

**REGIONAL GROUND-WATER STUDY
TOWN OF CORNWALL
ORANGE COUNTY, NEW YORK**

Prepared for
Orange County Water Authority
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Groundwater Inventory Map ("GIM")

**REGIONAL GROUND-WATER STUDY
TOWN OF CORNWALL
ORANGE COUNTY, NEW YORK**

EXECUTIVE SUMMARY

The Town of Cornwall contains three (3) water systems which supply water to approximately 95% of the residents of the Village of Cornwall-On-Hudson and 70% of the residents of the Town. A portion of the Town of Cornwall is serviced by the Firthcliffe Heights Water District. This District purchases water from the Town of New Windsor.

The Star Expansion Company operates a community water system which services properties owned by the Corporation. The Star Expansion System is supplied by four sand and gravel wells located near the intersection of Taylor and Otterkill Road.

The Village of Cornwall-On-Hudson operates a water system which serves the Village and the Town. The Village operates a water filter plant which treats water from the New York City Catskill Aqueduct, a surface reservoir system located in Black Rock Forest, and well field in the vicinity of the Star Expansion well field.

The Village of Cornwall-On-Hudson is in the process of constructing a water filter plant to treat the surface water from the Black Rock Forest Reservoir System.

With the construction of this filter plant, the Village will continue to provide an adequate supply of potable water to the Town and Village at the year 2020, the Village's system will have a surplus of 0.7 million gallons per day.

The Firthcliffe and Star Expansion Systems currently supply adequate water to residents within the service areas. No significant development is anticipated within the areas served by these Districts; therefore, they will continue to have an adequate supply.

The Village of Cornwall performed an extensive exploratory drilling program throughout the Town in 1963. No significant ground-water resources were identified with the exception of the Taylor Road well field.

INTRODUCTION

McGoey, Hauser and Edsall has been authorized by the Orange County Water Authority to be the community consultant for the Town of Cornwall. The community consultants have been tasked to perform an inventory and collect data pertaining to the existing and potential ground-water resources.

This report identifies the existing municipal and community water supplies, the existing zoning and land use, and the existing and potential sources of ground-water contamination.

The Town of Cornwall is served by four (4) major water systems:

- The Firthcliffe Heights Water District
- A community water system owned and operated by Star Expansion Company
- The Village of Cornwall-On-Hudson Main System
- The Village of Cornwall-On-Hudson's Mountain System

Several small community water systems exist within the Town which do not meet the 50,000 gallons per day production threshold of this report.

EXISTING WATER SUPPLY SYSTEMS

Firthcliffe Heights Water District

The Firthcliffe Height Water District receives its water supply from the Town of New Windsor. Water is purchased for this District under an inter-municipal agreement. The systems are connected in a meter vault located along Route 32 near the Town line.

Water supplied to the District is surface water from the Town of New Windsor Catskill Aqueduct tap located off Riley Road. The water is treated at the Town of New Windsor Filter Plant prior to being discharged into the system (MH&E, Town Engineers).

Village of Cornwall-on-Hudson

The Village of Cornwall-On-Hudson owns and operates two Water Districts, the main system and the mountain system. The main system supplies water to approximately 70% of the Town of Cornwall and all services in the Village of Cornwall-On-Hudson that are located below an elevation of 400 feet above sea level.

The mountain system supplies those portions of the Village of Cornwall-On-Hudson located above the 400 elevation.

The Main System

The main system is supplied by both surface water and ground-water sources. The Village maintains a series of surface reservoirs located in Black Rock Forest and a tap to the Catskill Aqueduct located at Riley Road in the Town of New Windsor. Water withdrawn from the aqueduct is treated at the Village's water treatment plant located off Palimino Road in the Town of Cornwall. The Village maintains a well field located near the intersection of Otterkill Road and Taylor Road in the Town of Cornwall (Groundwater Inventory Map ["GIM"], Wells CW-5 and CW-6).

