APPENDIX A

LETCHWORTH

Permits and Regulatory Correspondence

NEW YORK STATE DEPARTMENT OF HEALTH
Bureau of Water Supply Protection

Approval of Plans for Public Water Supply Improvement

This approval is issued under the provisions of 10 NYCRR, Part 5:

1. Applicant	2. Location of Works (C, V, T)	3. County	4. Water District (Specific Area Served)
United Water New York, Inc.	(T) Haverstraw	Rockland	Ramapo High

5. Type of Project

			☐ 7 Distribution
☐ 1 Source	☐ 3 Pumping Units	☐ 5 Fluoridation	☐ 8 Storage
☐ 2 Transmission	☐ 4 Chlorination	■ 6 Other Treatment	■ 9 Other

Remarks: Log #17981, NY4303673 for a project to increase seasonal peak plant production to approximately 3.0 MGD through addition of a 14 inch diameter line and a static mixer with polyaluminum chloride (PACl) coagulant, potassium permanganate, and future use injection ports bypassing a mixing pot (to be demolished) and a mixing basin (to be physically disconnected); installation of transverse masonry walls with 2' 8" wide by 5' high exits which convert two existing sedimentation basins into flocculation basins with variable speed flocculators (three each) and masonry baffle walls sequentially followed by upflow settling basins with tube settlers, mechanical sludge removal to lagoons, and reinforced fiberglass exit troughs; upsized 20" exit pipes from the settling basins to the existing duel media filters; continued post filtration additions of sodium hypochlorite, caustic soda and Seaquest; chlorine contact within and existing clear well; a new transformer, automatic switch and diesel standby generator unit on a fenced outdoor slab; a new booster pump station (two pumps at 1.5 MGD, 235 feet TDH); new backwash water pump motors; various new valves, monitoring and control and appurtenances.

By initiating improvement of the approved supply, the applicant accepts and agrees to abide by and conform with the following:

a. THAT the proposed works be constructed in complete conformity with the plans and specifications approved this day or approved amendments thereto.
b. THAT the proposed works not be placed into operation until such time as a Competed Works Approval is Issued in accordance with Part 5 of the New York State Sanitary Code.

See attached for Special Conditions c through u.

ISSUED FOR THE STATE COMMISSIONER OF HEALTH

June 11, 2007

_____, P.E.
Designated Representative

Michael J. Montysko, PE
Chief, Design Section, Bureau of Water Supply Protection

General

6. Type of Ownership □ Municipal □ Commercial □ Industrial ■ 9 Water Works Corp.	□ 68 Private–Other □ Private–Institutional □ 26 Board of Education	□ 1 Authority □ 19 Federal □ 20 State	□ 30 Interstate □ 40 International □ 8 Indian Reservation
7. Estimated Total Cost $4,000,000	8. Population Served 30% of 300,000	9. Drainage Basin Hudson River	
10. Federal Aid Involved? □ Yes ■ 2 No	11. WSA Project? ■ Yes □ 2 No WSA 9947 issued 7/18/06		

Source

12. □ Surface Name: Class: □ Ground Name:		13. Est. Source Development Cost
14. Safe Yield	15. Description	

Treatment

16. Type of Treatment □ 1 Aeration □ 2 Microstrainers □ 3 Mixing	■ 4 Sedimentation ■ 5 Clarifiers □ 6 Filtration	□ 7 Iron Removal □ 8 Chlorination □ 9 Fluoridation	□ 10 Softening □ 11 Corrosion Control ■ 12 Other
16. Name of Treatment Works Letchworth WTP	18. Max. Treatment Capacity Peak 3.0 MGD, 1.0 MGD ave. annual, and 45 MG/month	19. Grade of Plant Operator Req. IA & IIA	20. Est. Cost $3,000,000
21. Description: See Remarks 5.			

Distribution

22. Type of Project Distribution Mains □ 1 Cross Connection □ 2 Interconnection □ 3 Transmission □ 4 Fire Pump Cl_2	23. Type of Storage Elevated _____ gals. Underground_____ gals.	24. Est. Distribution Cost
25. Anticipated Distribution (This Project) System Demand: Avg. 31 MGD Max. 45 MGD Peak 61.2 MGD		26. Designed for fire flow? □ Yes □ No
27.		

SPECIAL CONDITIONS FOR LOG NO. 17981

Letchworth Water Treatment Plant
United Water New York, Inc., NY 4303673

Upgrade of Letchworth WTP with a Static Mixer, Variable Speed Flocculators, Tube Settlers, a Diesel Power Generator and various Hydraulic Improvements and Electrical Modifications

(T) Haverstraw, Rockland County

c. THAT the proposed works be constructed in compliance with all applicable Federal, State and local regulations.

d. THAT United Water New York shall amend, revise and/or develop emergency plans as necessary to properly account for the new source, new transmission main and other new water system facilities and UWNY shall advise municipalities within the service area of the changes.

e. THAT locked access to vaults/chambers and other facilities, access gates and other security measures shall be at least annually inspected and reevaluated for adequacy by UWNY, Inc. with findings included within each December operator's report.

f. THAT a professional engineer shall supervise the construction of this project and shall implement any changes and/or additions agreed to by the New York State Department of Health.

g. THAT the engineer of record shall provide manuals and parts lists for installed equipment and shall also provide a set of as-built plans (with equipment manufacturers and model numbers noted) to United Water New York, Inc., who shall then maintain and update these documents as needed.

h. THAT disinfection of all water mains conform to AWWA standard C651, with exclusion of "Sec. 5.1 Tablet Method"; disinfection of the treatment plant conforms to AWWA standard C653; and disinfection of clear wells and other water storage facilities conforms to AWWA standard C652.

i. THAT the existing mixing pot and the existing mixing basin will be bypassed and physically disconnected.

j. THAT, in addition to the overflow and drain, each flocculation chamber and each clarifier will be provided a down turned air vents with screens.

k. THAT a locked manhole or observation port will be placed in each clarifier roof to provide view of the tube settlers and troughs.

l. THAT all observation ports and accesses shall be capped or covered with overhanging edges, curbed and locked to prevent entrance of rain, runoff or unauthorized people.

m. THAT prior to completed works approval, with New York State endorsement, the temporary diesel booster pump will be replaced with a package finished water booster pumping station with two or

more pumps capable of pumping approximately 1.5 MGD each at 235 TDH with documentation by make and model included within or appended to the as-built plans.

n. THAT replaced motors for each existing Worthington 3LR-12 backwash water pump will be documented by make and model within the as-built plans.

o. THAT existing lines labeled for Calgon will be used for Sequest.

p. THAT all chemical feed lines will be provided with an anti-siphon device in addition to any device which may be within the chemical pump housing.

q. THAT devices permanently installed at the three reservoirs for accurately measuring storage and releases in accord with WSA 9947 Special Condition 2, may be included within the as-built plans or may be appended to them and temporary stage recording devices may be installed and used for demonstration studies at plant startup.

r. THAT demonstration studies, based upon performance criteria within New York State "Table A", will be conducted at startup to evidence that the upgraded plant can be operated with polyaluminum chloride (PACl) coagulant to progressively produce potable water at approximately 1.5 MGD, 2.2 MGD and finally 3.0 MGD, according to a proposal endorsed by the New York State Department of Health with intermediate test results daily emailed to the Rockland County Department of Health and the New York State Department of Health and immediate reduction or curtailment of production with any aberrant monitoring observations or test results.

s. THAT the plant will comply with the operating schedule in WSA 9947 Special Condition 1 with an average annual production not exceeding 1.0 MGD and monthly production not exceeding 45 MG [1.5 MGD monthly average or two weeks at 3.0 MGD].

t. THAT plant production will be lowered to 0.5 MGD or less each fall/winter so that the flocculation basins and clarifiers may be inspected/repaired.

u. THAT based upon reservoir operation records, studies of fisheries, and other factors, a critique of the reservoir operation schedule will be annually included within an operators report with refinements to the operation schedule proposed to assure 45 MG is available for taking during August and during September with successive years of a drought.

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Flanigan Square, 547 River Street, Troy, New York 12180-2216

Richard F. Daines, M.D.
Commissioner

June 11, 2007

Gary Albertson, VP.
United Water New York
700 Kinderkamack Road
Oradell, NJ 07649

RE: Log No. 17981, NY4303673, WSA 9947
Approval of Plans and Specifications
Upgrade of Letchworth WTP to Seasonal Peak Operation of 3.0 MGD with Static Mixer, Variable Speed Flocculators,Tube Settlers and Hydraulic Improvements and Electrical Modifications
United Water New York
(T) Haverstraw, Rockland County

Dear Mr. Albertson:

We have, this day, approved the plans and specifications submitted by Janine B. Witko, P.E., of Black & Veatch, L.L.P., for a project to increase seasonal peak plant production to approximately 3.0 MGD through addition of a 14 inch diameter line and a static mixer with polyaluminum chloride (PACl) coagulant, potassium permanganate, and future use injection ports bypassing a mixing pot (to be demolished) and a mixing basin (to be physically disconnected); installation of transverse masonry walls with 2' 8" wide by 5' high exits which convert two existing sedimentation basins into flocculation basins with variable speed flocculators (three each) and masonry baffle walls sequentially followed by upflow settling basins with tube settlers, mechanical sludge removal to lagoons, and reinforced fiberglass exit troughs; upsized 20" exit pipes from the settling basins to the existing duel media filters; continued post filtration additions of sodium hypochlorite, caustic soda and Seaquest; chlorine contact within and existing clear well; a new transformer, automatic switch and diesel standby generator unit on a fenced outdoor slab; a new booster pump station (two pumps at 1.5 MGD, 235 feet TDH); new backwash water pump motors; various new valves, monitoring and control and appurtenances.
Application for this project was duly made by you and received in this office on January 19, 2007, and final drawings were received on April 6, 2007, with additional documentation subsequently provided.

We call your attention to Standard Conditions a & b and Special Conditions c through u of our DOH form 1017 entitled: "Approval of Plans for Public Water Supply Improvement."

We are enclosing a Certificate of Approval. A set of the approved plans and specifications is being retained in our files, a second set is being sent to the Rockland County Department of Health, and the third set is being returned to your consultant.

Sincerely,

Kenneth W. Caffrey, P.E.
Senior Sanitary Engineer
Bureau of Water Supply Protection

Enclosure
cc: Black & Veatch, L.L.P., Attn: Janine B. Witko, P.E.
Rockland County Department of Health, Attn: Daniel Miller, Ph.D.
NYDEC- Albany, Attn: Michael Holt, P.E.
NYDEC- Region 3, Attn: Michael Merriman
Public Service Commission, Attn: Thomas G. Dvorsky
NYSDOH, Attn: George Philip, P.E.

Palisades Interstate Park Commission
Administration Building
Bear Mountain, NY 10911-0427
Tel: 845-786-2701
Fax: 845-786-2776

Michael Tesik
Capital Facilities Regional Manager I

FAX: 845-786-5367

139099
PIPC

C-3.1

February 9, 2007

Albert J. Capuzzi, P.E.
Project Manager
Black & Veatch New York, LLP
120 White Plains Rd., Suite 110
Tarrytown, NY 10591

RE: Proposed Modifications to Letchworth Village WTP

Dear Mr. Capuzzi,

I have reviewed your responses to my January 31, 2007 letter regarding the project noted above.

I will reserve most comments until I receive the revised drawings.

I do, however, have the following comments/questions regarding the standby generator:

1. The additional information which you provided is satisfactory to justify the diesel powered unit.
2. Because the fuel tank is 1000 gallons, you will need to register the tank (Petroleum Bulk Storage) with the New York State Department of Environmental Conservation. Because the threshold for tank registration is set at 1000 gallons for a facility, any other fuel storage tanks, regardless of size, must also now be registered. Please provide us with a copy of the registration certificate when you receive it.
3. The Rockland County Department of Environmental Health has additional PBS testing requirements above and beyond those of the DEC. Please contact them for this information.

Sincerely,

Larry Soeller, P.E.
Senior Park Engineer

cc: Jim Hall, PIPC
Michael Tesik, PIPC
Bob Raczko, UWNY

Palisades Interstate Park Commission
Administration Building
Bear Mountain, NY 10911-0427
Tel: 845-786-2701
Fax: 845-786-2776

Michael Tesik
Capital Facilities Regional Manager I

FAX: 845-786-5367

139099
PIPC

C-3.1

January 31, 2007

Albert J. Capuzzi, P.E.
Project Manager
Black & Veatch New York, LLP
220 White Plains Rd., Suite 275
Tarrytown, NY 10591

RE: Proposed Modifications to Letchworth Village WTP

Dear Mr. Capuzzi,

Jim Hall, the Acting Executive Director of the Palisades Interstate Park Commission, asked me to review the proposed modifications to the Letchworth Village Water Treatment Plant and respond to your proposal on his behalf. As per the water plant license agreement between UWNY and NYSOPRHP, all renovations and modifications to the existing facilities must be approved by the Palisades Region (PIPC) of NYSOPRHP.

I have reviewed the Engineer's Report and drawings which were prepared for submission to the NYS and Rockland County Departments of Health. The PIPC defers comment on the needs assessment and feasibility of the proposed improvements to those agencies responsible for protecting the public health. Our comments will be related the site plan, aesthetics, recreational access and environmental protection.

The projects proposed are:

1. Improve the hydraulics through the plant to achieve a 3 MGD peaking capacity.
2. Upgrade the electrical service and provide a stand-by emergency generator.
3. Replace the temporary diesel powered pump with a packaged finished water pumping station and a stand-by emergency generator.

I have the following comments/questions:

1. Please provide a Storm Water Pollution Prevention Plan (SWPPP) for all projects. The SWPPP must follow the guidelines established by the NYS Department of Environmental Conservation (DEC).
2. Sheet 2 of 7 shows the overflow from the settling tanks being discharged directly into the Minisceongo Creek. Since this overflow has chemicals added for coagulation, discharge into the creek is regulated by DEC. Please provide a copy of the SPDES permit for this discharge. It would be preferable to discharge the overflow of partially treated water to the backwash settling lagoons.

3. All grassed areas are to be restored with top soil and seeded upon completion of excavation work.
4. Sheet 2 of 7 shows the location of the new transformer and generator to be in the middle of the access road for the reservoirs. Please relocate them in order to maintain the road access.
5. Please provide an artist's rendering of the proposed transformer and generator so that the visual impacts can be evaluated.
6. Neither the drawings nor the engineer's report indicate the specifications for the proposed generator. An LP gas powered generator with an EPA approved sound attenuating enclosure is preferred. Prior to soliciting bids for the generator, please provide a copy of the specification for our review.
7. Please provide a site plan showing the proposed route for the new underground electric service from Call Hollow Rd.
8. Please provide an artist's rendering of the proposed pumping station and generator so that the visual impacts can be evaluated.
9. Prior to construction of the pump station, you must submit plans stamped by a NYS licensed Architect or Engineer and obtain a building permit from PIPC Office of Design and Construction.
10. Access to the reservoirs by Park staff must be maintained during all phases of construction.

Sincerely,

Larry Soeller, P.E.
Senior Park Engineer

cc: Jim Hall, PIPC
Michael Tesik, PIPC
Bob Raczko, UWNY

F-61

United Water
SUEZ

January 12, 2007

Mr. Kenneth Caffrey
Bureau of Water Supply Protection, Room 400
NewYork State Department of Health
Flanigan Square
547 River Street
Troy, NY 12180-2216

Subject: United Water New York Short Term Water Supply Program
Letchworth Water Treatment Facility Upgrade Permit Application

Dear Mr. Caffrey:

United Water New York (UWNY) is pleased to submit the attached Engineer's Report and permit application for a project to increase Letchworth plant capacity from 1.0 to 3.0 mgd. The enclosed information includes New York State Department of Health (NYSDOH) "Application for Approval of Plans for Public Water Supply Improvement", and an Engineer's Report completed by Black & Veatch.

The project will take place over an 18-month period, beginning after NYSDOH approval and finishing by mid-2008. The first phase will consist primarily of process, mechanical and hydraulic plant upgrades, which are expected to be completed by June 2007. The second phase will consist primarily of external electrical work, plant automation and installation of a new high lift pump station.

Upon your review of this package, we expect to have detailed design drawings for the first phase available within a week, in order to begin work immediately. Second phase detailed drawings will be available one to two months later.

This is an important project for UWNY, as the increased capacity from the upgrade will be applied directly to our water supply commitments. Upon completion of the first phase, the plant will be commissioned and put on line. We expect this milestone to be achieved by June 2007. Given this accelerated schedule, we would appreciate a determination on the attached package at your earliest convenience.

We look forward to working with you on this important project. If you have questions, please feel free to call me at 201-634-4236, or Michael McDonald at 201-986-4740.

Yours Truly;

Gary C. Albertson

Gary Albertson, P.E.
Vice President - United Water

Attachments: Application for Approval of Plans for Public Water Supply Improvement
Engineer's Report

Cc: Dan Miller, PhD, RCDOH
Michael Pointing – GM, UWNY
John Dillon – Corporate Attorney, UW
Alan Weland, P.E. – Director of Engineering, UWNY
Michael McDonald, P.E. – Program Manager, B&V

Bureau of Water Supply Protection

Public Water Supply Improvement

Applicant	Location of works (C,V,T)	County	Water District (area served)
United Water New York	Haverstraw (T)	Rockland	Ramapo High (PD20)

Type of Ownership

☒ Municipal	☐ Commercial	☒ Private - Other	☐ Authority	☐ Interstate
☐ Industrial	☒ Water Works Corp.	☐ Private - Institutional	☐ Federal	☐ International
		☐ Board of Education	☐ State	☐ Native American Reservation

☒ Modifications to existing system. If checked, provide PWS ID# NY4303673

☐ New System? If checked, provide capacity development (viability) analysis*

☐ If this project involves a new system, new water district, or a district extension provide boundary description location details in digital format on CD or Floppy Disk. If digital boundary location details are not available provide a text description.

☐ Digital GIS Data Provided ☐ Digital CAD Data Provided ☐ Other Digital Data provided ☐ Text Description Provided

Funding Source ☒ Private ☐ DWSRF** ☐ Federal ☐ Other _____

If DWSRF is checked, provide DWSRF # | | | | | |

Estimated Project Cost

Source $_____ Treatment $ 3,000,000 Storage $_____ Distribution $_____

Pumping $ 500,000 Engineering $ 350,000 Legal/Permitting $ 150,000 Total $4,000,000

Type of Project			
☐ Source	☐ Corrosion Control	☐ U.V. Disinfection	☐ Distribution
☐ Transmission	☒ Pumping Unit	☐ Fluoridation	☐ Storage
	☐ Chlorination	☒ Other Treatment	☐ Other

Project Description This project includes treatment, hydraulic and pumping systems designed to increase the capacity of the Letchworth Water Treatment plant from 1 mgd to 3 mgd maximum day capacity. The treatment includes retrofitting the existing gravity sedimentation basins with tube settlers. Hydraulic improvements include replacing the 8" filter inlet piping and valves with 12." A new pump station will replace the diesel pumping system. Additionally, the improvements will include full back-up power and full automation.

Population

Total population of Service area 300,000 % population actually served 85% % population served affected by project 30%

Latest total consumption data (in MGD)

Avg. day	31	Year 2006
Max. day	45	Year 2006
Peak hr.	61.2	Year 2006

NYS Professional Licensed Engineer Stamp & Signature***

STATE OF NEW YORK JANINE BENI WITKO LICENSED PROFESSIONAL ENGINEER No. 085624

Name of design engineer
Janine B. Witko, P.E.
Address 120 White Plains Road, Suite 110, Tarrytown, NY 10591 Telephone No. 914-524-8316, ext 12
E-Mail witkojb@bv.com Fax No. 914-524-8368

Name and title of applicant or designated representative GARY ALBERTSON, VP- UNITED WATER,
Address 700 KINDERKAMACK RD, ORADELL, NJ 07649

Signature of Applicant

JAN. 11, 2007
Date

NOTE: All applications must be accompanied by 3 sets of plans, 3 sets of specifications and an engineer's report describing the project in detail. The project must first be discussed with the appropriate city, county, district or regional public health engineer. Signature by a designated representative *must* be accompanied by a letter of authorization.

*Additional information regarding capacity development may be found at: http://www.health.state.ny.us/nysdoh/water/main.htm
**Current DWSRF project listings may be found at: http://www.health.state.ny.us/nysdoh/water/main.htm
***By affixing the stamp and signature the Design Engineer agrees that the plans and specifications have been prepared in accordance with the most recent version of the recommended standards for water works and in accordance with the NYS Sanitary Code.

APPENDIX

APPENDIX B

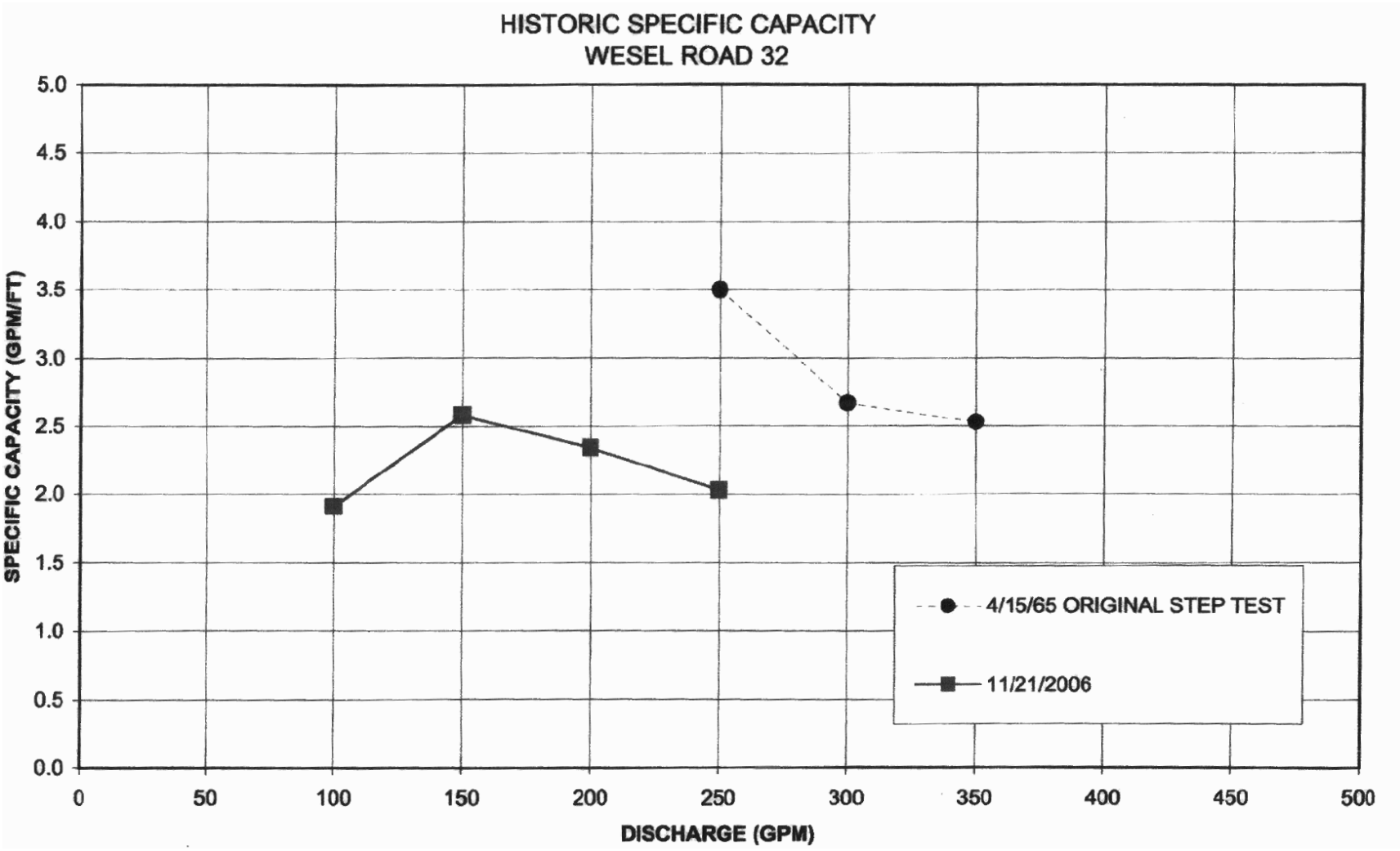
BEDROCK WELLS

Wesel 32

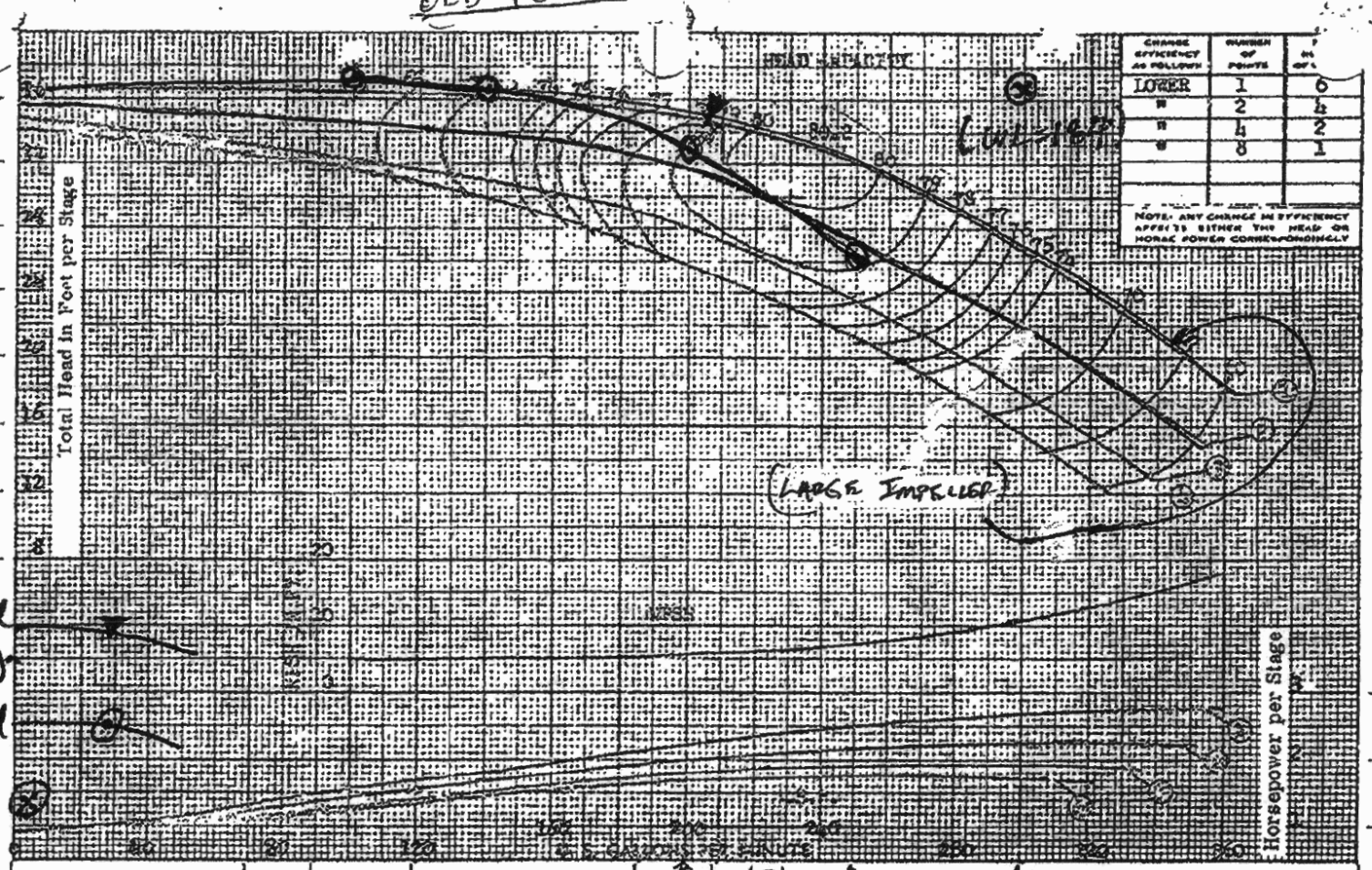
Wesel 32

Wesel 32 is permitted by NYSDEC for 300 gpm and taps the underlying bedrock aquifer. Recent production capacity indicates Wesel 32 has been utilized at rates between 175 gpm and 225 gpm, less than the original long-term operating capacity estimate of 300 gpm (and permitted rate). Wesel 32 was operating at approximately 175 gpm with an excess of 50 feet of submergence above the pump intake during the August 2001 3-day system peak demand period. Current pumping test data results indicate the specific capacity of Wesel 32 is similar to the results of the original testing, with no significant production-limiting decline noted. Based on the results of original testing, operational history, and results of current testing, Wesel 32 is capable of sustaining the short-term (3-day) peaking at a rate of 300 gpm during a drought demand period similar to August 2001. This 3-day peak pumping rate represents an increase of 125 gpm over the 2001 peak system demand operating rate.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK



OLD PUMP



Actual designed curve & design point.
Field measured curve
New design point

HYDRAULIC PERFORMANCE WARRANTY	CURVE NO.	IMPELLER NO.	IMPELLER DIA.	TAKEN FROM
Guaranteed at designated point only, and contingent on: Proper flow to pump suction; Proper submergence; Fluid free of gas, air & abrasives; Proper lateral setting of impeller	1	2616465	5 15/16"	35481
	2	2616465	5 13/16" x 5 15/16"	37215
	3	2616465	5 7/16" x 5 15/16"	37225
	4	2616465	5 3/16" x 5 15/16"	37322

1.8' ↑ 2.5' ← Column loss - 4.2

Customer

Item

Peerless Ref. No:

Laboratory Performance BOWL 2616457 CIE

SIZE 8 LB RPM 1760 CURVE 2831691

PUMP DESCRIPTION: Driver Electric, 30HP; Head 6x6x12; Column 6x1-3/16

GUARANTEED BOWL ☐ FIELD ☐ PERFORMANCE: Capacity 225 gpm; Head 350 ft; Eff 79 %; BHP 24.6

Column length = 175'

Wessel

Layne Christensen Company
Route 30, P.O. Box 917 • Schoharie, New York 12157 • Phone: (518) 295-8288 • Fax: (518) 295- 8289

May 31, 2007

United Water New York
360 West Nyack Road
West Nyack, NY 10994

Attention: Mr. Robert Raczko, Engineer

Reference: UWNY Wesel #32 Pump Replacement Report

Dear Mr. Raczko:

Layne Christensen Company is pleased to submit this letter report with respect to the installation of a new pump complete with motor, discharge head, steel base plate, 6-inch column piping and shafting. The work was completed on May 24, 2007.

Layne Christensen pulled the existing pump setting installed a new Gould's 10WALC, 8-stage vertical turbine pump cast iron bronze fitted with stainless steel collets and bolting. The design conditions for the new pump are 300 GPM @ 375' TDH with a secondary design point of 230 GPM @316' TDH. The new motor is a U.S. Electric 40 HP, 1800 RPM, premium efficient and inverter duty, compatible for use with a VFD. The installation also included those items listed in the first paragraph. A flow test was conducted as a final step to determine if the new pump was operating on its curve. The results of this test are summarized on Attachment 1. The pumping levels during the flow test were measured in the well with an electric water level meter.

Conclusions

Based on the results of the flow test the new pump is operating above curve. A plot of the data points obtained during the flow test is provided in Attachment 2.

Please contact us should you have any questions or wish to discuss these results in further detail.

We thank you for this continued opportunity to be of service.

Sincerely,

LAYNE CHRISTENSEN COMPANY

Stephen Crook, P.G.
District Manager

ATTACHMENT 1

Pumping Test Record

5/24/2007 **UWNY WESEL ROAD WELL**

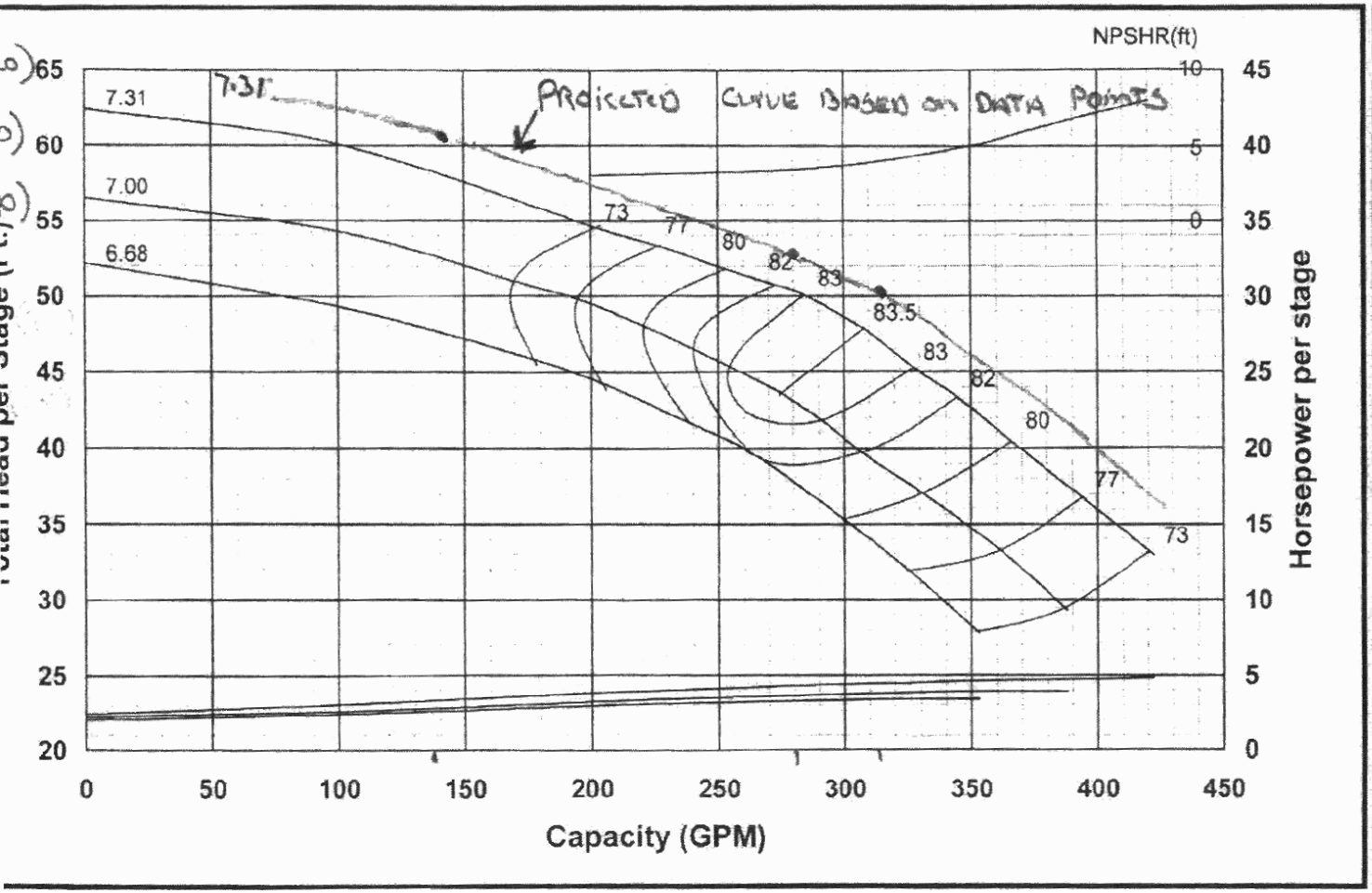
Time (Minutes)	Flow (Q) (GPM)	Pressure (PSI)	Pressure (FT)	Pumping Level (FT)	Static Level (FT)	Drawdown (FT)	Total Dynamic Head (FT)	Specific Capacity (GPM/FT)
15	137	186	429.66	60.02	9.92	50.10	489.68	2.73
30	280	131	302.61	116.72	9.92	106.8	419.33	2.62
45	312	114	263.34	138.60	9.92	128.68	401.94	2.42
			0			0	0	#DIV/0!

