	0.0-1.0	.24	.55			
	23-60	15-41- 52	28-37- 80	18-22- 27	1.70-2.00	0.42-1.40	0.02-0.04	0.0-2.9	0.0-1.0	.24	.55			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
CnC—Chippewa and Norwich very stony soils, 0 to 15 percent slopes														
Chippewa	0-1	-60-	-30-	-10-	0.30-0.60	1.40-141.00	0.35-0.45	—	50.0-95.0			2	8	0
	1-4	15-26- 32	50-52- 80	18-22- 27	1.10-1.40	4.00-14.00	0.14-0.20	0.0-2.9	3.0-10.0	.24	.32			
	4-16	15-26- 52	28-52- 80	18-22- 35	1.20-1.50	4.00-14.00	0.10-0.17	0.0-2.9	0.0-3.0	.32	.32			
	16-26	15-26- 52	28-52- 80	18-22- 35	1.70-2.00	0.42-1.40	0.01-0.02	0.0-2.9	0.0-1.0	.24	.32			
	26-60	15-41- 52	28-37- 80	18-22- 35	1.65-1.95	0.42-1.40	0.01-0.02	0.0-2.9	0.0-1.0	.24	.32			
Norwich	0-3	15-26- 32	50-52- 80	18-22- 27	1.10-1.40	4.00-14.00	0.12-0.18	0.0-2.9	3.0-10.0	.24	.32	2	8	0
	3-13	15-26- 52	28-52- 80	18-22- 27	1.20-1.50	4.00-14.00	0.11-0.18	0.0-2.9	0.0-3.0	.24	.37			
	13-23	15-41- 52	28-37- 80	18-22- 27	1.70-2.00	0.42-1.40	0.02-0.04	0.0-2.9	0.0-1.0	.24	.55			
	23-60	15-41- 52	28-37- 80	18-22- 27	1.70-2.00	0.42-1.40	0.02-0.04	0.0-2.9	0.0-1.0	.24	.55			
CuB—Culvers stony silt loam, 2 to 8 percent slopes														
Culvers	0-6	15-32- 50	50-56- 80	0-12- 17	1.20-1.40	4.00-14.00	0.10-0.14	0.0-2.9	3.0-5.0	.24	.32	3	6	48
	6-18	15-32- 52	28-56- 80	0-12- 17	1.30-1.50	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.28	.43			
	18-20	15-45- 52	28-43- 80	0-12- 17	1.30-1.50	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.28	.43			
	20-55	15-32- 52	28-56- 80	0-12- 17	1.70-1.95	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.28				
	55-72	15-32- 52	28-56- 80	0-12- 17	1.70-1.95	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.28				

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
CuC—Culvers stony silt loam, 8 to 15 percent slopes														
Culvers	0-6	15-32- 50	50-56- 80	0-12- 17	1.20-1.40	4.00-14.00	0.10-0.14	0.0-2.9	3.0-5.0	.24	.32	3	6	48
	6-18	15-32- 52	28-56- 80	0-12- 17	1.30-1.50	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.28	.43			
	18-20	15-45- 52	28-43- 80	0-12- 17	1.30-1.50	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.28	.43			
	20-55	15-32- 52	28-56- 80	0-12- 17	1.70-1.95	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.28				
	55-72	15-32- 52	28-56- 80	0-12- 17	1.70-1.95	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.28				
GP—Gravel pits														
Gravel pits	—	—	—	—	—	—	—	—	—					
Ha—Holly and Papakating silt loams														
Holly	0-4	15-26- 32	50-52- 80	18-22- 27	1.05-1.40	1.40-14.00	0.17-0.22	0.0-2.9	3.0-6.0	.43	.43	5	6	48
	4-26	15-26- 32	40-52- 80	18-22- 35	1.25-1.55	0.42-1.40	0.08-0.19	0.0-2.9	0.0-4.0	.43	.55			
	26-60	15-26- 82	0-52- 80	18-22- 35	1.25-1.55	0.42-1.40	0.08-0.19	0.0-2.9	0.0-2.0	.43	.55			
Papakating	**0-11**	**0-11- 32**	**50-67- 80**	**18-22- 27**	**1.05-1.40**	**1.40-14.00**	**0.17-0.22**	**0.0-2.9**	**3.0-6.0**	**.43**	**.43**	**5**	**6**	**48**
	11-34	**0- 6- 14**	**50-62- 80**	**18-32- 35**	**1.25-1.55**	**0.42-1.40**	**0.08-0.19**	**0.0-2.9**	**0.0-4.0**	**.43**	**.55**			
	34-60	**0-64-100**	**0-31-100**	**0- 6- 35**	**1.25-1.55**	**0.42-1.40**	**0.08-0.19**	**0.0-2.9**	**0.0-10.0**	**.43**	**.55**			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
LdB—Lakemont and Madalin silty clay loams, 2 to 6 percent slopes														
Lakemont	0-8	0-19-20	40-44-65	27-37-40	1.00-1.25	1.40-4.00	0.17-0.21	3.0-5.9	3.0-10.0	.49	.49	3	6	48
	8-11	0-19-45	0-44-65	27-37-60	1.20-1.40	0.14-4.20	0.12-0.17	3.0-5.9	0.0-3.0	.28	.28			
	11-42	0-5-45	0-45-65	35-50-60	1.20-1.40	0.14-4.20	0.12-0.17	3.0-5.9	0.0-2.0	.28	.28			
	42-60	0-7-45	0-48-65	27-45-60	1.15-1.40	0.14-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28			
Madalin	0-6	0-19-20	40-44-65	27-37-40	1.00-1.25	1.40-4.00	0.16-0.21	3.0-5.9	4.0-7.0	.37	.37	3	7	38
	6-30	0-5-45	0-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.13	3.0-5.9	0.0-3.0	.28	.28			
	30-60	0-21-100	0-55-80	0-25-60	1.15-1.40	0.42-1.40	0.12-0.13	3.0-5.9	0.0-1.0	.28	.32			
LmC—Lordstown channery silt loam, 5 to 15 percent slopes														
Lordstown	0-8	15-32-50	50-56-80	0-12-17	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	2.0-6.0	.24	.32	3	5	56
	8-21	15-32-52	28-56-80	0-12-17	1.20-1.50	4.00-14.00	0.10-0.16	0.0-2.9	0.0-2.0	.28	.55			
	21-27	15-45-85	0-43-80	0-12-17	1.20-1.50	4.00-14.00	0.05-0.14	0.0-2.9	0.0-1.0	.28	.64			
	27-31	—	—	—	—	0.00-0.01	—	—	—					

Physical Soil Properties-- Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
LmD— Lordstown channery silt loam, 15 to 25 percent slopes														
Lordstown	0-8	15-32-50	50-56-80	0-12-17	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	2.0-6.0	.24	.32	3	5	56
	8-21	15-32-52	28-56-80	0-12-17	1.20-1.50	4.00-14.00	0.10-0.16	0.0-2.9	0.0-2.0	.28	.55			
	21-27	15-45-85	0-43-80	0-12-17	1.20-1.50	4.00-14.00	0.05-0.14	0.0-2.9	0.0-1.0	.28	.64			
	27-31	—	—	—	—	0.00-0.01	—	—	—					
LoE— Lordstown and Oquaga very stony soils, 0 to 35 percent slopes														
Lordstown	0-8	15-32-50	50-56-80	0-12-17	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	2.0-6.0	.24	.32	3	8	0
	8-21	15-32-52	28-56-80	0-12-17	1.20-1.50	4.00-14.00	0.10-0.16	0.0-2.9	0.0-2.0	.28	.55			
	21-27	15-45-85	0-43-80	0-12-17	1.20-1.50	4.00-14.00	0.05-0.14	0.0-2.9	0.0-1.0	.28	.64			
	27-31	—	—	—	—	0.00-0.01	—	—	—					
Oquaga	0-5	0-30-50	50-56-80	0-14-27	1.10-1.40	4.00-14.00	0.08-0.17	0.0-2.9	2.0-5.0	.24	.32	3	8	0
	5-16	0-30-52	28-56-80	0-14-27	1.20-1.50	4.00-14.00	0.04-0.12	0.0-2.9	0.0-2.0	.20	.64			
	16-24	0-30-52	28-56-80	0-14-27	1.20-1.50	4.00-14.00	0.04-0.12	0.0-2.9	0.0-2.0	.20	.64			
	24-28	—	—	—	—	0.00-0.01	—	—	—					

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
LrF—Lordstown, Oquaga, and Nassau soils, 35 to 70 percent slopes														
Lordstown	0-8	15-32-50	50-56-80	0-12-17	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	2.0-6.0	.24	.32	3	5	56
	8-21	15-32-52	28-56-80	0-12-17	1.20-1.50	4.00-14.00	0.10-0.16	0.0-2.9	0.0-2.0	.28	.55			
	21-27	15-45-85	0-43-80	0-12-17	1.20-1.50	4.00-14.00	0.05-0.14	0.0-2.9	0.0-1.0	.28	.64			
	27-31	—	—	—	—	0.00-0.01	—	—	—					
Nassau	0-7	0-30-50	50-56-80	0-14-27	1.10-1.40	4.00-14.00	0.08-0.16	0.0-2.9	3.0-5.0	.24	.32	2	5	56
	7-10	0-30-52	28-56-80	0-14-27	1.20-1.50	4.00-14.00	0.07-0.12	0.0-2.9	0.0-2.0	.20	.64			
	10-20	0-30-52	28-56-80	0-14-27	1.20-1.50	4.00-14.00	0.07-0.12	0.0-2.9	0.0-1.0	.20	.64			
	20-24	—	—	—	—	0.42-4.00	—	—	—					
Oquaga	0-5	0-30-50	50-56-80	0-14-27	1.10-1.40	4.00-14.00	0.08-0.17	0.0-2.9	2.0-5.0	.24	.32	3	5	56
	5-16	0-30-52	28-56-80	0-14-27	1.20-1.50	4.00-14.00	0.04-0.12	0.0-2.9	0.0-2.0	.20	.64			
	16-24	0-30-52	28-56-80	0-14-27	1.20-1.50	4.00-14.00	0.04-0.12	0.0-2.9	0.0-2.0	.20	.64			
	24-28	—	—	—	—	0.00-0.01	—	—	—					

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
McB—Mardin channery silt loam, 2 to 8 percent slopes														
Mardin	0-6	15-32-50	50-56-80	0-12-17	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	3.0-7.0	.24	.32	2	5	56
	6-18	15-32-52	28-56-80	0-12-17	1.20-1.50	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	18-22	15-32-52	28-56-80	0-12-17	1.30-1.70	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	22-56	15-32-52	28-56-80	0-12-17	1.70-2.00	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	56-60	15-32-52	28-56-80	0-12-17	1.60-1.90	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
McC—Mardin channery silt loam, 8 to 15 percent slopes														
Mardin	0-6	15-32-50	50-56-80	0-12-17	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	3.0-7.0	.24	.32	2	5	56
	6-18	15-32-52	28-56-80	0-12-17	1.20-1.50	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	18-22	15-32-52	28-56-80	0-12-17	1.30-1.70	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	22-56	15-32-52	28-56-80	0-12-17	1.70-2.00	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	56-60	15-32-52	28-56-80	0-12-17	1.60-1.90	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
McD—Mardin channery silt loam, 15 to 25 percent slopes														
Mardin	0-6	15-32-50	50-56-80	0-12-17	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	3.0-7.0	.24	.32	2	5	56
	6-18	15-32-52	28-56-80	0-12-17	1.20-1.50	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	18-22	15-32-52	28-56-80	0-12-17	1.30-1.70	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	22-56	15-32-52	28-56-80	0-12-17	1.70-2.00	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	56-60	15-32-52	28-56-80	0-12-17	1.60-1.90	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
McE—Mardin channery silt loam, 25 to 35 percent slopes														
Mardin	0-6	15-32-50	50-56-80	0-12-17	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	3.0-7.0	.24	.32	2	5	56
	6-18	15-32-52	28-56-80	0-12-17	1.20-1.50	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	18-22	15-32-52	28-56-80	0-12-17	1.30-1.70	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	22-56	15-32-52	28-56-80	0-12-17	1.70-2.00	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	56-60	15-32-52	28-56-80	0-12-17	1.60-1.90	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
MdF—Mardin and Cattaraugus soils, 35 to 70 percent slopes														
Mardin	0-6	15-32-50	50-56-80	0-12-17	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	3.0-7.0	.24	.32	2	5	56
	6-18	15-32-52	28-56-80	0-12-17	1.20-1.50	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	18-22	15-32-52	28-56-80	0-12-17	1.30-1.70	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	22-56	15-32-52	28-56-80	0-12-17	1.70-2.00	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	56-60	15-32-52	28-56-80	0-12-17	1.60-1.90	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
Cattaraugus	0-7	15-32-50	50-56-80	0-12-17	1.20-1.40	4.00-14.00	0.10-0.14	0.0-2.9	3.0-5.0	.24	.32	3	6	48
	7-20	15-45-52	28-43-80	0-12-17	1.40-1.60	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.20	.43			
	20-24	15-45-52	28-43-80	0-12-17	1.40-1.60	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.20	.43			
	24-60	15-32-52	28-56-80	0-12-17	1.60-1.90	0.42-1.40	0.06-0.12	0.0-2.9	0.0-1.0	.20				

