

**REGIONAL GROUND-WATER STUDY  
TOWN OF MONROE  
MONROE, NEW YORK**

Prepared for  
Orange County Water Authority  
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**REGIONAL GROUND-WATER STUDY  
TOWN OF MONROE  
ORANGE COUNTY, NEW YORK**

**INTRODUCTION**

The Town of Monroe water system consists of four existing water districts, three of which obtain water from the Village of Monroe. The fourth district obtains water from its own wells. There are three villages within the Town of Monroe: the Village of Monroe, the Village of Harriman, and the Village of Kiryas Joel, which also maintain their own water districts. In addition, there are two private systems, Lamplight Village and Cromwell Hill Commons. These water systems are described below.

**EXISTING SURFACE WATER SUPPLIES**

The Village of Monroe currently uses Mombasha Lake as a source of water. Mombasha Lake has a surface area of 340 acres and a safe yield of approximately 1 million gallons per day (MGD). As of November 1992, the average daily production was 0.942 MGD and maximum daily production was 1.493 MGD. The treatment capacity of the water treatment plant is approximately 1.4 mgd with two filters in operation. The plant has three filters. (Orange County Health Department, 1993).

**EXISTING GROUND-WATER SUPPLIES**

**Lamplight Village  
(Private)**

**Well Supply in Service**

Lamplight Village currently operates two bedrock wells on an alternating basis. Both wells (Groundwater Inventory Map ["GIM"], Wells MT-1 and MT-2) are located adjacent to the stream, but do not appear to be under the influence of surface water. Available well data are located on Table 1, and a summary of the well capacities is presented in Table 2A (Montayne, 1993).

**Cromwell Hill Commons  
(Private)**

**Well Supply in Service**

Cromwell Hill Commons currently operates two bedrock wells (GIM, Wells MT-3 and MT-4) on an alternating basis. Available well data are presented in Table 1, and well yield capacities are summarized in Table 2B (Montayne, 1993).

**Water District No. 2  
(Sterling Manor)**

**Well Supply in Service**

Water District No. 2 currently operates two bedrock wells designated Well 1 (GIM, Well MT-5) and Well 2 (GIM, Well MT-6). Available well data are presented in Table 1 and well yield capacities are summarized on Table 2C (Montayne, 1993).

**Village of Kiryas Joel**

**Well Supply in Service**

The Village of Kiryas Joel currently operates seven production wells completed in the bedrock. There are also two additional production wells which are used in emergencies only. The locations of the wells are shown on the Groundwater Inventory Map ("GIM") (Wells MT-16 through MT-20, MT-22, and MT-28). The available well data are presented on Table 1 and well yield capacities are summarized on Table 2D.

**Well Supply Not in Service**

The Village of Kiryas Joel currently has 10 production wells which are out of service. Well data for these wells are presented in Table 1. The well locations are shown on the GIM (Wells MT-21, MT-23 through MT-27, and MT-29 through MT-34).

**Proposed Well Supply Not in Service**

The Village of Kiryas Joel has recently (1993) drilled three additional rock wells, designated well 15 (GIM, Well MT-35), well 16 (GIM, Well MT-36), and well 17 (GIM, Well MT-37). Although wells 15 and 16 have not yet had pumping tests conducted on them, the drillers estimated a combined yield of 250 gallons per minute (gpm). A 72-hour pumping test conducted on well 17 indicated a safe yield of about 200 gpm. Available well data are presented in Table 1 (Rysinger, 1993).

### **Village of Harriman**

#### **Well Supply in Service**

The Village of Harriman currently operates eight wells (GIM, Wells MT-38 through MT-42, and MT-44 through M-46). Only one of these wells, Mary Harriman 1 Replacement (GIM, Well MT-39) is constructed in the sand and gravel aquifer in the Village, the rest of the wells are completed in bedrock. Available well data are presented in Table 1, well capacities are summarized in Table 2E.

#### **Well Supply Not in Service**

The original Mary Harriman Well 1 (GIM, Well MT-47) is a sand and gravel well that was drilled in 1947 and is now inactive due to loss of well yield. The Freemont Well (GIM, Well MT-52) was found to be contaminated during pumping tests and has not been put into services. Available well data are presented in Table 1.

#### **Proposed Well Supply Not in Service**

In 1992, the Village of Harriman drilled a bedrock well designated as the River Road Well (GIM, Well MT-43). The Village currently is waiting for additional funding and approvals in order to put the well on line. Available well data are presented in Table 1 (Karl, 1993).

### **PROPOSED COMMUNITY WATER-SUPPLY SYSTEMS**

The following are proposed community water-supply systems for the Town of Monroe (including the Village of Monroe and the Village of Harriman).

#### **Markay Property**

A single bedrock well (GIM, Well MT-7) was drilled in 1984 on the Markay property as a possible source for proposed residential development of the property. The development project has been abandoned. Available well data are presented in Table 1 (E.A. Engineering, Science & Technology, 1984).

#### **Village Heights**

The Village Heights subdivision was planned for 272 residential dwellings and a total project of 372 units. Four bedrock wells were installed (GIM,

Wells MT-8, MT-9, MT-10, and MT-15) in the Town and Village of Monroe and have been found to have a combined yield of 164-224 gpm, which is in excess of the 60 gpm required by NYSDOH regulations. This provides an excess yield of 104-164 gpm. Available well data are presented in Table 1 (Tim Miller Associates, 1989).

#### **Applecross Estates**

Applecross Estates was a proposed development of 450 units, including commercial and office space and a restaurant. The estimated daily demand is 85 gpm. Four bedrock wells were installed (GIM, Wells MT-11 through MT-14), and pumping tests indicated a combined yields of 225-250 gpm. This provides a surplus yield of 140-165 gpm. Available well data are presented in Table 1 (Malcolm Pirnie, 1989).

#### **Harriman Business Park**

The proposed Harriman Business Park is a planned development including industrial, commercial, office, hotel, and attached residential housing. By NYSDOH regulation a water supply of 128-164 gpm must be developed (LBG, 1990). Four production have been installed at the locations shown on the GIM, Wells MT-48 through MT-51), and have been shown to have a combined yield of 565 gpm. This provides an excess of 401-437 gpm. Available well data are presented in Table 1 (LBG, 1990).

