Coral Springs Improvement District

Agenda

November 19, 2012

Coral Springs Improvement District

November 13, 2012

Board of Supervisors
Coral Springs Improvement District

Dear Board Members:

The regular meeting of the Board of Supervisors of the Coral Springs Improvement District will be held on Monday, November 19, 2012 at **4:00 P.M.** in the District Offices, 10300 N. W. 11th Manor, Coral Springs, Florida. Following is the advance agenda for this meeting.

1. Roll Call
2. Approval of the Minutes of the October 15, 2012 Meeting
3. Audience Comments
4. Consideration of Bids
   - Fire Protection System Bid
   - Culvert Inspection
5. Consideration of Sungas Services Tank Proposals
6. Ratification of Additional Expenses for Tank E Welding of Bottom Ring in the Amount of $7,000
7. Consideration of Work Authorization #70 Odor Control Analysis
8. Discussion of Setting a Public Hearing to Amend Interest Paid on Deposits Held
9. Staff Reports
   A. Manager
      - Toilet Rebate Program
      - Utility Billing Work Orders
      - Water Breaks Reports
   B. Director of Operations
      - Water
      - Sewer
      - Stormwater
      - Field
      - Human Resources
   C. Attorney
   D. Engineer
      - Well Rehabilitation Presentation
      - Odor Control Presentation
10. Approval of Financial Statements for October 2012
11. Supervisors' Requests
12. Adjournment

The Minutes of the October 15, 2012 Meeting are enclosed for your review.

10300 N.W. 11th Manor • Coral Springs, Florida 33071 • (954) 753-0380 • Fax (954) 755-6701

A quote for a fire protection system is enclosed under the fourth order of business. Additional backup information is separately enclosed. The bid opening for the culvert inspection will be on November 16, 2012. Documentation and staff's recommendation will be distributed at the meeting.

The fifth order of business is consideration of Sungas Services tank proposals, a copy of which is enclosed.

Work Authorization #70 is enclosed under the seventh order of business.

The utility billing work orders and water breaks report are enclosed under the Manager's Report.

Financial statements for October are enclosed under the tenth order of business.

I look forward to seeing you at the meeting and in the meantime if you have any questions, please contact me.

Sincerely,

Kenneth Cassel/sd
District Manager

cc: Stephen Bloom
William Capko
Dan Daly
Shawn Frankenhauser
Randy Frederick
Troy Lyn
John McKune
David McIntosh
Kay Woodward
Beverley Servé
Ed Stover

Minutes

MINUTES OF MEETING
CORAL SPRINGS IMPROVEMENT DISTRICT

A regular meeting of the Board of Supervisors of the Coral Springs Improvement District was held on Monday, October 15, 2012 at 4:00 p.m. at the District Office, 10300 NW 11th Manor, Coral Springs, Florida.

Present and constituting a quorum were:

Martin Shank	President
Theodore Mena	Vice President
Duane Holland	Secretary

Also present were:

Kenneth Cassel	District Manager
William Capko	District Counsel
Dan Daly	Director of Operations
Kay Woodward	District Accountant
Troy Lyn	District Engineer
John McKune	District Consultant
Jan Zilmer	Human Resources
Ed Stover	Water Department
Joe Stephens	Water Department
Alvan Jones	Water Department
Mark Nealon	Wastewater Department
Shawn Frankenhauser	Drainage
Steve Seigfried	Field Superintendant
George Miller	Severn Trent Services
David Schuman	Globaltech
Cory Johnson	CH2M Hill

The following is a summary of the minutes and actions taken during the October 15, 2012 CSID Board of Supervisors Meeting.

FIRST ORDER OF BUSINESS **Roll Call**

Mr. Cassel called the meeting to order and called the roll.

SECOND ORDER OF BUSINESS **Approval of the Minutes of the September 10, 2012 Meeting**

Mr. Shank stated each Board member received a copy of the minutes of the September 10, 2012 meeting and requested any corrections, additions or deletions.

There not being any,

On MOTION by Mr. Mena seconded by Mr. Holland with all in favor the minutes of the September 10, 2012 meeting were approved.

THIRD ORDER OF BUSINESS **Audience Comments**

There not being any, the next item followed.

FOURTH ORDER OF BUSINESS **Consideration of CH2M Hill Invoices**

- **Services Dated December 1, 2011 through January 27, 2012**

The following was discussed:

- Payment of the previously approved invoices was to be withheld until the Certificate of Operations were received.
- The above referenced invoices have not been approved.
- The invoice dated December 1, 2011 through January 27, 2012 is for work performed on the claims issue. The original work authorization was for $30,000. The work was performed and only $12,419.30 was spent. Payment was authorized for the work performed and the work authorization was amended from $30,000 to the amount expended. CH2M Hill provided the information on the claims issue.

On MOTION by Mr. Mena seconded by Mr. Shank with all in favor CH2M Hill's invoice for Work Authorization 62 dated December 1, 2011 through January 27, 2012 in the amount of $12,419.30 was approved.

On MOTION by Mr. Mena seconded by Mr. Shank with all in favor Work Authorization 62 was amended from a total amount of $30,000 to $12,419.30.

- **Services Dated April 28, 2012 through May 25, 2012**
- **Services Dated May 26, 2012 through June 29, 2012**
- **Services Dated June 30, 2012 through July 27, 2012**
- **Services Dated July 28, 2012 through August 31, 2012**

The following was discussed:

- Mr. Cassel reviewed and marked up the invoices.
- Mr. Mena requested clarification on the work associated with these invoices and Mr. Cassel explained the invoices are for engineering work performed during construction and closeout.

- The recommended payments are as follows:
  - April 28, 2012 through May 25, 2012 - $7,722.70
  - May 26, 2012 through June 29, 2012 - $2,190.58
  - June 30, 2012 through July 27, 2012 - $21,688.44
  - July 28, 2012 through August 31, 2012 - $27,677.04
- Mr. Shank asked for an update on the demand letter sent to CH2M Hill. Mr. Capko received confirmation the amount is approximately $440,000 and sent another demand letter last week. CH2M Hill was provided 20 days to respond.

> Mr. Mena MOVED to approve the above referenced invoices with the revised amounts suggested by the District Manager seconded by Mr. Holland.

- Mr. Shank suggested approving the invoices but delaying payment due to the pending litigation. There is concern regarding approximately $440,000 not reimbursed to the District.
- Mr. Cassel understands the Boards position; however he indicated these are two separate issues.
- Mr. Mena agreed with Mr. Shank's suggestion.
- Mr. Capko stated if the Board adopts a motion to delay payment of the remaining invoices, he will review the issue and make a recommendation at the next meeting.

> On MOTION Mr. Shank seconded by Mr. Mena with all in favor the revised amounts of the above referenced invoices were approved but payment will not be issued until it is considered in pending mediation.

FIFTH ORDER OF BUSINESS Consideration of Work Authorizations

A. Work Authorization 68 for Headworks Leveling Gate

The following was discussed:

- There are several issues with the leveling gate. Staff has been doing a workaround, but it is a short-term solution. Replacing the leveling gate will minimize the possibility of other issues associated with operating the valves the way they are currently being operated. It will be a long-term solution.
- Mr. Lyn reviewed the work authorization, which totals $85,222.80.

- Mr. Mena asked how long the prices are guaranteed. Globaltech received quotes from three vendors and the prices are good for two to three months. Mr. Lyn does not foresee a cost increase.

On MOTION by Mr. Mena seconded by Mr. Holland with all in favor Work Authorization 68 with Globaltech for a total cost of $85,222.80 was approved.

B. Work Authorization 69 for DIW Slab Investigation and Repair

Mr. Daly provided the Board with a video presentation.

- Mr. Holland mentioned there was discussion at the last Broward County Water Resources Task Force meeting regarding periodic audits conducted by the Health Department and CSID was cited as doing an excellent job.
- Mr. Shank requested including a section with the engineer's expectations as well as the inspector's final report, both with signatures, on all future projects. If necessary, he suggested independent inspections.

On MOTION by Mr. Holland seconded by Mr. Mena with all in favor Work Authorization 69 with Globaltech for a total cost of $16,436.91 was approved.

SIXTH ORDER OF BUSINESS Consideration of Bids

A. Re-Roofing Project

A total of seven bids were submitted by the deadline. The lowest bid came in five minutes after the deadline. Staff recommends awarding the contract to ABC Roofing, Corp. at a cost of $32,535.

On MOTION by Mr. Mena seconded by Mr. Holland with all in favor the re-roofing bid was awarded to ABC, Roofing, Corp.

B. Aquatic Chemicals

Aquatic chemicals are bid every year. The Board previously authorized staff to purchase chemicals from several vendors depending on the lowest price for each chemical. Staff recommends purchasing Diquat and Cutrine Plus from Crop Production Services; Hydrothol 191, Aquathol K, Aquathol S K and 2, 4-D from Winfield Solutions; and Glyphostate and Induce

from Alligare. Staff is requesting purchasing discretion if a chemical costs more but requires fewer applications resulting in a lower overall cost.

> On MOTION by Mr. Holland seconded by Mr. Shank with all in favor the chemical bids were awarded, as recommended by staff, to the lowest bidders indicated on the bid tabulation sheet.