Well Supply in Service

The Village of Cornwall-On-Hudson operates two wells. The wells are identified as Well 1 (GIM, Well CW-5) south and Well 2 (GIM, Well CW-6) north. The wells are pumped alternately. The wells are typically pumped when the Village Filter Plant is off line after normal working hours, holidays and weekends.

The wells are located in the Moodna Creek Aquifer and were developed in 1963 and 1964, after an extensive exploration study of the Town and Village of Cornwall-On-Hudson performed by Hazen and Sawyer Engineers. These sand and gravel wells were the only successful wells located within the Town.

The well locations are depicted on the Cornwall base map as Well Location 1 and 2. The wells are located very close together, so they are depicted as one location on the map.

Mountain System

The mountain system supplies water to all locations above an elevation of 400 feet. The mountain system receives its water supply from the Village's reservoir system in Black Rock Forest. This water currently is chlorinated. The Village is in the process of designing a water filter plant for its reservoir system and the mountain system will be absorbed as part of the main system (Smith, 1993).

Star Expansion Community System

The Star Expansion water system provides process water for the Star Expansion factory and corporate owned dairy farm. The system also provides potable water for approximately 25 single family homes owned by the Corporation.

Well Supply In Service

The Star Expansion community water system withdraws water from the Moodna Creek Aquifer via four wells (GIM, Wells CW-1, CW-2, CW-3 and CW-4). These wells are in the same general vicinity as the Village of Cornwall-On-Hudson's well field. The wells are constructed with the sand and gravel aquifer. Each of the four wells had an original yield of 300 gpm. Typically, only one well is pumped at a time; occasionally two wells are pumped to meet peak demands.

Star Expansion Well 2 (GIM, Well CW-3) is equipped with a propane fired generator and supplies power during emergencies. This well is typically run for approximately 15 minutes per week (Joyce, 1993).

PROPOSED COMMUNITY WATER SYSTEMS

Based on a review of the available information, there are no proposed municipal or community water systems (MH&E, 1993).

WATER SUPPLY DEMAND

Firthcliffe Heights Water District

The Firthcliffe Water District purchases its water supply from the Town of New Windsor. The District does not currently experience any shortfalls in supply. The current average daily water demand was reported by the system operator, Mr. Hines, to be 0.015 mgd. Water is purchased based on quarterly meter readings. No peak information is available. (Hines, 1993) The area served by the District has been substantially "built out". The only anticipated water user is a proposed 57 lot subdivision, which is before the Planning Board at this time (MH&E, Town Engineer).

Village of Cornwall-On-Hudson Main System and Mountain System

The Village of Cornwall-On-Hudson's main and mountain systems have an average daily demand of 1.1 mgd. This is supplied by the Village's two surface water sources and two wells. The Village of Cornwall-On-Hudson supplies water to approximately 95% of the Village population and 70% of the Town of Cornwall population. The Village of Cornwall-On-Hudson's water system has adequate capacity to supply the projected water demands of the Village and

Town, well into the future. The Village is currently planning to add a filter plant to filter water obtained from the Black Rock Forest reservoir system, with construction expected to begin in late 1995. The Black Rock Forest system continues to operate under a waiver from DOH filtering requirements (MH&E, 1993).

Star Expansion Community Water System

The Star Expansion system currently has adequate capacity to serve the users within its service area. The major user, Star Factory, does not have any plans for expansion.

The system obtains water from four wells located off Taylor Road. Each well is capable of supplying 300 gpm, however, only two wells are run simultaneously. The system demand has never exceeded 587,000 gpd (408 gpm). The average daily demand is 359,000 gpd (249 gpm) (Joyce, 1993).

Projected Water Demands

Table 4 identifies the existing and proposed water demands for the various water systems located within the Town of Cornwall.

The projected peak water demands in the Firthcliffe Heights Water District will increase by 34,200 gallons per day if the proposed 57 lot subdivision is built out. (MH&E, 1993)

The Star Expansion community system demand will remain the same within the planning period of this report (year 2020) (Joyce, 1993).