Physical Soil Properties-- Schoharie County, New York														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
MeE—Mardin and Culvers very stony soils, 0 to 35 percent slopes														
Mardin	0-6	15-32-50	50-56-80	0-12-17	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	3.0-7.0	.24	.32	2	8	0
	6-18	15-32-52	28-56-80	0-12-17	1.20-1.50	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	18-22	15-32-52	28-56-80	0-12-17	1.30-1.70	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	22-56	15-32-52	28-56-80	0-12-17	1.70-2.00	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
	56-60	15-32-52	28-56-80	0-12-17	1.60-1.90	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.64			
Culvers	0-6	15-32-50	50-56-80	0-12-17	1.20-1.40	4.00-14.00	0.10-0.14	0.0-2.9	3.0-5.0	.24	.32	3	8	0
	6-18	15-32-52	28-56-80	0-12-17	1.30-1.50	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.28	.43			
	18-20	15-45-52	28-43-80	0-12-17	1.30-1.50	4.00-14.00	0.10-0.14	0.0-2.9	0.0-2.0	.28	.43			
	20-55	15-32-52	28-56-80	0-12-17	1.70-1.95	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.28				
	55-72	15-32-52	28-56-80	0-12-17	1.70-1.95	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.28				
MoB—Morris stony silt loam, 2 to 8 percent slopes														
Morris	0-7	15-32-50	50-56-80	0-12-17	1.20-1.40	4.00-14.00	0.10-0.14	0.0-2.9	2.0-4.0	.24	.32	2	6	48
	7-13	15-32-52	28-56-80	0-12-17	1.30-1.50	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	13-15	15-45-52	28-43-80	0-12-17	1.30-1.60	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	15-48	15-45-52	28-43-80	0-12-17	1.60-2.00	0.14-1.40	0.06-0.08	0.0-2.9	0.0-1.0	.24	.49			
	48-60	0-45-52	28-43-80	0-12-35	1.50-1.90	0.42-1.40	0.06-0.08	0.0-2.9	0.0-1.0	.24	.49			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
OdB—Odessa and Rhinebeck silt loams, 2 to 6 percent slopes														
Odessa	0-9	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-4.00	0.17-0.21	3.0-5.9	3.0-9.0	.49	.49	3	6	48
	9-36	0-5-45	0-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.17	3.0-5.9	0.0-2.0	.28	.28			
	36-60	0-7-45	0-48-65	27-45-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28			
Rhinebeck	0-7	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-4.00	0.16-0.21	3.0-5.9	3.0-7.0	.49	.49	3	6	48
	7-29	0-5-45	0-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-2.0	.28	.28			
	29-47	0-19-45	0-44-65	27-37-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28			
	47-60	0-19-100	0-44-100	0-37-60	1.45-1.65	0.42-1.40	0.12-0.15	3.0-5.9	0.0-1.0	.28	.32			
OdC—Odessa and Rhinebeck silt loams, 6 to 12 percent slopes														
Odessa	0-9	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-4.00	0.17-0.21	3.0-5.9	3.0-9.0	.49	.49	3	6	48
	9-36	0-5-45	0-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.17	3.0-5.9	0.0-2.0	.28	.28			
	36-60	0-7-45	0-48-65	27-45-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28			
Rhinebeck	0-7	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-4.00	0.16-0.21	3.0-5.9	3.0-7.0	.49	.49	3	6	48
	7-29	0-5-45	0-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-2.0	.28	.28			
	29-47	0-19-45	0-44-65	27-37-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28			
	47-60	0-19-100	0-44-100	0-37-60	1.45-1.65	0.42-1.40	0.12-0.15	3.0-5.9	0.0-1.0	.28	.32			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
OsC—Oquaga stony silt loam, 3 to 15 percent slopes														
Oquaga	0-5	0-30-50	50-56-80	0-14-27	1.10-1.40	4.00-14.00	0.08-0.17	0.0-2.9	2.0-5.0	.24	.32	3	5	56
	5-16	0-30-52	28-56-80	0-14-27	1.20-1.50	4.00-14.00	0.04-0.12	0.0-2.9	0.0-2.0	.20	.64			
	16-24	0-30-52	28-56-80	0-14-27	1.20-1.50	4.00-14.00	0.04-0.12	0.0-2.9	0.0-2.0	.20	.64			
	24-28	—	—	—	—	0.00-0.01	—	—	—					
PlB—Phelps gravelly silt loam, clay substratum, 2 to 8 percent slopes														
Phelps	0-8	15-26-50	50-52-80	0-22-27	1.10-1.40	4.00-14.00	0.13-0.20	0.0-2.9	3.0-6.0	.24	.32	3	5	56
	8-15	24-42-85	0-38-50	0-20-27	1.25-1.55	4.00-14.00	0.08-0.13	0.0-2.9	0.0-2.0	.24	.49			
	15-25	20-39-82	0-37-50	18-24-35	1.25-1.55	4.00-14.00	0.09-0.18	0.0-2.9	0.0-2.0	.24	.49			
	25-60	0-22-45	0-28-73	27-50-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
ShB—Schoharie and Hudson silt loams, 2 to 6 percent slopes														
Schoharie	0-10	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-4.00	0.17-0.21	3.0-5.9	3.0-6.0	.49	.49	3	6	48
	10-44	0-5-20	40-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.17	3.0-5.9	0.0-2.0	.28	.28			
	44-60	0-7-45	0-48-65	27-45-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28			
Hudson	0-9	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-14.00	0.16-0.21	3.0-5.9	3.0-6.0	.49	.49	3	6	48
	9-14	0-19-20	40-44-65	27-37-60	1.15-1.40	0.42-1.40	0.13-0.17	3.0-5.9	0.0-2.0	.28	.28			
	14-36	0-5-45	0-45-65	35-50-60	1.15-1.40	0.42-1.40	0.13-0.17	3.0-5.9	0.0-1.0	.28	.28			
	36-60	0-26-100	0-29-100	0-45-60	1.15-1.40	0.42-1.40	0.12-0.20	3.0-5.9	0.0-1.0	.28	.28			
ShC—Schoharie and Hudson silt loams, 6 to 12 percent slopes														
Schoharie	0-10	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-4.00	0.17-0.21	3.0-5.9	3.0-6.0	.49	.49	3	6	48
	10-44	0-5-20	40-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.17	3.0-5.9	0.0-2.0	.28	.28			
	44-60	0-7-45	0-48-65	27-45-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28			
Hudson	0-9	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-14.00	0.16-0.21	3.0-5.9	3.0-6.0	.49	.49	3	6	48
	9-14	0-19-20	40-44-65	27-37-60	1.15-1.40	0.42-1.40	0.13-0.17	3.0-5.9	0.0-2.0	.28	.28			
	14-36	0-5-45	0-45-65	35-50-60	1.15-1.40	0.42-1.40	0.13-0.17	3.0-5.9	0.0-1.0	.28	.28			
	36-60	0-26-100	0-29-100	0-45-60	1.15-1.40	0.42-1.40	0.12-0.20	3.0-5.9	0.0-1.0	.28	.28			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
SnD3—Schoharie and Hudson silty clay loams, 12 to 20 percent slopes, eroded														
Schoharie	0-10	0-19-20	40-44-65	27-37-40	1.00-1.25	1.40-4.00	0.17-0.21	3.0-5.9	2.0-4.0	.49	.49	2	6	48
	10-38	0-5-20	40-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.17	3.0-5.9	0.0-2.0	.28	.28			
	38-60	0-7-45	0-48-65	27-45-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28			
Hudson	0-5	0-19-20	40-44-65	27-37-40	1.00-1.25	1.40-14.00	0.16-0.21	3.0-5.9	2.0-4.0	.49	.49	2	6	48
	5-10	0-19-20	40-44-65	27-37-60	1.15-1.40	0.42-1.40	0.13-0.17	3.0-5.9	0.0-2.0	.28	.28			
	10-36	0-5-45	0-45-65	35-50-60	1.15-1.40	0.42-1.40	0.13-0.17	3.0-5.9	0.0-1.0	.28	.28			
	36-60	0-26-100	0-29-100	0-45-60	1.15-1.40	0.42-1.40	0.12-0.20	3.0-5.9	0.0-1.0	.28	.28			
SoE—Schoharie soils, 20 to 40 percent slopes														
Schoharie	0-10	0-21-50	50-55-80	18-24-27	1.00-1.25	1.40-4.00	0.17-0.21	3.0-5.9	3.0-6.0	.49	.49	3	6	48
	10-44	0-5-20	40-45-65	35-50-60	1.20-1.40	0.42-1.40	0.12-0.17	3.0-5.9	0.0-2.0	.28	.28			
	44-60	0-7-45	0-48-65	27-45-60	1.15-1.40	0.42-1.40	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
ThC—Tunkhannock and Chenango gravelly silt loams, 5 to 15 percent simple slopes														
Tunkhannock	0-5	0-30-50	50-56-80	0-14-27	1.20-1.40	14.00-42.00	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32	4	6	48
	5-21	0-30-85	0-56-80	0-14-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-2.0	.17	.64			
	21-60	44-67-100	0-23-49	0-10-20	1.40-1.65	14.00-141.00	0.01-0.08	0.0-2.9	0.0-0.5	.17	.64			
Chenango	0-8	0-30-50	50-56-80	0-14-27	1.20-1.50	4.00-42.00	0.08-0.16	0.0-2.9	2.0-6.0	.24	.32	3	5	56
	8-17	0-30-85	0-56-80	0-14-27	1.25-1.55	4.00-42.00	0.07-0.15	0.0-2.9	0.0-2.0	.17	.55			
	17-22	24-67-85	0-23-50	0-10-27	1.45-1.65	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.17	.64			
	22-60	70-79-100	0-17-29	0-5-15	1.45-1.65	42.00-141.00	0.01-0.05	0.0-2.9	0.0-0.5	.17	.64			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
ThCK—Tunkhannock and Chenango gravelly silt loams, 3 to 15 percent complex slopes														
Tunkhannock	0-5	0-30-50	50-56-80	0-14-27	1.20-1.40	14.00-42.00	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32	4	6	48
	5-21	0-30-85	0-56-80	0-14-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-2.0	.17	.64			
	21-60	44-67-100	0-23-49	0-10-20	1.40-1.65	14.00-141.00	0.01-0.08	0.0-2.9	0.0-0.5	.17	.64			
Chenango	0-8	0-30-50	50-56-80	0-14-27	1.20-1.50	4.00-42.00	0.08-0.16	0.0-2.9	2.0-6.0	.24	.32	3	5	56
	8-17	0-30-85	0-56-80	0-14-27	1.25-1.55	4.00-42.00	0.07-0.15	0.0-2.9	0.0-2.0	.17	.55			
	17-22	24-67-85	0-23-50	0-10-27	1.45-1.65	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.17	.64			
	22-60	70-79-100	0-17-29	0-5-15	1.45-1.65	42.00-141.00	0.01-0.05	0.0-2.9	0.0-0.5	.17	.64			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
ThD—Tunkhannock and Chenango gravelly silt loams, 15 to 25 percent slopes														
Tunkhannock	0-5	0-30-50	50-56-80	0-14-27	1.20-1.40	14.00-42.00	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32	4	6	48
	5-21	0-30-85	0-56-80	0-14-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-2.0	.17	.64			
	21-60	44-67-100	0-23-49	0-10-20	1.40-1.65	14.00-141.00	0.01-0.08	0.0-2.9	0.0-0.5	.17	.64			
Chenango	0-8	0-30-50	50-56-80	0-14-27	1.20-1.50	4.00-42.00	0.08-0.16	0.0-2.9	2.0-6.0	.24	.32	3	5	56
	8-17	0-30-85	0-56-80	0-14-27	1.25-1.55	4.00-42.00	0.07-0.15	0.0-2.9	0.0-2.0	.17	.55			
	17-22	24-67-85	0-23-50	0-10-27	1.45-1.65	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.17	.64			
	22-60	70-79-100	0-17-29	0-5-15	1.45-1.65	42.00-141.00	0.01-0.05	0.0-2.9	0.0-0.5	.17	.64			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/in*	*Pct*	*Pct*					
TnF—Tunkhannock and Chenango soils, 25 to 60 percent slopes														
Tunkhannock	0-5	0-30-50	50-56-80	0-14-27	1.20-1.40	14.00-42.00	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32	4	6	48
	5-21	0-30-85	0-56-80	0-14-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-2.0	.17	.64			
	21-60	44-67-100	0-23-49	0-10-20	1.40-1.65	14.00-141.00	0.01-0.08	0.0-2.9	0.0-0.5	.17	.64			
Chenango	0-8	0-30-50	50-56-80	0-14-27	1.20-1.50	4.00-42.00	0.08-0.16	0.0-2.9	2.0-6.0	.24	.32	3	5	56
	8-17	0-30-85	0-56-80	0-14-27	1.25-1.55	4.00-42.00	0.07-0.15	0.0-2.9	0.0-2.0	.17	.55			
	17-22	24-67-85	0-23-50	0-10-27	1.45-1.65	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.17	.64			
	22-60	70-79-100	0-17-29	0-5-15	1.45-1.65	42.00-141.00	0.01-0.05	0.0-2.9	0.0-0.5	.17	.64			
TuA—Tunkhannock cobbly sandy loam, 0 to 5 slopes														
Tunkhannock	0-5	44-67-85	0-23-49	0-10-20	1.20-1.40	14.00-42.00	0.08-0.15	0.0-2.9	2.0-4.0	.15	.20	4	6	48
	5-21	0-30-85	0-56-80	0-14-27	1.40-1.60	14.00-42.00	0.08-0.12	0.0-2.9	0.0-2.0	.17	.64			
	21-60	44-67-100	0-23-49	0-10-20	1.40-1.65	14.00-141.00	0.01-0.08	0.0-2.9	0.0-0.5	.17	.64			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
VcB—Volusia channery silt loam, 3 to 8 percent slopes														
Volusia	0-7	15-26-32	50-52-80	18-22-27	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	2.0-7.0	.24	.32	2	5	56
	7-11	15-41-52	28-37-80	18-22-27	1.30-1.60	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	11-15	15-41-52	28-37-80	18-22-27	1.30-1.60	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	15-46	15-41-52	28-37-80	18-22-27	1.70-2.00	0.42-1.40	0.00-0.02	0.0-2.9	0.0-1.0	.24	.43			
	46-60	15-41-52	28-37-80	18-22-27	1.65-1.95	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.24	.64			
VcC—Volusia channery silt loam, 8 to 15 percent slopes														
Volusia	0-7	15-26-32	50-52-80	18-22-27	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	2.0-7.0	.24	.32	2	5	56
	7-11	15-41-52	28-37-80	18-22-27	1.30-1.60	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	11-15	15-41-52	28-37-80	18-22-27	1.30-1.60	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	15-46	15-41-52	28-37-80	18-22-27	1.70-2.00	0.42-1.40	0.00-0.02	0.0-2.9	0.0-1.0	.24	.43			
	46-60	15-41-52	28-37-80	18-22-27	1.65-1.95	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.24	.64			

