



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 26 2007

To All Interested Government Agencies and Public Groups:

In accordance with the U.S. Environmental Protection Agency's (EPA) procedures for the preparation of environmental impact statements (EIS), an environmental review has been performed on the proposed agency action below:

Project Name: Quarry Heights District Sewer System

Project Number: XP-982846-04

Purpose of Project: Construct a sewer system in a residential community to properly remove untreated wastewater from 57 homes that are connected to on-site septic systems. Wastewater will be collected from these homes and conveyed to an existing treatment plant. This project will protect the public health, environment, and ground water and surface water sources within the Kensico Reservoir Watershed.

Project Originator: Town of North Castle, New York

Project Location: Quarry Heights
Town of North Castle
Westchester County, New York

Project Description: Under the proposed project, approximately 5,000 feet of low-pressure force mains, 49 valve boxes, 57 grinder pumps will be installed to eliminate the failing on-site septic systems connected to residential homes in Quarry Heights. These mains will be connected to a new lateral that will tie into an existing gravity sewer in the Town of Harrison to convey wastewater to the Mamaroneck Wastewater Treatment Plant in the Village of Mamaroneck, New York.

Project Costs: \$ 994,578

EPA Grant: \$ 482,100

Our environmental review of this project indicates that no significant adverse environmental impacts will result from the proposed action. Consequently, we have made a decision not to prepare an EIS on the project. This decision is based on a careful review of the project's environmental information document, a site visit, and other supporting information. All of these documents, along with the Environmental Assessment (copy enclosed), are on file at the offices of the EPA Region 2 and the Town of North Castle, where they are available for public scrutiny upon request. The EA is also available on EPA Region 2's website at <http://www.epa.gov/region02/spmm/r2nepa.htm>.

Comments supporting or disagreeing with this decision may be submitted to EPA for consideration. All comments must be received within 30 calendar days of the date of this finding of no significant impact (FNSI). Please address your comments to: Grace Musumeci, Chief, Environmental Review Section, at the above address. No administrative action will be taken on the project for at least 30 calendar days after the date of this FNSI.

Sincerely,



Alan J. Steinberg
Regional Administrator

Enclosure

Environmental Assessment

I. Project Identification:

Name of Project: Quarry Heights District Sewer System

Name and Address of Applicant: Town of North Castle
15 Bedford Road
Armonk, New York 10504

EPA Project Number: XP-982846-04

Project Location: Quarry Heights
Town of North Castle
Westchester County, New York

II. Description of Facility Planning Area:

The Town of North Castle is approximately 26 square miles (16,640 acres) and located at the narrow waist of Westchester County where the western protruding corner of Connecticut points towards the Kensico Reservoir. The project planning area, Quarry Heights, is a

densely developed residential community of approximately 30 acres located at the south end of North Castle and within the Kensico Reservoir Basin (Figure 1).

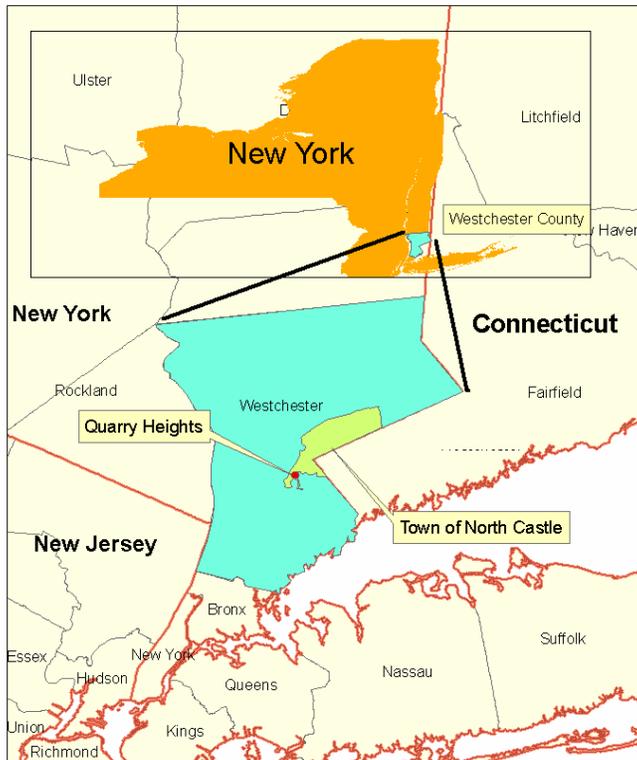


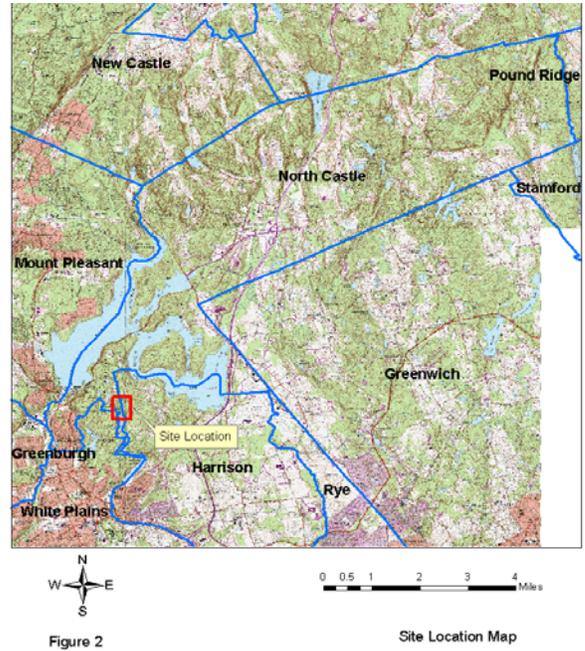
Figure 1



County Location Map

Quarry Heights is situated at the site where granite was quarried for the construction of the Kensico Dam. A portion of the project area drains to the Kensico Reservoir, which is part of the New York City Watershed that supplies potable water to Westchester County and New York City. Other portions of the project area also drain to smaller reservoirs that are part of the White Plains Watershed, which supplies potable water to the City of White Plains. Quarry Heights is within the designated Critical Environmental Area of North Castle.

