

# Appendix C

## Reclaimed Water System Facility Data Sheets



# **Cary Reclaimed Water System Facility Data Sheet List**

## **North Cary WRF**

- North Cary Reclaimed Water Pump Station
- North Cary Reclaimed Water Storage Tank
- North Cary Turbidity Monitor
- North Cary Chlorine Analyzer
- North Cary Effluent Flow Meter
- North Cary WRF Bulk Reclaimed Water Fill Station
- North Cary Hypochlorite Tank
- North Cary Chemical metering pumps
- North Cary Hydropneumatic Tank
- North Cary Generator
- North Cary Flow Diversion Structure

## **South Cary WRF**

- South Cary Reclaimed Water Pump Station
- South Cary Reclaimed Water Storage Tank
- South Cary Turbidity Monitor
- South Cary Chlorine Analyzer
- South Cary Effluent Flow Meter
- South Cary WRF Bulk Reclaimed Water Fill Station
- South Cary Hypochlorite Tank
- South Cary Chemical Metering Pumps
- South Cary Hydropneumatic Tank
- South Cary Generator

## **Distribution System**

- Typical Distribution System Blow-off
- Typical Distribution System Customer Meter

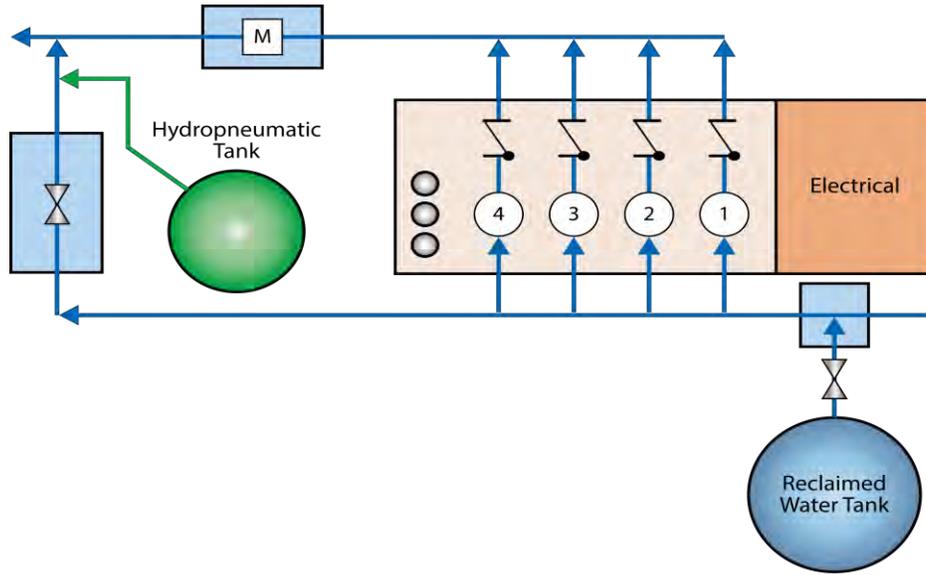


**Town of Cary Reclaimed Water System  
Facility Worksheet  
PUMP STATIONS**

**Facility:** North Cary Reclaimed Water Pump Station  
**Date:** 02/28/13 **Inspected By:** JSG

**Pump Station Schematic:**

**Year Built** 2002  
**Drawing Provided**  **Yes**  **No**



North Cary Reclaimed Water Pump Station

**Pump Configuration:** Vertical Turbine Can **Pump Curves Available?** yes  
**Suction Supply:** RCW Ground Storage **Flow Meter Location:** Vault  
**Pump Control:** Distribution System Pressure **Meter Type / Model:** Danfoss/16" Mag/3100W-083Z8612  
**Pump Centerline Elevation:** 310.0 (finished floor elev) **Date Last Calibrated:** 9/9/2012  
**Source:** Drawings/Verbal

**Overall condition:**  **Excellent**  **Good**  **Fair**  **Poor**  **Needs Repair**  **Needs Replacement**

**Detailed Pump Information**

**Source of Information:** as-built/verbal  
(model, as-built, visual inspection, verbal)

Pump No.	Serial No.	Manuf.	Model	HP	Design Flow		Design Head (ft)	RPM / Stages
					gpd	mgd		
1	187867-0	Fairbanks Morse	15H(7000AW)	300	2972	4.3	292	1785/4
2	187867-1	Fairbanks Morse	15H(7000AW)	300	2972	4.3	292	1785/4
3	188068-1	Fairbanks Morse	13E(7000AW)	150	1500	2.2	260	1785/5
4	1888068-0	Fairbanks Morse	13E(7000AW)	150	1500	2.2	260	1785/5

**Capacity of Pump Station:**

**Total Capacity:** \_\_\_\_\_ mgd  
**Firm Capacity:** 7.5 mgd

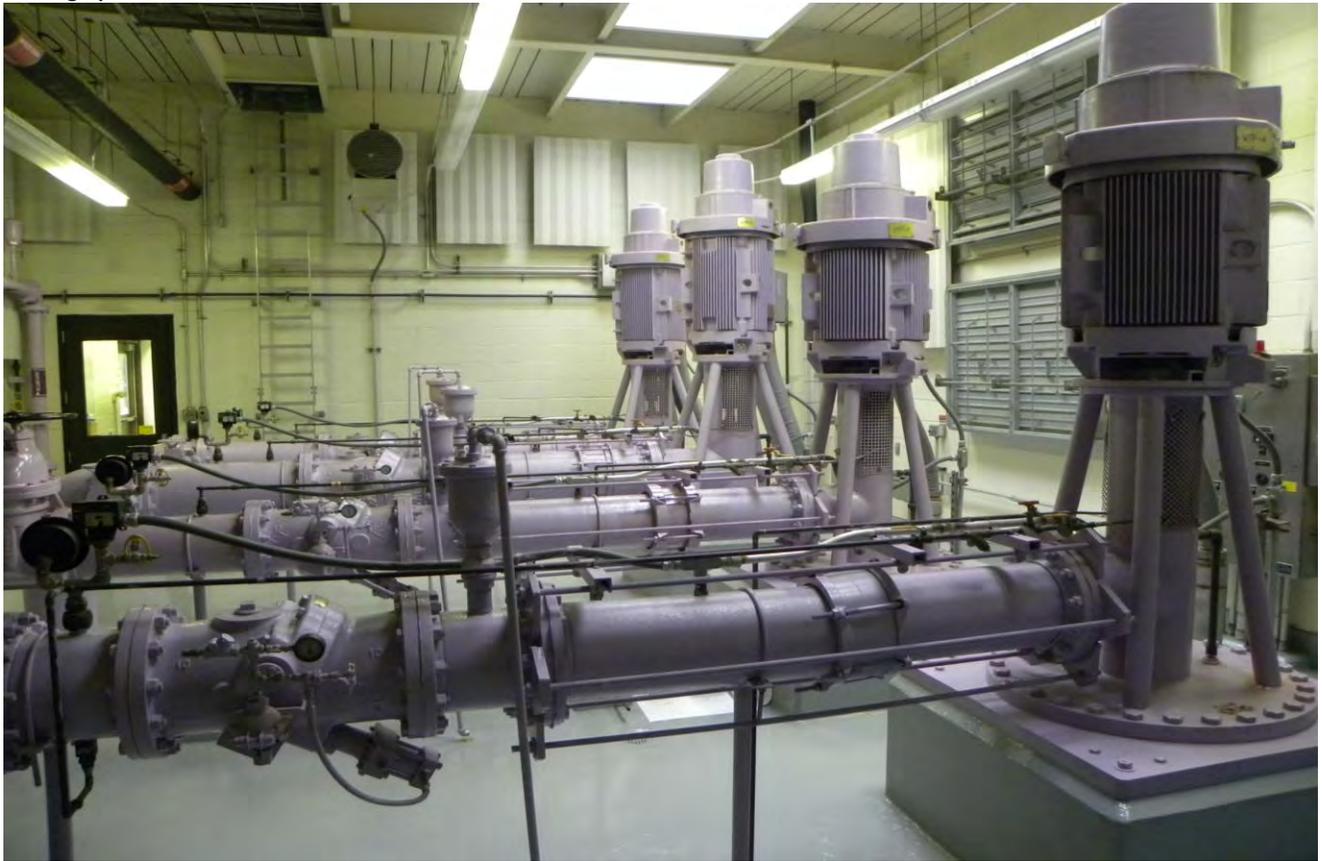
**Control Set-points:**

Automatic (automatic / manual)  
Level (psi) (feet, psi, time of day)

CPZ	Pump No.	On Set-point	Off Set-point	Always On
Lead	1	125 PSI	140 PSI	
Lag 1	2	100 PSI	135 PSI	
Lag 2	3	80 PSI	130 PSI	

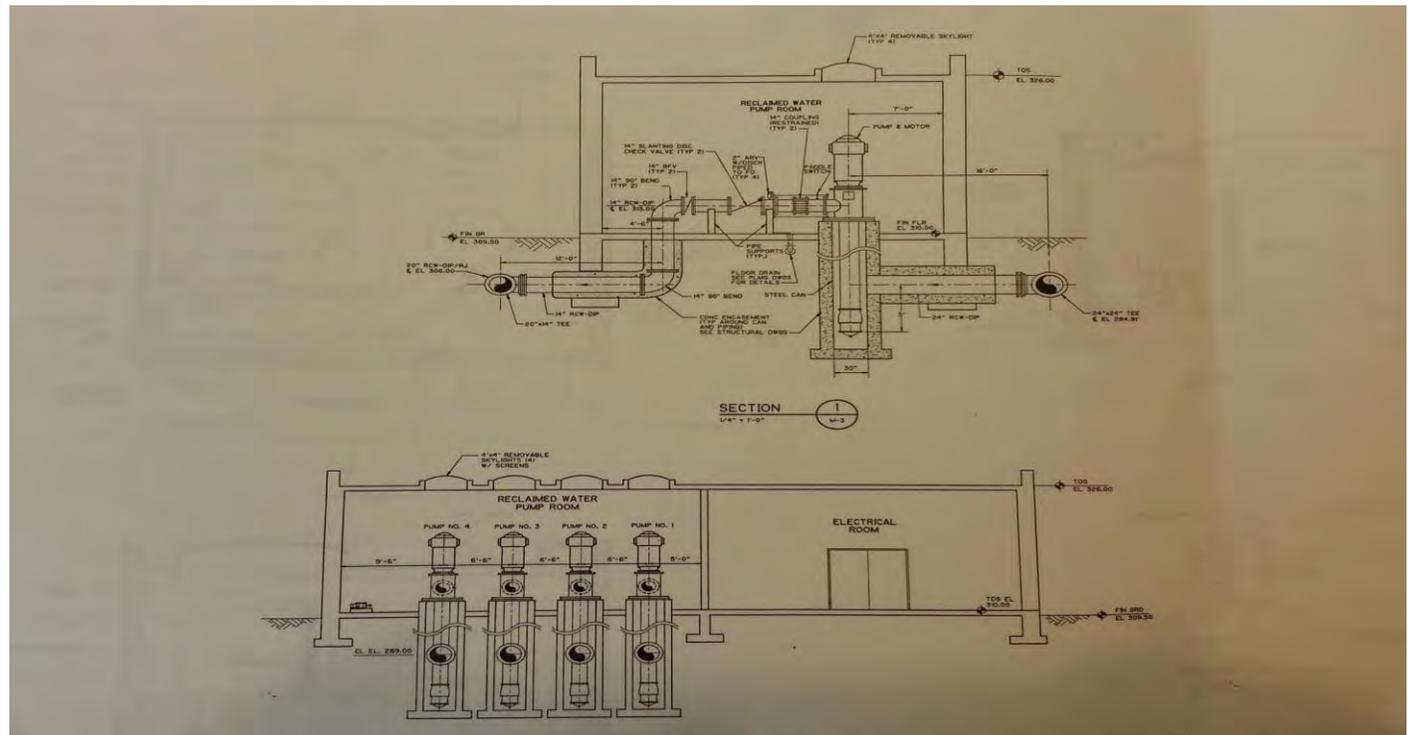
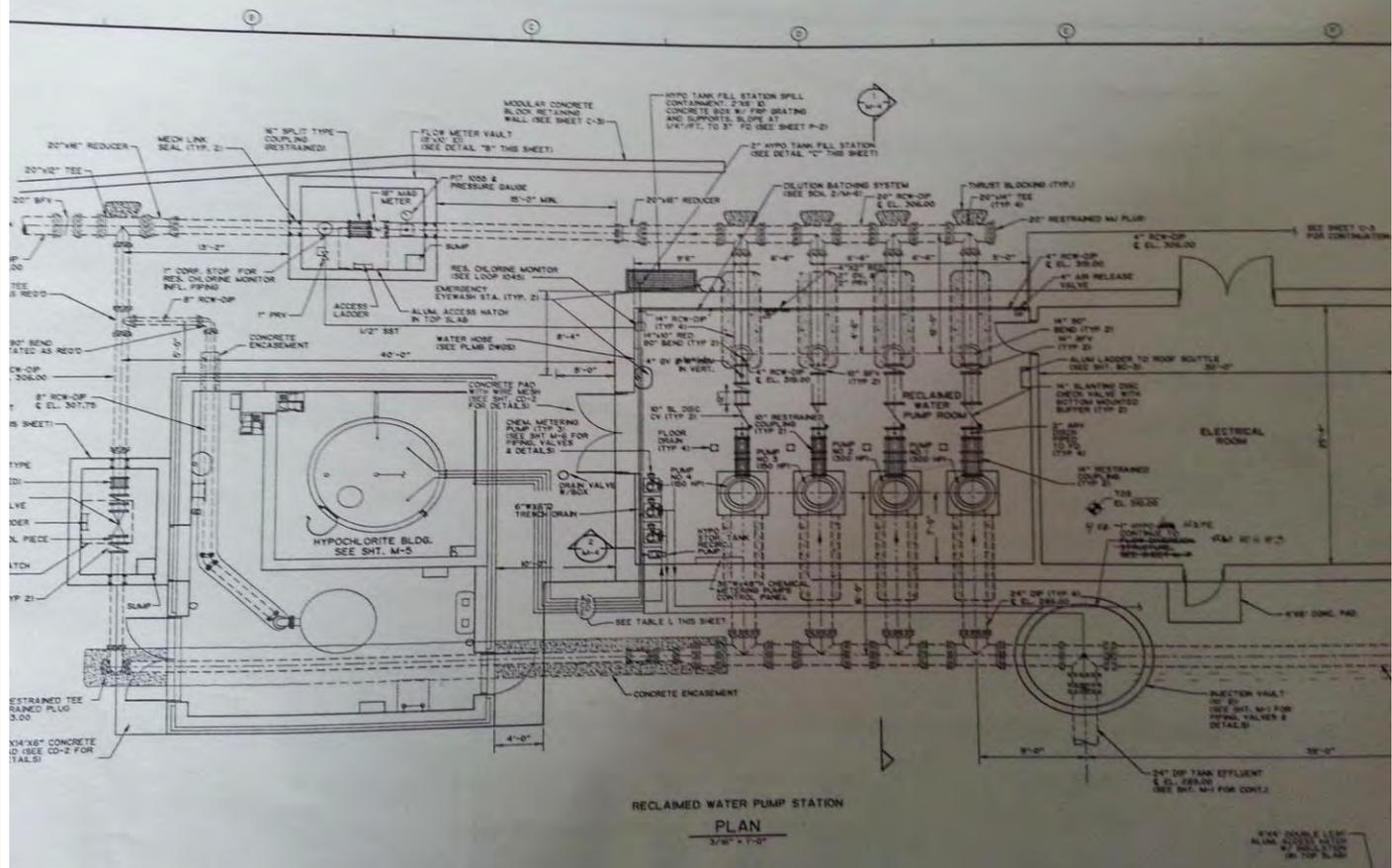
Town of Cary Reclaimed Water System  
Facility Worksheet  
PUMP STATIONS

Photographs:



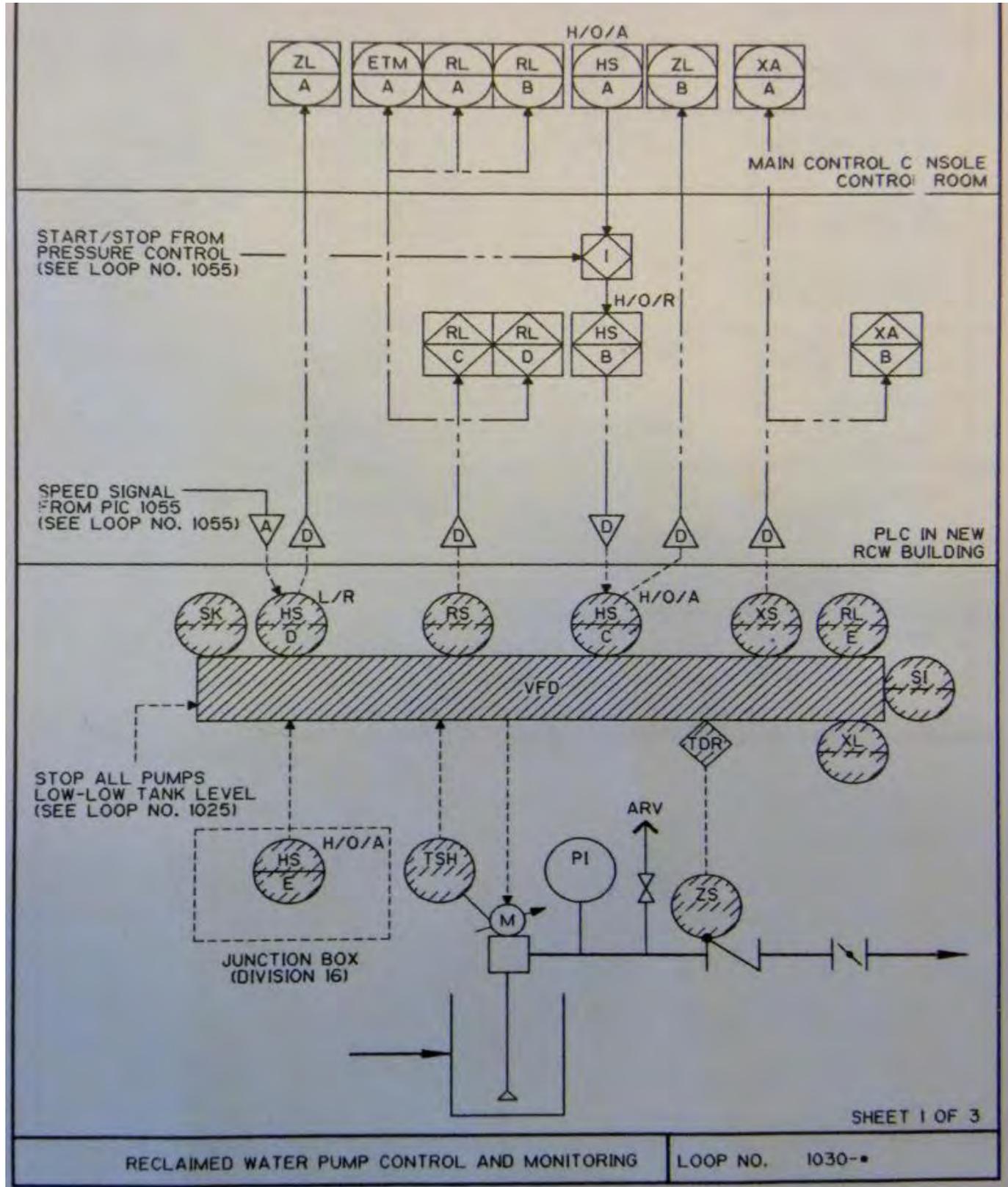
**Town of Cary Reclaimed Water System  
Facility Worksheet  
PUMP STATIONS**

Plans/Drawings:



Town of Cary Reclaimed Water System  
 Facility Worksheet  
 PUMP STATIONS

Additional Information:



SHEET 1 OF 3

Town of Cary Reclaimed Water System  
Facility Worksheet  
PUMP STATIONS

Pump Curves and Additional Information:

Equipment Data Sheet

*VFD OPERATION w/  
A 16 Pulse Drive*

Name: Vertical Turbine Pumps	
Nomenclature:	
Location:	Cary, NC
<b><u>Manufacturer's Local</u></b>	
Representative:	Hughes Supply, Inc.
Address:	P. O. Box 2504; Hickory, NC 28603
Phone:	(828) 324-9705
<b><u>Equipment Data</u></b>	
Serial Number:	188068
Model No:	7000AW
Size: 13E	Lubricant: Product Lubricated
If pump, complete the following:	
RPM: 1785	GPM: 1500
TDH (FT): 260.0	Impeller Diameter 10.04
Material: Packing Gland	Seal
<b>Motor Data</b>	
Manufacturer: General Electric	
Serial Number: 464028 & 464029	Frame: L449VP20
Model No. 5KS444DT6458P:	Type: KS
Volts: 460	Hertz: 60
Phase: 3	Amps: 167.0
Amps: 167.0	<b>Horsepower: 150</b>
Motor rpm: 1785	Rating: Continuous
Insulation Class: F	Max Ambient: 40 Deg C
Service Factor: 1.15	Max Temp Rise: 90 Deg C
Code Letter: G	Nema Design: B
Shaft End Bearing No.: 6219ZC3	Front Bearing No. 235A2534AA01

**Town of Cary Reclaimed Water System  
Facility Worksheet  
PUMP STATIONS**

**Pump Curves and Additional Information:**

4

**Section 2 Introduction**

Congratulations! You are the owner of the finest pump commercially available. If you give it the proper care as outlined and recommended by this manual, it will provide you with reliable service and long life.