The Village of Cornwall-On-Hudson water system has a capacity of 2.3 mgd. The year 2020 projected water demand for the Village of Cornwall-On-Hudson is 1.6 mgd. The existing Village water system has a capacity of 2.3 mgd. This will leave a surplus capacity of 0.7 mgd in the year 2020 (Smith, 1993).

GEOLOGY

Moodna Creek Aquifer

There are several large areas of sand and gravel located in the Moodna Creek drainage basin within the Town of Cornwall. These sand and gravel deposits have been mapped by Frimpter (1972) and discussed briefly in a report entitled "Ground-Water Resources of Orange and Ulster Counties, New York" (Frimpter, 1972). These aquifers consist of stratified

layers of sand and gravel which extend to the surface over Martinsburg Formation (shale).

An area within the aquifer located north and west of Skunnemunk Mountain contains stratified sand and gravel at the surface and below the water table. A representative sample of this material is exposed in an unconsolidated mine near the south end of the Moodna viaduct and near Otterkill Road.

The major ground-water users within the Town, the Village of Cornwall-On-Hudson and the Star Expansion community system, obtain water from this aquifer near the intersection of Taylor Road and Otterkill Road. The wells completed in the sand and gravel aquifers yield in a range of 300 gallons per minute to 750 gallons per minute.

Woodbury Creek Aquifer

A finger of the Woodbury Creek aquifer extends into the Town of Cornwall, along the Woodbury Creek between Skunnemunk Mountain and NYS Route 32. This finger extends from the Woodbury/Cornwall Town line, north to the Star Expansion property. The Frimpter Report identifies this sand and gravel aquifer as having the potential to provide significant volumes of water. Small tributaries to Woodbury Creek are the source of recharge for this aquifer. The Woodbury Creek itself flows over glacial lake deposits or bedrock and is not the source of recharge for the aquifer.

The Village of Cornwall-On-Hudson unsuccessfully attempted to develop 10 separate wells in this aquifer, as identified in a report entitled "Village of Cornwall-On-Hudson Exploratory and Test Well Program (Hazen & Sawyer 1963)". Only three of the wells produced any water. Two were pumped at 40 gpm and one at 25 gpm, however, significant draw down was observed. All ten wells were abandoned.

Additional Sand and Gravel Aquifers

A small sand and gravel aquifer is identified in the Meadowbrook portion of the Town. This aquifer is associated with a large NYSDEC regulated wetland (CO-8). No information on potential yield was available for this aquifer.

The area along the shore of the Hudson River, in the Village of Cornwall-On-Hudson, is identified as a sand and gravel deposit. This area would be under the influence of the Hudson River. The area also has

been extensively impacted by many years of human activity related to the former warehousing and industry in the area during the early part of this century, and more recently, with filling and grading associated with the development of a park (MH&E, 1993).

BEDROCK GEOLOGY

The southeast portion of the Town of Cornwall lies within the area known as the Hudson Highlands. The bedrock in that area is composed of undifferentiated Gneiss, Granite and Granitic Gneiss which is exposed in many areas. The above units overlay Basalt.

The geology in the southwest portion of the Town (that area composing Skunnemunk Mountain) consists of layered sandstone and shale of the Martinsburg formation. In some areas, this layered sandstone and shale is overlaid with the Skunnemunk conglomerate formation (Advance Testing, 1993).

The remainder of the Town is underlaid by sedimentary bedrock units consisting of the following:

- 1) Undifferentiated Hamilton Group (shale, siltstone)
- 2) Martinsburg formation (shale, siltstone)
- 3) Undifferentiated Lower Devonian and Silurian Rocks (sandstone, shale, conglomerate)
- 4) Mount Merino Formation

The eastern portion of the Town consists of bedrock within the Mount Merino formation and the Austin Glen formation (Graywacke shale). The surface of the bedrock varies in depth from surface exposure to greater than 100 feet deep.