SEVENTH ORDER OF BUSINESS **Staff Reports**

A. Manager

- **Correspondence from the City of Coral Springs Regarding Fencing**

The Board reviewed the City's proposed ordinance changes with regard to fences, hedges and walls. The Board does not agree with 25 feet from the normal water line and would like to recommend changing it to 15 or 20 feet from the top of the bank. Mr. Mena does not want to approve anything unless the City meets with the District. This item was tabled.

Mr. Shank requested an update on a meeting Mr. Frankenhauser and Mr. Frederick had with Mr. Westfall, the Environmental Coordinator for the City of Coral Springs. Mr. Frankenhauser discussed the following:

- There are three locations with large trees growing across the District's right-of-way and/or the edge of the canal. Two of the trees are Rubber Trees and one is a Ficus Tree. If two of the trees fall during a storm, the canal will be blocked which will result in flooding.
- Mr. Westfall will declare the Ficus Tree a hazard so it can be removed without mitigation. Mr. Mena clarified all Ficus Trees are considered nuisance trees and can be removed without a permit.
- Mr. Westfall prefers the residents living adjacent to the Rubber Trees be contacted and asked if they have objections to the trees being removed.
- The City is in the process of determining whether CSID is a utility so mitigation can be one to one instead of the diameter of the trunk. Mr. Capko noted he has been arguing this issue with the City on behalf of SWCD.
- If Mr. Westfall's report is not favorable to the District, Mr. Shank requested a letter from the City stating they will accept legal and expense liability for any flooding resulting from these trees falling into the canal.

- **Change Order #3 for Interconnect Upgrades**

Before working on the initial design for this project Eckler Engineering, Inc. contacted all utilities to request the locations of their utilities. FPL stated all of their utilities were on the other side of the street. In the process of working on the project, an existing unknown FPL feeder conduit was damaged. This was FPL's error for not identifying their locations correctly. The City of Coral Springs will pursue reimbursement of additional costs from FPL. The Board needs to decide whether to pay the District's portion up front and then seek reimbursement with the City from FPL. Mr. Cassel suggested the District pay upfront in accordance with the Interlocal Agreement.

On MOTION by Mr. Mena seconded by Mr. Holland with Mr. Mena and Mr. Holland voting aye and Mr. Shank voting nay Change Order #3 with Eckler Engineering for emergency interconnect upgrades with the City of Coral Springs was approved.

- **Consideration of Contract with Severn Trent Services**

The Board reviewed the amendment to the contract with Severn Trent Services.

- There is an average of 12 to 16 regular meetings as well as 4 to 5 workshops a year covered under the contract.
- The Board requested "special meetings" be redefined to be more specific.

On MOTION by Mr. Holland seconded by Mr. Mena with all in favor the amendment to the contract with Severn Trent Services was approved subject to District counsel's review of the revision to Exhibit B.

- **Utility Billing Work Orders**
- **Water Breaks Reports**

The above items are for informational purposes only, copies of the reports are attached hereto and made a part of the public record.

B. Director of Operations

- **Water**

Mr. Stover reported the District received the Certificate of Occupancy. Payment was released to Lanzo. The new trees were planted.

- **Sewer**

Mr. Nealon provided a brief update on the work being done on Plant E. The vertical welds are complete and the welds at the bottom are almost complete. X-rays will begin tomorrow. Once the X-rays are complete painting will be done. All work is expected to take eight weeks.

- **Field Services**

Mr. Siegfried stated the company relining Lift Station #1 is taking a break because they are having trouble bypassing the water level. Reynolds is working on mainlines. Once they are done LMP will begin with the laterals.

- **Drainage**

This item was previously discussed.

- **Human Resources**

Mr. Zilmer reported the pensions are being moved to Fidelity. Out of 53 employees, 49 signed up for 4%.

Mr. Daly reported the Holiday Party is being planned and will be held at The Outback Steakhouse.

C. Attorney

There being no report, the next item followed.

D. Engineer

Mr. Lyn reported the Health Department indicated the District should have a permit by next week. Once it is received they will begin work on the sludge line.

EIGHTH ORDER OF BUSINESS **Approval of Financial Statements for August and September 2012**

Ms. Woodward reviewed the financial statements.

On MOTION by Mr. Holland seconded by Mr. Mena with all in favor the financial statements were approved.

NINTH ORDER OF BUSINESS **Supervisors' Requests**

The following was discussed:

- Mr. Shank stated the City of Tamarac had issues with their drinking water due to lack of procedures. He wants to make sure this does not happen with the District. He also thanked Mr. Daly and Ms. Woodward for their help.
- Mr. Holland commented on the great job District staff is doing. He provided an update on the Broward County Water Resources Task Force meeting.
- Mr. Mena commented it was impressive the Broward County Water Resources Task Force asked CSID to be a part of it.

TENTH ORDER OF BUSINESS **Adjournment**

There being no further business,

On MOTION by Mr. Holland seconded by Mr. Shank with all in favor the meeting was adjourned.

Kenneth Cassel
Assistant Secretary

Martin Shank
President

Fourth Order of Business

SimplexGrinnell
BE SAFE.

10550 Commerce Parkway
MIRAMAR, FL 33025-3913
(954) 431 3700
FAX: (954) 435 6650
www.simplexgrinnell.com

SimplexGrinnell Quotation

TO:

Site: Coral Springs Improvement Dist
Project: Sapphire System-Server, Electi
Customer Reference: Sapphire System-Server,Electr
SimplexGrinnell Reference: L29780-000006
Date: 09/04/2012

SimplexGrinnell is pleased to offer for your consideration this quotation for the above project.

QUANTITY	MODEL NUMBER	DESCRIPTION
	Server Room-Sapphire System	
	Server Room-Sapphire System	
	INST LAB	INSTALLATION LABOR
1	MECH INV	MECHANICAL
1	DPGS	MISC. PARTS/SUPPLIES
1	DPHZ	DOOR FAN TEST
	Fire Alarm Labor	
	INST LAB	INSTALLATION LABOR
	Fire Alarm Material	
1	4004-9302	4004R RELEASE PANEL
1	4004-9860	4PT AUXILIARY RELAY MODULE
1	2081-9046	2 AMP COIL SUPERVISORY MODULE
2	4098-9601	PHOTO DETECTOR
2	2081-9274	BATTERY 10AH
1	2099-9149	MANUAL STATION - DOUBLE ACTION
2	4098-9788	DETECTOR 2-WIRE BASE
1	4099-9802	LABEL KIT - RELEASE
1	MT-24MCW-AR	MULTITONE STROBE 8 TONES 24V
1	RSS-24MCW-AR	STR WALL 24V 15/30/75/110CD AG
2	SBB-R	SURFACE BACKBOX RED
1	43T-G6-24-R	24 VAC 6 INCH SHELL RED BELL
1	DK-120SR	120V 20V SER HYBRID W/EMI/RFI
1	2080-9060	MAINT SWITCH W/LAMP,SURFACE
1	2080-9057	ABORT SWITCH
1	DPFA	DP FIRE ALARM
	Design/Permits	
	DPSVC	CAD DESIGN/PERMITS

Net selling price for Server Room-Sapphire System, FOB shipping point, $14,884.25

	Control Room-Sapphire System	
	Control Room-Sapphire System	
	INST LAB	INSTALLATION LABOR
1	MECH INV	MECHANICAL
1	DPGS	MISC. PARTS/SUPPLIES

Fifth Order of Business

SUNGAS SERVICES
more than just a gas company

2950 NW 24 Street, Miami, FL 33142 • Office (305) 635-8682 • Fax (305) 637-4017
11710 Wiles Road, Coral Springs, FL 33076 • Office (954) 752-8885 • Fax (954) 752-2797

PROPOSAL

To:
Shawn Frankenhauser

shawnf@fladistricts.com
fax: 954-757-4850

Installation:

At pump station for
Coral Springs Improvement District

WE ARE PLEASED TO SUBMIT THE FOLLOWING QUOTATION FOR YOUR CONSIDERATION

Date	50% Down	Subject to local and	Quotation #
04/12/12	50% When Finished	state tax as applicable	

Quantity	Description	Price	Amount
1	1000 gallon tank (propane)	$ 2,600.00	$ 2,600.00
1	roskote underground tank protection	$ 250.00	$ 250.00
1	anode bag (cathodic protection)	$ 190.00	$ 190.00
1	tank tie downs	$ 150.00	$ 150.00
1	back hoe to install tanks @ $500.00	$ 500.00	$ 500.00
1	piping schedule 80 blac pipe (coated)	$ 240.00	$ 240.00
	1" or 3/4" (labor Inc) per foot ($38.00 per foot)	$ -	$ -
	Installation includes labor & materials	$ -	$ -
Total		$ 3,930.00	$ 3,930.00
	****This quote is per 1000 gallon tank****		

Note : Any large tank properly installed has a life expectance of 20-25 years

Acceptance of this proposal is conditioned upon the execution of a properly completed work order and Equipment Lease and Gas Supply Agreement (as applicable) by both parties and is subject to all terms and conditions contained therein. This proposal is valid for thirty (30) days from the above date unless withdrawn earlier by SUNGAS SERVICES.