Physical Soil Properties– Schoharie County, New York														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
VmC—Volusia, Morris, and Erie very stony soils, 0 to 15 percent slopes														
Volusia	0-7	15-26-32	50-52-80	18-22-27	1.10-1.40	4.00-14.00	0.11-0.17	0.0-2.9	2.0-7.0	.24	.32	2	8	0
	7-11	15-41-52	28-37-80	18-22-27	1.30-1.60	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	11-15	15-41-52	28-37-80	18-22-27	1.30-1.60	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	15-46	15-41-52	28-37-80	18-22-27	1.70-2.00	0.42-1.40	0.00-0.02	0.0-2.9	0.0-1.0	.24	.43			
	46-60	15-41-52	28-37-80	18-22-27	1.65-1.95	0.42-1.40	0.00	0.0-2.9	0.0-1.0	.24	.64			
Morris	0-7	15-32-50	50-56-80	0-12-17	1.20-1.40	4.00-14.00	0.10-0.14	0.0-2.9	2.0-4.0	.24	.32	2	8	0
	7-13	15-32-52	28-56-80	0-12-17	1.30-1.50	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	13-15	15-45-52	28-43-80	0-12-17	1.30-1.60	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.37			
	15-48	15-45-52	28-43-80	0-12-17	1.60-2.00	0.14-1.40	0.06-0.08	0.0-2.9	0.0-1.0	.24	.49			
	48-60	0-45-52	28-43-80	0-12-40	1.50-1.90	0.42-1.40	0.06-0.08	0.0-2.9	0.0-1.0	.24	.49			
Erie	0-7	15-26-32	50-52-80	18-22-27	1.10-1.40	4.00-14.00	0.10-0.18	0.0-2.9	3.0-7.0	.24	.32	2	8	0
	7-21	15-26-52	28-52-80	18-22-27	1.20-1.50	4.00-14.00	0.09-0.16	0.0-2.9	0.0-2.0	.24	.43			
	21-40	15-41-52	28-37-80	18-22-27	1.70-2.00	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.55			
	40-60	15-41-52	28-37-80	18-22-27	1.65-1.95	0.42-1.40	0.01-0.03	0.0-2.9	0.0-1.0	.24	.55			
W—Water														
Water	—	—	—	—	—	—	—	—	—					

Data Source Information

Soil Survey Area: Schoharie County, New York
Survey Area Data: Version 8, Dec 20, 2011

Exhibit 3.2.c.A

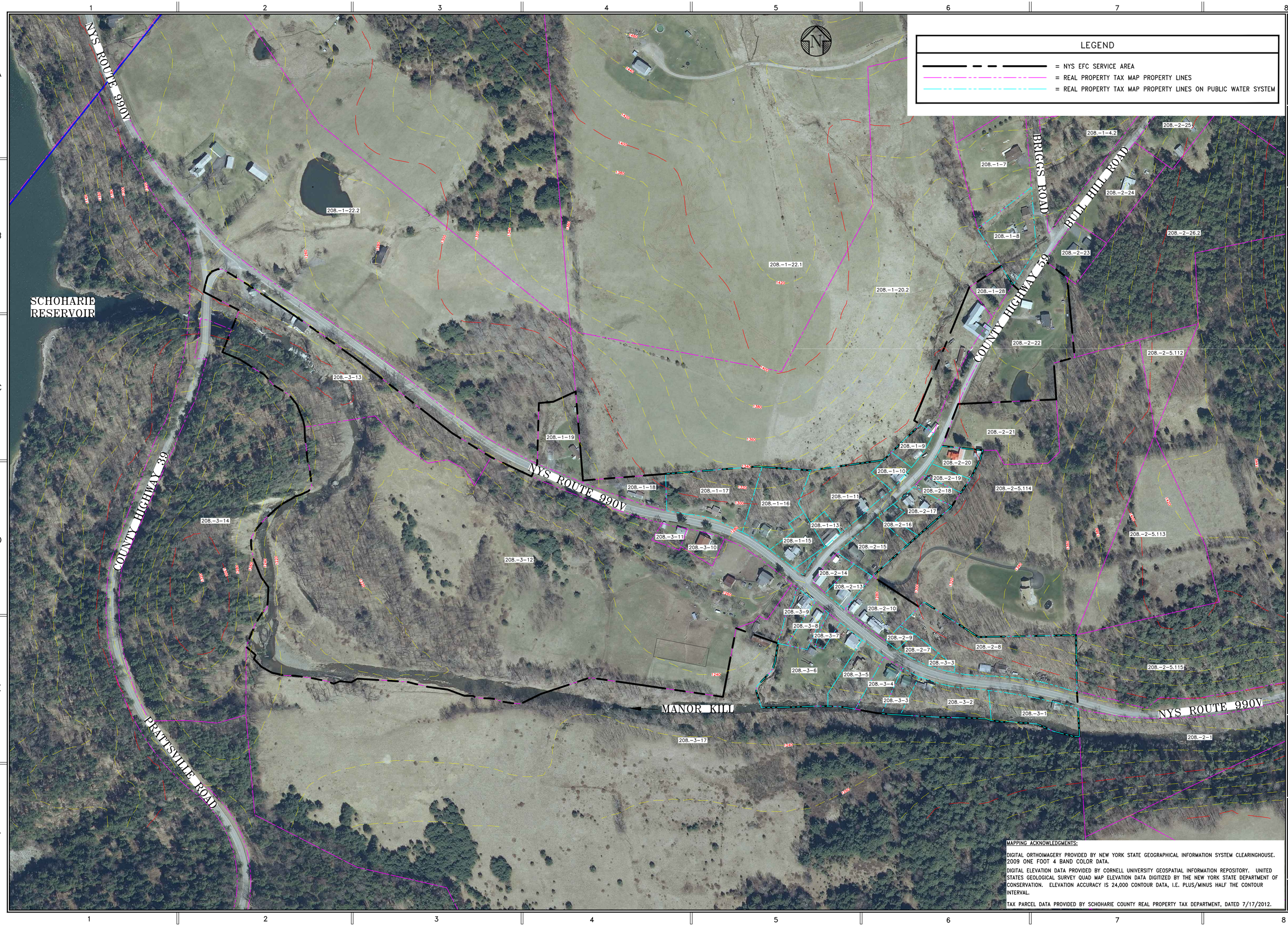
Property Use Windshield Survey

Town of Conesville
Hamlet of West Conesville

Property Use Windshield Survey
EFC Service Area

TAX NUMBER	PROPERTY ADDRESS	OWNER	TYPE	DESCRIPTION
208.-1-15	793 STATE ROUTE 990V	PALMER, JOHN E	RSF	
208.-1-16	787 STATE ROUTE 990V	LABAN, JEFFREY M	RSF	
208.-1-28	149 BULL HILL RD	KILMER, MURIEL H	RSF	
208.-2-14	799 STATE ROUTE 990V	STEEVES, GEORGE	RSF	
208.-2-20	126 BULL HILL RD	GERLAK, ADAM	RSF	
208.-3-1	836 STATE ROUTE 990V	ERSKINE, MARGA MARIA TRUST	RSF	
208.-3-2	818 STATE ROUTE 990V	KESSLER, MARLYNN	RSF	
208.-3-11	776 STATE ROUTE 990V	COMO, JOSEPH	RSF	
208.-3-10	780 STATE ROUTE 990V	AGUANNO, NICOLA	RSF	
208.-2-22	148 BULL HILL RD	FLORES, LUIS MICHAEL	RSF	
208.-1-17	781 STATE ROUTE 990V	TRUESDELL, LAUREL H	RSF	
208.-2-19	124 BULL HILL RD	MINCONE, DOMENIC	V	
208.-2-18	122 BULL HILL RD	FLORES, FRANK	RSF	
208.-3-13	706 STATE ROUTE 990V	NICHOLAS, MICHAEL	C	Nick's Waterfall House
208.-2-15	108 BULL HILL RD	ALLAN, DAVID E	RSF	
208.-2-16	116 BULL HILL RD	CASTLE, KENNETH	RSF	
208.-1-13	107 BULL HILL RD	GILBOA LODGE NO 630 F&AM	I	Masonic Lodge
208.-2-9	STATE ROUTE 990V	DAWSON, DONALD A	V	
208.-2-7	815 STATE ROUTE 990V	DAWSON, DONALD A	RSF	
208.-2-8	827 STATE ROUTE 990V	DENT, JEFFREY	C	Auto Shop
208.-3-6	806 STATE ROUTE 990V	MILLER, MICHAEL	RSF	
208.-3-12	790 STATE ROUTE 990V	ZUNIGA, LORELEI M	RSF	
208.-2-13	801 STATE ROUTE 990V	HANSON, JOANN	RSF	
208.-2-10	809 STATE ROUTE 990V	REYNOLDS, CHARLES L	RSF	
208.-3-5	808 STATE ROUTE 990V	GUZMAN, EDGAR	RSF	
208.-3-4	814 STATE ROUTE 990V	BRANDOW, DONALD W	RSF	
208.-3-7	802 STATE ROUTE 990V	REYNOLDS, GERALD	V	
208.-3-8	800 STATE ROUTE 990V	CORDELL, DONALD W	RSF	
208.-3-9	798 STATE ROUTE 990V	CLARK, PATRICIA	RSF	
208.-1-19	757 STATE ROUTE 990V	DOWITSCH, ROBERT	RSF	
208.-1-9	129 BULL HILL RD	SCHILLING, GARY	RSF	
208.-1-10	121 BULL HILL RD	ROGOWSKI, GRZEGORZ	RSF	
208.-1-11	113 BULL HILL RD	CRONE, IVA I	RSF	
208.-1-18	769 STATE ROUTE 990V	LASHER, RAYMOND	RSF	
208.-3-17	STATE ROUTE 990V	CITY OF NEW YORK	V	
208.-2-17	118 BULL HILL RD	TR CULP ASSOC INC	RSF	
208.-3-3	816 STATE ROUTE 990V	GREEN, VERNON R	RSF	
208.-1-20.2	141 BULL HILL RD	JOHNSON, LINDA	V	

	TOTAL CALCULATIONS	
RSF	TOTAL Res. Single Family	30
RTF	TOTAL Res. Two Family	0
C	TOTAL Commercial Businesses	2
CA	TOTAL Commercial Apartments	0
M	TOTAL Municipal	0
V	TOTAL Vacant lots / lands	5
I	TOTAL Institutional	1
IA	TOTAL Institutional w/ Apartments	0
RA	TOTAL Residential Apartments	0
N/A	TOTAL NOT ASSESSED	0
	TOTAL # of Properties	38



LEGEND

= NYS EFC SERVICE AREA

= REAL PROPERTY TAX MAP PROPERTY LINES

= REAL PROPERTY TAX MAP PROPERTY LINES ON PUBLIC WATER SYSTEM

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ENGINEERS - PLANNERS
FACILITY OPERATIONS
548 MAIN ST., CORLESKILL, NY 12043
(518) 234-4028
www.lamontengineers.com

Consultant

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue/Rev.	Date	Remarks

Project Number	2012002
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	06/04/12
Scale	1"=150'
File Name	WINDSHIELD SURVEY

Sheet Title

WINDSHIELD SURVEY MAP
WEST CONESVILLE

Sheet No.

3.2.c.A

MAPPING ACKNOWLEDGMENTS:

DIGITAL ORTHOIMAGERY PROVIDED BY NEW YORK STATE GEOGRAPHICAL INFORMATION SYSTEM CLEARINGHOUSE. 2009 ONE FOOT 4 BAND COLOR DATA.

DIGITAL ELEVATION DATA PROVIDED BY CORNELL UNIVERSITY GEOSPATIAL INFORMATION REPOSITORY. UNITED STATES GEOLOGICAL SURVEY QUAD MAP ELEVATION DATA DIGITIZED BY THE NEW YORK STATE DEPARTMENT OF CONSERVATION. ELEVATION ACCURACY IS 24,000 CONTOUR DATA, I.E. PLUS/MINUS HALF THE CONTOUR INTERVAL.

TAX PARCEL DATA PROVIDED BY SCHOHARIE COUNTY REAL PROPERTY TAX DEPARTMENT, DATED 7/17/2012.