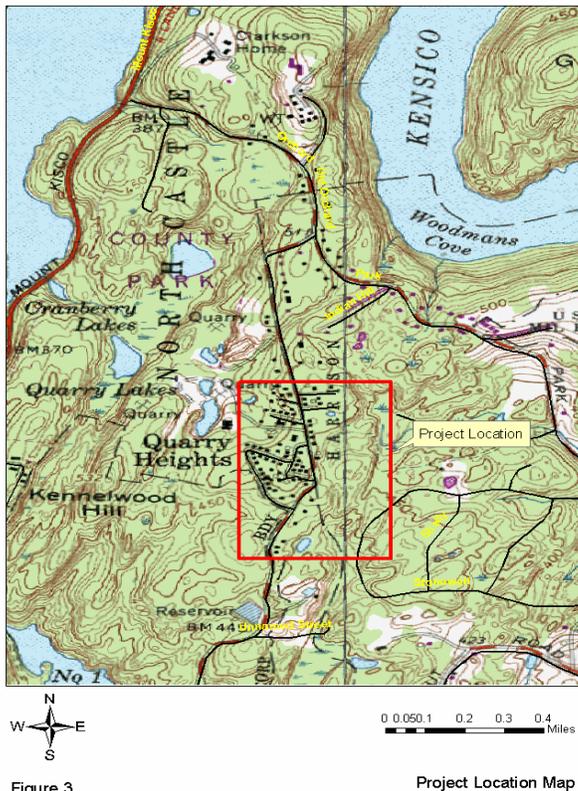
Quarry Heights is classified as suburban residential density area with permanent open space immediately to the north and south of the project area. North White Plains is immediately west of the project area and the Town of Harrison lies to the east (Figure 2). The Town plans to extend sewer services to existing residential homes in the Quarry Heights area. Under this proposed project, the sewer system will connect to residential homes on Old Orchard Street, Starkey Road, James Street, William Street, McClure Street, Memorial Lane, and Johnson Place (Figure 3).



III. Purpose and Need for Project:

The purpose of the project is to eliminate the subsurface wastewater disposal systems (septic systems) within the project area. The septic systems connected to homes in the project area have been failing as a result of their age and rocky soils with very limited percolation rates. The Westchester County Department of Health detected ground water contamination in the wells. Untreated wastewater from the failing septic systems contributes to ground water contamination and threatens the water quality of the surrounding reservoirs. The New York

City Department of Environmental Protection (NYCDEP) issued a Compliance Order for two of the worst cases, and financed the North Castle Sewer District #1 to pump out these two systems weekly.



The Town zoning map shows that lots in the project area are zoned as half-acre, one-family residential. The septic field expansion area is limited due to these small lot sizes and the required distance between the well and septic system is inadequate. Therefore, constructing the proposed sewer system will allow proper removal and treatment of wastewater from the project area to protect the public health and surrounding environment. Installation of sewers will protect the ground water and surface water within the New York City Watershed.

IV. Detailed Description of Selected Plan:

The selected plan is to install sewers to serve residential dwellings in Quarry Heights. At this time, 57 connections will be completed for existing dwellings; one additional property is undeveloped. Under the proposed project, the County of Westchester will install approximately 5,000 feet of 2- to 3-inch diameter, low-pressure force mains and 49 valve boxes. An existing sewer with nine valve boxes connects to residential dwellings at the north end of Old Orchard Street (Figure 4). The Town will provide the sewer service connections from the grinder pumps, which will be installed by the homeowner, to the new or existing valve boxes.



Figure 4

Quarry Heights Proposed Sewer System Map

The force mains will be installed in roadways within the right-of-way at the lower portion of Old Orchard Street, Starkey Road, James Street, William Street and McClure Street. These mains will be connected to a new lateral, which will be installed from Old Orchard Street to an existing gravity sewer at Stonewall Circle. This lateral will be a low-pressure force main that runs eastward through an undeveloped property in the Town of Harrison. Wastewater will subsequently travel through approximately 4,600 feet of gravity sewers in Harrison before reaching the County trunk line on Park Lane. This trunk line conveys wastewater to the Mamaroneck Wastewater Treatment Plant in the Village of Mamaroneck, New York.

Sewers serving homes within the upper portion of Old Orchard Street, Memorial Lane and Johnson Place will connect into an existing low-pressure force main on Old Orchard Street. Wastewater from Johnson Place and properties on Old Orchard Street north of Memorial Lane will flow northward through local sewers and a pumping station in Harrison before reaching the existing County trunk line on Park Lane. Wastewater from Memorial Lane and properties south of Old Orchard Street will be accepted by the new force main on Old Orchard Street and conveyed to the proposed County lateral from Old Orchard Street to Stonewall Circle. The new sewers will contribute approximately 24,000 gallons per day of wastewater to the wastewater treatment plant. The plant and existing trunk sewers have sufficient capacity to handle additional flows from this project.

V. **Estimated Project Costs:**

Table 1 provides detailed project costs information for the proposed sewer system.

Table 1 – Detailed Project Costs

Total Project Cost	\$ 994,578
Total Eligible Project Cost	\$ 994,578
Projected EPA Grant Amount	\$ 482,100
Other Grant / Loans Amount	\$ 312,500 (East of Hudson Funds) \$ 200,000 (Community Development Block Grant) \$ 100,000 (Community Capital Assistance Program Grant)
Local Share of Project Cost	\$ 0 (valve box to sewer system)
Existing Annual Household Charge	\$ 425 (no existing sewer system)
Estimated Household Equipment Installation	\$ 6,000 (grinder pump and waste line from house to valve box)
Estimated Future Annual Household Charge	\$ 635 (electrical & sewer services)

VI. **Evaluation of Alternatives:**

- A. **No Action:** The “No Action” alternative was rejected because it would result in continuation of the existing situation, which is reliance on failing septic systems for disposal of wastewater. Continuing use of on-site septic systems in Quarry Heights will further contribute to water quality problems and potential health hazards from continuous releases of inadequately treated wastewater to the environment.
- B. **Replacement of Individual Septic Tank Systems:** This alternative involves installing new septic tanks and leach fields on existing individual residential properties, which currently have inadequate systems. This alternative was rejected due to inadequate lot sizes, unsuitable rocky soils, and insufficient depth of soil above bedrock and limited percolation rates for installation of new subsurface disposal systems, which will place high cost burden on property owners.
- C. **Construction of New Sewer System:**
1. **Gravity Sewers:** This alternative involves installing gravity sewers and lift stations within the project area. This concept was rejected due to the need for extensive rock removal as well as numerous manholes to be installed within the winding roads in the area. Additionally, because of varying grades in the project area, at least three lift stations would need to be constructed, which is not an economical solution.
 2. **Low-pressure Force Main (Selected):** As described in Section IV, installation of low-pressure force main is the selected alternative because a portion of the area is already served by low-pressure sewers. The proposed sewer extension will be compatible with the existing sewer system. Additionally, this alternative is the most economical, environmentally sound, and achieves the project’s goals.

VII. Environmental Consequences of the Selected Plan:

A. Surface Water and Ground Water Quality:

Implementation of this project is expected to result in substantial long-term positive impacts to surface and ground water quality by eliminating pollutants from on-site individual residential septic systems from reaching these water sources. Eliminating ground water recharge from septic systems will not significantly reduce ground water levels or impact regional ground water supplies.