Wells drilled into bedrock units within the Town are not highly productive. Most residential wells with the Town are low yield bedrock wells. No high yield bedrock wells were identified during this study.

LAND USE

The southern and eastern portion of the Town is vacant forested land, which includes Storm King State Park, Black Rock Forest and West Point Military Reservation.

The western portion of the Town, south of Orrs Mills Road, is also mostly vacant land owned by Star Expansion Company or its subsidiaries.

The majority of the remaining land is residential, containing single-family homes with some commercial

retail and service businesses located along Main and Hudson Streets (Space Track, 1993).

WATER QUALITY

Water obtained from the Moodna Creek Aquifer for both the Village of Cornwall-On-Hudson system and Star Expansion system is of good quality. The water obtained is treated with hypochlorite for disinfection. The Village surface water is also treated with zinc orthophosphate to coat the distribution pipes, due to the Low Langiers Index (LI = 1.13) (Orange County Health Department, 1993). The water quality of the Village's sand and gravel well is excellent, requiring only disinfection.

The water quality of the bedrock aquifers is generally good, however, some wells contain high iron and/or manganese. Isolated portions of the Town have ground-water with odor problems due to a high hydrogen sulfide content.

INVENTORY OF GROUND-WATER CONTAMINATION PROBLEMS

Existing Ground-Water Contamination Problems

McGoey, Hauser and Edsall reviewed the available information concerning any existing ground-water contamination, known ground-water contamination sites, New York State Department of Environmental Conservation in-active hazardous waste sites, reported spills, solid waste sites, and RCRA reporting sites.

The Orange County Water Authority retained Lawler Matusky and Skelly Engineers (LMS, 1993) to provide information from NYSDEC under the Freedom of Information Act (FOIL). The FOIL request revealed no active spills in the Town of Cornwall, however, three in-active hazardous waste sites and a construction and demolition disposal site were identified. These sites have been depicted on the Cornwall plate as potential ground-water contamination sites.

The following will provide a summary of the known ground-water contamination sites identified by LMS.

Construction and Demolition Landfill - Route 218 Village of Cornwall-On-Hudson

This site was used for the disposal of construction and demolition debris for several weeks in the late 1980s. The site was closed after complaints of odors and truck traffic. Large numbers of railroad ties were disposed on the site (LMS, 1993).

Star Expansion In-Active Hazardous Waste Site

The site is located on the Star Expansion Factory site. The site was used as a disposal site by a manufacturer of expansion bolts and related items. Elevated levels of heavy metals, solvents and cyanide may occur on the site. Monitoring wells are in-place (LMS, 1993).

Town of Cornwall Landfill

The landfill is located off Holloran Road in the Firthcliffe Heights area of the Town. The landfill received municipal refuse from the Town from the early 1960s until the mid 1970s. The site has been closed since the mid 1970's. The NYSDEC performed ground-water monitoring of the site and has recently downgraded the site from a Class 2A to a Class 2 site (LMS, 1993).

Majestic Wearing Company Disposal Site

This site received waste from the former Majestic Wearing Company, a textile dying plant. The site is located near the Moodna Creek. Two former treatment lagoons remain on the site. The lagoons contain sludge which was left when the company closed.

Potential Ground-Water Contamination Sites

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).

The following is a summary of the potential ground-water contamination sites identified by LMS and a review of the Town's files.

Town of Cornwall Highway Department Facility

The Town of Cornwall stores ice control salt on its Highway Department Facility located off NYS Route 32 in the Mountainville section of Town. Although no known contamination exists, an area of

stressed vegetation is located down gradient of the salt storage site.

Village of Cornwall-On-Hudson

The Village of Cornwall-On-Hudson maintains a seasonal salt storage pile on its site off Shore Road in the Village. This is only stockpiled during the winter and spring months.

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 Sites

The FOIL request from NYSDEC identified petroleum bulk storage sites, presented in Table 5.

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

CONCLUSIONS

The Town of Cornwall's existing municipal and community water systems are capable of meeting the present and future project water demands based on anticipated growth within each systems service area.