**IMPORTANT** Read this complete manual and manuals for all component equipment before assembly or installation is started. It contains information which is the result of engineering and research efforts. It is designed to supply adequate instructions for the installation, operation and maintenance of your pump. Failure or neglect to properly install, operate or maintain your pump may result in personal injury, property damage or unnecessary damage to the pump.

This manual applies to the pump installation, operation and maintenance. If your operating conditions ever change, always refer to the factory for reapplication. Always refer to the manuals provided by manufacturers of the accessory equipment for their separate instructions.

Variations exist in both the equipment used with these pumps and in the particular installation of the pump and driver. Therefore, specific operating instructions are not within the scope of this manual. The manual contains general rules for installation, operation and maintenance of the pump. If there are questions regarding the pump or its application which are not covered in this manual, please contact the factory as follows:

Fairbanks Morse Pump  
3601 Fairbanks Ave.  
Kansas City, KS 66203  
(913) 371-5000  
Fax: (913) 371-2272

To obtain additional data on hydraulics and pump selection and operation, we suggest you purchase both of the following reference books:

1. "Hydraulic Handbook" available from the Kansas City factory.

Fairbanks Morse Pump  
3601 Fairbanks Avenue  
P.O. Box 6999  
Kansas City, KS 66106-0999  
(913) 371-5000  
Fax: (913) 371-2272

2. Hydraulic Institute Standards

Hydraulic Institute  
9 Sylvan Way  
Parsippany, NJ 07054-3802

Pump Identification

Important identification is given in the following tables. Some of the information may not be available at the time this manual is prepared. Fill in the missing information from nameplate(s) supplied with the equipment. In addition to the nameplate, the serial number is stamped on the discharge flange.

Pump	
Serial Number	188068
Size	13E
Model	7100AW
Number of Stages	5
Capacity (GPM)	1500/400/800
Head (Ft.)	260.0/429.0/375.0
Full Load Speed (RPM)	1785
Motor	
Manufacturer	General Electric
Serial Number	464028 & 29
Horsepower	150
Frame	L444VP20
Full Load Amps	167.0
Phase/Hz/Volts	3/60/460V

- Serial number is not yet available. Copy from motor nameplate.

General Description

A vertical line shaft turbine pump consists of five basic components. These components are the pump bowl assembly, column pipe, line shafting, discharge head, and driver. Refer to the section 7 for general arrangement drawings.

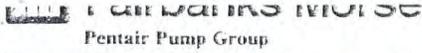
Bowl Assembly

The 7100 series single stage bowl assembly is made up of a suction bell (or suction case), a top intermediate bowl and impeller, and a discharge case. Units of two or more stages include a suction bell (or suction case), multiple intermediate bowls and impellers. Multiple stage open line shaft construction does not require a discharge case.

Refer to the assembly drawing found in section 7 of this manual for your specific configuration.

**Town of Cary Reclaimed Water System  
Facility Worksheet  
PUMP STATIONS**

**Pump Curves and Additional Information:**



SUBMITTAL CURVE

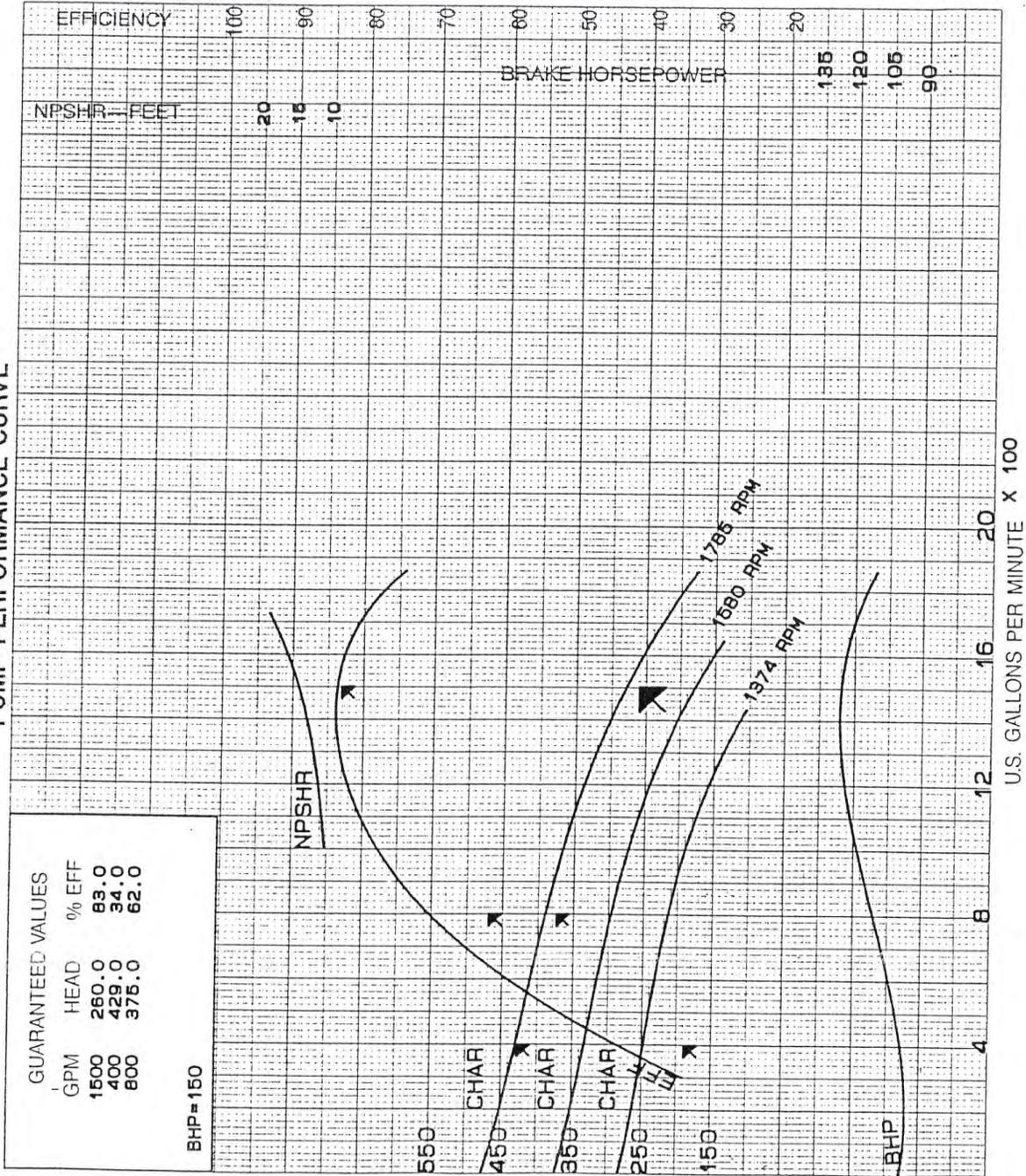
THIS CURVE IS BASED ON ACTUAL TEST PERFORMANCE OF A SIMILAR PUMP. ONLY THE INDICATED POINT(S) IS GUARANTEED.

NO. STAGES FIVE  
REFERENCE 96-09868  
PLOTTED BY BHW  
DATE 6/02/00

SIZE-MODEL 13E-7100AW  
IMPELLER DES. 5585  
IMPELLER DIA. 10.04"  
RPM(S) 1785

**PUMP PERFORMANCE CURVE**

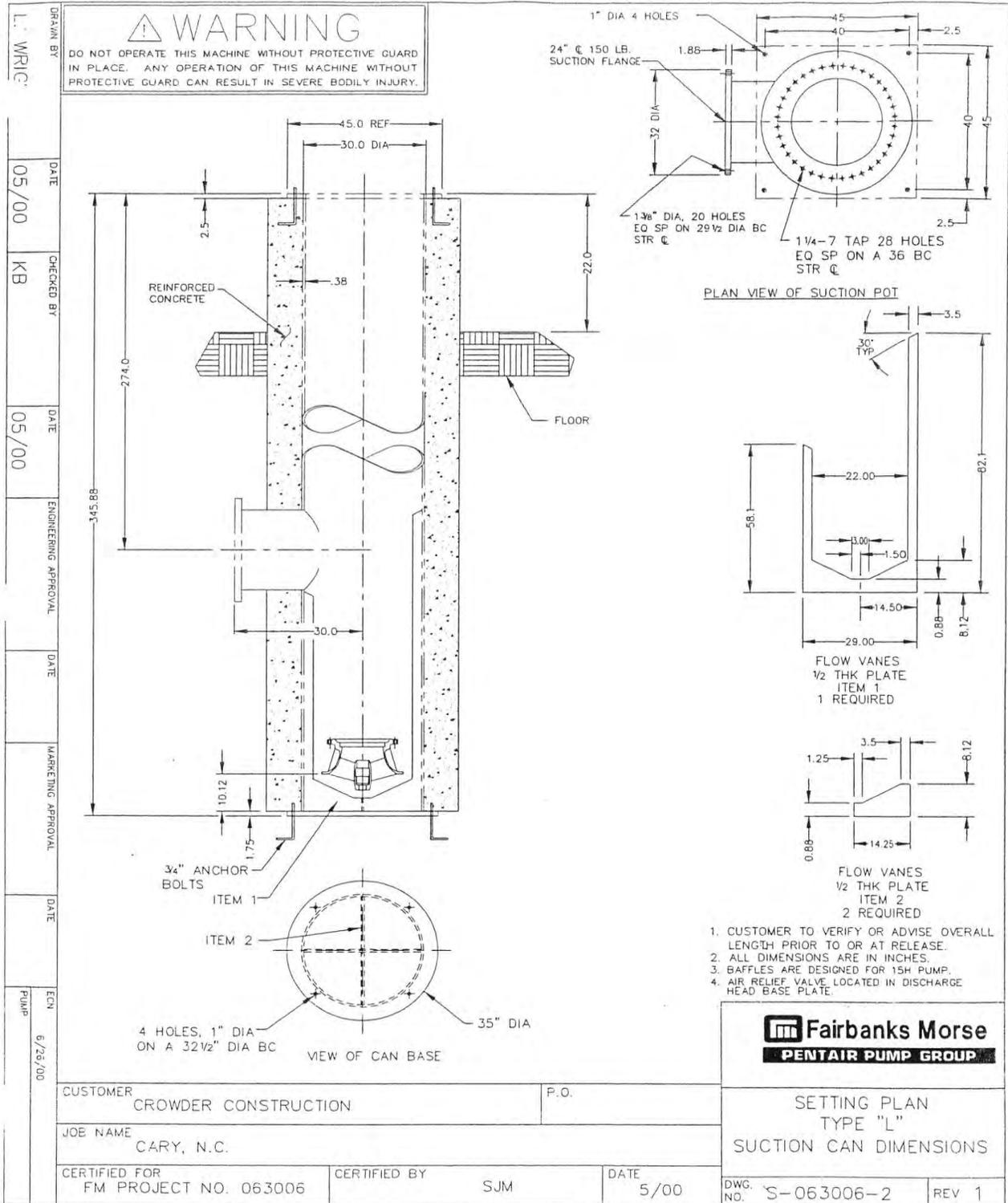
PROJECT NO. C-063007



FM143E-10/99

**Town of Cary Reclaimed Water System  
Facility Worksheet  
PUMP STATIONS**

**Pump Curves and Additional Information:**



SETTING PLAN  
TYPE "L"  
SUCTION CAN DIMENSIONS

Town of Cary Reclaimed Water System  
 Facility Worksheet  
 PUMP STATIONS

Pump Curves and Additional Information:

<u>Equipment Data Sheet</u> <span style="float: right; font-weight: normal;">VFD OPERATION w/ A 16 PULSE DRIVE</span>							
Name: Vertical Turbine Pumps							
Nomenclature:							
Location: Cary, NC							
<u>Manufacturer's Local</u>							
Representative: Hughes Supply, Inc.							
Address: P. O. Box 2504; Hickory, NC 28603							
Phone: (828) 324-9705							
<u>Equipment Data</u>							
Serial Number:		187867		Model No: 7000AW			
Size: 15H		Lubricant: Product Lubricated					
If pump, complete the following:							
RPM:	1785	GPM:	2972	TDH (FT):	292.0	Impeller Diameter	9.2
Material:	Packing Gland			Seal			
Motor Data							
Manufacturer: General Electric							
Serial Number: 473033 & 472033				Frame: L449VP20			
Model No. 5KS449DT66429P:				Type: KS			
Volts: 460				Hertz: 60			
Phase: 3				Amps: 322.0			
Amps: 322.0				Horsepower: 300			
Motor rpm: 1785				Rating: Continuous			
Insulation Class: F				Max Ambient: 40 Deg C			
Service Factor: 1.15				Max Temp Rise: 90 Deg C			
Code Letter: G				Nema Design: B			
Shaft End Bearing No.: 6219ZC3				Front Bearing No. 235A2534AA01			

**Town of Cary Reclaimed Water System  
Facility Worksheet  
PUMP STATIONS**

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Hydraulic Institute  
9 Sylvan Way  
Parsippany, NJ 07054-3802

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Pump	
Serial Number	187867
Size	15H
Model	7000AW
Number of Stages	4
Capacity (GPM)	2972/1000/2000
Head (Ft.)	292.0/368.0/353.0
Full Load Speed (RPM)	1785
Motor	
Manufacturer	General Electric
Serial Number	473033 & 472033
Horsepower	300
Frame	L444VP
Full Load Amps	322.0
Phase/Hz/Volts	3/60/460V

- Serial number is not yet available. Copy from motor nameplate.

General Description

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Refer to the assembly drawing found in section 7 of this manual for your specific configuration.



**Town of Cary Reclaimed Water System  
Facility Worksheet  
PUMP STATIONS**

**Pump Curves and Additional Information:**

**WARNING**  
DO NOT OPERATE THIS MACHINE WITHOUT PROTECTIVE GUARD IN PLACE. ANY OPERATION OF THIS MACHINE WITHOUT PROTECTIVE GUARD CAN RESULT IN SEVERE BODILY INJURY.

DISCH SIZE	COL SIZE	DISCHARGE HEAD DIMENSIONS						
		A**				B	C	E
		MTR BASE DIA (BD)						
12	16 1/2	20	24 1/2	30 1/2	22 3/8	14	16 1/4	
14	12	--	--	48 1/2	--	--	--	

BOWL SIZE	First Stage Open Lineshaft, Flanged Column Multi-Stage	Each Additional Stage	W	X	Y	BY
15H	28 7/16	14 1/2	7 3/16	10 1/8	14 3/4	15

••SEE PERFORMANCE CURVE

1. THIS DRAWING NOT FOR CONSTRUCTION OR INSTALLATION UNLESS CERTIFIED. DIMENSIONS SHOWN ARE TYPICAL AND MAY VARY DUE TO VARIOUS TOLERANCES.
2. MAXIMUM SUBMERGENCE REQUIRED AT MINIMUM FLOW.
3. CUSTOMER TO VERIFY OR ADVISE OVERALL LENGTH PRIOR TO OR AT RELEASE.
4. POT DESIGNED TO MEET HYDRAULIC INSTITUTE STANDARDS, FM WILL ADVISE ON DESIGN, SUPPLIED BY OTHERS.
5. ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.

CUSTOMER CROWDER CONSTRUCTION		P.O.	
JOB NAME CARY, N.C.		SERVICE	
PUMP SIZE & MODEL 15H 7000	STAGES 4	GPM ••	TDH ••
MOTOR GE	HP 300	FRAME L444VP	PHASE 3
CERTIFIED FOR FM PROJECT NO. 063006		CERTIFIED BY SJM	
DATE 5/00		DATE 5/00	

**SETTING PLAN  
MODEL 15H 7000  
TYPE "L" SURFACE HEAD  
NO SOLEPLATE**

DWG. NO. S-063006-1    REV 0

DRAWN BY: L. WRICHT  
 DATE: 05/00  
 CHECKED BY: KB  
 DATE: 05/00  
 ENGINEERING APPROVAL:  
 MARKETING APPROVAL:  
 DATE:  
 ENR:

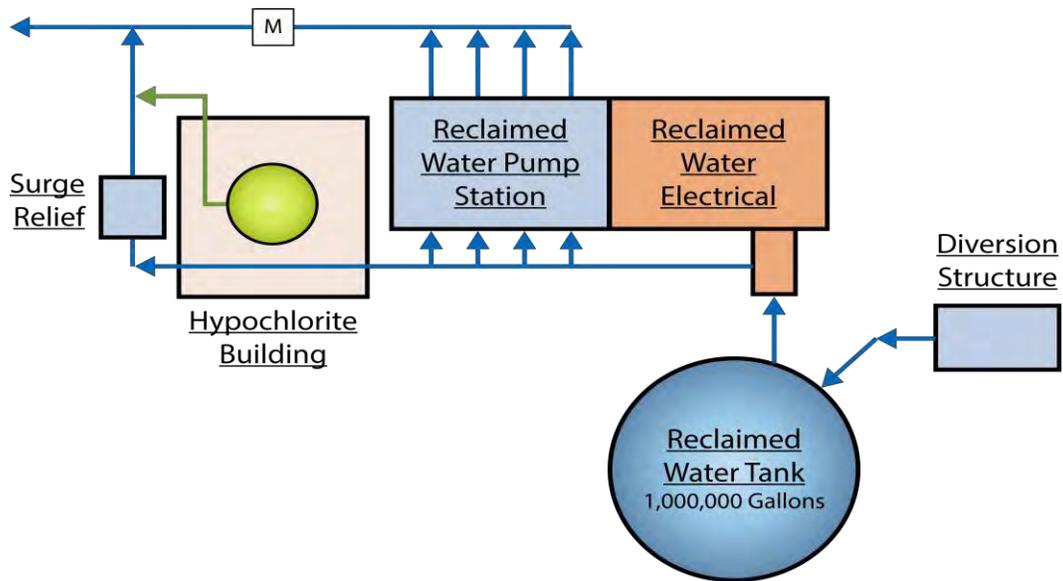
**Town of Cary Reclaimed Water System  
Facility Worksheet  
STORAGE TANKS**

**Facility:** North Cary Reclaimed Water Storage Tank  
**Date:** 2/28/13 **Inspected By:** JSG

**Tank Information:**

**Type of Tank:** Ground Tank **HWL Alarm** 15 ft  
**Set Points and on/off control:** System Pressure **LWL Alarm** 4 ft  
125 PSI/130 PSI  
**Chlorine Set Points H/L:** 5.0 ppm/0.0 ppm

**Tank Schematic:**



North Cary Reclaimed Water Storage Tank

**Year Constructed:** 2002  
**Manufacturer:** Crom  
**Overall condition:**  Excellent  Good  Fair  Poor  Needs Repair  Needs Replacement

**Drawing Provided**  Yes  No

**Tank Diameter:** 110 feet **Ground Elevation:** 291.5 feet m.s.l.  
**Tank Height:** 18.5 feet **Ground to Overflow:** 310 feet  
**Head Range:** 18.5 feet **Total Volume:** 1000000 MG