During construction of the sewer system, without proper storm water runoff control and dewatering measures, there could be potential for short-term water quality impacts to surface and ground water sources. However, mitigation strategies will be employed to minimize water quality impacts.

B. Wetlands:

No state jurisdictional wetlands are located in the vicinity of the project area. However, freshwater palustrine forested and unconsolidated bottom wetlands exist within the periphery of the project area. The closest wetland is about 1,000 feet southwest from the new sewer connection from Old Orchard Street to the existing sewer system in Stonewall Circle in Harrison. Construction activities will not disturb wetlands, change drainage to and from wetlands, or alter current conditions (Figure 5).

C. Floodplains:

The proposed project is located outside of the 100-year and 500-year floodplains.

D. Air Quality:

Quarry Heights is located within the moderate 8-hour ozone (O₃) nonattainment area, fine particulate matter (PM_{2.5}) nonattainment area, and carbon monoxide (CO)

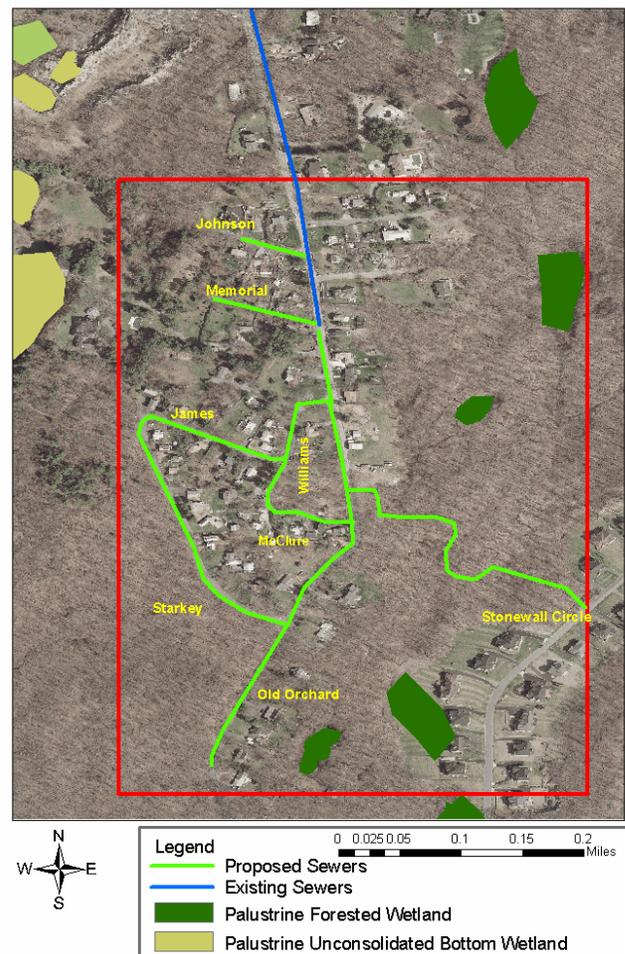


Figure 5

Wetlands Map

maintenance area. Since the area is designated as nonattainment, this project is subject to the general conformity regulations. Table 2 shows the results of the general conformity applicability analysis completed by the EPA for construction emissions of volatile organic compounds (VOC), nitrogen oxides (NO_x), CO, PM_{2.5}, and sulfur dioxide (SO₂) in the Quarry Heights area during the 2007 construction year. The results are below the applicable de minimis threshold values; therefore, the project is presumed to conform to the State Implementation Plan and no further action is necessary. Appendix A contains the General Conformity Determination calculation tables.

Table 2 – 2007 Construction Emissions Summary for General Conformity

Pollutant (tons/year)	VOC	NO_x	CO	PM_{2.5}	SO₂
Off-Road Construction Emissions	0.228	0.698	1.717	0.060	0.032
On-Road Construction Emissions	0.074	0.033	0.712	0.002	0.001
Total Construction Emissions	0.303	0.731	2.428	0.062	0.032
General Conformity Threshold	50	100	100	100	100

Once operational, this project will not contribute any new green house gas emissions. However, there will be short-term impacts from this project. These include vehicular emissions from operating construction equipment and dust generated from construction activity.

E. Natural Resources:

There are minimal impacts to natural resources because most of the project will be constructed within existing roadways and already disturbed/grassed areas. Disturbed vegetation areas and bare soils along roadways will be reseeded following construction. However, a narrow swath of vegetation will be cleared within the undeveloped land in Harrison to install the 1,150 feet lateral to connect to the existing sewer system in Stonewall Circle. This undeveloped area comprises secondary growth deciduous trees and irregular topography.

Impacts to vegetation and disturbance to wildlife within this narrow linear swath of land in Harrison are anticipated to be minor. Less than a quarter-acre of trees smaller than 12-inches diameter will be removed near Old Orchard Street and Stonewall Circle, where the lateral will deviate from the existing pathway. Much of this pathway contains rock and blasting will also be required to assist with trench excavation to install the sewer lateral underground. Impacts to wildlife will be temporary and minimal during blasting and construction activities because any transient or residential species within the vicinity of this impact area will likely relocate for protection.

F. Noise:

Noise associated with construction activities in the project area will increase. This noise will be temporary and localized. There will be temporary noise impacts from blasting activities within the undeveloped land in Harrison for rock removal to install the pipeline. There are no hospitals, schools or other public facilities within the project area that could be affected by construction noise.

G. Endangered/Threatened Species:

To comply with Section 7 of the Endangered Species Act, the EPA reviewed the federal threatened and endangered species list for Westchester County in the Fish and Wildlife Service's website, <http://www.fws.gov/northeast/nyfo/es/section7.htm>. The list indicates that the federally endangered Shortnose sturgeon (*Acipenser brevirostrum*), threatened Bog turtle (*Clemmys muhlenbergii*), and endangered Indiana bat (*Myotis sodalis*) are known or likely to occur in Westchester County. Based on the review of the project area, the environment does not provide the necessary habitat to support any of the aforementioned species.

Review of the NYSDEC National Heritage Program (NHP) report further indicates that there are no federally listed species in the vicinity of the project area. There are state-listed rare, threatened, and endangered vascular plant species approximately 0.3 to 0.5 miles away from the project area; however, the project is not expected to have impacts at such distance. Consequently, there are no anticipated impacts to state and federally listed species or critical habitats from implementation of this project.

H. Archeological and Historical Resources:

The New York State Historic Preservation Office (SHPO) of the New York State Department of Parks and Recreation and Historic Preservation determined that the Quarry Heights project area is not located within an archeologically sensitive area and the proposed project will have no effect on cultural resources in or eligible for inclusion in the National Register of Historic Places. Appendix B contains a copy of the letter from SHPO.