This estimate is based on a gas supply agreement to be signed by the home owner and does not include gas, tax, or permit fee. All charges to drawing after permitting are required to have signed change order, and will be billed at regular Sungas Services rates.

Jose Izaguirre	
Sale Representative	Signature
11710 Wiles Rd	
Address	Company (if applicable)
Coral Springs, FL 33076 954-752-8885	
City, State, Zip code Telephone	Title (if applicable)

SUNGAS SERVICES

PROPOSAL

Shawn Frankenhauser Shawnf@fladistricts.com Fax# 954-757-4850		Installation: 10300 NW 11 Avenue Coral Springs, Florida

WE ARE PLEASED TO SUBMIT THE FOLLOWING QUOTATION FOR YOUR CONSIDERATION

Date	50% Down	Subject to local and	Quotation #
10/23/12	50% When Completed	state tax as applicable	

Quantity	Description	Price	Amount
3	1000 Gallon Tanks (New)	$2,600.00	$7,800.00
4	Regulators 3-Low Pressure- 1- High Pressure	$65.00	$260.00
3	Excavation F or Tanks	$500.00	$1,500.00
100"	Block Pine Schedule 40	$38.00	$3,800.00
3	Concret Slab	$500.00	$1,500.00
3	Anode Bag	$95.00	$285.00
3	Tie Down	$150.00	$450.00
12	Remove & Reinstall Crash Posts	$60.00	$720.00
3	Tanks Delivery	$100.00	$300.00
3	Protection for U/G tank	$250.00	$750.00
3	Remove Old Tank	$200.00	$600.00
3	Pump Propane for old Tank	$120.00	$360.00
	Sp-Back Fill (Top Layer) Gravol	$480.00	$480.00
3	Back Fill (Sand)	$150.00	$450.00
	Prep For Permit	$150.00	$150.00
	Tax Not Included, Only if Applicable		
	Grand Total		**$19,405.00**

Acceptance of this proposal is conditioned upon the execution of a properly completed work order and Equipment Lease and Gas Supply Agreement (as applicable) by both parties and is subject to all terms and conditions contained therein. This proposal is valid for thirty (30) days from the above date unless withdrawn earlier by SUNGAS SERVICES.

Orlando Perez	
Sales Representative	Signature
2950 NW 24th Street	
Address	Company (if applicable
Miami, Florida 33142 305-635-8682	
City, State, Zip Code Telephone	Title (if applicable)

Seventh Order of Business

WORK AUTHORIZATION

CSID WA # 70

Globaltech No. 120320

Pursuant to the provisions contained in the "Contract for Professional Engineering Consulting and Design-Build Services on a Continuing Contract Basis " between the CORAL SPRINGS IMPROVEMENT DISTRICT, hereinafter referred to as "OWNER", and Globaltech, Inc., hereinafter referred to as "FIRM", dated July 1, 2012 (hereinafter referred to as "AGREEMENT"), this Work Authorization authorizes the FIRM to provide services under the terms and conditions set forth herein and in the AGREEMENT, which is incorporated herein by reference as though set forth in full.

The OWNER desires engineering consulting services related to the Water Treatment Plant Degasifier Odor Control Options, hereinafter referred to as the "Specific Project".

Section 1 – Terms

The FIRM shall be defined as an individual, corporation or contractor having a direct contract with the OWNER or with any other subcontractor in the performance of a part of the work contracted for under the terms of this Work Authorization with the OWNER.

Section 2 – Scope of Work

The FIRM will provide the following services in accordance with the AGREEMENT:

The reverse osmosis (RO) water treatment plant (WTP) was constructed with two degasifier towers to remove hydrogen sulfide from the membrane permeate before the water is ready for distribution as finished water to customers. Currently, the removed hydrogen sulfide gas is exhausted to the atmosphere by degasifier towers with gooseneck/candy cane type

exhaust stacks. While the gooseneck stack configuration prevents birds orand their waste from contaminating the towers, the gooseneck exhaust configuration forces the removed hydrogen sulfide, which is odorous, toxic, and corrosive to metal, to be vented downward toward the ground.

The OWNER has requested that the FIRM investigate options to alleviate the hydrogen sulfide problem. The scope of this Work Authorization includes making recommendations to modify the exhausts of the degasifiers to improve the dispersion of the hydrogen sulfide, or add odor control scrubbers to treat the hydrogen sulfide. The work will supplement work previously conducted by the former District Engineer.

The FIRM shall prepare a Technical Memorandum (TM) that discusses various options to disperse or treat the hydrogen sulfide and provide order of magnitude costs for those options.

Task 1 – Engineering Services

This task includes project management and preparation of the TM work.

1. Meet with the OWNER to review the project scope.
2. Determine potential height restrictions for the exhaust stack by the Coral Springs Building Department.
3. Determine exhaust configuration limitations by Broward County Health Department.
4. Examine mixed flow fan as an alternative exhaust system.
5. Examine chemical and biological odor control systems.
6. Determine feasible options for degasifier exhaust dispersion or odor control option.
7. Prepare order of magnitude cost estimate for options.

8. Prepare a draft TM outlining the feasible options and order of magnitude costs for the degasifier exhaust dispersion or odor control option.
9. Meet with staff to collect comments on draft TM.
10. Prepare final TM.

Assumptions

Assumptions for the project are as follows:

- No dispersion modeling is to be conducted by FIRM. Results from previous dispersion modeling will be considered.
- If OWNER decides to proceed with either of the degasifier exhaust dispersion or odor control options, the work will be conducted under a separate Work Authorization/Agreement.
- Cost estimates shall be order of magnitude.

Section 3 – Location

The services to be performed by the FIRM shall be on the following site or sites: **Coral Springs Improvement District Water Treatment Plant**

Section 4 – Deliverables

The FIRM will provide the following Deliverables to OWNER:

- Draft and Final TM

Section 5 - Time of Performance

Project will commence after execution of this Work Authorization. The FIRM and OWNER agree to the following schedule:

Task	Time Elapsed to Subtask Completion
Notice to Proceed (NTP)	0 Days
Draft TM	30 Days after NTP
Final Completion	15 days after Draft TM Staff Review

Section 6 - Method and Amount of Compensation

1. The FIRM shall be paid by the OWNER in accordance with the Florida's Prompt Payment Act Florida Statute 218.70-79 and in accordance with the payment method as set forth in Section 6 of the AGREEMENT. The calculations shall begin using the date the invoice was received.

2. Total job price: **$13,850.00**

3. The cost for the above scope of services is a lump sum (LS). The LS is based on the materials, methods, and assumptions presented in the scope of services. The LS shall not be greater than the stated amount unless there is an approved increase in the scope of services.
4. A Budget Summary for the above LS is provided in Attachment A.

Section 7 - Application for Progress Payment

1. Unless otherwise prescribed by law, at the end of each month, the FIRM shall submit to the OWNER for review, an Application for Progress Payment filled out and signed by the FIRM covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the AGREEMENT.

Section 8 – Responsibilities

The FIRM shall, under no circumstance, look to the OWNER to provide any labor or equipment for the FIRM. The FIRM shall provide all of the labor and equipment necessary to perform the job or services contracted for at the expense of the FIRM. Property of any kind that may be on the premises, which are the site of the performance of this contract, during the performance of this Work Authorization, shall be at the sole risk of the FIRM.

8.1 The OWNER hereby designates Ken Cassel as the OWNER's representative.

8.2 In addition to applicable provisions of Section 2 of the AGREEMENT, the OWNER will:

- Provide copies of existing drawings and equipment cut sheets if requested by FIRM
- Pay for any required permit fees

The FIRM acknowledges and understands that it is an independent contractor in its relationship with the OWNER. The FIRM hereby designates Troy Lyn as the FIRM's representative.

Section 9 – Insurance

The FIRM shall provide certificate of insurance to the OWNER setting forth the type and amount of insurance carried by the FIRM and conforming to the minimum requirements set forth in the AGREEMENT.

Section 10 – Level of Service

The OWNER shall have the right to terminate said Agreement by giving the FIRM thirty (30) days written notice if the service that is being provided is not maintained at levels necessary to provide the required service. The OWNER will determine in its sole judgment what constitutes a satisfactory level of service.

Section 11 – Indemnification

The Firm shall indemnify and hold harmless the Owner and its officers and employees as set forth in Section 11 of the Agreement.

IN WITNESS WHEREOF, this Work Authorization, consisting of nine (9) pages and Attachment A has been caused fully executed on behalf of the FIRM by its duly authorized officer, and the OWNER has the same to be duly name and in its behalf, effective as of the date herein above written.