**Source of Information:** as built/Verbal  
 (model, as-built, visual inspection, verbal)

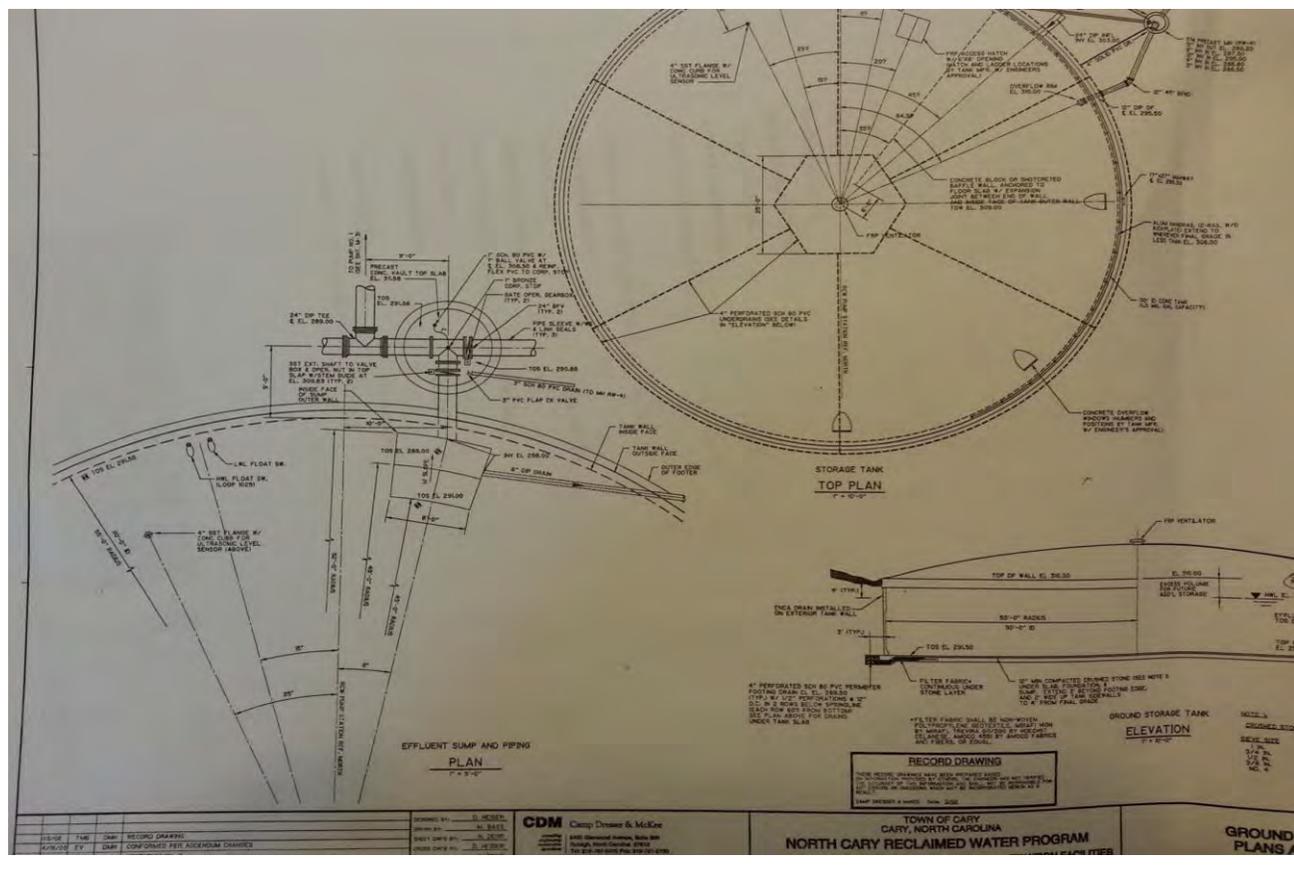
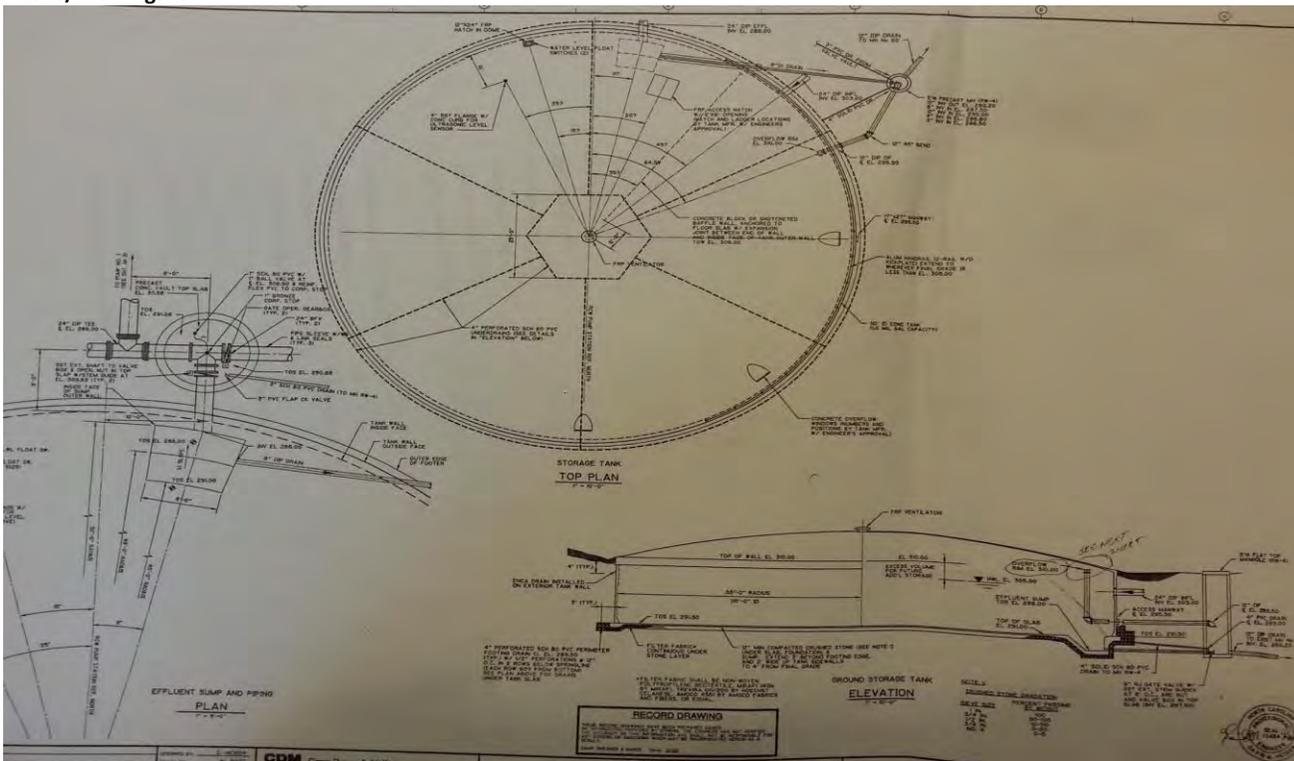
Town of Cary Reclaimed Water System  
Facility Worksheet  
STORAGE TANKS

Photographs:



**Town of Cary Reclaimed Water System  
Facility Worksheet  
STORAGE TANKS**

Plans/Drawings:



Town of Cary Reclaimed Water System  
Facility Worksheet  
STORAGE TANKS

Additional Information:



**I. Kruger Inc.**  
401 Harrison Oaks Blvd  
Ste. 100  
Cary, NC 27513

TELEPHONE 919-677-8310  
FACSIMILE 919-677-0082

North Cary WWTP Reclaim Tank Level Meter Calibration  
Calibration Date: September 09, 2012 (Calibration of Reclaim Tank Level Meter)  
Calibrated By: Todd Casey / Kruger  
Milltronics Hydroranger Ultrasonic Transmitter / STH Transducer  
Configured for Material Level

**Reclaim Tank Level Settings**  
**0~20.00 Feet**

		<u>Parameter Value</u>	<u>Parameter Units</u>
P-1	Units of calibration and display	3	Feet
P-2	Mode of measurement	1	Material Level
P-3	Empty distance to transducer	21.950	Feet
P-4	Span	20.00	Feet
P-5	Near Blanking	1.50	Feet
P-6	Milliamp Output	2	4-20mA
P-7	Decimal Point Location	2	Two digits after decimal

**Town of Cary Reclaimed Water System  
Facility Worksheet  
STORAGE TANKS**

**Additional Information:**

 Kruger Products <b>INSTRUMENT SPECIFICATION</b> Project No.: 330003 Client: North Cary WWTP Cary, NC Proj. Name: Reuse Pump Station	Tag No.: LE/LIT-1025	Associated Tag No:	
	Spec. No: 13300	PO No:	
	Manufacturer: Milltronics		
	Model No: HydroRanger		
	By: ETC	Checked:	Approved:
No. A	Date: 7/21/00	By: ETC	Revision: Issued for Approval
<b>Ultrasonic Level Transmitter</b>			
<b>GENERAL INFORMATION</b>	1 Tag Number	LE/LIT-1025	3 Application Level
	2 Service	Reclaimed Water Storage	4 Function Level
<b>GENERAL OPERATIONS</b>	5 Modes of Operation	Level	9 Blanking From 0.3m (1 ft.)
	6 Range	50 Feet	
	7 Range Extension	none	10 Resolution the greater of 0.1% of range or 2mm
	8 Error messages	Loss of Echo Shorted or open cable	11 Transducer STH Support
<b>DISPLAY</b>	12 Panel	high contrast 4 digit LCD	16 Parameter values protected via Retention EEPROM
	13 Units of Measurement	m, cm, ft, in, and % of span	
	14 Programming	keypad programmer	
	15 Rate Limit	0 to 9999 units/min	
<b>TRANSDUCER</b>	17 Model Number	STH	19 Range min. (1ft.) to max. (50ft.)
	18 Housing	Tefzel	
<b>OUTPUTS</b>	20 Relays	5 Form C (5A) contacts available	22 Analog programmable 4-20mA mA current loop into 350 ohms or 750 ohms
	21 Alarms	Programmable as pump control, sampler, or totalizer	
<b>INSTALLATION</b>	23 Power Supply	100/115/200/230 VAC	27 Process range -40 °F to 203°F Temp.
	24 Enclosure Type	NEMA 4X	28 Cable to included transmitter
	25 Enclosure Size	6.3"Hx9.5"Wx3.2"D	
	26 Operating Temp. for electronics	range -5 °F to 122°F	29 Temp. built-in compensation Compen.
Notes:			
Sunshield Surge Arrestor Josyln 1669-06			



**Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT**

**Facility:** North Cary Turbidity Monitor  
**Date:** 2/28/13 **Inspected By:** JSG

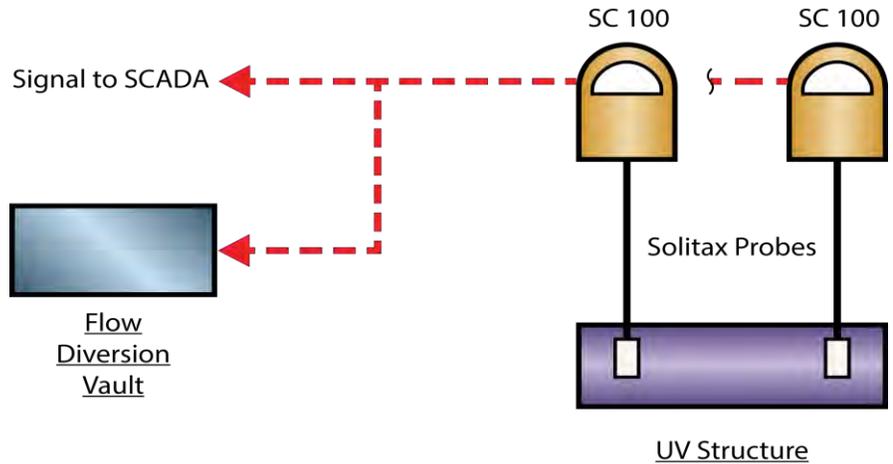
**Information:**

**2- Hach Turbidity Monitors**

sc 100 Controller  
 Solitax Probe SN 1121057  
 sc 100 Controller  
 Solitax Probe SN 1121055

Sample from UV Structure  
 High Alarm for Turbidity - 5.0 NTU  
 Turbidity of 8.0 NTU signals Diversion Vault RCW Slide Gate to close.  
 RCW Permit Limit is 10.0 NTU

**Schematic:**



North Cary Turbidity Monitor

**Year Constructed:** 2005  
**Manufacturer:** HACH

**Overall condition:**    Excellent     Good    Fair    Poor    Needs Repair    Needs Replacement

**Drawing Provided**    \_\_\_ Yes     No

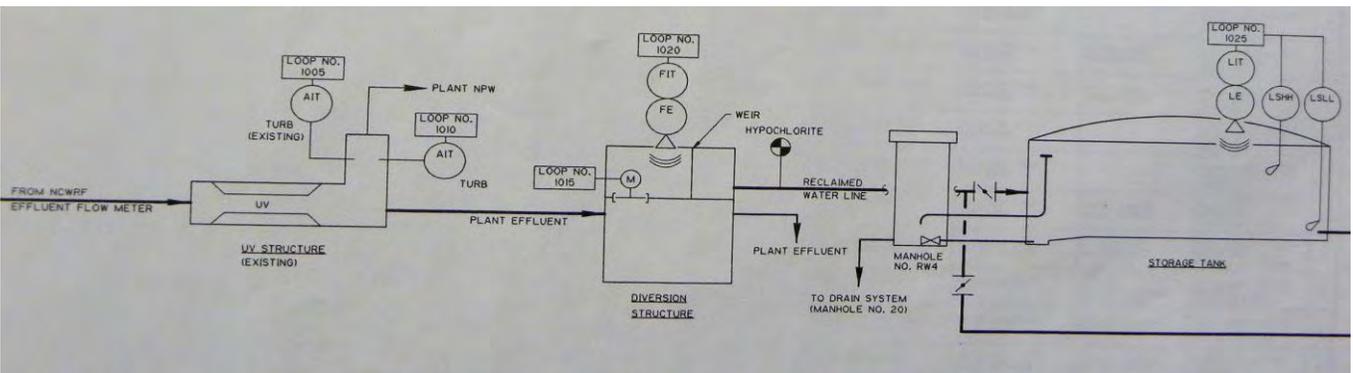
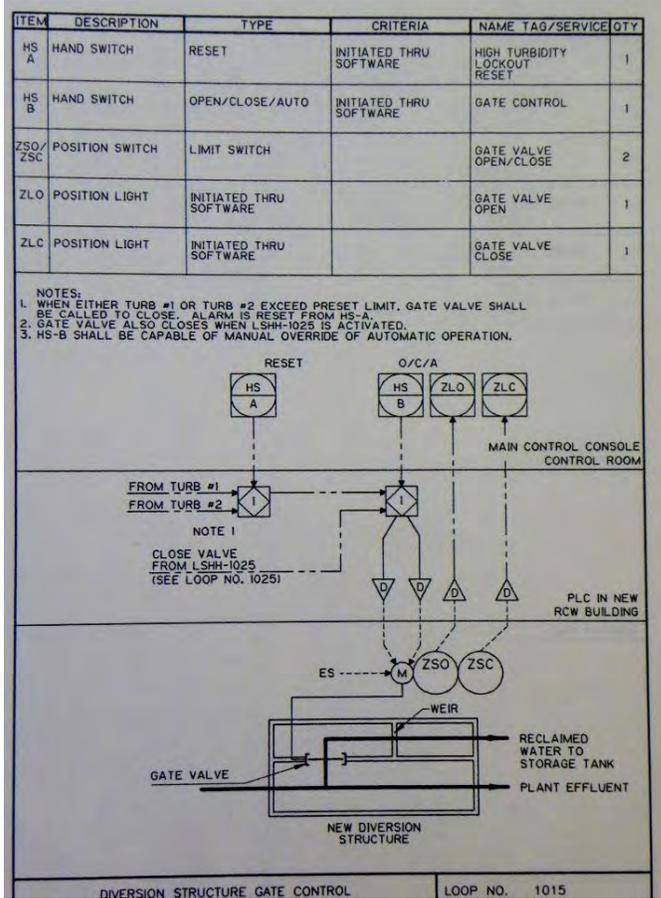
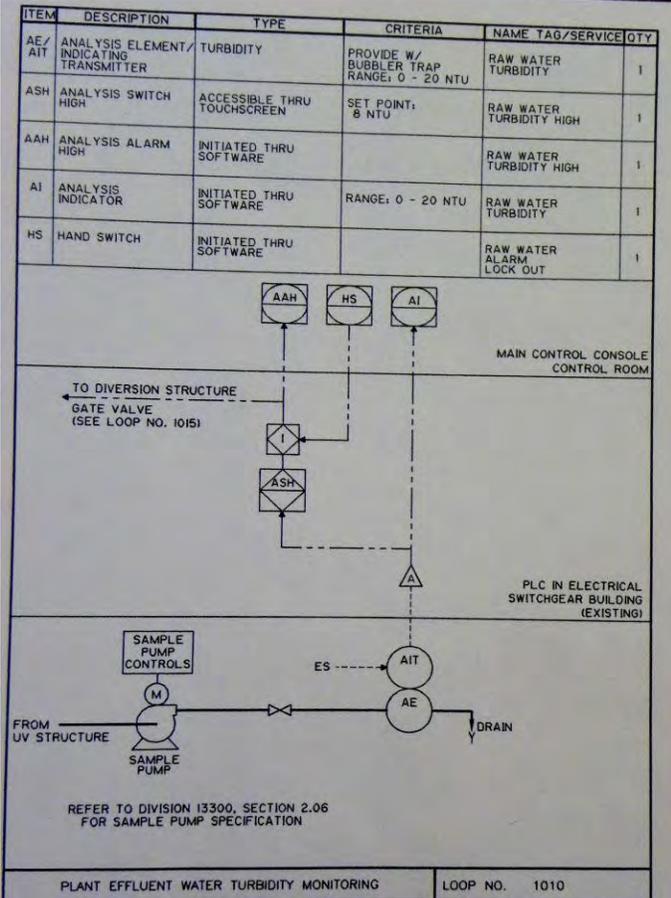
Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT

Photographs:



**Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT**

**Plans/Drawings:**



**Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT**

**Additional Information:**

HACH sc 100 Controller

Alarm: Low alarm point, low alarm point deadband, high alarm point, high alarm point deadband, off delay, and on delay  
Certifications: ETL to UL 61010A-1 and CSA C22.2 No. 1010.1  
Communication: RS-232 (MODBUS): Configure and retrieve measured data for one analyzer using IBM-compatible PC RS-485 (MODBUS): Advanced communications/networking with PLC or SCADA system directly from analyzer. Profibus DPV1: Advanced communications/networking with PLC or SCADA system directly from analyzer.  
Display: Graphic LCD, 128 x 64 pixels with LED backlighting  
Enclosure Rating: NEMA 4X/IP65  
Mounting: Surface, panel, and pipe (horizontal and vertical)  
Operating Humidity: 0 to 95% relative humidity, non-condensing  
Operating Temperature Range: -20 to 60 °C  
Outputs: Two analog 4-20 mA, maximum impedance 500 Ohms, optional digital network connection  
Power Requirements (Hz): 50/60 Hz  
Power Requirements (Voltage): 100 - 230 V AC  
Relays: Three SPDT, user-configurable contacts rated 100 to 230 Vac, 5 Amp resistive maximum

**Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT**

**Additional Information:**

Solitax Probe

Accuracy:Turbidity: Defined according to ISO/WD 13530. Suspended Solids Less than of reading or  $\pm 0.001$  NTU, whichever is greater  
Accuracy 2:Defined according to ISO/WD 13530. Turbidity Suspended Solids Less than 5 % of reading (depends on homogeneity of municipal activated sludge)  
Cable Length:10 m (33 ft.) standard. Optional extension cables available in 7.6 m (25 ft.), 15.2 m (50 ft.), 30.5 m (100 ft.). Maximum total length: (328 ft.).  
Calibration:Turbidity Suspended Solids:Formazin or StablCal® Standard Based on gravimetric TSS analysis with a correction factor procedure  
Calibration Method:Turbidity Suspended Solids:Formazin or StablCal® Standard Based on gravimetric TSS analysis with a correction factor procedure  
Certifications:CE certified to EN 61326-1, EN 61326/A1, EN 61326/A2, EN 61010-1  
Construction - Sensor Body (RD 240/260):Wiper Sensor body: Silicon Stainless steel or PVC  
Detection Limit:Turbidity Suspended Solids 0.001 mg/L  
Diameter Sensor:(diameter x lenglmmersion sensor: x (2.4 x)  
Dimensions (D x L):2.36 in x 7.87 in (60 mm x 200 mm)  
Flow:Flow Velocity 3 m/s (9.8 ft./s) maximum  
Max. cable length Sensor-to-Controller:100  
Measuring Principle:Dual beam infrared/scattered light photometer to measure turbidity. A backscatter photoreceptor to measure suspended solids  
Measuring Range:Turbidity Suspended Solids to  
Measuring Range Turbidity:Suspended Solids 0.001 to 4000 NTU  
Mounting:Through sidewall of a pipeline using a ball valve; minimum pipe size (4 in.) in carbon or stainless steel  
Operating Temperature Range:0 to 40 °C  
Response Time:Initial response in 1 second  
Sample Temperature:> 0 to 40 °C  
Unit:Units of Measure Turbidity Suspended Solids: User selectable—g/L, mg/L, ppm, or % solids