ATTACHMENT 2

GOULDS PUMPS

S PROPOSAL NO.	GOULDS S.O. NO.	INQUIRY NO.	CUSTOMER P.O. NO.	P.O. DATE	ITEM NO.	CUSTOMER
						UNITED WATER OF NEW YORK

CT	SERVICE	GPM CAPACITY	FT. TDH	% EFFICIENCY	RPM
ESEL ROAD #32		300	375	83.5	1770



Curve No. E6410WBPC1	
Model	10WALC
RPM	1770
EFFICIENCY CORRECTION	
1-STAGE	-3.0
2-STAGE	-2.0
3-STAGE	-1.0
4-STAGE	0.0
Impeller	ENCLOSED
Ns =	1700
K =	4.60 LBS/FT
K(Bal.)=	N/A
Bowl O.D.	9.50"
Bowl Lateral	0.63"
Max. PSI	375
Disch size	4",6",8"

TURBINE OPERATIONS
Lubbock, Texas

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER. RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION IS REQUIRED FOR LESSER STAGES.

Model 10WALC

June 2005

Goulds Pumps
ITT Industries

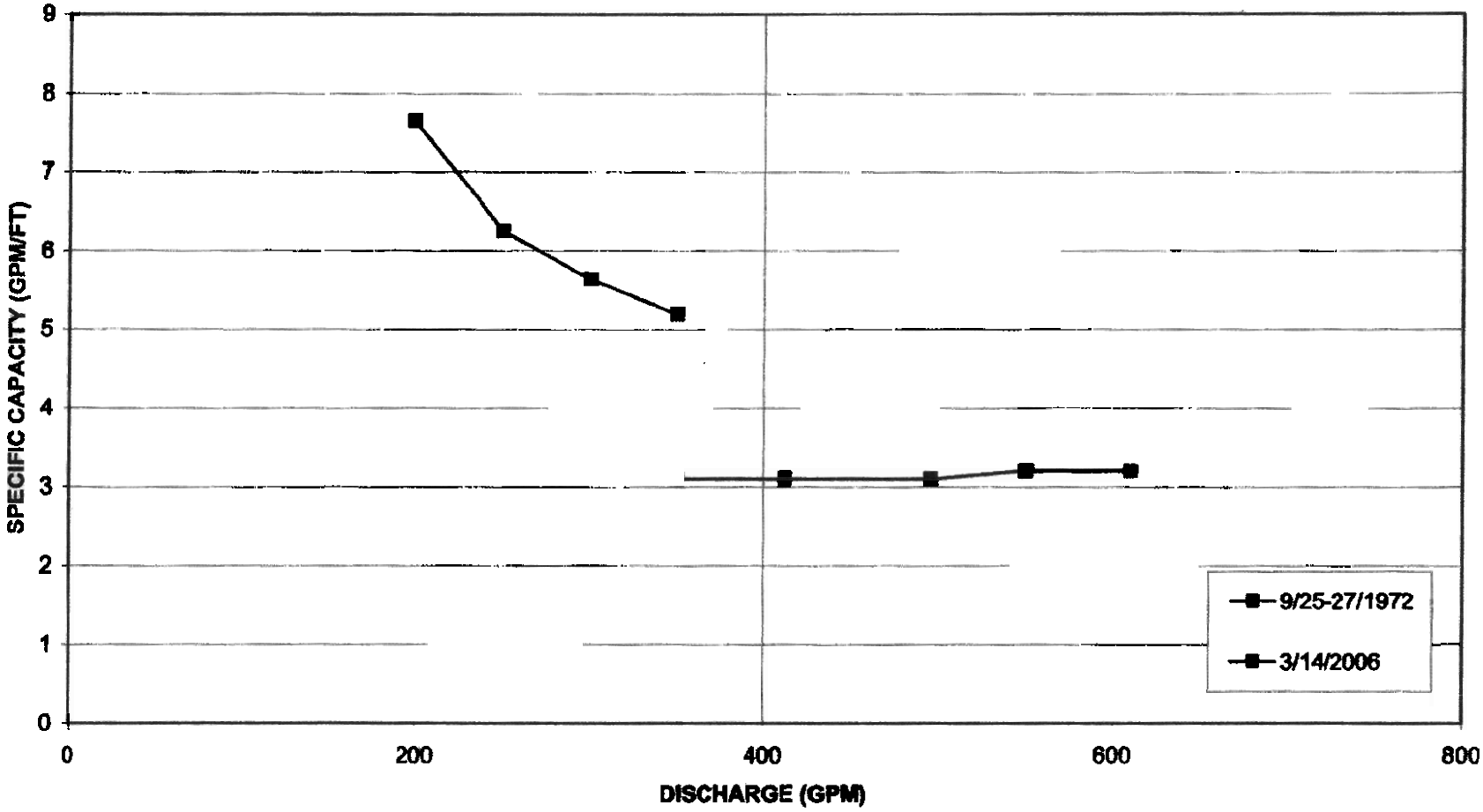
Eckerson 71

Eckerson 71

Eckerson 71 is permitted by NYSDEC for 500 gpm and taps the underlying bedrock aquifer. Recent production capacity indicates Eckerson 71 has been utilized at rates between 200 gpm and 250 gpm, not at the permitted rate of 500 gpm. Eckerson 71 was operating at approximately 165 gpm with approximately 10 feet of submergence above the pump intake during the August 2001 3-day system peak demand period. Current pumping test data results indicate the specific capacity of Eckerson 71 is similar, if not higher, than the results of the original testing, with no significant production-limiting decline noted. Based on the results of original testing, operational history, and results of current testing, Eckerson 71 is capable of short-term (3-day) peaking at a rate of 300 gpm during a drought demand period similar to August 2001. This 3-day peak pumping rate represents an increase of 135 gpm over the 2001 peak system demand operating rate.

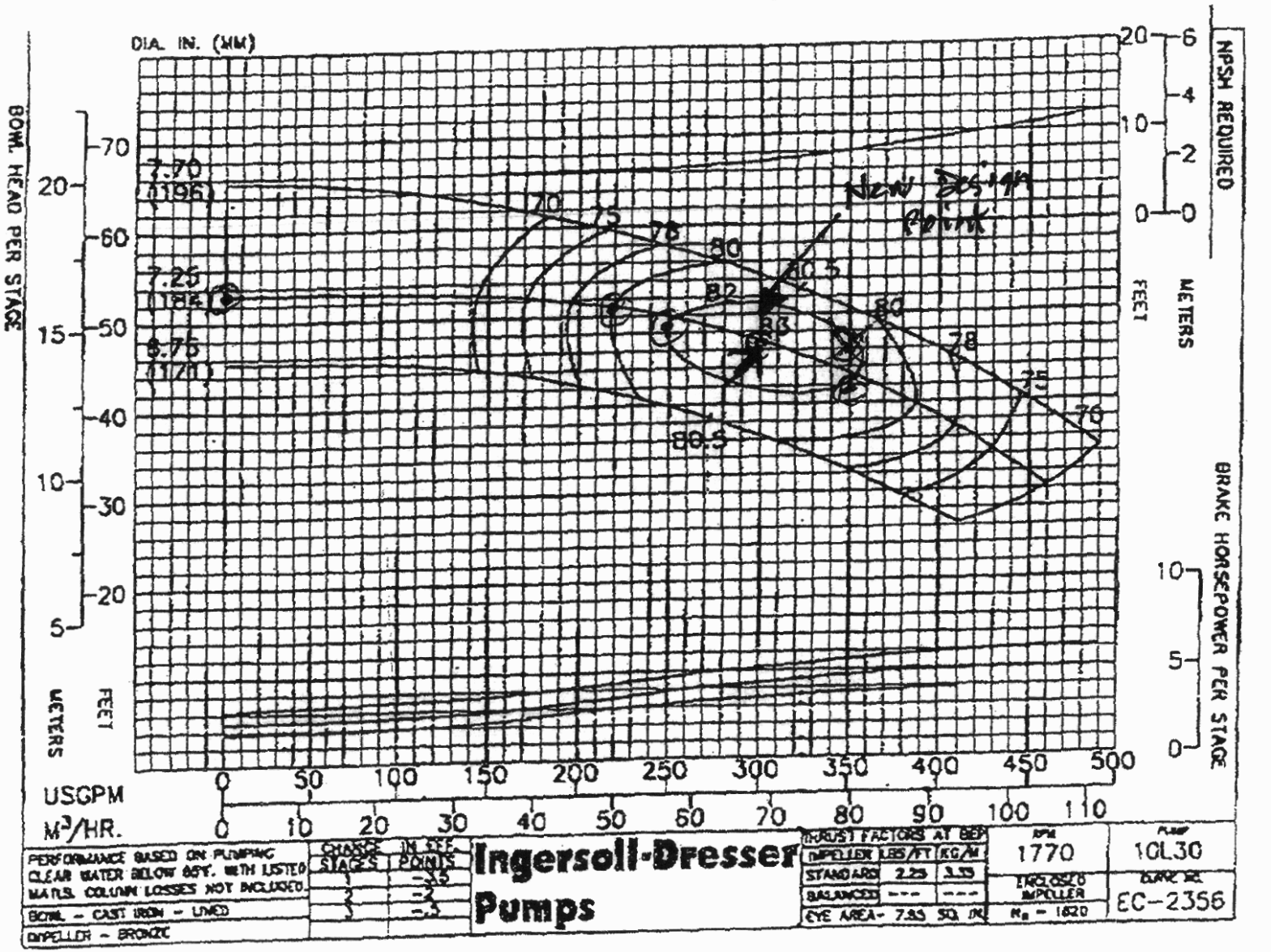
UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

HISTORIC SPECIFIC CAPACITY
ECKERSON 71



OLD PUMP

UWNY Eckerson Rd Well #71 50HP, #10LC30 8-stage 300GPM @ 368'TDH
200ft - 6"x1¼" Col/Shaft



RINBRAND WELL DRILLING COMPANY INC.

ARTESIAN
WELL
CONTRACTORS
pumps • water works installations

14 WALDRON AVENUE
GLEN ROCK, NJ 07452-2831
TEL (201) 652-4274 / FAX (201) 445-4591
established 1919

May 31, 2007

United Water New York
360 W. Nyack Road
West Nyack, NY 10994

To: Bob Raczko 1-845-623-1500 ex2267 / 1-845-620-3318fax

From:: Steve Rinbrand

RE: Eckerson #71

Bob, The New Gould Bowl Unit #8RJHC-16Stage w/5.25 trim impellers Regular Construction Bowl Unit (300GPM @ 400'TDH) was installed on 5-23-07 and step test on 5-24-07

The Pump appears to pump on curve - see attached curve.

Sincerely,

Stephen Rinbrand

CC: Bill Prehoda @ LBG.

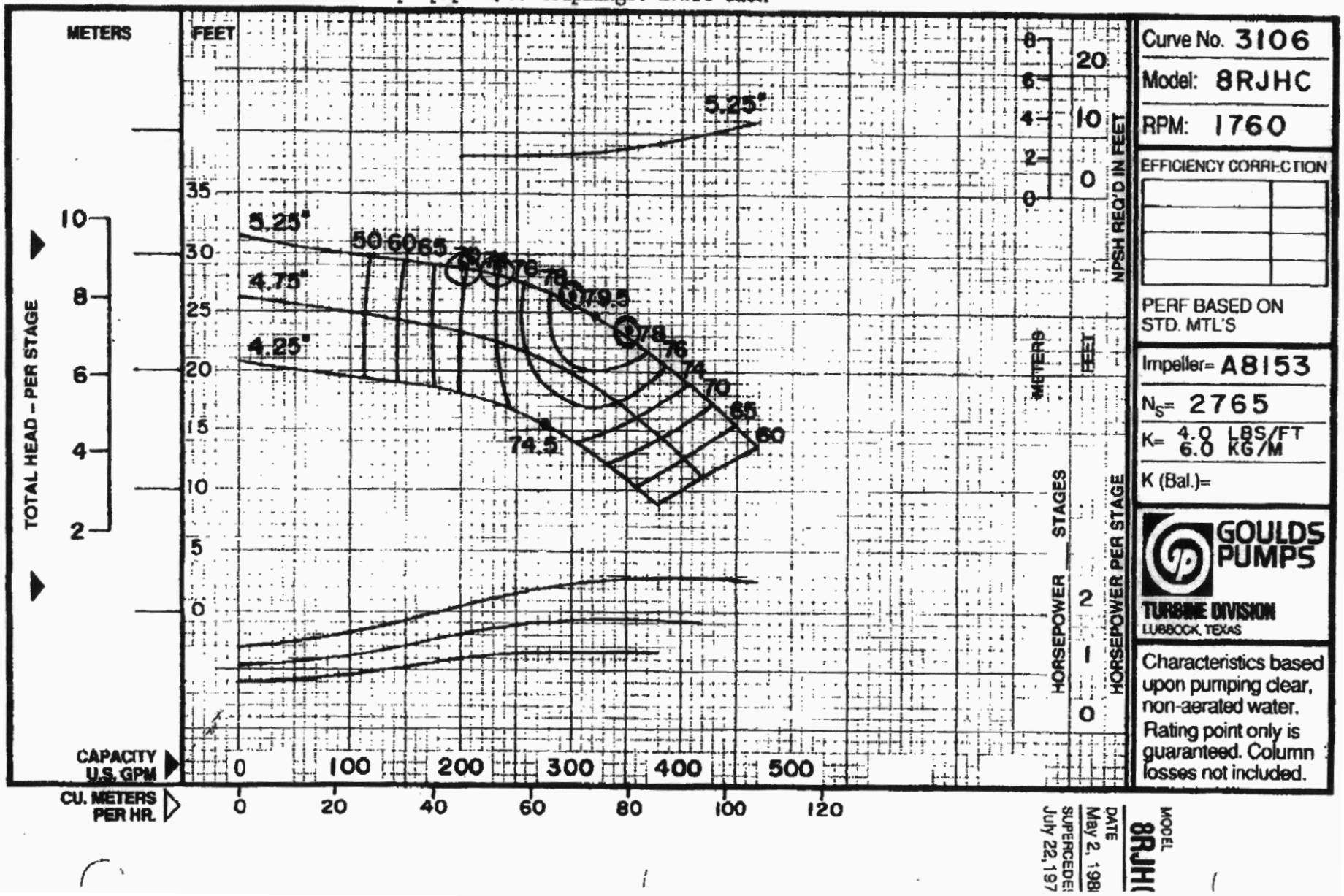
2page fax - hard copy in mail

5-24-07 UWNY Eckerson #71 (300GPM @ 400'TDH) (173PSI)

GOULDS PROPOSAL NO.	GOULDS S.O. NO.	INQUIRY NO.	CUSTOMER P.O. NO.	P.O. DATE	ITEM NO.	CUSTOMER
						UWNY 50HP.

PROJECT	SERVICE	GPM CAPACITY	F.T. TDH	% EFFICIENCY	RPM
Eckerson #71	#8RJHC-16Stage	300GPM	400' TDH		1800RPM

275ft of 6"x 13/16" Column & Shaft plus 10ft 5"Tail Pipe & Cone Strainer
2 - 1"PVC M-scope pipe w/SS Couplings. 275ft each



Rinbrand Well Drilling Co., Inc.
14 Waldron Ave., Glen Rock, NJ 07452
201-652-4274 / 201-445-4591fax Est.1919

United Water New York - Step Test
Well No. Eckerson #71

Date 5/24/2007
Line Pressure=
Shut Off TDH= 497'TDH or 215PSI

Time	PWL'	PSI	Orfice"	GPM	Time	PWL'	PSI	Orfice	GPM
1:10	start	175	9.5	200	1:56	58.44	140	29	350
1:11	31.68	180	9.5	200	1:57	59.17	140	29	350
1:13	34.35	180	9.5	200	2:00	60.88	139	29	350
1:14	35	180	9.5	200	2:03	62.62	137	29	350
1:16	36.14	180	9.5	200	2:06	63.93	137	29	350
1:20	38.05	180	9.5	200	2:09	65.02	137	29	350
1:24	39.4	180	9.5	200	2:10	65.4	137	29	350
1:25	open up	***	***	250	Misc Info				
1:26	41.66	177	15	250	1:24	455.2'TDH	1779RPM		
1:27	42.54	176	15	250	1:39	454.3'TDH	1781RPM		
1:30	44.36	176	15	250	1:54	425.8'TDH	1782RPM	Amps 46-45-47	
1:33	45.69	176	15	250	2:10	381.9'TDH	1775RPM	Amps 47-46.5-49.5	
1:35	46.39	176	15	250					
1:39	47.7	176	15	250					
1:40	open up	***	***	300					
1:41	50	161	21.5	300					
1:42	50.79	161	21.5	300					
1:45	52.57	160	21.5	300					
1:50	54.72	160	21.5	300					
1:54	56.2	160	21.5	300					
1:55	open up	***	***	350					

Type/HP	Turbine 50HP 1800RPM	Orifice"	4" Pipe" 6"
Pump	Gould #8RJHC (300GPM @ 400'TDH)	Airline	M-scope 2 - 1"PVC 275fteach
Stages	16 Stage (5.25"Trim impellers)	SWL	23.3ft
Discharge	6"	Well Dia	18"x12" 28'2" of 18"/55'3"of 12"casing
Setting	275ft	Depth	406ft
Witness	Max Dieber	RWD	Cliff Rinbrand

Rinbrand Well Drilling Co.,Inc.
14 Waldron Ave., Glen Rock, NJ 07452
201-652-4274 / 201-445-4591fax Est.1919

United Water New York - Step Test
Well No. Eckerson Rd #71

Date 3-14-06
Line Pressure= 74PSI
Shut Off TDH= 424'TDH or 183PSI

Time	PWL'	PSI	Orfice"	GPM	Time	PWL'	PSI	Orfice"	GPM
10:00	47.42	150	9 1/2	200	11:01	75.3	138	15	250
10:01	54.67	150	9 1/2	200	11:02	76.12	138	15	250
10:02	56.94	150	9 1/2	200	11:03	76.8	138	15	250
10:03	57.78	150	9 1/2	200	11:04	77.25	138	15	250
10:04	58.6	150	9 1/2	200	11:05	77.7	138	15	250
10:05	59.3	150	9 1/2	200	11:06	78.11	138	15	250
10:06	60.02	150	9 1/2	200	11:07	78.45	138	15	250
10:07	20.65	148	9 1/2	200	11:08	78.76	138	15	250
10:08	61.22	148	9 1/2	200	11:09	79.12	138	15	250
10:09	61.79	148	9 1/2	200	11:10	79.4	138	15	250
10:10	62.3	148	9 1/2	200	11:15	80.58	132	15	250
10:15	64.26	148	9 1/2	200	11:20	81.8	132	15	250
10:20	66.23	148	9 1/2	200	11:25	82.77	132	15	250
10:25	67.56	148	9 1/2	200	11:30	83.6	132	15	250
10:30	68.7	145	9 1/2	200	11:35	84.44	132	15	250
10:35	69.88	145	9 1/2	200	11:40	85.03	132	15	250
10:40	70.8	145	9 1/2	200	11:45	85.74	132	15	250
10:45	71.41	145	9 1/2	200	11:50	86.34	130	15	250
10:50	72.2	145	9 1/2	200	11:55	86.94	130	15	250
10:55	72.91	145	9 1/2	200	12:00	87.42	130	15	250
11:00	73.6	145	9 1/2	200	12:01	89	118	21	300

Type/HP	Turbine 50HP,230/460V,3PH 1800RPM	Orifice"	4"	Pipe"	6"
Pump	IDP #10LC30	Airline	200ft	M-scope	2-1" PVC 200ft each
Stages	8 Stage (300GPM @ 368'TDH)	SWL	47.42ft		
Discharge	6"	Well Dia	18"x12" (28'2" of 18" / 55'3" of 12"casing)		
Setting	200ft 6"x 1 1/4"Col/Shaft	Depth	406ft		
Witness	Max Dieber	RWD	Adam F Rinbrand Jr.		

Rinbrand Well Drilling Co.,Inc.
14 Waldron Ave., Glen Rock, NJ 07452
201-652-4274 / 201-445-4591fax Est.1919

United Water New York - Step Test
Well No. Eckerson Rd #71

Date 3-14-06
Line Pressure= 74PSI
Shut Off TDH= 424'TDH or 183PSI

Time	PWL'	PSI	Orfice"	GPM	Time	PWL'	PSI	Orfice"	GPM
12:02	89.84	118	21	300	1:02	103.37	93	29	350
12:03	90.44	118	21	300	1:03	104.15	93	29	350
12:04	90.88	118	21	300	1:04	104.75	93	29	350
12:05	91.31	118	21	300	1:05	105.06	93	29	350
12:06	91.67	118	21	300	1:06	105.45	93	29	350
12:07	91.95	118	21	300	1:07	105.78	93	29	350
12:08	92.3	118	21	300	1:08	106.17	93	29	350
12:09	92.28	118	21	300	1:09	106.37	93	29	350
12:10	92.88	118	21	300	1:10	106.68	93	29	350
12:15	94.1	118	21	300	1:15	107.9	93	29	350
12:20	94.95	118	21	300	1:20	109	92	29	350
12:25	95.88	118	21	300	1:25	109.92	92	29	350
12:30	96.77	118	21	300	1:30	110.77	92	29	350
12:35	97.48	118	21	300	1:35	111.53	91	29	350
12:40	98.21	118	21	300	1:40	112.3	91	29	350
12:45	98.9	118	21	300	1:45	113	91	29	350
12:50	99.5	118	21	300	1:50	113.65	91	29	350
12:55	100.12	118	21	300	1:55	114.35	91	29	350
1:00	100.7	118	21	300	2:00	114.86	91	29	350
1:01	102.52	93	29	350					

Type/HP	Turbine 50HP,230/460V,3PH 1800RPM	Orifice"	4" Pipe" 6"
Pump	IDP #10LC30	Airline	200ft M-scope 2-1"PVC 200ft each
Stages	8Stage (300GPM @ 368'TDH)	SWL	47.42ft
Discharge	6"	Well Dia	18"x12" (28'2" of 18"/ 55'3" of 12"casing)
Setting	200ft 6"x 1 1/4"Col/Shaft	Depth	406ft
Witness	Max Dieber	RWD	Adam F. Rinbrand Jr.

Rinbrand Well Drilling Co.,Inc.
14 Waldron Ave., Glen Rock, NJ 07452
201-652-4274 / 201-445-4591fax Est.1919

United Water New York - Step Test
Well No. Eckerson Rd #71

Date 3-16-06
Line Pressure= 74PSI
Shut Off TDH= 424'TDH or 183PSI

Time	PWL'	PSI	Orfice"	GPM	Time	PWL'	PSI	Orfice	GPM
Recovery					Misc Info				
1 Minute					10:15	Airline 64%			
2 Minute					10:50	RPM=1789 Amps 37-37-38			
3 Minute					10:55	PH=7.0	Temp 53F		
4 Minute					11:00	408.55'TDH Drawdown 26.15' GPF=7.63'			
5 Minute					11:15	Airline 56%			
6 Minute					11:40	Airline 53%			
7 Minute					11:50	RPM=1786		Amps39-40-41	
8 Minute					11:55	PH=7.0	Temp 53F		
9 Minute					12:00	387.72'TDH Drawdown 40.00' GPF=6.25'			
10 Minute					12:30	Airline 48%			
15 Minute					12:45	RPM=1785 Amps 42-43-44			
20 Minute					12:50	PH=7.0	Temp 53F		
25 Minute					12:55	Airline 47%			
30 Minute					1:00	368.66'TDH Drawdown 53.28' GPF=5.63'			
					1:15	Airline 42%			
					1:45	PH=7.2	Temp 53F		
					1;50	RPM=1783 Amps 44-45-47			
					2:00	325.07'TDH Drawdown 67.44' GPF 5.18'			

Type/HP	Turbine 50HP,230/460V,3PH 1800RPM	Orifice"	4" Pipe" 6"
Pump	IDP #10LC30	Airline	200ft M-scope 2- 1"PVC 200ft each
Stages	8 Stage (300GPM @ 368'TDH)	SWL	47.42ft
Discharge	6"	Well Dia	18"x12" (28'2"of 18"/ 55'3" of 12"casing)
Setting	200ft 6" x 1 1/4"col/shaft	Depth	406ft
Witness	Max Dieber	RWD	Adam F. Rinbrand Jr.

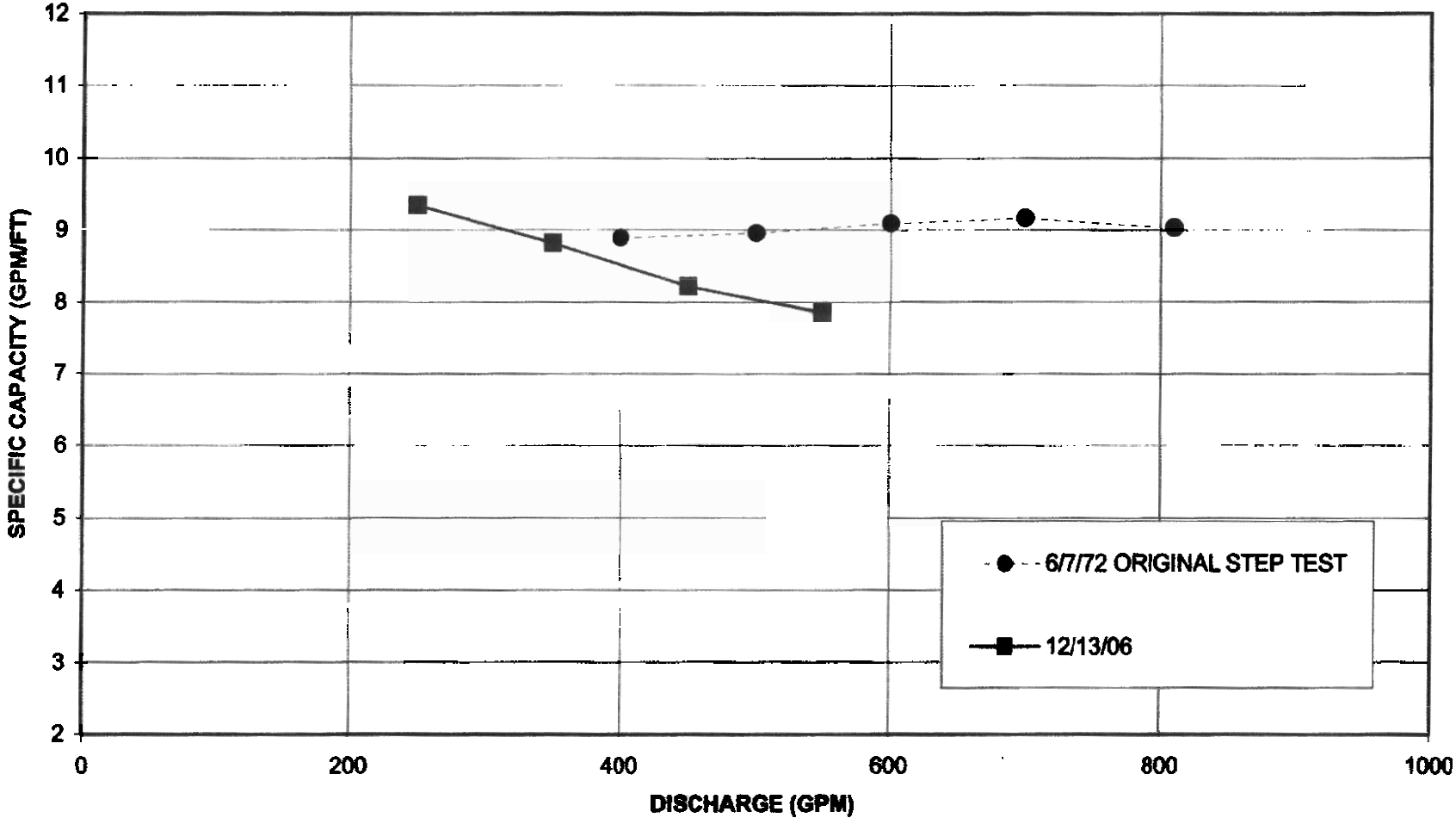
Lakeshore 73

Lakeshore 73

Lakeshore 73 is permitted by NYSDEC for 700 gpm and draws from the underlying bedrock aquifer. Recent production capacity indicates Lakeshore 73 has been utilized at rates between 400 gpm and 450 gpm, less than the original long-term operating capacity estimate of 500 gpm and not at the peaking estimate (and permitted rate) of 700 gpm. Lakeshore 73 was operating at approximately 370 gpm with an excess of 50 feet of submergence above the pump intake during the August 2001 3-day system peak demand period. Current pumping test data results indicate the specific capacity of Lakeshore 73 is similar to the results of the original testing, with no significant production-limiting decline noted. Based on the results of original testing, operational history, and results of current testing, Lakeshore 73 is capable of short-term (3-day) peaking at a rate of 700 gpm during a drought demand period similar to August 2001. This 3-day peak pumping rate represents an increase of 330 gpm over the 2001 peak system demand operating rate.

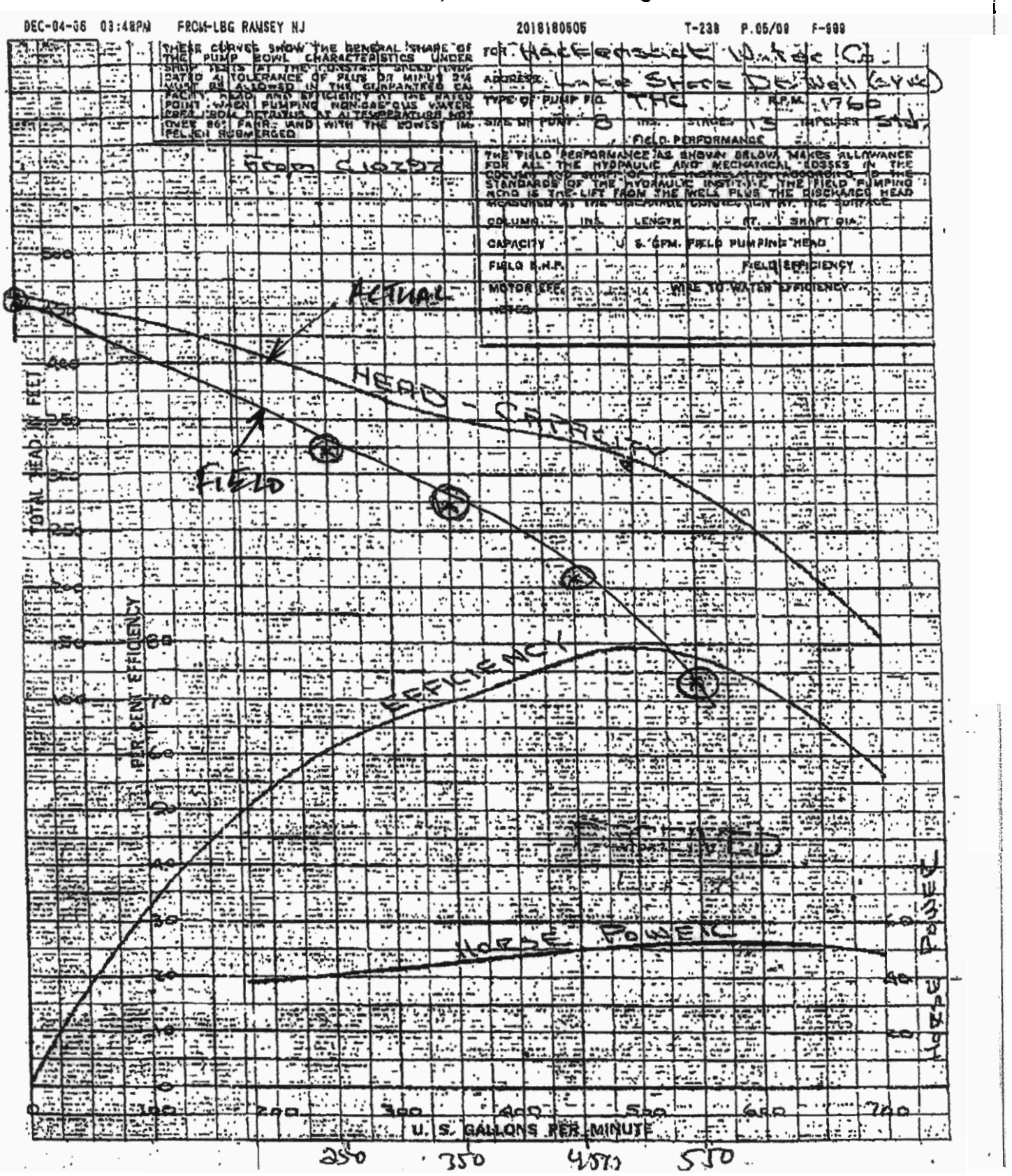
UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

HISTORIC SPECIFIC CAPACITY
LAKE SHORE 73



OLD PUMP 12-13-06

UWNY - Lakeshore Drive #73 150ft - 6" x 1 3/16"ColShaft 10ft - 6"Tail
500GPM @ 310'TDH Layne #8TCH 13stage 60HP 1800RPM



Layne Christensen Company
Route 30, P.O. Box 917 • Schoharie, New York 12157 • Phone: (518) 295-8288 • Fax: (518) 295- 8289

June 12, 2007

United Water New York
360 West Nyack Road
West Nyack, NY 10994

Attention: Mr. Robert Raczko, Engineer

Reference: UWNY Lakeshore #73 Pump Replacement Report

Dear Mr. Raczko:

Layne Christensen Company is pleased to submit this letter report with respect to the installation of a new pump complete with motor, discharge head, steel base plate, 6-inch column piping and shafting. The installation work was completed on May 16, 2007 and a final flow test run on June 11. 2007.