I. Other Environmentally Sensitive Resources:

The project will not result in any significant impacts to agricultural lands, wild and scenic rivers, designated coastal zone, sole source aquifer, and wellhead protection areas because these environmentally sensitive resources do not exist in the vicinity of the project area.

J. Population Growth/Secondary Impacts of Induced Growth:

The proposed sewer system in the Quarry Heights area has been designed to accommodate only the existing development plus one additional potential single family detached residential dwelling. The small diameter sewer lines in the project area will provide limited wastewater carrying capacity. The large area of undeveloped land directly to the west of Starkey Road is a protected watershed that belongs to the City of White Plains. As such, the proposed project will not induce further growth within the densely developed Quarry Heights since it is intended to serve the present residential community.

K. Traffic:

Construction activities related to installation of sewer lines in roads or road rights-of-way will most likely create short-term traffic impacts. Short-term traffic impacts are expected to be temporary and minor since affected roadways are local and no road

closures are anticipated. There will be no long-term significant increases in traffic in the project area after the installation of sewers is complete.

L. Odors:

No odors will be generated from the enclosed sewer system while it is in operation.

M. Aesthetics:

The aesthetics of the project area will not be significantly affected since sewers will be placed underground. There will be no post-construction impacts on the surrounding community since roadways, easements, and vegetation will be restored to normal condition. Removal of several trees of less than a quarter-acre from the secondary growth forest will be required within the existing pathway between Old Orchard Street in North Castle and Stonewall Circle in Harrison.

N. Socioeconomics and Demographics:

Even though there are no existing municipal sewer services in the project area, homeowners are currently paying an annual rate of \$425 for sewer service to the Mamaroneck Valley sewer district. With implementation of this project, each homeowner will be responsible for purchasing a grinder pump for \$3,800 and installing the waste line from the house to the valve box for an additional \$2,200 using contractor services. Based on current electrical rates, the annual electrical cost to operate the grinder pump for a single-family residence is approximately \$210. The first-year total cost to the homeowner will be \$6,635 for equipment installation, and electrical and sewer services. After the first year, the total projected annual cost for a typical residential user in the project area is approximately \$635 for electrical and sewer services. This represents 0.54 percent of the Town’s median household income of \$117,815, which is based on the U.S Census Bureau’s 2000 census. The national median household income is \$41,994. Consequently, there are no significant socio-economic impacts from this project.

Table 3 provides the demographic information from the U.S. Census Bureau’s 2000 census for North Castle.

Table 3 – Town of North Castle Population by Race and Ethnicity

Origin	Population	Percentage	U.S. Percentage
White	9,967	92	75.1
Black	168	2	12.3
American Indian	0	0	0.9
Asian	471	4	3.6
Other	243	2	0.1
Hispanic (may be of any race)	461	4	12.5

O. Environmental Justice:

An environmental justice (EJ) assessment was performed on the Towns of North Castle and Harrison to identify whether this project would create any disproportionate impacts relative to a community's environmental and/or human health. The relative burden of this selected area was compared to that of a statistically-derived reference community utilizing “EPA Region 2’s Environmental Justice Analysis” tool. In the EJ analysis, North Castle and Harrison were both identified as Communities of Concern (COC), the defined geographic area for the purposes of performing an EJ assessment. The methodology used in this assessment supports *EPA Region 2’s Interim Policy (IP) for Environmental Justice*.

Table 4 shows the results of the Environmental Load Analysis, which indicates the existing environmental burden of the COC relative to an overall New York State (NYS) average.

Table 4. Environmental Load Analysis

Indicators	NYS Threshold	North Castle		Harrison	
		Indicator	Ranking	Indicator	Ranking
Toxics Release Inventory	5.67	4.44	0	5.82	0
Facility Density	56	116.56	4	150.47	5
Air Toxics – Cancer	63.55	44.22	0	45.69	0
Air Toxics – Non-cancer	11.3	9.03	0	9.54	0

The analysis indicates risk rankings of four and five with facility density indicators of 116.56 and 150.47 for North Castle and Harrison, respectively. While these values are greater than the overall NYS value, the rankings of 4 and 5 indicate that these loads for the COC are not at the high end of the spectrum. More importantly, with the installation of the sewer system being entirely underground, there will be no increase in environmental burden in the COC from this project.

Table 5 shows the results of the demographic analysis, which calculates the percent minority and percent poverty, which is then compared to a statistically derived threshold reference for an urban area in NYS.

Table 5. Demographic Analysis

Indicators	NYS Threshold	North Castle		Harrison	
		Indicator	Setting	Indicator	Setting
Percent Minority	51.51 %	17.58 %	Urban	17.23 %	Urban
Percent Poverty	23.59 %	3.85 %	Urban	4.73 %	Urban

The demographic analysis indicates that the COC percentages are well below the NYS values. Accordingly, the COC do not meet the EPA criteria to be classified as EJ areas. Appendix D contains the complete EJ analyses results. EPA’s website, <http://www.epa.gov/region02/ej/>, contains EJ information and explains how the indicators are used in the assessment.

P. Cumulative Impacts:

Construction of this sewer system will have a positive impact on the project area by effectively providing an environmentally sound solution to the failing septic system problem. Implementing this project will alleviate the high cost for pumping out the failed septic systems. The local threat to the reservoir and ground water quality will dissipate after the project is completed; thus, the environment in the Quarry Heights area as well as the Kensico Reservoir will be protected.

The sewer system will be constructed in accordance with the local, state, and environmental laws. This proposed project meets the requirements of the existing conditions, and is consistent with the planning and development goals in the Town's Comprehensive Plan Update. Implementing this project will not induce further development in the Quarry Heights area since there is limited carrying capacity in the proposed sewer system to accommodate additional wastewater flows.

VIII. Steps to Minimize Adverse Effects on the Environment:

A. Surface Water and Ground Water Quality:

During construction of the sewer system, no sediment or silt laden water from dewatering operations will be discharged directly into any stream, wetland, or surface water and ground water source, or storm sewer. If necessary, the Town will develop a detailed dewatering operations plan to be approved by the County and NYSDEC.

Mitigation measures will be implemented to minimize any potential impacts to surface and ground water sources from storm water runoff during construction. Contractors will maintain water quality standards by adhering to sediment and erosion control practices in the *New York State Standards and Specifications for Erosion Control* during all phases of construction.

B. Air Quality:

Short-term air quality impacts from construction can be minimized by performing operation and maintenance routine services on construction equipment. Additionally, the contractor can use clean fuel(s) in combustion-type equipment.

The contractor will adhere to dust control and mitigation measures, such as sweeping and water spray suppression, and ensure that air quality standards are met during all phases of construction.