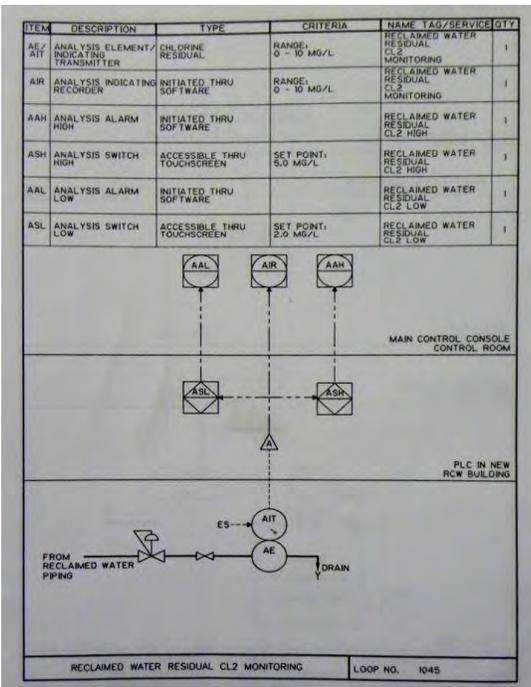
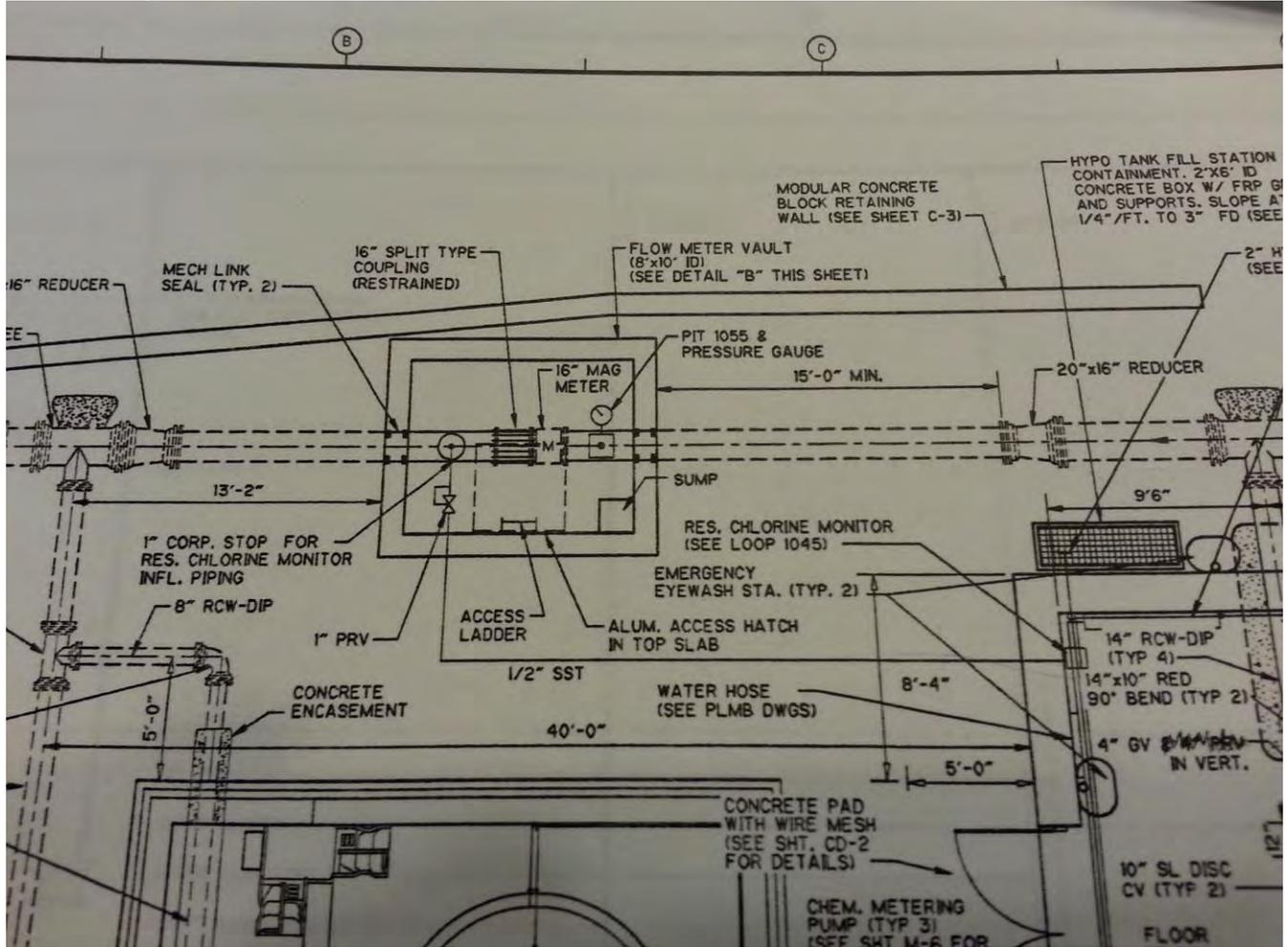
Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT

Photographs:



**Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT**

**Plans/Drawings:**

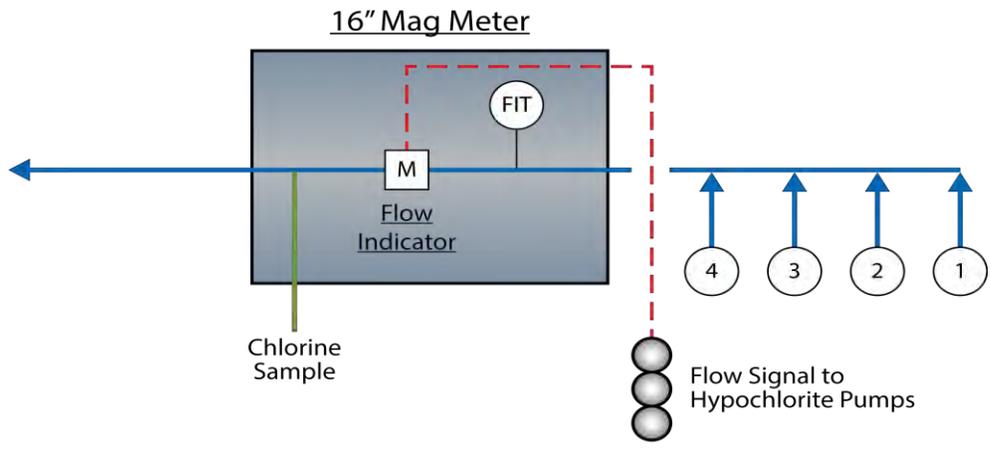


**Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT**

**Facility:** North Cary Effluent Flow Meter  
**Date:** 02/28/13 **Inspected By:** JSG

**Information:**  
 Danfoss MAG3100W 16" Mag Meter  
 Q Max - 1388 (US GPM) 2.00 MGD (US Gallons)

**Schematic:**



North Cary Effluent Flow Meter

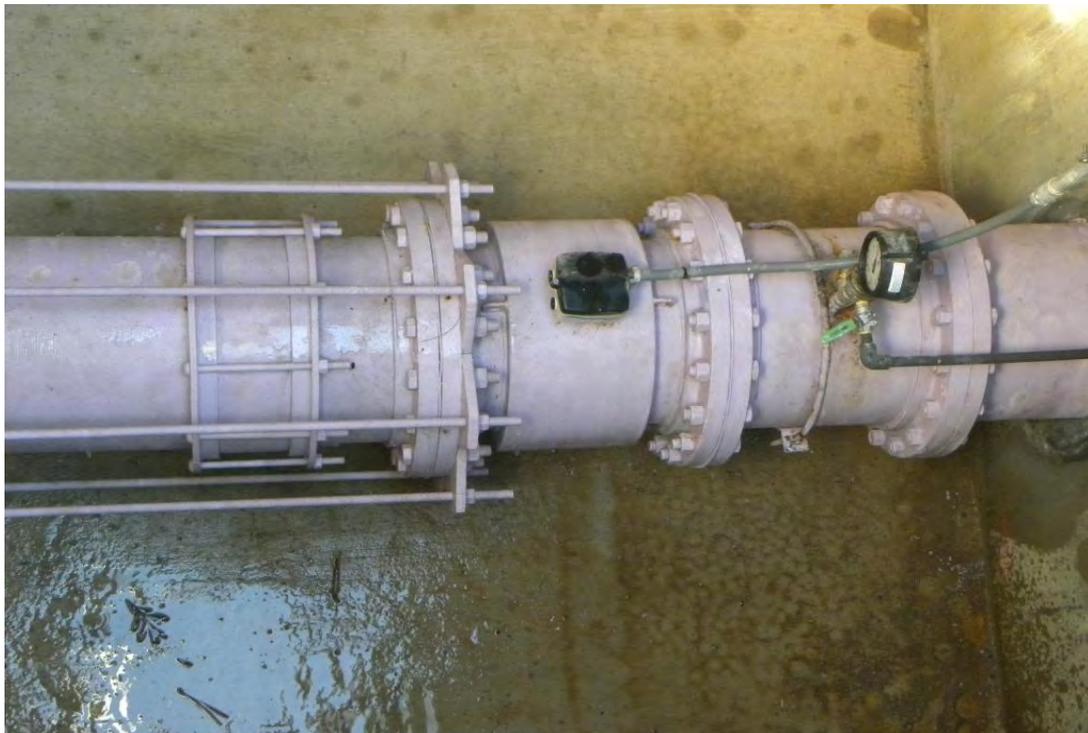
**Year Constructed:** 2002  
**Manufacturer:** Danfoss MAF3100W 16" Mag Meter Mag500 Converter

**Overall condition:**    Excellent    Good    Fair    Poor    Needs Repair    Needs Replacement

**Drawing Provided**      x   Yes       No

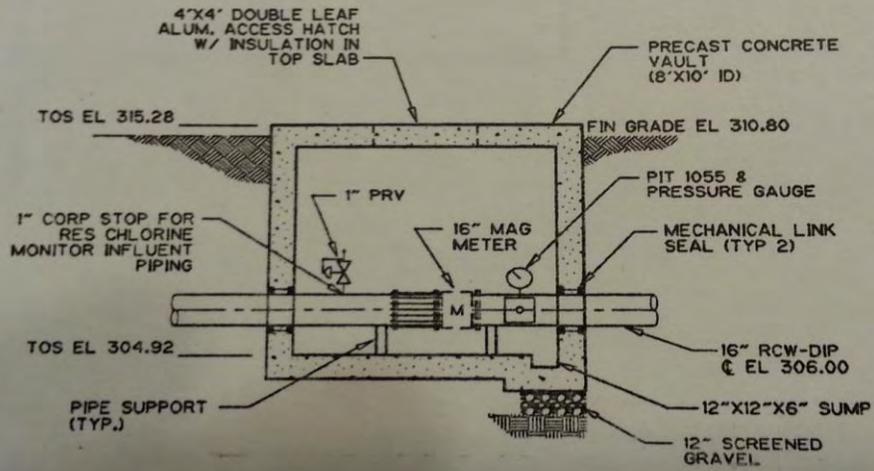
Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT

Photographs:



Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT

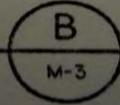
Plans/Drawings:



FLOW METER VAULT

DETAIL

3/16" = 1'-0"



**Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT**

**Additional Information:**

		Tag No.: FE/FIT 1050		Associated Tag No:			
		Spec. No: 13300		PO No:			
<b>Kruger Products</b> <b>INSTRUMENT SPECIFICATION</b> Project No.: 330003 Client: North Cary WWTP Cary, NC Proj. Name: Reuse Pump Station		Manufacturer: Danfoss		Model No: MAG3100W-083Z8612			
		By: ETC		Checked: Approved:			
		No.		Date:		By Revision	
		A		7/21/00		ETC Issued for Approval	
B		10/5/00		ETC Submittal Comments			
<b>Magnetic Flowmeter</b>							
		1 Tag Number	FE/FIT 1050	3 Location	Reclaimed Water		
		2 Service	Recalimed Water Flow				
<b>CONNECTION INFORMATION</b>		4 Line Size	16" line				
		5 Line Material	Neoprene				
		6 Connection Type	Flanged Tube				
		7 Connection Mat's	Carbon Steel				
<b>METER INFORMATION</b>		8 Tube Material	Type 304 Stainless Steel	13 Pwr Supply	115 VAC		
		9 Liner Material	Neoprene	14 Grnding			
		10 Electrode Type	AISI 316 Ti	Type & Mat			
		11 Electrode Material	Stainless Steel 316	15 Enclosure	Carbon steel, corrosion resistant		
		12 Meter Casing	NEMA 6	Type			
<b>FLUID INFORMATION</b>		16 Fluid	Neoprene	21 Max. Press.	40 bar		
		17 Max. Flow Units	8000 gpm	22 Min Fluid			
		18 Max. Velocity Units	30 ft/s	Conductivity			
		19 Norm. Flow		23 Vacuum Poss.			
		20 Max. Temp.	185°F				
<b>TRANSMITTER</b>		24 Instr. Tag Number	FE/FIT 1050				
		25 Function	Measure flow				
		26 Mounting	Integral / Remote				
		27 Enclosure Type	Fiber glass-reinforced polyamide or optional stainless steel (NEMA 4/4X)				
		28 Part number	MAG5000-083F5001 w/085U1001 Wall Mount Unit w/40' Cable				
		29 Accuracy	+/- 0.5%				
		30 Power Supply	115 VAC				
		31 Transmitter Output	4-20 mA				
<b>DISPLAY</b>		32 Scale Size	2-line by 16 char. LCD	36 Range	Flow based		
		33 Keypad	6 keys	37 Speed			
		34 Chart Drive	not available	38 Chart No.	not available		
		35 Integrator	not available				
<b>CONTROL</b>		39 Modes	bi-directional flow, empty	41 Output	4-20mA		
		40 Action	empty pipe cutoff	42 Auto-Man	Auto		
<b>ALARM</b>		43 Contact Number	1	46			
		44 Rating		47			
		45					
		48 Manufacturer	Danfoss				
		49 Meter Model Number	MAG3100W-083Z8612				
		50 Instr. Model Number	MAG5000-083F5001 w/085U1001 Wall Mount Unit w/40' Cable				
Notes: Sunshield Surge Arrestor Josyln 1669-06							

Town of Cary Reclaimed Water System  
Facility Worksheet  
MONITORING EQUIPMENT

Additional Information:



**I. Kruger Inc.**  
401 Harrison Oaks Blvd  
Ste. 100  
Cary, NC 27513

TELEPHONE 919-677-8310  
FACSIMILE 919-677-0082

North Cary WWTP Reclaim Effluent Flowmeter Calibration  
Calibration Date: September 09, 2012 (Calibration of Reclaim Effluent Flowmeter)  
Calibrated By: Todd Casey / Kruger  
Danfoss MAG3100W 16" Mag Meter Mag5000 Converter

**Reclaim Effluent Flowmeter Settings**  
**0~2.00 MGD**

<u>Parameter</u>	<u>Setting</u>
Flow Direction	Negative
Q Max	1388.00 (US GPM) 2.00 MGD (US Gallons)
Totalizer	Gallons
Low Flow Cut-Off	2.0%
Empty Pipe Detection	On
Current Output	On
Current Output	Unidirectional
Current Output	4-20mA
Current Output Time Constant	05.0 S
Language Mode	English
Units	English
Totalizer 1	US Gallons
Totalizer 2	US Gallons
Password	1000



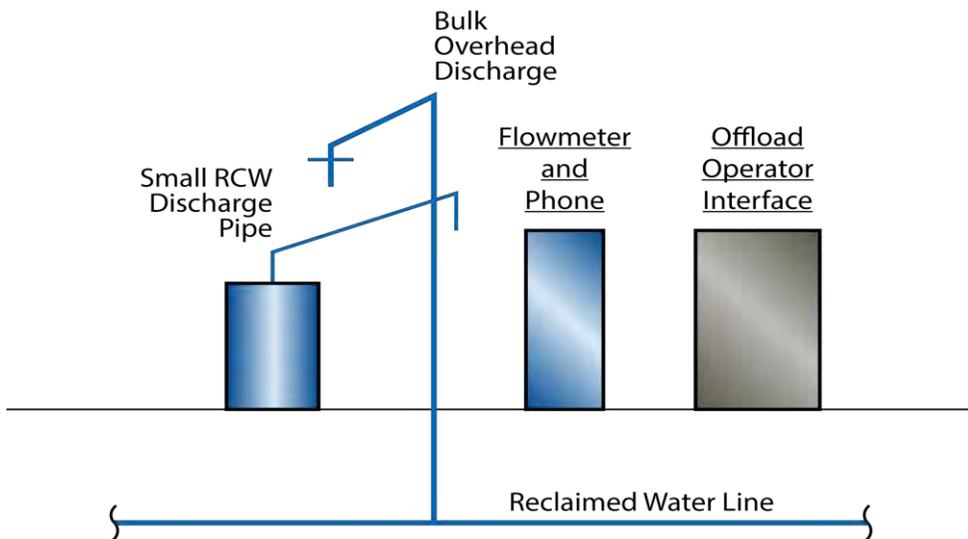
**Town of Cary Reclaimed Water System  
Facility Worksheet  
BULK FILL STATION**

**Facility:** North Cary WRF Bulk Reclaimed Water Fill Station  
**Date:** 2/28/13 **Inspected By:** JSG

**Information:**

Small loading arm scheduled for replacement in the 2013-2014 Budget - Due to internal corrosion.  
 Most all bulk RCW offload reuse water with the smaller arm as opposed to the overhead fill station.  
 The system is automated . Attached is a copy of the offloading procedure.