#### **Interchange Commerce Center**

Five test wells have been installed at the proposed Interchange Commerce Center. Well OR-7 (GIM, Well MT-46), Well OR-1 (GIM, Well MT-53), Well OR-3 (GIM, Well MT-54), Well OR-5 (GIM, Well MT-56), and Well OR-6 (GIM, Well MT-55) have a combined estimated yield of 252 gpm (Karl, 1993). Well OR-7 is owned and operated by the Village of Harriman. The remaining 4 wells when placed in service will also be owned and operated by the Village of Harriman.

### **WATER SUPPLY DEMAND**

#### **Town of Monroe**

The Town of Monroe currently meets its estimated average daily water demand of 0.0085 mgd with the existing wells in service. The maximum daily water demand is 0.012 mgd. The current maximum yield capacity and average yield capacity of the system are 0.036 mgd and 0.020 mgd, respectively. The wells drilled for proposed sources have an average daily yield of 0.560 mgd. Available water demand and well yield data are summarized in Table 3A (Montayne, 1993).

#### **Village of Monroe**

The Village of Monroe currently meets estimated average daily water demand of 0.903 mgd and its maximum daily demand of 0.931 mgd using its surface water supply, which has a maximum yield capacity of approximately 1.493 mgd and an average yield capacity of 0.942 mgd. The single bedrock well installed for a proposed source has an average daily yield of 0.050 mgd. Available water supply data are presented in Table 3B (Prince, 1993).

#### **Village of Kiryas Joel**

The present supply meets the estimated average daily water demand of 0.850 mgd and an estimated maximum daily water demand of 1.0 mgd. The seven wells currently in service have a maximum yield capacity of 0.879 mgd. The well driller estimated the three wells recently installed have a yield of 0.500 mgd. Available water demand and well yield data are summarized in Table 3C (Rysinger, 1993).

#### **Village of Harriman**

The average daily water demand of 0.325 mgd and the maximum daily demand of 0.403 mgd are met by the wells currently in service. The wells in service have a combined average yield capacity of 0.450 mgd and a maximum yield capacity of 0.580 mgd. The proposed sources for the Village of Harriman have a combined average daily yield of 0.904 mgd. Available water demand and well yield data are summarized in Table 3D (Karl, 1993).

#### **Projected Water Demands**

Table 4A summarizes the water demands for the Town and Village of Monroe projected by CH<sub>2</sub>M Hill (1992). Because the Village of Monroe also supplies

water to the Town of Monroe, the two have been considered together. The current and proposed supplies have a maximum yield capacity of 2.139 mgd, and the projected water demand for the Town and Village of Monroe in 2020 is 1.602 mgd. Therefore, the Town and Village of Monroe will likely have a surplus of 0.537 mgd at the year 2020.

The current and proposed maximum yield capacity for the Village of Kiryas Joel (Table 4B) is 1.379 mgd. The projected water demand for the Village by the year 2020 is 1.800 mgd, indicating that the Village will have a water deficit of 0.421 mgd in 2020, based on current projections.

The current and proposed maximum yield capacity for the wells in the Village of Harriman (Table 4C) is 1.480 mgd. The projected water demand for the year 2020 is 0.700 mgd. Therefore, the Village of Harriman is projected to have a water supply surplus of 0.780 mgd by 2020.

### **INVENTORY OF GROUND-WATER CONTAMINATION PROBLEMS**

#### **Existing Ground-Water Contamination Problems**

There are three identified existing ground-water contamination sites in Monroe. These are Gaess Environmental, Inc., Nepara, Inc., and a source upgradient of the Freemont Well. The Gaess, Inc. (Gaess) site is located in the Village of Harriman and was suspected as the source of TCE contamination in well Mary Harriman 1. A Phase II investigation at the site found that the downgradient ground-water samples from the Gaess site contained concentrations of TCA and TCE above New York State drinking water standards (verbal communication, T. Cusack).

Nepara, Inc. is located on Route 17 at Arden House Road in the Village of Harriman. According to Ms. Charlene Graff, Nepara, Inc. is a bulk chemical manufacturing plant currently specializing in the manufacture of pyridine and pyridine derivatives. Nepara, Inc. has been at the same location for 50 years and is ranked on the National Priorities List (NPL) of hazardous waste (Superfund) sites. The ground water at the site is contaminated with organic chemicals, including benzene. A Remedial Investigation is currently being conducted at the site (Graff, 1993).

In July 1990, a pumping test was conducted on the Freemont Well (GIM, Well MT-52) in the Village of

MT-4

Harriman. Chemical analysis of water samples collected during the test had concentrations of trichlorofluoromethane up to 48 ug/L. The source of the contamination was postulated to be Superior Shiftworks, a transmission service facility which is located immediately southwest of the Freemont Well location. Superior Shiftworks has not been confirmed as the source of the contamination (verbal communication, T. Cusack).

**Potential Ground-Water Contamination Problems**

Information about potential ground-water contamination sites was obtained from:

- ! FOIL request to NYSDEC (LMS, 1993); and
- ! Land use data from the Orange County, New York Real Property Tax Assessment data base (Space Track, 1993).

Information obtained by LMS through a Freedom of Information Law (FOIL) request indicates that there are numerous sites in the Town of Monroe which could be potential sources of contamination. The FOIL response provided lists of Petroleum Bulk Storage Tank facilities, Region II RCRA Notifiers, Hazardous Waste Remediation Registered Sites and Potential Spill Sites, and Solid Waste Facilities. This list is summarized below.