Layne Christensen pulled the existing pump setting installed a new Gould's 8RJHO, 5-stage vertical turbine pump cast iron bronze fitted with stainless steel collets and bolting. The design conditions for the new pump are 700 GPM @ 415' TDH with a secondary design point of 500 GPM @350' TDH. The new motor is a U.S. Electric 100 HP, 3600 RPM, standard efficient and compatible for use with a VFD. The installation also included those items listed in the first paragraph. A flow test was conducted as a final step to determine if the new pump was operating on its curve. The results of this test are summarized on Attachment 1. The pumping levels during the flow test were measured in the well with an electric water level meter.

Conclusions

Based on the results of the flow test the new pump is operating on curve. A plot of the data points obtained during the flow test is provided in Attachment 2.

Please contact us should you have any questions or wish to discuss these results in further detail

We thank you for this continued opportunity to be of service.

Sincerely,

LAYNE CHRISTENSEN COMPANY

Stephen Crook, P.G.
District Manager

ATTACHMENT 1

Pumping Test Record

6/11/2007 **UWNY LAKESHORE WELL**

Time (Minutes)	Flow (Q) (GPM)	Pressure (PSI)	Pressure (FT)	Pumping Level (FT)	Static Level (FT)	Drawdown (FT)	Total Dynamic Head (FT)	Specific Capacity (GPM/FT)
31	699	150	346.50	85.20	10.30	27.17	431.70	NA
35	550	175	404.25	72.90	10.30	62.60	477.15	8.79
40	498	194	448.14	65.50	10.30	55.20	513.64	9.02
52	403	204	471.24	54.30	10.30	44.00	525.54	9.16

ATTACHMENT 2

Company: CHRISTENSEN PUMPS Customer: United Water, Lakeshore 73
Name: MEMPHIS, TENNESSEE
Date: 04/11/07 Order No:

Christensen Pumps
A division of
Layne Christensen Company

Pump:

8RJHO (5 stages)
Lineshaft Speed: 3530 rpm
Synch speed: 3600 rpm Dia: 5.0625 in
Curve: 3005
Specific Speeds: Ns: 2825
Pump Notes for Standard Sizes:
Suction Size-5" Discharge Sizes-5",6"
Vertical Turbine: Bowl size: 7.5 in
Max lateral: 0.63 in
Thrust K factor: 5.3 lb/ft

Pump Limits for Standard Construction:

Temperature: 120 °F Pressure: 425 psi g
Sphere size: 0.43 in

Search Criteria:

Flow: 700 US gpm Head: 415 ft
Secondary Operating Point: 500 US gpm, 350 ft

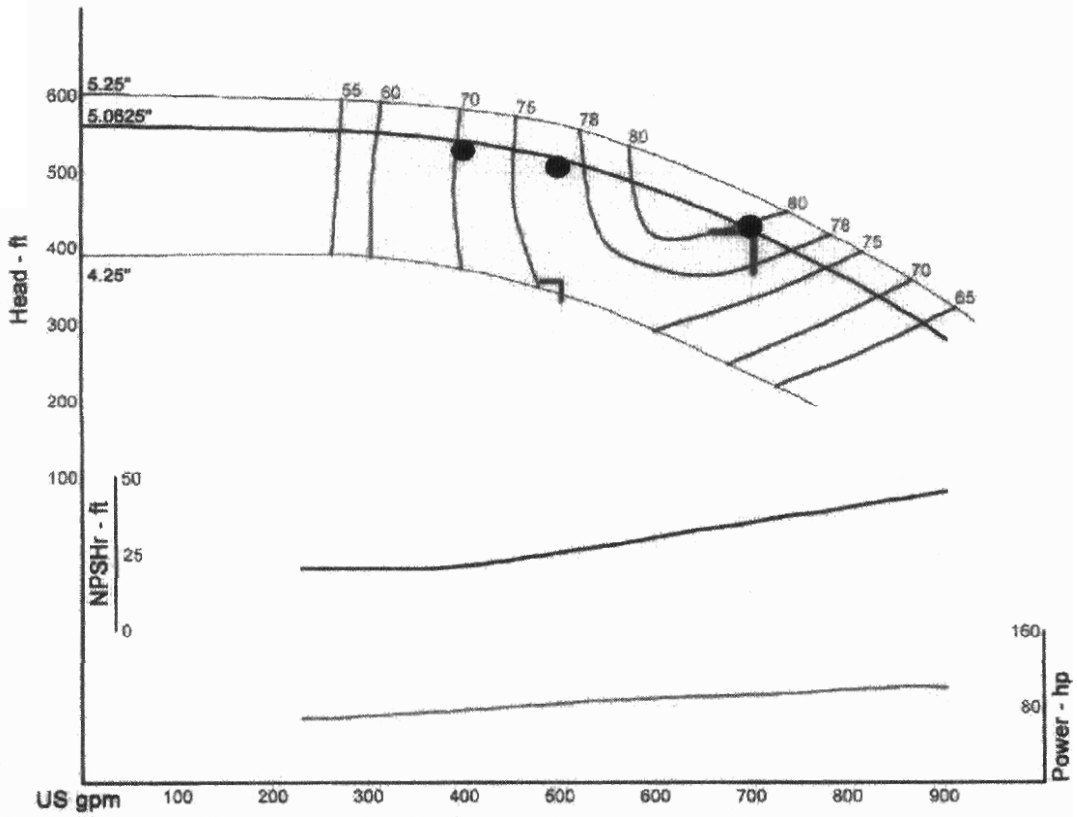
Fluid:

Water Temperature: 60 °F
SG: 1 Vapor pressure: 0.2563 psi a
Viscosity: 1.105 cP Atm pressure: 14.7 psi a
NPSHa: --- ft

Motor:

Standard: NEMA Size: 125 hp
Speed: 3600

Sizing criteria: Max Power on Design Curve



--- Data Point ---
Flow: 716 US gpm
Head: 406 ft
Eff: 78.9%
Power: 92.7 hp
NPSHr: 35.9 ft

-- Design Curve --
Shutoff Head: 551 ft
Shutoff dP: 238 psi
Min Flow: --- US gpm
BEP: 80.9% eff
@ 634 US gpm
NOL Pwr: 101 hp
@ 875 US gpm

-- Max Curve --
Max Pwr: 112 hp
@ 908 US gpm

Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Pump %eff	Power hp	NPSHr ft
840	3530	324	68.8	99.7	42.2
700	3530	416	79.5	92.2	35
560	3530	486	79.4	86.3	27.9
420	3530	527	72.4	77	21.5
280	3530	545	56.3	68.3	19.7

Permits and Regulatory Correspondence

NEW YORK STATE DEPARTMENT OF HEALTH
Bureau of Water Supply Protection

Application of Approval of Plans for Public Water Supply Improvement

Applicant	Location of works (C,V,T)	County	Water District (specific area served)
United Water New York	Clarkstown (T) - Lakeshore 73, Wesel 32 Ramapo (T) - Eckerson 71	Rockland	United Water New York

Type of Ownership

☐ Municipal ☐ Commercial ☐ Private - Other ☐ Private - Institutional ☐ Authority ☐ Federal ☐ Interstate ☐ International
☐ Industrial ☑ Water Works Corp. ☐ Board of Education ☐ State ☐ Native American Reservation

☑ Modifications to existing system. If checked, provide PWS ID # NY NY4303673

☐ New System. If checked, provide capacity development (viability) analysis*

If this project involves a new system, new water district, or a district extension provide boundary description location details in digital format on CD or Floppy Disk. If digital boundary location details are not available provide a text description.

☐ Digital GIS Data Provided ☐ Digital CAD Data Provided ☐ Other Digital Data Provided ☐ Text Description Provided ☑ N/A

Funding Source ☑ Private ☐ DWSRF** ☐ Federal ☐ Other

If DWSRF is checked, please provide DWSRF #

Estimated Project Cost $

Source	Treatment	Storage	Distribution
Pumping	**Engineering**	**Legal/Permitting**	**Total**
$200,000.00			

Type of Project

☐ Source ☐ Transmission ☐ Corrosion Control ☑ Pumping Unit ☐ Chlorination ☐ U.V. Light Disinfection ☐ Fluoridation ☐ Other Treatment ☐ Distribution ☐ Storage ☐ Other

Project Description Replace pumps and motors at three well sites in UWNY system (Lakeshore 73, Wesel 32 and Eckerson 71) to provide more flow for peak demand.

Total Population of Service Area	298,000
% population actually served	90
% population affected by project	5

Latest Total Consumption Data (in MGD)

Average Day	Year
31.5	2006
Maximum Day	**Year**
44.8	2006
Peak Hour	**Year**
57.2	2006

NYS Professional Licensed Engineer Stamp and Signature***

STATE OF NEW YORK * ROBERT FRANCIS RACZKO * No. 062909 LICENSED PROFESSIONAL ENGINEER

Name and Address of Design Engineer

Robert F Raczko, P.E.
UWNY
360 West Nyack Road
West Nyack, NY 10994
845-623-1500 x2267 email: bob.raczko@unitedwater.com

Signature of Applicant

5/24/2007
Date

NOTE: All applications must be accompanied by 3 sets of plans, 3 sets of specifications and an engineer's report describing the project in detail. The project must first be discussed with the appropriate city, county, district or regional public health engineer. Signature by a designated representative *must* be accompanied by a letter of authorization.

*Additional information regarding capacity development may be found at: http://www.health.state.ny.us/nysdoh/water/main.htm

**Current DWSRF project listings may be found at: http://www.health.state.ny.us/nysdoh/water/main.htm

***By affixing the stamp and signature the Design Engineer agrees that the plans and specifications have been prepared in accordance with the most recent version of the recommended standards for water works and in accordance with the NYS Sanitary Code.

DOH - 348 (02/05)

Bob Raczko, PE
Operations Engineer

UNITED WATER
360 West Nyack Road, West Nyack, NY 10994
Tel: 845.623.1500 x2267 • Fax: 845.620.3318
bob.raczko@unitedwater.com

United Water
SUEZ

May 25, 2007

Dan Miller, Ph.D
Rockland County Department of Health
Environmental Health Division
Dr. Robert L. Yeager Health Center
50 Sanatorium Rd
Pomona, New York 10970

Subject: Pump Modifications at Three Well Sites

Dear Dr. Miller:

As requested, we have prepared a DOH Form 348 for three pump modification projects that we are undertaking to increase the peaking capacity of our water supply by June 15, 2007. These projects include:

- Wesel 32 - Provide new pump, larger motor and VFD to provide an additional 0.18 mgd
- Eckerson 71 – Provide new pump, larger motor and VFD to provide an additional 0.19 mgd
- Lakeshore 73 – Provide new pump, Larger motor and VFD to provide an additional 0.48 mgd

Please note that the increase in capacity will capture the full, permitted amount of capacity, above and beyond that which has historically been realized at these wellfields, but not exceed the permitted capacity. The pumps have been identified as candidates for replacement because they represent pumps which could not achieve the desired Total Dynamic Head (TDH) required to meet desired flow conditions, as well as there being sufficient hydrogeologic capacity available to capture. The former was determined by comparing field pumping data to manufacturer's data, and the latter being determined by reviewing years of SCADA and specific capacity data.

The required TDH was obtained by assuming worst case, peak pressure conditions in the system, then modeling the impact of the new capacity to the system in terms of pressure layered on top of those conditions. From there the pressure required to meet peaking conditions was obtained from the model, as represented by the TDH requirement below (this also assumes maximum drawdown in the wells). In all cases, the pressure design exceeds that which was seen in the system during August 2001 conditions, and also under maximum pressure conditions. Were August 2001 conditions to occur again, these new pumps would meet their full permitted capacities and exceed the 2001 flow by the amount noted above.

A summary is shown below:

Pump ID	Old Pump		Larger Capacity Pump		Aug 2001 Capacity	Increase (mgd)
	Flow (gpm)	TDH (ft)	Flow (gpm)	TDH (ft)		
Wesel 32	225	350	300	375	175	0.18
Eckerson 71	300	368	300	380	170	0.18
Lakeshore 73*	500	310	700	395	370	0.48

*A copy of each of the permits has been attached for your reference. Note that a review of the permit for Lakeshore 73 indicates this well is permitted for 700 gpm, as opposed to 500 gpm.

If you have any questions or desire additional information, please contact me at 845.623.1500 X2267, or Michael McDonald, Program Manager, at 201.986.4740.

Yours Truly,

Robert F. Raczko, P.E.
Operations Engineer

Att: Water Supply Permits

cc: Sam Rulli, P.E. - RCDOH
Vito Spadavecchia - UWNY
Mike McDonald, P.E. - Black and Veatch
Bill Prehoda, P.G. – LBG

APPENDIX C

CATAMOUNT WELLS 42 AND 54

APPROACH

Two existing wells comprise the Catamount Well Field, Wells 42 and 54 and the NYSDEC listed permitted rates are 510 gpm and 400 gpm, respectively. The Catamount wells tap the underlying unconsolidated sand and gravel aquifer. The historic capacity of the Catamount Well Field declines significantly with time due primarily to iron-related bacteria biofouling and iron hydroxide precipitates clogging the well screens. The declining specific capacity necessitated the rehabilitation of the wells on numerous occasions in order to regain capacity. Currently, both Catamount 42 and 54 exhibit the lowest recorded specific capacities to date.

To provide the ability to rehabilitate the Catamount Well Field wells on a more frequent basis to maintain production capacity, with minimal lost production time, a more efficient specific capacity maintenance program at the Catamount Well Field is being implemented. The capacity maintenance program being conducted includes a thorough rehabilitation of the Catamount wells utilizing carbon dioxide injection (AquaFreed®) with surge block and simultaneous discharge, followed by the installation of carbon dioxide injection pipes into each well. The injection pipes are part of the AquaGard™ system to periodically rehabilitate the well with carbon dioxide injection. The pumps remain in the well during the carbon dioxide injection and are utilized to purge the well after injection. The Aqua Gard™ process allows for more frequent carbon dioxide treatment while minimizing production down time.

The frequency of the Aqua Gard™ treatments will depend on the degree of specific capacity decline noted after the rehabilitation, however we anticipate that the first AquaGard™ injection will potentially occur at Catamount 42 as soon as three months after the current rehabilitation is completed. The frequency of the AquaGard™ rehabilitations will vary depending on the results, with the goal to maintain the maximum specific capacity with no additional permanent loss.

A complete AquaFreed® carbon dioxide injection and surge block rehabilitation were completed at each Catamount 42 and 54 prior to the installation of the Aqua Gard™ system at each well. The full rehabilitations insured the wells are operating at maximum capability prior to implementing the Aqua Gard™ system. The results of the pre-rehabilitation pumping tests conducted indicated the lowest specific capacities recorded to date. The pumping test results also indicated that the pump in Well 54 was operating off curve and inspection of the Well 42 pump showed shaft replacement and column replacement was necessary.

The rehabilitation results indicate that the maximum operating pumping rate at Catamount 42 was increased 25 gpm (from 175 gpm to 200 gpm) and Catamount 54 capacity increased from 135 gpm to 350 gpm The rehabilitation results are similar to those obtained during the last major rehabilitation effort in 2004, but significantly less

than the original capacity. The results of the complete rehabilitations are summarized in the attached historic specific capacity graphs.

The existing pumps at both Catamount 42 and 54 were replaced with new submersible pumps, which were tested during the post-rehabilitation testing, and are operating on curve. The replacement pump curves are attached.

SUBSURFACE TECHNOLOGIES

June 15, 2007

Mr. Vito Spadavecchia
United Water New York
360 W. Nyack Road
West Nyack, NY 10994

RE: Catamount #42A & #54A

Dear Vito,

The new Grundfos 230S400-13 was installed in well #42A on 6/12/07 and a step test was done on 6/13/07. The pump is operating on curve.

A new Berkeley 7T60-350 was installed in well #54A on 6/14/07 and a step test was done on 6/15/07. This pump is operating on curve.

Sincerely,

Steve Catania

Steve Catania
V.P. Operations
Subsurface Technologies, Inc

Attachments

Cc: Bill Prehoda

SC/dc

40 Stone Castle Road, Rock Tavern, NY 12575 845.567.0187 Fax: 845.567.1035 http://www.subsurfacetech.com

Catamount 42
Pump replacement test
6/13/2007

Flow GPM	Pressure PSI	Pumping Level Feet	TDH Feet
0		8.56	
99	340	24.03	809.43
150	310	33.03	749.13
200	269	45.87	667.26
225	250	53	630.5

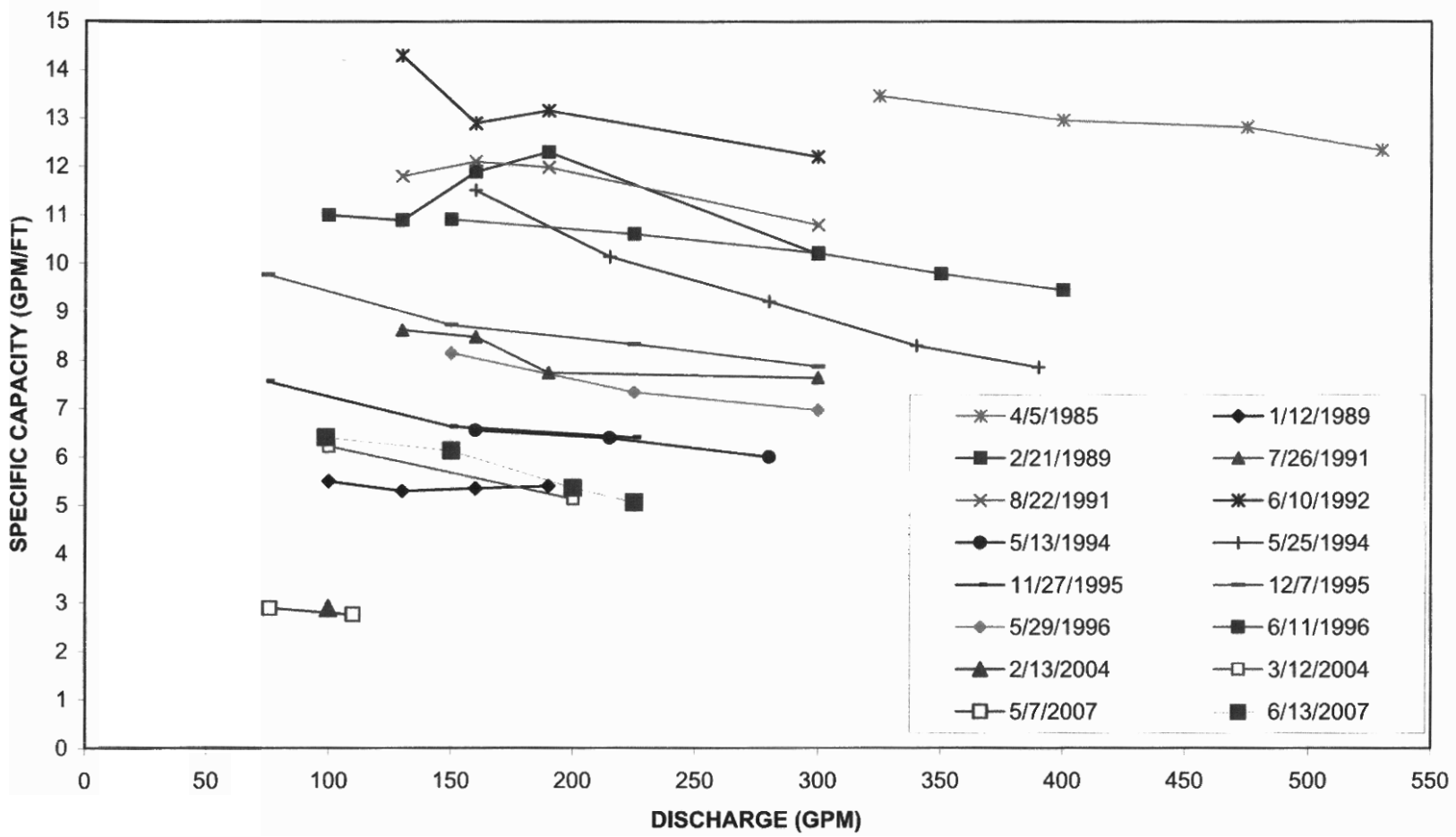
Catamount 54
Pump replacement test
6/15/2007

Flow GPM	Pressure PSI	Pumping Level Feet	TDH Feet
0		7.36	
100	340	23.78	809.18
200	290	42.42	712.32
350	190	71.09	509.99

SPECIFIC CAPACITY AND PUMP CURVES

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

HISTORIC SPECIFIC CAPACITY
CATAMOUNT 42



Catamount #42A

June 1st 2005

GOULDS PROPOSAL NO.	GOULDS S.O. NO.	INQUIRY NO.	CUSTOMER P.O. NO.	P.O. DATE	ITEM NO.	CUSTOMER: United Water New York
PROJECT: Catamount Well No: 42A		SERVICE: #10ILC - 9 Stages		GPM CAPACITY: 300GPM	FT. TDH: 428 TDH	% EFFICIENCY / RPM:

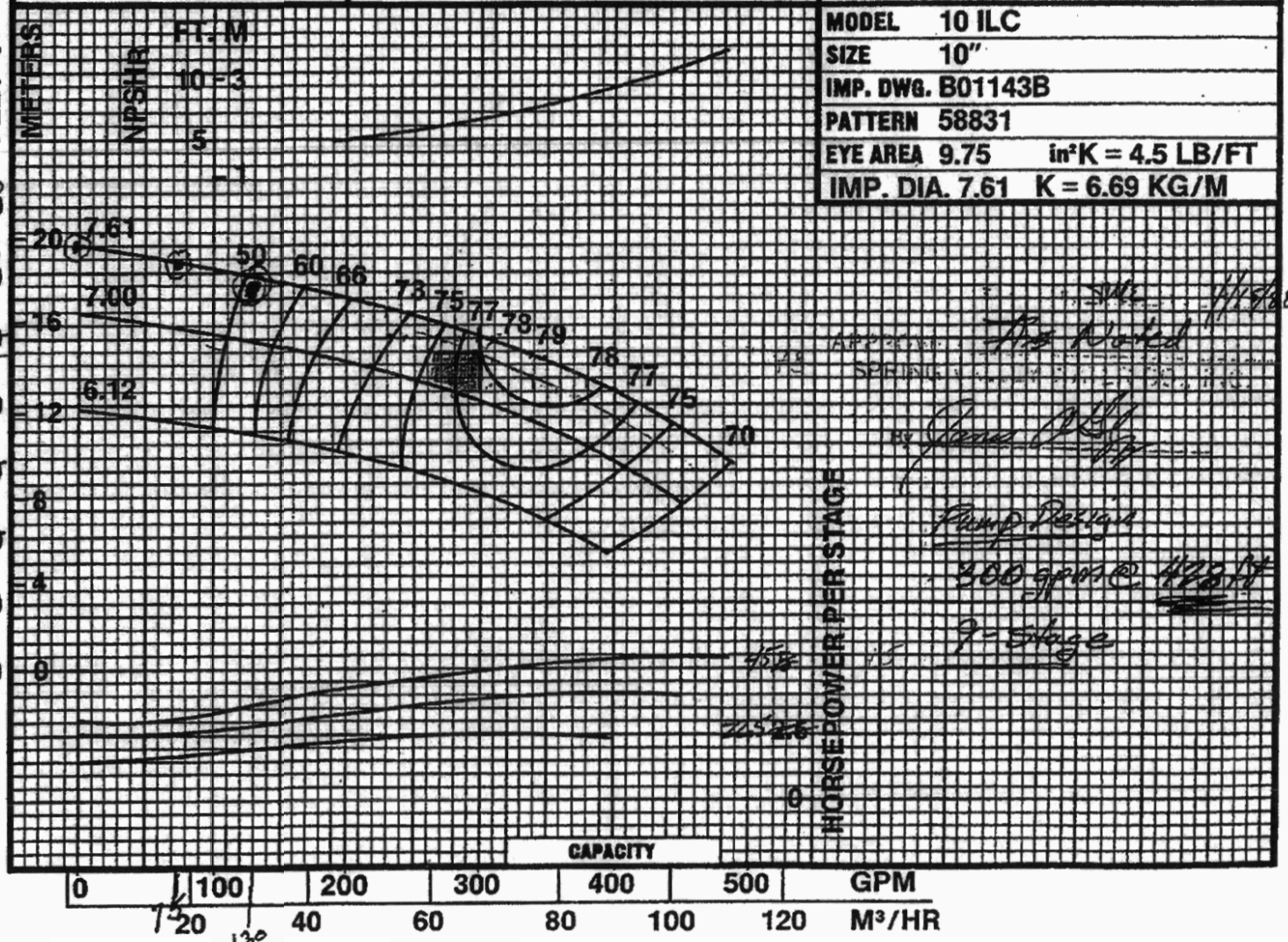
DATE REV. DATE

GOULDS PUMPS, INC. SENECA FALLS, NEW YORK 13148

CENTRIFUGAL PUMP CHARACTERISTICS
BASED ON GOULDS STANDARD CLEARANCES

RPM 1770 **CDS** 3312

MODEL	10 ILC
SIZE	10"
IMP. DWG.	B01143B
PATTERN	58831
EYE AREA	9.75 in²K = 4.5 LB/FT
IMP. DIA.	7.61 K = 6.69 KG/M



Approved
SPRING
By
Pump Design
300 gpm @ 428 ft
9-Stage

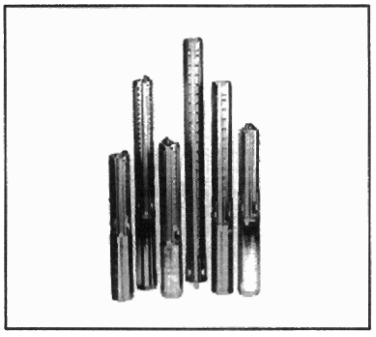
GOULDS PUMPS, INC.
TEXAS DIVISION-STD. PRODUCTS GROUP

Goulds Vertical Turbine Pumps
Performance Curve

5C32.1a

July 1985 (New)

Position	Count	Description	Unit price
	1	**300S500-13**	5463



Product photo could vary from the actual product

Product No.: 14B60013
Multi-stage submersible pump for raw water supply, groundwater lowering and pressure boosting. The pump is suitable for pumping clean, thin, non-agressive liquids without solid particles or fibers.

The pump is made entirely of Stainless steel DIN W.-Nr. 1.4301 DIN W.-Nr. and suitable for horizontal and vertical installation.
The pump is fitted with a built-in non-return valve.

Liquid:

Maximum liquid temperature:	104 °F

Technical:

Speed for pump data:	3450 rpm
Rated flow:	299.4 US gpm
Rated head:	505 ft
Curve tolerance:	ISO 9906 Annex A

Materials:

Pump:	Stainless steel 1.4301 DIN W.-Nr. 304 AISI
Impeller:	Stainless steel 1.4301 DIN W.-Nr. 304 AISI

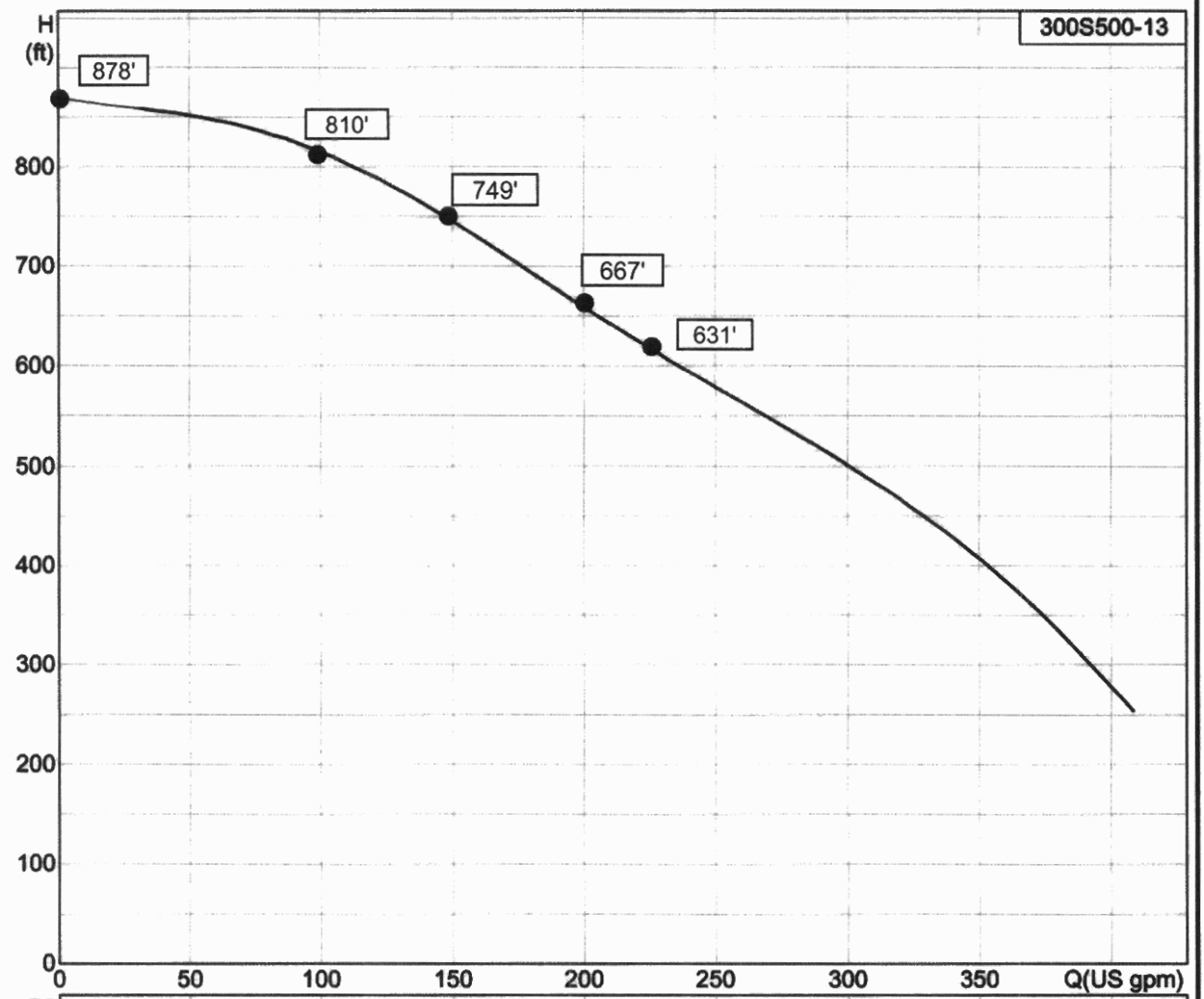
Installation:

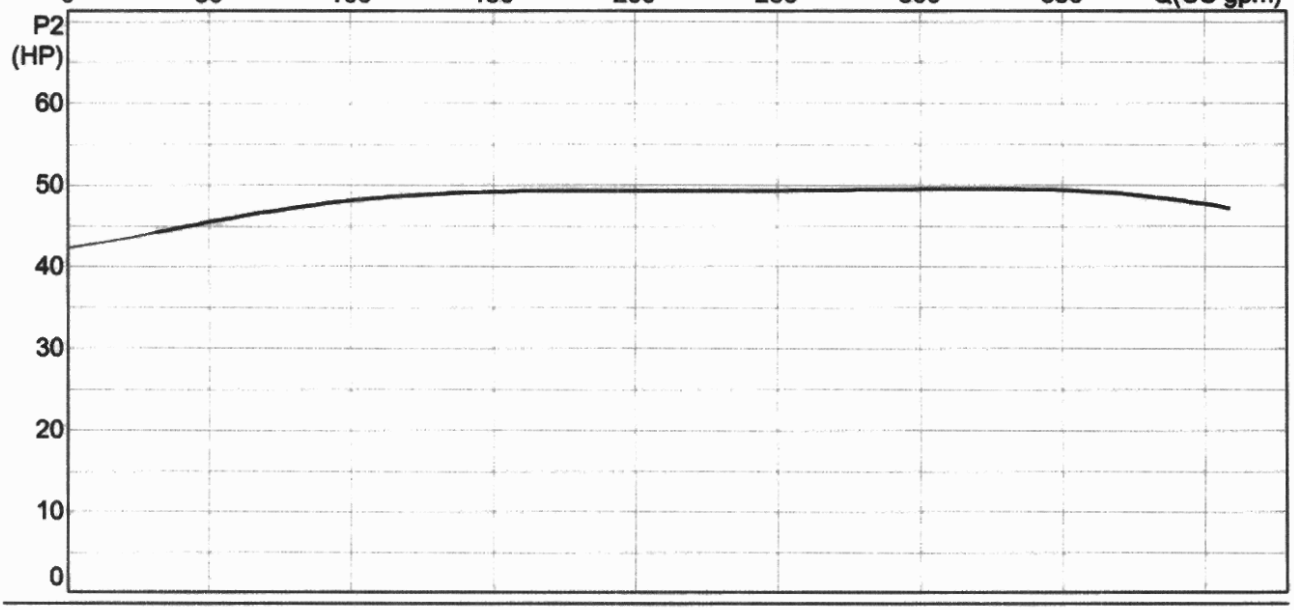
Pump outlet:	4" NPT
Motor diameter:	6 inch
Minimum borehole diameter:	6" in

Electrical data:

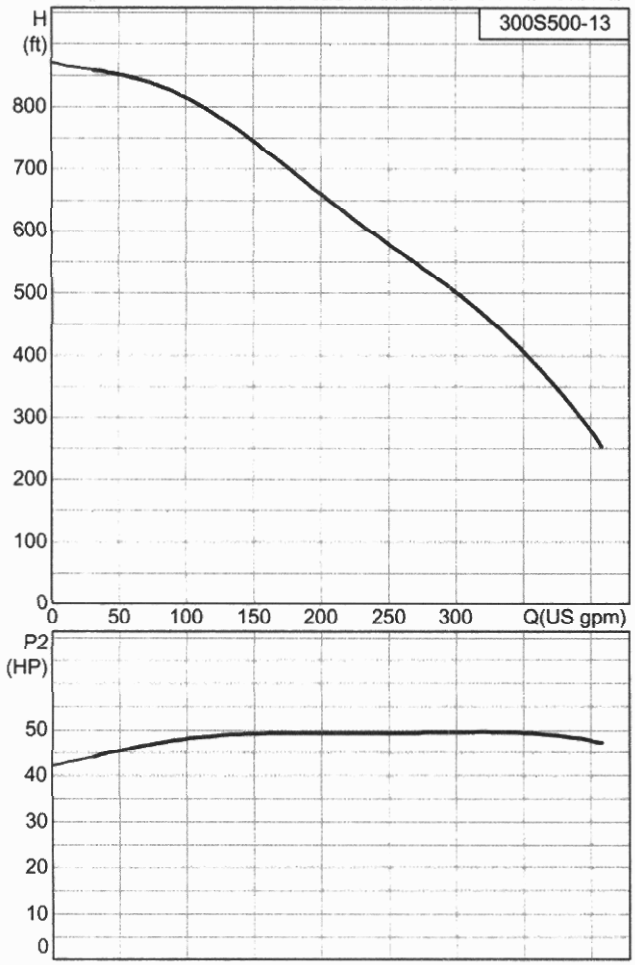
Power (P2) required by pump:	50 HP
Start. method:	direct-on-line

14B60013 300S500-13

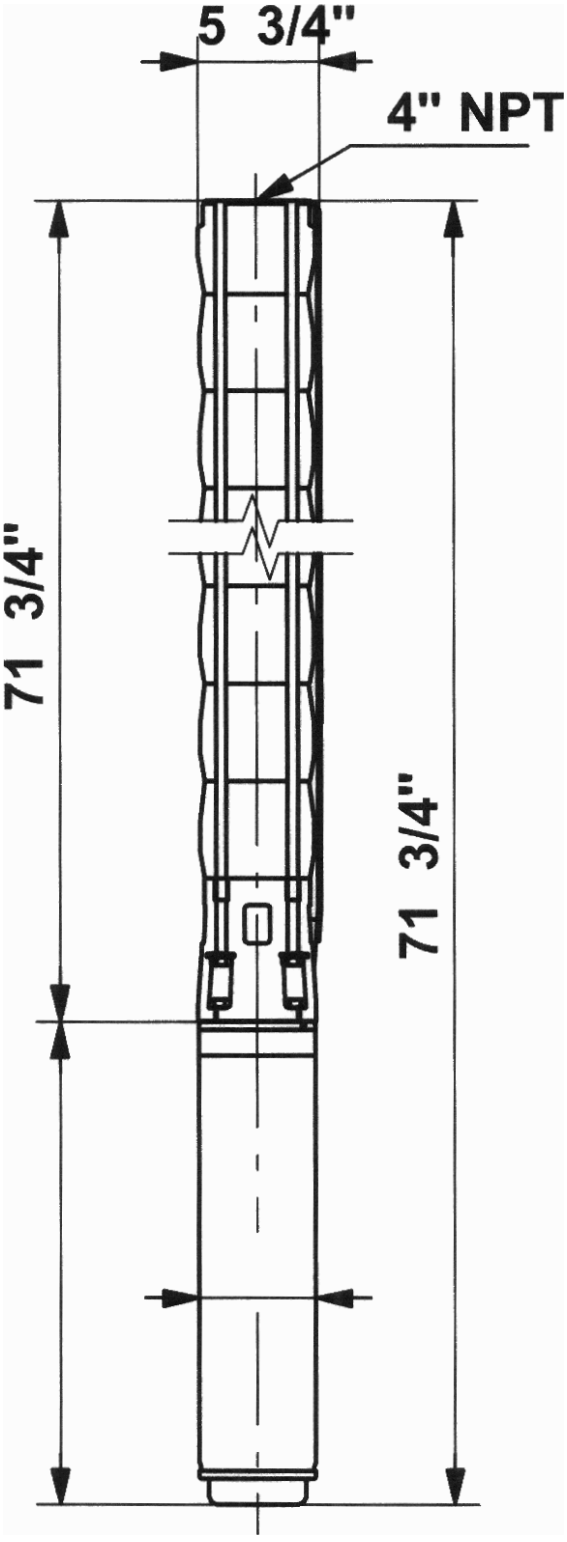




Description	Value
Product name::	300S500-13
Product Number::	14B60013
EAN number::	5700391740961
Technical:	
Speed for pump data:	3450 rpm
Rated flow:	299.4 US gpm
Flow range:	41.2 .. 412 US gpm
Rated head:	505 ft
Curve tolerance:	ISO 9906 Annex A
Stages:	13
Model:	A
Valve:	pump with built-in non-return valve
Materials:	
Pump:	Stainless steel 1.4301 DIN W.-Nr. 304 AISI
Impeller:	Stainless steel 1.4301 DIN W.-Nr. 304 AISI
Installation:	
Pump outlet:	4" NPT
Motor diameter:	6 inch
Minimum borehole diameter:	6" in
Liquid:	
Maximum liquid temperature:	104 °F
Electrical data:	
Applic. motor:	NEMA
Power (P2) required by pump:	50 HP
Start. method:	direct-on-line
Others:	
Sales region:	Namreg



14B60013 300S500-13



All units are [mm] unless otherwise presented.

LEGGETTE, BRASHEARS & GRAHAM, INC.
6 ARROW ROAD, SUITE 103
RAMSEY, NEW JERSEY 07446
800-818-8524
WWW.LBGWEB.COM

Job Code: CATAMOUNT Well Number: 42A ☒ Pumping ☐ Observation Pumping Test of Well: 42A Date: 6, 13, 07

Well Location: Street: RT 202 Town: RAMAPO State: NY

Measurements Taken By: JH

Well Location:	Well Construction:	Well Depth: 70'	Pump Setting / Type:	Pump Installation:	Power Source:
☒ Outdoors	☒ Overburden	☒ Measured ☐ Reported	53' Feet Below TOC	☐ Temporary	☐ Portable Generator
☐ Well Pit	☐ Bedrock	Feet Below TOC	☐ Vertical Turbine	☒ Permanent	☒ Electric Utility
☐ Pump House	☐ Open Hole	Inner Casing Diameter: 12"	☒ Submersible	Pump Manufacturer:	☐ Other:
☐ Basement	☐ Screened	Screen Diameter: 12"	☐ Suction		
☐ Other:	☐ Gravel Packed	Screen Setting: 53' - 68'	☐ Jet	Horsepower / Model:	
	☐ Telescoping ☐ Pipe Size	Drilled By: Date:	☐ Other:		

Type of Test:	Method of Water-Level Measurement:	Method of Flow Measurement:	Distance From Pumping Well (ft): N/A
☐ Constant-Rate	☒ Electric Tape	☐ Flow Meter	Water-Level Measuring Point: M-SCOPE PORT
☒ Step 100, 150, 200, 250	☐ Wetted Tape	☐ - Gallon Bucket/Drum	Static Water Level:
☐ Slug	☐ Airline	☒ x Orifice Weir	Elevation of Monitoring Point: 0.1' ABOVE PUMP BASE
☐ Recovery	☐ Transducer	Orifice Table:	Pump On (Date/Time): 6/13 17:55 Pump Off (Date/Time):
☐ Other:	☐ Other:	☐ Other:	

Date	Time	Elapsed Time (min)	Depth to Water (ft)	Drawdown (ft)	Discharge Rate (gpm)	Notes (Observer, Water Quality, Weather, Discharge Quality, etc.)	Date	Time	Elapsed Time (min)	Depth to Water (ft)	Drawdown (ft)	Discharge Rate (gpm)	Notes (Observer, Water Quality, Weather, Discharge Quality, etc.)
6/13	1740	—	8.66	—		Shut off press = 380 psi		1821	26	32.82	24.16	150	310 psi
								1822	27	32.73	24.07		
	1756	1	32.50	23.84	99			1823	28	32.75	24.09		
	1757	2	26.63	17.97	99	340 psi		1824	29	32.80	24.14		
	1758	3	24.95	16.29	99			1825	30	32.85	24.19	150	
	1759	4	24.30	15.64		52.5 - 54.0 - 62.1 AMPS		1830	35	32.90	24.33		310 psi
	1800	5	24.08	15.42				1835	40	33.13	24.47		TDH = 749' S.C. = 6.13
	1801	6	23.99	15.33				1836	41	38.20	29.54	200	
	1802	7	23.98	15.32	99			1837	42	41.61	32.95		
	1803	8	23.99	15.33				1838	43	43.15	34.49		
	1804	9	24.00	15.34				1839	44	43.98	35.32		
	1805	10	24.02	15.36				1840	45	41.43	35.83	200	269 psi
	1810	15	24.09	15.43		345 psi		1841	46	41.84	36.18		
	1815	20	24.13	15.47	99	TDH = 810' S.C. = 6.40		1842	47	45.11	36.45	200	
	1816	21	29.30	21.04	150			1843	48	45.31	36.65		
	1817	22	32.74	24.48				1844	49	45.41	36.75	200	269 psi
	1818	23	32.54	23.88		302 psi		1845	50	45.50	36.84		
	1819	24	33.20	24.54	150			1850	55	45.80	37.14		269 psi
	1820	25	33.32	24.66				1855	60	45.97	37.31	200	TDH = 667' S.C. = 5.36

LEGGETTE, BRA[illegible]EARS & GRAHAM, INC.
6 ARROW ROAD, SUITE 103
RAMSEY, NEW JERSEY 07446
800-818-8524
WWW.LBGWEB.COM

JOB CODE:

WELL NUMBER: CATAMOUNT 42A ☒ Pumping ☐ Observation

DATE 6 / 13 / 07

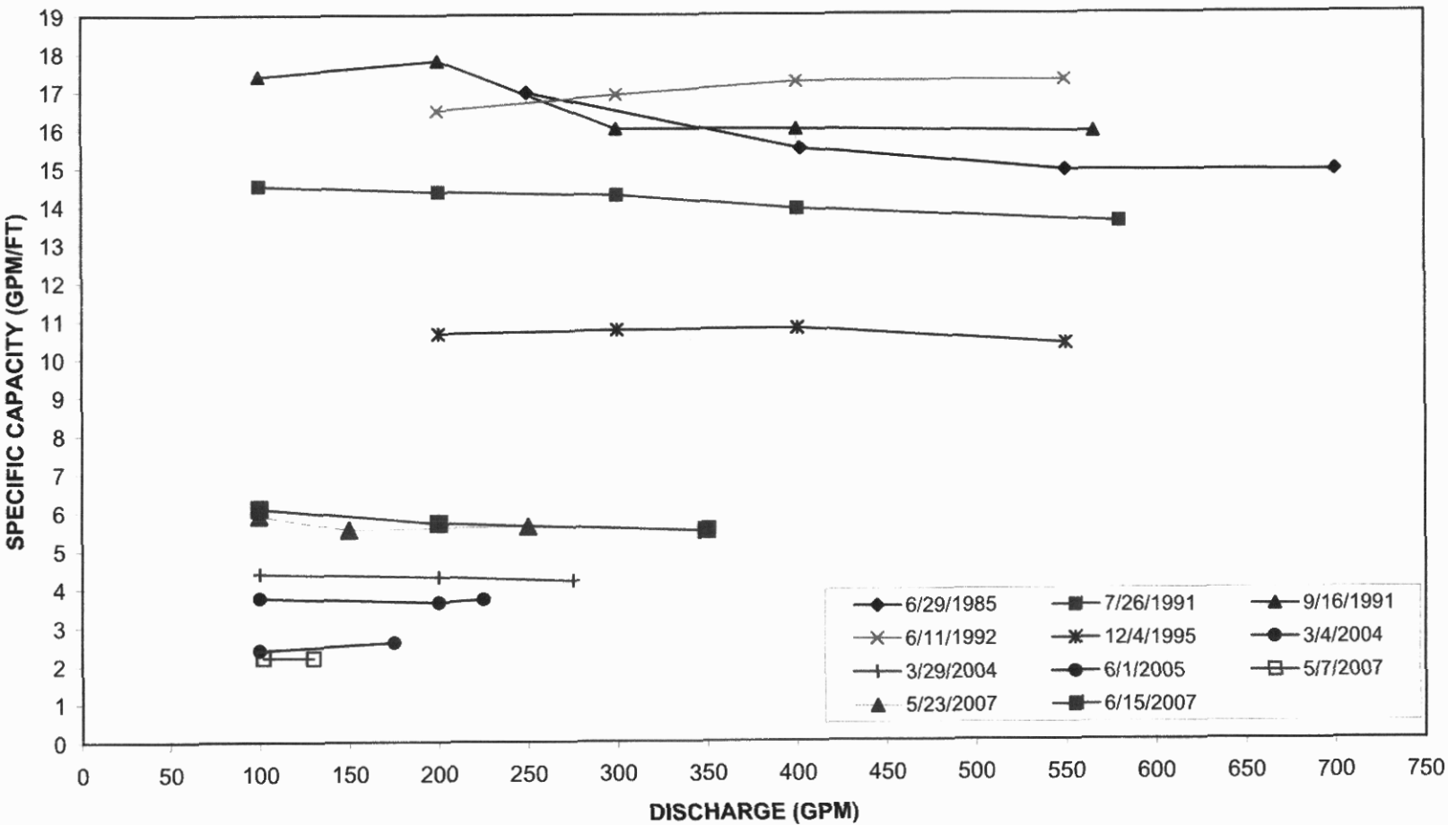
WELL LOCATION: Street: RT 202 Town: RAMAPO State: NY

MEASUREMENTS TAKEN BY: JH

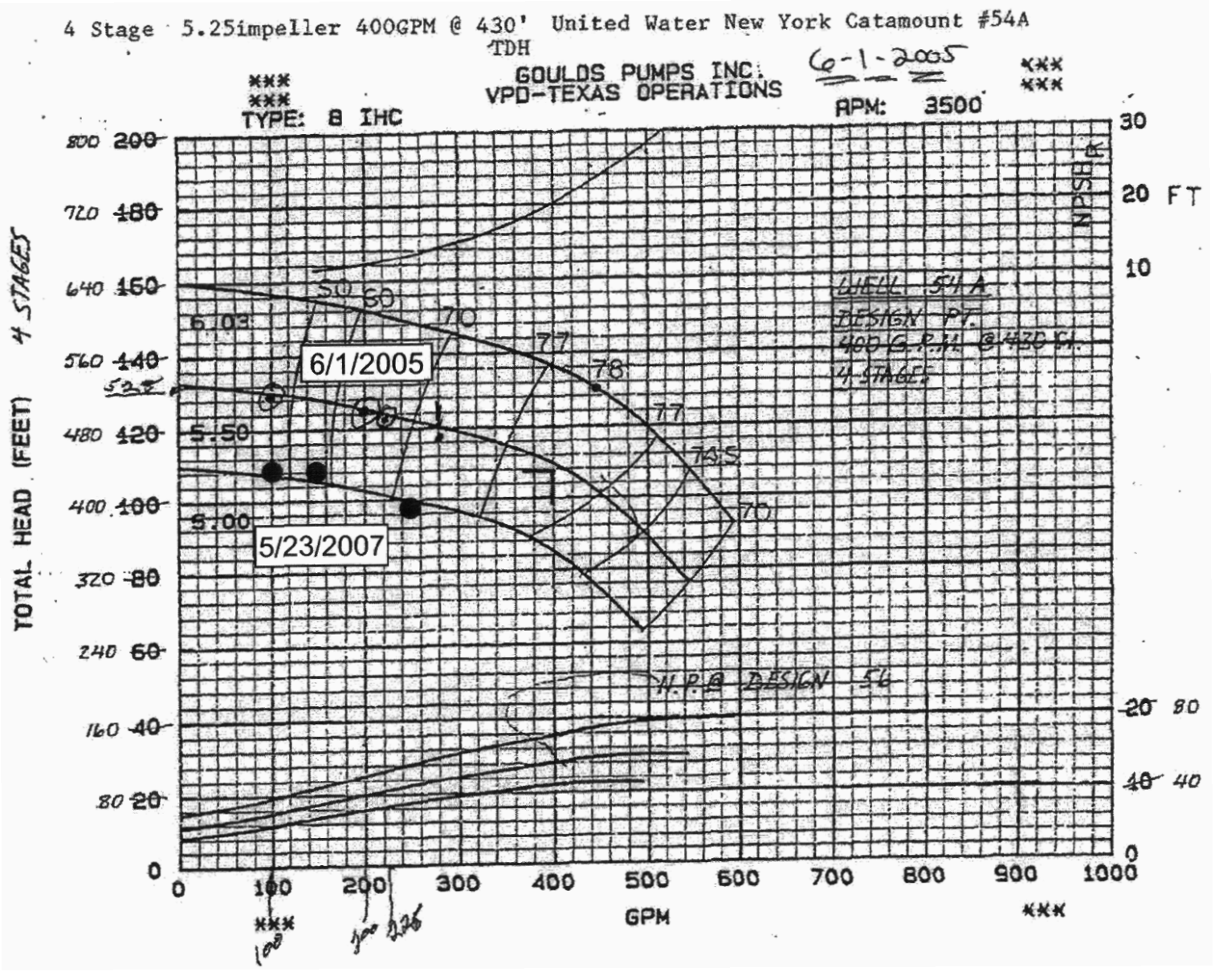
Date	Time	Elapsed Time (min)	Depth to Water (ft)	Drawdown (ft)	Discharge Rate (gpm)	Notes (Observer, Water Quality, Weather, Discharge Quality, etc.)	Date	Time	Elapsed Time (min)	Depth to Water (ft)	Drawdown (ft)	Discharge Rate (gpm)	Notes (Observer, Water Quality, Weather, Discharge Quality, etc.)
6/13	1856	61	48.75	40.09	225								
	1857	62	50.42	41.76									
	1858	63	51.13	42.47		250 psi							
	1859	64	51.67	43.01	225								
	1900	65	52.04	43.38									
	1901	66	52.23	43.57	~								
	1902	67	52.38	43.72	225								
	1903	68	52.47	43.81		250 psi							
	1904	69	52.54	43.88									
	1905	70	52.62	43.96	225								
	1910	75	52.90	44.24		250 psi							
	1915	80	53.10	44.44	225	TAH = 63' S.C. = 5.06							
	RECOVERY					SAMPLED @ 1915							
	1916	1	32.10			TEMP: 56° pH: 6.2							
	1917	2	19.25			TURB: 3.4 CO_2: 160 mg/L							
	1918	3	14.02										
	1919	4	12.63										
	1920	5	11.00										
	1921	6	9.85										
	1922	7	9.42										
	1923	8	9.25										
	1924	9	9.18										
	1925	10	9.13										

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

HISTORIC SPECIFIC CAPACITY
CATAMOUNT 54



LEGGETTE, BRASHEARS AND GRAHAM, INC


4 Stage 5.25impeller 400GPM @ 430' United Water New York Catamount #54A
TDH
GOULDS PUMPS INC.
VPD-TEXAS OPERATIONS
6-1-2005
TYPE: 8 IHC
RPM: 3500
TOTAL HEAD (FEET)
4 STAGES
NPSH ft
HORSEPOWER
GPM
6/1/2005
5/23/2007
DESIGN PT.
400 G.P.M. @ 430 Ft.
4 STAGES
H.P. @ DESIGN 56

Catamount 54 New

New Selection | Reports | Preferences | Feedback | Help |

Berkeley Electronic Catalog

[redacted]

Selection Criteria
- Conditions of Service
- Product Lines
- Pump Size List

Selection Results
- Search Results
- Performance Curve
- Performance Datasheet
- Life Cycle Cost

Units | Curve Preferences | Print | Show Flow #2 | Multi-Speed Curves

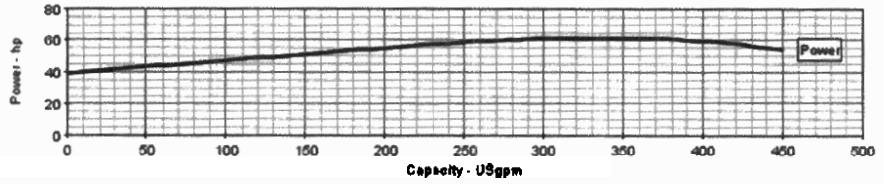
Performance Datasheet | Additional Data

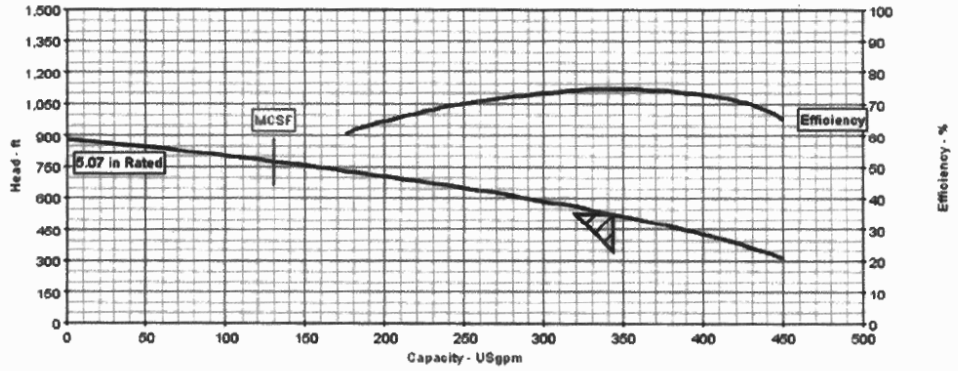
Header Information

Performance Details

Pump size	: 7T60-350		Based on curve number	: 7T60-350(9@5.39x4.75)	
Stages	: 9				
Operating Conditions			**Liquid**		
Flow, rated	343.5	USgpm	Liquid type	: Water	
Head, rated (requested)	526.3	ft	Additional liquid description		
Head, rated (actual)	526.3 ft		Solids diameter, max	0.00	in
Suction pressure, rated / max	0.00	/ 0.00 psi.g	Temperature, max	68.00	deg F
NPSH available (system)	Ample	ft	Fluid density, rated / max	0.998	/ 0.998 SG
Frequency	60	Hz	Viscosity, rated	1.00	cP
Performance			Vapor pressure, rated	0.00	psi.a
Speed criteria	Synchronous	Variable	**Material**		
Pump speed, rated	set @ 3,450	rpm	Material requested	Auto	
Impeller diameter, rated	5.07	in	Material selected	: Not specified	
Impeller diameter, maximum	: 5.07 in		**Pressure Data**		
Impeller diameter, minimum	: 5.07 in		Maximum working pressure	: 382.8 psi.g	
Efficiency	: 74.73 %		Maximum allowable working pressure	: 550.0 psi.g	
NPSH required / margin required	: N/A / 0.00		Maximum allowable suction pressure	: N/A	
Specific speed / Suction specific speed	: N/A		Hydrostatic test pressure	: N/A	
MCSF	: 130.0 USgpm		**Driver & Power Data**		
Head, maximum, rated diameter	: 884.6 ft		Driver sizing specification	Rated power	
Head rise to shutoff	: N/A %		Margin over specification	0.00 %	
Flow, best eff. point (BEP)	343.5 USgpm		Service factor	✓ Use service factor 1.15	
Flow ratio (rated / BEP)	: 100.00 %		Power, hydraulic	: 45.57 hp	
Diameter ratio (rated / max)	: 100.00 %		Power, rated	: 60.97 hp	
Cutwater ratio (rated / cutwater)	: N/A		Power, maximum, rated diameter	: 61.06 hp	
Head ratio (rated dia / max dia)	100.00 %		Power reserve (rated / max / sizing spec)	: 13.17 / 13.00 / 13.17 %	
Viscous coefficients (CQ / CH / CE)	: 1.00 / 1.00 / 1.00		Minimum recommended motor rating	: 60.00 hp / 44.74 kW (Fixed)	
Selection status	: Acceptable				

Performance Curve





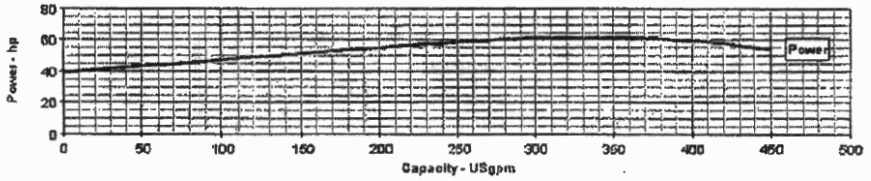
Catamount 54 New

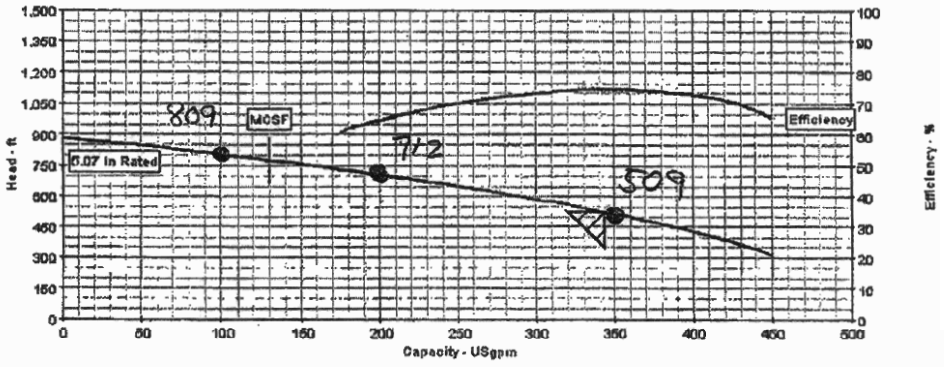
▶ Header Information

▼ Performance Details

Pump size	: 7T60-350		Based on curve number	: 7T60-350(9@5.39x4.75)	
Stages	: 9				
Operating Conditions			**Liquid**		
Flow, rated	343.5	USgpm	Liquid type	: –Water	
Head, rated (requested)	526.3	ft	Additional liquid description		
Head, rated (actual)	: 526.3 ft		Solids diameter, max	0.00	in
Suction pressure, rated / max	0.00 / 0.00	psi.g	Temperature, max	66.00	deg F
NPSH available (system)	Ample	ft	Fluid density, rated / max	0.998 / 0.998	SG
Frequency	60 Hz		Viscosity, rated	1.00	cP
Performance			Vapor pressure, rated	0.00	psi.a
Speed criteria	Synchronous Variable		**Material**		
Pump speed, rated	set @ 3,450	rpm	Material requested	Auto	
Impeller diameter, rated	set @ 5.07	in	Material selected	: Not specified	
Impeller diameter, maximum	: 5.07 in		**Pressure Data**		
Impeller diameter, minimum	: 5.07 in		Maximum working pressure	: 382.8 psi.g	
Efficiency	: 74.73 %		Maximum allowable working pressure	: 550.0 psi.g	
NPSH required / margin required	: N/A / 0.00		Maximum allowable suction pressure	: N/A	
Specific speed / Suction specific speed	: N/A		Hydrostatic test pressure	: N/A	
MCSF	: 130.0 USgpm		**Driver & Power Data**		
Head, maximum, rated diameter	: 884.6 ft		Driver sizing specification	Rated power	
Head rise to shutoff	: N/A %		Margin over specification	0.00 %	
Flow, best eff. point (BEP)	: 343.5 USgpm		Service factor	Use service factor 1.15	
Flow ratio (rated / BEP)	: 100.00 %		Power, hydraulic	: 45.57 hp	
Diameter ratio (rated / max)	: 100.00 %		Power, rated	: 60.97 hp	
Cutwater ratio (rated / cutwater)	: N/A		Power, maximum, rated diameter	: 61.06 hp	
Head ratio (rated dia / max dia)	: 100.00 %		Power reserve (rated / max / sizing spec)	: 13.17 / 13.00 / 13.17 %	
Viscous coefficients (CQ / CH / CE)	: 1.00 / 1.00 / 1.00		Minimum recommended motor rating	: 60.00 hp / 44.74 kW (Fixed)	
Selection status	: Acceptable				

▼ Performance Curve





REGULATORY CORRESPONDENCE

NEW YORK STATE DEPARTMENT OF HEALTH
Bureau of Water Supply Protection

Application of Approval of Plans for Public Water Supply Improvement

Applicant	Location of works (C,V,T)	County	Water District (specific area served)
United Water New York	Ramapo (T)	Rockland	United Water New York

Type of Ownership

☐ Municipal ☐ Commercial ☐ Private - Other ☐ Authority ☐ Interstate
☐ Private - Institutional ☐ Federal ☐ International
☐ Industrial ☑ Water Works Corp. ☐ Board of Education ☐ State ☐ Native American Reservation

☑ Modifications to existing system. If checked, provide PWS ID # NY NY4303673

☐ New System. If checked, provide capacity development (viability) analysis*

*If this project involves a new system, new water district, or a district extension provide boundary description location details in digital format on CD or Floppy Disk. If digital boundary location details are not available provide a text description.

☐ Digital GIS Data Provided ☐ Digital CAD Data Provided ☐ Other Digital Data Provided ☐ Text Description Provided ☑ N/A

Funding Source ☑ Private ☐ DWSRF** ☐ Federal ☐ Other

If DWSRF is checked, please provide DWSRF #

Estimated Project Cost $

Source	Treatment	Storage	Distribution
Pumping	**Engineering**	**Legal/Permitting**	**Total**
$25,000.00			

Type of Project

☐ Source ☐ Transmission ☐ Corrosion Control ☑ Pumping Unit ☐ Chlorination ☐ U.V. Light Disinfection ☐ Fluoridation ☐ Other Treatment ☐ Distribution ☐ Storage ☐ Other

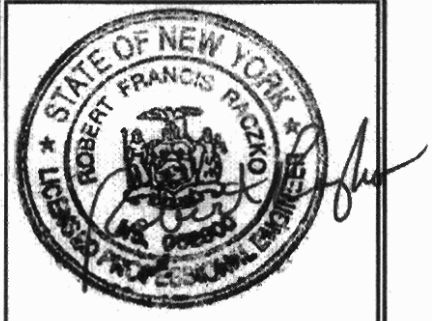
Project Description: Replace pumps and motors at two wells at the UWNY catamount Wellfield (Catamount 42 and 54) to provide more flow for peak demand.

Total Population of Service Area	298,000
% population actually served	90
% population affected by project	5

Latest Total Consumption Data (in MGD)

Average Day	Year
31.5	2006
Maximum Day	**Year**
44.8	2006
Peak Hour	**Year**
57.2	2006

NYS Professional Licensed Engineer Stamp and Signature***



Name and Address of Design Engineer

Robert F Raczko, P.E.
UWNY
360 West Nyack Road
West Nyack, NY 10994
845-623-1500 x2267 email: bob.raczko@unitedwater.com

Robert Raczko
Signature of Applicant

6/12/2007
Date

NOTE: All applications must be accompanied by 3 sets of plans, 3 sets of specifications and an engineer's report describing the project in detail. The project must first be discussed with the appropriate city, county, district or regional public health engineer. Signature by a designated representative *must* be accompanied by a letter of authorization.

*Additional information regarding capacity development may be found at: http://www.health.state.ny.us/nysdoh/water/main.htm
*Current DWSRF project listings may be found at: http://www.health.state.ny.us/nysdoh/water/main.htm
**By affixing the stamp and signature the Design Engineer agrees that the plans and specifications have been prepared in accordance with the most recent version of the recommended standards for water works and in accordance with the NYS Sanitary Code.

OH - 348 (02/05)

APPENDIX D

SYSTEM WELL CAPACITY MODIFICATIONS

Donald F. Distante, P.E.
Director, Master Planning

UNITED WATER
700 Kinderkamack Road, Oradell, NJ 07649
Tel: 201.986.4749 • Fax: 201 225.5113
donald.distante@unitedwater.com

January 19, 2007

Rockland County Department of Health
Environmental Health Division
Dr. Robert L. Yeager Health Center
50 Sanatorium Rd
Pomona, New York 10970

Subject: System well capacity modification

Dear Dr. Miller:

Attached please find a report from Leggette, Brashears & Graham, Inc. (LBG) regarding the capacity of United Water New York's (UWNY) system wells. The existing reported capacity of the system wells is 20.5 mgd, which was based on the actual production amounts attained during the 3-day historical peak demand days in 2001. For several reasons, as explained in detail in LBG's report, we are requesting that the peak capacity be modified from 20.5 mgd to 21.5 mgd (an increase of 1.0 mgd, sustainable for two 3-day periods). Note that LBG's report/table refers to the 2001 capacity of 20.6 mgd. This was the actual system well production capacity in 2001 but it was reported as 20.5 mgd just for simplicity. The primary reasons for these modifications are as follows:

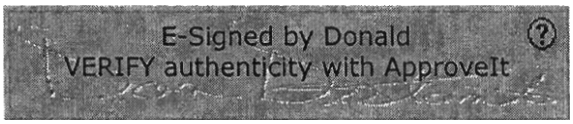
- The achieved capacity in 2001 were without the improvements made at Nanuet 13/14 and Viola 28/106
- One well (Germonds 21) was not in-service in 2001 and has since been placed into service
- Some wells were shutoff for periods of time during the August 2001 peak event (Spring Valley 3, Tappan 20 and New Hempstead 24). In reviewing the data it was determined that these wells had ample submergence to allow them to operate. In speaking to the operators about this, the issue of excessive pressure has been raised as one potential reason for shutting them down. To address this, we applied the hydraulic model using the capacities indicated in LBG's letter with an overall system demand of 47.9 mgd (i.e., the 2007 projection). The results indicate that 21.5 mgd can be produced. The model includes the recent distribution system improvements (i.e., East-to-West transmission main and the Eckerson Rd. Booster pump) as well as Letchworth WTP addition which have significantly helped transmit the water produced to the needed areas within acceptable pressures.