C. Natural Resources:

Construction impacts to vegetation / trees will be mitigated by contractors complying with the *New York State Standards and Specifications for Erosion Control*.

D. Noise:

Construction operations will be limited to normal working hours to control noise generated by trucks, construction equipment, and blasting. Minimizing noise levels from construction equipment will be required by properly equipping construction machinery with noise attenuation devices (i.e., mufflers).

Noise from blasting impacts will need to be minimized by implementing precautionary measures, including blasting mats. If necessary, a blasting plan will be developed and will comply with the local blasting ordinance.

E. Traffic:

Alternative traffic routing, detouring, flagging, will be used to keep vehicles moving during the installation of sewer lines and mains to alleviate short-term traffic impacts.

IX. Coordination of Environmental Review:

A. Public Participation: Public participation was an integral part of project planning. Meetings and hearings open to the public are listed below:

- March 23, 2003 – North Castle Town Board discussed need to pump various septic systems due to septic system failures in Quarry Heights.
- April 23, 2003 – North Castle Town Board discussed the extension of Sewer District #1 to include Quarry Heights District at Public Hearing.
- March 24, 2004 – North Castle Town Board reported that it applied for Federal grants for the Quarry Heights District sewer project.
- September 8, 2004 – North Castle Town Board reported funding status to bring sewer infrastructure to Quarry Heights.
- November 22, 2004 – North Castle Town Board discussed the letter from Assistant Attorney General James M. Tierney and the use of East of Hudson funds for the Quarry Heights District Sewer project.
- December 2005 – North Castle Town Board adopted Westchester County sewer use code for the Quarry Heights neighborhood.
- January 10, 2005 – North Castle Town Board discussed \$482,100 federal grant application regarding sewer construction in Quarry Heights.
- January 31, 2005 – North Castle Town Board discussed status of Quarry Heights sewer project.
- March 23, 2005 – North Castle Town Board discussed status of Quarry Heights sewer project. Specifically, the Board discusses funding sources and a task list and draft timeline.
- April 13, 2005 – North Castle Town Board received letters from the residents of Quarry Heights expressing appreciation for Town's efforts to bring sewers to the neighborhood.
- June 8, 2005 – North Castle Town Attorney reported to Town Board regarding the status of sewer project.
- March 8, 2006 – North Castle Town Board approved authorization to prepare preliminary construction budget for Quarry Heights sewer project.
- May 10, 2006 – North Castle Town Supervisor announced Northern Westchester Watershed Committee voted to unanimously accept North Castle's application for Quarry Heights.
- October 5, 2006 – North Castle Town Board discussed receipt of \$312,500 for Westchester County in connection with Quarry Heights sewer project.

- December 29, 2006 – Involved/Interested Parties received the Negative Declaration for Quarry Heights Sanitary Sewers, Towns of North Castle and Harrison.

Appendix D contains the Negative Declaration in accordance with the State Environmental Quality Review Act.

Appendix E contains the mailing list of individuals, organizations, and institutions where this environmental assessment was sent for the 30-day public comment period.

B. Federal, State, and Local Agencies Notified/Consulted:

- Westchester County Board of Legislators
- Westchester County Planning Department
- Westchester County Department of Public Works
- Westchester County Department of Environmental Facilities
- Westchester County Department of Health
- Town of Harrison Town Board
- New York City Department of Environmental Protection
- New York State Department of Environmental Conservation
- New York State Environmental Facilities Program
- New York State Department of Parks, Recreation, and Historic Preservation
- U.S. Environmental Protection Agency
- U.S. Department of Interior, Fish and Wildlife Service

There are no federally recognized Tribal Nations within region; therefore, construction of the proposed sewer system in North Castle and Harrison, New York will not have an impact on any tribal lands or activities.

X. Reference Documents:

- *Environmental Information Document for the Quarry Heights District Sewer System*, Town of North Castle, New York, September 2007.
- Letter from Ruth L. Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, Peebles Island Office, re: State Historic Preservation Officer's opinion, January 3, 2007.
- *Town Comprehensive Plan Update*, Town of North Castle, New York, 1996.
- *Full Environmental Assessment Form (Parts I, II, and III)*, Westchester County, August 25, 2006.
- Memorandum from David S. Kvinge, to Involved/Interested Agencies re: Negative Declaration for Quarry Heights Sanitary Sewers, Towns of North Castle and Harrison, New York, December 29, 2006.
- Town of North Castle - <http://www.northcastleny.com/>.

APPENDIX A

GENERAL CONFORMITY APPLICABILITY ANALYSIS

TABLE A1

CONSTRUCTION EMISSION FACTORS FOR NO _x									
EQUIPMENT	FUEL TYPE	HP	LOAD FACTOR ¹	NO _x EF (Tier 1) g/hp-hr ²	TAF	A	Fraction of Useful Life Expended	DF ³	NO _x EF _{adj} g/hp-hr ⁴
Chain Saw	GASOLINE	11	0.7	4.5	1.00	N/A	N/A	N/A	4.50
Mixer	GASOLINE	12	0.59	4.5	1.00	N/A	N/A	N/A	4.50
Backhoe	DIESEL	65	0.21	5.5988	1.10	0.024	0.5	1.012	6.23
Small crane	DIESEL	85	0.43	5.5988	1.00	0.024	0.5	1.012	5.67
Backhoe	DIESEL	90	0.21	5.5988	1.10	0.024	0.5	1.012	6.23

CONSTRUCTION EMISSION FACTORS FOR VOC									
EQUIPMENT	FUEL TYPE	HP	LOAD FACTOR ¹	VOC EF (Tier 1) g/hp-hr ²	TAF	A	Fraction of Useful Life Expended	DF ³	VOC EF _{adj} g/hp-hr ⁴
Chain Saw	GASOLINE	11	0.7	207.92	1.00	N/A	N/A	N/A	207.92
Mixer	GASOLINE	12	0.59	207.92	1.00	N/A	N/A	N/A	207.92
Backhoe	DIESEL	65	0.21	0.5213	2.29	0.036	0.5	1.018	1.22
Small crane	DIESEL	85	0.43	0.5213	1.00	0.036	0.5	1.018	0.53
Backhoe	DIESEL	90	0.21	0.5213	2.29	0.036	0.5	1.018	1.22

CONSTRUCTION EMISSION FACTORS FOR CO									
EQUIPMENT	FUEL TYPE	HP	LOAD FACTOR ¹	CO EF (Tier 1) g/hp-hr ²	TAF	A	Fraction of Useful Life Expended	DF ³	CO EF _{adj} g/hp-hr ⁴
Chain Saw	GASOLINE	11	0.7	485.81	1.00	N/A	N/A	N/A	485.81
Mixer	GASOLINE	12	0.59	485.81	1.00	N/A	N/A	N/A	485.81
Backhoe	DIESEL	65	0.21	2.3655	2.29	0.036	0.5	1.018	5.51
Small crane	DIESEL	85	0.43	2.3655	1.00	0.036	0.5	1.018	2.41
Backhoe	DIESEL	90	0.21	2.3655	2.29	0.036	0.5	1.018	5.51