**Town of Monroe (including Village of Monroe and Village of Kiryas Joel):**

- All-Matic Transmissions, Inc., 228 Elm Street
- Apple Automotive, Inc., 231 Route 17M
- Autron, Inc., Route 17M
- Bruce's Service Station, Route 208
- D&L Dry Cleaners, K-Mart Plaza, Route 17M
- Environmental Recycling Association, 16 Wilson Road
- Havell Motors, Inc., Route 17M
- High Quality, Jamesway Plaza, Route 17M
- Hummels Coin Laundry, Route 17M
- Jamesway Store #20, Jamesway Mall, Route 17M  
(The Jamesway store was destroyed in a fire in 1990, but is still listed by NYSDEC.)
- Kaye Kleaners, Stonegate Shopping, Route 208
- Lake Regton Cleaners, 17 Stage Road
- Louis Gortiz, RD #2 Amdur Park
- Lou's Radiator Shop, 104 Elm Street
- Mill Pond Cleaners, Mill Pond Parkway
- Monroe Automotive, 238 Spring Street

- Monroe Tube Co., Inc., U.S. Route 208
- NYSDOT Bin 1003299, Bridge at Route 17, Orange Rock Lake
- NYSDOT Bin 1003300, Route 208 over Route 17
- NYSDOT Bin 1003310, Forest Road over Route 17
- NYSDOT Bin 1003330, County Road 105 over Route 17
- Orange and Rockland Utilities, One O&R Road
- Sunoco Service Station, U.S. Route 208
- Sunoco Service Station - Monroe, W/S Route 17
- Carpenter & Smith, Inc., 100 Spring Street
- Carpenter & Smith Waste Oil Facility, Spring Street
- Harrison All-in-One Waste Oil Facility
- Town of Monroe Landfill, Lakes Road  
(Includes: Monroe Sanitary Landfill, Town of Monroe Compost Facility, Monroe Construction & Demolition Debris Landfill)

**Village of Harriman:**

- Barcana, Inc., 101 Barcana Parkway
- C&D Disposal Co., River Road
- Finale Touch Cleaners, 17M and Main Street
- Harriman Auto Spa, 17 Route 17M
- NYS Thruway Authority, Thruway Bridge MP 47.04
- NYS Thruway Authority, Thruway Bridge MP 46.42
- NYS Thruway Authority, Thruway Bridge MP 45.13
- NYS Thruway Authority, Thruway Bridge MP 47.58
- NYS Thruway Authority, Interchange 16
- Ral Industries, Route 17 M
- Round Lake Sanitation Corporation, North Main Street
- Sunoco Service Station, Route 17 and Church Street
- Tom Sullivan Chevrolet, Inc., Junction of Rtes 6, 17, and 32
- Tri State Carting Corporation, North Main Street

Each property in Orange County has a land use code number. Properties with land use code numbers associated with potential contamination of ground water were identified through analysis of the Real Property Tax Assessment data base by Space Track, Inc. The types of land uses in the potential contamination category include:

- ! industrial facilities;

- ! gas stations;
- ! dry cleaners, and
- ! auto repair facilities.

Where possible, approximate locations of these sites are shown as triangles on the GIM.

**Petroleum Bulk Storage Facilities**

The FOIL response from the NYSDEC inventoried 48 petroleum bulk storage facilities in the Town of Monroe. These facilities are listed in Table 5.

The above sites are listed as potential ground-water contamination sites. Further investigations would be required to determine if contamination exists at the respective locations.

**TABLE 1**  
**TOWN OF MONROE**  
**Summary of Available Well Data**

Well ----- Water District	Tax Map Municipality ----- Section --- Block --- Lot	Map Location ----- I.D. #	Well Status	Reported Yield (gpm) Original ----- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) ----- Setting Interval (feet)	Aquifer	Date Drilled	Comments
1R Lamplight Village	T. Monroe 1 3 25.12	Monroe  MT-1	Alternating Supplier	75  75	265	6	156		Bedrock  Ds	1992	Adjacent to Stream
2 Lamplight Village	T. Monroe 1 3 25.12	Monroe  MT-2	Alternating Supplier	NA  30	330	NA	112		Bedrock  OEw	1975	Adjacent to Stream
1 Cromwell Hill	T. Monroe 3 1 23.3	Monroe  MT-3	Alternating Supplier	38  NA	350	8	90		Bedrock  Dh	1983	
2 Cromwell Hill	T. Monroe 3 1 23.3	Monroe  MT-4	Alternating Supplier	40  NA	350	8	NA		Bedrock  Dh	1985	
1 Sterling Manor Water District #2	T. Monroe 44 3 1	Monroe  MT-5	Active	NA  10	165	6	NA		Bedrock  mgu	1965	
2 (Sterling Manor) Water District #2	T. Monroe 44 3 1	Monroe  MT-6	Active	NA  15	220	6	NA		Bedrock  mgu	NA	



TABLE 1  
(continued)

TOWN OF MONROE

Summary of Available Well Data

Well ----- Water District	Tax Map Municipality ----- Section --- Block --- Lot	Map Location ----- I.D. #	Well Status	Reported Yield (gpm) Original ----- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) ----- Setting Interval (feet)	Aquifer	Date Drilled	Comments
1 Markay Property	T. Monroe 29 1 5	Monroe MT-7	Inactive	37 NA	350	NA	NA	NA	Bedrock mgu	1984	Possible Subdivision yield from pump test
2 Village Heights	T. Monroe 3 1 8	Monroe MT-8	Inactive	100* NA	491	8	40		Bedrock Dh	1988	Proposed Development
4 Village Heights	T. Monroe 3 1 8	Monroe MT-9	Inactive	30 NA	375	6	60		Bedrock Dh	1986	Proposed Development
5 Village Heights	T. Monroe 3 1 8	Monroe MT-10	Inactive	60 NA	495	6	50		Bedrock Dh	1988	Proposed Development
6 Applecross	T. Monroe 31 1 4	Monroe MT-11	Inactive	75 NA	530	8	NA		Bedrock mgu	1986	Pump Test
9 Applecross	T. Monroe 31 1 4	Monroe MT-12	Inactive	25-50 NA	435	8	NA		Bedrock mgu	1986	During Interference

**TABLE 1  
(continued)**

**TOWN OF MONROE  
Summary of Available Well Data**

<b>Well ----- Water District</b>	<b>Tax Map Municipality ----- Section --- Block --- Lot</b>	<b>Map Location ----- I.D. #</b>	<b>Well Status</b>	<b>Reported Yield (gpm) Original ----- Present</b>	<b>Depth of Well (feet)</b>	<b>Well Diameter (inches)</b>	<b>Length of Casing (feet)</b>	<b>Well Screen Length (feet) ----- Setting Interval (feet)</b>	<b>Aquifer</b>	<b>Date Drilled</b>	<b>Comments</b>
10 Applecross	T. Monroe 31 1 4	Monroe MT-13	Inactive	50 NA	610	6	30		Bedrock mgu	1987	Estimated Flow
11 Applecross	T. Monroe 31 1 4	Monroe MT-14	Inactive	75 NA	360	6	NA		Bedrock mgu	NA	Safe Yield
3 Village Heights	T. Monroe 203 1 1.2	Monroe MT-15	Inactive	NA 34	512	8	40		Bedrock Dh	1988	Test well from proposed development
* Simultaneous pump test, with well number 5, indicated each had a capacity #50 gpm (100 hours of pumping).											