K:\APPS\SCHPRO\201404\WEST CONESVILLE\3.2.c.A_WINDSHIELD SURVEY.dwg, 12/29/2015 7:34:1

Exhibit 3.2.c.B

Summary of Responses to Questionnaire

Exhibit 3.2.c.B

West Conesville Sanitary Septic Survey – 13 of 40 returned

Circle, check or complete answers as appropriate

Type of property

[ ] Residential…….(12)
[ ] Commercial/Institutional……...()
[ ] Mixed Residential and Commercial/Institutional. ()
[ ] Vacant……. (1)

How many bedrooms are in your residence or on your parcel?

[ ] Undeveloped ()
[ ] None……. ()
[ ] One……. (1)
[ ] Two…….. (3)
[ ] Three …….. (4)
[ ] Four…….. (4)
[ ] Five…….. ()
[ ] Six or more…()
[ ] No Answer… ()

About how old is your septic system?

[ ] 1 - 8 years old ……. (1)
[ ] 9 - 16 years old…… ()
[ ] 17 - 24 years old…….. ()
[ ] 25 - 32 years old…….. (3)
[ ] More than 32 years old. (5)
[ ] Unknown …… (3)
[ ] No Answer……. ()
[ ] Undeveloped……. ()

Do you have a raised/engineered system?

YES () NO (10) DON'T KNOW (2) NO ANSWER () UNDEVELOPED ()

Has the septic system had any recent problems that you are aware of? Yes (2) No (10)

Odors (1)
Backing up of sewage into house (1)
Seasonal Problems Only (1)
Saturated soils in yard ()
Slow draining plumbing (2)
Surfacing of sewage on ground ()
Contaminated Well(s) ()
Other ()
Describe ()

Has your system, or a part of it, ever failed?

YES (2) NO (10) DON'T KNOW () NO ANSWER () UNKNOWN () UNDEVELOPED ()

If YES, what type of maintenance did you do to get it working again?

[ ] Replaced septic tank……..……... (1)
[ ] Replaced drain lines…….……..….. ()
[ ] Jetted drain lines…….……..…… ()
[ ] Replaced entire system…….……..…….. ()
[ ] Replaced/Repaired pump(s)-float(s)……..…..…… ()
[ ] Replaced/Repaired electrical or Alarm components.... ()
[ ] No Answer……..……..…… (7)
Had cesspool pumped out (1)

Was the maintenance done through the Catskill Watershed Corporation?

YES (1) NO (2) NO ANSWER/NOT APPLICABLE (9)

How often do you have your system pumped out?

[ ] Yearly……()
[ ] Every other year……(1)
[ ] Every third year…… ()
[ ] Greater than every three years..… (2)
[ ] Never…… (6)
[ ] As Needed…… (1) "once a long time ago"
[ ] Unknown…….. (1)
[ ] N/A Undeveloped land……. ()
[ ] No Answer…… (1)

Do you use a garbage disposal?

YES () NO (12) NO ANSWER () UNDEVELOPED ()

Do you use any commercially available septic system additives?

YES (3) NO (7) NO ANSWER (2) UNDEVELOPED ()

How is the drainage on your property?

[ ] Good (I rarely have water in my basement)……. (7)
[ ] OK (After a large rain or snowmelt, I may have some water)….. (3)
[ ] Poor (I have some water most the time)…… (2)
[ ] Terrible (My sump pump runs 24 hours a day)……. ()
[ ] No Answer……..… ()

Has your drainage changed over the years?

[ ] It's gotten better…….. (1)
[ ] It's gotten worse…….. (3)
[ ] It hasn't changed……. (8)
[ ] No Answer…….. ()
[ ] Don't Know/Unsure.…… ()

Is your residence tied into the hamlet's water supply system?

YES (8) NO (3) NOT APPLICABLE / NO ANSWER ()

Do you have a water softener? YES () NO(12)

Please provide any other comments you may have:

1. We have our own well.

COMMENTS

1. We are in need of a septic system, but would not want to see a community system or a treatment plant due to the additional cost to the residents.
2. Water and sewer lines extended for new home, after house burnt in 2014.
3. I know nothing about the septic system—as far as I know it works ok. (rental property)
4. Works fine and always has worked good.

Exhibit 4.A

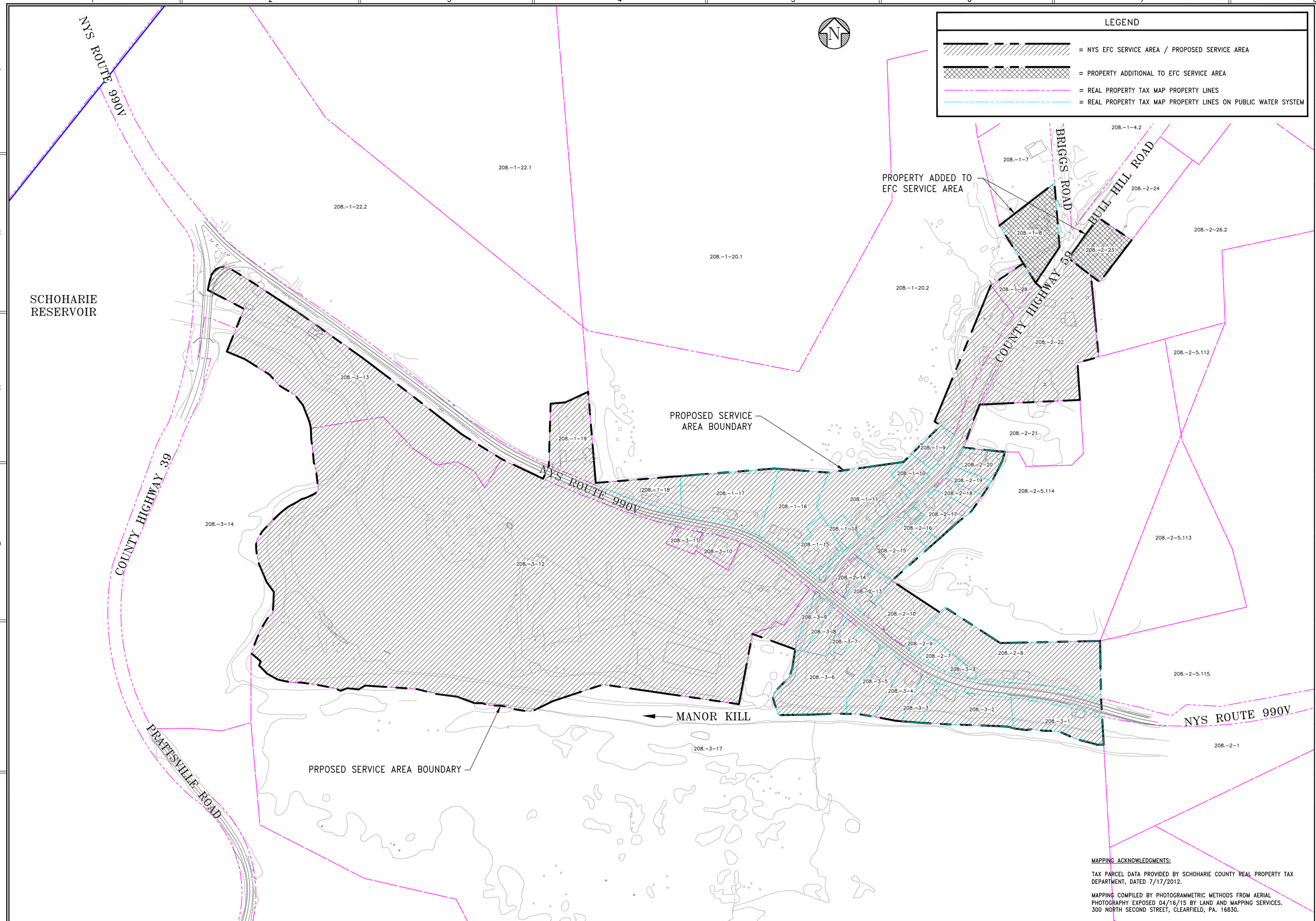
Proposed Service Area Map and Table Summary of Parcels

Town of Conesville
Hamlet of West Conesville

Proposed Service Area
Parcel List

TAX NUMBER	PROPERTY ADDRESS	OWNER	TYPE	DESCRIPTION
208.-1-15	793 STATE ROUTE 990V	PALMER, JOHN E	RSF	
208.-1-16	787 STATE ROUTE 990V	LABAN, JEFFREY M	RSF	
208.-1-28	149 BULL HILL RD	KILMER, MURIEL H	RSF	
208.-2-14	799 STATE ROUTE 990V	STEEVES, GEORGE	RSF	
208.-2-20	126 BULL HILL RD	GERLAK, ADAM	RSF	
208.-3-1	836 STATE ROUTE 990V	ERSKINE, MARGA MARIA TRUST	RSF	
208.-3-2	818 STATE ROUTE 990V	KESSLER, MARLYNN	RSF	
208.-3-11	776 STATE ROUTE 990V	COMO, JOSEPH	RSF	
208.-3-10	780 STATE ROUTE 990V	AGUANNO, NICOLA	RSF	
208.-2-22	148 BULL HILL RD	FLORES, LUIS MICHAEL	RSF	
208.-1-17	781 STATE ROUTE 990V	TRUESDELL, LAUREL H	RSF	
208.-2-19	124 BULL HILL RD	MINCONE, DOMENIC	V	
208.-2-18	122 BULL HILL RD	FLORES, FRANK	RSF	
208.-3-13	706 STATE ROUTE 990V	NICHOLAS, MICHAEL	C	Nick's Waterfall House
208.-2-15	108 BULL HILL RD	ALLAN, DAVID E	RSF	
208.-2-16	116 BULL HILL RD	CASTLE, KENNETH	RSF	
208.-1-13	107 BULL HILL RD	GILBOA LODGE NO 630 F&AM	I	Masonic Lodge
208.-2-9	STATE ROUTE 990V	DAWSON, DONALD A	V	
208.-2-7	815 STATE ROUTE 990V	DAWSON, DONALD A	RSF	
208.-2-8	827 STATE ROUTE 990V	DENT, JEFFREY	C	Auto Shop
208.-3-6	806 STATE ROUTE 990V	MILLER, MICHAEL	RSF	
208.-3-12	790 STATE ROUTE 990V	ZUNIGA, LORELEI M	RSF	
208.-2-13	801 STATE ROUTE 990V	HANSON, JOANN	RSF	
208.-2-10	809 STATE ROUTE 990V	REYNOLDS, CHARLES L	RSF	
208.-3-5	808 STATE ROUTE 990V	GUZMAN, EDGAR	RSF	
208.-3-4	814 STATE ROUTE 990V	BRANDOW, DONALD W	RSF	
208.-3-7	802 STATE ROUTE 990V	REYNOLDS, GERALD	V	
208.-3-8	800 STATE ROUTE 990V	CORDELL, DONALD W	RSF	
208.-3-9	798 STATE ROUTE 990V	CLARK, PATRICIA	RSF	
208.-1-19	757 STATE ROUTE 990V	DOWITSCH, ROBERT	RSF	
208.-1-9	129 BULL HILL RD	SCHILLING, GARY	RSF	
208.-1-10	121 BULL HILL RD	ROGOWSKI, GRZEGORZ	RSF	
208.-1-11	113 BULL HILL RD	CRONE, IVA I	RSF	
208.-1-18	769 STATE ROUTE 990V	LASHER, RAYMOND	RSF	
208.-3-17	STATE ROUTE 990V	CITY OF NEW YORK	V	
208.-2-17	118 BULL HILL RD	TR CULP ASSOC INC	RSF	
208.-3-3	816 STATE ROUTE 990V	GREEN, VERNON R	RSF	
208.-1-20.2	141 BULL HILL RD	JOHNSON, LINDA	V	
208.-1-8			RSF	
208.-2-23			RSF	

	TOTAL CALCULATIONS	
RSF	TOTAL Res. Single Family	32
RTF	TOTAL Res. Two Family	0
C	TOTAL Commercial Businesses	2
CA	TOTAL Commercial Apartments	0
M	TOTAL Municipal	0
V	TOTAL Vacant lots / lands	5
I	TOTAL Institutional	1
IA	TOTAL Institutional w/ Apartments	0
RA	TOTAL Residential Apartments	0
N/A	TOTAL NOT ASSESSED	0
	TOTAL # of Properties	40



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www.lamontengineers.com

Consultant

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER
MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue Rev.	Date	Remarks

Project Number	2014044
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	12/12/15
Scale	1"=150'
File Name	WINDSHIELD SURVEY

Sheet Title

PROPOSED SERVICE AREA MAP
WEST CONESVILLE

Sheet No.

EX 4.A

MAPPING ACKNOWLEDGMENTS:

TAX PARCEL DATA PROVIDED BY SCHOHARIE COUNTY REAL PROPERTY TAX DEPARTMENT, DATED 7/17/2012.

MAPPING COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY EXPOSED 04/16/15 BY LAND AND MAPPING SERVICES. 300 NORTH SECOND STREET, CLEARFIELD, PA. 16830.