**Schematic:**



North Cary Bulk Reclaimed Water Fill Station

**Year Constructed:** 2002/2005 (Small offloading arm added 2005)

**Overall condition:** Excellent    Good    Fair    Poor    Needs Repair    Needs Replacement

**Drawing Provided**     Yes     No

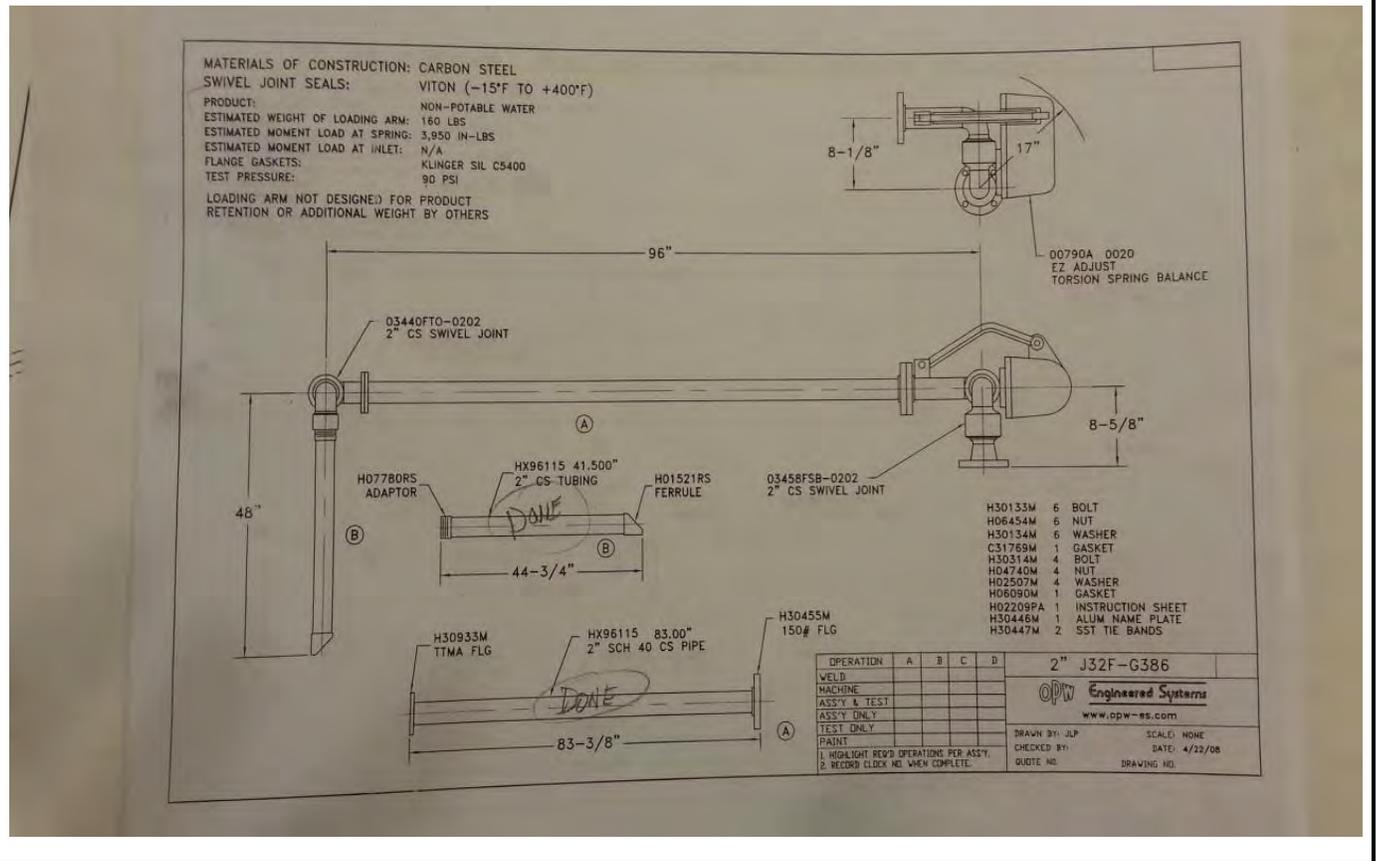
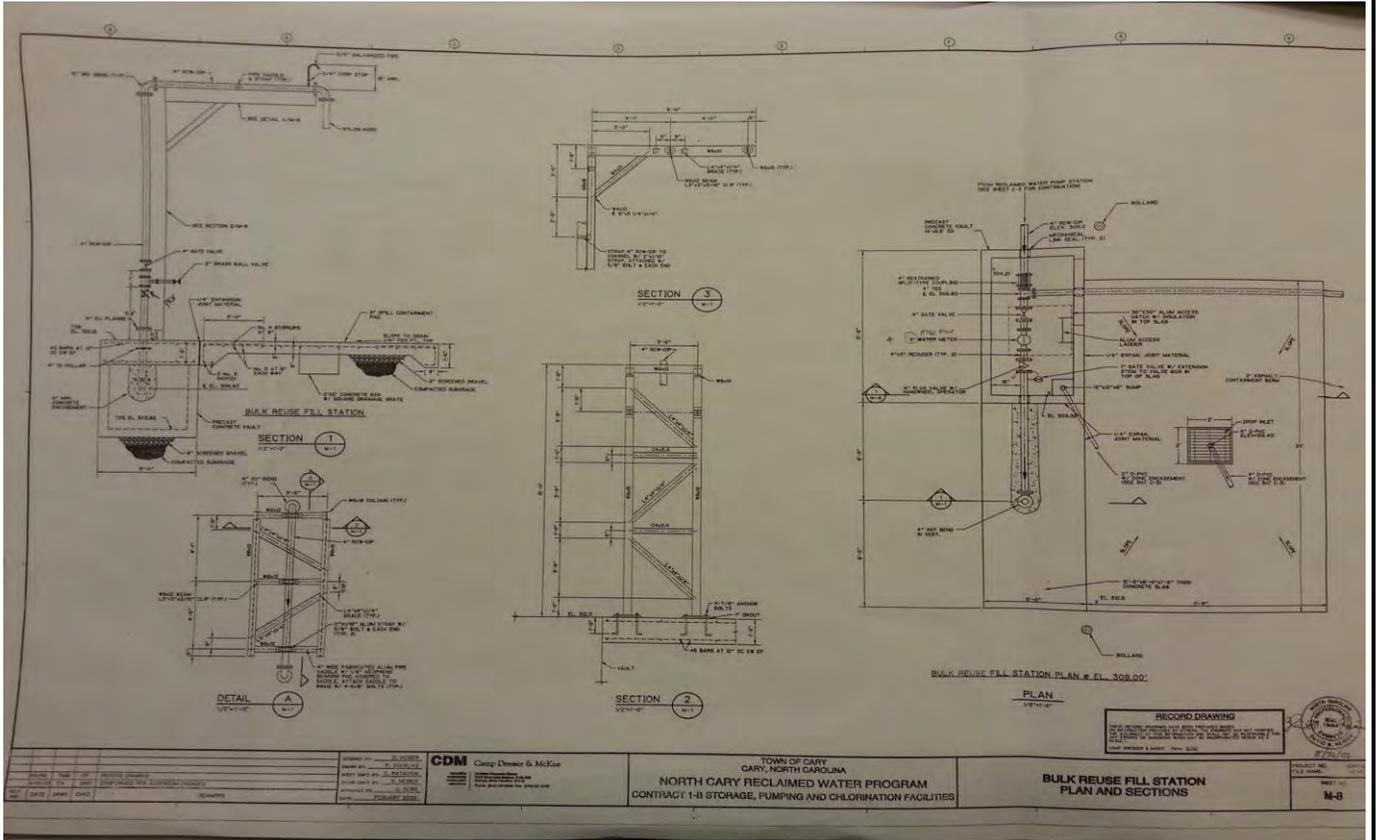
Town of Cary Reclaimed Water System  
Facility Worksheet  
BULK FILL STATION

Photographs:



**Town of Cary Reclaimed Water System  
Facility Worksheet  
BULK FILL STATION**

Plans/Drawings:



**Town of Cary Reclaimed Water System  
Facility Worksheet  
BULK FILL STATION**

**Additional Information:**

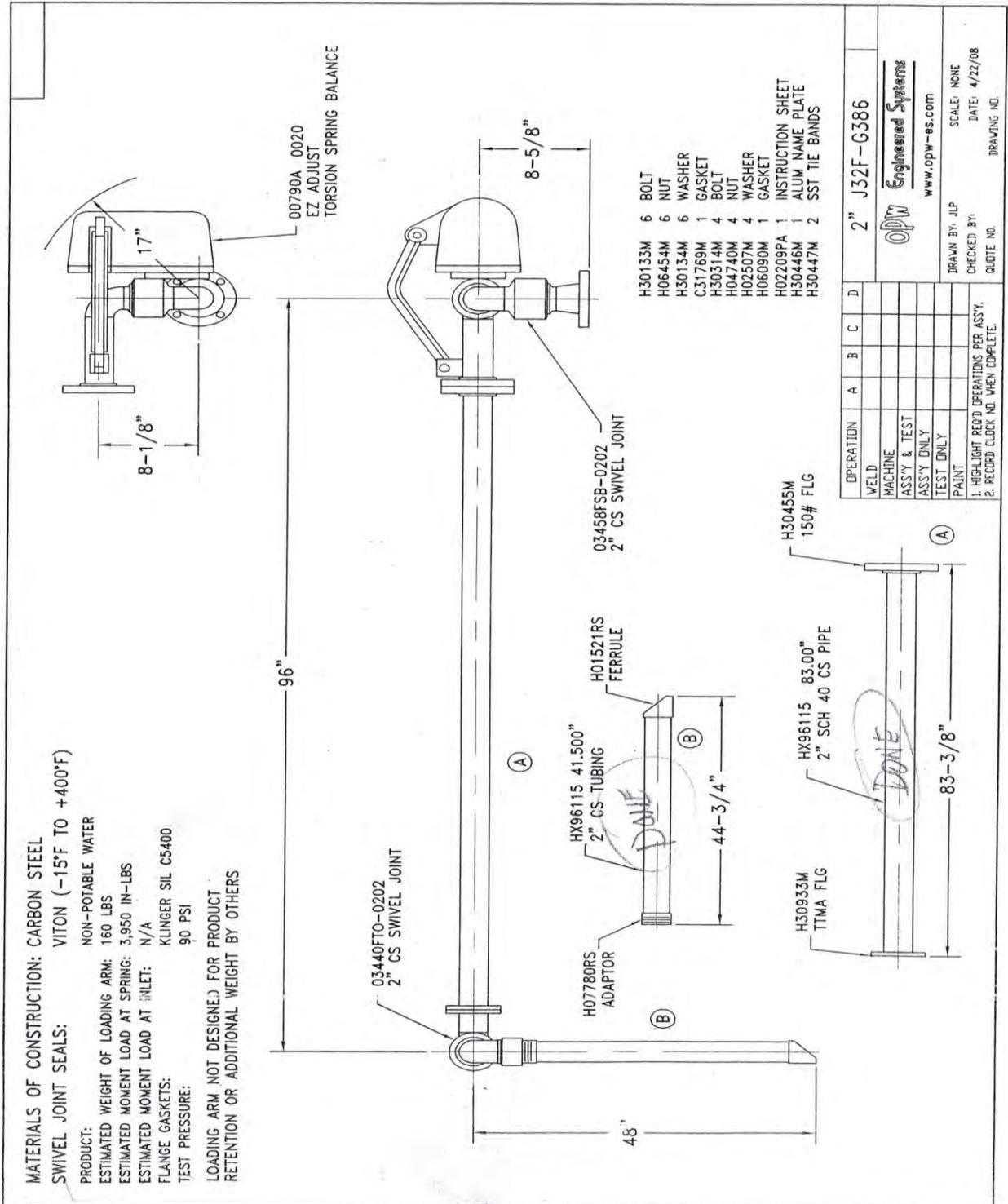
**Bulk Fill Station Operation  
North Cary Water Reclamation Facility**

- \* The customer parks their vehicle inside the containment area nearest the device they will use to load.
- \* The individual will exit their vehicle, taking their permit card with them.
- \* The customer will place the hose/fill nozzle appropriately to fill their vehicles and restrain the piping/hose accordingly.
- \* The customer will proceed to the large stainless steel enclosure. They will open the door located under the sunshield.
- \* The customer will be prompted for several items. These will be addressed as follows:
  1. English or Spanish (select the appropriate language)
  2. Enter the operators permit number (the program requires a 4 digit number-if your permit is a 3 digit number, the number should be preceded by a 0)
  3. The screen provides a drop down selection of names (for security purposes). Select the correct name associated with the permit-for instance, John Doe. [Each customer must have a unique permit-permits cannot be shared or borrowed]
  4. Touch the intended use. Select the most appropriate item that reflects your application.
  5. Touch the "Does the vehicle have appropriate signage" and enter yes or no (a no answer will prohibit the use of the station) The vehicle operator must verify that the three manual fill valves are closed prior to activating the automatic valve. Failure to do so will result in the release of water in an unpredictable and potentially unsafe manner.
  6. Press the "enable fill" button and the automatic valve should actuate
  7. The computer controls an automatic valve. It tracks the use and user of the water. The valve directly before the discharge into the vehicle is manually operated by the vehicle operator. This individual will begin the filling process and end it just prior to the tank becoming full. Once the automatic valve begins to actuate, the operator has 2 minutes to begin filling their vehicle. If the individual waits too long, the valve will close and the process will need to be started all over again. 13. Two minutes after the conclusion of the filling process the automatic valve will close.
  8. The operator will move the filling device (hose or nozzle) away from their vehicle and store it properly.
  9. The vehicle operator will secure their load so that leakage does not occur.
  10. The customer will move their vehicle out of the containment area.

Any problems noted or arising during the filling process should be brought to the attention of the plant staff immediately. The intercom located next to the loading boom can be utilized or the plant employees can be contacted via phone at 919-677-0850.

**Town of Cary Reclaimed Water System  
Facility Worksheet  
BULK FILL STATION**

**Additional Information:**



Town of Cary Reclaimed Water System  
Facility Worksheet  
BULK FILL STATION



**I. Kruger Inc.**  
401 Harrison Oaks Blvd  
Ste. 100  
Cary, NC 27513

TELEPHONE 919-677-8310  
FACSIMILE 919-677-0082

North Cary WWTP Reclaim Bulk Flowmeter Calibration  
Calibration Date: September 09, 2012 (Calibration of Reclaim Bulk Flowmeter)  
Calibrated By: Todd Casey / Kruger  
Endress & Hauser ProMag50 w/Transmitter

**Reclaim Bulk Flowmeter Settings**  
**0~450 GPM**

<u>Parameter</u>	<u>Setting</u>
Flow Direction	Positive
Q Max	450 GPM
Totalizer	Gallons
Low Flow Cut-Off	1.5%
Empty Pipe Detection	On
Current Output	On
Current Output	4-20mA
Language Mode	English
Units	English
Relay Output	Off

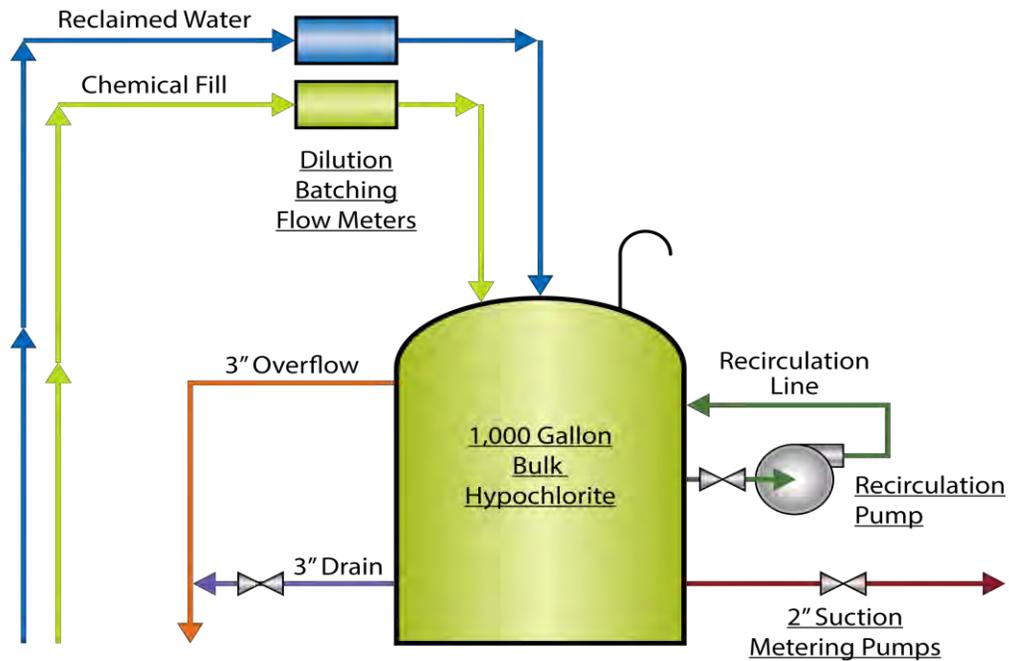
**Town of Cary Reclaimed Water System  
Facility Worksheet  
HYPOCHLORITE TANK**

**Facility:** North Cary WRF Hypochlorite Tank  
**Date:** 2/28/13 **Inspected By:** JSG

**Information:**  
 Tank Dimensions: 10' 5" x 10' 2" (12'1" to top of dome)  
 Tank Installed 2011  
 6150 Gallon Upright Tank  
 1.9 SpG/XLPE/NAT W/I  
 STOCK NO. 71006150440  
 Tank overflow - 9'11"  
 Computer File - HWDHS3247B  
 PolyProcessing Company

Hypochlorite Recirculation Pump  
 IWAKI WALCHEM  
 Model Series- MDH-F400  
 Impellar Code Size "G"  
 Flow Capacity 66 GPM

**Schematic:**



**North Cary Hypochlorite Tank**

**Year Constructed:** 2011

**Overall condition:**  Excellent  Good  Fair  Poor  Needs Repair  Needs Replacement

**Drawing Provided**  Yes  No

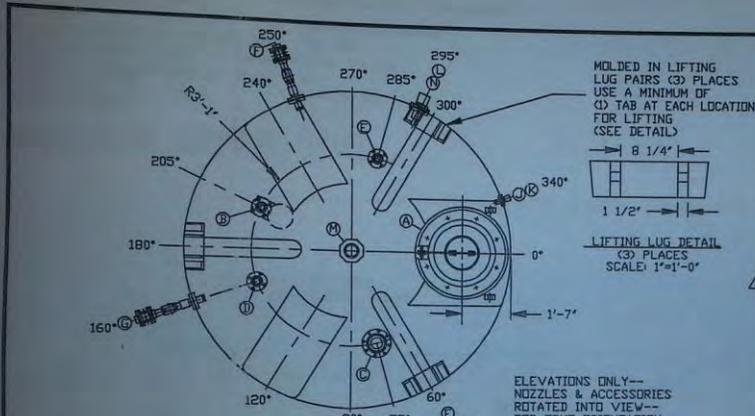
Town of Cary Reclaimed Water System  
Facility Worksheet  
HYPOCHLORITE TANK

Photographs:

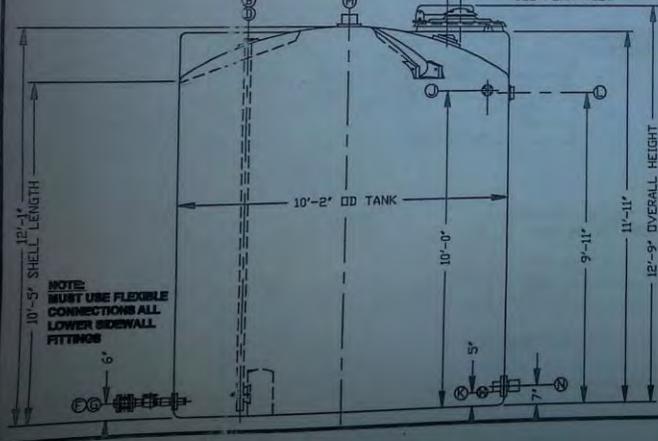


**Town of Cary Reclaimed Water System  
Facility Worksheet  
HYPOCHLORITE TANK**

**Plans/Drawings:**



NOZZLE SCHEDULE & ACCESSORIES					
SERVICE	MK	STOCK NO.	SIZE	FITTING	DRG
MANWAY	A	8340	24"	CVR ASMLY 24" SAFE-SURGE	0"
FILL	B	3162	2"	DROP PIPE 2" INT PVC	205"
		2825		URD FTG 2" FLG STYLE PVC/TITAN/EPDM	
		7443		SUPPORT ASMLY F/PROMO TANK HOPE	
		7001620		PROMO TANK HOPE NAT	
ULTRASONIC PUMP	C	2865	4"	URD FTG 4" FLG STYLE PVC/TITAN/EPDM	75"
RECIRC	D	2825	2"	URD FTG 2" FLG STYLE PVC/TITAN/EPDM	160"
WATER PUMP SUCTION	E	2825	2"	URD FTG 2" FLG STYLE PVC/TITAN/EPDM	285"
		9740	2"	B.O.S.S. FITTING 2" ASMLY PE/PVC/TITAN/EPDM	250"
RECIRC	G	9810		FLEX JOINT EXP JNT ASM SCKT PVC/TITAN PTFE	
		7961		FLG MATE ASMLY SCKT PVC/TITAN	
		-		(NIPPLE & BALL VALVE CSP & INSTALLED)	
		-		(NIPPLE & BALL VALVE CSP & INSTALLED)	
SIGHT GAUGE	J	9777	1"	B.O.S.S. FITTING 1" ASMLY PE/PVC/TITAN/EPDM	340"
SIGHT GAUGE	K	9777	1"	B.O.S.S. FITTING 1" ASMLY PE/PVC/TITAN/EPDM	340"
OVERFLOW	L	7122	3"	BHF ASMLY 3" SXT H'WARD PVC/EPDM	295"
VENT	M	7127	4"	BHF ASMLY 4" SXT H'WARD PVC/EPDM	TDC
DRAIN	N	9869	3"	B.O.S.S. FITTING 3" ASMLY PE/PVC/TITAN/EPDM	295"



- NOTES**
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
  2. MOLDED IN GALLONAGE MARKERS ON SIDEWALL IN 200 GAL INCREMENTS UP TO 5000 GAL.
  3. DIMENSIONS WILL VARY ±3% DUE TO VARIATIONS IN MULTIPLE MOLDS & CONDITIONS PREVALENT DURING MANUFACTURE & USAGE.
  4. TANK DESIGNED FOR 1.9 SpG MAT'L @ 100"/ATMOS PRESSURE.
  5. TAG PD #197952