CORAL SPRINGS IMPROVEMENT DISTRICT

_____
Signature of Witness

_____
Printed name of Witness

_____
Signature of President

Dr. Marty Shank
Printed Name of President

_____
Date

Approved as to form and legality

_____
District Counsel

ENGINEER

State of Florida
County of Broward

The foregoing instrument was acknowledged before me on this ___ day of _____, 2012 by

_____
who is personally known to me OR produced _____ as identification.

_____
Company

_____
Signature

Troy Lyn, P.E., Vice President
Name and Title (typed or printed)

_____
Signature of Notary

_____
Date

Attachment A

Budget Summary

ATTACHMENT A

Water Treatment Plant Degasifier Odor Control Options

Budget Summary

Task	Task Description	Officer	E6	E4	CADD	Adm 3	Adm 1	Total Labor	*Sub-Consultant Services	Sub-Consultants
		$210.00	$175.00	$150.00	$85.00	$75.00	$50.00			
1	**Engineering**									
	Project Management/Coordination		4			4	4			
	Prepare Draft TM		60	6			2			
	Meet with Staff and Finalize TM		6				2			
	Subtotal Task 1	**0**	**70**	**6**	**0**	**4**	**8**	**$13,850**		
	Labor Total							**$13,850**		
	Subconsultant Labor Total								$0	
	Subconsultant Multiplier								1.12	
	Subcontract Total								**$0**	
	PROJECT TOTAL								**$13,850**	

Ninth Order of Business

9 A

Coral Springs Improvement District
Utility Billing Work Orders

2012	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
Customer Inquiry requiring work order	97	45	36	40	41	54	50	35	29	54			481
Mis-Reads	5	5	6	2	3	4	6	11	4	8			54
Meter Calibration Tests	1	0	0	0	2	0	1	1	1	4			10

2011	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
Customer Inquiry requiring work order	73	44	53	52	58	31	48	55	45	59	26	48	592
Mis-Reads	4	7	12	6	2	2	11	1	8	7	5	4	69
Meter Calibration Tests	4	0	0	0	3	1	1	2	1	2	1	1	16

2010	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
Customer Inquiry requiring work order	56	49	25	44	26	28	42	54	32	63	52	42	513
Mis-Reads	4	7	9	3	7	4	1	5	4	8	4	5	61
Meter Calibration Tests	6	5	0	0	0	0	0	0	0	2	4	1	18

Date called in	day	Address	Legal	# men
10/1/2012	MON	9584-9606 1ST CT	PATIOS OWD	3
10/1/2012	MON	485 NW 111 AVE	28/CC/CYG	2
10/1/2012	MON	8992 SHADOW WOOD BL	4A/BB/RWS	3
10/2/2012	TUES	146 SW 99 WAY	17/L/OWD	3
10/4/2012	THURS	1720 NW 126 DR	10/C/FWY	3
10/5/2012	FRI	8888 NW 2 ST	19/N/SWD	2
10/9/2012	TUES	385 NW 105 DR	37/A/CYG	3
10/10/2012	WED	8810 NW 18 ST	12/B/FT	2
10/10/2012	WED	148 SW 97 TER	7/L/OWD	3
10/11/2012	THURS	215 NW 90 AVE	21/P/SWD	2
10/15/2012	MON	9950 NW 11 MNR	2/FF/MWD	2
10/15/2012	MON	162 NW 84 WAY	41/H/SWD	3
10/17/2012	WED	8800 SW 1 PL	29/F/SWD	3
10/18/2012	THURS	9625 SHADOW WOOD CT	11/SWD VILLA	2
10/19/2012	FRI	9642 NW 1 PL	7/K/OWD	3
10/19/2012	FRI	9773 NW 3 MNR	10/G/OWD	3
10/19/2012	FRI	11005 NW 7 ST	10/EE/CYG	2
10/21/2012	SUN	8473 NW 14 CT	6/AA/RWD	3
10/25/2012	THURS	860 NW 110 LA	10/AB/CYR	3
10/25/2012	THURS	10899 NW 17 PL	25/X/CYR	3
10/26/2012	FRI	9063 NW 21 CT	16/E/RWD	3

Hous used	Date completed	Subdivision
3	10/3/2012	OWD
3.5	10/2/2012	CYG
2	10/4/2012	RWS
3	10/5/2012	OWD
2.5	10/4/2012	FWY
3	10/5/2012	SWD
2	10/10/2012	CYG
3	10/15/2012	FT
2.5	10/11/2012	OWD
3	10/15/2012	SWD
1	10/18/2012	MWD
2	10/18/2012	SWD
2	10/19/2012	SWD
3	10/22/2012	SWD VI
2.5	10/24/2012	OWD
2.5	10/24/2012	OWD
3	10/25/2012	CYG
2	10/22/2012	RWD
2	10/29/2012	CYR
2	10/30/2012	CYR
2	10/29/2012	RWD

9 D

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MEMO

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To:	Ed Stover/CSID Ken Cassel/CSID Dan Daly/CSID	**CC:**	Alvan Jones/CSID Joe Stevens/CSID
From:	Paul Gandy, PE Troy Lyn, PE	**Date:**	10/24/12
Re:	CSID Well Upgrade Analysis Technical Memorandum		

ES. Executive Summary

Improvements to the existing supply wells are proposed in this Technical Memorandum (TM) to provide additional flow and pressure to the reverse osmosis (RO) water treatment plant (WTP), existing meet regulatory requirements, improve reliability and maintenance, and redundancy. Each well was evaluated and a list of improvements identified. Plant staff is in the process of addressing the simpler tasks that were identified. The more difficult and complex improvements have been grouped into phases and an order of magnitude cost was developed as shown in **Table ES-1**.

Table ES-1: Summary of Order of Magnitude Cost Estimated Well Improvement Phases

Improvements	Estimated Construction Cost	15% Contingency	Estimated Engineering Costs	Order of Magnitude Total Cost
Phase 1: Wells 5, 6, and 7	$257,476	$38,600	$30,900	$326,976
Phase 2: Wells 4, 9, and 10	$217,545	$32,600	$26,200	$276,345
Phase 3: Wells 8 and 11	$86,873	$13,000	$10,500	$110,373
Phase 4: Wells 1, 2, and 3	$212,226	$25,500	$25,500	$263,226
Total	**$774,120**	**$109,700**	**$93,100**	**$976,920**

Note: Does not including bonding cost

Phases 1 and 2 should be executed within a year to provide additional flow and pressure to the RO WTP. Phase 3 and 4 can be done within the next 2 to 5 years. The improvements generally consist of replacing the various well pumps and motor with a single type 40 hp pump and motor so that a variety of spares pumps and motors do not have to be maintained. Improvements to Wells 5, 6, 7, 9 and 10 are not only needed to increase flows to the RO WTP but also to address regulatory issues the Health Department may have regarding the well casing elevation and height. For these wells, the piping will need to be raised and well enclosures modified.

1. Introduction

This TM identifies proposed improvements to the existing supply wells utilized by the CSID WTP. Improvements are desired for the following reasons:

- Existing well pumps are not able to provide adequate flow and pressure to the new RO WTP.
- Wells are old and range in age from 10, 24, 33 and 40 years old. Pumps and motors in the wells may be newer as they have been replaced as needed.
- While the construction and design of the wells are "grandfathered", there are more stringent rules governing sanitary hazards in affect. The wells will be required to be upgraded to the newer rules if they are modified.
- Existing well head ports do not provide for needed access for inspections.

The improvements are recommended based on the following:

- Site inspections conducted at each supply well on August 17, 2012 and interview with WTP staff.
- Hydraulic modeling conducted by Globaltech to increase flow and pressure to the reverse osmosis (RO) WTP
- Florida Department of Environmental Protection/Broward County Health Department regulations governing well design and construction (FAC 62-532.500 & FAC 62-555.315)