Exhibit 5.2.A

2010 U.S. Census Information New York State

NY - New York

Population

Total Population	19,378,102

Housing Status
(in housing units unless noted)

Total	8,108,103
Occupied	7,317,755
Owner-occupied	3,897,837
Population in owner-occupied (number of individuals)	10,557,835
Renter-occupied	3,419,918
Population in renter-occupied (number of individuals)	8,234,589
Households with individuals under 18	2,319,196
Vacant	790,348
Vacant: for rent	200,039
Vacant: for sale	77,225

Population by Sex/Age

Male	9,377,147
Female	10,000,955
Under 18	4,324,929
18 & over	15,053,173
20 - 24	1,410,935
25 - 34	2,659,337
35 - 49	4,068,780
50 - 64	3,723,596
65 & over	2,617,943

Population by Ethnicity

Hispanic or Latino	3,416,922
Non Hispanic or Latino	15,961,180

Population by Race

White	12,740,974
African American	3,073,800
Asian	1,420,244
American Indian and Alaska Native	106,906
Native Hawaiian and Pacific Islander	8,766
Other	1,441,563
Identified by two or more	585,849

D: Suppressed to avoid disclosure of confidential information
F: Fewer than 100 firms
FN: Footnote on this item for this area in place of data
NA: Not available
S: Suppressed; does not meet publication standards
X: Not applicable
Z: Value greater than zero but less than half unit of measure shown

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report
Last Revised: Tuesday, 18-Sep-2012 16:41:54 EDT

State & County QuickFacts

USA

People QuickFacts	USA
Population, 2011 estimate	311,591,917
Population, 2010 (April 1) estimates base	308,745,538
Population, percent change, April 1, 2010 to July 1, 2011	0.9%
Population, 2010	308,745,538
Persons under 5 years, percent, 2011	6.5%
Persons under 18 years, percent, 2011	23.7%
Persons 65 years and over, percent, 2011	13.3%
Female persons, percent, 2011	50.8%
White persons, percent, 2011 (a)	78.1%
Black persons, percent, 2011 (a)	13.1%
American Indian and Alaska Native persons, percent, 2011 (a)	1.2%
Asian persons, percent, 2011 (a)	5.0%
Native Hawaiian and Other Pacific Islander persons, percent, 2011 (a)	0.2%
Persons reporting two or more races, percent, 2011	2.3%
Persons of Hispanic or Latino Origin, percent, 2011 (b)	16.7%
White persons not Hispanic, percent, 2011	63.4%
Living in same house 1 year & over, 2006-2010	84.2%
Foreign born persons, percent, 2006-2010	12.7%
Language other than English spoken at home, pct age 5+, 2006-2010	20.1%
High school graduates, percent of persons age 25+, 2006-2010	85.0%
Bachelor's degree or higher, pct of persons age 25+, 2006-2010	27.9%
Veterans, 2006-2010	22,652,496
Mean travel time to work (minutes), workers age 16+, 2006-2010	25.2
Housing units, 2011	132,312,404
Homeownership rate, 2006-2010	66.6%
Housing units in multi-unit structures, percent, 2006-2010	25.9%
Median value of owner-occupied housing units, 2006-2010	$188,400
Households, 2006-2010	114,235,996
Persons per household, 2006-2010	2.59
Per capita money income in past 12 months (2010 dollars) 2006-2010	$27,334
Median household income 2006-2010	$51,914
Persons below poverty level, percent, 2006-2010	13.8%

Business QuickFacts	USA
Private nonfarm establishments, 2010	7,396,628
Private nonfarm employment, 2010	111,970,095
Private nonfarm employment, percent change, 2000-2010	-1.8
Nonemployer establishments, 2010	22,110,628
Total number of firms, 2007	27,092,908
Black-owned firms, percent, 2007	7.1%
American Indian- and Alaska Native-owned firms, percent, 2007	0.9%
Asian-owned firms, percent, 2007	5.7%
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	0.1%
Hispanic-owned firms, percent, 2007	8.3%
Women-owned firms, percent, 2007	28.8%
Manufacturers shipments, 2007 ($1000)	5,338,306,501
Merchant wholesaler sales, 2007 ($1000)	4,174,286,516
Retail sales, 2007 ($1000)	3,917,663,456
Retail sales per capita, 2007	$12,990
Accommodation and food services sales, 2007 ($1000)	613,795,732
Building permits, 2011	624,061

Geography QuickFacts	USA
Land area in square miles, 2010	3,531,905.43
Persons per square mile, 2010	87.4

(a) Includes persons reporting only one race.
(b) Hispanics may be of any race, so also are included in applicable race categories.

Exhibit 5.2.B

Wastewater Flow Estimate

Town of Conesville
Hamlet of West Conesville

Proposed Service Area
Wastewater Flow Estimate

Facility Type	No. of Units	Flow Calculation Basis	Average Household Size	Flow (gpd)	Source	Total Flow (gpd)
Residential						
Single Family Homes	32	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	8,320
Two Family Homes	0	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	0
Apartments	0	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	0
Commercial/Institutional w/ Apartment	3	EDU	2.6	100	Ten State Standards - chap. 10, sect 11.243	780
					Residential Total =	**9,100**
Commercial/Institutional (w/ parcel number)						
Masonic Lodge (208.-1-13)	n/a	50 seats	n/a	1,750	NYSDEC - Food Service - 35 gallons per seat	1,750
Auto Shop (208.-2-8)	n/a	1 employee	n/a	25	NYSDEC - Factory - 25 gallons per employee	25
					Commercial/Industrial Subtotal =	**1,775**
Mixed Use (with parcel number)						
Nick's Waterfall House (w/ 3 res.(208.-3-13))	n/a	30 Seats	n/a	480	NYSDEC - Tavern - 16 gallons per seat	480
					Mixed Use Subtotal =	**480**
					Commercial/Industrial/Mixed Use Subtotal =	**2,255**
					WASTEWATER FLOW - WEST CONESVILLE =	11,355
					10% GROWTH =	1,136
					TOTAL =	12,491
					TOTAL WASTEWATER FLOW FOR WEST CONESVILLE =	**13,000**

Exhibit 6.3.a.A

Septic Maintenance District Soil Testing

Lamont Engineers
ENGINEERS • PLANNERS • FACILITY OPERATIONS
548 Main Street
Cobleskill, New York 12043
(518) 234-4028

PERCOLATION TEST DATA

Project No.: 2014044 Client: CWC Date: 11-20-15

Project: WEST CONESVILLE CWMP Lot No.: 208-1-16

Project Engineer: CHRIS YACOBUCCI Inspector: JML

Percolation Test Location: (See Reverse) ,

Weather Conditions: SUNNY Temperature: 45°F

TEST HOLE NO.	TEST HOLE DEPTH	TEST HOLE DIA.	TIME	PERCOLATION TEST RUNS (TIME FOR 1" DROP IN WATER LEVEL)						STABLE RATE
1	24"	12"	FINISH	10:25 AM						
			START	9:25 AM						
			TIME	60 MIN						

COMMENTS: FAILED MOVED APPROX. 1/4"

TEST HOLE NO.	TEST HOLE DEPTH	TEST HOLE DIA.	TIME	PERCOLATION TEST RUNS (TIME FOR 1" DROP IN WATER LEVEL)						STABLE RATE
2	12"	12"	FINISH	10:45 AM	11:22 AM	11:51 AM				
			START	9:55 AM	10:55 AM	11:22 AM				
			TIME	50 MIN	27 MIN	29 MIN				

COMMENTS:

Sketch Requirements

(To Be Completed On Back Of Sheet)

Indicate North

Indicate Nearest Roadway

Indicate Property Lines

Indicate Off-Sets from 2 Adjacent Property Lines

Lamont Engineers
ENGINEERS • PLANNERS • FACILITY OPERATIONS

Date: 11-20-15

Project: WEST CONCORD CLUMP

Location: 209 - 1 - 16 PROPERTY

TEST PIT
TP - DEEP HOLE

Client: CWC	Depth to Seepage:	Inspector: JML
Contractor: JAMES RION CONSTRUCTION	Depth to Groundwater: N/A	Surface Elevation:
Equipment:	Depth to Bedrock: N/A	Datum:

SAMPLES		Unified Soil Classification	DESCRIPTION OF MATERIAL	Strata Change (ft.)	REMARKS
Sample No.	Moisture				
			0 - 6" TOPSOIL 6" - 28" CLAY - LOAM 28" - 57" HARD PAN NOTES: 28" ROOTS 25" MOTTLING		

PARTICLE SIZE		PROPORTION (exclusive of boulders & cobbles)	PROPORTION (boulders & cobbles)		MOISTURE
Bolder 10"(+) Coble 3-10" Gravel 3/16"-3"	Sand: No. 200 Sieve-3/16" Silt/Clay: No. 200 Sieve (-)	trace: 0-10% little: 10-20% some: 20-35% and: 35-50%	sparse: few: many:	0-10% 10-35% 35-65%	D: dry M: moist W: wet

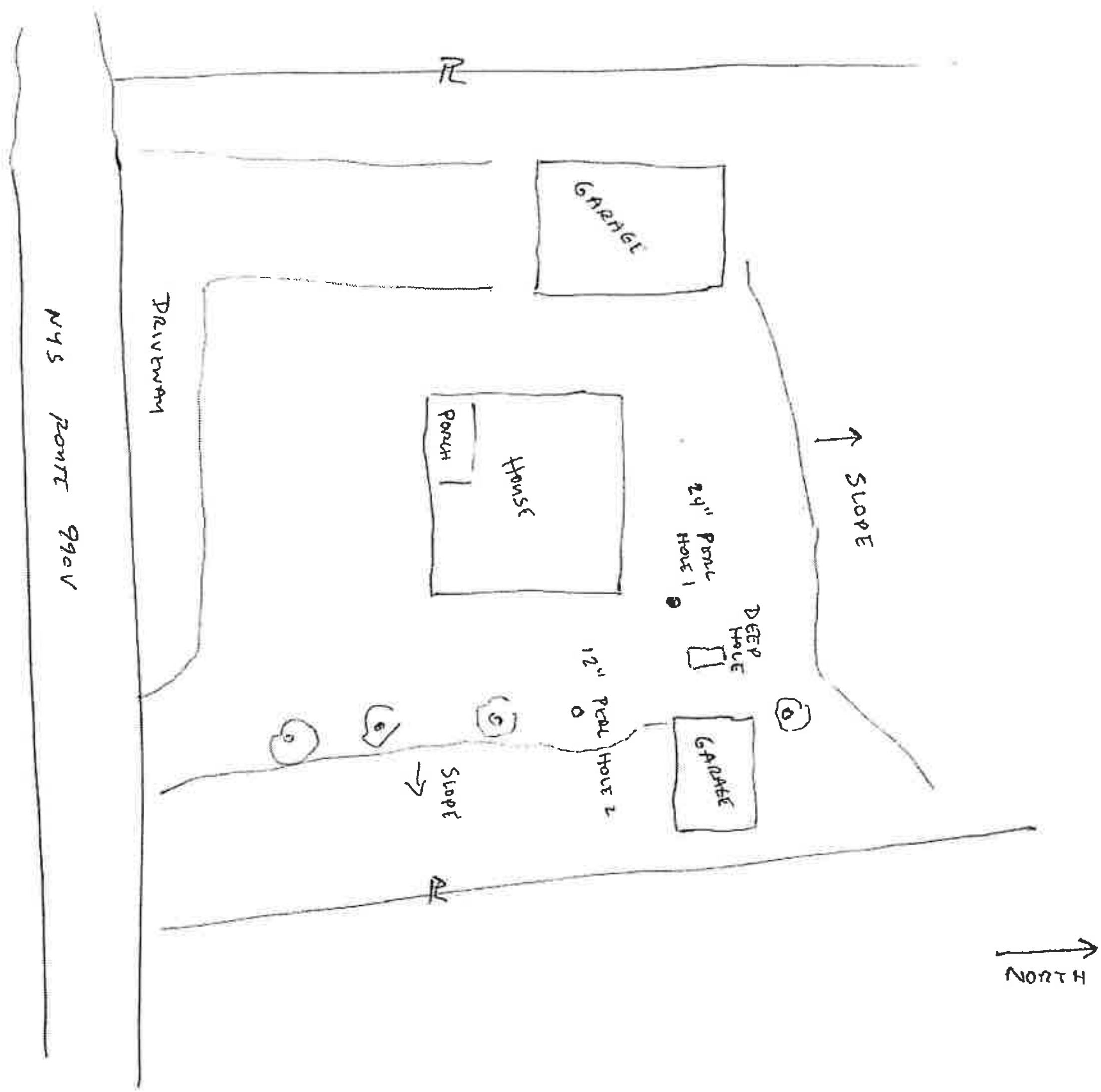

NYS ROUTE 990V
DRIVEWAY
GARAGE
PORCH
HOUSE
24" PERC HOLE 1
DEEP HOLE
12" PERC HOLE 2
GARAGE
SLOPE
SLOPE
NORTH

Exhibit 8.1.a.A

Site Selection Criteria for Subsurface Disposal

Hamlet of West Conesville, Town of Conesville
Community Wastewater Management Program
Site Selection Criteria for a Community Wastewater Treatment Facility
(Subsurface Treatment and Disposal)

Phase I – Initial site identification by Town and Engineer
Phase II – Desktop investigation by Engineer
Phase III – Contact property owners by Town
Phase IV – Field investigation and testing by the Engineer
Phase V – Choose site and continue studies by Town and Engineer

Phase I. Phase I – Initial site identification by Town and Engineer. Phase I is a review of the list of criteria using visual observation and local knowledge from the Town officials and members of the community to select possible sites for a Municipal Wastewater Treatment Facility. The following list of criteria is meant to be only preferential, and it is understood that no site will meet all of these conditions.