CONSTRUCTION EMISSION FACTORS FOR PM									
EQUIPMENT	FUEL TYPE	HP	LOAD FACTOR ¹	PM EF (Tier 1) g/hp-hr ²	TAF	A	Fraction of Useful Life Expended	DF ³	PM EF _{adj} g/hp-hr ⁴
Chain Saw	GASOLINE	11	0.7	7.7	1.00	N/A	N/A	N/A	7.70
Mixer	GASOLINE	12	0.59	7.7	1.00	N/A	N/A	N/A	7.70
Backhoe	DIESEL	65	0.21	0.473	2.29	0.036	0.5	1.018	1.10
Small crane	DIESEL	85	0.43	0.473	1.00	0.036	0.5	1.018	0.48
Backhoe	DIESEL	90	0.21	0.473	2.29	0.036	0.5	1.018	1.10

CONSTRUCTION EMISSION FACTORS FOR SO ₂							
EQUIPMENT	FUEL TYPE	HP	BSFC	soxcnv	VOC EF _{adj} g/hp-hr	soxdsl / soxbas	SO ₂ EF g/hp-hr
Chain Saw	GASOLINE	11	0.87	0.03	207.92	0.0339	0.12
Mixer	GASOLINE	12	0.87	0.03	207.92	0.0339	0.12
Backhoe	DIESEL	65	0.408	0.02247	1.22	0.2500	0.90

Small crane	DIESEL	85	0.408	0.02247	0.53	0.2500	0.90
Backhoe	DIESEL	90	0.408	0.02247	1.22	0.2500	0.90

Notes:

1. Load factor is the fraction of rated horsepower at which the equipment typically operates over its duty cycle. Load factors were taken from *Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling* (EPA420-P-04-005)

2. All diesel equipment was assumed to be Tier 1 compliant (model years 1996-2001 for most equipment) with the emission factors (EF), transient activity factors (TAF) and relative deterioration factors (A) taken from *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling--Compression-Ignition* (EPA420-P-04-009)

Gasoline emission factors were taken from *Exhaust Emission Factors for Nonroad Engine Modeling: Spark-Ignition* (EPA420-R-05-019). To be conservative, the greatest emission factor for each pollutant for a given piece of equipment was chosen.

3. Diesel equipment was assumed to have reached half of its useful life. The deterioration factor (DF) is then:

$$DF = 1 + A * (\text{Fraction of useful life expended})$$

Deterioration factors were not available for the gasoline-powered equipment.

4. Adjusted emission factors were determined by:

$$EF_{adj} = EF_{Tier1} * TAF * DF$$

5. SO₂ emission factors for diesel equipment determined by:

$$SO_2 \text{ EF} = (\text{BSFC} * 453.6 * (1 - \text{soxcnv}) - \text{VOC EF}_{adj}) * 0.01 * \text{soxdsl} * 2$$

(taken from *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling--Compression-Ignition* (EPA420-P-04-009))

SO₂ emission factors for gasoline equipment determined by:

$$SO_2 \text{ EF} = (\text{BSFC} * 453.6 * (1 - \text{soxcnv}) - \text{VOC EF}_{adj}) * 0.01 * \text{soxbas} * 2$$

(taken from *Exhaust Emission Factors for Nonroad Engine Modeling: Spark-Ignition* (EPA420-R-05-019))

Where:

BSFC = Brake Specific Fuel Consumption

soxcnv = grams of PM sulfur / grams of fuel sulfur consumed

soxdsl = episodic fuel sulfur weight percent

soxbas = default certification fuel sulfur weight percent

TABLE A2

ON-ROAD VEHICLE EMISSION FACTORS									
EQUIPMENT	FUEL TYPE	GVWR	VEHICLE CLASS	LOCATION	2007				
					NO _x EF (g/mi) ¹	VOC EF (g/mi) ¹	CO EF (g/mi) ¹	PM EF (g/mi) ²	SO ₂ EF (g/mi) ³
Truck	DIESEL	31,000	HDDV7	OFF-SITE	6.58	0.37	1.34	0.21	0.0126
Truck	DIESEL	44,000	HDDV8a	OFF-SITE	9.51	0.42	2.30	0.35	0.0148
Truck	GASOLINE	1/2 Ton PU	LDGT1	OFF-SITE	0.42	0.48	12.52	0.01	0.0096
Auto	GASOLINE	Auto	LDGV	OFF-SITE	0.54	0.62	12.30	0.01	0.0075

Notes:

1. Emission factors for NO_x, VOC, and CO taken from *MOBILE6.2 Emission Factors (Arterial, Collector, and Local Road) For Westchester County*, prepared by the New York State Department of Transportation and available at <https://www.nysdot.gov/portal/page/portal/divisions/engineering/environmental-analysis/repository/westchea.pdf>. Vehicles were assumed to travel at an average speed of 40mph.
2. PM_{2.5} emission factors taken from *PM Emission Factor Table C for all the counties in NYSDOT Region 10 and 11 and Rockland and Westchester counties in NYSDOT Region 8*, prepared by the New York State Department of Transportation and available at https://www.nysdot.gov/portal/page/portal/divisions/engineering/environmental-analysis/repository/table_c.pdf.
3. SO₂ emission factors developed using MOBILE6.2 default inputs and diesel sulfur content of 15ppm.

TABLE A3

CONSTRUCTION EMISSIONS FROM OFF-ROAD EQUIPMENT

YEAR	ACTIVITY	EQUIPMENT	FUEL TYPE	NO.	HP	LOAD FACTOR	TOTAL HRS	NO _x EMISSIONS (g)	VOC EMISSIONS (g)	CO EMISSIONS (g)	PM EMISSIONS (g)	SO ₂ EMISSIONS (g)
2007	Site clearing	Chain Saw	GASOLINE	3	11	0.7	285	9875.25	456280.44	1066110.05	16897.65	260.19
	Site clearing	Backhoe	DIESEL	3	65	0.21	456	38794.10	7564.30	34324.46	6863.44	5592.47
	Excavation	Backhoe	DIESEL	5	65	0.21	925	78694.17	15344.24	69627.47	13922.55	11344.37
	Masonry Repairs	Mixer	GASOLINE	1	12	0.59	96	3058.56	141319.07	330195.34	5233.54	80.59
	Landscaping	Backhoe	DIESEL	5	90	0.21	450	53008.13	10335.83	46900.83	9378.18	7641.53
	Construction Material Placement	Crane	DIESEL	1	85	0.43	114	23608.46	2211.20	10033.74	2006.32	3757.94
TOTAL 2007 OFF-ROAD CONSTRUCTION EMISSIONS (g/year)								207038.66	633055.07	1557191.89	54301.68	28677.09
TOTAL 2007 OFF-ROAD CONSTRUCTION EMISSIONS (tons/year)								0.228	0.698	1.717	0.060	0.032