TABLE 1

## VILLAGE OF HARRIMAN

## Summary of Available Well Data

Well --- Water District	Tax Map Municipality --- Section --- Block --- Lot	Map Location --- I.D.#	Well Status	Reported Yield (gpm) Original --- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) --- Setting Interval (feet)	Aquifer	Date Drilled	Comments
Village of Harriman 1A (North Main Street Well)	V. Harriman 102 4 7.2	Monroe  MT-38	Active	171	400	8	130		Bedrock OEw	1977	
Village of Harriman 1 (replacement Mary Harriman)	V. Harriman 105 2 1.2	Monroe  MT-39	Active	75	52	8	48	10' (8")  NA	Sand and gravel	1984	
Village of Harriman 3 Mary Harriman	V. Harriman 105 2 1.1	Monroe  MT-40	Active	40	520	8	50		Bedrock OEw	1989	
Village of Harriman 1 Harriman Heights	T. Monroe 51 1 2	Monroe  MT-41	Active	60 30	328	10	Not available		Bedrock OEw	1928	
Village of Harriman 2 Harriman Heights	T. Monroe 51 1 1	Monroe  MT-42	Active	102 102	400	8	130		Bedrock OEw	1972	
Village of Harriman River Road Well	V. Harriman 105 2 12.3	Monroe  MT-43	Waiting for additional funds and approval	70+ --	450	6	40		Bedrock OEw	1992	

## VILLAGE OF HARRIMAN

## Summary of Available Well Data

Well --- Water District	Tax Map Municipality --- Section --- Block --- Lot	Map Location --- I.D.#	Well Status	Reported Yield (gpm) Original --- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) --- Setting Interval (feet)	Aquifer	Date Drilled	Comments
Village of Harriman 3 (Amato Well) Harriman Heights	T. Monroe 51 1 3.1	Monroe  MT-44	Active	50		8	NA		Bedrock OEw	1989	
Village of Harriman 1 Lizda Well	Woodbury 25 1 35.3	Monroe  MT-45	Active	75	350	8	153		Bedrock OEw	1984	
Village of Harriman OR-7-Well	V. Harriman 108 1 5	Monroe  MT-46	Active	100 -- 50	400	8	NA	NA	Bedrock OEw	NA	
Village of Harriman 1 (original) Mary Harriman	V. Harriman 105 2 1.1	Monroe  MT-47	Inactive	350 NA	34	12	24	10'	Sand and gravel	1947	
Village of Harriman 1 Harriman Business Pk.	Woodbury 25 1 16	Monroe  MT-48	Inactive	160	600	8	40		Bedrock OEw	Appro- x. 1986	
Village of Harriman 2 Harriman Business Pk.	T. Monroe 2 1 24.2	Monroe  MT-49	Inactive	150	418	8	40		Bedrock OEw	Appro- x. 1986	
Village of Harriman 3 Harriman Business Pk.	T. Monroe 2 1 24.2	Monroe  MT-50	Inactive	70	74	10' outer 6" inner	25' (10") 65" (6')	10' (6")	Sand and gravel	Approx . 1986	

**TABLE 1  
(continued)**

**VILLAGE OF HARRIMAN**

**Summary of Available Well Data**

<b>Well --- Water District</b>	<b>Tax Map Municipality --- Section --- Block --- Lot</b>	<b>Map Location --- I.D.#</b>	<b>Well Status</b>	<b>Reported Yield (gpm) Original --- Present</b>	<b>Depth of Well (feet)</b>	<b>Well Diameter (inches)</b>	<b>Length of Casing (feet)</b>	<b>Well Screen Length (feet) --- Setting Interval (feet)</b>	<b>Aquifer</b>	<b>Date Drilled</b>	<b>Comments</b>
Village of Harriman 4 Harriman Business Pk.	T. Monroe 2 1 24.2	Monroe MT-51	Inactive	185	350	6" 8"	140'(6") 76'(8")		Bedrock OEw	1990	
Village of Harriman Freemont Well	NA	Monroe MT-52	Test well	75 NA	340	6	40		Bedrock OEw	1989	Abandoned due to contamination
Village of Harriman OR-1 Interchange Commerce Ctr.	NA	Monroe MT-53	Inactive	75-100 NA	NA		NA	NA	Bedrock OEw	NA	
Village of Harriman OR-3 Interchange Commerce Ctr.	NA	Monroe MT-54	Inactive	70-100 NA	NA	NA	NA	NA	Bedrock OEw	NA	
Village of Harriman OR-6 Interchange Commerce Ctr.	NA	Monroe MT-55	Inactive	25-45 NA	NA	NA	NA	NA	Bedrock OEw		
<b>TABLE 1Page 2 of (continued)</b>  <b>VILLAGE OF HARRIMAN</b>  <b>Summary of Available Well Data</b> Village of Harriman OR-5 Interchange Commerce Ctr.	NA	Monroe MT-56	Inactive	32-75 NA	NA	NA	NA	NA	Bedrock OEw		

**TABLE 1**  
**VILLAGE OF KIRYAS JOEL**  
**Summary of Available Well Data**

Well --- Water District	Tax Map Municipality ---- Section ---- Block ---- Lot	Map Location ---- I.D.#	Well Status	Reported Yield (gpm) Original ---- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) ---- Setting Interval (feet)	Aquife r	Date Drilled	Comments
Kiryas Joel 1 Off Raywood Drive	Kiryas Joel 305 1 1.4	Monroe MT-16	Active	125 >65	187	8	38.5		Bedroc k Dh	1967	
Kiryas Joel 2	Kiryas Joel 305 1 1.4	Monroe MT-24	NA	NA -- NA	187	8	NA		Bedroc k Dh	1967	
Kiryas Joel 4	Kiryas Joel 301 3 23.2	Monroe MT-17	Active	150 15-25	400	8	84		Bedroc k Dh	1976	
Kiryas Joel 5	Kiryas Joel 305 1 1.4	Monroe MT-18	Active	125 48-30	370	8	40		Bedroc k Dh	1975	Alternates with Well No. 14 - History of High Iron