- Distant from public water supply reservoir
  - Minimum 200' per NYSDEC regulations
  - Minimum 300' per NYCDEP regulations
- Distant from active private wells
  - Minimum 100' away
- Distant from active municipal wells
  - Minimum 200' away
- Prefer to be down gradient from the Hamlet
  - Avoid costly pumping
- Prefer relatively flat land
  - Land should not be over a 15% slope (If you would be uncomfortable driving a riding lawnmower across it, it is too steep.)
- Distant from a surface water
  - 100' buffer from surface water
- Prefer to be distant from residences, but not too distant
  - At least 250' and less than 1500'
- Above the flood plain
  - Check with local flood plain manager
  - If the area floods on a regular basis, the site is not usable.
  - If the site is within the 100 year flood plain, a leach field may be sited there if the trench is above the 10 year flood elevation.
- Prefer to avoid areas being considered by the community for other purposes.
  - Avoid areas inconsistent with the community comprehensive plans and zoning.
- Prefer to avoid prime farm land
  - Check with County Planning department (Agricultural Districts)
  - Check with County Soil and Water Conservation Districts
- Prefer to avoid prime development land
  - Check with County Planning Department
  - Review zoning maps
  - Review Comprehensive Plan
- Prefer to avoid areas where rock outcroppings are visible.

    - This may indicate shallow depth to bedrock.
- Prefer to avoid areas that lay wet or where water ponds after rain.
    - A wet area may indicate soil that is not suitable for wastewater treatment or a high groundwater table.
    - Could indicate wetlands which would increase permitting requirements, time and cost
- Prefer that land is relatively inexpensive to purchase and develop.
    - Prefer willing seller
    - Easy vehicular access
    - Easy access to power
    - Unencumbered by easements and rights-of-way
        - Railroad
        - Highway
    - Prefer to avoid land that would acquire extensive clearing or grading
- History of Land Use
    - Prefer to avoid land known to have been filled because of possible foundation, settlement or environmental issues
    - Prefer to avoid land known to have historical significance
    - Prefer to avoid land known to be possibly contaminated in the past since remediation will be costly

Phase II. Phase II – Desktop investigation by Engineer. Phase II is a desktop review of the sites identified under Phase I. This will require review of existing data and mapping. Identified sites will be reviewed by the Town and Engineer prior to moving on to Phase III.

- Contact NYS DOH and local health departments regarding proximity to private and municipal wells and water supplies.
    - Review local Wellhead Protection Law.
    - Per "Design Standards for Wastewater Treatment Works 1988"
        - Absorption fields must be a minimum of 200 feet from public wells or water supply reservoirs.
        - 100 foot separation from a private well.
- Review available topographic maps.
    - Per "Design Standards for Wastewater Treatment Works 1988"
        - Absorption fields must be a minimum of 25 feet from the top of an embankment or steep slope.
- Review soils maps and descriptions
    - Suitability of soil for leach field
    - Likely depth to ground water
    - Likely depth to bedrock
- Review flood maps
    - Per "Design Standards for Wastewater Treatment Works 1988"
        - "Flooding of a …disposal site must be avoided."
        - "No part of a subsurface treatment and disposal system should be located lower than the 10-year flood elevation. "
- Review wetland and stream maps
    - An Article 24 permit is required for any construction in or adjacent (within 100 feet) of a New York State designated wetland.
    - Per "Design Standards for Wastewater Treatment Works 1988"

        - An absorption field must be a minimum of 100 feet from any surface water.
        - 50' minimum separation distance from an open drainage ditch.
    - Per 10 NYCRR Part 75 Appendix 75-A Table 2
        - The minimum separation distance from a well to an absorption field is 100 feet except "When sewage treatment systems are located in coarse gravel or upgrade and in the general path of drainage to a well, the closest part of the treatment system shall be at least 200 feet away from the well."
    - Per "Rules and Regulation for the Protection from Contamination, Degradation and Pollution of the NYC Water Supply and its Sources", Section 18-38(a)(5):
        - "No part of any absorption field ..., shall be located within the limiting distance of 100 feet of a watercourse or wetland or 300 feet of a reservoir, reservoir stem or controlled lake."
    - Possible ACOE permitting
- Review documents from DOH, DEC, and DEP relative to performance of existing septic systems in the area.

Phase III. Phase III – Contact property owners by Town. At this point the Town will send letters to the property owners of potential sites requesting permission for the Engineer to go on site to perform soil and other on-site investigations and requesting an indication of whether or not the owner may be willing to sell the site to the project.

Phase IV. Phase IV – Field investigation and testing by the Engineer. Once permission is obtained to enter the property and perform tests the Engineer will:

- Contact UFPO regarding utilities at the site.
- Perform percolation tests
    - Moderately rapid percolation rate to minimize the size of the leach field.
        - Greater than 3 minutes up to 5 minutes is ideal
        - Maximum is 60 minutes per inch.
- Obtain a detailed topographic survey of the property
    - Including adjacent buildings, water courses, any other surface features.
- Perform soil borings and deep test holes to determine soil profile.
    - Factors to be evaluated (per "Design Standards for Wastewater Treatment Works 1988")
        - Thickness of layers or horizons
        - Texture, consistence, and structure of soil layers.
        - General color and color mottling or variation.
        - Depth to Groundwater
            - The seasonally high groundwater level shall be at least 2 feet below an absorption field.
        - Depth to bedrock
            - The bottom of a conventional absorption field shall be at least 4 feet above bedrock or impervious strata.

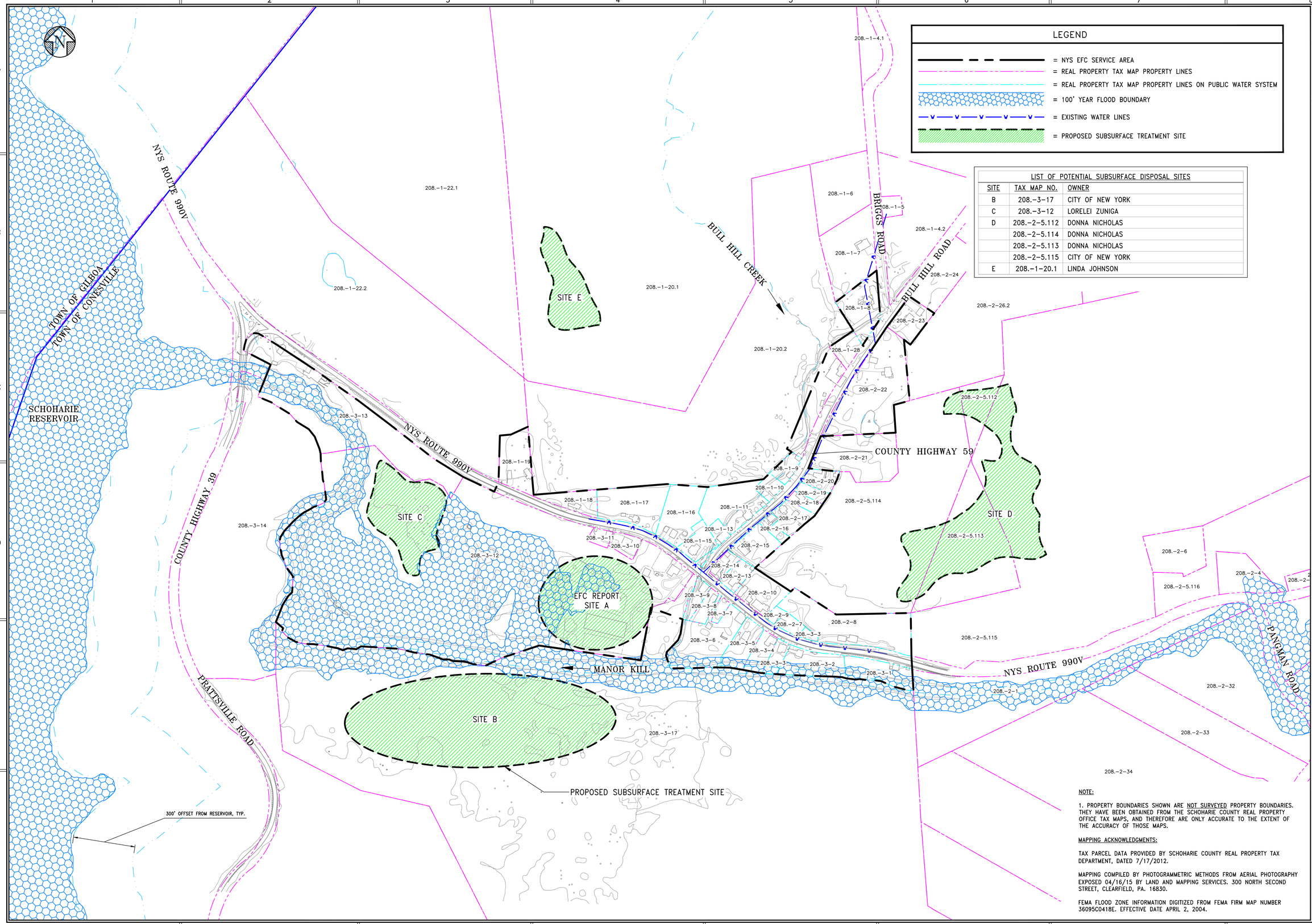
        - Other prominent features such as visible pores, stoniness, roots, or animal traces.
    - Preliminary groundwater mounding test
    - Determine proximity to septic systems, wells and drains.
    - Review tax maps and available surveys of the properties.
        - The minimum separation distance from a property line is 10 feet.
    - If reasonable and necessary, install monitoring wells to determine groundwater fluctuations.
    - Perform preliminary environmental assessment work.
        - Contact New York State Office of Parks, Recreation and Historic Preservation
        - Contact New York State Department of Environmental Conservation
        - Contact the US Army Corps of Engineers

Phase V. Phase V – Choose site and continue studies by Town and Engineer

- Perform environmental assessment work and other environmental studies such as archeological surveys, wetlands delineations, and wildlife and endangered species investigations.

Exhibit 8.1.a.B

Potential Subsurface Treatment Site Map



Lamont Engineers
ENGINEERS - PLANNERS
FACILITY OPERATIONS
548 MAIN ST., COBLESKILL, NY 12043
(518) 234-4028
www.lamontengineers.com

Consultant

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue No.	Date	Remarks
1	10/12/15	ADDED SITES C, D & E

Project Number	2014044
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	12/12/15
Scale	1"=200'
File Name	TREATMENT SITE

Sheet Title

POTENTIAL SUBSURFACE TREATMENT SITE MAP

Sheet No.

8.1.a.B

Exhibit 8.1.a.C

Sample Access/Willingness to Sell Letter

Town of Conesville
1306 State Route 990V
Gilboa, New York 12076
Phone: (607) 588-7211 Fax: (607) 588-6832

August 26, 2015

Linda J. Johnson
131 Briggs Road
Gilboa, New York 12076

RE: Access Agreement and non-binding indication of willingness to sell land for community wastewater facilities
Tax Map Parcel No. 208.-1-20.1; L 605, P 339
Town of Conesville, Schoharie County, NYS
Wastewater Facilities Site Identification and Testing Phase
Preliminary Engineering Studies
West Conesville Community Wastewater Management Program

Dear Linda J. Johnson:

The Catskill Watershed Corporation (CWC) was established as a local development corporation to, in part, develop and administer various programs aimed at enhancing water quality and local community economies. It is funded primarily by New York City Watershed program funds. CWC has established a Community Wastewater Management Program to assist the Town of Conesville (and certain other watershed communities) improve the management and treatment of sewage within the hamlet area by funding the cost of studying, designing and constructing a community wastewater management system. A copy of the agreement between the CWC and the Town of Conesville, which explains the Project more fully, is available for public review at the Town Hall.

The initial phase of the Project involves conducting a study to assess the wastewater needs of the hamlet of West Conesville (the "Study Phase"). This assessment will involve many tasks including identifying the area to be serviced by the community wastewater management system(s), analyzing the various wastewater management options available, and selecting the best wastewater management system(s) to serve the designated area. To assist it in this process, CWC has retained the professional engineering services of Lamont Engineers, P.C. (the "Engineer").

Two basic alternative wastewater management strategies are being seriously considered for West Conesville: (1) a septic maintenance district and (2) a cluster/community leach field, or a combination thereof.

Briefly, a septic maintenance district provides for more intensive management, maintenance and operation of individual septic systems on existing lots. The septic systems would continue to exist on existing lots and be owned by the property owners. The district would obtain an easement on the lot for the sole purpose of maintaining, operating and, if necessary, upgrading the septic system. When the district is created, project funding will be used (1) to upgrade any septic systems in need of improvement and (2) to set aside a capital account for operating, maintaining and upgrading the septic systems in the future. A septic maintenance district is a good alternative for communities with relatively large residential lots and good soils.

A cluster/community leach field is one or more larger septic systems at one or a few central locations to serve multiple homes. Wastewater is piped to the facility through sewers. A cluster/community leach field is a good alternative for communities that have relatively small lots and/or poorer soils, both of which can reduce and restrict the effectiveness of individual septic systems.

A community with a cluster of small lots could have a cluster leachfield and a septic maintenance district.

While some data already exists about septic systems in West Conesville, more detailed information is needed.

To conduct the study phase, the Engineer needs access to various properties in the Town of Conesville, including yours. Your property has been identified as a potential cluster/community leach field site. The initial activities to be conducted on your property include a general walk over, the taking of photographs, soil percolation tests, deep soil test pits, and/or soil borings. Depending upon the results of these initial activities, further investigations may occur. A more detailed outline of the scope of the investigation is attached. Before any of this work can begin, it is necessary that you, the property owner, grant access to your property to the Engineer. Your cooperation in granting access is vital to a successful study. The Engineer will notify you prior to visiting your property, and conduct their study at reasonable times and will repair and/or restore any area disturbed by the study.