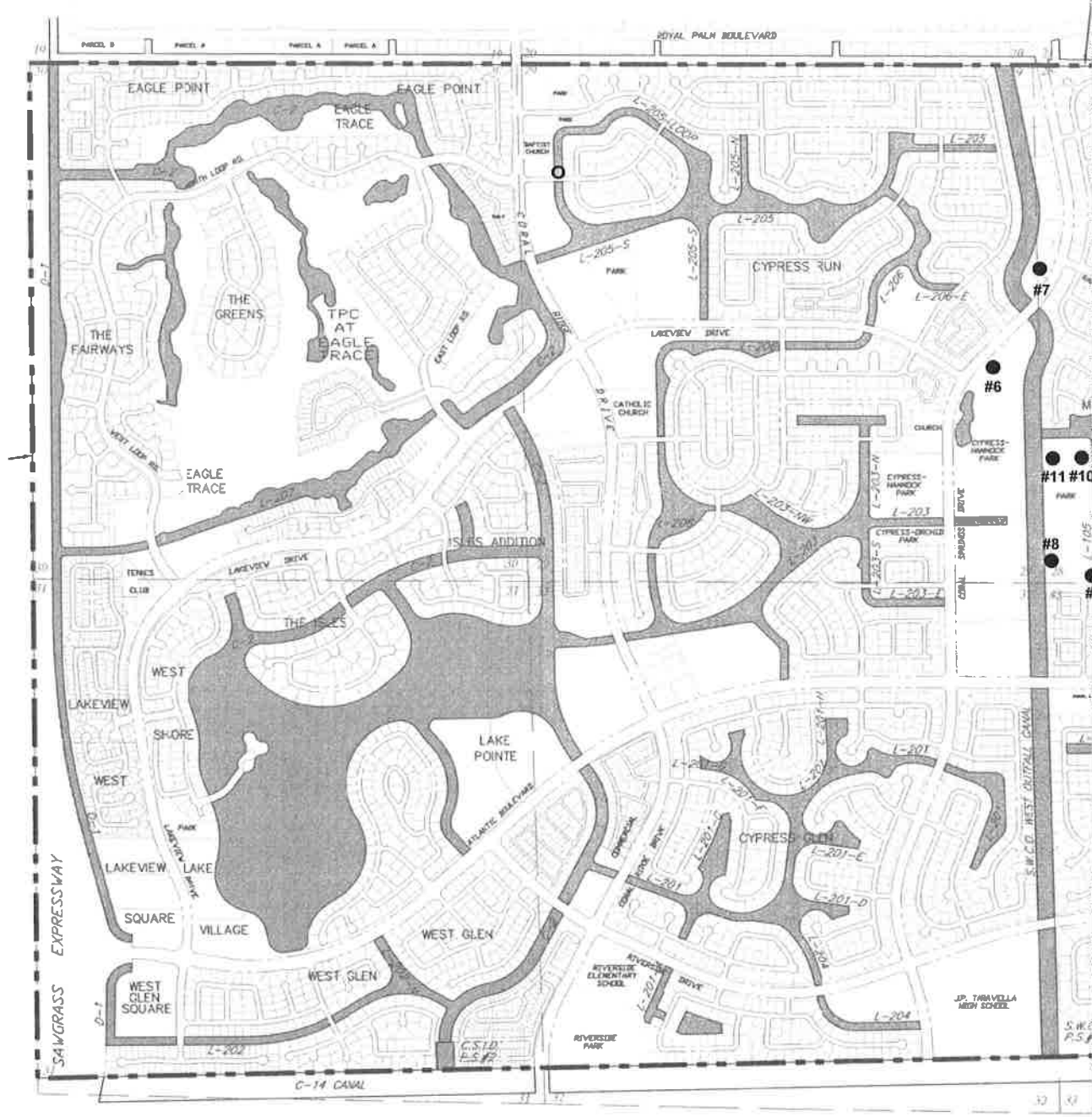
2. Background

Well Description: CSID currently owns, operates, and maintains eleven (11) water supply wells for its WTP. **Figure 1** shows the approximate location of each well. **Table 1** summarizes the data for each of the wells including when they were drilled, the casing size, and approximate depths based on available data from CSID. All the wells are surficial Biscayne Aquifer type wells and have varying depths ranging to 105, 120, and 140 feet.

3. Well Pumping Capacity

The existing well pumping system was originally designed to supply water to the lime softening (LS) WTP but is unable to provide adequate flow and pressure for the full capacity of the new RO WTP (finished water production of 7.4 mgd) as determine by full scale testing and subsequent hydraulic modeling. While the flow rates of the LS and RO WTPs are similar, the inlet pressure requirements are greater for the RO WTP.

Full Scale Testing: Operational testing conducted on April 4, 2012 with 10 of 11 wells operating (Well 5 was out of service) show that the wells were not able to provide water to the membrane system with all three trains operating. Bypass flow was not attempted with three trains in operation. The existing well pumping system did provide water for two RO trains to operate in addition to raw water bypass. The operational testing was conducted with clean cartridge filters (0.8 to 1.2 psi differential). Under these conditions, membrane feed pump suction pressure was approaching low pressure alarm conditions. Additional run time and increasing pressure loss across the cartridge filters would not allow continued operation. Some wells (**Wells 1, 6, 7, and 10**) were at their pumping limit and possibly dead heading as engaging the last few pumps brought little change in flow and pressure.



LEGEND

● CSID WELL No. #9

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figure1.dwg

Table 1: Existing Well Information

Parameter	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W10	W-11
Year Drilled	1972	1972	1972	1978	1979	1988	1988	2002	2002	2002	2002
Well Diameter (inches)	8	8	8	16[b]	16	16	16	16	16	16	16
Total Depth (feet)	105	105	105	105	140	120	120	140	140	140	140
Cased Depth (feet)	60	60	60	60	60	60	60	80[b]	80[b]	80[b]	60
Screened Interval (feet)	60-105	60-105	60-105	60-105	60-140	60-120	60-120	80-140[b]	80-140[b]	80-140[b]	Unknown
Pump Inlet Elev. Feet (Below Land Surface)	-30	-30	-30	-25	-30	-40	-40	-40	-40	-40	-40
Pump Type	Sub.[a]	Sub.[a]	Sub.[a]	Sub.	Sub	Sub	Sub	Sub	Sub	Sub	Sub

Notes:
Well data based on South Florida Water Management District Water Use Permit No. 06-00100-W (Issued November 29, 2010) unless otherwise noted.

a. All pumps are submersible (Sub) type. SFWMD Permit listed Wells W-1, W-2, and W-3 as vertical turbine type.
b. Information based on Well Completion Report
c. Well W-5 is currently out of service (O/S).
d. Staff indicates pump inlet elevation needs to be confirmed on all wells.

Table 2 provides recent flow and drawdown levels for the wells. The test data was used to develop a hydraulic model of the well pumping system to the LS and RO WTPs. The data also was used to calculate the specific capacity of the well. This is a measure of the ability of the well to transmit water. Please note that an aquifer performance test would be required to provide a true estimate of the specific capacity of the well.

It might be surprising to see that Wells W-8, W-9, W-10, and W-11 have low specific capacity ranging from 46 to 63 gpm/ft when compared to the other wells. But this is a function of the area in which they were drilled. The four wells were all drilled at the same time and have similar construction. Data obtained from CSID for wells W-8, W-9, and W-11 indicate similar low specific capacity when the wells were originally built ranging from 32 to 43 gpm/sf.

Hydraulic Model: A printout of the hydraulic model using available well pump information and specific capacity information from **Table 2** is provided in **Attachment A**. The model assumes all existing wells are available for service, a sand strainer is out of service, raw water is bypassed at 451 gpm (0.65 mgd), 20 psi is required at the membrane feed pump suction, and three RO trains are producing 6.75 mgd of permeate. The hydraulic model shows the following deficiencies:

- As confirmed in the full scale testing, existing well system is marginal to provide sufficient flow to the RO WTP.
- All existing wells may are needed to provide flow to the RO WTP leaving no backup well.
- Wells are "backed" up on their "operating" point which could lead to overheating and inefficient operation of the pumps.
- Well 7 is predicted to have the lowest flow contribution and should be high on the priority list to be modified. Wells 4 and 5 would be the next priority as far as flow contribution.

Based on discussion with staff, an overall goal to replace all well pumps over time has been established. This is not only due to the ability of pumps to provide water to the RO WTP but also because of the age of some pumps and the different types (manufacturer, size, and horsepower) of pumps in the system. The different types of pumps make it difficult to maintain spare parts. With this goal in mind, the hydraulic model was re-run to pick a single pump that could be used in all the wells and is provided in **Attachment B**. A pump curve for a sample pump is also provided in **Attachment B**.

The new replacement pump(s) would have the following design criteria:

- Goulds Pump 7TSHC – 2 stage pump or equal
- 40 hp 316 SS Submersible Pump and Motor
- Design Operating Point: 660 gpm at 136 ft TDH
- 3600 rpm, 480 volts, 3 phase motor

Note that the 3600 rpm motor was chosen over the 1770 rpm motor to keep the pump bowl size small especially in Wells 1, 2, and 3. These wells have a casing size of 8-inches which prohibits the use of a 1770 rmp pump which has a bowl diameter of 9.5-inches. The 1770 rpm pump bowl size is 7.5-inches. The use of the lower 1770 rpm motor are sometimes preferred as they tend to last longer if there is a lot of sand coming from the wells. While the slower speeds were initially suitable for the LS WTP inlet condition they are not adequate in the smaller casing diameters. Therefore, the higher rotational speed will be required to serve the RO WTP given the fixed casing size. For standardization in all wells, the 3600 rpm pump motor and corresponding pump was chosen.

Table 2: Existing Pump Flow and Well Drawdown Information Tested June 2012

Parameter	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W-10	W-11
Static Water Level (feet)[a]	7.8	7.7	7.7	8.9	5.0	8.9	9.5	9.9	9.7	9.4	9.2
Flow (gpm)[b]	910	850	940	1000	O/S	980	650	1100	1185	560	1065
Well Drawdown (feet)[a]	2.6	4.4	4.7	6.6	O/S	8.9	1.7	23.2	22.1	8.8	23.3
Well Specific Capacity (gpm/ft)	350	193	200	151	O/S	110	382	47	56	63	46
Pump Discharge Pressure (psi) [a]	14	15	16	16	O/S	15	15	16	18	15	20
Pump Manufacturer [e]	Goulds	Grundfos	Grundfos	Grundfos	Grundfos	Layne	Layne	Grundfos	Grundfos	Grundfos	Grundfos
Pump Model [e]	10RJLC	1100S300-1A	1100S300-1A	800S300-1	800S300-1	Unknown	Unknown	1100S400-1	1100S400-1	1100S400-1	1100S400-1
Motor HP [e]	30	30	30	30	30	20	20	40	40	40	40

Notes:

a. Static levels and drawdown levels were taken by hand by CSID staff using level probe from top of well flange.
b. Wells were operated while supplying water to the Lime Softening WTP with 3 to 5 wells running at normal system pressures.
c. Pump discharge pressure was taken from pressure gauges installed in well discharge piping. The discharge piping was 2.5 to 3.0 ft above wellhead.
d. Well W-5 was out of service (O/S).
e. CSID Pump & Motor Asset Management May 2008. Pump and motor information needs to be confirmed.