The Star Expansion System is the only system totally dependant on one ground-water source, however, the system has four wells, each of which is capable of producing in excess of the average daily supply. The system also has 100,000 gallon storage reservoir as a backup.

The Village of Cornwall-On-Hudson's water system, serves 95% of the Village and 70% of the Town on a population basis. The Village system is projected to have a surplus of approximately 0.7 mgd in the year 2020.

Based on the information contained in this report, the Town and Village of Cornwall-On-Hudson will

have an adequate supply of water to serve its current and projected future needs.

REFERENCES

Advance Testing Company, 1993, "NYSDOT Source Number 8-065, Initial Geologic Report".

Fisher, Donald, Y. W. Isacksen and L.V. Rickard, 1970, Geologic Map of New York, Lower Hudson Sheet, New York State Museum and Science Service Map and Chart, Series No. 15.

Frimpter, Michael H., 1972, Ground-water Resources of Orange and Ulster Counties, New York, U.S. Geological Survey Water-Supply Paper, 1985.

Hazen and Sawyer Engineers, 31 January 1964, Village of Cornwall-On-Hudson, New York, "Exploratory and Test Well Program, May - December 1963".

Lawler, Matusky & Skelly Engineers, October 1993, "Environmental Data Gathering for Community Consultant, Town of New Windsor" File #677-001.

McGoey, Hauser and Edsall, Town Engineer's Files.

Orange County Department of Health, 1993, Cornwall Inspection Reports and Files.

Verbal Communication, September 1993, Ralph Smith, Village of Cornwall-On-Hudson Water Superintendent.

Verbal Communication, September 1993, Joseph M. Hines, Town of Cornwall Public Works Superintendent.

Verbal Communication, September 1993, Adrian Joyce, Star Expansion Company Engineer.

Space Track, Inc., 1993, "Orange County Landuse Maps."

TABLE 1
TOWN OF CORNWALL
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 ----- Star Expans.	Cornwall 29 1 102	Cornwall ----- CW-3	In Service ----- Active	300 ----- 300	83'	8"	79'-8"	10' ----- 74-83'	Sand & Gravel	10/22/64	Boring Log Attached
2 ----- Star Expans.	Cornwall 29 1 102	Cornwall ----- CW-4	In Service ----- Standby	300 ----- 300	102'	8"	76'	7' ----- 76-83'	Sand & Gravel	9/63	Boring Log Attached
3 ----- Star Expans.	Cornwall 29 1 24	Cornwall ----- CW-5	In Service ----- Active	300 ----- 300	104'	8"	77'	10' ----- 77-87.5'	Sand & Gravel	9/4/64	Boring Log Attached
4 ----- Star Expans.	Cornwall 29 1 24	Cornwall ----- CW-6	In Service ----- Active	300 ----- 300	72'	8"	55'	10' ----- 65-72'	Sand & Gravel	11/12/64	Boring Log Attached
1 South C-On-H Main	Cornwall 29 1 50	Cornwall ----- CW-1	In Service ----- Active	750 ----- 750	88'	18"	N/A	20' ----- N/A	Sand & Gravel	1966	Well Log Attached
2 North ----- C-On-H Main	Cornwall 27 1 50	Cornwall ----- CW-2	In Service ----- Active	750 ----- 550	87'	18"	N/A	20' ----- N/A	Sand & Gravel	1966	Well Log Attached

gpm - Gallons per minute.

NA - Not available.