Furthermore, as a condition to you granting us access, CWC and the Town of Conesville will defend you against and pay any legitimate claims for damages, losses, liabilities or expenses made against you as a result of the Engineers' use of the property as provided in this letter, including damage to your property. CWC and the Town will not require the property owner to pay for any damages, losses, or injuries sustained or suffered by any persons or property as a result of the Engineers' use of the property as provided in this letter. If you feel that your property has been damaged or not adequately restored, CWC and the Town will endeavor to have the problem rectified. CWC and the Town will only pay for damage to your property and any consequential out-of-pocket expenses you incur as a result of the damage.

To assure that your property is restored to the condition it was in prior to commencement of work, photographs will be taken prior to commencement of work and after work is

completed. Copies of the photographs will be kept at CWC and the Town Hall and will be available for your inspection.

The investigation on your property will begin this summer but may occur over a one-year or two-year period. As set forth in the attached schedule, the work will involve various stages. The decision whether to do work under a specific task will depend upon the results of the previous task.

In order to allow the Engineers to begin their study, please sign this letter and return it to Town of Conesville, 1306 State Route 990V, Gilboa, NY 12076 and keep one copy for your records. Your signature below certifies and acknowledges that you are the owner of the property at the listed address, that you have read and understand the content of this authorization letter, and that by this letter, you are granting your permission for Lamont Engineers, P.C., to perform the necessary studies on your property.

The specific activities the Engineers will undertake on your property are described on the attached schedule.

If you are <u>not</u> interested in making your property available for soil testing, do not sign this letter, but inform the Town of that fact. Any future questions regarding this letter or the study should be directed to this office.

Very truly yours,

William A. Federice, Supervisor
Town of Conesville

2014044\Corr\West Conesville\0051

Owner: Linda J. Johnson

By: _____
Print Name of Property Owner

_____
Signature of Property Owner

_____
Address

_____
Address

_____
Telephone Number

West Conesville CWMP Project Contacts

The following is a list of contacts for your reference.

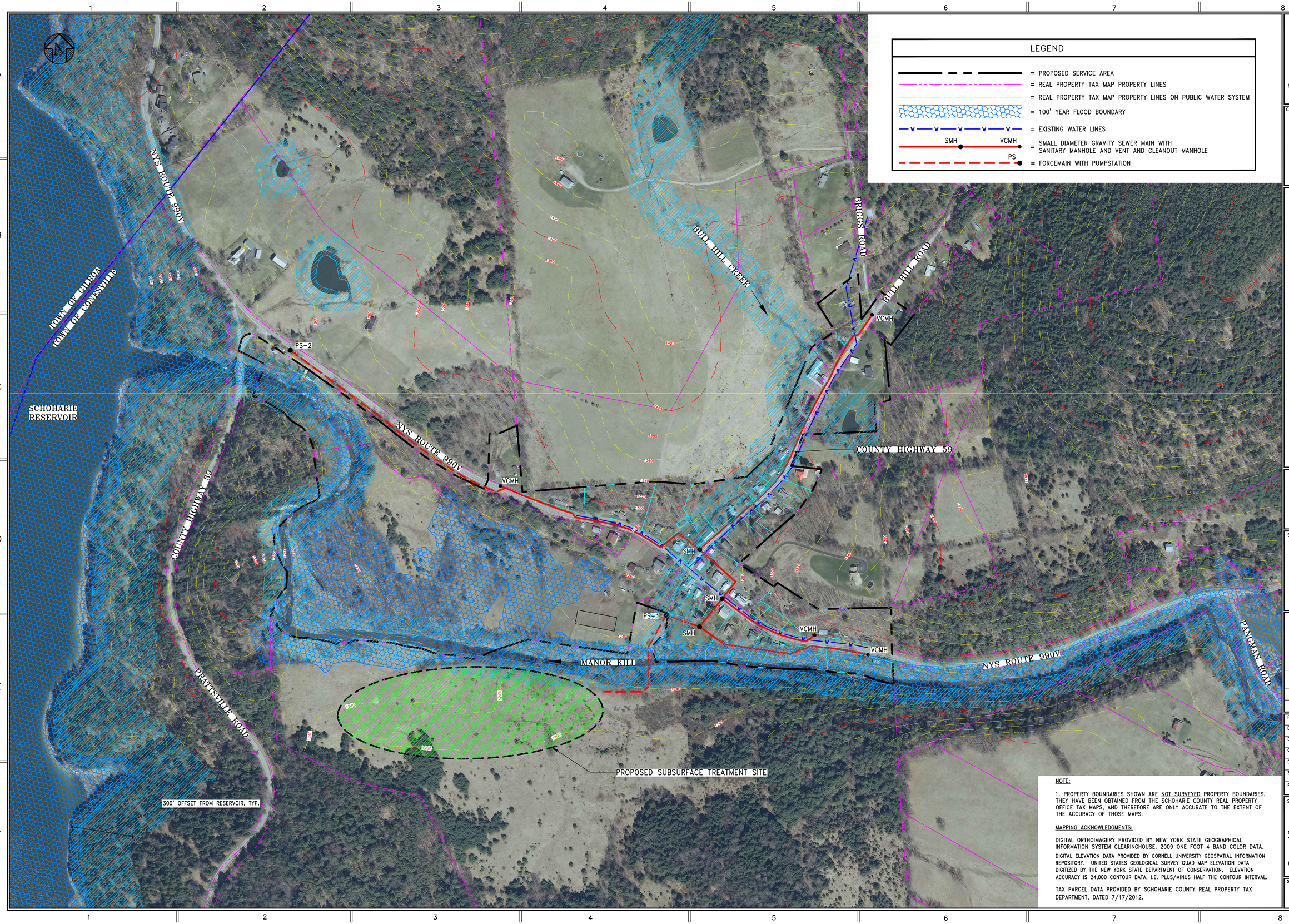
William Federice
Supervisor
1306 State Route 990V
Gilboa, New York 12076
Ph: (607) 588-7211
federicbill@gmail.com

John Mathiesen
Catskill Watershed Corporation
PO Box 569
905 Main Street
Margaretville, NY 12455
Phone (845) 586-1400
jmathiesen@cwconline.org

Christopher J. Yacobucci
Lamont Engineers
PO Box 610
548 Main Street
Cobleskill, NY 12043
Phone (518) 234-4028
cyacobucci@lamontengineers.com

Exhibit 9.1.e.A

Preliminary SDGS Collection System Layout



LEGEND

- = PROPOSED SERVICE AREA
- = REAL PROPERTY TAX MAP PROPERTY LINES
- = REAL PROPERTY TAX MAP PROPERTY LINES ON PUBLIC WATER SYSTEM
- = 100' YEAR FLOOD BOUNDARY
- = EXISTING WATER LINES
- SMH — VCMH = SMALL DIAMETER GRAVITY SEWER MAIN WITH SANITARY MANHOLE AND VENT AND CLEANOUT MANHOLE
- PS = FORCEMAIN WITH PUMPSTATION

NOTE:

1. PROPERTY BOUNDARIES SHOWN ARE NOT SURVEYED PROPERTY BOUNDARIES. THEY HAVE BEEN OBTAINED FROM THE SCHOHARIE COUNTY REAL PROPERTY OFFICE TAX MAPS, AND THEREFORE ARE ONLY ACCURATE TO THE EXTENT OF THE ACCURACY OF THOSE MAPS.

MAPPING ACKNOWLEDGMENTS:

DIGITAL ORTHOIMAGERY PROVIDED BY NEW YORK STATE GEOGRAPHICAL INFORMATION SYSTEM CLEARINGHOUSE. 2009 ONE FOOT 4 BAND COLOR DATA.

DIGITAL ELEVATION DATA PROVIDED BY CORNELL UNIVERSITY GEOSPATIAL INFORMATION REPOSITORY. UNITED STATES GEOLOGICAL SURVEY QUAD MAP ELEVATION DATA DIGITIZED BY THE NEW YORK STATE DEPARTMENT OF CONSERVATION. ELEVATION ACCURACY IS 24,000 CONTOUR DATA, I.E. PLUS/MINUS HALF THE CONTOUR INTERVAL.

TAX PARCEL DATA PROVIDED BY SCHOHARIE COUNTY REAL PROPERTY TAX DEPARTMENT, DATED 7/17/2012.

Lamont Engineers
ENGINEERS - PLANNERS
FACILITY OPERATIONS
548 MAIN ST., CORLESKILL, NY 12043
(518) 234-4028
www.lamontengineers.com

Consultant

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Stamp

Issue	Rev.	Date	Remarks

Project Number	2012002
Drawn By	MKS
Designed By	HL
Checked By	HL
Date	10/16/12
Scale	1"=200'
File Name	COLLECTION SYSTEM

Sheet Title

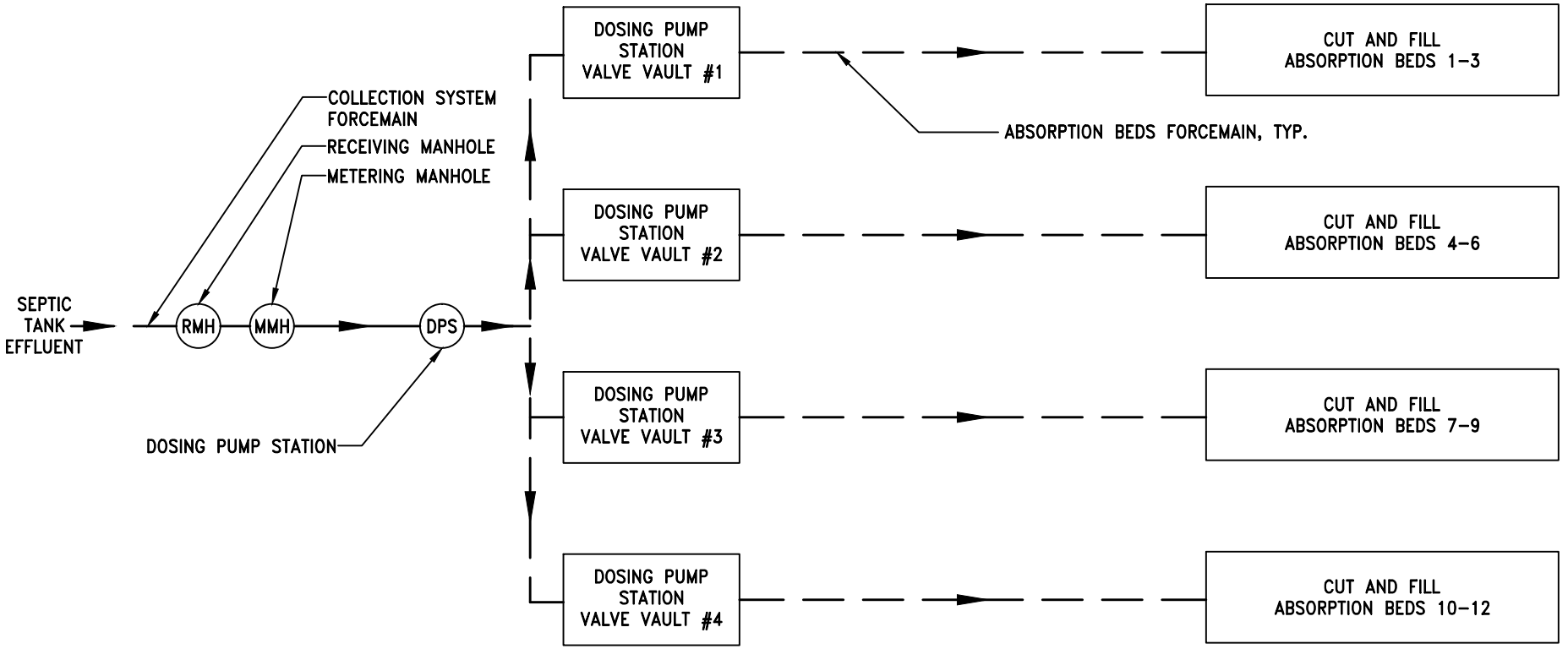
PRELIMINARY SDGS COLLECTION SYSTEM MAP WEST CONESVILLE

Sheet No.

9.1.e.A

Exhibit 9.3.A

Subsurface Wastewater Treatment Facility
Process Flow Schematic and Site Layout



DATE 12/15/15	PROJECT NO. 2014044_W.CONESVILLE	ABSORPTION BED PROCESS FLOW SCHEMATIC EXHIBIT 9.3.A	Lamont Engineers ENGINEERS • PLANNERS • FACILITY OPERATIONS
SCALE NOT TO SCALE	DRAWN MKS		

K:\AD_S\2014\2014044 W.CONESVILLE\9.3.A FLOW SCHEMATIC.dwg, 12/29/2015 7:58:44 AM, wsaylnour, DWG to PDF.pc3

LEGEND

= REAL PROPERTY TAX MAP PROPERTY LINES

MH

= SMALL DIAMETER GRAVITY SEWER MAIN WITH SANITARY MANHOLE

= FEMA 100 YEAR FLOOD ZONE

= 100' BUFFER FROM WATERWAYS

MANOR KILL

RESERVE ABSORPTION BED, 4 TYP.

CUT AND FILL ABSORPTION BED, 12 TYP.

1240

145'

20'

500'

ABSORPTION BED FORCEMAINS, TYP.

1260

MATCHLINE THIS SHEET

15'

ABSORPTION BED VALVE VAULT, 4 TYP.