Modifications may be required at some of the well to accommodate the new pump. This may include

- Pump connection to the pump column - little is known about the existing connections and each pump would have to be adapted on a case by case basis.
- Pump setting may need to be increased. The well setting depth for each well shown in **Table 1** was assumed and needs to be confirmed. It is assumed that the setting depth will be 40 ft in the future and would affect Wells 1 through 5.
- Electrical components will need to be changed for the larger well pump as described in the latter section on the individual wells.

4. Regulatory Concerns

This TM will focus on regulatory concerns regarding the wellhead and well pumps as it relates to sanitary hazards and security.

Setback Distances for Sanitary Hazards: FAC 62-555.312 governs the location of "new wells" and establishes setback distances from sanitary hazards. Since CSID wells are already established, the setback distances were not evaluated for this analysis. But it is important to note that the setback distances exist and for CSID to be on the lookout for potential sanitary hazards that may be placed in its well field.

In general terms, FDEP has established a 100 ft setback for potentially high risk sanitary hazards and 50 ft setback for potentially moderate risk to ground water quality and public health. Examples of high risk sanitary hazard include fuel storage facility, injection wells, fertilizer, herbicide, or pesticide storage area, septage tanks and sanitary sewers. Moderate risk sanitary hazards may include above ground storage tanks, fertilizer, herbicide, or pesticides application areas that are not under the control of water supplier at agricultural sites, golf courses, nurseries, and parks, storm water detention or retention basins.

Well Upper Terminus: FAC 62-532.500 (Water Well Construction Standards) governs how a well is constructed. The portion of the rule relating to the upper terminus of the top of the well (FAC 62-532.500(3)(b)) is to be evaluated as the upper terminus or top of the well casing (wellhead flange) can introduce contaminants. It is important to note that the rules only apply for wells constructed on or after April 1, 2002. While some of the wells may be "grandfathered" as is, modification should be considered to meet the rule to limit possible sanitary hazards. Similarly, if the wells are modified significantly and a construction permit is required from BCHD, the well would need to be upgraded to meet the current rules. The criteria evaluated included the following from the rule:

- **Well Casing 12 inches above concrete apron - FAC 62-532.500(3)(b)4:** "For public water wells constructed on or after April 1, 2002, the upper terminus of the well casing shall project at least 12 inches above the pump house floor, pump pit floor, or concrete apron around the well."
- **Well casing 12 inches above 100-year flood elevation -FAC 62-532.500(3)(b)5:** "For public water system wells, limited use commercial public water system wells, and limited use community public water system wells constructed on or after April 1, 2002, located at sites subject to flooding, the upper terminus of the well casing shall project at least 12 inches above the 100-year flood elevation and 100-year wave-action elevation. Where it is not practicable to comply with this requirement, the water management district or delegated permitting authority shall allow exceptions on a case-by-case basis provided the upper terminus of the well casing is fitted with a water tight seal."

- **Well casing disinfection and level ports - FAC 62-532.500(3)(b)6:** "Public water system water wells, limited use commercial public water system wells, and limited use community public water system wells, shall be equipped with a sealable opening that will allow introduction of disinfectant and measurement of static water level and drawdown of artesian pressure."

Table 3 below indicates there are concerns with the top of well casings for Wells 5, 6, 7, 9, and 10. Of these wells, Wells 5 and 7 are of greatest concern because the top of well elevations are below the 12-inch criteria for the 100-year flood elevation. Well 6 and 7 are also of concern as the wells can become flooded in the walled enclosure if the drain holes in the side of the walls become plugged.

Well Concrete Apron: FAC 62-532.500(3)(c) indicate that wells constructed on or after April 2002, not located within a pump house or pump pit shall have a concrete apron at least six feet by six feet and a at least four inches centered around the well. It also indicated the bottom of the concrete apron shall be constructed on top of finished grade, and the top of surface of the concrete apron shall be sloped to drain away from the well casing.

All the wells appear to meet this criterion. Well 5, sits in a pump house/pit that has a five foot width.

Well Security: FAC 62-555.315(1) and 62-555.320(5) indicate that wellheads or pumping facility shall be enclosed by fences with lockable access gates, housed in lockable building or enclosures, or otherwise protected against tampering, vandalism, and sabotage.

All CSID wells and associated equipment are secured by a fence or locked enclosure. Wells 1-3 are located on the WTP property and do not have their own fence or enclosure but are protected by the WTP site fencing.

Flood Protection: FAC 62-555.320(4) indicate in general that the structures, and electrical or mechanical equipment, used to treat, pump or story water shall be protected from physical damage by the 100 year flood. This is similar to FAC 62-532.500(3)(b)5 discussed above for the well casing elevation but is more encompassing. No additional observations are provided for this issue.

Well Pump Discharge Piping: Table 4 summarizes the equipment for the well discharge piping. FAC 62-555.320(8) (b) provide guidelines for the well discharge piping that are enforced by BCHD. Relevant items are listed below.

- Per referenced Section 3.2.7.3 in ***Recommended Standard for Water Work***, discharge piping shall be equipped with a check valve in or at the well, a shutoff valve, a pressure gauge, a means of measuring flow and a smooth nose sampling tap located at a point where positive pressure is maintained. All CSID wells have the required equipment. Some wells have more than one sample tap and in some cases one of the two taps do not have a smooth nose end as noted in the individual well section below.
- Per referenced Section 3.2.7.3 in ***Recommended Standard for Water Work***, Air release-vacuum valve shall be located upstream of check valve, with exhaust/relief piping terminating in a down-turned position at least 18 inches above floor and covered with 24 mesh corrosive resistant screen. Not all CSID wells meet this requirement as shown in **Table 3**. Also see comments on individual wells.
- Per referenced Section 3.2.7.3 in ***Recommended Standard for Water Work***, the discharge piping should be provided with a means of pumping to waste, but shall not be directly connected to sewer. Wells 1, 2, and 3 do not have a means to pump to waste. Well 5 does have a tee to pump to waste; however, the downstream isolation valve is missing.

Table 3: Well Construction Criteria

Parameter	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W10	W-11	Comments
Year Drilled	1972	1972	1972	1978	1979	1988	1988	2002	2002	2002	2002	
Height of Well Casing above concrete apron[A]	18.0	12.0	12.0	12.8	**3.5**	**4.8**	**4.5**	12.0	**11.1**	**11.1**	12.0	Highlighted value indicates wellhead flange is less than 12-inches above concrete floor/apron Per Reference A
CSID 100-yr Flood Elevation	11.6	11.6	11.6	11.6	11.6	11.1	11.6	11.6	11.6	11.6	11.6	
Top of Well Casing Elevation[B]	12.77	12.72	12.75	12.76	**11.91**	12.67	**12.37**	14.12	14.01	13.74	13.75	Highlighted value indicates wellhead flange is less than 12-inches above 100-year flood elevation per Reference B
Disinfection Port[C]	1-1/2" Vent	1-1/2"" Vent	1-1/2" Vent	3" Port	O/S	1" Vent	1" Vent	3" Port	3" Port	3" Port	3" Port	Disinfection can be done through vent or other available port. Size indicated is for fitting on wellhead
Level Port Size	1" Sensor	1" Sensor	1" Sensor	3" Sensor	O/S	1" Sensor	1" Sensor	1-1/2" Sensor	1-1/2" Sensor	1-1/2" Sensor	1-1/2" Sensor	Size indicated is for fitting on wellhead. Wells all have a level sensor
Vent Port Size	1-1/2"	1-1/2""	1-1/2"	2"	O/S	**1"**	**1"**	1-1/2"	1-1/2"	1-1/2"	1-1/2"	Minimum 1 1/2" is recommended per Reference E. Screen shall be min 24 mesh.
Height above lowest access point to top of top of well casing.	N/A	N/A	N/A	16.3	-6.24	-37.6	-37.6	12.1	11.6	11.3	12.0	Negative values represent possibility of flooding wellhead flange.[D]
Issues with Air Release Valve Vent.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Per reference F.
Well can pump to waste	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	

Notes:

A. Well casing 12 inches above concrete apron - FAC 62-532.500(3)(b)4.
B. Well casing 12 inches above 100-year flood elevation -FAC 62-532.500(3)(b)5.
C. Well casing disinfection and level ports - FAC 62-532.500(3)(b)6
D. Wells 1, 2, and 3 are not fenced or walled. Wells 6 and 7 are enclosed with concrete walls with 0.4' x 0.5' located approximately 4 inches below wellhead flange.
E. Well vent above 100-year flood elevation, 1 ½" minimum well vent size, and 24 mesh scree - FAC 62-555.320(8) (c)
F. Air release shall be 18" above concrete apron and be covered with 24 mesh screen - FAC 62-555.320(8) (b)
G. Well W-5 was out of service (O/S) and value is unknown.