Well Status: In service - active; In service - stand by; Inactive - equipped; Inactive - not equipped; Abandoned

TABLE 2A
VILLAGE OF CORNWALL-ON-HUDSON

Summary of Well Yield Capacities
Village of Cornwall-On-Hudson Main System

Well ----- Water District	WSA No. ----- Permitted Yield (gpm)	Average Yield Capacity (gpm) ----- (gpd)	Maximum Yield Caacity (gpm) ----- (gpd)	Comments
1 South ----- C-On-H Main	3526 ----- 1,000,000	208.3-243 ----- 300,000 - 350,000	750 ----- 1,080,000	Permit limits withdrawal to 1 MGD from both wells.
2 North ----- C-On-H Main	3526 ----- 1,000,000	208 - 243 ----- 300,000 - 350,000	550 ----- 792,000	Both Wells Typically Not Pumped at the Same Time
TOTALS	1,000,000	416-486 gpm ----- 750,000	1,300 gpm ----- 1,872,000	

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

TABLE 2B
TOWN OF CORNWALL

Summary of Well Yield Capacities
Star Expansion System

Well ----- Water District	WSA No. ----- Permitted Yield (gpm)	Average Yield Capacity (gpm) ----- (gpd)	Maximum Yield Caacity (gpm) ----- (gpd)	Comments
Well 1 ----- Star Expansion	10303 ----- N/A	300 ----- 432,000	300 ----- 432,000	
Well 2 ----- Star Expansion	10303 ----- N/A	300 ----- 432,000	300 ----- 432,000	
Well 3 ----- Star Expansion	10303 ----- N/A	300 ----- 432,000	300 ----- 432,000	
Well 4 ----- Star Expansion	10303 ----- N/A	300 ----- 432,000	300 ----- 432,000	
TOTALS	(Total Permitted Yield)	408 gpm ----- 587,000	408 gpm ----- 587,000	

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

*The systems maximum day water use never exceeded 587,000 gallons per day.

TABLE 3B

MUNICIPALITY: Town of Cornwall

Summary of Firthcliffe Heights Water-Supply Source

The Town of Cornwall operates the Firthcliffe Heights Water District. This District purchases its water from the Town of New Windsor.

Existing Source

	Surface Water (mgd)	Ground Water (mgd)
Current Average Daily Water Demand	0.015	0
Current Maximum Daily Water Demand	Main Meter Not In Service Assume 0.015	0
Maximum Yield Capacity	Unknown Meter Read Quarterly	0
Average Yield Capacity	0.015	0
Proposed Sources (Average Day)		0
*TOTAL MAXIMUM YIELD CAPACITY (MGD) = -----		N/A -----
*CURRENT MAXIMUM DAILY USE (MGD) =		0.015

mgd - Million gallons per day.

* Combine surface water and ground-water sources.

COMMENTS

! Average daily flow number was obtained from system operator, as meter has not functioned for some time. Water is purchased, based on quarterly meter readings. No peaks available.

! The Town of Cornwall plans on repairing the main meter in the near future.

TABLE 3C

MUNICIPALITY: Village of Cornwall-On-Hudson

Summary of the Village of Cornwall-On-Hudson Water-Supply Source

The Village of Cornwall-On-Hudson provides water for 90% of the people in the Village and 70% of the people in the Town of Cornwall. The surface water sources include a Catskill Aqueduct tap and the Village's reservoir system. Ground-water is pumped from the Moodna Creek Aquifer.

Existing Source

	Surface Water (mgd)	Ground Water (mgd)
Current Average Daily Water Demand	0.90	0.2
Current Maximum Daily Water Demand	1.3	0.2
Maximum Yield Capacity	1.8	0.5
Average Yield Capacity	0.9	0.2
Proposed Sources (Average Day)	0	0
*TOTAL MAXIMUM YIELD CAPACITY (MGD) = -----		2.3 (MGD)
*CURRENT MAXIMUM DAILY USE (MGD) =		1.5 (MGD)

mgd - Million gallons per day.

* Combine surface water and ground-water sources.

COMMENTS

! The Cornwall-On-Hudson water system has sufficient capacity to provide water into the foreseeable future.

The 2.3 MGD includes surface water from the reservoir system which is currently being supplied under a waiver from DOH filtering requirements. A filter plant is under design.

VCORT3-2.MK

TABLE 3A

MUNICIPALITY: Town of Cornwall

Summary of Star Expansion Water-Supply

The Star Expansion water system provides water for the Star Expansion Factory Complex, Glen Ogden Farms and approximately 25 residential units owned by the Corporation.