This requested modification is an important element of UWNY's ability to meet the June 15, 2007 volume commitment of 1.5 mgd. As you are aware, two other projects that are part of our short-term supply strategy (Sparkill Air Stripper and Blaisdell Pump Station) are still under review by RCDOH. Therefore, to assist UWNY with meeting this important water supply target,

we would greatly appreciate a determination on the attached package at your earliest convenience.

We look forward to working with you on this project. LBG and UWNY would be pleased to meet with you to discuss this further, if necessary.

Yours Truly,



Donald Distante, PE
Director, Master Planning

cc:
Michael Pointing, General Manager of UWNY
John Dillon, Corporate Attorney UW
Michael McDonald, P.E., Program Manager, B&V
Alan Weland, P.E., Director of Engineering UWNY
Gary Albertson, P.E. Vice President, UW

LEGGETTE, BRASHEARS & GRAHAM, INC.

PROFESSIONAL GROUND-WATER AND ENVIRONMENTAL ENGINEERING SERVICES

6 ARROW ROAD, SUITE 103
RAMSEY, NJ 07446
201-818-0700
FAX 201-818-0505
www.lbgweb.com

January 18, 2007

Mr. Don Distante, P.E.
United Water New York
700 Kinderkamack Road
Oradell, NJ 07649

RE: Summary of Well Supply Contribution to 2001 System Drought Yield
United Water New York
Rockland County, New York

Dear Mr. Distante:

As per your request, Leggette, Brashears & Graham, Inc. (LBG) has completed a review of the United Water New York (UWNY) well-production data for 2001, relative to system capacity during droughts. The 2001 data were utilized since it corresponds to a historical peak demand during a period of very dry weather. The purpose of the review was to evaluate overall yield contribution of the wells to the UWNY system during peak demand periods (considered over the course of three successive days) under drought conditions such as those exhibited during 2001.

Based on the available SCADA-recorded information, the peak (3-day) UWNY system demand during the 2001 drought occurred on August 8, 9, and 10. A summary of the corresponding daily pumpage ("flow" rate) data, expressed in gallons per minute (gpm), is provided as Table 1. The "Adjusted Peak Capacity" column presented in Table 1, reflects the actual average rates for each well reported for the three day period in August 2001, rounded to the nearest 5 gpm. Totaling the average flow rate for each of the UWNY Wells that were in production during the August 2001 peak demand period, yields a well production total of 20.6 million gallons per day (mgd).

The well production total of 20.6 mgd represents well-pumpage corresponding to the maximum operational system demand at that time, and does not represent the maximum cumulative well yield that is currently available. Based on the currently existing pump, treatment and well conditions, and available aquifer yield, a greater amount of cumulative yield is available. The basis for this conclusion regarding available well capacity is presented by the following discussion regarding Spring Valley Well 3, Tappan 20,

and New Hempstead 24, which were reportedly not pumped either at all or consistently during the targeted August 2001 peak period at the respective potential peak capacity.

The submergence data for Spring Valley Well 3 and Tappan 20 indicate that the utilized pumping rates over the three-day period were at some point decreased to a flow rate below the respective potential capacities, though no adverse conditions assumed as a basis for this decision were reported (see respective graphs presented in Attachment I). As such, the Adjusted Peak Capacity values indicated in Table 1 for Spring Valley Well 3 and Tappan 20, are based on the respective peak flow rate use during the corresponding three day period (145 gpm and 115 gpm, respectively).

As for New Hempstead 24, a peak flow rate of 418 gpm was noted for the August 2001 period. However, New Hempstead 18 (which with New Hempstead 24, comprise the local well field) was being pumped during this same time at 880 gpm and exhibited minimal submergence (see respective graphs presented as Attachment I). In consideration of the interference effects that have historically existed between these two wells, and the reported conditions that prevailed during the August 2001 period, the New Hempstead Well Field was capable of a cumulative yield of 1,200 gpm, which could have also been accomplished by pumping each well at approximately 600 gpm. As such, 600 gpm has been indicated for each of these wells in the Adjusted Peak Capacity column of Table 1. Further support of this capacity is that these two wells produced an average of 1,434 gpm during the 3-day peak demand event that occurred from August 3 through 5, 2005. This was also a dry period, albeit of shorter duration than that of 2001.

In addition to the three wells discussed above, three other UWNY Wells that reportedly were not utilized at the corresponding peak capacity over the three-day period in August 2001, by virtue of not being in service, are: Nanuet 14; Germonds 21 and Viola 106. Nanuet 14 was not in service during this time due to treatment system work which precluded the ability for it to be pumped. Germonds 21 was not in service as it is a relatively low-capacity well and at the time not considered crucial to have available. Viola 106 was not in service in early August 2001, due to clear-well construction activities for air removal. This well was returned to service in late August 2001.

In an effort to project the adjusted peak capacity during a drought, the flow and submergence data for Nanuet 13 and Nanuet 14 (comprising the local well field) collected in 2005 indicate average pumping rates of 390 gpm and 242 gpm, respectively, during the peak demand period in August 2005 (Attachment I). During this time frame, Nanuet 14 was not pumped consistently at 242 gpm, but at daily average rates ranging from 110 gpm to 312 gpm. The available submergence data and recorded interference effects with Nanuet 13, indicate that Nanuet 14 was capable of being pumped consistently at a rate of 312 gpm during that peak demand period. Thus, the Adjusted Peak Capacities for Nanuet 13 and 14 presented by Table 1 reflect the 2005 data, and are 390 gpm and 310 gpm, respectively, which equates to a 3-day peak demand period well-field yield of 700 gpm.

Germonds 21 was not in service in 2001, and flow data is absent for the peak demand period of August 2005. However, submergence data for this time period indicates that the well was in service. Recent well test results indicate that Germonds 21 is capable of being pumped at 150 gpm during peak

demand periods, and conservatively meeting current operating demands at 90 gpm. As such, the conservative operating demand (90 gpm) for Germonds 21 was assumed as the respective Adjusted Peak Capacity value provided in Table 1.

Submergence data for 2001 and 2005 indicate that if Viola 106 had been in service during the three-day demand period in August 2001, the well would have been capable of being pumped at 538 gpm, which is the average demand rate utilized in 2005 (see respective graphs presented as Attachment I). Thus, based on the flow rate and submergence data recorded for 2005, and the interference effects which occur between Viola 28 and Viola 106 (both comprise the local well field), the Adjusted Conservative Peak capacity of the Viola Well Field is 990 gpm (i.e., based on the 2005 data, which indicate Viola 28 at 450 gpm, and Viola 106 at 540 gpm).

Based on the available UWNY SCADA flow and submergence data, and the above discussion, the total Adjusted Peak Capacity for the active wells comprising the UWNY system during drought conditions (as exhibited in 2001 and 2005) is 21.5 mgd. This total does not include additional well capacities that may be available in the event that pump size and setting limitations relative to residual available submergence are compensated for at selected UWNY Wells.

If you have any questions or need additional information, please call.

Very truly yours,

LEGGETTE, BRASHEARS & GRAHAM, INC.

Bill Prehoda

Bill Prehoda, PG
Hydrogeologist/Sr. Associate

Frank Getchell

Frank Getchell, PG
Hydrogeologist/Vice President

BP:pw
Attachments

Distribution: M. McDonald; B&V

TABLE

TABLE 1

United Water New York
Rockland County, New York

System Wells Peak Flow 2001

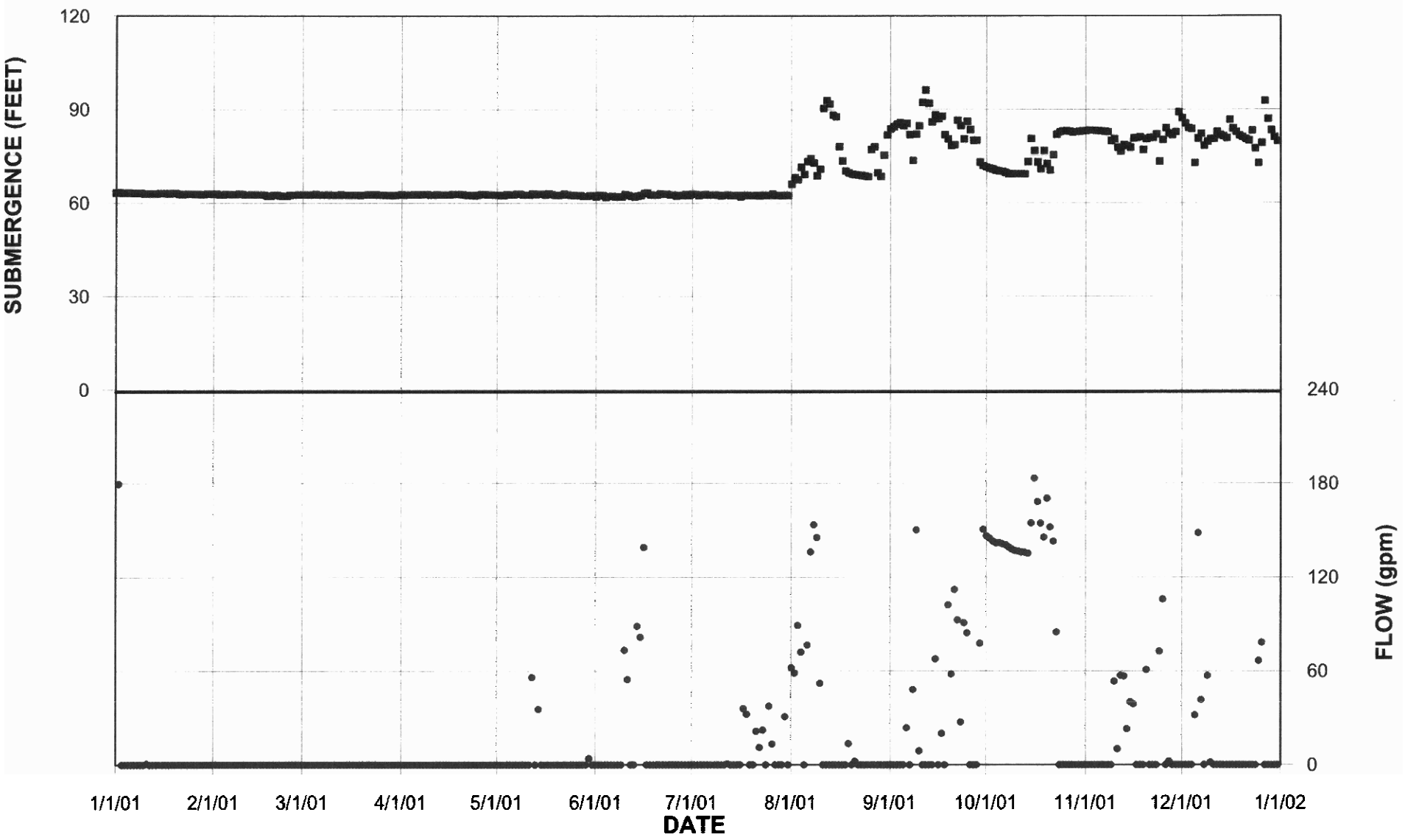
Well	Pressure District	8/8/2001	8/9/2001	8/10/2001	Average	Adjusted Peak Capacity[1]
			Values reported in gallons per minute			
Spring Valley 1A	10	559	545	546	550	550
Spring Valley 3	10	145	52	0	66	145
Spring Valley 4	10	107	272	245	208	210
Spring Valley 6	10	399	390	391	393	390
Spring Valley 17	10	408	400	404	404	400
SVWF Total					*1621*	*1695*
Nanuet 13	10	476	476	425	459	390
Nanuet 14	10	0	0	0		310
Nanuet Total					*459*	*700*
Blauvelt 15	10	333	332	331	332	330
Tappan 16	10	211	193	189	198	200
Tappan 20	10	53	115	101	90	115
Tappan Total					*287*	*315*
Bardonia 19	10	152	128	155	145	145
Germonds 21	10	0	0	0		90
Pearl River 22	10	93	94	89	92	90
New City 23	10	270	231	242	248	250
Wesel Road 32	10	178	179	171	176	175
Norge 64	10	363	365	319	349	350
Elmwood 66	10	241	241	240	241	240
Lake Shore 73	10	408	353	345	369	370
West Gate 79	10	126	126	125	126	125
Grotke 83	10	149	147	147	148	150
Total PD 10:	***20***				*4591*	*5025*
Total PD 10 (mgd)					*6.6*	*7.2*
Saddle River 53	95	437	436	413	429	430
Pascack 65	95	430	422	427	426	425
Pinebrook 69	95	447	449	425	440	440
Birchwood 70	95	165	165	163	164	165
Eckerson 71	95	165	169	155	163	165
Eckerson 82	95	254	251	248	251	250
Total PD 95	***6***				*1874*	*1875*
Total PD 95 (mgd)					*2.7*	*2.7*
New Hempstead 18	20	953	775	919	882	600
New Hempstead 24	20	0	418	24	147	600
New Hempstead Total					*1030*	*1200*
Tallman 26	20	439	440	436	438	440
Ramapo 27	20	925	928	916	923	925
Ramapo29A	20	716	712	709	712	710
Ramapo Total					*1635*	*1635*
Viola 28	20	825	957	1213	998	450
Viola 106	20	0	0	0	0	540
Viola Total					*998*	*990*
Monsey 30	20	230	231	229	230	230
Monsey 31A	20	200	201	199	200	200
Monsey Total					*430*	*430*
Pomona 37	20	181	179	149	170	170
Pomona 38	20	292	293	291	292	290
Pomona Total					*462*	*460*
Catamount 42A	20	173	174	172	173	175
Catamount 54A	20	218	218	216	217	215
Catamount Total					*390*	*390*
Nottingham 55	20	410	411	408	410	410
Willow Tree 56	20	661	655	650	655	655
Grandview 67	20	194	194	197	195	195
Grandview 78	20	194	193	160	182	180
Grandview Total					*378*	*375*
Cherry Lane 68	20	330	331	328	330	330
Rustic 72	20	448	449	447	448	450
Total PD 20	***19***				*7604*	*7765*
Total PD 20 (mgd)					*10.9*	*11.2*
Garnerville 46	40	0	0	0		
Thiells 50	40	37	38	38	38	40
Thiells 51	40	219	219	219	219	220
Total PD 40					*257*	*260*
Total PD 40 (mgd)					*0.4*	*0.4*
Total System Wells (gpm)					*14326*	*14925*
Total System Wells (mgd)					*20.6*	*21.5*

Note: (1) Values indicated for Spring Valley Well 3, Tappan 20, New Hempstead 18 and 24, Nanuet 13 and 14, Germonds 21, and Viola 28 and 106, are reflective of 2005 peak demand period data as discussed in the January 18, 2007 letter.

ATTACHMENT

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

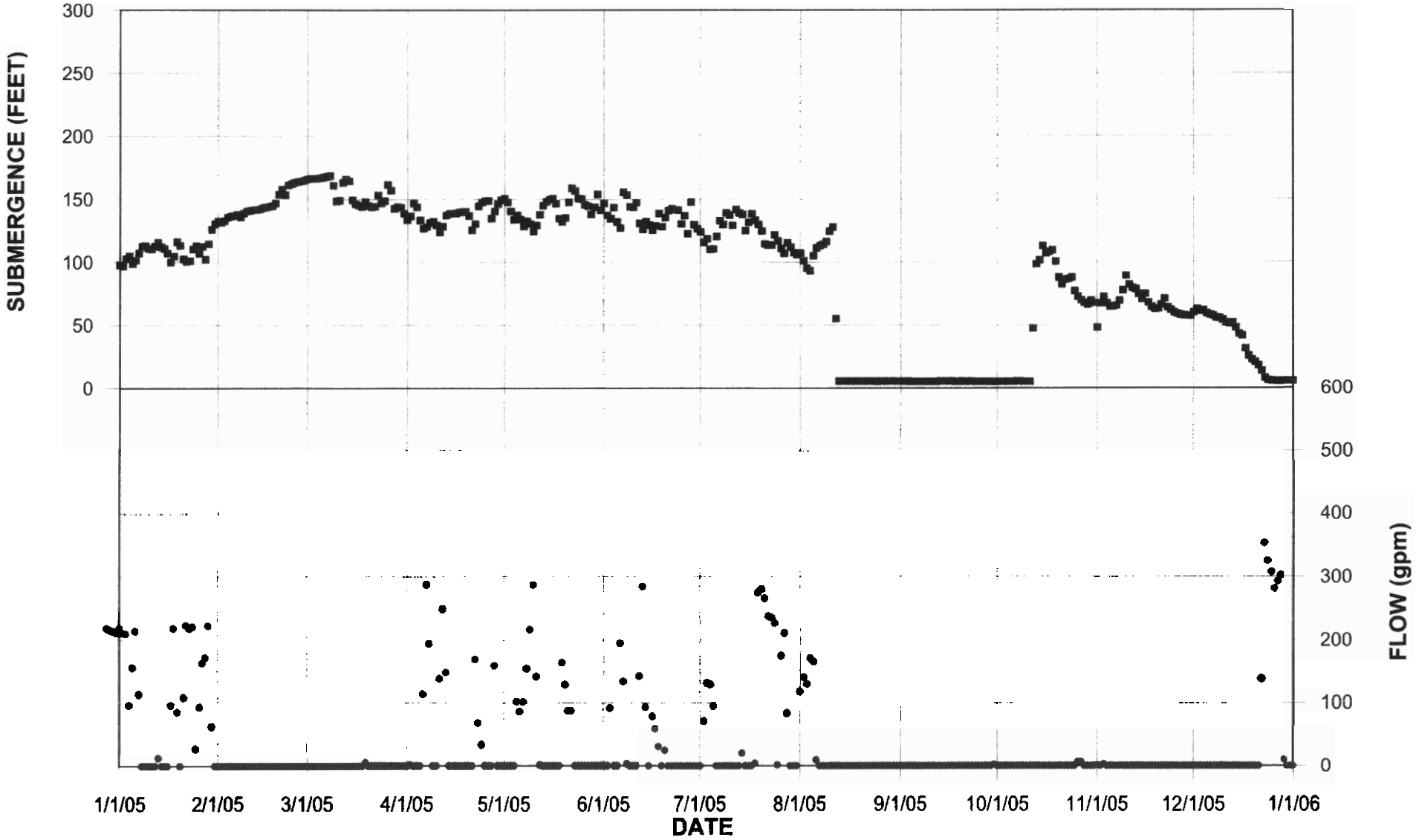
SPRING VALLEY WELL 3
SCADA FLOW AND SUBMERGENCE DATA - 2001



Leggette, Brashears & Graham Inc.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

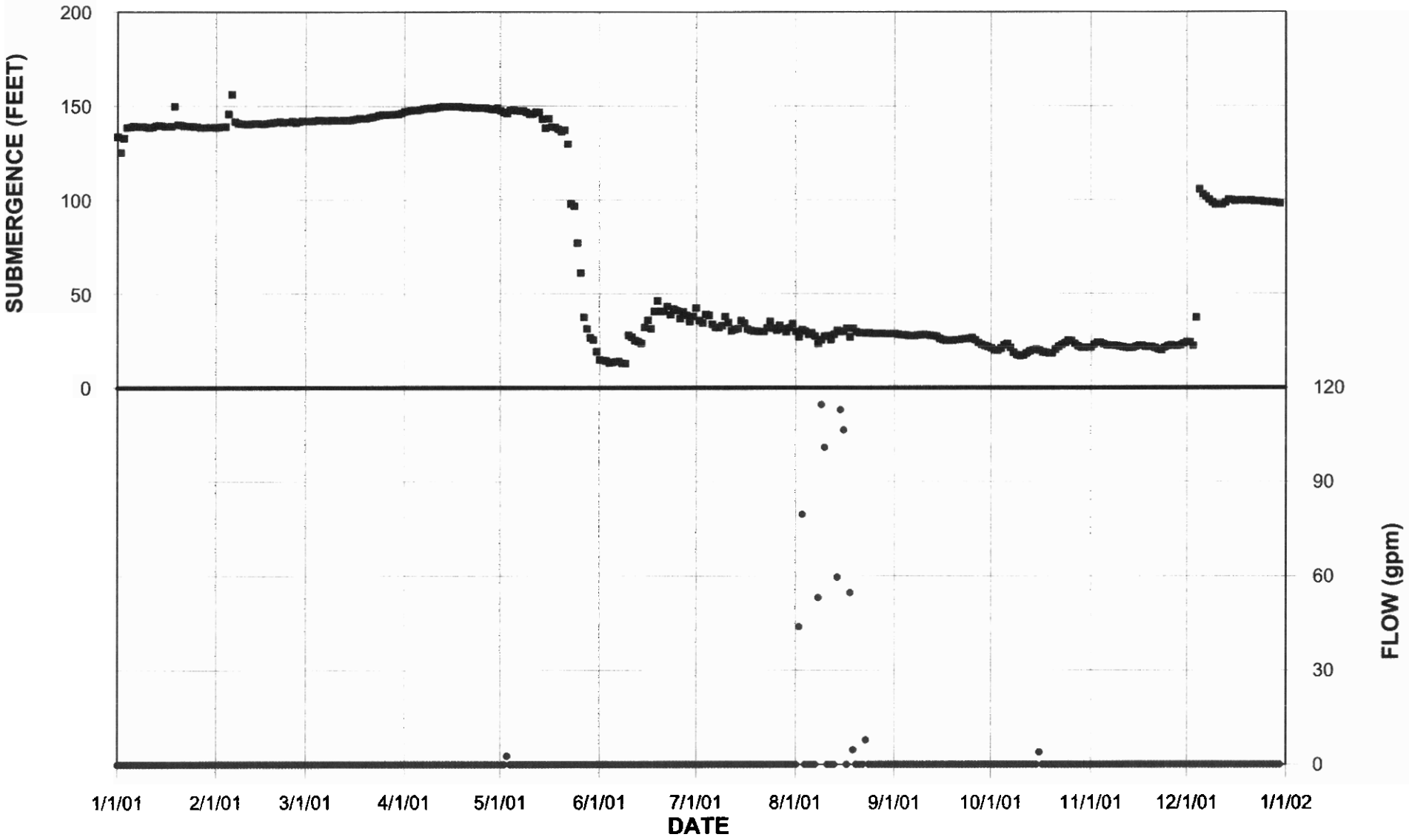
SPRING VALLEY WELL 3
SCADA FLOW AND SUBMERGENCE DATA 2005



Leggette, Brashears & Graham Inc.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

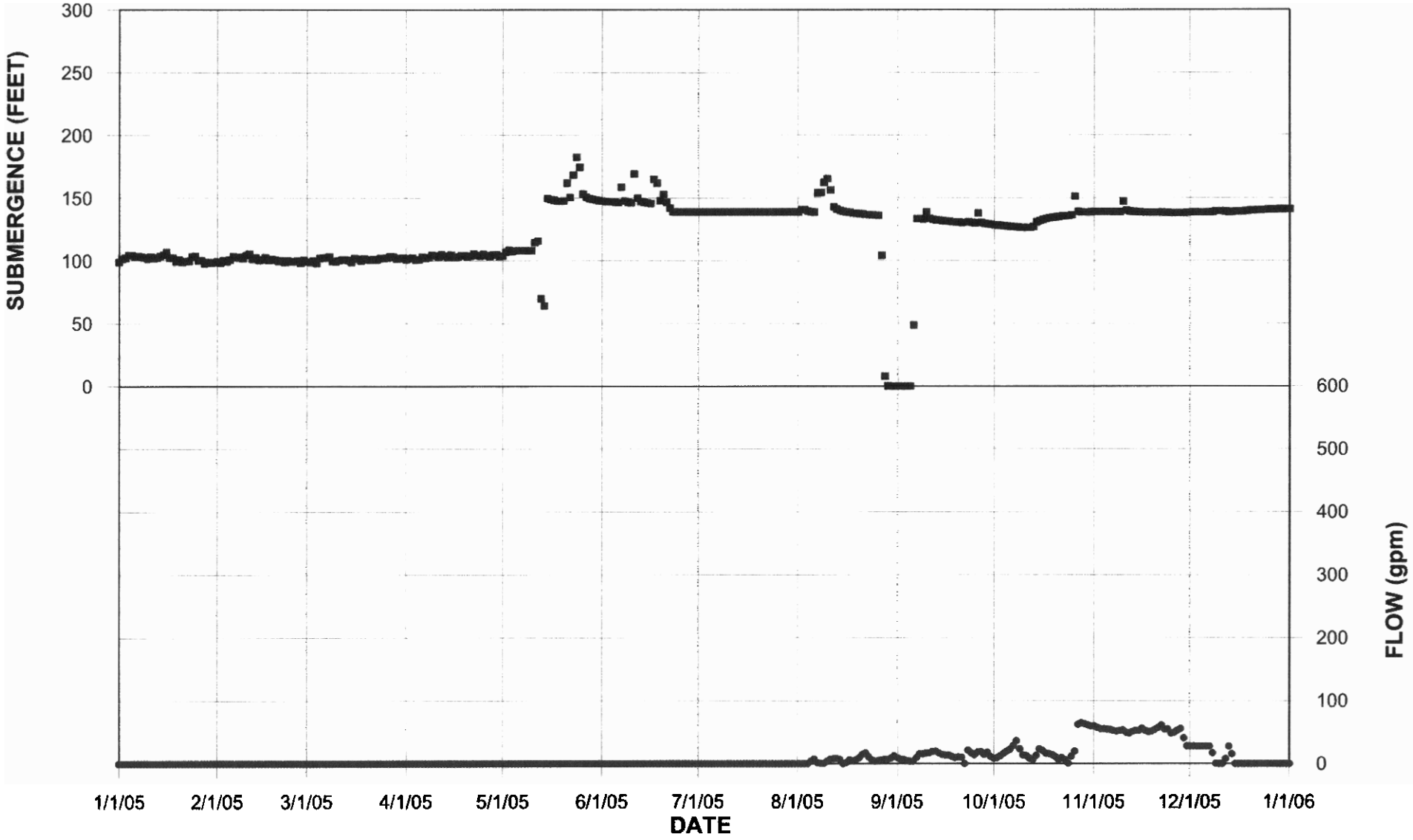
TAPPAN WELL 20
SCADA FLOW AND SUBMERGENCE DATA - 2001



Leggette, Brashears & Graham Inc.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

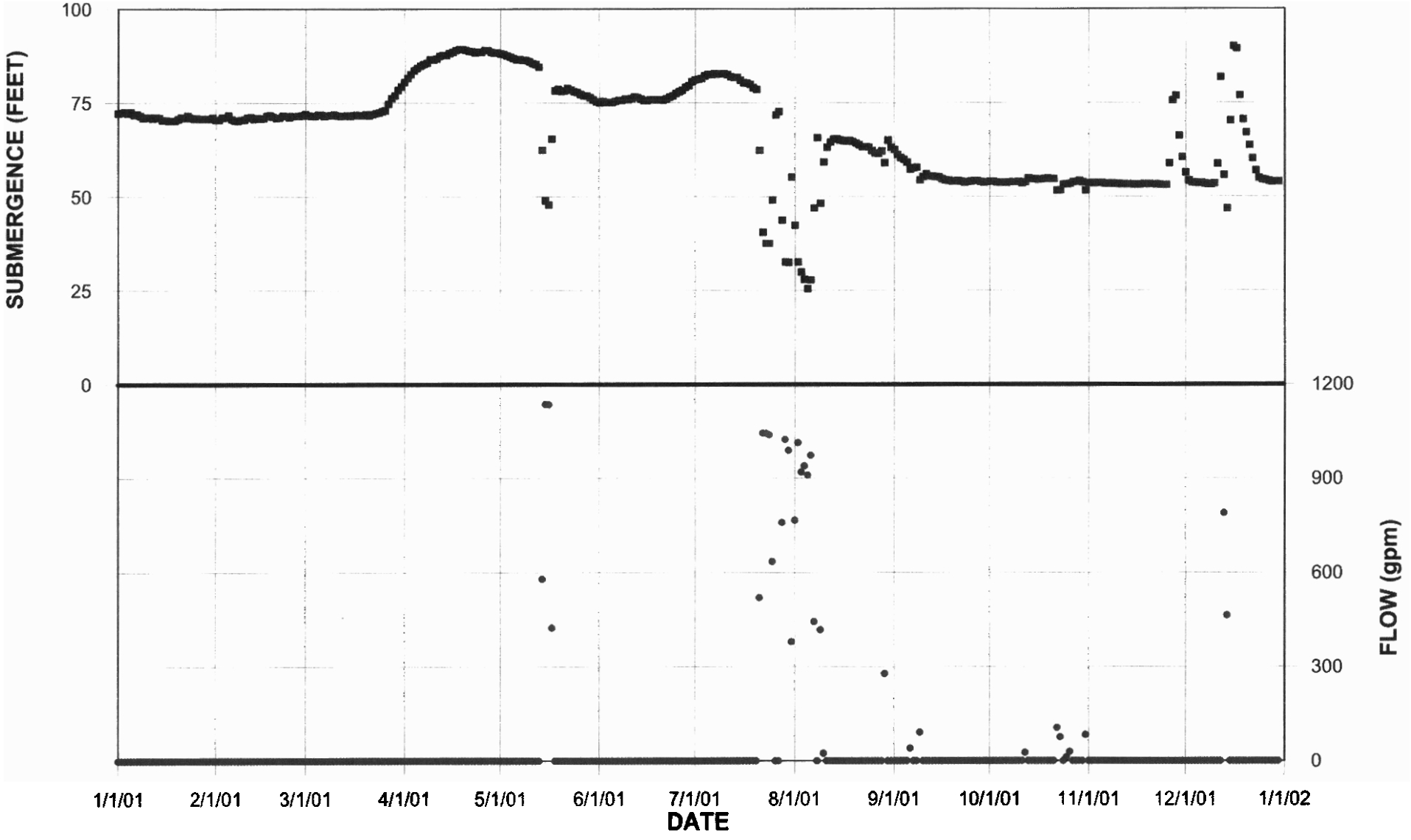
TAPPAN WELL 20
SCADA FLOW AND SUBMERGENCE DATA, 1987 through 2005



Leggette, Brashears & Graham Inc.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

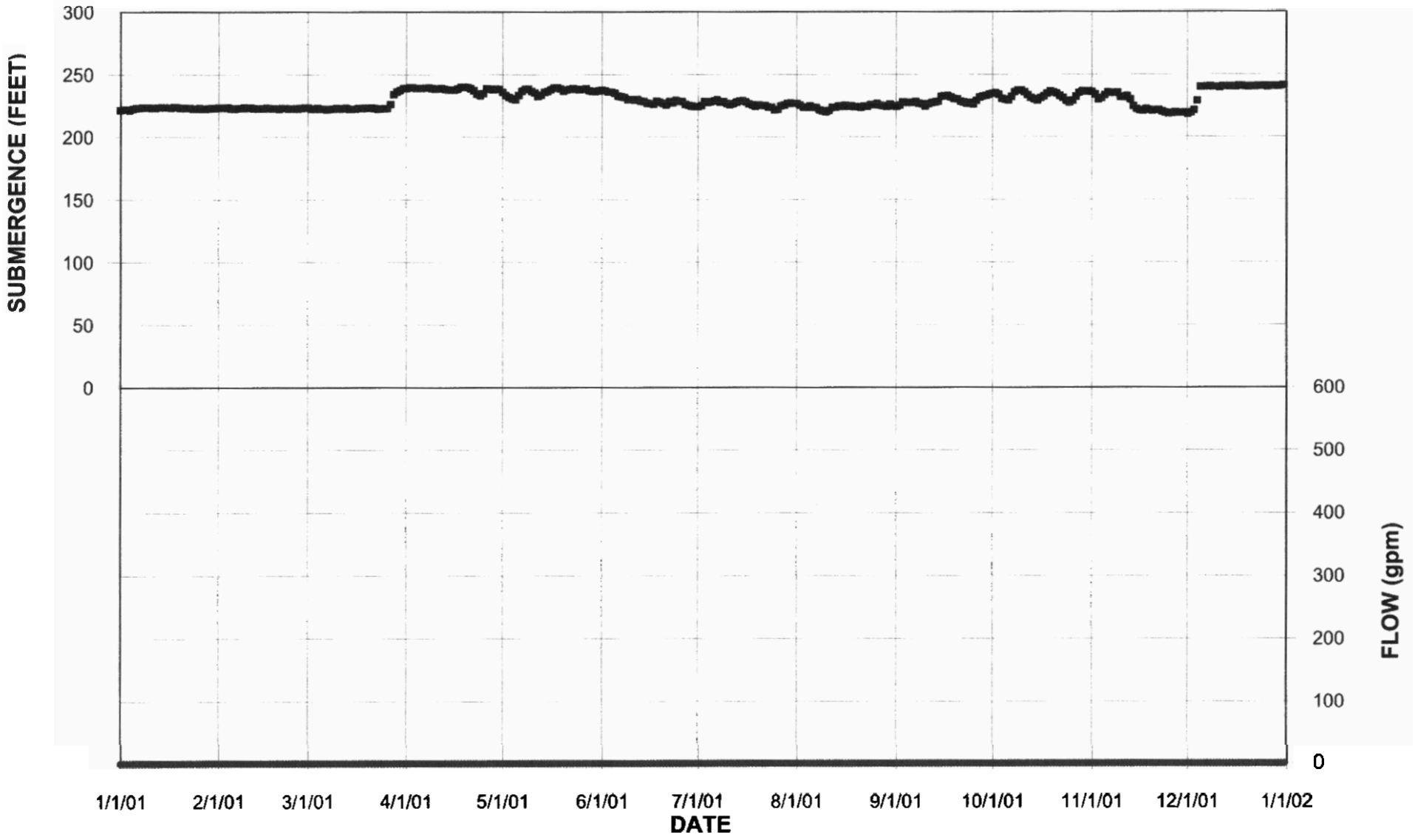
NEW HEMPSTEAD WELL 24
SCADA FLOW AND SUBMERGENCE DATA - 2001



Leggette, Brashears & Graham Inc.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