Table 4: Well Equipment

Parameter	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W-10	W-11
Well Casing	8"	8"	8"	16"	16"	16"	16"	16"	16"	16"	16"
Pump Column	6"	6"	6"	6"	6"	12"	12"	6"	8"	8"	8"
Well Discharge Piping Size	6"	6"	6"	8"	8"	8"	8"	8"	8"	8"	8"
Air release Valve	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Check Valve	Lever	Lever	Lever	Lever	Lever	Lever	Lever	Lever	Lever	Lever	Lever
Flow Control Valve	Yes	Yes	None	None	None	Yes	None	Yes	Yes	Yes	Yes
Flow Meter	Clamp - on	Propeller	Propeller	Mag Meter	Mag Meter	Turbine	Turbine	Mag Meter	Mag Meter	Mag Meter	Mag Meter
Flow to Waste	None	None	None	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pressure Gauge	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Digital Pressure Sensor	None	None	None	Yes	None	None	None	Yes	Yes	Yes	Yes
Wellhead Flange Size	8"	8"	8"	16"	16"	16"	16"	24"	24"	24"	24"
Power Port	1 1/2"	1 1/2"	1 1/2"	2"	1 1/2"	1 1/2"	1 1/2"	2"	2"	2"	2"
Vent Port	1 1/2"	1 1/2"	1 1/2"	2"	1"	1"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
Level Port	1"	1"	1"	3"	1"	1"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
Gravel Fill Tube								3"	3"	3"	3"
Additional Ports	3/4" vent	1/2"	3/4"	3"	None	None	None	1 1/2"	1 1/2"	1 1/2"	1 1/2"
Sample Tap	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

- Each well shall include a smooth-nosed tap for sampling water. All such sampling taps shall be located upstream of the check valve in the discharge piping if possible and upstream of all treatment facilities and chemical application points; shall be located at least 12 inches above finished floor, pad, or ground surface below the tap; and shall be conveniently accessible and downward-opening. Raw water well water sampling taps installed on or after August 28, 2003, shall have no interior or exterior thread. Most of CSID wells meet this criterion except for Wells 4, 5, and 7 which has the sample tap location downstream of the check valve.

Well Vents: FAC 62-555.320(8)(c) indicates that all wells are to be vented to the atmosphere unless there is justification not to do so. All of CSID wells are vented to atmosphere. It also states that all well vents shall terminate at least 12 inches above the 100-year flood elevation and shall be designed and constructed in accordance with Section 3.2.7.5 in ***Recommended Standard for Water Work***. The referenced section indicate that the vent shall terminate in a downturned position, at or above the top of the casing or pitless unit, no less than 12 inches above grade or floor, in a minimum 1 ½-inch diameter opening covered with a 24 mesh, corrosion resistant screen. The pipe connecting the casing to the vent shall be of adequate size to provide rapid venting of the casing.

Table 3 shows that Wells 6 and 7 have 1-inch vents. All others have minimum 1 ½-inch Most of the screens on the wells appear to be a larger mesh size than 24 mesh. All well vents appear to be located above the 100-year flood elevation.

Other Sanitary Survey Items: In addition to the items already mentioned, FDEP or BCHD will also check the following during a sanitary survey of the wells.

- Integrity of the sanitary seal. The sanitary seal refers to the top of the well casing flange in which piping and electrical cables are routed. FDEP or BCHD will check the integrity of the sanitary seal to insure that all bolts and pipes are securely fastened and no gaps are visible.
- General housekeeping of the well pad. Well pad must be kept free of algae, debris, and plant growth and should not have any cracks that could compromise the well.
- Piping and valve should be functional with no visible signs of leak.
- Piping color code. The raw water piping color code is olive green.

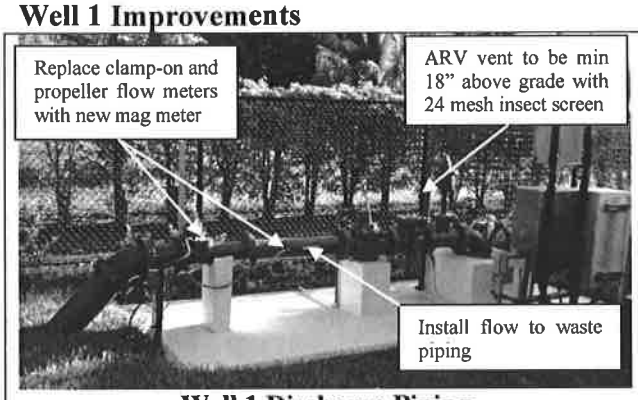
In general, the housekeeping of the well pads was good. A few wells had loose vents or caps which need to be secured as noted in the individual well section that follows.

Wells 1, 2, and 3 have been repainted olive green. The remaining wells are painted green but not olive green.

5. Individual Well Observations/Improvements

The following provides a list of improvements identified for each well. Please note that the observations were based on an August 17, 2012 site visits and some of the improvements may have already been addressed by plant staff.

Well 1 Improvements



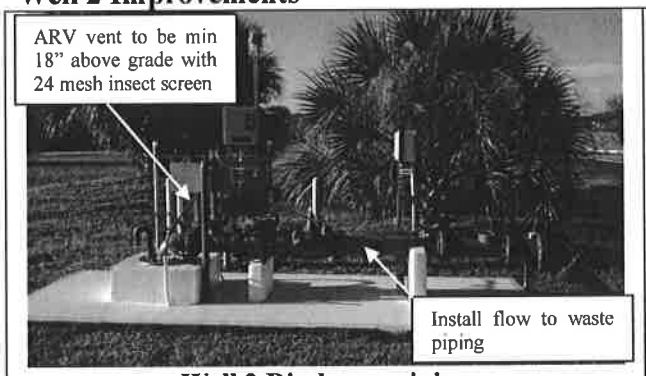
Well 1 Discharge Piping

Well 1 Wellhead

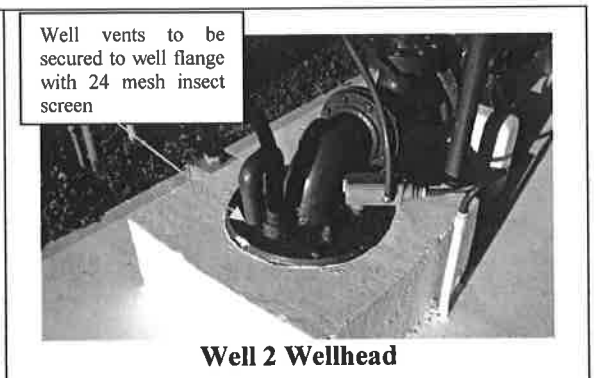
- Air release valve discharge should be terminated 18" above concrete apron with a 24 mesh non-corrosion resistant screen
- Well vents should be securely attached to wellhead and the screen replaced with a 24 mesh non-corrosive resistant screen. Well vents should be painted olive green.
- Replace existing 30 hp pump with new 40 hp pump
  - Set pump at 40 ft setting depth by extending existing pump column or replace with new 6" Certa-Lok column pipe.
  - Replace safety cable suitable for larger pump and motor
- Upgrade well pump control panel for 40 hp pump with the following electrical improvements:
  - Well 1 feeder at #2 AWG is acceptable.
  - Well 1 Control Panel main breaker at 80A requires upgrade to 90A
  - Well 1 Control Panel starter at NEMA size 3 is acceptable; however, overload heaters require upgrade for 40 hp well pump.
  - Well 1 Control Panel is located too close to the wellhead and piping. Control panel will have to be moved back a minimum 10 inches or rotated 90 degrees to meet the National Electrical Code minimum working clearance requirements.
  - Conduit and cable are to be installed to connect new pump.
  - Wells 1, 2 and 3 are fed from existing panel PP-3 in the High Service Building. PP-3 will require upgrading to accommodate the additional loads and the larger breakers required for the upgrade of the well pumps from 30 hp to 40 hp.
- Add flow to waste connection consisting of a 6" x 4" tee, 4" butterfly valve, and 4" quick connect between flow control valve and flow meter.
- Consider replacing clamp on flow meter and propeller flow meter with new 6" mag meter.

Please note that Well 1 piping was recently repainted to the correct color – olive green. The concrete slab and pipe supports were also painted.