TABLE 1  
(continued)

VILLAGE OF KIRYAS JOEL  
Summary of Available Well Data

Well --- Water District	Tax Map Municipality ---- Section ---- Block ---- Lot	Map Location --- I.D.#	Well Status	Reported Yield (gpm) Original ---- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) ---- Setting Interval (feet)	Aquife r	Date Drilled	Comments
Kiryas Joel 6	Kiryas Joel 303 4 4.22	Monroe MT-23	Inactive  Emerge ncy	190  80	250	8	57		Bedroc k Dh	1978	Located in Synagogue
Kiryas Joel 7	Kiryas Joel 305 1 1.4	Monroe MT-19	Active	125 75	420	8	60		Bedroc k Dh	1977	
Kiryas Joel 8A	Kiryas Joel 308 1 2	Monroe MT-20	Active	250 150	405	8	60		Bedroc k Ds	1986	Located in Freshwater Wetland
Kiryas Joel 9A	Kiryas Joel 308 1 2	Monroe MT-21	Inactive	190 NA	405	8	50		Bedroc k Ds	1986	

TABLE 1  
(continued)

VILLAGE OF KIRYAS JOEL

Summary of Available Well Data

Well --- Water District	Tax Map Municipality ---- Section ---- Block ---- Lot	Map Location --- I.D.#	Well Status	Reported Yield (gpm) Original ---- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) ---- Setting Interval (feet)	Aquife r	Date Drilled	Comments
Kiryas Joel 14	Kiryas Joel 305 1 12	Monroe MT-22	Active	NA 45-34	325	8	NA		Bedroc k Dh	1983	Influence on Wells 5 & 7 when used
Kiryas Joel 3	Not Available	Monroe MT-25	Inactive	NA	NA	NA	NA	NA	NA	NA	
Kiryas Joel 8	Kiryas Joel 308 1 2	Monroe MT-26	Inactive	300 NA	397	6	38.5		Bedroc k Ds	1963	
Kiryas Joel 9	Kiryas Joel 308 1 2	Monroe MT-27	Inactive	135 NA	267	6	4-5		Bedroc k Ds	1975	
Kiryas Joel 9B	Kiryas Joel 308 1 2	Monroe MT-28	Active	158	540	10	54		Bedroc k Ds	1993	



TABLE 1  
(continued)

VILLAGE OF KIRYAS JOEL  
Summary of Available Well Data

Well ---- Water District	Tax Map Municipality ---- Section ---- Block ---- Lot	Map Location ---- I.D.#	Well Status	Reported Yield (gpm) Original ---- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) ---- Setting Interval (feet)	Aquife r	Date Drilled	Comments
Kiryas Joel 10	Kiryas Joel 301 5 43.11	Monroe MT-29	Inactive	NA	70	6	70	NA	Sand and Gravel	1920	
Kiryas Joel 11	Kiryas Joel 301 -- --	Monroe MT-30	Inactive	NA	NA	NA	NA	NA	NA	NA	
Kiryas Joel 12	Kiryas Joel 303 -- --	Monroe MW-31	Inactive	NA	NA	NA	NA	NA	NA	NA	
Kiryas Joel 13	Kiryas Joel 308 1 3	Monroe MT-32	Inactive	200 NA	500	6	60	NA	Bedroc k Ds	1982	
Kiryas Joel 13A	Kiryas Joel 308 1 3	Monroe MT-33	Inactive	145 NA	510	8	150		Bedroc k Ds	1992	

TABLE 1  
(continued)

VILLAGE OF KIRYAS JOEL

Summary of Available Well Data

Well --- Water District	Tax Map Municipality ---- Section ---- Block ---- Lot	Map Location --- I.D.#	Well Status	Reported Yield (gpm) Original ---- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) ---- Setting Interval (feet)	Aquife r	Date Drilled	Comments
Kiryas Joel 13B	Kiryas Joel 308 1 3	Monroe MT-34	Active (Emerg ency use only)	245 100	490	8	40		Bedroc k Ds	1992	
Kiryas Joel 15	Kiryas Joel 310	Monroe MT-35	Inactive	100 NA	500	8	(10") 47		Bedroc k Ds	1993	Reported yields are based on the well drillers estimates. Well must be tested for safe yields
Kiryas Joel 16	T. Monroe 1 3 1.3	Monroe MT-36	Inactive being tested for approva ls	100 NA	550	10	(10") 156		Bedroc k Dh	1993	
Kiryas Joel 17	Kiryas Joel 306 1 4	Monroe MT-37	Inactive	200 NA	NA	10	10" (40)		Bedroc k Dh	1993	72-hour pumping test indi cates safe yield of 200 gpm

Well ---- Water District	Tax Map Municipality ----- Section ---- Block ---- Lot	Map Location ---- I.D.#	Well Status	Reported Yield (gpm) Original ---- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) ---- Setting Interval (feet)	Aquife r	Date Drilled	Comments
Kiryas Joel 18	Kiryas Joel 307 1 4	Monroe  MT-37A	Inactive	200  NA	650	10  7	50  250		Bedroc k Dh	1994	

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TABLE 2A  
TOWN OF MONROE  
Summary of Well Yield Capacities

Well ----- Water District	WSA No. ----- Permitted Yield (gpm)	Average Yield Capacity (gpm) ----- (gpd)	Maximum Yield Capacity (gpm) ----- (gpd)	Comments
1R ----- Lamplight Village	NA ----- NA	8 ----- 11,500	10.5 ----- 15,000	Values given are for total system; not the individual well.
2 ----- Lamplight Village	NA ----- NA	8 ----- 11,500	10.5 ----- 15,000	
<b>TOTALS</b>	<b>(Total Permitted Yield)</b>  NA	<b>(Total Yield Capacity)</b> <b>8 gpm</b> ----- <b>11,500 gpd</b>	<b>(Total Maximum Yield Capacity)</b> <b>10.5 gpm</b> ----- <b>15,000 gpd</b>	

gpm - Gallons per minute.      WSA No. - Water Supply Application Number.  
gpd - Gallons per day.