REV "B" REVISED & REDRAWN BY:JB 11/2/10 CK/CD  
 REV "A" MARKS F & G ADDED FLEX JNT BY:JB 10/22/10 CK/CD

DWG TITLE: **6150 GALLON UPRIGHT TANK**

SERVICE: SODIUM HYPOCHLORITE  
 SCALE: 3/8"=1'-0"  
 DATE: 10/13/10  
 SHEET: 1 OF 1  
 COMPUTER FILE: HWDHS3247R B

DESIGNER: J. BRANTLEY  
 CHECKER: C. DAVIES

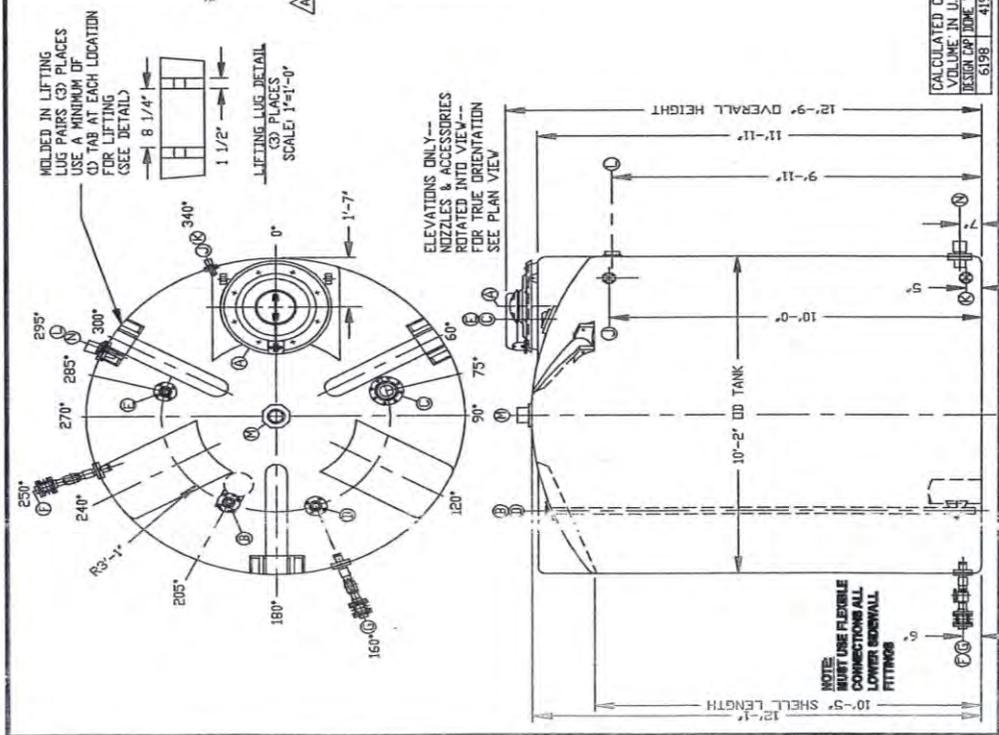
HEYWARD (NC) POW HS3247-10-01  
 FOR: TOWN OF CARY

**Town of Cary Reclaimed Water System  
Facility Worksheet  
HYPOCHLORITE TANK**

Additional Information:

*HYPOCHLORITE STORAGE TANK INSTALLED 2011*

SERVICE	MK	STOCK NO	SIZE	FITTING	NOZZLE SCHEDULE & ACCESSORIES	DEG	ELEV
MANWAY	A	8940	20"	C1/8 ASMY 2" SAFE SURGE		0°	DOIME
FILL	B	3162	2"	DROP PIPEZ 2" INT PVC		205°	DOIME
		2825		UBD FIG 2" FIG STYLE PVC/TITAN/EPDM			
		7443		SUPPORT ASMY F/PROMOTANK HOPE			
		7001600		PROMO TANK HOPE MAT			
ULTRASONIC	C	2865	4"	UBD FIG 4" FIG STYLE PVC/TITAN/EPDM		75°	DOIME
PUMP	D	2825	2"	UBD FIG 2" FIG STYLE PVC/TITAN/EPDM		160°	DOIME
RECIRC	E	2825	2"	UBD FIG 2" FIG STYLE PVC/TITAN/EPDM		285°	DOIME
PUMP	F	9740	2"	B.O.S.S. FITTING 2" ASMY PE/PVC/TITAN/EPDM		250°	6"
SUCTION		8810		FLEXJOINT EXP INT ASM SKT PVC/TITAN PTFE			
		7961		FLG MATE ASMY SKT PVC/TITAN (NIPPLE & BALL VALVE CSP & INSTALLED)			
RECIRC	G	9740	2"	B.O.S.S. FITTING 2" ASMY PE/PVC/TITAN/EPDM		160°	6"
		8810		FLEXJOINT EXP INT ASM SKT PVC/TITAN PTFE			
		7961		FLG MATE ASMY SKT PVC/TITAN (NIPPLE & BALL VALVE CSP & INSTALLED)			
SIGHT	I	9777	1"	B.O.S.S. FITTING 1" ASMY PE/PVC/TITAN/EPDM		340°	10'-0"
GAUGE							
SIGHT	K	9777	1"	B.O.S.S. FITTING 1" ASMY PE/PVC/TITAN/EPDM		340°	5"
GAUGE							
OVERFLOW	L	7122	3"	BHF ASMY 3" SKT HWARD PVC/EPDM		295°	9'-11"
VENT	M	7127	4"	BHF ASMY 4" SKT HWARD PVC/EPDM		TDC	DOIME
DRAIN	N	8869	3"	B.O.S.S. FITTING 3" ASMY PE/PVC/TITAN/EPDM		295°	7"



**NOTES**  
 1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.  
 2. MOLDED IN GALLONAGE MARKERS ON SIDEWALL IN 200 GAL INCREMENTS UP TO 5800 GAL.  
 3. DIMENSIONS WILL VARY ±3% DUE TO VARIATIONS IN MULTIPLE MOLDS & CONDITIONS PREVALENT DURING MANUFACTURE & USAGE.  
 4. TANK DESIGNED FOR 1.5 SPG MATL @ 100' FATMS PRESSURE.  
 5. TAG PD #137792

REV \*B\* REVISED & REDRAWN BY:JB 11/2/10 CKGD  
 REV \*A\* MARKS F & G ADDED FLEX JNT BY:JB 10/22/10 CKGD

**TITLE**  
 6150 GALLON UPRIGHT TANK

SERVICE: SODIUM HYPOCHLORITE  
 STOCK NO: 71006150440  
 1.9 SPG XLPE/NAT V/DR1000

SCALE: 3/8"=1'-0"  
 DATE: 10/13/10  
 DRAWN BY: J. BRANTLEY  
 CHECKED BY: C. DAVIES

CALCULATED CAPACITIES/  
 VOLUME IN U.S. GALLONS  
 DESIGN CAP DOIME VOLUME  
 6198 419 6617

DESIGNER: HEYWARD (MC) PD# H53247-10-01  
 FOR: TOWN OF CARY

1 OF 1 HWDHS3247 B

**Town of Cary Reclaimed Water System  
Facility Worksheet  
HYPOCHLORITE TANK**

Additional Information:

*RECIRCULATION PUMP - DUE TO BE REPLACED  
(REPLACEMENT PUMP IS ON SITE)*

**3 Specifications**

Model Series	Impeller Code (Size)	Specific* Gravity Capability	Maximum Flow Capacity (GPM)	Maximum Head/TDH (FT)	Motor Output (HP)	Connections Suction & Discharge (NPTM)	
MDH-400	6	1.10	72	37	½	1½ x 1½	
	7		66	42	¾		
MDH-401	6		85	66	1.0		
	7		92	70	1½ <sup>5</sup>		
MDH-422	6		1.20	95	79	2.0	2 x 1½
MDH-423	6			120	78	3.0	
MDH-425	6	158		100	5.0		
MDH-F400	G	1.10	66	42	¾	1½ x 1½	
MDH-F401	G	1.20	92	70	1½	2 x 1½	
MDH-F422	X		95	80	2.0		
MDH-F423	X		120	77	3.0		
MDH-F425	G		158	100	5.0		

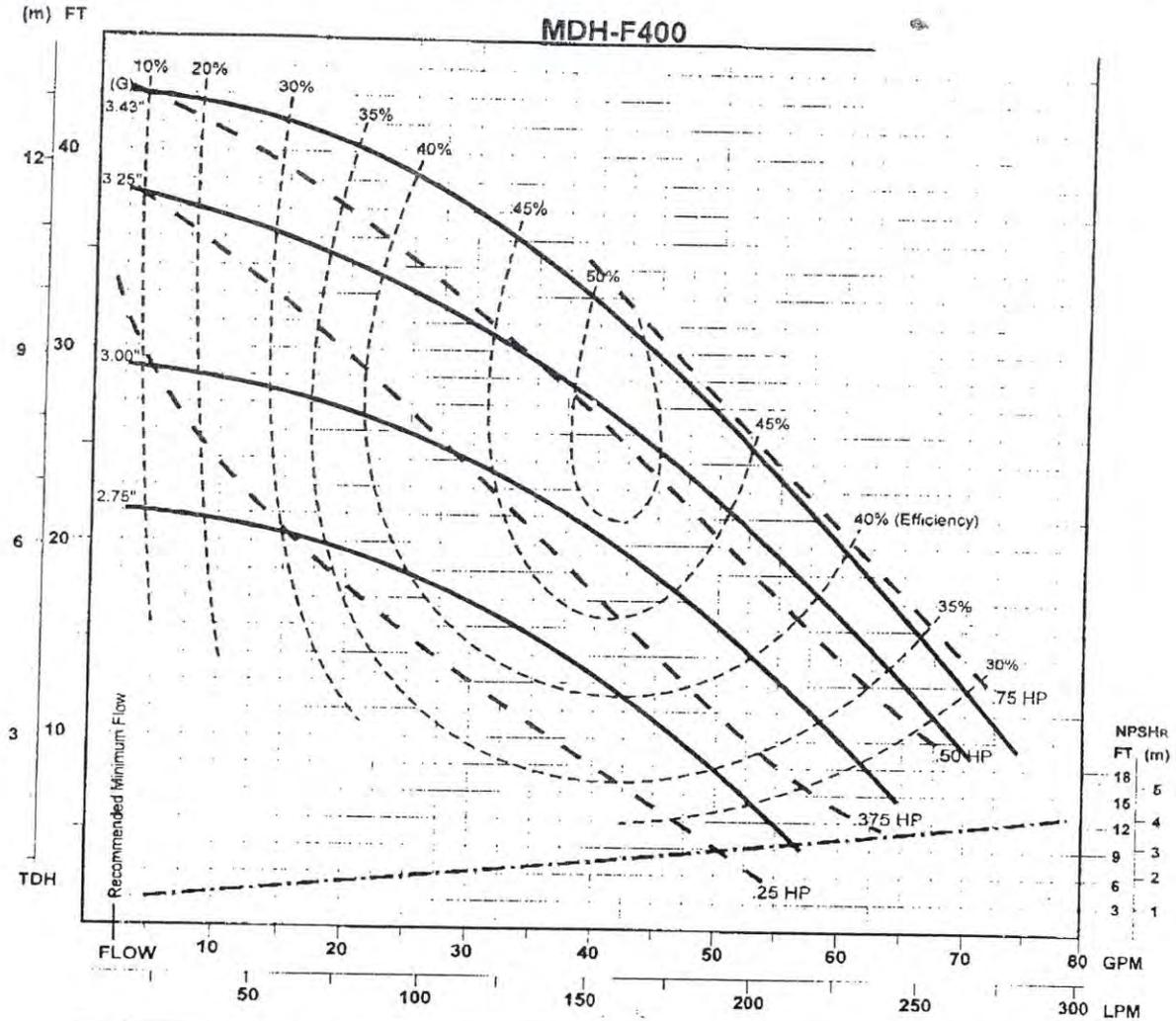
Notes:

- Rated performance (head/capacity) represents the maximum discharge head/capacity measured with water at 70° F (21° C).
- Liquid temperature range: 32 - 176° F (0 - 80° C)  
Ambient temperature range: 32 - 104° F (0 - 40° C)
- Slurry: Standard pumps are not suitable for slurry applications. Only MDH-F(AV) models are capable of handling applications with a slurry hardness 80Hs or below, grain size maximum 2 mil, maximum density 5% wt. Contact Iwaki Walchem or your distributor for details.
- Specific gravity capability at maximum flow with maximum impeller when fluid viscosity is 1cp. Specific gravity fluids up to 2.0 can be handled with appropriate trimming of impeller. Consult Iwaki Walchem or your distributor for recommended model and impeller trim.
- The MDH-401-7, when coupled to a 1½ HP motor should use a flywheel drive magnet assembly, part number MFL1361.

Note that the MDH-(F)401 with a 1 HP motor does NOT require the flywheel drive magnet.

**Town of Cary Reclaimed Water System  
Facility Worksheet  
HYPOCHLORITE TANK**

Additional Information:



Curve No: IP20162.B	Max. Impeller Dia.: (G) 3.43"	Suction: 1½" NPT
RPM: 3440	Min. Impeller Dia.: (G) 2.75"	Discharge: 1½" NPT
Date: 7-12-85	Approved: BLC	No. of Vanes: 6

Performance based on water at 70°F (21°C).  
Fluids with specific gravities other than 1.0 should be reviewed by the factory.

6 BOYNTON ROAD HOPPING BROOK PARK HOLLISTON, MA 01746-1446 USA  
TEL: 508-429-1440 FAX: 508-429-1386

Town of Cary Reclaimed Water System  
Facility Worksheet  
HYPOCHLORITE TANK

Additional Information:



**I. Kruger Inc.**  
401 Harrison Oaks Blvd  
Ste. 100  
Cary, NC 27513

TELEPHONE 919-677-8310  
FACSIMILE 919-677-0082

North Cary WWTP Reclaim Sodium Hypochlorite Tank Level Meter Calibration  
Calibration Date: September 09, 2012 (Calibration of Reclaim Sodium Hypochlorite  
Tank Level Meter)

Calibrated By: Todd Casey / Kruger  
Milltronics Hydroranger Ultrasonic Transmitter / STH Transducer  
Configured for Material Level

**Sodium Hypochlorite Tank Level Settings**  
**0~10.00 Feet**

		<u>Parameter Value</u>	<u>Parameter Units</u>
P-1	Units of calibration and display	3	Feet
P-2	Mode of measurement	1	Material Level
P-3	Empty distance to transducer	11.45	Feet
P-4	Span	9.60	Feet
P-5	Near Blanking	2.00	Feet
P-6	Milliamp Output	2	4-20mA
P-7	Decimal Point Location	2	Two digits after decimal

**Town of Cary Reclaimed Water System  
Facility Worksheet  
HYPOCHLORITE TANK**

**Additional Information:**

 <b>Kruger Products</b> <b>INSTRUMENT SPECIFICATION</b> Project No.: 330003 Client: North Cary WWTP Cary, NC Proj. Name: Reuse Pump Station		Tag No.: LE/LIT-2010		Associated Tag No:	
		Spec. No: 13300		PO No:	
		Manufacturer: Milltronics		Model No: HydroRanger	
		By: ETC		Checked: Approved:	
		No. A		Date: 7/21/00	
No. B		Date: 10/5/00		By: ETC	
				Revision: Issued for Approval	
				Revision: Submittal Comments	
Ultrasonic Level Transmitter					
<b>GENERAL INFORMATION</b>	1	Tag Number	LE/LIT-2010	3	Application Level
	2	Service	Sodium Hypochlorite Storage	4	Function Level
<b>GENERAL OPERATIONS</b>	5	Modes of Operation	Level	9	Blanking From 0.3m (1 ft.)
	6	Range	50 Feet	10	Resolution the greater of 0.1% of range or 2mm
	7	Range Extension	none	11	Transducer Support STH
	8	Error messages	Loss of Echo Shorted or open cable	16	Parameter Retention values protected via EEPROM
<b>DISPLAY</b>	12	Panel	high contrast 4 digit LCD	17	Model Number STH
	13	Units of Measurement	m, cm, ft, in, and % of span	18	Housing Tefzel
	14	Programming	keypad programmer	19	Range min. (1ft.) to max. (50ft.)
<b>TRANSDUCER</b>	15	Rate Limit	0 to 9999 units/min	20	Relays 5 Form C (5A) contacts available
	17	Model Number	STH	21	Alarms Programmable as pump control, sampler, or totalizer
<b>OUTPUTS</b>	20	Relays	5 Form C (5A) contacts available	22	Analog programmable 4-20mA mA current loop into 350 ohms or 750 ohms
	21	Alarms	Programmable as pump control, sampler, or totalizer	23	Power Supply 100/115/200/230 VAC
<b>INSTALLATION</b>	23	Power Supply	100/115/200/230 VAC	24	Enclosure Type NEMA 4X
	24	Enclosure Type	NEMA 4X	25	Enclosure Size 6.3"Hx9.5"Wx3.2"D
	25	Enclosure Size	6.3"Hx9.5"Wx3.2"D	26	Operating Temp. range -5 °F to 122°F for electronics
	26	Operating Temp. for electronics	range -5 °F to 122°F	27	Process Temp. range -40 °F to 203°F
Notes:					
Sunshield Surge Arrestor JosyIn 1669-06					

**Town of Cary Reclaimed Water System  
Facility Worksheet  
CHEMICAL METERING PUMPS**

**Facility:** North Cary WRF Chemical Metering Pumps

**Date:** 2/28/13

**Inspected By:** JSG

**Information:** Milton Roy 2002

Sodium Hypochlorite Feed Pumps

Equipment ID : #1, #2, #3

Service : Sodium Hypochlorite (5-16%)

Pump Model Number : MGH402 20CBM2SE11NN22

Serial Number : 0230790-01/02/03

Rated Capacity : 45.0 GPH

Rated Pressure : 100 PSIG

Plunger Diameter : 2 -1/2 INCH

Stroking Speed : 86 SPM

Stroke Adjustment : Manual

Materials of Construction

Diaphragm Head: PVC

Diaphragm : PTFE/NITRILE

Check Valve Body : PVC

Ball Checks (Double) : Ceramic

Ball Seats: PVC

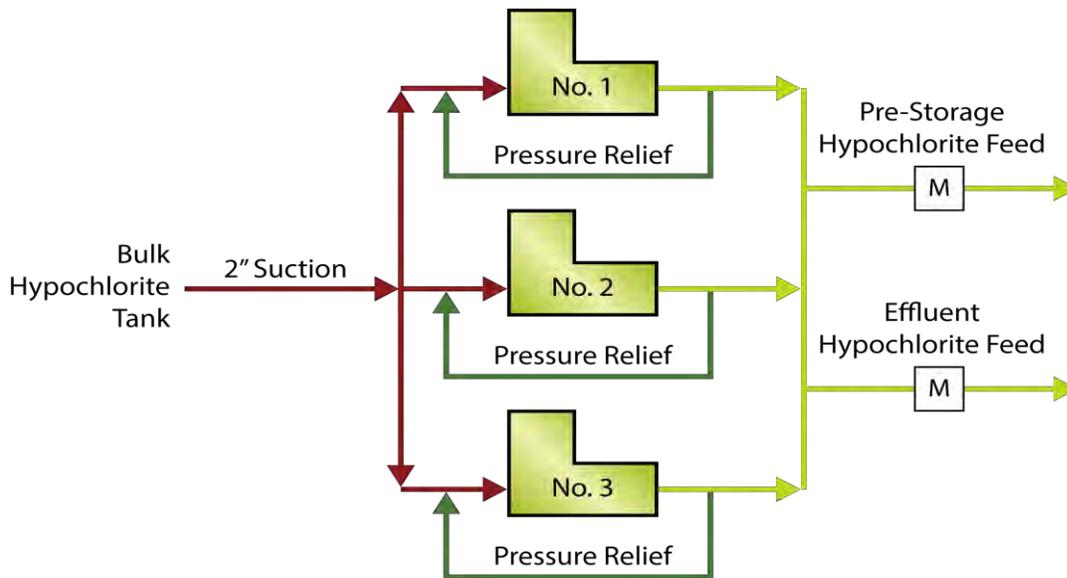
O-Ring Seals: Viton

Feed Points:

Pre-Storage RCW Hypo Feed

Effluent RCW Hypo Feed

**Schematic:**



North Cary Chemical Metering Pumps

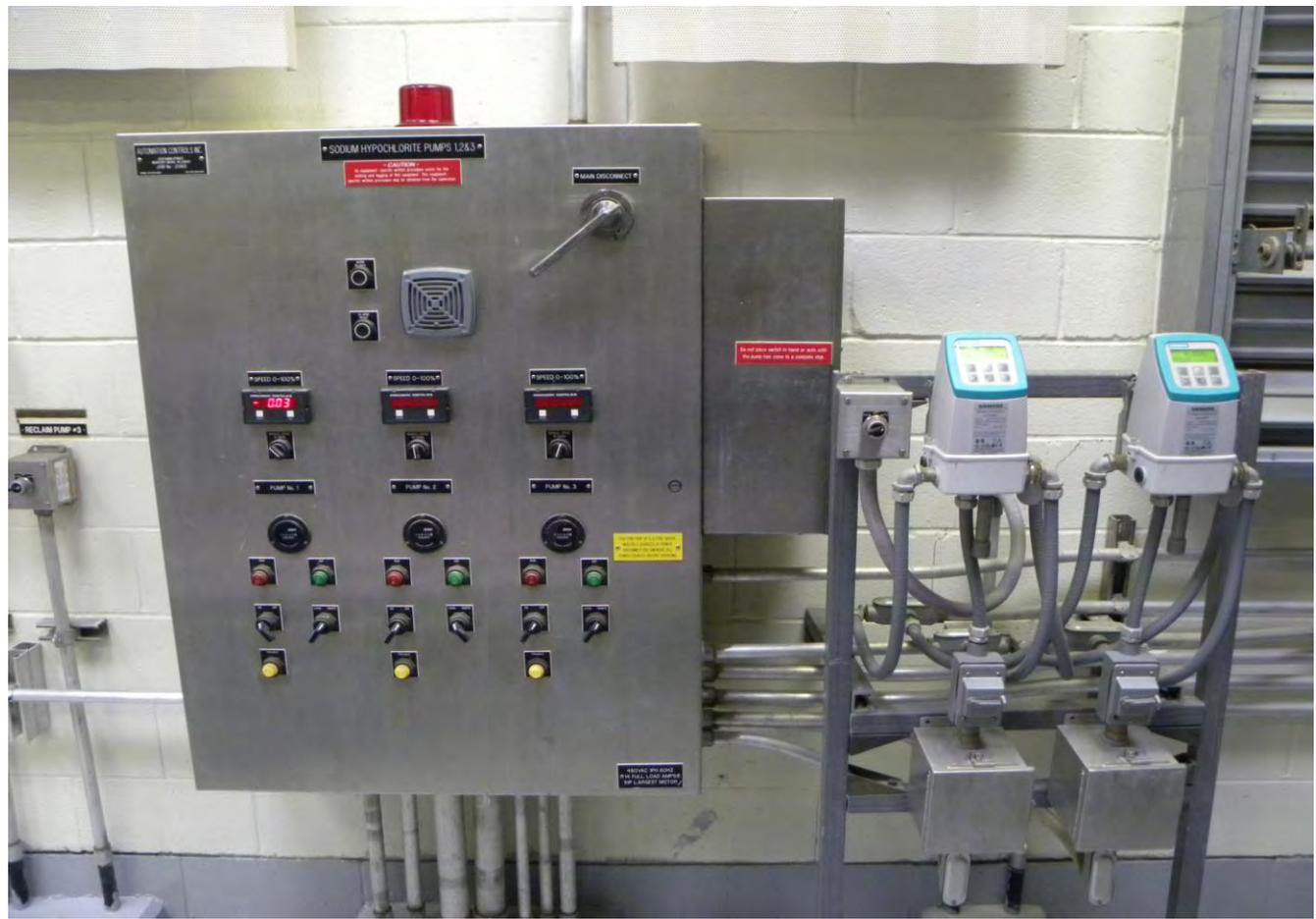
**Year Constructed:** 2002

**Overall condition:**    Excellent     Good    Fair    Poor    Needs Repair    Needs Replacement

**Drawing Provided**     Yes     No

Town of Cary Reclaimed Water System  
Facility Worksheet  
CHEMICAL METERING PUMPS

Photographs:







**Town of Cary Reclaimed Water System  
Facility Worksheet  
HYDROPNEUMATIC TANKS**

**Facility:** North Cary WRF Hydropneumatic Tank  
**Date:** 2/28/13 **Inspected By:** JSG

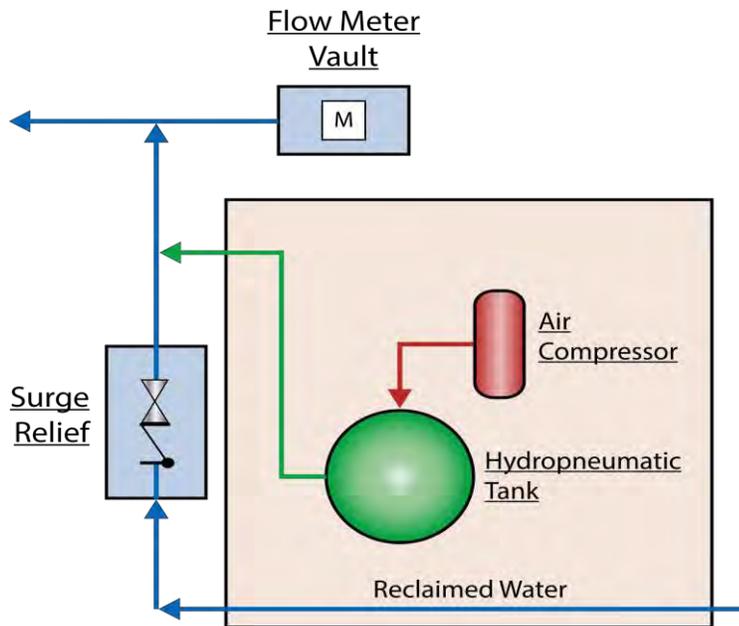
**Information:**

Hydropneumatic Tank  
 Adamson Global Tech. Corp. Hydro Tank  
 Model No. 60824 S/N 4341  
 6' Diameter x 10' H Steel  
 (2000 Gallons)  
 8" Gate Valve  
 8" DIP RCW EL 307.5

Duplex Air Compressor with Control Panel  
 Quincy Compressor Tank Model No. QT5DT5HP00079  
 Serial No. 5141814  
 Quincy Compressor #1 Model No. QT5-202 Serial No. 6197401  
 Quincy Compressor #2 Model No. QT5-202 Serial No. 6197402

Located in the Hypochlorite Building

**Schematic:**



North Cary Hydropneumatic Tank

**Year Constructed:** 2002

**Overall condition:**  Excellent     Good     Fair     Poor     Needs Repair     Needs Replacement

**Drawing Provided**     Yes     No

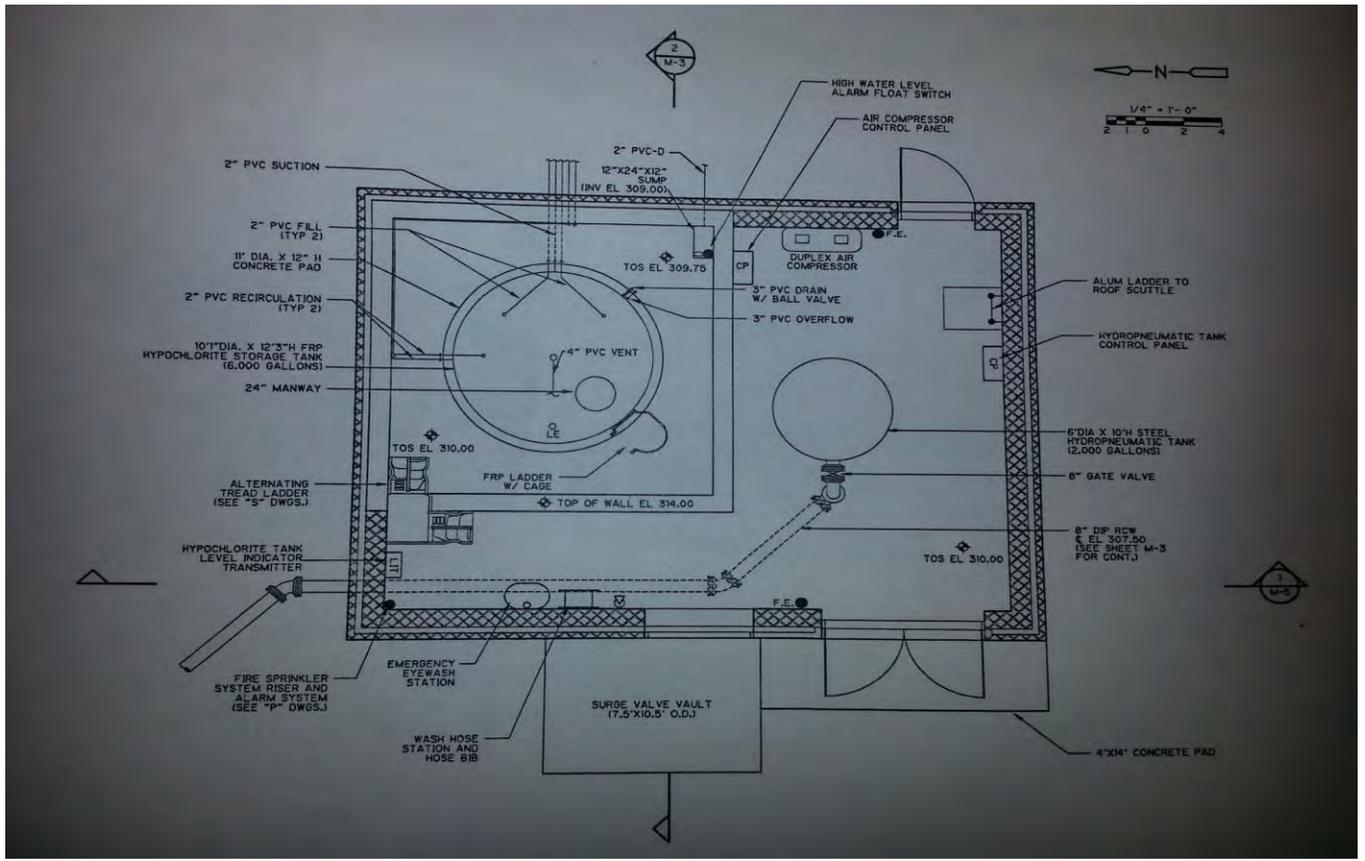
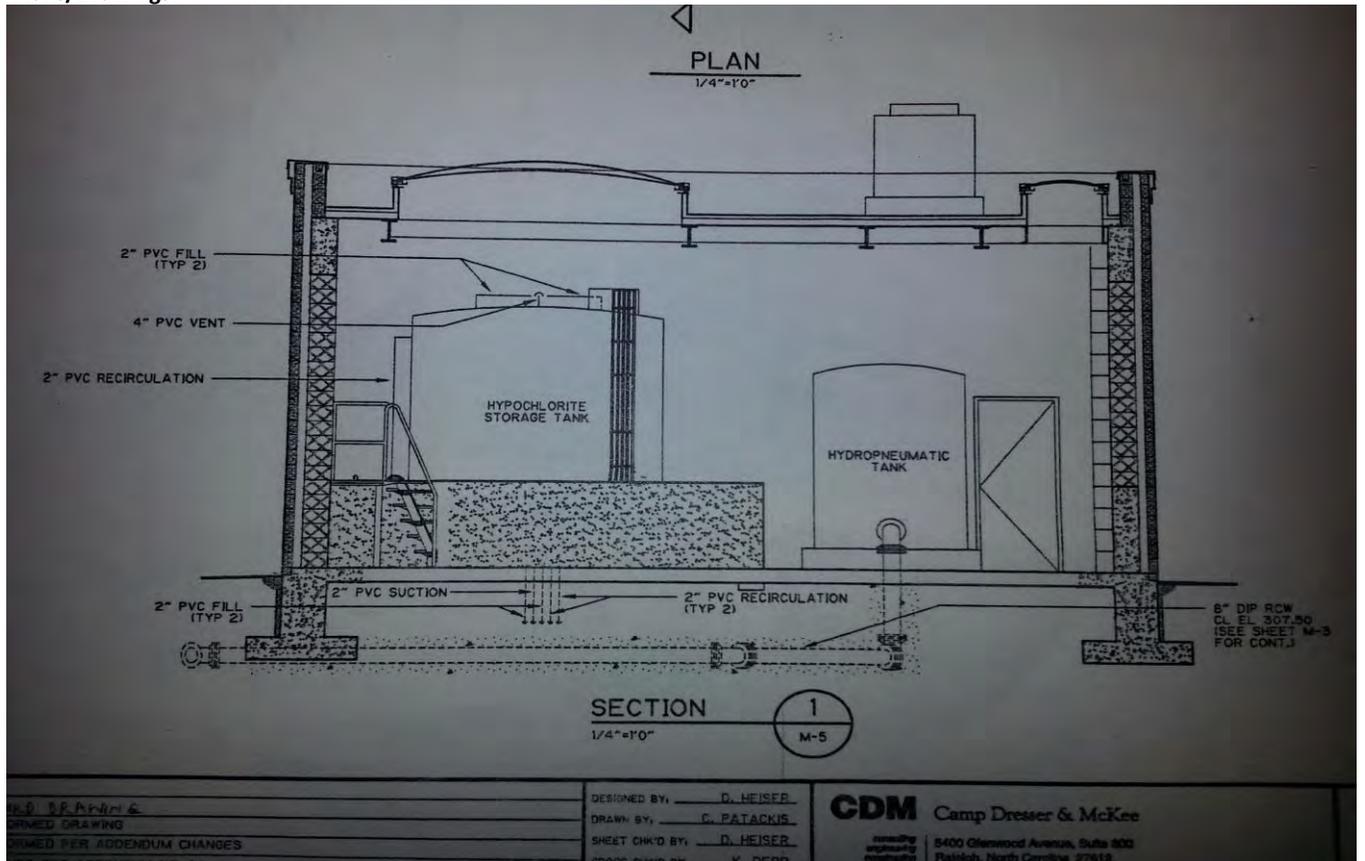
Town of Cary Reclaimed Water System  
Facility Worksheet  
HYDROPNEUMATIC TANKS

Photographs:



**Town of Cary Reclaimed Water System  
Facility Worksheet  
HYDROPNEUMATIC TANKS**

Plans/Drawings:





**Town of Cary Reclaimed Water System  
Facility Worksheet  
GENERATORS**

**Facility:** North Cary WRF Reclaimed Water System Generator

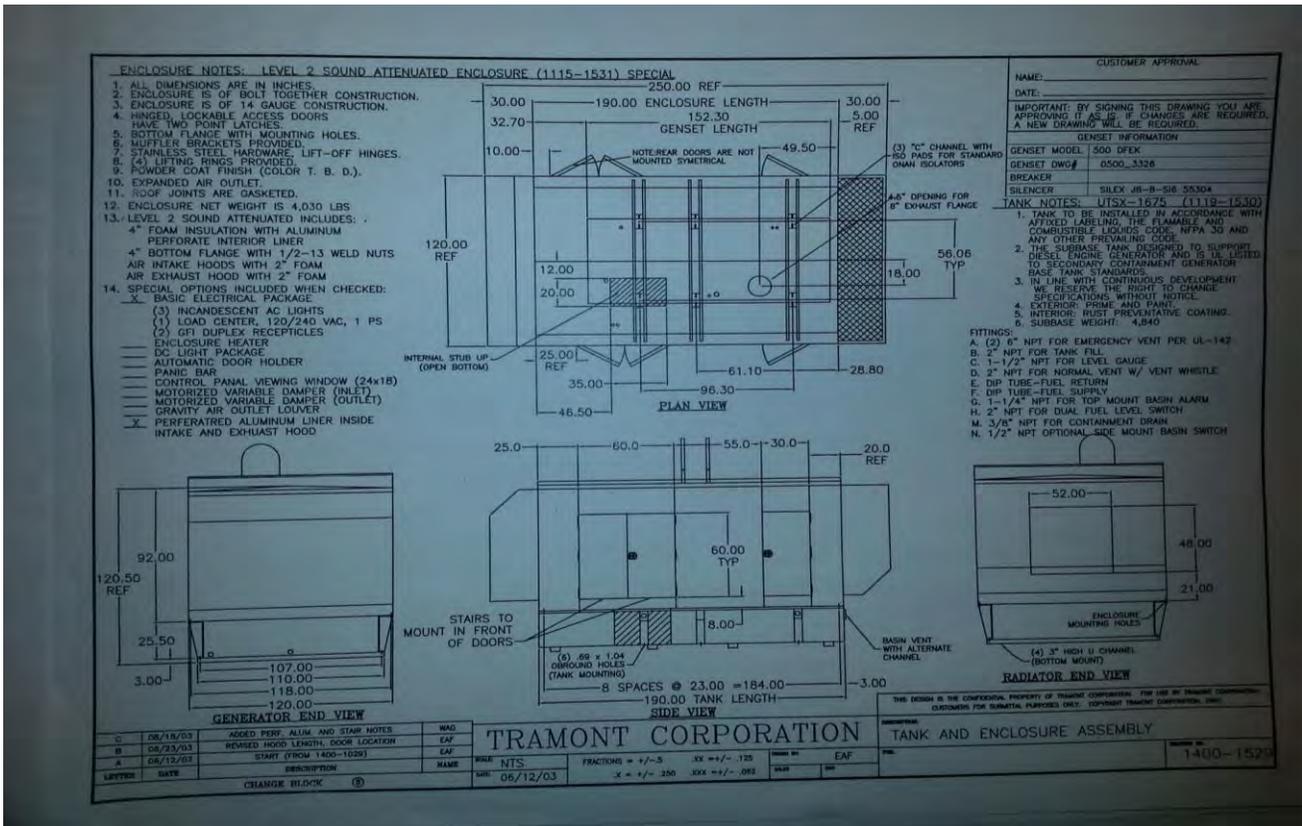
**Date:** 2/28/13

**Inspected By:** JSG

**Information:**

Cummins Generator  
Emergency Power Reclaimed Water System  
500 KW Emergency Generator dedicated to the RCW system.  
Annual Maintenance Contract  
Generator tested weekly/monthly operation under load conditions.

**Plans/Drawings:**



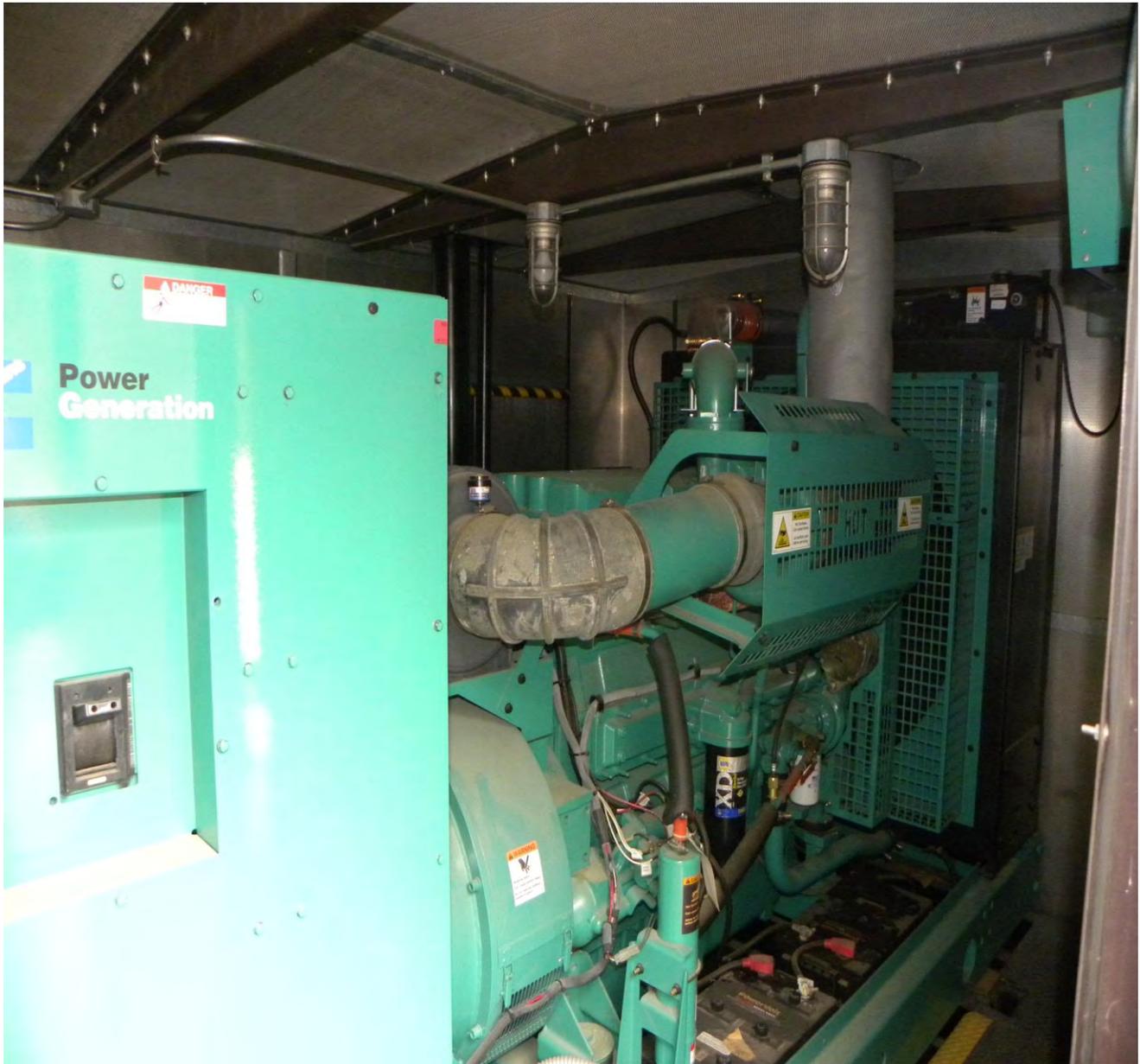
**Year Constructed:** \_\_\_\_\_

**Overall condition:**  Excellent     Good     Fair     Poor     Needs Repair     Needs Replacement

**Drawing Provided**     Yes     No

Town of Cary Reclaimed Water System  
Facility Worksheet  
GENERATORS

Photographs:



**Town of Cary Reclaimed Water System  
Facility Worksheet  
FLOW DIVERSION STRUCTURE**

**Facility:** North Cary WRF Reclaimed Water Flow Diversion Structure

**Date:** 2/28/13

**Inspected By:** \_\_\_\_\_

**Information:**

Flow Diversion Structure

Diversion Gate - Auma installed in 2002

Plant Effluent passes through Diversion Structure. When RCW Storage Tank Level drops .5 feet below the set point the gate valve begins to open.