Existing Source

	Surface Water (mgd)	Ground Water (mgd)
Current Average Daily Water Demand Star Expansion	0	0.359
Current Maximum Daily Water Demand Star Expansion	0	
Maximum Yield Capacity Star Expansion	0	0.726
Average Yield Capacity Star Expansion	0	0.359
Proposed Sources (Average Day)	0	0
*TOTAL MAXIMUM YIELD CAPACITY (MGD) = -----		0.741 (MGD) -----
*CURRENT MAXIMUM DAILY USE (MGD) =		0.587 (MGD)

mgd - Million gallons per day.

* Combine surface water and ground-water sources.

COMMENTS

! The Star Expansion system is currently run to meet the requirements of system demand. The 0.587 MGD was the maximum ever pumped from the system. Demand is typically much lower. The factory utilizes a majority of the water 200,000 +/- gallons per day.

TABLE 4B
VILLAGE OF CORNWALL-ON-HUDSON

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**
C-O-H Main & Mountain	2.3	2.3	1.2 ----- + 1.1**	1.2 ----- + 1.1**	1.326 ----- + 1.0**	1.647 ----- + 0.7**
TOTAL	2.3	2.3	1.2 ----- + 1.1**	1.2 ----- + 1.1**	1.326 ----- + 1.0**	1.647 ----- + 0.7**

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).

COMMENTS:

! The Village of Cornwall-On-Hudson systems serves areas both in the Town of Cornwall and the Village of Cornwall-On-Hudson.

TABLE 4A
TOWN OF CORNWALL

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
Firthcliffe Heights	0.015	0.015	0.015 ----- 00**	0.049 ----- 00**	0.049 ----- 00**	0.049 ----- 00**
Star Expansion	0.587	0.587	0.359 ----- + 0.228**	0.359 ----- + 0.228**	0.359 ----- + 0.228**	0.359 ----- + 0.228**
TOTAL	0.602	0.602	0.374 ----- + 0.228**	0.393 ----- + 0.228**	0.395 ----- + 0.228**	0.395 ----- + 0.228**

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).

COMMENTS:

The Firthcliffe Heights Water District purchases its water supply from the Town of New Windsor. It is anticipated that as increased demand is placed on the system, additional water will be purchased from New Windsor.

TABLE 5

MUNICIPALITY: Town of Cornwall

PETROLEUM BULK STORAGE

Facility Name	Location	Municipality
Administration Building	130 Main Street	Cornwall
B C & M Dodge Inc.	317 Main Street	Cornwall
Bank of New York	Broadway and Quaker Avenue	Cornwall
Cornwall Owner's Corporation	131 Willow Avenue	Cornwall
Cornwall Texaco	Route 9 and Willow Avenue	Cornwall
Cumberland Farms #3166	Route 94 and Shore Drive	Cornwall
Dairy Mart #6664	374 Hudson Street	Cornwall
James F. Clark Building	232-238 Main Street	Cornwall
Leary Chevrolet Inc.	Route 9W	Cornwall
The Cornwall Hospital	Laurel Avenue	Cornwall
Town of Cornwall Highway Dept.	Route 32	Cornwall
Town of Cornwall Town Hall	183 Main Street	Cornwall
Willow Avenue School	Willow Avenue	Cornwall
Cornwall Yacht Club Inc.	Shore Road	Cornwall-On-Hudson
Cornwall-On-Hudson Elementary	234 Hudson Street	Cornwall-On-Hudson
Cumberland Farms #3158	263 Hudson Street	Cornwall-On-Hudson
St. Thomas of Canterbury School	336 Hudson Street	Cornwall-On-Hudson
Storm King Fire Engine Co.	233 Hudson Street	Cornwall-On-Hudson
H. Peter Stern	Otterkill Road	Mountainville
Star Expansion Company	Pleasant Hill Road	Mountainville
Storm King Art Center	Old Pleasant Hill Road	Mountainville