TABLE 2B  
TOWN OF MONROE  
Summary of Well Yield Capacities

Well ----- Water District	WSA No. ----- Permitted Yield (gpm)	Average Yield Capacity (gpm) ----- (gpd)	Maximum Yield Capacity (gpm) ----- (gpd)	Comments
1 ----- Cromwell Hill Condo	7,600 ----- 12.5	7.5 ----- 10,800	12 ----- 17,000	Values given are for total system
2 ----- Cromwell Hill Condo	7,600 ----- 12.5	7.5 ----- 10,800	12 ----- 17,000	
<b>TOTALS</b>	<b>(Total Permitted Yield)</b>  <b>12.5 gpm</b>	<b>(Total Yield Capacity)</b> <b>7.5 gpm</b> ----- <b>10,800 gpd</b>	<b>(Total Maximum Yield Capacity)</b> <b>12 gpm</b> ----- <b>17,000 gpd</b>	

gpm      Gallons per minute  
gpd      Gallons per day  
WSA No.    Water Supply Application Number

TABLE 2C  
TOWN OF MONROE  
Summary of Well Yield Capacities

Well ----- Water District	WSA No. ----- Permitted Yield (gpm)	Average Yield Capacity (gpm) ----- (gpd)	Maximum Yield Capacity (gpm) ----- (gpd)	Comments
1 ----- Water District # 2	7741 ----- NA	7 ----- 10,000	10 ----- 14,000	
2 ----- Water District # 2	7741 ----- NA	7 ----- 10,000	15 ----- 21,000	
<b>TOTALS</b>	<b>(Total Permitted Yield)</b>  NA	<b>(Total Yield Capacity)</b> <b>14 gpm</b> ----- <b>20,000 gpd</b>	<b>(Total Maximum Yield Capacity)</b> <b>25 gpm</b> ----- <b>36,000 gpd</b>	

gpm      Gallons per minute  
gpd      Gallons per day  
WSA No.    Water Supply Application Number

TABLE 2D  
VILLAGE OF KIRYAS JOEL  
Summary of Well Yield Capacities

Well ----- Water District	WSA No. ----- Permitted Yield (gpm)	Average Yield Capacity (gpm) ----- (gpd)	Maximum Yield Capacity (gpm) ----- (gpd)	Comments
1 -----	5739 ----- NA	> 65 ----- 13,000	> 65 ----- 13,000	Mostly not used. Has been off for several months. After 8 hours pumping, well becomes air bound.
4 -----	6910 ----- NA	15-25 ----- 30,000	15-25 ----- 30,000	Off and on usually on a weekly basis.
5 -----	NA ----- NA	40 ----- 42,000	40 ----- 42,000	24-hour use
7 -----	NA ----- NA	30-48 ----- 94,000	30-48 ----- 94,000	24-hour use
8A -----	7473 ----- 225*	150 ----- 180,000	150 ----- 180,000	24-hour use
14 -----	6910 ----- NA	45 ----- 55,000	45 ----- 55,000	24-hour use

<b>Well</b> ----- <b>Water District</b>	<b>WSA No.</b> ----- <b>Permitted Yield</b> <b>(gpm)</b>	<b>Average Yield Capacity</b> <b>(gpm)</b> ----- <b>(gpd)</b>	<b>Maximum Yield Capacity</b> <b>(gpm)</b> ----- <b>(gpd)</b>	<b>Comments</b>
1 -----	5739 ----- NA	> 65 ----- 13,000	> 65 ----- 13,000	Mostly not used. Has been off for several months. After 8 hours pumping, well becomes air bound.
9B -----	7473 ----- 225*	160 ----- 205,000	160 ----- 205,000	24-hour use

TABLE 2D (Continued)

## VILLAGE OF KIRYAS JOEL

## Summary of Well Yield Capacities

<b>Well</b> ----- <b>Water District</b>	<b>WSA NO.</b> ----- <b>Permitted Yield</b> <b>(gpm)</b>	<b>Average Yield Capacity</b> <b>(gpm)</b> ----- <b>(gpd)</b>	<b>Maximum Yield Capacity</b> <b>(gpm)</b> ----- <b>(gpd)</b>	<b>Comments</b>
13B -----	NA ----- NA	160 ----- 260,000	160 ----- 260,000	24-hour use



<b>TOTALS</b>	<b>(Total Permitted Yield)</b>	<b>(Total Yield Capacity)</b>	<b>(Total Maximum Yield Capacity)</b>	
		<b>665 gpm</b>	<b>693 gpm</b>	
		-----	-----	
	<b>1,000,000** gpd</b>	<b>879,400 gpd</b>	<b>879,000 gpd</b>	

gpm Gallons per minute

gpd Gallons per day

WSA No. Water Supply Application Number

\* Total for both wells

\*\* Total permitted for the Village under WSA # 7473

TABLE 2E  
VILLAGE OF HARRIMAN  
Summary of Well Yield Capacities

Well ----- Water District	WSA No. ----- Permitted Yield (gpm)	Average Yield Capacity (gpm) ----- (gpd)	Maximum Yield Capacity (gpm) ----- (gpd)	Comments
1A ----- (N. Main Street Well)	NA ----- 170	140 ----- 130,000	170 ----- 183,600	
1 ----- (Mary Harriman)	NA ----- 78	78 ----- 84,240	78 ----- 100,000	
3 ----- (Mary Harriman)	8351 ----- 50	50 ----- 36,000	50 ----- 54,000	
1 ----- (Harriman Heights)	6127 ----- 30	30 ----- 12,000	30 ----- 12,000	
2 ----- (Harriman Heights)	6127 ----- 50	50 ----- 54,000	50 ----- 54,000	
3 ----- (Amato Well)	7945 ----- 46	46 ----- 49,680	46 ----- 65,000	
1 ----- (Lizda Well)	NA ----- 75	52 ----- 54,000	52 ----- 54,000	

TABLE 2E (Continued)  
 VILLAGE OF HARRIMAN  
 Summary of Well Yield Capacities

Well --- Water District	WSA No. --- Permitted Yield (gpm)	Average Yield Capacity (gpm) --- (gpd)	Maximum Yield Capacity (gpm) --- (gpd)	Comments
OR-7 Well -----	8150 ----- 54	54 ----- 42,000	54 ----- 70,000	
<b>TOTALS</b>	<b>(Total Permitted Yield)</b>  <b>553 gpm</b>	<b>(Total Yield Capacity)</b>  <b>470 gpm</b> ----- <b>449,920 gpd</b>	<b>(Total Maximum Yield Capacity)</b>  <b>500 gpm</b> ----- <b>580,600 gpd</b>	

gpm Gallons per minute  
 gpd Gallons per day  
 WSA No. Water Supply Application Number

COMMENTS: C Harriman Heights Well 1 and 2 cannot be pumped simultaneously.