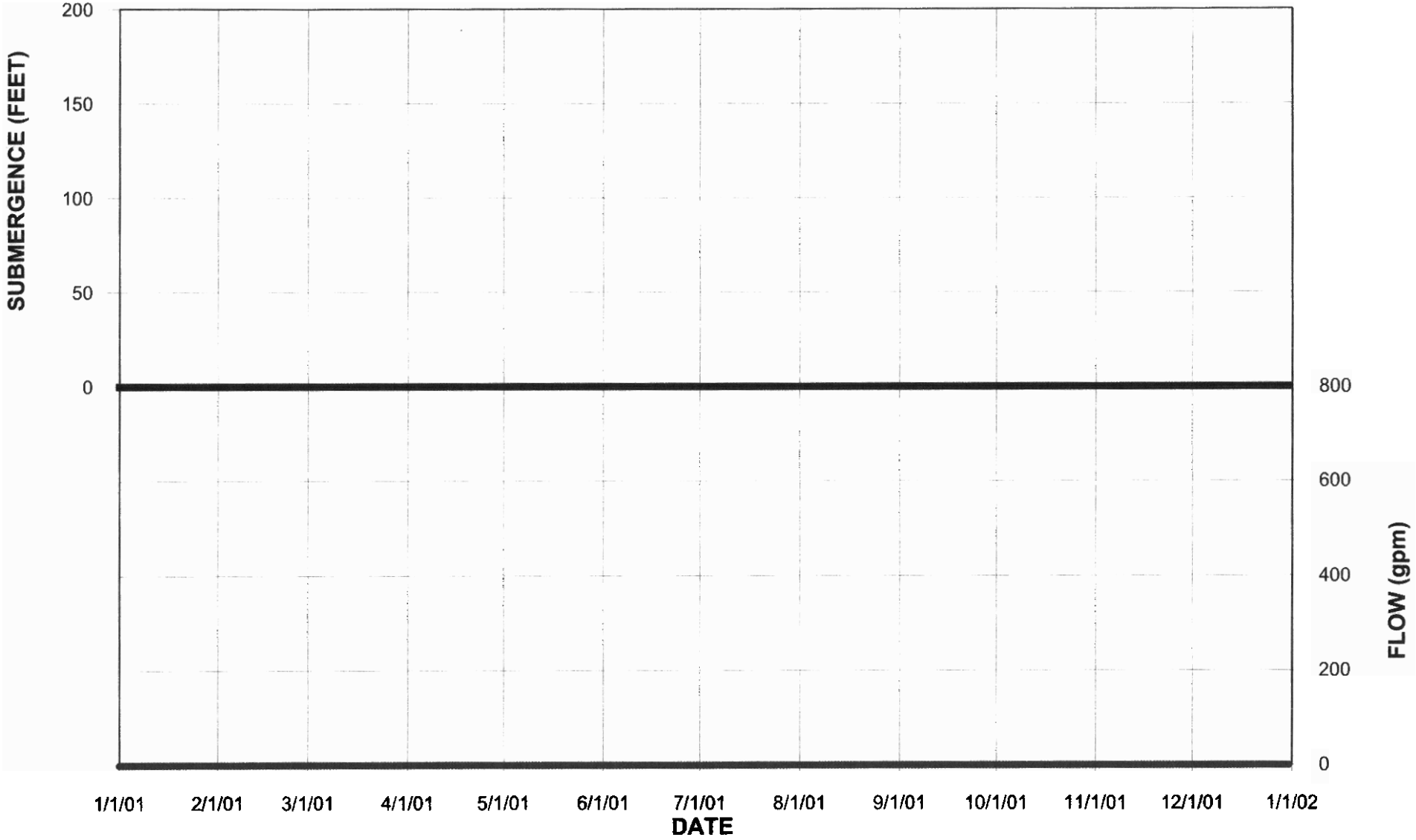
GERMONDS WELL 21
SCADA FLOW AND SUBMERGENCE DATA 2001



Leggette, Brashears & Graham Inc.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

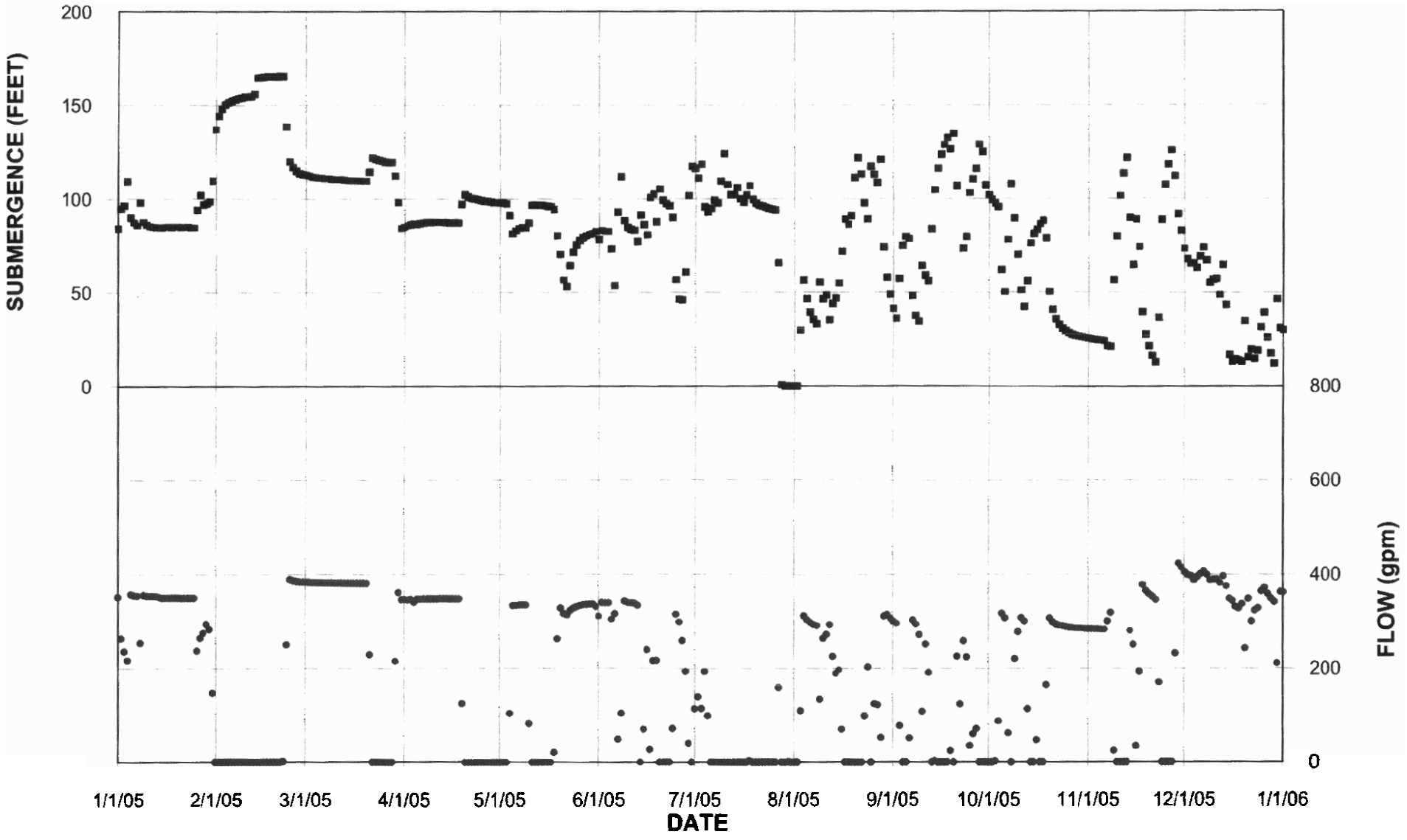
NANUET WELL 14
SCADA FLOW AND SUBMERGENCE DATA - 2001



Leggette, Brashears & Graham Inc.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

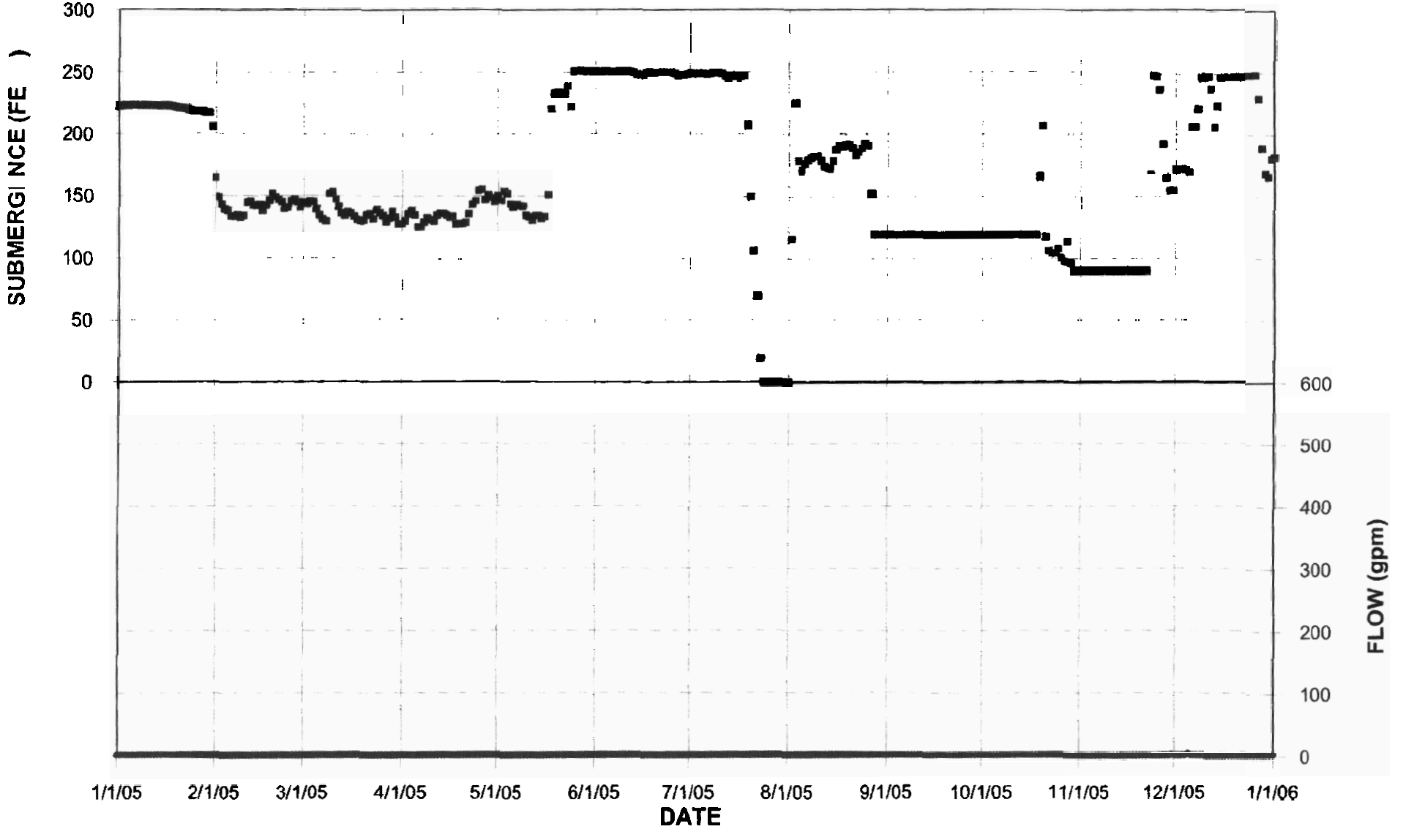
NANUET WELL 14
SCADA FLOW AND SUBMERGENCE DATA 2005



Leggette, Brashears & Graham Inc.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

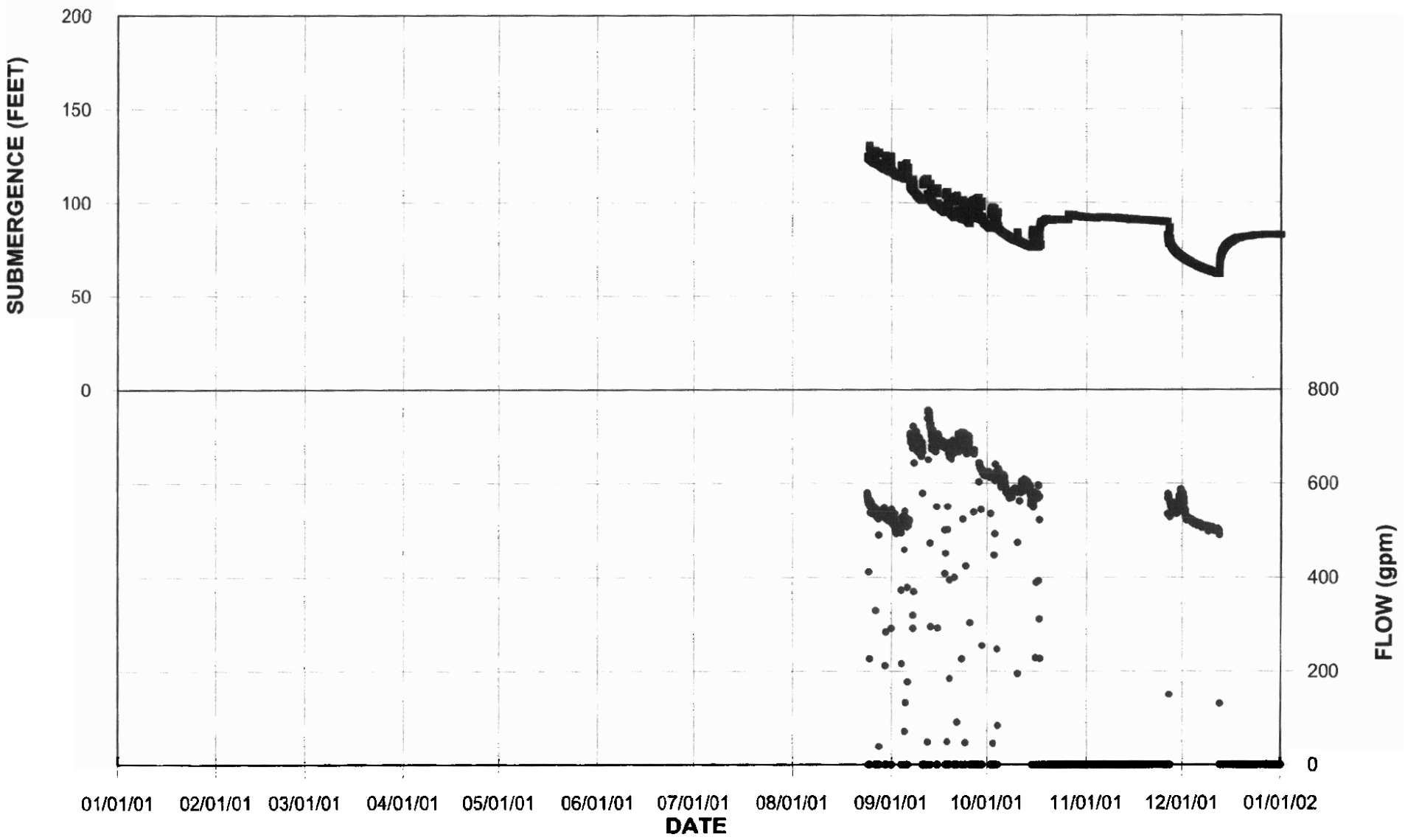
GERMONDS WELL 21
SCADA FLOW AND SUBMERGENCE DATA 2005



Leggette, Brashears & Graham Inc.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

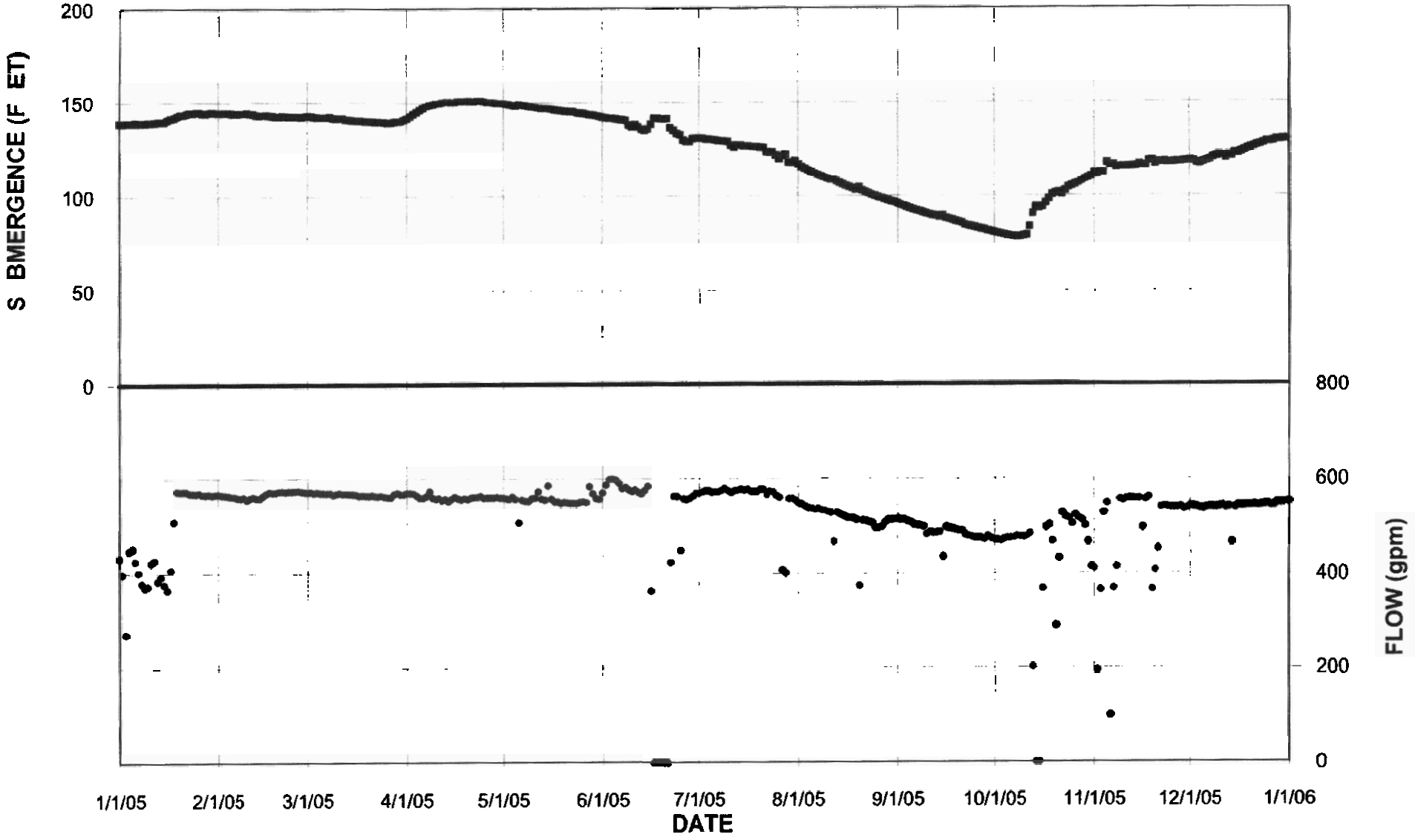
VIOLA WELL 106
SCADA FLOW AND SUBMERGENCE DATA 2001



Leggette, Brashears & Graham Inc.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

VIOLA WELL 106
SCADA FLOW AND SUBMERGENCE DATA - 2005



Leggette, Brashears & Graham Inc.

APPENDIX E

TEST WELLS

SCHEDULE AND MILESTONES

July 2006

- A Potential Well Development and Conceptual Cost Estimates Report was prepared evaluating eight (8) potential well sites for development into production wells.

December 2006

- Meeting between United Water New York (UWNY), Rockland County Department of Health (RC-DOH) to discuss the conversion of test wells to production wells. At this meeting, properties that meet required standards to be constructed were discussed and a list of possible sites was developed.

January 2007

- For the potential sites, a technical package was submitted to the RCDOH for the conversion of test wells to production wells.

February 2007

- Discussed requirements for submittal of application packages with each town that the potential production wells are located.
- Discussed electrical requirements with Orange and Rockland (O&R) Utilities, Inc. for each site.
- PB Americas, Inc. visited all three (3) potential sites to identify wetlands, streambanks, and tree inventory for each site.

March 2007

- Conference call with New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and RCDOH to discuss the permit requirements for the construction of the test wells.
- Electrical Application for Service was submitted to O&R Utilities, Inc.
- Partial Site Plans for Strawtown Road and Long Clove Well were submitted to the Rockland County Drainage Agency (RCDA) for Jurisdictional Determination (JD).
- Partial Site Plans for Strawtown Road and Long Clove Road are submitted for Jurisdictional Determination (JD) by the NYSDEC for the construction of the test wells.
- On March 19, 2007 a meeting with the Rockland County Legislature and public was held to discuss the two (2) projects being considered for development. A presentation for information purposes only was given by UWNY and questions regarding the work and potential impacts to the surrounding environment are discussed and will be monitored during the pump test.

- A licensed surveyor began preparing a survey for the three (3) sites.

April 2007

- The licensed surveyor retained for the work completed the survey for all three (3) sites.
- In a letter dated April 9, 2007, the RCDA confirmed that they do not have jurisdiction for the sites.

May 2007

- In a letter dated May 4, 2007, the RCDOC issued the test well drilling permit for Strawtown Road, Long Clove Well, and Lime Kiln Road Wells. A copy of the approved permit follows.
- In an email dated May 2, 2007, the NYSDEC confirmed that no other permits are required for the construction of the test wells.
- On May14, 2007, letters are submitted to private well owners within a one-thousand five hundred (1,500') feet radius of the proposed wells. The letters are sent notifying all private well owners of the intention to construct new wells at the site and to offer monitoring of their wells during the pump test.
- On May 25, 2007, the Technical Advisory Committee (TAC) application was submitted to the Town of Clarkstown.
- Layne Christensen begins drilling the test wells at the Strawtown Road and Long Clove Road sites. Strawtown was air tested and the estimated capacity is between three hundred to four hundred (300 to 400) gpm. The air test at Long Clove Road results in an estimated capacity of sixty (60) gpm. The estimated capacity at Long Clove Road was approximately one hundred and fifty (150) gpm. A new test well location on the property is being considered that is closer to the existing test wells. However, this will require easement(s) from adjacent property owners. A new RC-DOH permit will be required for the new test well location.

June 2007

- A TAC hearing was held on June 13th for the Strawtown and Long Clove Test Wells with the Town of Clarkstown.
- A second Environmental Meeting of the Rockland County Legislature is currently scheduled for June 18, 2007.
- It is anticipated that the pump capacity test and monitoring of adjacent private wells will occur at the end of this month. In addition, a full water quality analysis shall be performed.
- Due to the reduced capacity encountered at the proposed Long Clove Road test well site, submit new test well location for approval for a new test well at the Long Clove Road site. Pending approval of the new location, drill new test well and air test shall be performed in June 2007.

July/August 2007

- Pending approval at the TAC hearing, it is anticipated that the design of the well house will be completed and an application for Preliminary and Final Planning Board hearings will be submitted to the Town of Clarkstown. It is anticipated that this will be scheduled to be heard in July and August 2007.
- Final applications for the NYSDOH and NYSDEC shall be applied for.
- The two (2) well projects shall be bid with pre-qualified contractors to construct the well and well house.

September/October 2007

- Pending approval at the Preliminary and Final Planning Board hearings, Construction Applications for the Town of Clarkstown shall be applied for.
- Pending approval of the Building, NYSDEC, and NYSDOH applications, the successful Contractor shall be given Notice to Proceed to begin construction of the production wells and above ground well houses.

November/December 2007

- Construction of the production wells shall continue and be completed by December 15, 2007.

PERMITS AND CORRESPONDENCE

The following information is included for reference and follows:

Strawtown Road Well

1. May 25, 2007 letter prepared by Buck, Seifert & Jost, Inc. (BS&J) addressed to the Town of Clarkstown Technical Advisory Committee (TAC), 3 pages
2. Strawtown PW-1 Geologic Log prepared by Leggette, Brashears & Graham, Inc. (LBG) dated May 18, 2007, 2 pages
3. Rockland County Department of Health Permit to Construct a Water Supply Well, Permit #07-004, dated May 4, 2007, 1 page
4. April 9, 2007 letter prepared by the County of Rockland Drainage Agency regarding Jurisdictional Determination (JD) for Proposed Production Well at Strawtown Site, 1 page
5. Construction of the Strawtown Test Well No. 2 - Site Plan, Well Diagram, and Notes drawing prepared by BS&J, 1 page – 11" x 17".
6. Construction of the Strawtown Well Cost Estimate dated March 14, 2007, 1 page.

Long Clove Well

1. Long Clove TW-4 Geologic Log prepared by Leggette, Brashears & Graham, Inc. (LBG) dated May 29, 2007, 2 pages
2. May 25, 2007 letter prepared by Buck, Seifert & Jost, Inc. (BS&J) addressed to the Town of Clarkstown Technical Advisory Committee (TAC), 3 pages
3. Rockland County Department of Health Permit to Construct a Water Supply Well, Permit #07-004, dated May 4, 2007, 1 page
4. April 9, 2007 letter prepared by the County of Rockland Drainage Agency regarding Jurisdictional Determination (JD) for Proposed Production Well at Strawtown Site, 1 page
5. Construction of the Long Clove Test Well No. 3 - Site Plan, Well Diagram, and Notes drawing prepared by BS&J, 1 page – 11" x 17".
6. Construction of the Long Clove Well Cost Estimate dated March 14, 2007, 1 page.

APPENDIX F

SPARKILL

PERMITS AND CORRESPONDENCE

PERMITS AND CORRESPONDENCE

The following information is included for reference and follows:

1. UWNY receives final approval for the project on June 6, 2007 when the Zoning Board of Appeals (ZBA) for the Town of Orangetown denies an appeal of the Town Zoning Director's prior determination that the project does not require a use variance.

2. April 24, 2007 memorandum prepared by John Giardiello, P.E., Director of the Town of Orangetown Office of Building, Zoning, and Planning Administration and Enforcement addressed to the Zoning Board of Appeals, 2 pages.

3. Town of Orangetown Building Permit No. 36910 dated March 9, 2007 for the public water supply treatment system and building located at 59 Flitt Street, Tappan, NY, 2 pages.

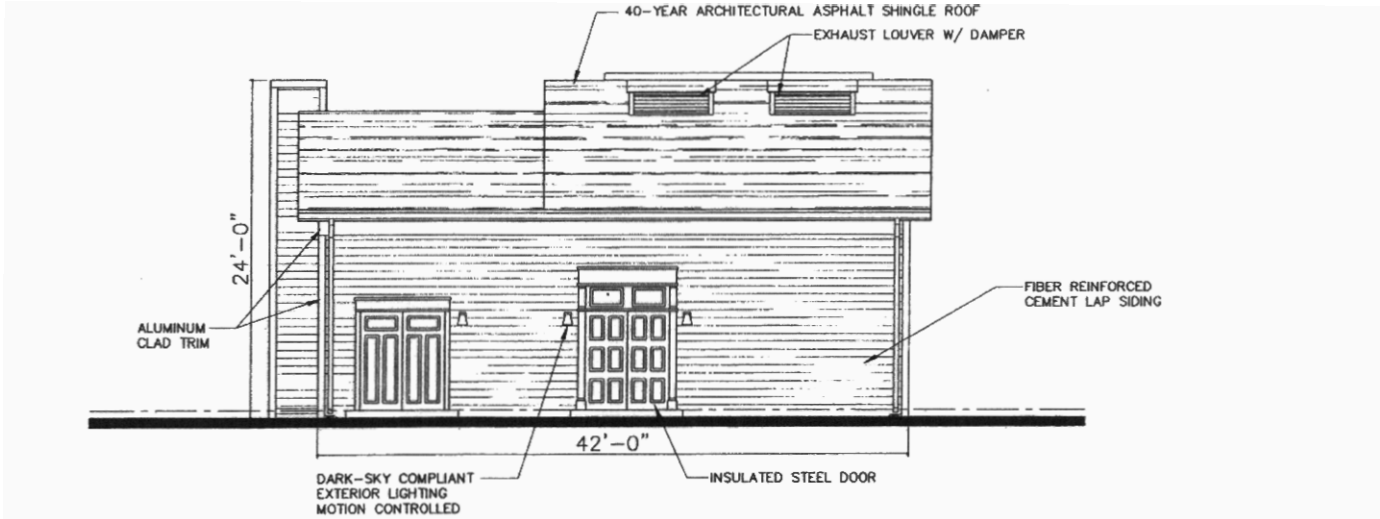
4. November 1, 2006 memorandum prepared by John Giardiello, P.E., Director of the Town of Orangetown Office of Building, Zoning, and Planning Administration and Enforcement addressed to Cheryl Coopersmith, Chief Clerk and Debbie Arbolino, Administrative Aide, 1 page.

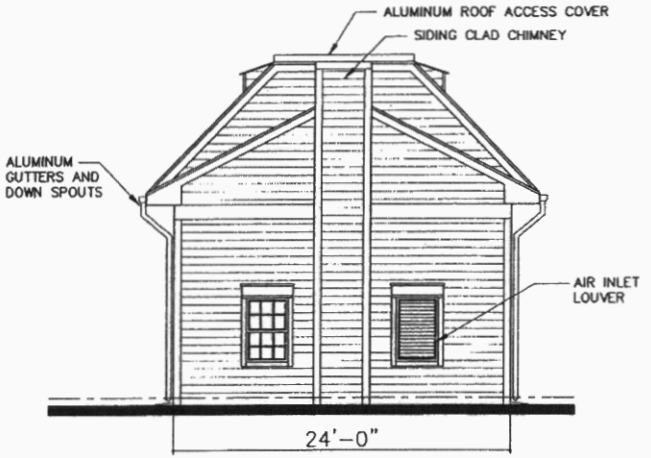
5. November 1, 2006 letter prepared by Rockland County Department of Health (RCDOH) regarding air emissions guidelines for the proposed UWNY Well Head Treatment at Well Nos. 8 and 11, Sparkill, NY, 1 page.

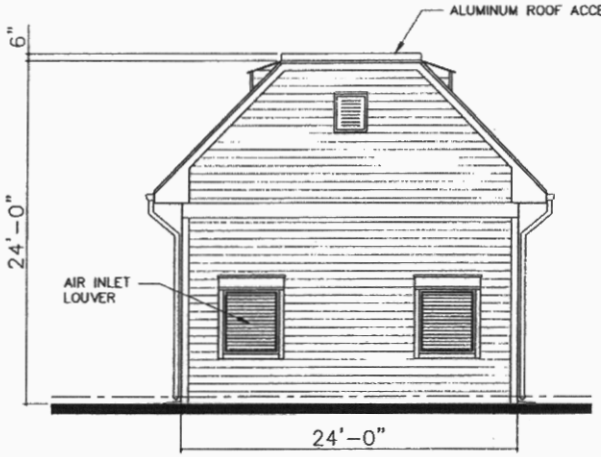
6. September 5, 2006 Denial of building permit application and referral to the ACABOR and ZBA for the proposed UWNY Well Head Treatment at Well Nos. 8 and 11, Sparkill, NY prepared by John Giardiello, P.E., Director of the Town of Orangetown Office of Building, Zoning, and Planning Administration and Enforcement, 2 pages.

7. Town of Orangetown Building Permit No. 36502 dated August 21, 2006 for the replacement of electrical service to the existing well house located at 59 Flitt Street, Tappan, NY, 2 pages.

SITE AND ARCHITECTURAL PLANS







H2MGROUP
HOLZMACHER, McLENDON & MURRELL, P.C.
575 Broad Hollow Road, Melville, New York 11747
ENGINEERS + ARCHITECTS + PLANNERS + SCIENTISTS + SURVEYORS

MARK	DATE	DESCRIPTION

ISSUE:	
PROJECT NO:	LAYN 0602
DATE:	NOVEMBER 2006
CAD DWG FILE:	
XREF DWG FILE:	
SCALE:	AS SHOWN
FILE LOCATION:	M:\cadd
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
REVIEWED BY:	

UNITED WATER NEW YORK

LAYNE CHRISTENSEN CO.

WELL HEAD TREATMENT AT WELL NOS. 8 & 11 SPARKILL, NEW YORK

FOR BLDG. DEPT. REVIEW

SHEET TITLE

BUILDING ELEVATIONS

SHEET NUMBER

A2

PPENDIX

APPENDIX G

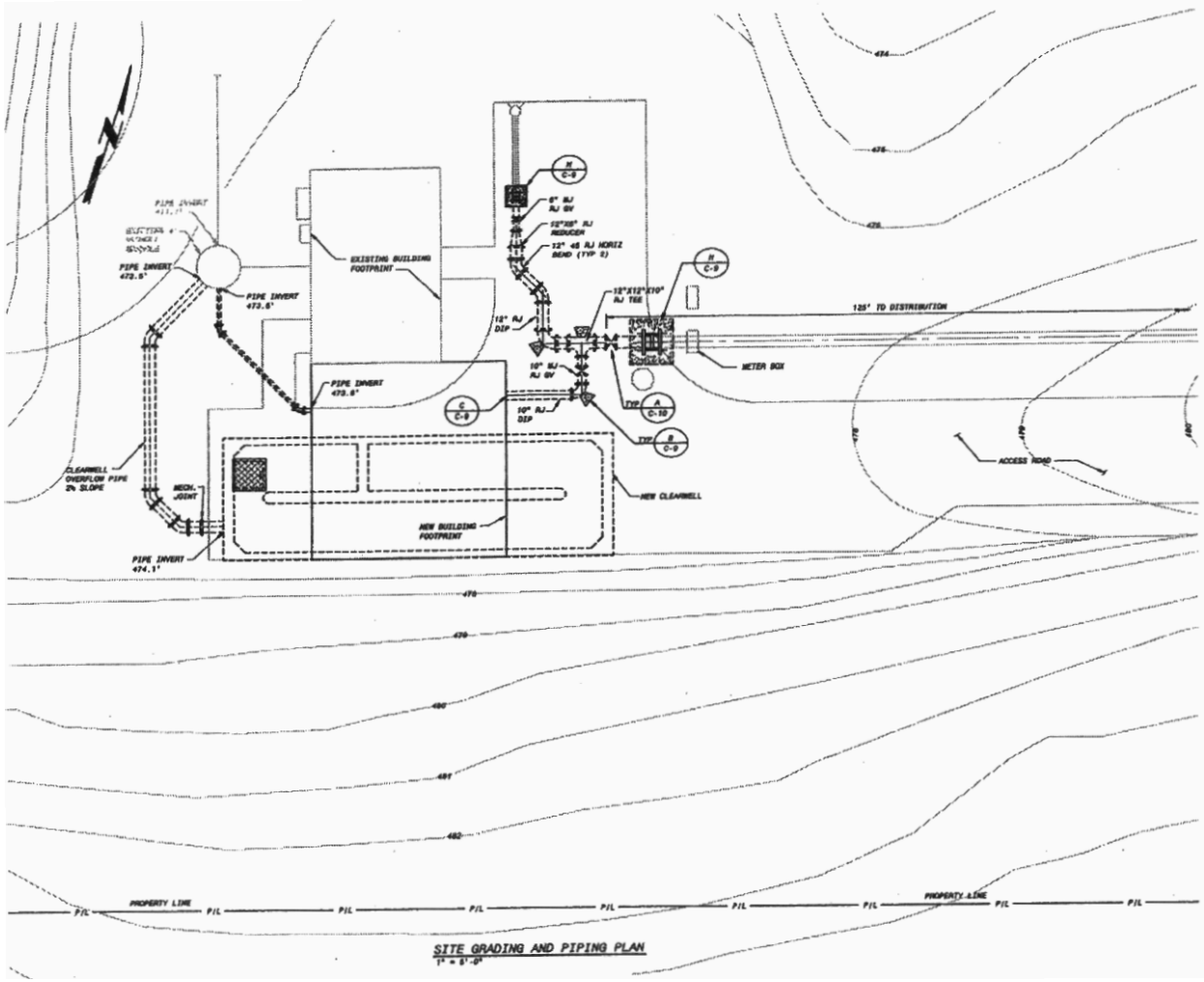
BEDROCK WELL DE-AERATION

WILLOW TREE 56

Willow Tree 56

Willow Tree 56 is permitted by NYSDEC for 1,000 gpm and taps the underlying bedrock aquifer. Recent production capacity indicates Willow Tree 56 has been utilized at rates ranging between 400 gpm and 800 gpm. Willow Tree 56 was operating at an average of 655 gpm with an excess of 50 feet of submergence above the pump intake during the August 2001 3-day system peak demand period. Current pumping test data results indicate the specific capacity of Willow Tree 56 is similar to the results of the original testing, with no significant production-limiting decline noted.