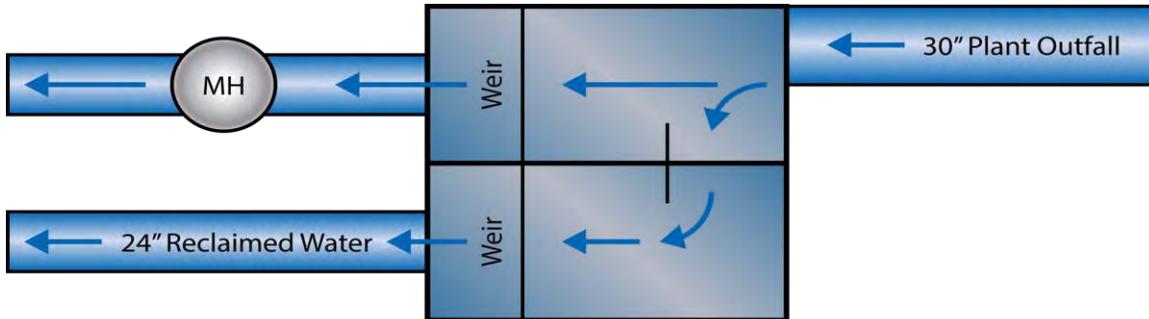
Structure has a fixed weir elevation of 312.35 flow measured via Ultrasonic level meter with a flow range of 0-15 mgd

Chemical feed systems will not run w/o flow or gate operating. Prevents overfeed of hypochlorite. Chlorine is fed downstream of the Diversion structure in a manhole.

Flow Measurement : Milltronics Hydroranger Ultrasonic Transmitter/STH Transducer

Tag No. FE/FIT 1020

**Schematic:**



North Cary Reclaimed Water Flow Diversion Structure

**Year Constructed:** \_\_\_\_\_

**Overall condition:**  Excellent     Good     Fair     Poor     Needs Repair     Needs Replacement

**Drawing Provided**     Yes     No

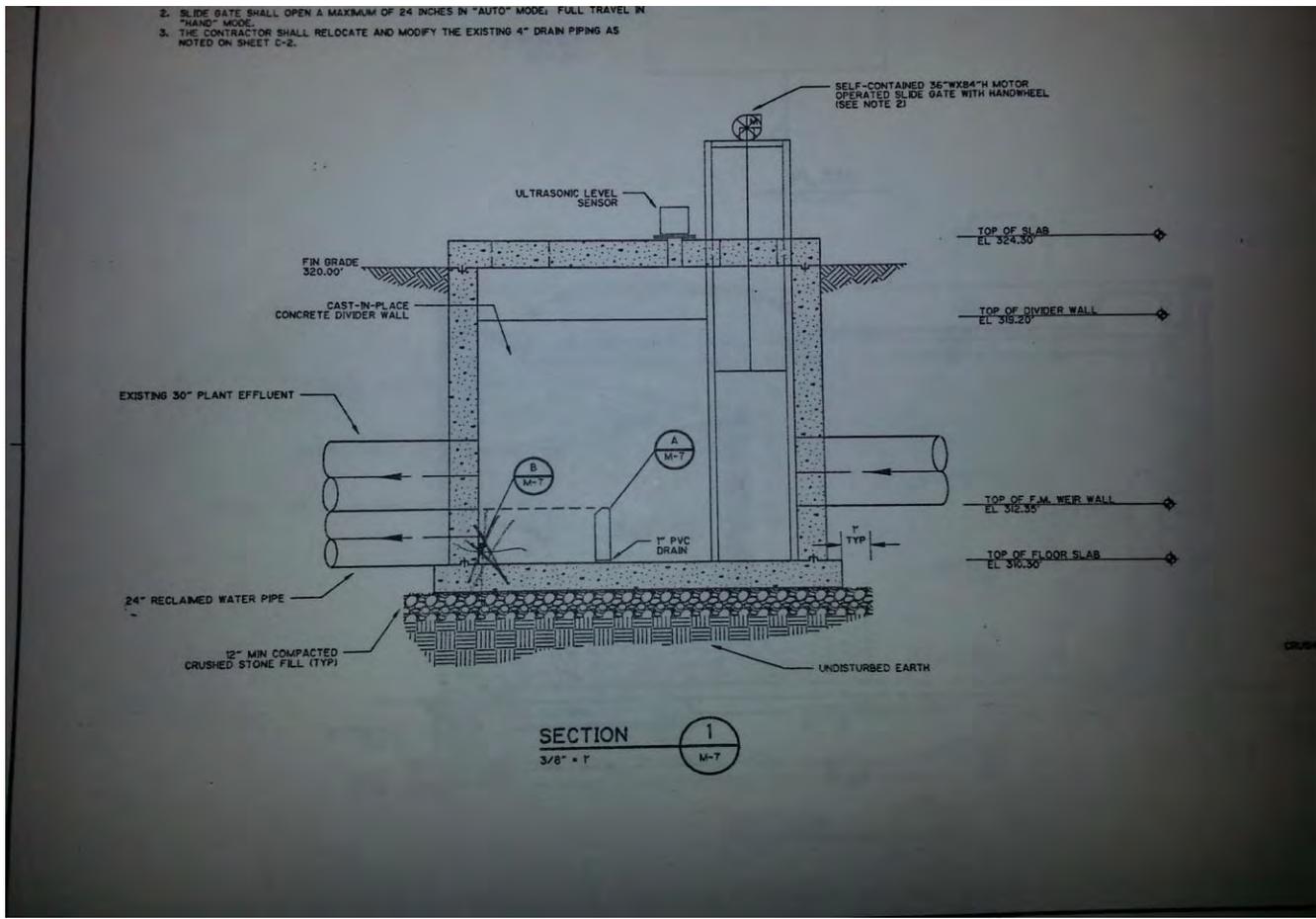
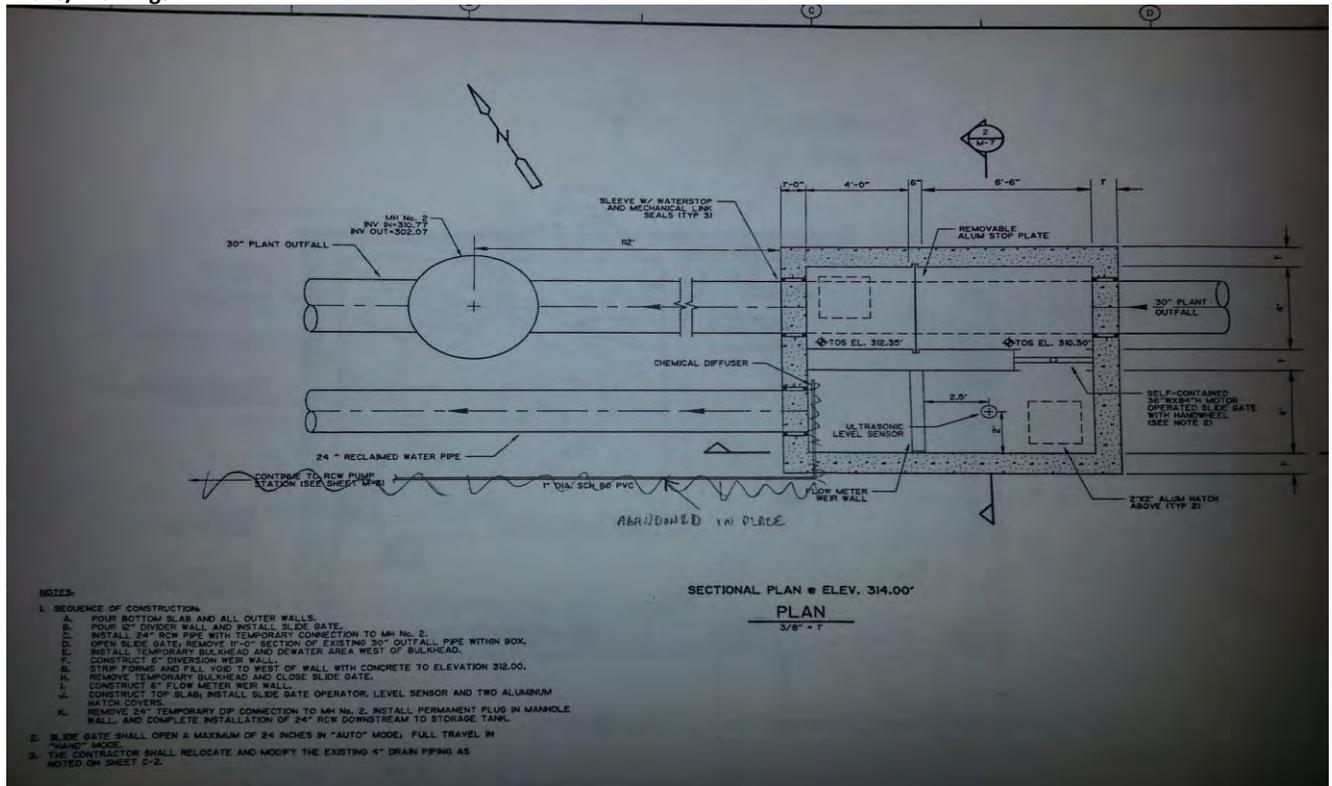
Town of Cary Reclaimed Water System  
Facility Worksheet  
FLOW DIVERSION STRUCTURE

Photographs:



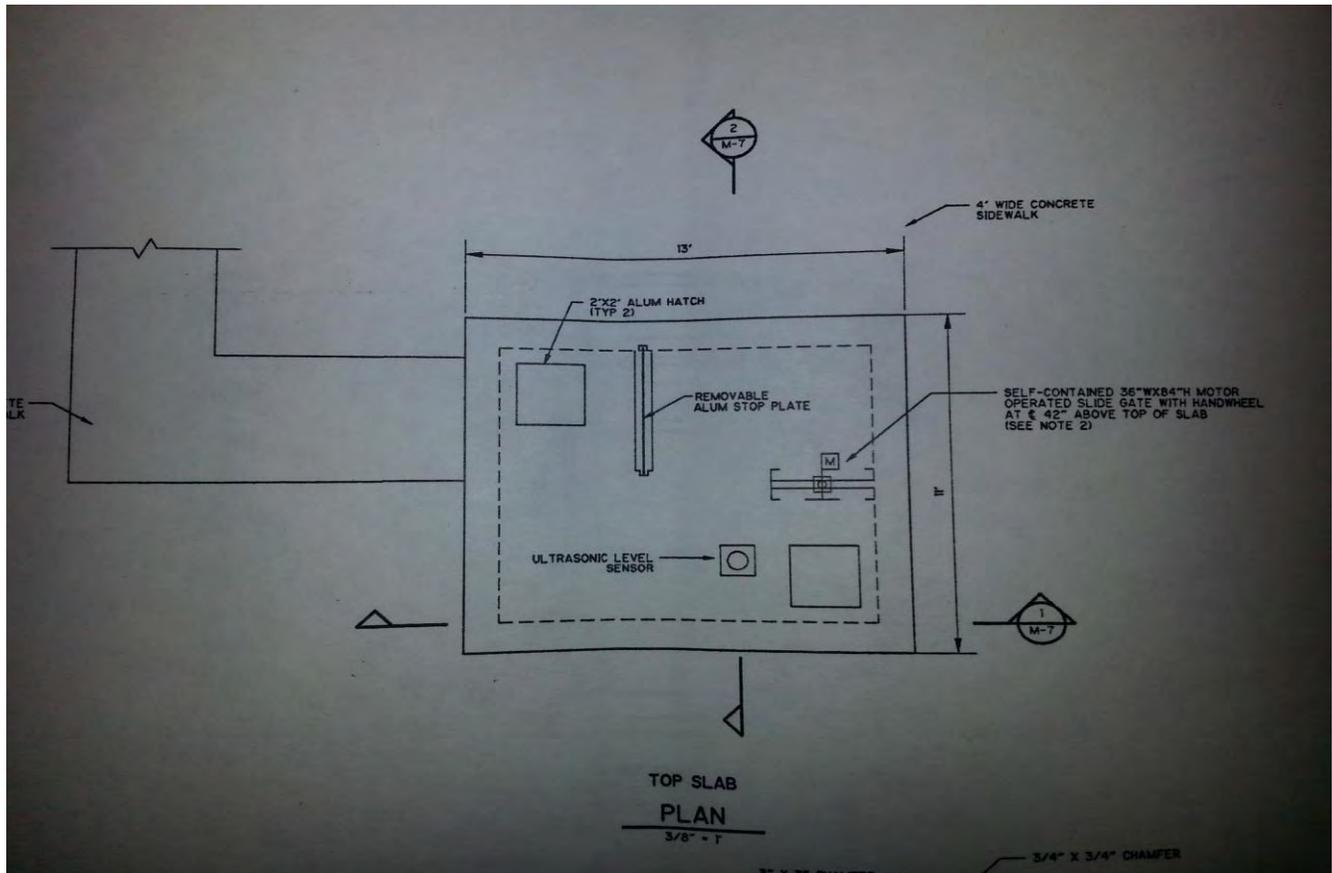
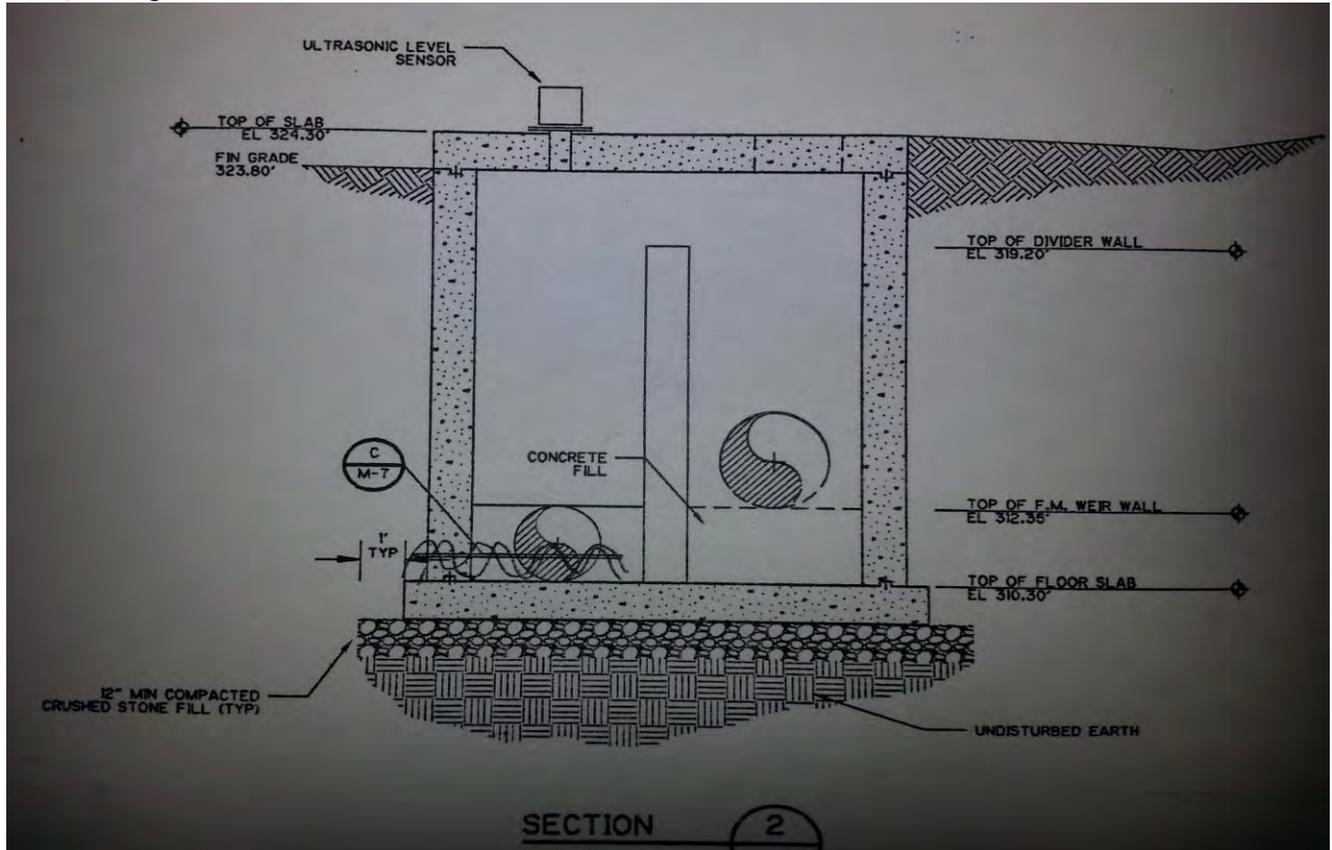
**Town of Cary Reclaimed Water System  
Facility Worksheet  
FLOW DIVERSION STRUCTURE**

**Plans/Drawings:**



Town of Cary Reclaimed Water System  
 Facility Worksheet  
 FLOW DIVERSION STRUCTURE

Plans/Drawings:



**Town of Cary Reclaimed Water System  
Facility Worksheet  
FLOW DIVERSION STRUCTURE**

**Additional Information:**



**I. Kruger Inc.**  
401 Harrison Oaks Blvd  
Ste. 100  
Cary, NC 27513

TELEPHONE 919-677-8310  
FACSIMILE 919-677-0082

North Cary WWTP Reclaim Diverter Flow Meter Calibration  
 Calibration Date: September 09, 2012 (Calibration of Reclaim Diverter Flow Meter)  
 Calibrated By: Todd Casey / Kruger  
 Milltronics Hydroranger Ultrasonic Transmitter / STH Transducer  
 Configured for Open Channel Measurement / Flume

**Reclaim Diverter Flow Meter Settings  
0~15.00 MGD**

	<u>Parameter Value</u>	<u>Parameter Units</u>
P-1 Units of calibration and display	4	Inches
P-2 Mode of measurement	5	OCM
P-3 Empty distance to transducer	90.00	Inches
P-4 Span	17.40	Inches
P-5 Near Blanking	11.81	Inches
P-6 Milliamp Output	2	4-20mA
P-39 Display Reading Options	4	Flow rate
P-40 Primary measuring device	1	Exponential
P-41 Flow rate time units	4	Per Day
P-42 OCM exponent	1.500	Parshall flume exponent
P-46 Maximum flow rate	15.00	MGD
P-49 OCM decimal point	2	Two digits after decimal
P-52 Totalizer display factor	0	Divide by 1
P-53 Totalizer decimal point location	2	Two digits after decimal
P-68 Fill damping	32.81	Rate of change flow increase
P-69 Empty damping	32.81	Rate of change flow decrease
P-97 4mA Trim	231	4mA trim
P-98 20mA Trim	3503	20mA Trim