ABSORPTION BED DOSING PUMP STATION

GRAVEL ACCESS DRIVE

RECEIVING MANHOLE

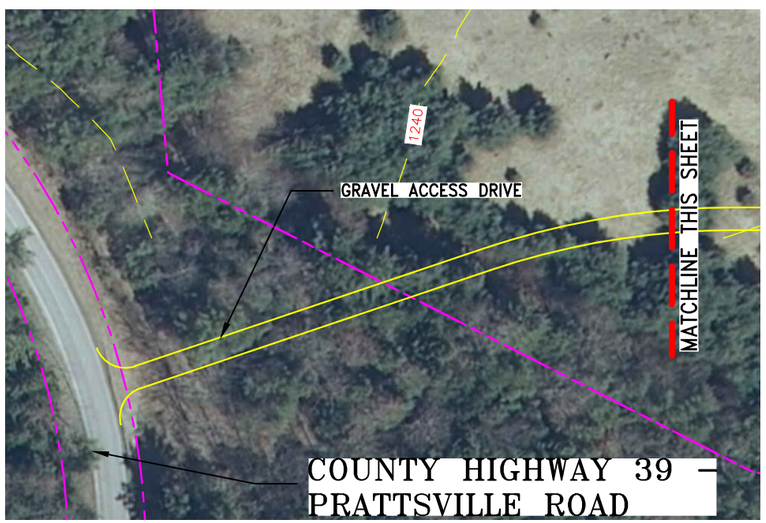
METERING MANHOLE

WWTF BUILDING

ODOR CONTROL UNIT

BACK UP STATIONARY GENERATOR AND CONCRETE PAD

COLLECTION SYSTEM FORCEMAIN



SITE B INFO:

TAX I.D. NUMBER: 208.-3-17
SOIL TYPE(S): Bg
STARTING APPLICATION RATE: 0.6 GPD/SF
STARTING APPLICATION RATE REDUCED BY 25% FOR ABSORPTION BEDS: 0.45 GPD/SF
REDUCED APPLICATION RATE INCREASED BY 25% FOR CONSTRUCTION OF 150% 0.5625 GPD/SF
DESIGN FLOW: 13,000 GPD
BED DIMENSIONS: 145' x 20'

MAPPING ACKNOWLEDGMENTS:

DIGITAL ORTHOIMAGERY PROVIDED BY NEW YORK STATE GEOGRAPHICAL INFORMATION SYSTEM CLEARINGHOUSE. 2009 ONE FOOT 4 BAND COLOR DATA.

DIGITAL ELEVATION DATA PROVIDED BY CORNELL UNIVERSITY GEOSPATIAL INFORMATION REPOSITORY. UNITED STATES GEOLOGICAL SURVEY QUAD MAP ELEVATION DATA DIGITIZED BY THE NEW YORK STATE DEPARTMENT OF CONSERVATION. ELEVATION ACCURACY IS 24,000 CONTOUR DATA, I.E. PLUS/MINUS HALF THE CONTOUR INTERVAL.

TAX PARCEL DATA PROVIDED BY SCHOHARIE COUNTY REAL PROPERTY TAX DEPARTMENT, DATED 7/17/2012.

Lamont Engineers

COBLESKILL NEW YORK
(518) 234-4028

WEST CONESVILLE SEWER DISTRICT
COMMUNITY WASTEWATER MANAGEMENT PROGRAM
SCHOHARIE COUNTY NEW YORK STATE

Project Number	2014044
Drawn By	MKS
Designed By	CJY/JRB
Checked By	HL/JRB
Date	12/15/15
Scale	1"=100'
File Name	COLL SYSTEM

Sheet Title

COMMUNITY SEPTIC SYSTEM SITE LAYOUT WEST CONESVILLE

Sheet No.

9.3.A

Exhibit 10.1.A

Opinion of Probable Cost Estimate Breakdown
SDGS to Community Subsurface Treatment System on Site B

West Conesville CWMP
Opinion of Probable Cost
Community Subsurface Treatment System on Site B
with Small Diameter Gravity Sewers

	Item	Description	Amount
1	**SDGS Collection System**		$ 2,137,000.00
2	**Shallow Cut-and-Fill Absorption Beds**		$ 2,798,000.00
		Total Construction Cost	**$ 4,935,000.00**
1	**Non-Construction**	Includes administrative, legal, SEQRA Compliance, permitting, engineering (design & construction), easement acquisition, etc.	$ 1,234,000.00
2	**Property Acquisition**		$ 501,000.00
		Total Non-Construction Cost	**$ 1,735,000.00**
		Total Project Cost	**$ 6,670,000.00**

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SDGS Collection System				
Item	Quantity	Units	Unit Price*	Amount
4" HDPE SDGS Main	4,400	LF	$ 110.00	$ 484,000.00
6" HDPE SDGS Main	150	LF	$ 110.00	$ 16,500.00
4" HDPE FM	1,200	LF	$ 110.00	$ 132,000.00
2" HDPE FM	1,300	LF	$ 75.00	$ 97,500.00
Stream Crossing No. 1 - 4" HDPE FM	200	LF	$ 300.00	$ 60,000.00
Stream Crossing No. 2 - 4" HDPE SDGS	60	LF	$ 300.00	$ 18,000.00
Highway Crossing No. 1 - 2" HDPE FM	50	LF	$ 300.00	$ 15,000.00
Highway Crossing No. 2 - 4" HDPE SDGS	40	LF	$ 300.00	$ 12,000.00
Highway Crossing No. 3 - 4" HDPE SDGS	50	LF	$ 300.00	$ 15,000.00
4" HDPE Lateral Stubs (35)	700	LF	$ 110.00	$ 77,000.00
Inspection Port	11	EA	$ 1,000.00	$ 11,375.00
Cleanout	30	EA	$ 1,000.00	$ 30,333.33
Manholes	3	EA	$ 3,500.00	$ 10,500.00
End Line Vent and Cleanout Manholes	4	EA	$ 5,000.00	$ 20,000.00
Main Effluent Pump Station 1	1	EA	$ 95,000.00	$ 95,000.00
Individual Effluent Pump Station 2	1	EA	$ 70,000.00	$ 70,000.00
Sewer Lateral Connection and All Appurtenances	35	EA	$ 15,000.00	$ 525,000.00
				$ 1,689,208.33
			Inflation 10%	$ 168,920.83
			Subtotal	$ 1,858,129.17
			Contingency (15%)	$ 278,719.38
			Construction Total	**$ 2,136,848.54**
*Unit Prices based on previous CWMP project cost estimates and bidding results.				

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	Item	Description	Units	Quantity	Unit Price*	Amount	
Site Preparation							
	Environmental Protection		LS	1	$ 20,000.00	$ 20,000.00	
	Site Preparation		LS	1	$ 20,000.00	$ 20,000.00	
	Mobilization/Demobilization		LS	1	$ 50,000.00	$ 50,000.00	
	Survey and Stakeout		LS	1	$ 10,000.00	$ 10,000.00	
	Access Road Construction		LS	1	$ 200,000.00	$ 200,000.00	
	Restoration		LS	1	$ 50,000.00	$ 50,000.00	
	Site Work		LS	1	$ 50,000.00	$ 50,000.00	
	Subtotal Site Preparation						$ 400,000.00
Absorption Beds							
	Receiving Structure		EA	1	$ 7,500.00	$ 7,500.00	
	Flow Meter and Metering Manhole		EA	1	$ 25,000.00	$ 25,000.00	
	Absorption Bed Dosing Pump Station		EA	1	$ 100,000.00	$ 100,000.00	
	Dosing Pumps		EA	3	$ 15,000.00	$ 45,000.00	
	Valve Vault with Valves		EA	4	$ 20,000.00	$ 80,000.00	
	3" HDPE Forcemain to Leach Beds		LF	6,212	$ 50.00	$ 310,600.00	
	1' of Topsoil Removal, Stockpile, Installation, and Seeding	12 leach beds at 145' (+10') x 20' (+10') x 1' of removal	CY	2,067	$ 35.00	$ 72,333.33	
	2' Excavation and Disposal of Material	12 leach beds at 145' (+10') x 20' (+10') x 2' of removal	CY	4,133	$ 25.00	$ 103,333.33	
	Installation of Fill Material	12 leach beds at 145' (+10') x 20' (+10') x 2' of installation + 10' wide outisde perimeter of bed x 1'	CY	4,911	$ 40.00	$ 196,444.44	
	Crushed Stone Bedding	12 leach beds at 145' x 20 x 1' of removal	CY	1,289	$ 40.00	$ 51,555.56	
	Leach Field Absorption Bed Piping		LF	6,720	$ 20.00	$ 134,400.00	
	Separation Material - Geotextile Fabric		SF	66,960	$ 0.50	$ 33,480.00	
	Subtotal Absorption Beds						$ 1,159,646.67
Other Treatment Facility Equipment							
	Odor Control System		EA	1	$ 20,000.00	$ 20,000.00	
	O&M Manuals		EA	1	$ 12,000.00	$ 12,000.00	
	Spare Parts		LS	1	$ 15,000.00	$ 15,000.00	
	Misc Treatment Facility Equip		LS	1	$ 115,000.00	$ 115,000.00	
	Subtotal Other Treatment Facility Equipment						$ 162,000.00
Utility Shed							
	Wood Frame Building (incl. Foundation)		SF	800	$ 150.00	$ 120,000.00	
	Misc. Bldg.		LS	1	$ 15,000.00	$ 15,000.00	
	Driveway and Parking Area		LS	1	$ 50,000.00	$ 50,000.00	
	Water Supply Well		LS	1	$ 15,000.00	$ 15,000.00	
	Office Furniture/ Lab Equipment		LS	1	$ 10,000.00	$ 10,000.00	
	Subtotal Utility Shed						$ 210,000.00
Electrical			LS	1	$ 75,000.00	$ 75,000.00	$ 75,000.00
Plumbing			LS	1	$ 35,000.00	$ 35,000.00	$ 35,000.00
HVAC			LS	1	$ 35,000.00	$ 35,000.00	$ 35,000.00
Utilities			LS	1	$ 35,000.00	$ 35,000.00	$ 35,000.00
Potential Extra Costs for Additional Requirements from NYCDEP			LS	1	$ 100,000.00	$ 100,000.00	$ 100,000.00
						SUBTOTAL	$ 2,211,646.67
						inflation (10%)	$ 221,164.67
						Subtotal	$ 2,432,811.33
						Contingency (15%)	$ 364,921.70
						Construction Total	**$ 2,797,733.03**
*Unit Prices based on previous CWMP project cost estimates and bidding results.							

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	Unit	Quantity	Unit Cost	Full Flow Cost	1st Yr. Flow Cost
Utilities					
Electricity	LS	1	$2,500	$2,500	$2,500
Fuel	LS	1	$500	$500	$500
Subtotal Utilities			**$3,000**	**$3,000**	**$3,000**
Chemicals/Degreasers	**LS**	**1**	**$500**	**$500**	**$500**
Personnel					
O&M operator	LS	1	$21,048	$21,048	$21,048
O&M Engineering	LS	1	$2,000	$2,000	$2,000
Eng overview					
Subtotal Personnel			**$23,048**	**$23,048**	**$23,048**
Admininstration					
O&M Legal	LS	1	$2,000	$2,000	$2,000
Admin Serv/Clerical	LS	1	$7,000	$7,000	$7,000
Office Supplies	LS	1	$500	$500	$500
Insurance	LS	1	$2,000	$2,000	$2,000
Subtotal Administration			**$11,500**	**$11,500**	**$11,500**
O&M					
Preventative Maintenance	LS	1	$1,200	$1,200	$1,200
Telephone	LS	1	$2,000	$2,000	$2,000
Bldg & Grounds Maintenance	LS	1	$5,000	$5,000	$5,000
Plant Equip/Spare parts	LS	1	$1,000	$1,000	$1,000
Sludge Hauling	LS	1	$2,000	$2,000	$2,000
Maint Supplies	LS	1	$500	$500	$500
Instrumentation Spare parts	LS	1	$500	$500	$500
Laboratory Contract	LS	1	$0	$0	$0
Subtotal O&M			**$12,200**	**$12,200**	**$12,200**
Collection Sys O&M				$0	$0
General O&M	LS	1	**$1,000**	**$1,000**	**$1,000**
Total O&M			**$51,248**	**$51,248**	**$51,248**
Contingency			$0	$0	$0
Total Estimated O&M			**$51,248**	**$51,248**	**$51,248**
Additional Start-up Costs					
O&M Contractor: Clean Water Start-up	HRS	8	$65	$0	$520
O&M Contractor: Dirty Water Start-up	HRS	8	$65	$0	$520
Engineer: Clean Water Start-up	HRS	35	$100	$0	$3,500
Subtotal Additional Start-up Costs				**$0**	**$4,540**
Grand Total				$51,248	$55,788

Exhibit 10.3.A

Permits and Approvals Inventory

Hamlet of West Conesville
Permits and Approvals Inventory

Agency	Application or Submission	Reason
NYSDEC	SPDES Permit - Stormwater	Stormwater discharge from a construction site
	Article 15 Permit - Stream Crossing	Stream bed or bank disturbance
	SPDES Permit - Wastewater	Wastewater surface discharge
	Facility Plan Submission	
	Final Design Submission	
ACOE	Nationwide Permit 12	Utility installation in a wetland or stream
	Nationwide Permit 33	Stream/ Wetland Dewatering for utility installation
NYCDEP	Stormwater Permit/ SWPPP	Stormwater discharge
	Facility Plan Submission	
	Plan approval	
SHPO	Submission	Assess archeological impacts
Town	Floodplain Work Permit	Installation of piping in the floodplain/floodway
	Building Permit Review	
County DPW	Highway Work Permit	Pipe Installation within the County Highway ROW
NYSDOT	Utility Work Permit	Pipe Installation within the State Highway ROW
	Non-utility work permit	WWTP or Pump station access drives
NYSDOH	Plan Review and Approval	