Willow Tree 56 has exhibited air in the discharge, especially at higher pumping rates, limiting production capacity. UWNY proposes to install a de-aeration basin to eliminate air entrainment into the distribution system and allow for higher discharge capacity. Based on the results of original testing, operational history, and results of current testing, Willow Tree 56 is capable of sustaining the short-term (3-day) peaking at a rate of 1,000 gpm during a drought demand period similar to August 2001. This 3-day peak pumping rate represents an increase of 345 gpm over the 2001 peak system demand operating rate.



BLACK & VEATCH Corporation

WILLOW TREE

CIVIL

SITE AND GRADING PLAN

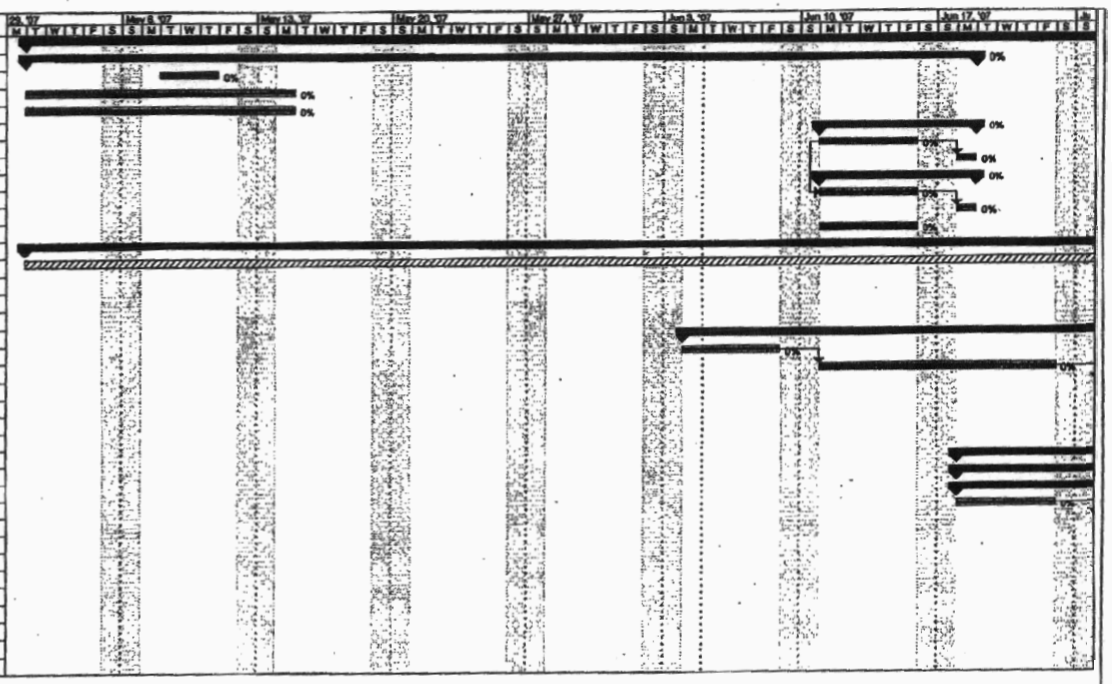
DESIGNED:
DETAILED:
CHECKED:
APPROVED:
DATE:

PROJECT NO.
142522

C-5

SHEET OF

WBS	Task Name	Duration	Start	Finish
1	Task 1 Detailed Design	68 days	Tue 5/1/07	Wed 8/1/07
2	Basis of Design	35 days	Tue 5/1/07	Mon 6/18/07
3	Prepare site improvements	3 days	Tue 5/8/07	Thu 5/10/07
4	Prepare well pump and motor design criteria	10 days	Tue 5/1/07	Mon 5/14/07
5	Prepare new wet well and pump station design criteria	10 days	Tue 5/1/07	Mon 5/14/07
6	Prepare electrical requirements, control requirements, and instrumentation	6 days	Mon 6/11/07	Mon 6/18/07
7	Prepare Electrical Requirements	5 days	Mon 6/11/07	Fri 6/15/07
8	Meet with United Water, New York	1 day	Mon 6/18/07	Mon 6/18/07
9	Prepare instrumental and control requirements	6 days	Mon 6/11/07	Mon 6/18/07
10	Prepare instrumental and control requirements	5 days	Mon 6/11/07	Fri 6/15/07
11	Meet with United Water, New York	1 day	Mon 6/18/07	Mon 6/18/07
12	Prepare stormwater improvements	5 days	Mon 6/11/07	Fri 6/15/07
13	Willow Tree 50- Detailed Design	66 days	Tue 5/1/07	Wed 8/1/07
14	Prepare 90% Detailed Design Drawings and Specifications	49 days	Tue 5/1/07	Mon 7/9/07
15	Quality Control	5 days	Tue 7/10/07	Mon 7/16/07
16	UWNY Review	5 days	Tue 7/17/07	Mon 7/23/07
17	Meet with UWNY	1 day	Tue 7/24/07	Tue 7/24/07
18	Permitting	19 days	Mon 6/4/07	Thu 6/28/07
19	Submit Applications	5 days	Mon 6/4/07	Fri 6/8/07
20	Town to Review	10 days	Mon 6/11/07	Fri 6/22/07
21	Address Town Comments	3 days	Mon 6/25/07	Wed 6/27/07
22	Submit Review Pack	1 day	Thu 6/28/07	Thu 6/28/07
23	Prepare Final Drawings and Specifications	6 days	Wed 7/25/07	Tue 7/31/07
24	Meet with United Water, New York	1 day	Wed 8/1/07	Wed 8/1/07
25	Task 2 Equipment Procurement & Bidding Assistance	43 days	Mon 6/18/07	Thu 8/16/07
26	Willow Tree	43 days	Mon 6/18/07	Thu 8/16/07
27	Equipment procurement	14 days	Mon 6/18/07	Fri 7/6/07
28	Prepare equipment bid packages	5 days	Mon 6/18/07	Fri 6/22/07
29	Identify equipment vendors - respond to comments/questions	5 days	Mon 6/25/07	Fri 6/29/07
30	Equipment bid evaluation and selection	5 days	Mon 7/2/07	Thu 7/5/07
31	Notice to Proceed	1 day	Fri 7/6/07	Fri 7/6/07
32	General Construction	11 days	Thu 8/2/07	Thu 8/16/07
33	Prepare construction bid package	5 days	Thu 8/2/07	Wed 8/8/07
34	Bid Advertisement	3 days	Thu 8/9/07	Mon 8/13/07
35	Pre-bid meeting	1 day	Tue 8/14/07	Tue 8/14/07
36	Identify contractor – respond to comments/questions	1 day	Wed 8/15/07	Wed 8/15/07
37	Contractor bid evaluation and election	1 day	Thu 8/16/07	Thu 8/16/07



Project: Willow Tree.mpp
Date: Tue 6/5/07

Critical | Critical Progress | Split | Baseline | Baseline Milestone | Summary Progress | Project Summary | External Milestone
Critical Split | Task | Task Progress | Baseline Split | Milestone | Summary | External Tasks | Deadline

ID	Task Name	Duration	Start	Finish
1	Task 1 Detailed Design	66 days	Tue 5/1/07	Wed 8/1/07
2	Basis of Design	35 days	Tue 5/1/07	Mon 6/18/07
3	Prepare site improvements	3 days	Tue 5/8/07	Thu 5/10/07
4	Prepare well pump and motor design criteria	10 days	Tue 5/1/07	Mon 5/14/07
5	Prepare new wet well and pump station design criteria	10 days	Tue 5/1/07	Mon 5/14/07
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7	Prepare Electrical Requirements	5 days	Mon 6/11/07	Fri 6/15/07
8	Meet with United Water, New York	1 day	Mon 6/18/07	Mon 6/18/07
9	Prepare instrumental and control requirements	6 days	Mon 6/11/07	Mon 6/18/07
10	Prepare instrumental and control requirements	5 days	Mon 6/11/07	Fri 6/15/07
11	Meet with United Water, New York	1 day	Mon 6/18/07	Mon 6/18/07
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13	Willow Tree 50- Detailed Design	66 days	Tue 5/1/07	Wed 8/1/07
14	Prepare 90% Detailed Design Drawings and Specifications	48 days	Tue 5/1/07	Mon 7/9/07
15	Quality Control	5 days	Tue 7/10/07	Mon 7/16/07
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18	Permitting	19 days	Mon 6/4/07	Thu 6/28/07
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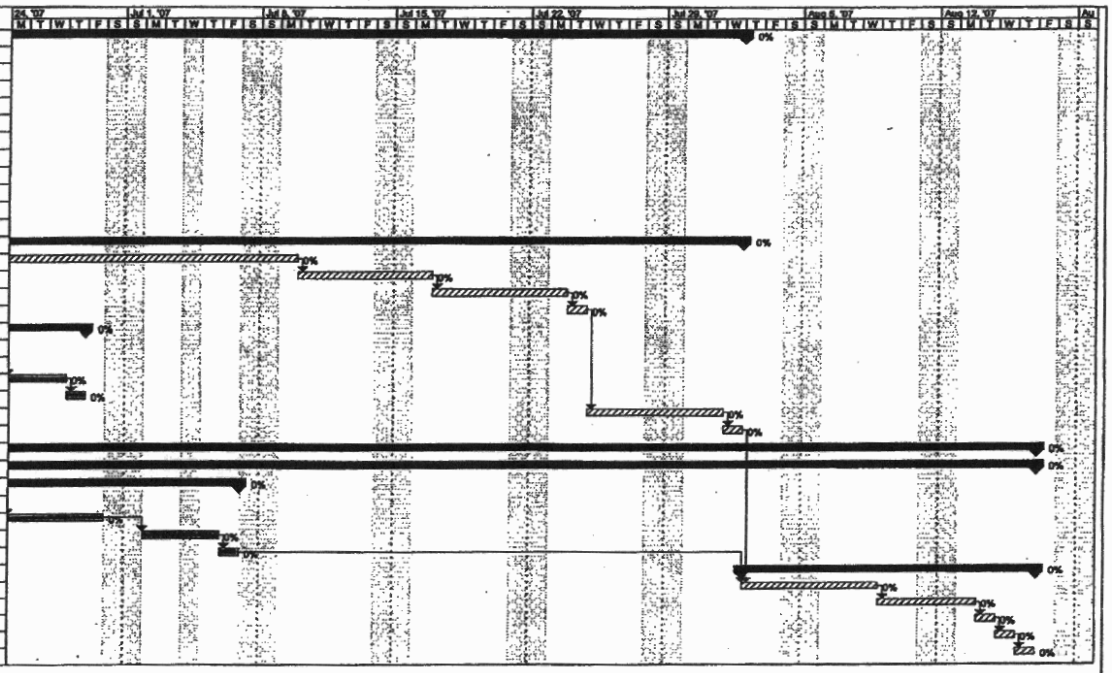
34	Bid Advertisement	3 days	Thu 8/9/07	Mon 8/13/07
35	Pre-bid meeting	1 day	Tue 8/14/07	Tue 8/14/07
36	Identify contractors - respond to comments/questions	1 day	Wed 8/15/07	Wed 8/15/07
37	Contractor bid evaluation and slection	1 day	Thu 8/16/07	Thu 8/16/07



Project: Willow Tree.mpp
Date: Tue 8/5/07

Critical
Critical Split
Critical Progress
Task
Split
Task Progress
Baseline
Baseline Split
Baseline Milestone
Milestone
Summary Progress
Summary
Project Summary
External Tasks
External Milestone
Deadline

NEW HEMPSTEAD 18 AND 24

New Hempstead 18 and 24

The New Hempstead Well Field is permitted by NYSDEC at a combined capacity of 1,700 gpm. Both New Hempstead 18 and 24 tap the underlying bedrock aquifer. Recent production capacity indicates that UWNY utilizes the wells in the New Hempstead Well Field primarily on an alternating basis and not 24 hours per day. Recent New Hempstead 18 production rates range between 800 gpm and 1,000 gpm (while New Hempstead 24 is off), and recent New Hempstead 24 production rates vary between 900 and 1,200 gpm (while New Hempstead 18 is off).

The New Hempstead Well Field is typically not operated at its maximum permitted production capacity of 1,700 gpm, in part due to air entrainment at higher production rates. UWNY proposes to install a deaeration basin to eliminate air entrainment into the distribution system. The New Hempstead combined operating discharge rate was 1,030 gpm (New Hempstead 18 – 882 gpm, New Hempstead 24 – 147 gpm) during the August 2001 3-day system peak demand period. The low discharge rate of New Hempstead 24 reflects primarily only one day of usage during this period. Current pumping test data results indicate the specific capacity of both New Hempstead 18 and 24 are similar to historic specific capacity data, with no significant production-limiting decline noted at the well field.

Based on the results of original testing, mutual interference, operational history, and results of current testing, the New Hempstead Well Field is capable of sustaining the short-term (3-day) peaking at a rate of 1,200 gpm during a drought demand period similar to August 2001. This well field peaking discharge can be obtained by operating Wells 18 and 24 at 600 gpm each, or potentially operating Well 24 at a higher rate and reducing the rate of Well 18 by an equivalent amount. This 3-day peak pumping rate represents an increase of 170 gpm over the 2001 peak system demand operating rate.

PASCACK 65

Pascack 65

Pascack 65 is permitted by NYSDEC for 700 gpm and taps the underlying bedrock aquifer. Recent production capacity indicates Pascack 65 has been utilized at rates ranging between 350 gpm and 500 gpm. Pascack 65 was operating at an average of 426 gpm with an excess of 50 feet of submergence above the pump intake during the August 2001 3-day system peak demand period. Current pumping test data results indicate the specific capacity of Pascack 65 is similar to the results of the original testing, with no significant production-limiting decline noted.

Pascack 65 has historically exhibited air in the discharge, limiting production capacity especially at higher pumping rates. UWNY proposes to install a deaeration basin at Pascack 65 to eliminate air entrainment into the distribution system and allow for higher discharge capacity. Based on the results of original testing, operational history, and results of current testing, Pascack 65 is capable of sustaining the short-term (3-day) peaking at a rate of 600 gpm during a drought demand period similar to August 2001. This 3-day peak pumping rate represents an increase of 274 gpm over the 2001 peak system demand operating rate.

APPENDIX H

APPENDIX H

VIOLA AND ELMWOOD INFRASTRUCTURE IMPROVEMENTS

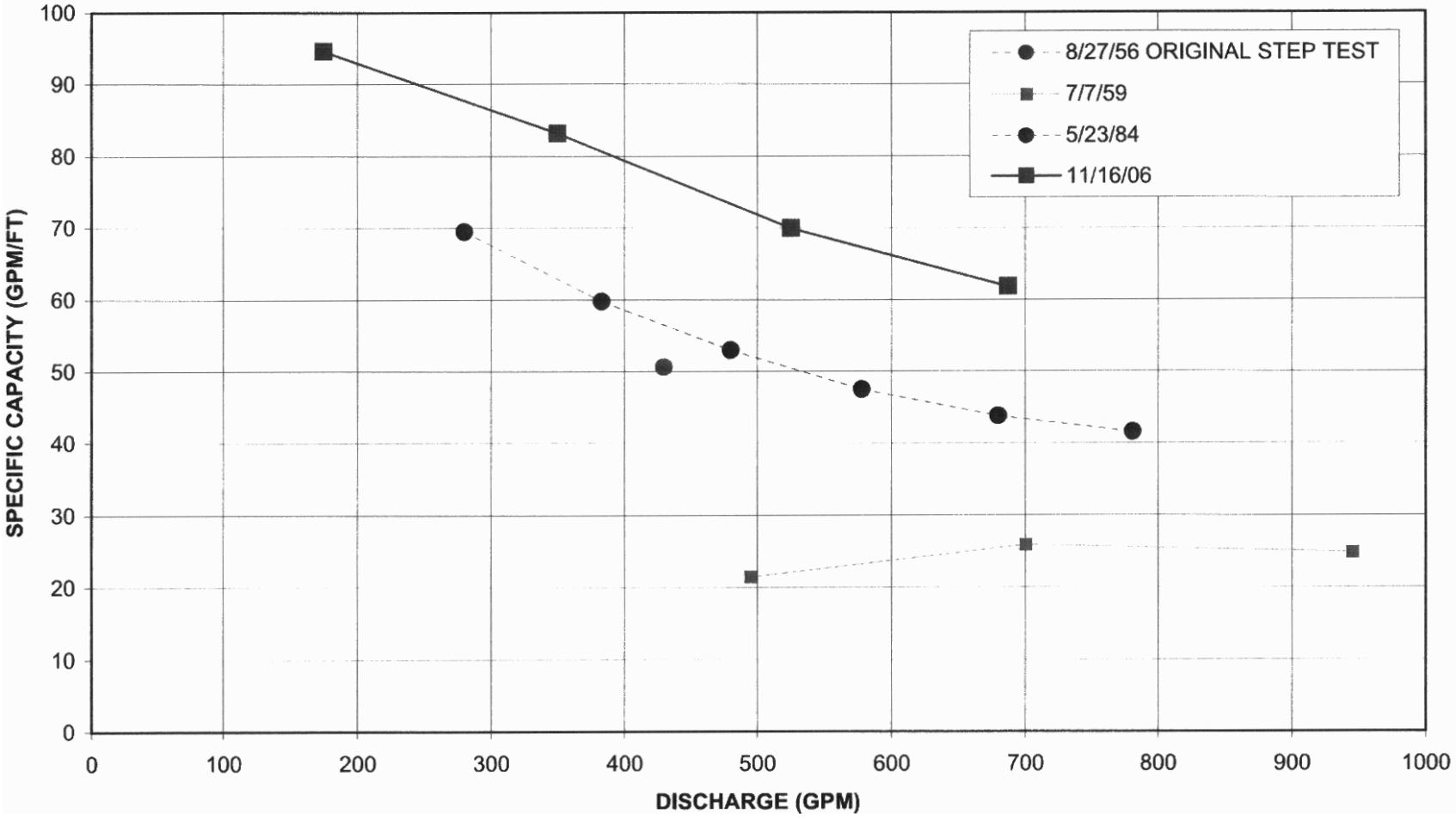
Viola 28 and 106

The Viola Well Field is permitted by NYSDEC at a combined capacity of 1,400 gpm. Both Viola 28 and 106 tap the underlying bedrock aquifer. Recent production capacity indicates that UWNY utilizes the wells in the Viola Well Field primarily on an individual basis with the recent production rates range between 500 gpm and 700 gpm total. The Viola Well Field is typically not operated at its maximum permitted production capacity of 1,400 gpm due to air entrainment at higher production rates. UWNY installed a deaeration basin in 2001 to eliminate air entrainment into the distribution system.

The Viola 28 average discharge rate was 998 gpm during the August 2001 3-day system peak demand period, without Viola 106 operating due to the dearation basin not being put online until the end of August 2001. Current pumping test data results indicate the specific capacity of both Viola 28 and 106 are similar to historic specific capacity data, with no significant production-limiting decline noted at the well field. Based on the results of original testing, mutual interference, operational history, and results of current testing, the Viola Well Field is capable of sustaining the short-term (3-day) peaking at a rate of 1,400 gpm during a drought demand period similar to August 2001. This well field peaking discharge can be obtained by operating Wells 28 and 106 at 700 gpm each. This 3-day peak pumping rate represents an increase of 402 gpm over the 2001 peak system demand operating rate.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

HISTORIC SPECIFIC CAPACITY
VIOLA 28



LEGGETTE, BRASHEARS AND GRAHAM, INC.

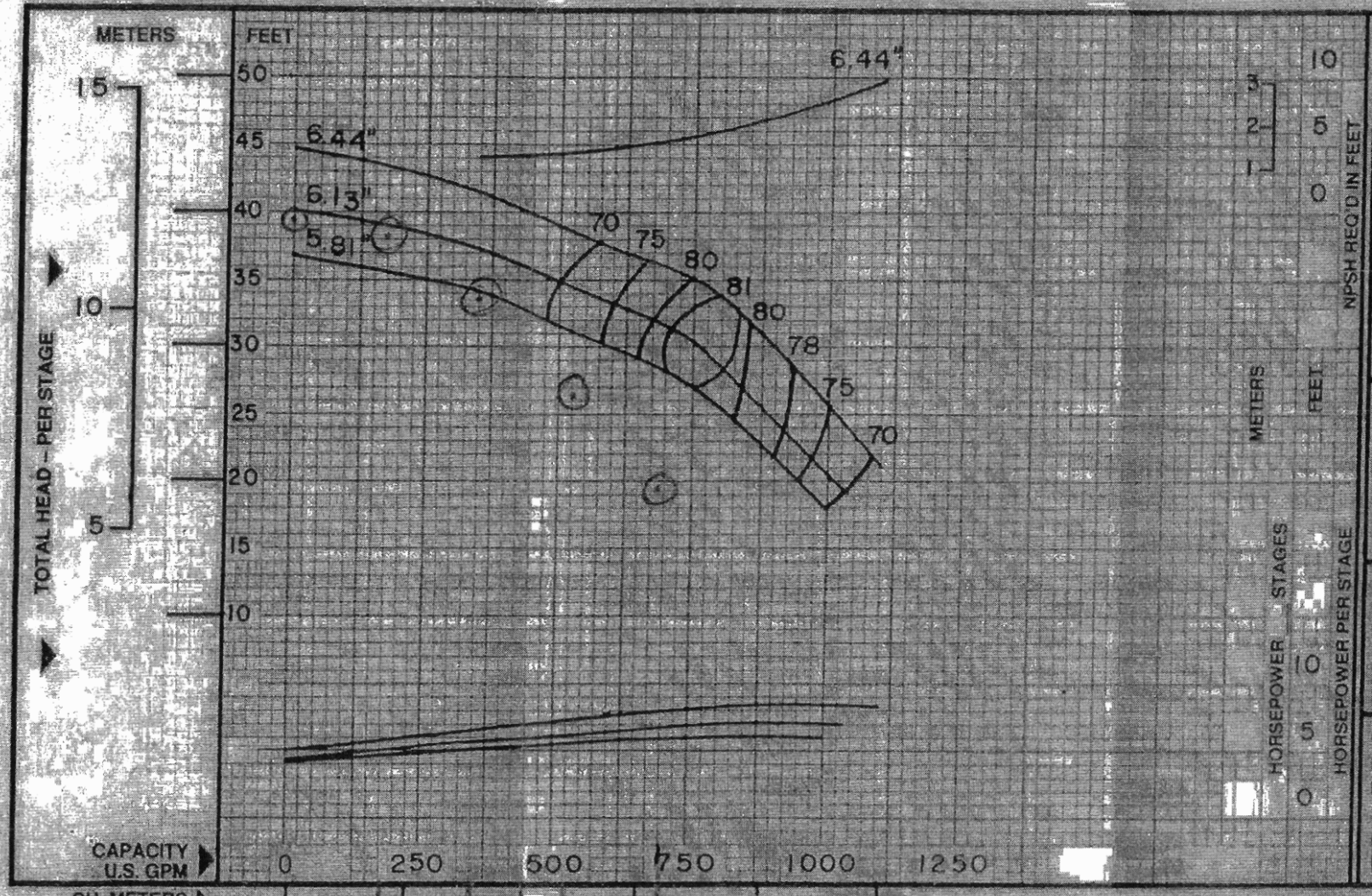
GOULDS PROPOSAL NO.	GOULDS S.O. NO.	INQUIRY NO.	CUSTOMER P.O. NO.	P.O. DATE	ITEM NO.	CUSTOMER

11-jc-2006

UWNY - Viola #28 Well Turbine Pump

PROJECT	SERVICE	GPM CAPACITY	F.T. TDH	% EFFICIENCY	RPM
Viola #28 Well Turbine Pump	150ft - 6"x 1 3/16"Col/Shaft	700GPM	127'TDH		1800RPM

6"dia Impeller 4-stage



175 350 525 700

Curve No: E6409TEPCO

Model: 9THC

RPM: 1770

EFFICIENCY CORRECTION

PERF BASED ON STD. MTL'S

Impeller=ENCLOSED

N_S= 3500

K= 9.00 LBS/FT
13.4 KG/M

K (Bal.)=

GOULDS PUMPS

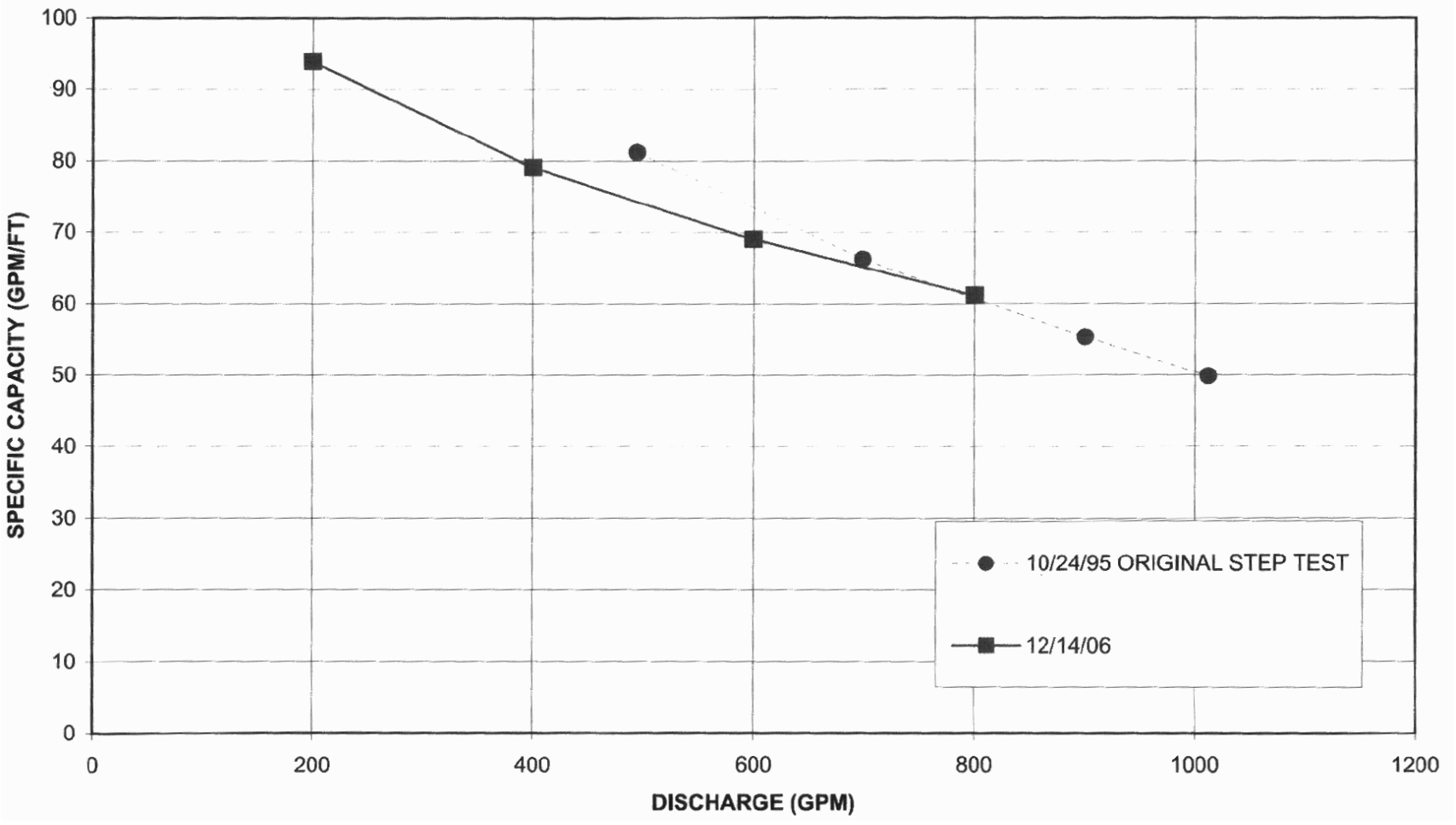
TURBINE DIVISION
LUBBOCK, TEXAS

Characteristics based upon pumping clear, non-aerated water. Rating point only is guaranteed. Column losses not included.

3HT16

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

HISTORIC SPECIFIC CAPACITY
VIOLA 106

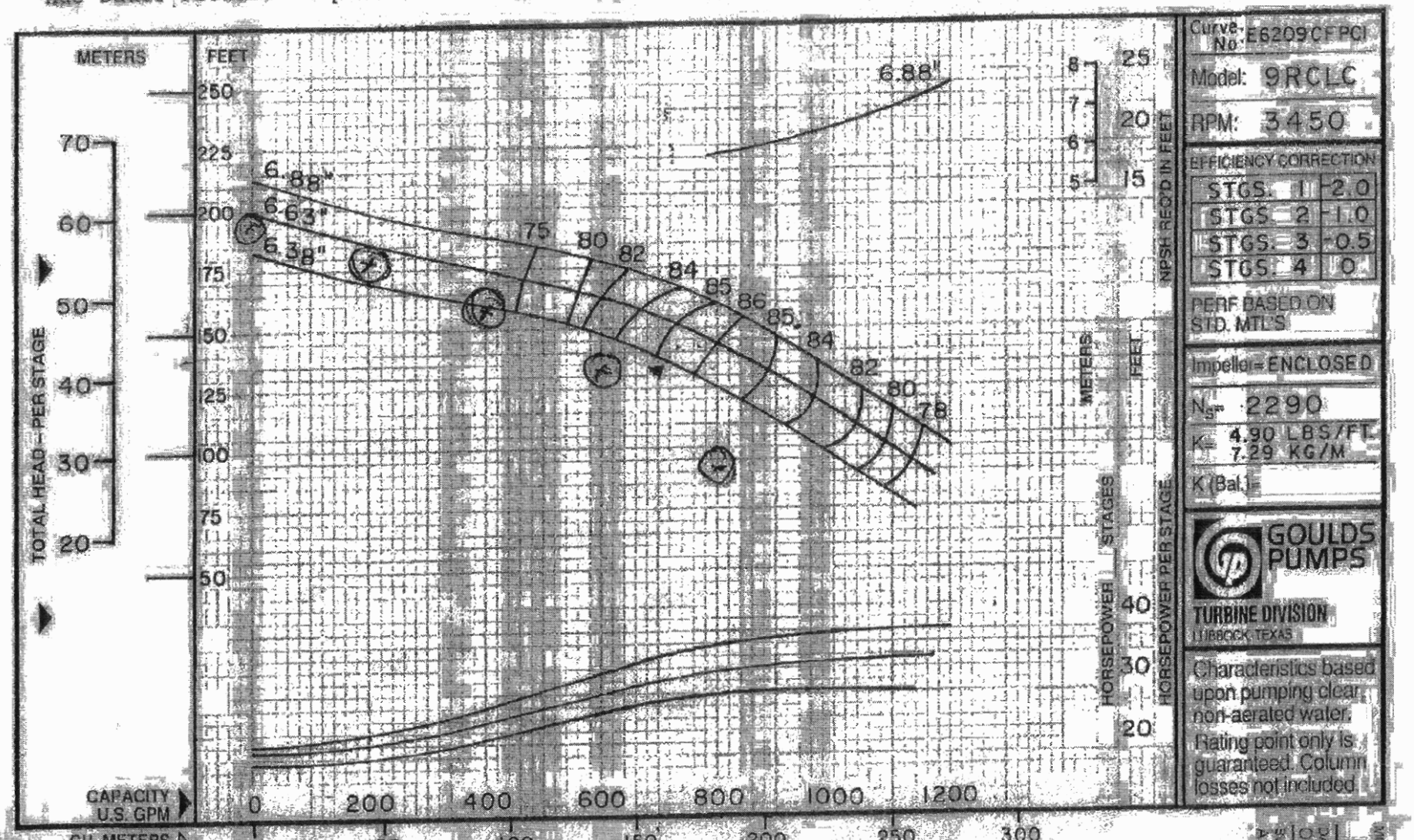


LEGGETTE, BRASHEARS AND GRAHAM, INC.