TABLE 3A

Town of Monroe

Summary of Water-Supply Source

**The Town of Monroe water system consists of four water districts, three of which obtain water from the Village of Monroe. District 2 has its own wells.**

**Existing Source**

	<b>Water District</b>	<b>Ground Water (mgd)</b>
Current Average Daily Water Demand	2	0.0085
Current Maximum Daily Water Demand	2	0.012
Maximum Yield Capacity	2	0.036
Average Yield Capacity	2	0.020
<b>Proposed Sources (Average Day)</b>	*	0.560
<b>TOTAL MAXIMUM YIELD CAPACITY (MGD) =</b> -----		<b>0.036</b> -----
<b>CURRENT MAXIMUM DAILY USE (MGD) =</b>		<b>0.012</b>

mgd - Million gallons per day.

COMMENTS:

\* Based on various wells located in the Town (Markey, Village Hts., and Applecross)

TABLE 3D

Village of Harriman

Summary of Water-Supply Source

**The Village of Harriman currently operates eight wells to supply the Village system. An additional well is inactive due to contamination. Another well is drilled and ready to be put on-line.**

**Existing Source**

	<b>Water District</b>	<b>Ground Water (mgd)</b>
Current Average Daily Water Demand	Village of Harriman	0.325
Current Maximum Daily Water Demand	Village of Harriman	0.403
Maximum Yield Capacity	Village of Harriman	0.580
Average Yield Capacity	Village of Harriman	0.450
<b>Proposed Sources (Average Day)</b>		0.904
<b>TOTAL MAXIMUM YIELD CAPACITY (MGD) =</b> -----		<b>0.580</b> -----
<b>CURRENT MAXIMUM DAILY USE (MGD) =</b>		<b>0.403</b>

mgd - Million gallons per day.

COMMENTS:

- ! Proposed source is the River Road well @ 70+ gpm, the Harriman Business Park wells 1 through 4, and the Interchange Commerce Center Wells (4).
- ! Eighteen hour maximum pumping time for any of the wells including proposed sources.

TABLE 3C

## Village of Kiryas Joel

## Summary of Water-Supply Source

**The Village of Kiryas Joel currently operates seven rock wells as its regular source and has two additional wells that are kept as standby for emergencies.**

**Existing Source**

	<b>Water District</b>	<b>Ground Water (mgd)</b>
Current Average Daily Water Demand	Kiryas Joel	0.850
Current Maximum Daily Water Demand	Kiryas Joel	1.000
Maximum Yield Capacity	Kiryas Joel	0.879
Average Yield Capacity	Kiryas Joel	0.879
<b>Proposed Sources (Average Day)</b>	Kiryas Joel	0.500 <sup>2</sup>
<b>TOTAL MAXIMUM YIELD CAPACITY (MGD) =</b> -----		<b>0.879</b> -----
<b>CURRENT MAXIMUM DAILY USE (MGD) =</b>		<b>1.00</b>

mgd - Million gallons per day.

## COMMENTS:

- <sup>1</sup> Based on September 1993 water use records.
- <sup>2</sup> Assumes yields for wells 15, 16, and 17, as reported by well driller.

TABLE 4C

## VILLAGE OF HARRIMAN

Projected Water Demand  
1993 - 2020  
(mgd)

Water District	Current Maximum Yield Capacity (mgd)	Current and Proposed* Maximum Yield Capacity (mgd)	1993 Projected Water Demand ----- Water-Supply Adequacy**	2000 Projected Water Demand ----- Water-Supply Adequacy**	2010 Projected Water Demand ----- Water-Supply Adequacy***	2020 Projected Water Demand ----- Water-Supply Adequacy***
Village of Harriman	0.580	1.48	0.403 ----- +0.177**	0.600 ----- +0.880***	0.650 ----- +0.830***	0.700 ----- +0.780***
<b>TOTAL</b>	<b>0.580</b>	<b>1.48</b>	<b>0.403</b> ----- <b>+0.177**</b>	<b>0.600</b> ----- <b>+0.880***</b>	<b>0.650</b> ----- <b>+0.830***</b>	<b>0.700</b> ----- <b>+0.780***</b>

mgd - Million gallons per day.

\* Combined yield capacity of both current and proposed water supply(s).

\*\* Calculated by current maximum yield capacity minus projected water demands.

\*\*\* Calculated by current and proposed maximum yield capacity minus projected water demands.

+ Surplus water supply, mgd.

- Water supply deficiency (mgd).

TABLE 4B  
VILLAGE OF KIRYAS JOEL

Projected Water Demand  
1993 - 2020  
(mgd)

Water District	Current Maximum Yield Capacity (mgd)	Current and Proposed* Maximum Yield Capacity (mgd)	1993 Projected Water Demand ----- Water-Supply Adequacy**	2000 Projected Water Demand ----- Water-Supply Adequacy** or ***	2010 Projected Water Demand ----- Water-Supply Adequacy** or ***	2020 Projected Water Demand ----- Water-Supply Adequacy** or ***
Village of Kiryas Joel	0.879	1.379	0.850 ----- +0.029**	1.300 ----- +0.079***	1.500 ----- -0.121***	1.800 ----- -0.421***
<b>TOTAL</b>	<b>0.879</b>	<b>1.379</b>	<b>0.850</b> ----- <b>+0.029**</b>	<b>1.300</b> ----- <b>+0.079***</b>	<b>1.500</b> ----- <b>-0.121***</b>	<b>1.800</b> ----- <b>-0.421***</b>

mgd Million gallons per day

\* Combined yield capacity of both current and proposed water supply(s)

\*\* Calculated by current maximum yield capacity minus projected water demands

\*\*\* Calculated by current and proposed maximum yield capacity minus projected water demands

+ Surplus water supply, mgd

- Water supply deficiency (mgd)



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TABLE 3B

## Village of Monroe

## Summary of Water-Supply Source

The Village of Monroe currently uses Mombasha Lake as its source of water and also supplies water to the Town of Monroe.