TABLE A4

CONSTRUCTION EMISSIONS FROM ON-ROAD VEHICLES

YEAR	ACTIVITY	EQUIPMENT	NO.	VEHICLE CLASS	MILES PER VEHICLE	TOTAL MILES	NO _x EMISSIONS (g)	VOC EMISSIONS (g)	CO EMISSIONS (g)	PM _{2.5} EMISSIONS (g)	SO ₂ EMISSIONS (g)
2007	Worker transportation to/from job	Auto	20	LDGV	1280	25600	13824	15872	314880	256	192
	Worker transportation to/from job	Truck	20	LDGT1	1280	25600	10752	12288	320512	256	245.76
	Deliver Septic Tank Pumps	Truck	1	HDDV7	700	700	4606	259	938	147	8.82
	Deliver Electrical Supplies	Truck	1	HDDV8a	600	600	5706	252	1380	210	8.88
	Deliver Sand	Truck	1	HDDV8a	1710	1710	16262.1	718.2	3933	598.5	25.308
	Deliver Gravel	Truck	1	HDDV8a	1710	1710	16262.1	718.2	3933	598.5	25.308
TOTAL 2007 ON-ROAD CONSTRUCTION EMISSIONS (g/year)							67412.20	30107.40	645576.00	2066.00	506.08
TOTAL 2007 ON-ROAD CONSTRUCTION EMISSIONS (tons/year)							0.074	0.033	0.712	0.002	0.001

APPENDIX B

CORRESPONDENCE

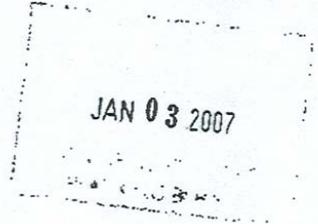


New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

December 22, 2006

Adam R. Kaufman
Town of New Castle Planning Dept.
17 Bedford Rd
Armonk, New York 10504



Re: CD
Quarry Heights District Sewer System
Old Orchard St. and others/NORTH CASTLE.
Westchester County
06PR06736

Dear Mr. Kaufman:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966.

Based upon this review, it is the SHPO's opinion that your project will have No Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont
Director

APPENDIX C

ENVIRONMENTAL JUSTICE ANALYSES

Community of Concern:North Castle

EPA Region 2 Environmental Justice Analysis

The Region 2 Environmental Justice (EJ) Analysis supports [EPA Region 2's Interim Policy for Environmental Justice \(IP\)](#). The specific community that is under evaluation for inclusion in the Region's EJ program is referred to as the Community of Concern (COC) in the IP. The evaluation process hinges on the comparison of the respective levels of the environmental burden, minority representation, and low-income representation between the COC and its statistical reference area.

For environmental burden analysis, Region 2 advances the concept of an "Environmental Load Profile (ELP)". The profile would provide a representation of the environmental load (i.e. relative environmental burden) within a community. The ELP serves to identify communities that may bear a disproportionate environmental load in comparison to statewide-derived thresholds. Currently, the Environmental Load Profile consists of the following three indicators: Toxics Release Inventory (TRI) Air Emissions, Air Toxics, and Facility Density. The ELP generates a summary report that provides numeric values for state thresholds, indicator of the community of concern (COC Indicator), and the ranking of the community in the state. These calculated values not only identify whether the particular community meets an ELP threshold, but further upon exceedance, the indicator value is ranked to provide a measure of magnitude.

Environmental Load Analysis

Indicators	NY State Threshold	COC Indicator	Ranking
TRI Indicator:	5.67	4.44	0
Facility Density Indicator:	56	116.56	4
Air Toxics Cancer Indicator:	63.55	44.22	0
Air Toxics Non_cancer Indicator:	11.3	9.07	0

The demographic analysis calculates the percent minority and percent poverty for the COC and compared to an appropriate statistical reference. Statistical reference for percent minority and percent poverty were calculated for each state in EPA Region 2 using cluster analysis. Separate statistical references for rural and urban settings were developed for evaluating percent minority. The location of the COC determines which statistical reference area is used.

Demographic Analysis

Indicators	NY State Thresholds	COC Indicator	Urban/Rural
Percent Minority:	51.51	17.58	urban
Percent Poverty:	23.59	3.85	urban

Community of Concern:Harrison

EPA Region 2 Environmental Justice Analysis

The Region 2 Environmental Justice (EJ) Analysis supports [EPA Region 2's Interim Policy for Environmental Justice \(IP\)](#). The specific community that is under evaluation for inclusion in the Region's EJ program is referred to as the Community of Concern (COC) in the IP. The evaluation process hinges on the comparison of the respective levels of the environmental burden, minority representation, and low-income representation between the COC and its statistical reference area.

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Environmental Load Analysis

Indicators	NY State Threshold	COC Indicator	Ranking
TRI Indicator:	5.67	5.82	0
Facility Density Indicator:	56	150.47	5
Air Toxics Cancer Indicator:	63.55	45.69	0
Air Toxics Non_cancer Indicator:	11.3	9.54	0

The demographic analysis calculates the percent minority and percent poverty for the COC and compared to an appropriate statistical reference. Statistical reference for percent minority and percent poverty were calculated for each state in EPA Region 2 using cluster analysis. Separate statistical references for rural and urban settings were developed for evaluating percent minority. The location of the COC determines which statistical reference area is used.

Demographic Analysis

Indicators	NY State Thresholds	COC Indicator	Urban/Rural
Percent Minority:	51.51	17.23	urban
Percent Poverty:	23.59	4.73	urban

APPENDIX D

SEQRA NEGATIVE DECLARATION

STATE ENVIRONMENTAL QUALITY REVIEW

NEGATIVE DECLARATION

This notice has been prepared pursuant to Part 617 of the implementing regulations pertaining to Article 8 of the New York State Environmental Conservation Law.

The County of Westchester has assumed the role of Lead Agency for the action described below. It has been determined by the County, acting by and through its Board of Legislators, that the proposed action will not have a significant effect on the environment.

TITLE OF ACTION:

Quarry Heights Sanitary Sewers

LEAD AGENCY:

County of Westchester

SEQR STATUS:

Unlisted Action

LOCATION OF ACTION:

South end of the Town of North Castle, in the vicinity of Old Orchard Street, including Startkey Road, James Street, William Street, McClure Street, Memorial Lane and Johnson Place, and the Town of Harrison, north of Stonewall Circle.