GOULDS PROPOSAL NO.	GOULDS S.O. NO.	INQUIRY NO.	CUSTOMER P.O. NO.	P.O. DATE	ITEM NO.	CUSTOMER: Dunn #106 Subm

PROJECT: Viola #106	SERVICE: #9RCLC - 1Stage Submersible	GPM CAPACITY: 700GPM	F.T. TDH: 134'TDH	% EFFICIENCY:	RPM: 3450RPM

Has Baker Fitless Adaptor 170Ft - 8"Pipe / 190ft - #6-4 Subm.Wire 2- 3/4"PVC Poly Tubes



Curve No: E6209CFPCI
Model: 9RCLC
RPM: 3450

EFFICIENCY CORRECTION

STGS. 1	-2.0
STGS. 2	-1.0
STGS. 3	-0.5
STGS. 4	0

PERF. BASED ON STD. MTL'S

Impeller = ENCLOSED

N_s = 2290

K = 4.90 LBS/FT
7.29 KG/M

K (Bal.) =

GOULDS PUMPS
TURBINE DIVISION
LUBBOCK, TEXAS

Characteristics based upon pumping clear, non-aerated water. Rating point only is guaranteed. Column losses not included.

MODEL 9RCLC
DATE October 1993
SUPERCEDES August 1995

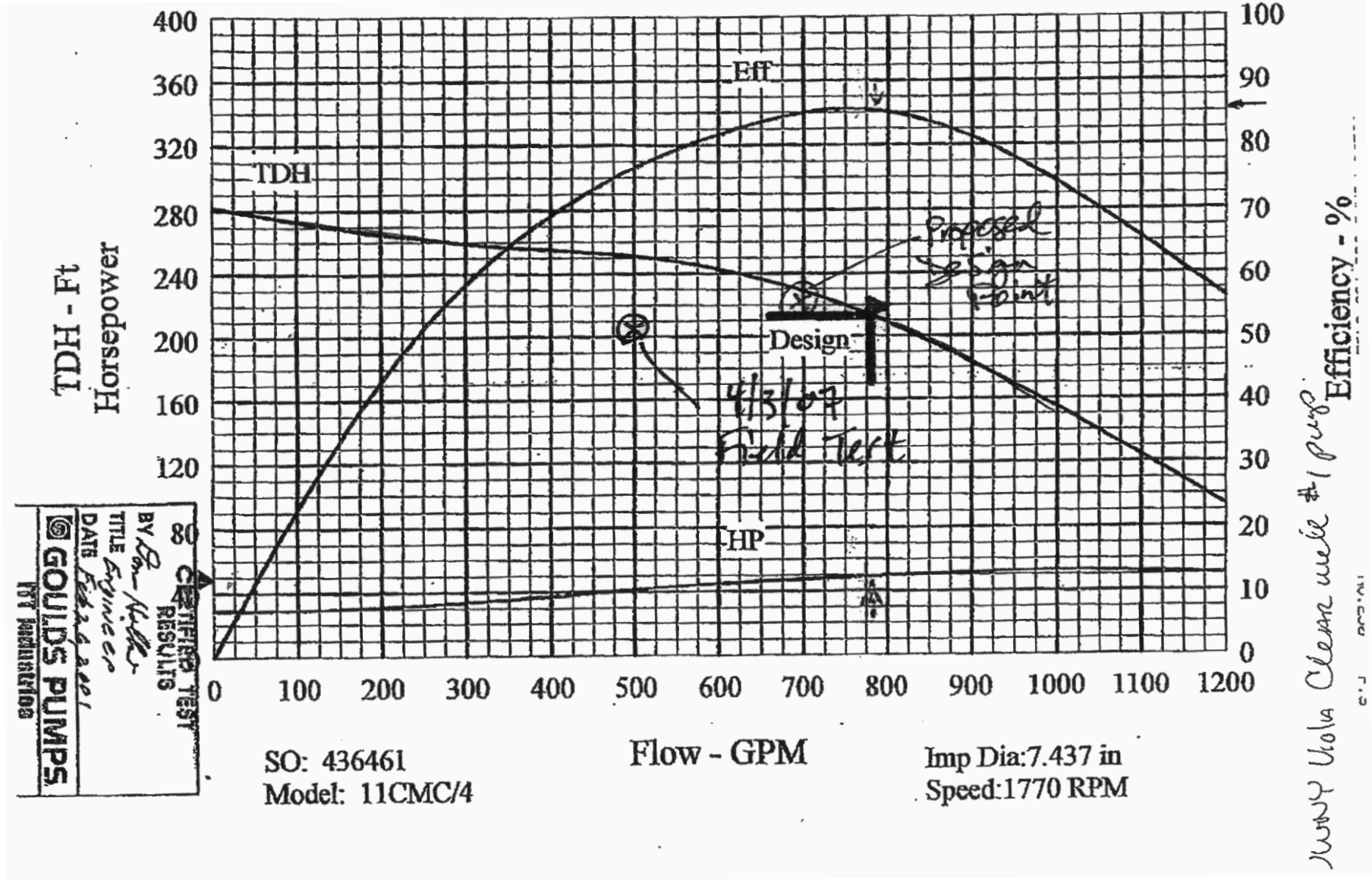
C9RCLC-1

12-14-06 Somewhat off curve. But ok

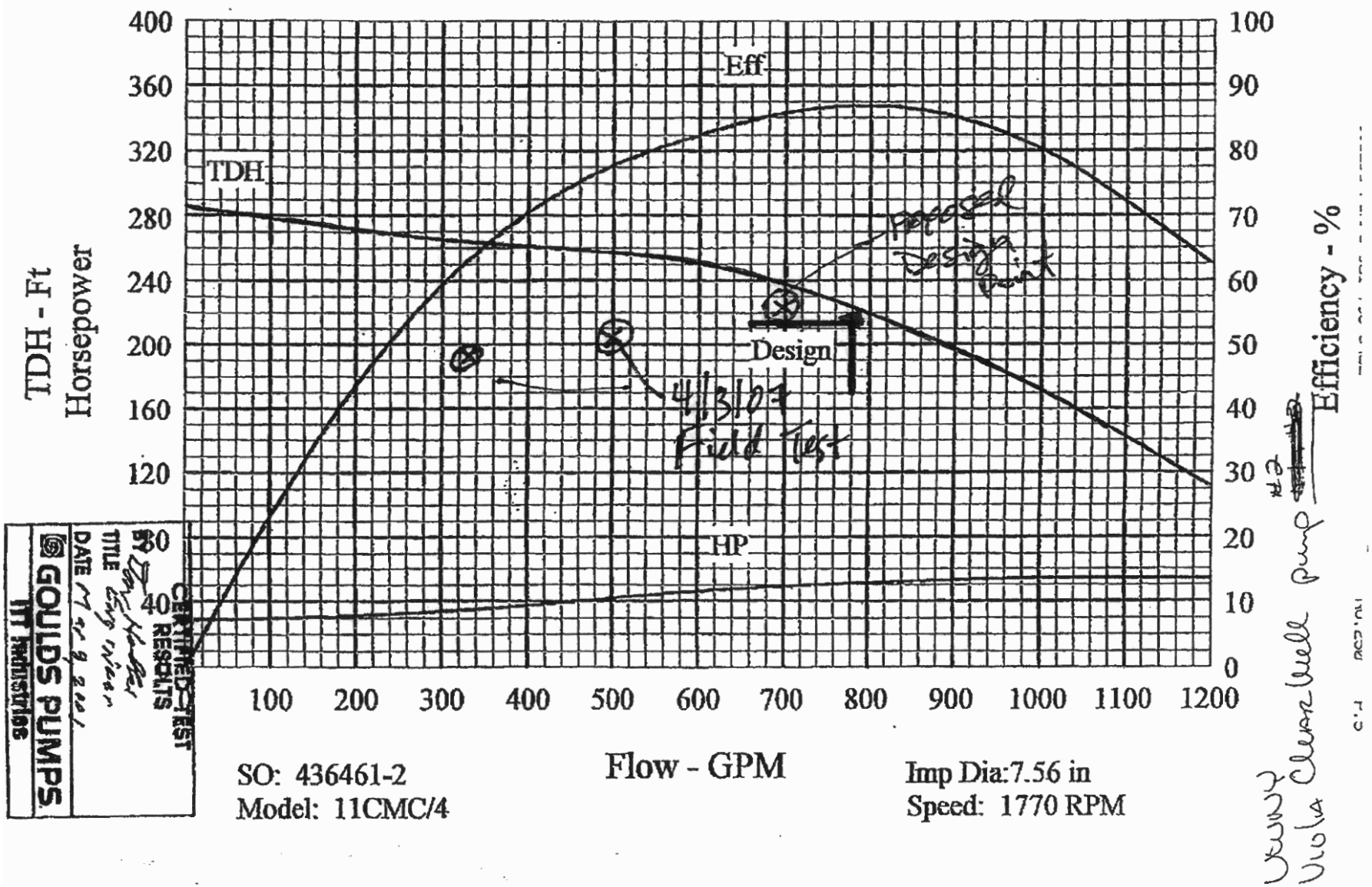
.JF007
Rev 0
8/1999

Time: Fri Feb 23 14:55:47

ITT - Goulds Pumps
Turbine Operations



ITT - Goulds Pumps
Turbine Operations



TO: RINBRAND

Company:
Name:
Date: 04/05/07

Same Curve w/ Ductile Iron Impellers

4-11-07

Pump:
Size: 11CHC (4 stages)
Type: Lineshaft
Synch speed: 1800 rpm
Speed: 1770 rpm
Dia: 7.5625 in
Curve: E3141-2
Specific Speeds: Ns: 2130
Pump Notes for Standard Sizes:
Suction Size-8" Discharge Sizes-6",8"
Vertical Turbine:
Bowl size: 11 in
Max lateral: 0.75 in
Thrust K factor: 7 lb/ft

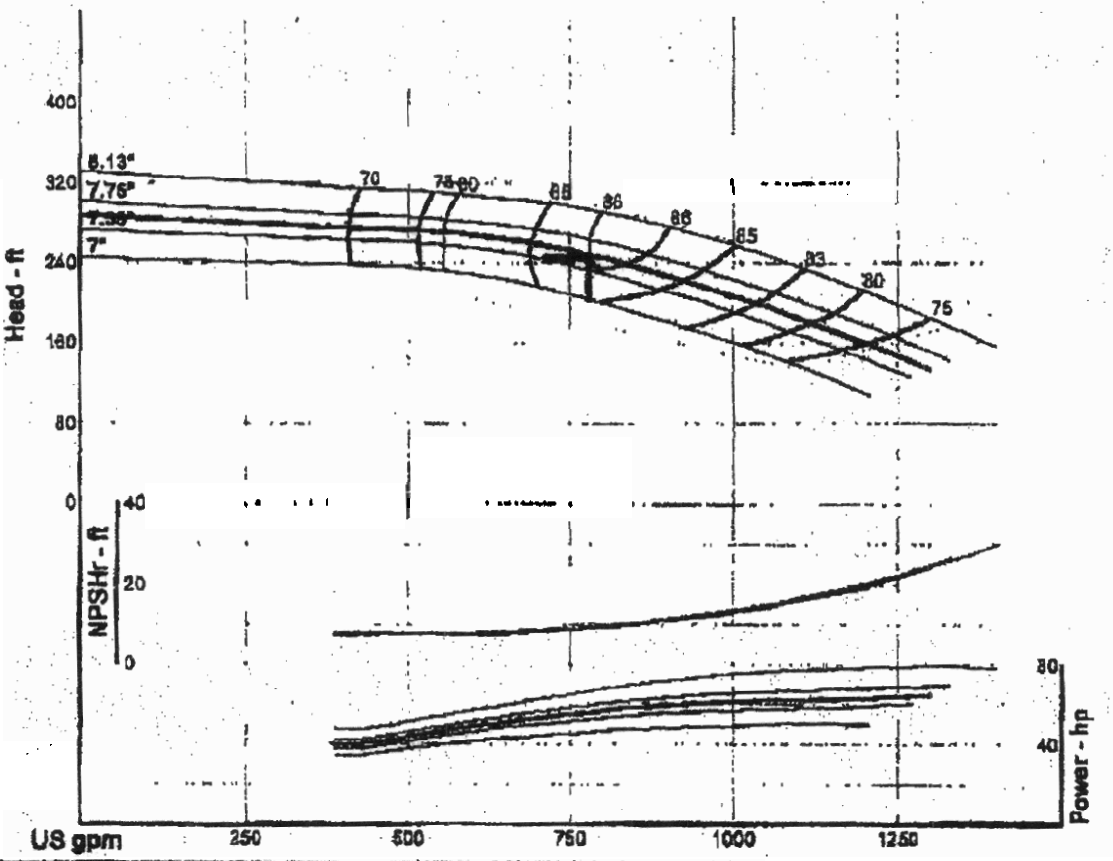
Search Criteria:
Flow: 780 US gpm
Head: 240 ft

Fluid:
Water
SG: 1
Viscosity: 1.106 cP
Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a
NPSHa: --- ft

Motor:
Standard: NEMA
Size: 75 hp
Speed: 1800

Pump Limits for Standard Construction:
Temperature: 120 °F
Pressure: 380 psi g
Sphere size: 0.68 in

Sizing criteria: Max Power on Design Curve



— Data Point —
Flow: 780 US gpm
Head: 242 ft
Eff: 86%
Power: 55.3 hp
NPSHr: 8.74 ft

– Design Curve –
Shutoff Head: 261 ft
Shutoff dP: 122 psi
Min Flow: --- US gpm
BEP: 86% eff
@ 806 US gpm
NOL Pwr: 64 hp
@ 1299 US gpm

– Max Curve –
Max Pwr: 78.6 hp
1300 US gpm

Flow US gpm	Speed rpm	Head ft	Pump %eff	Power hp	NPSHr ft
938	1770	215	84.6	59.7	11.7
780	1770	242	86	55.3	8.74
624	1770	259	82.8	49.2	7.39
468	1770	268	74.6	42.2	7
312	1770	---	---	---	---

RINBRAND WELL DRILLING CO., INC.
14 Waldron Avenue
Glen Rock, NJ 07452-2831

780 gpm at 242' TDH
60Hp needed

Selected from catalog: Goulds Lineshaft 60HZ Vers: 3.06

Viola 28 pump 1+2 Booster Viola Booster 1+2
28

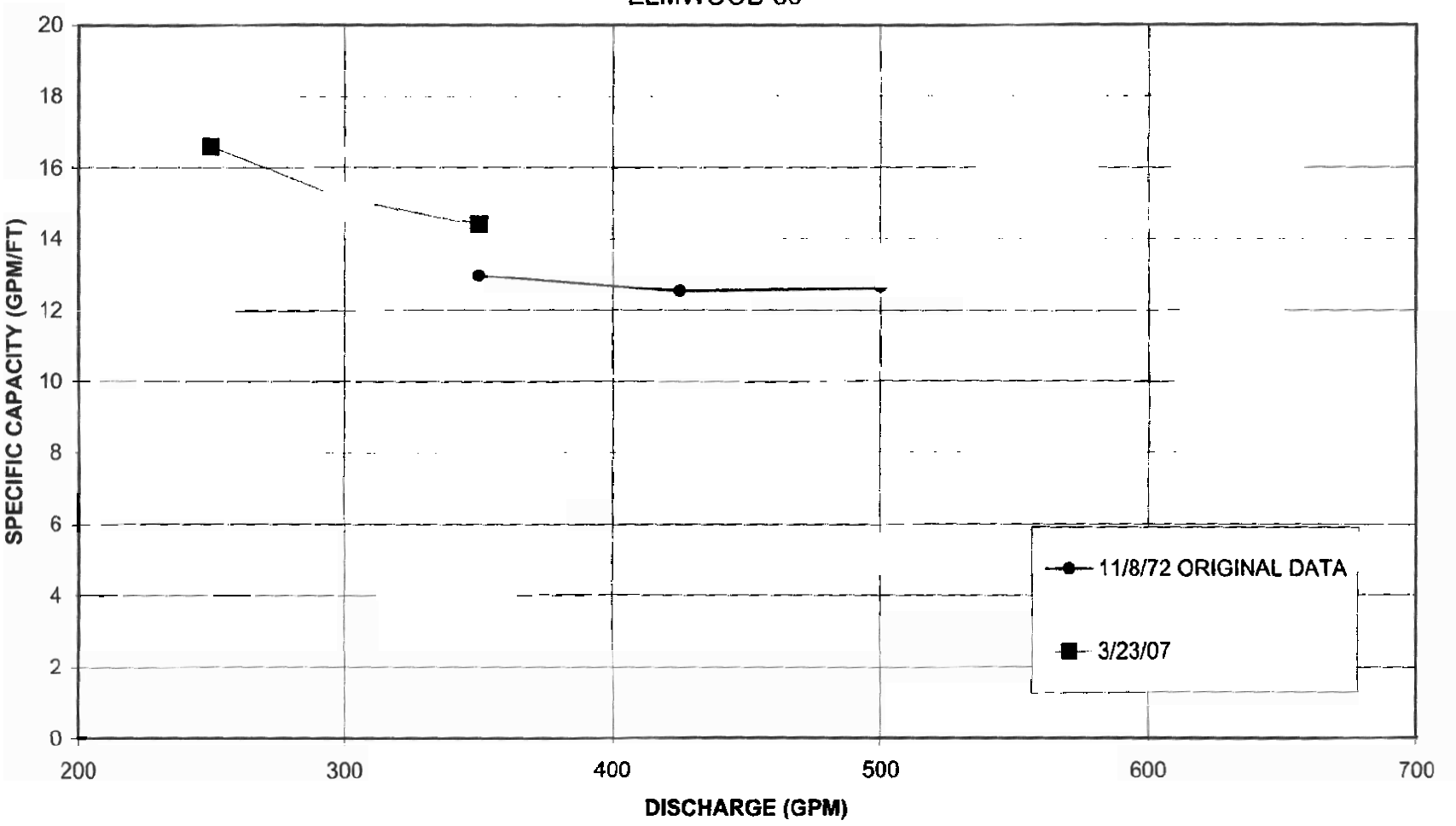
Elmwood 66

Elmwood 66 is permitted by NYSDEC at a capacity of 350 gpm and taps the underlying bedrock aquifer. Recent production capacity indicates that UWNY utilizes Elmwood 66 at a production rate up to 300 gpm, but not typically operated at its maximum permitted production capacity of 350 gpm. Elmwood 66 has a Lowery treatment system installed primarily for treatment of VOCs.

The Elmwood 66 average discharge rate was 241 gpm during the August 2001 3-day system peak demand period. Current pumping test data results indicate the specific capacity of Elmwood 66 is similar to historic specific capacity data, with no significant production-limiting decline noted at the well field. Based on the results of original testing, operational history, and results of current testing, Elmwood 66 is capable of sustaining the short-term (3-day) peaking at a rate of 350 during a drought demand period similar to August 2001. This 3-day peak pumping rate represents an increase of 109 gpm over the 2001 peak system demand operating rate.

UNITED WATER NEW YORK
ROCKLAND COUNTY, NEW YORK

HISTORIC SPECIFIC CAPACITY
ELMWOOD 66



LEGGETTE, BRASHEARS AND GRAHAM, INC.

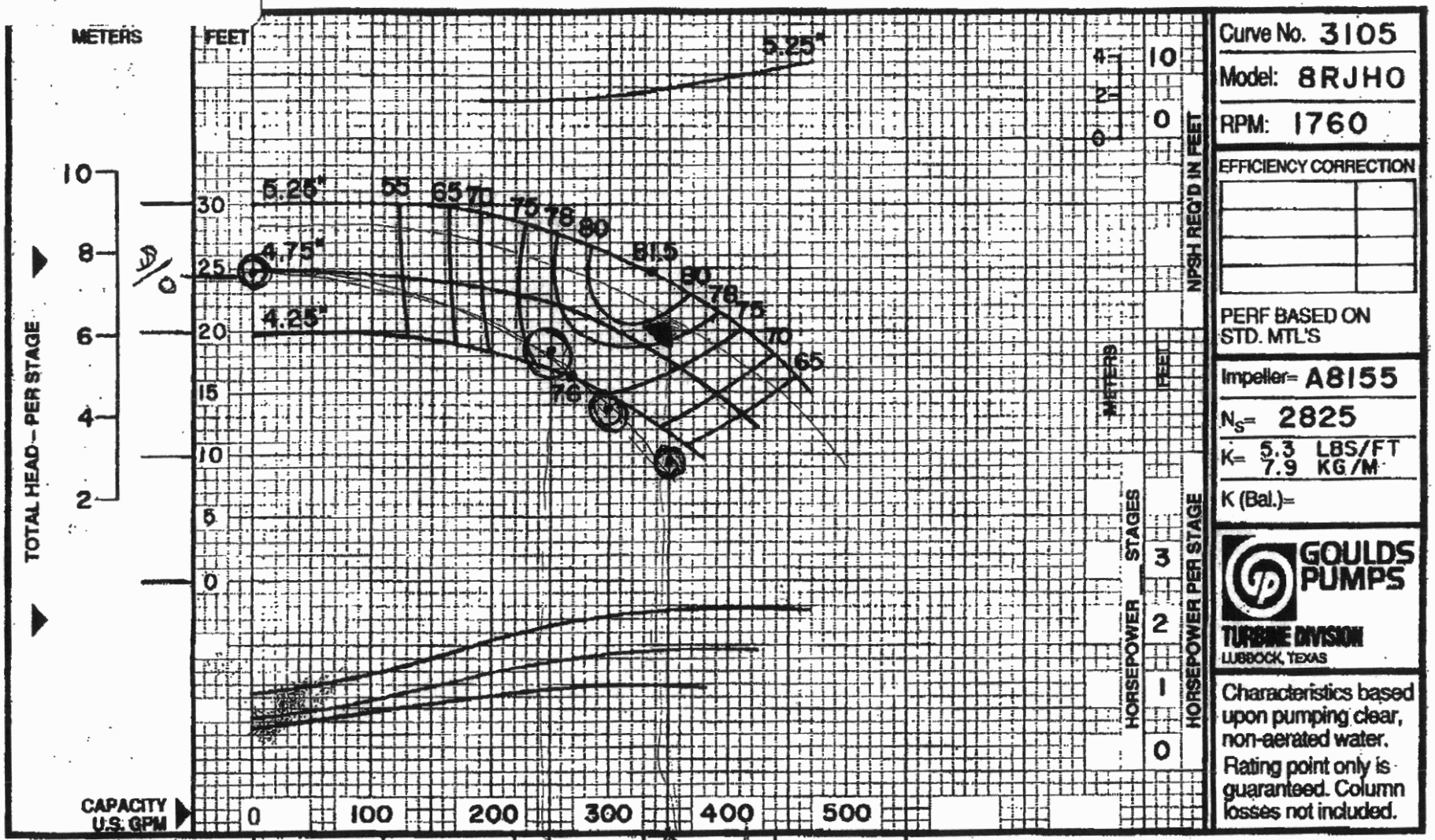
3-23-07

GOULDS PROPOSAL NO.	GOULDS S.O. NO.	INQUIRY NO.	CUSTOMER P.O. NO.	P.O. DATE	ITEM NO.	CUSTOMER
						UINTED WATER NEW YORK 7½HP

PROJECT	SERVICE	GPM CAPACITY	F.T. TDH	% EFFICIENCY	RPM
ELMWOOD WELL PUMP #66	#8RJHO - 3stage (5"Impellers	350GPM	62'TDH		1760RPM

3-23-07

85ft - 6"x1"Column & Shaft & 10ft - 6"Tail Pipe



Somewhat off course

Curve No. 3105
Model: 8RJHO
RPM: 1760

EFFICIENCY CORRECTION

PERF BASED ON STD. MTL'S

Impeller= A8155
N_S= 2825
K= 5.3 LBS/FT
7.9 KG/M
K (Bal.)=

GOULDS PUMPS
TURBINE DIVISION
LUBBOCK, TEXAS

Characteristics based upon pumping clear, non-aerated water. Rating point only is guaranteed. Column losses not included.

MODEL 8RJHO
DATE May 2, 1988
SUPERCEDES July 22, 1977

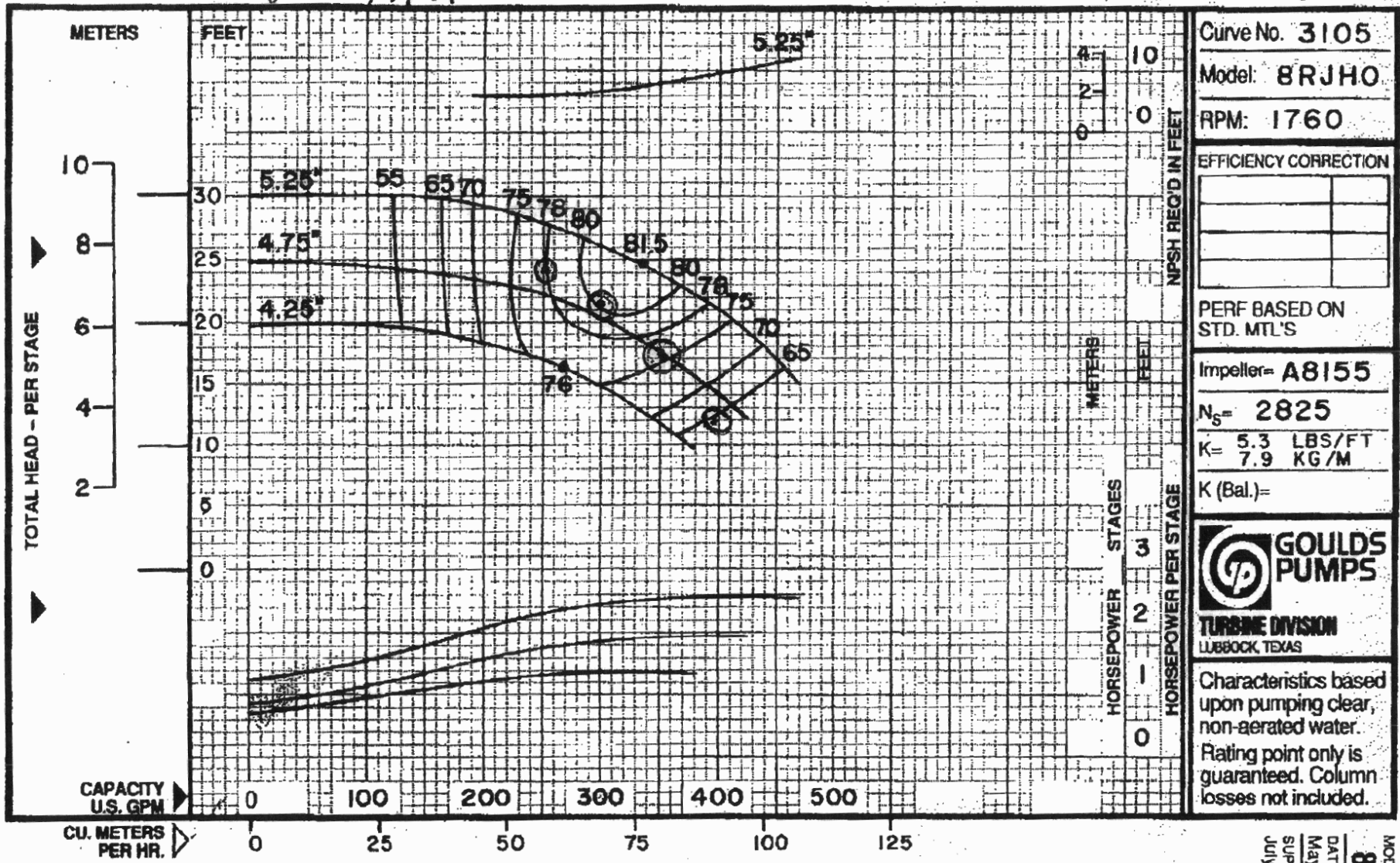
C8RJHO

Well Pump 4-25-07) Bill Prehoda)

GOULDS PROPOSAL NO.	GOULDS S.O. NO.	INQUIRY NO.	CUSTOMER P.O. NO.	P.O. DATE	ITEM NO.	CUSTOMER
						5.12" UNITED WATER NEW YORK 7½HP

PROJECT	SERVICE	GPM CAPACITY	F.T. TDH	% EFFICIENCY	RPM
ELMWOOD WELL PUMP #66	#8RJHO - 3stage 5" Impellers	350GPM	62' TDH		1760RPM

Original 1994 Ductile Iron
New ~~Bowls Nov 2006~~ Impellers 4-17-07 85ft - 6"x1"Column & Shaft & 20ft - 5"Tail Pipe (Ductile Iron Impellers)



C8RJHO

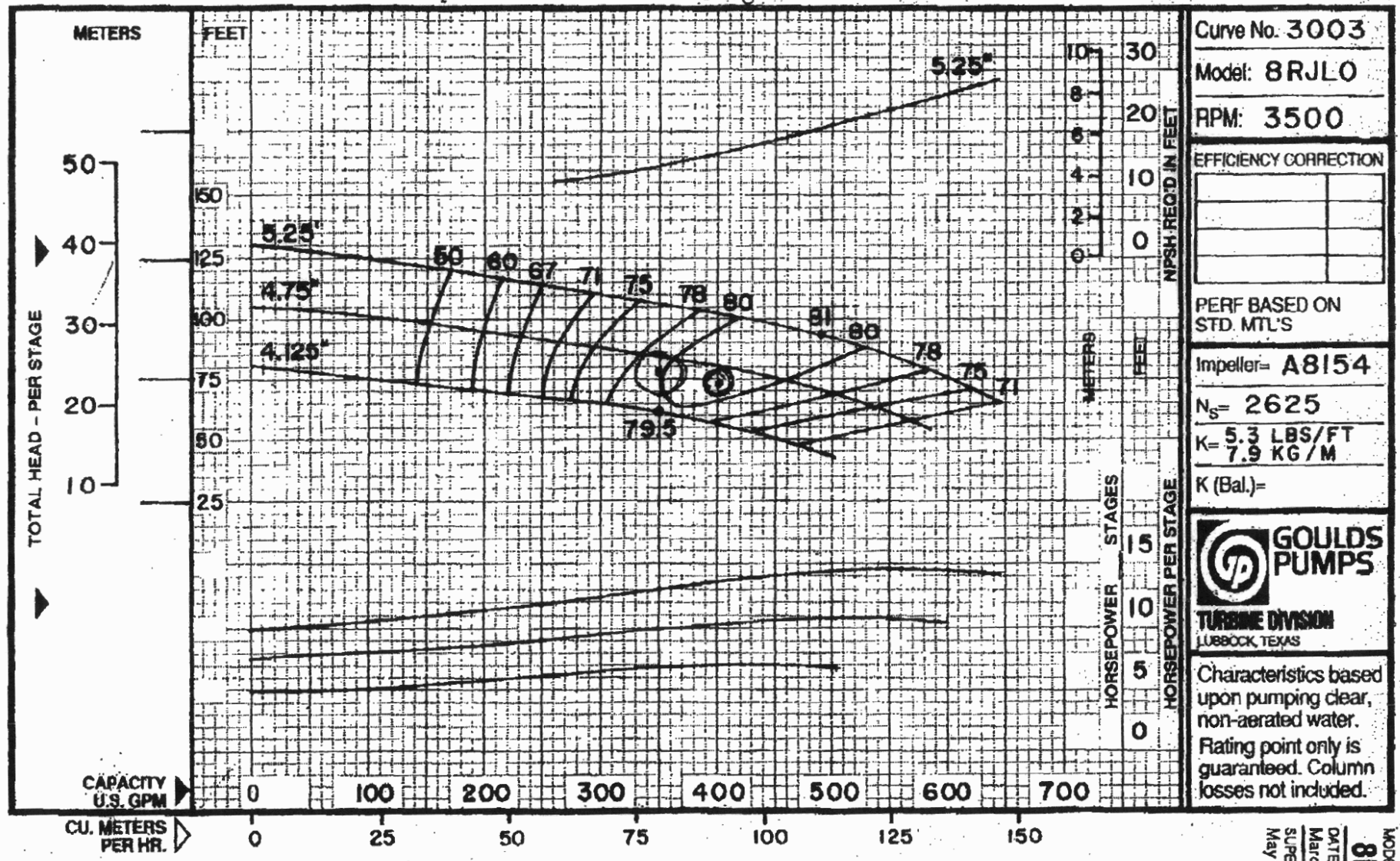
MODEL 8RJHO
DATE May 2, 1988
SUPERCEDES July 22, 1977

Destribution Booster Pump 4-25-07

GOULDS PROPOSAL NO.	GOULDS S.O. NO.	INQUIRY NO.	CUSTOMER P.O. NO.	P.O. DATE	ITEM NO.	CUSTOMER
						United Water New York

PROJECT	SERVICE	GPM CAPACITY	F.T. TDH	% EFFICIENCY	RPM
Elmwood #66 Booster Pump	Model#8RJLO-5Stage 4.68Imp	350GPM	380'TDH		3600RPM

Short setting 6"x 13/16" Column&Shaft 50HP 230/460V/3PH
Bronze Impellers 4.68" 5 stage



Curve No. 3003
Model: 8RJLO
RPM: 3500

EFFICIENCY CORRECTION

PERF BASED ON STD. MTL'S

Impeller= A8154

N_S= 2625

K= 5.3 LBS/FT
7.9 KG/M

K (Bal.)=

GOULDS PUMPS
TURBINE DIVISION
LUBBOCK, TEXAS

Characteristics based upon pumping clear, non-aerated water. Rating point only is guaranteed. Column losses not included.

DUCTILE IRON IMPELLERS would be same Curve.

RINDRAND WELL DRILLING CO., INC.
14 Waldron Avenue
Glen Rock, NJ 07452-2831

MODEL 8RJLO
DATE March 1995
SUPERCEDES May 2, 1988

United Water
SUEZ

▶ Acknowledgements

A great deal of resources and expertise have contributed to the assessment and implementation of means and methods for increasing supply to meet STWS goals. The effort has been a collaboration of UWNY's engineering and operations staff, monitored by way of weekly progress meetings, and UWNY's management, which has been meeting every two weeks to gage progress. A strong contingent of consulting expertise has been enlisted and working closely with UWNY to support the program.

The following individuals and organizations have provided consistent support for the program and will continue to do so through 2008:

- Bob Raczko, P.E. – Senior Engineer; UWNY
- Vito Spadavecchia – Production Manager; UWNY Operations
- Michael Joosten – Senior Operations Staff; UWNY Operations
- Bill Prehoda, P.G. – Hydrogeologist; Leggette, Brashers and Graham, Inc.
- Jonas Hollis, P.G. – Hydrogeologist; Leggette, Brashers and Graham, Inc.
- Michael Johnson, P.E. – Engineer; Buck, Seifert and Jost, Inc.
- Michael McDonald, P.E. – Program Manager; Black & Veatch, Inc.