## Existing Source

	Surface Water (mgd)	Ground Water (mgd)
Current Average Daily Water Demand	0.903	NA
Current Maximum Daily Water Demand	0.9310	NA
Maximum Yield Capacity	1.493	NA
Average Yield Capacity	0.942	NA
<b>Proposed Sources (Average Day)</b>	NA	0.050
<b>*TOTAL MAXIMUM YIELD CAPACITY (MGD) =</b> -----		<b>1.493</b>
<b>*CURRENT MAXIMUM DAILY USE (MGD) =</b>		<b>0.931</b>

mgd - Million gallons per day.

\* Combine surface water and ground-water sources.

## COMMENTS

! Includes three districts located in the Town of Monroe (District Nos. 1, 7, and 8)

- ! Includes approximately 46,200 gpd for hook-ups in the Town of Monroe, but not in a separate district.
- ! Maximum yield capacity from Orange County Health Department Report as a safe yield.

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TABLE 5  
 REGIONAL GROUND-WATER STUDY  
 TOWN OF MONROE  
 ORANGE COUNTY, NEW YORK

-----  
*Petroleum Bulk Storage Facilities*

<i>Facility Name</i>	<i>Location</i>	<i>Municipality</i>
<i>17 Express Mart Corporation</i>	<i>Routes 17 and 17M</i>	<i>Harriman</i>
<i>A &amp; B Sunoco Service</i>	<i>Route 17M</i>	<i>Harriman</i>
<i>Arden (Harriman Residence)</i>	<i>Harriman Heights Road</i>	<i>Harriman</i>
<i>Four Seasons Convenience Store</i>	<i>Route 17M</i>	<i>Harriman</i>
<i>Harriman Garage</i>	<i>28 Grove Street</i>	<i>Harriman</i>
<i>Harriman KDG N</i>	<i>No. Main Street</i>	<i>Harriman</i>
<i>Harriman Section Maint. MP 45.2</i>	<i>NY State Thruway</i>	<i>Harriman</i>
<i>Harriman Training Academy</i>	<i>Harriman Heights Road</i>	<i>Harriman</i>
<i>Harriman Toll Barrier MP 45.2</i>	<i>NY State Thruway Auth.</i>	<i>Harriman</i>
<i>Loyal Service Center</i>	<i>Routes 17 &amp; 17M</i>	<i>Harriman</i>
<i>Mante Hagen Partnership</i>	<i>23 North Main Street</i>	<i>Harriman</i>
<i>Nepera, Inc.</i>	<i>Route 17</i>	<i>Harriman</i>
<i>Orange County Sewage Treatment</i>	<i>River Road</i>	<i>Harriman</i>
<i>St. Patrick Academy Storage Rms.</i>	<i>Harriman Heights Road</i>	<i>Harriman</i>
<i>St. Patrick's Semi-Military Academy</i>	<i>Harriman Heights Road</i>	<i>Harriman</i>
<i>St. Patrick's Villa</i>	<i>Harriman Heights Road</i>	<i>Harriman</i>
<i>Tom Sullivan Chevrolet Inc.</i>	<i>Jct. Routes 6, 17 &amp; 32</i>	<i>Harriman</i>
<i>Village of Harriman Water Department</i>	<i>Meadow Avenue</i>	<i>Harriman</i>
<i>Woodbury Toll Barrier</i>	<i>NY State Thruway</i>	<i>Harriman</i>
<i>A C Service Center</i>	<i>Route 17M</i>	<i>Harriman</i>
<i>Bruce's Gulf Station</i>	<i>Routes 208 &amp; 17</i>	<i>Monroe</i>
<i>Bruce's Service, Inc.</i>	<i>Route 208</i>	<i>Monroe</i>
<i>Carpenter &amp; Smith, Inc.</i>	<i>100 Spring Road</i>	<i>Monroe</i>
<i>Don's Service Station</i>	<i>30 Carpenter Place</i>	<i>Monroe</i>

**TABLE 5 (CONTINUED)**  
**REGIONAL GROUND-WATER STUDY**  
**TOWN OF MONROE**  
**ORANGE COUNTY, NEW YORK**

-----  
**Petroleum Bulk Storage Facilities**

Facility Name	Location	Municipality
G & Z Exxon	Route 208 & Clove Road	Monroe
Highland Telephone Co.	Box 657 Route 17M	Monroe
Highland Telephone Co.	Box 657 145 No. Main Street	Monroe
Jehovah's Witnesses Assembly Hall	P. O. Box 579	Monroe
Monroe	Neptune Road	Monroe
Monroe Police Dept - Monroe Village	104 Stage Road	Monroe
Monroe Rt. 17M S/S, Inc. #120855	Route 17 & Freeland Street	Monroe
Monroe Senior Center / St. Joseph	RR 3, Box 165	Monroe
Monroe Tube Co., Inc.	Route 208	Monroe
Monroe - Woodbury Transportation	27 Mine Road	Monroe
Moore's Garage	223 Lakes Road	Monroe
New York State Police	MD 5 Dunderberg Road	Monroe
North Main Street Elementary School	North Main Street	Monroe
NYSDOT	Routes 17 & 208	Monroe
Old Monroe Plant	Oxford Road & Route 208	Monroe
Orange & Rockland Mason Supply	Route 17 M	Monroe
Pine Tree Elementary School	Pine Tree Road	Monroe
Sacred Heart School	Still Road	Monroe
Sunoco #0006-7686	Route 17M	Monroe
Town of Monroe Highway	32 Mine Road	Monroe
U.S. Postal Service	600 Route 17M	Monroe
Village of Monroe Highway Department	120 Maple Avenue	Monroe
Village of Monroe Water Department	RD3 Box 202 B Woodcock Road	Monroe
Wallace Self Serve - Monroe	Route 208	Monroe