NATURE OF ACTION:

Construction of sewer lines to serve approximately 58 residential properties in the Quarry Heights section of the Town of North Castle. Under the proposed project, the County will install approximately 5,000 linear feet of low pressure force mains and approximately 49 valve boxes. The Town of North Castle will construct the service connections from the new or existing valve boxes to grinder pumps that the affected homeowners will be required to install for approximately 57 homes. The new sewers will connect to existing local sewers owned by the Town of Harrison. These sewers lead to the County trunk line in Park Lane and ultimately to the County-owned Mamaroneck Wastewater Treatment Plant in the Village of Mamaroneck.

Implementation of the project will require intermunicipal agreements between the County and the Towns of North Castle and Harrison, modification of the County sewer districts to transfer or incorporate the subject parcels into the Mamaroneck Valley Sanitary Sewer District and amendment of section 964.22 of the Laws of Westchester County to reflect the proposed sewer district modification

SEQR DETERMINATION: Negative Declaration

BACKGROUND:

SEQR Classification – The proposed action is classified as an Unlisted action pursuant to Section 617.2(ak), "...all actions not identified as a Type I or Type II action...."

Lead Agency – This project requires the approvals of the Westchester County Board of Legislators, the Town Boards of North Castle and Harrison, New York City Department of Environmental Protection and the New York State Department of Environmental Conservation (NYSDEC). In addition to county funding, the project will receive funding from the U.S. Environmental Protection Agency, the East of Hudson Water Quality Investment Program (which is administered by the County under the 1997 Memorandum of Agreement with the City of New York) and the Community Development Block Grant program (which is administered by the County on behalf of the U.S. Department of Housing and Urban Development). The County of Westchester initiated a coordinated review of the proposed project by circulating a notice of intent to serve as lead agency, along with Part 1 of the Short Environmental Form (EAF), to all of the aforementioned involved agencies on June 29, 2006. It was later identified that financing assistance under the Clean Water State Revolving Fund (CWSRF) was also being sought. In order to comply with the requirements for the CWSRF program, on September 8, 2006, the County recirculated its notice of intent to serve as lead agency to all involved agencies, including the New York State Environmental Facilities Corporation (NYSEFC), and provided Part 1 of a full EAF for review. In letters dated and received between September 12 – September 19, all of the involved agencies eligible to serve as lead agency in connection with SEQR indicated that they had no objection to the designation of the County as lead agency.

Project Purpose/Need – The Quarry Heights area in the Town of North Castle is densely developed with existing homes. A portion of the area drains to the Kensico Reservoir, which is part of the New York City drinking water supply, which also serves many portions of Westchester County. Other portions of the area drain to reservoirs that serve as part of the City of White Plains water supply system. The subsurface sewage disposal (septic) systems serving homes in this area have been failing as a result of their age and rocky soils. Septic field expansion is not feasible due to the small lot sizes. The failing septic systems have already resulted in the contamination of the groundwater. The proposed sewer line will allow for the proper removal and treatment of sewage and, thereby serve to protect the health and wellbeing of the residents of this neighborhood as well as serve to protect the both ground and surface water quality in this area.

REASONS SUPPORTING THIS DETERMINATION:

The proposed project will ultimately improve and protect the environment. The proposed sewer line has been designed to alleviate existing problems, including the degradation of groundwater quality, associated with septic systems that have failed. Installation of the proposed sewer system will allow for the discontinuation in the use of the failing septic systems, which will improve groundwater quality in the area and protect the surrounding watersheds and reservoirs of New York City and White Plains.

Impacts associated with construction will be limited. Much of the construction will occur on developed land and within existing roadways. Impacts associated with the installation of pipeline through undeveloped property owned by the Town of Harrison will be limited by the linear and narrow nature of the scope of work and by following an existing pathway. Tree removals will be required near Old Orchard Street and Stonewall Circle, where the pipeline will deviate from the pathway. However, the majority of these trees are 12-inches or less in diameter. Construction impacts will be mitigated by complying with *New York State Standards and Specifications for Erosion and Sediment Control*. Blasting impacts will be mitigated by the implementation of precautionary measures, such as mats and seismic monitoring, to ensure that nearby structures or utilities are not damaged.

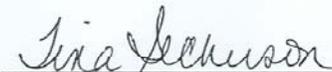
The proposed sewer system has been designed to accommodate only the existing development plus one additional potential single-family residence. As such, the project will not induce further development in this area. The new sewers will contribute approximately 24,000 gallons of sewage per day to the Mamaroneck Wastewater Treatment Plant. The plant and existing trunk sewers have sufficient capacity to handle this additional sewage.

DETERMINATION: Based on the information in the attached Environmental Assessment Form and the criteria in Section 617.7 of 6 NYCRR Part 617, the County of Westchester, acting by and through its Board of Legislators, has determined that the proposed project will not have a significant impact on the environment.

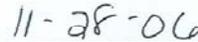
CONTACT

PERSON:

David Kvinge, Director of Environmental Planning
432 Michaelian Office Building
White Plains, NY 10601
(914) 995-4400



Tina Seckerson, Acting Clerk
Westchester County Board of Legislators



Date

Enclosures:

- County Location Map
- Site Location Map
- North Castle Sewer District Map
- Full Environmental Assessment Form

cc:

County:

Office of the County Executive
Att: Lawrence Schwartz, Deputy County Executive

Charlene M. Indelicato, County Attorney

Gerard E. Mulligan, Commissioner, Dept. of Planning

Ralph Butler, Commissioner, Dept. of Public Works

Anthony Landi, Commissioner, Dept. of Environmental Facilities

Dr. Joshua Lipsman, Commissioner, Dept. of Health

Other:

Reese Berman, Supervisor
Town of North Castle

Stephen Malfitano, Supervisor
Town/Village of Harrison

New York City Department of Environmental Protection
Attn: Marilyn Shanahan, Chief, SEQRA Coordination Section
Bureau of Water Supply, 465 Columbus Avenue, Valhalla, NY 10595

New York State Department of Environmental Conservation
Attn: Margaret Duke, Regional Permit Administrator
21 South Putt Corners Road, New Paltz, NY 12561

New York State Environmental Facilities Corporation
Attn: George Cholakis, Assistant General Counsel
625 Broadway, Albany, NY 12207

Environmental Notice Bulletin
New York State Department of Environmental Conservation
4th Floor, 625 Broadway, Albany, NY 12233-1750

United States Environmental Protection Agency
Attn: Dennis Durack/Region 2
290 Broadway, New York, NY 10007-1866

APPENDIX E

MAILING LIST

Mailing List

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