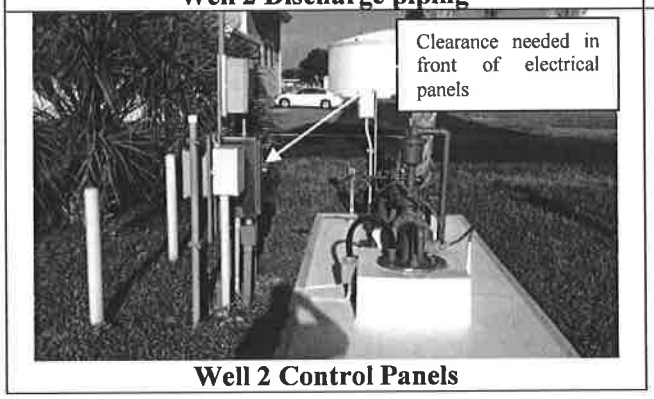
Well 2 Improvements



Well 2 Discharge piping



Well 2 Wellhead

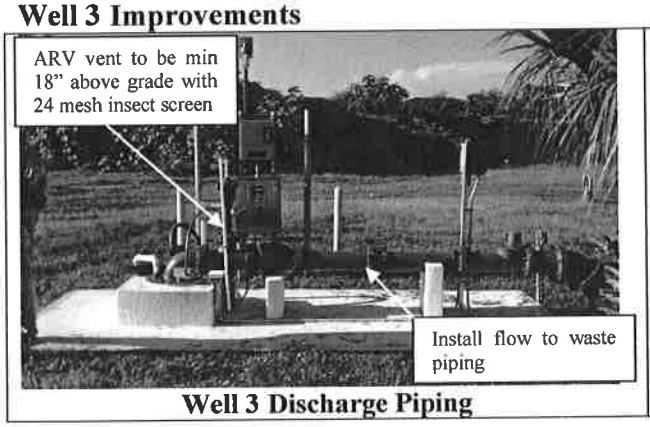


Well 2 Control Panels

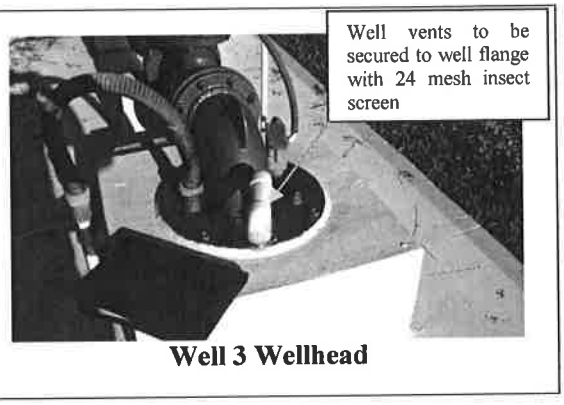
- Air release valve discharge should be terminated 18" above concrete apron with a 24 mesh non-corrosion resistant screen
- Well vents should be securely attached to wellhead and the screen replaced with a 24 mesh non-corrosive resistant screen.
- Replace existing 30 hp pump with new 40 hp pump
  - Set pump at 40 ft setting depth by extending existing pump column or replace with new 6" Certa-Lok column pipe.
  - Replace safety cable suitable for larger pump and motor
- Upgrade well pump control panel for 40 hp pump with the following electrical improvements:
  - Upgrade well pump control panel from 30 hp to 40 hp
  - Well 2 Control Panel main breaker at 80A requires upgrade to 90A
  - Well 2 Control Panel starter at NEMA size 3 is acceptable, overload heaters require upgrade for 40HP well pump
  - Well 2 Control Panel is located too close to the wellhead and piping. Control panel will have to be moved back a minimum 12 inches or rotated 90 degrees to meet the National Electrical Code minimum working clearance requirements.
  - Conduit and cable are to be installed to connect new pump.
  - Wells 1, 2 and 3 are fed from existing panel PP-3 in the High Service Building. PP-3 will require upgrading to accommodate the additional loads and the larger breakers required for the upgrade of the well pumps from 30 hp to 40 hp.
  - Wells 2 and 3 are fed from a single feeder that will have to be upgraded for the additional horse power.
- Add flow to waste connection consisting of a 6" x 4" tee, 4" butterfly valve, and 4" quick connect between flow control valve and flow meter.

Please note that Well 2 piping was recently repainted to the correct color – olive green. The concrete slab and pipe supports were also painted.

Well 3 Improvements



Well 3 Discharge Piping



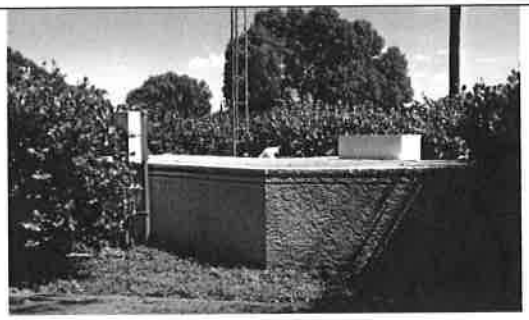
Well 3 Wellhead

- Air release valve discharge should be terminated 18" above concrete apron with a 24 mesh non-corrosion resistant screen.
- Well vents should be securely attached to wellhead and the screen replaced with a 24 mesh non-corrosive resistant screen.
- Replace existing 30 hp pump with new 40 hp pump
  - Set pump at 40 ft setting depth by extending existing pump column or replace with new 6" Certa-Lok column pipe.
  - Replace safety cable suitable for larger pump and motor
- Upgrade well pump control panel for 40 hp pump with the following electrical improvements:
  - Upgrade well pump control panel from 30 hp to 40 hp
  - Well 3 Control Panel main breaker at 80A requires upgrade to 90A
  - Well 3 Control Panel starter at NEMA size 3 is acceptable, overload heaters require upgrade for 40 hp well pump
  - Well 3 Control Panel location is acceptable
  - Conduit and cable are to be installed to connect new pump.
  - Wells 1, 2 and 3 are fed from existing panel PP-3 in the High Service Building. PP-3 will require upgrading to accommodate the additional loads and the larger breakers required for the upgrade of the well pumps from 30HP to 40HP.
  - Wells 2 and 3 are fed from a single feeder that will have to be upgraded for the additional horse power.
- Add flow to waste connection consisting of a 6" x 4" tee, 4" butterfly valve, and 4" quick connect between flow control valve and flow meter.

Please note that Well 3 piping was recently repainted to the correct color – olive green. The concrete slab and pipe supports were also painted.

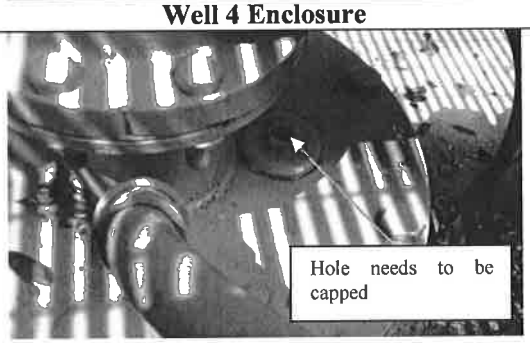
Well 4 Improvements

Well 4 Location

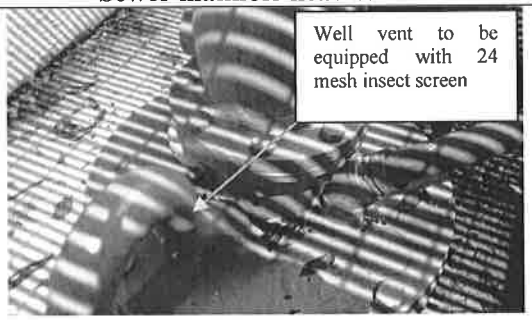


Well 4 Enclosure

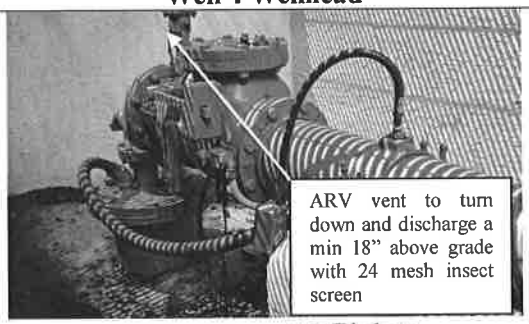
Sewer manhole near Well 4



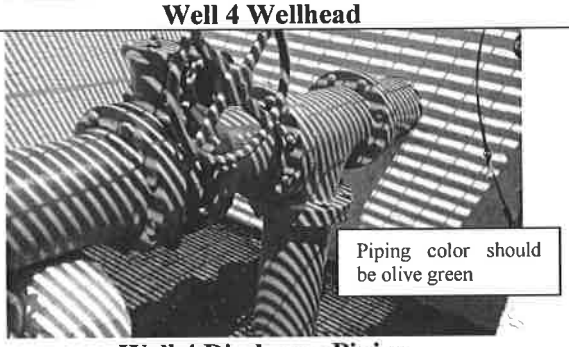
Well 4 Wellhead



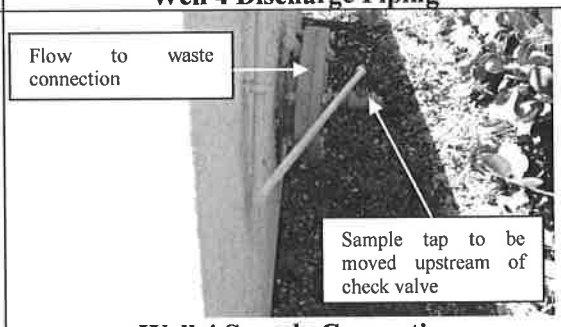
Well 4 Wellhead



Well 4 Discharge Piping



Well 4 Discharge Piping



Well 4 Sample Connection

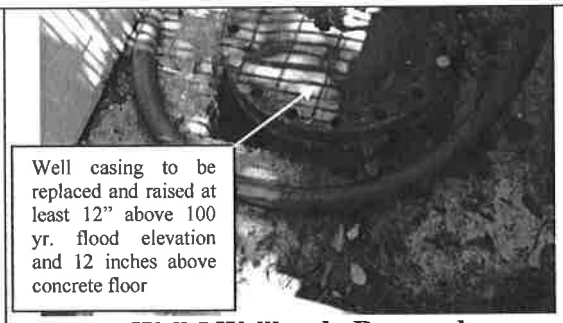
The well enclosure is built into the sloped part along a road and access is difficult. Please note that a gravity sewer is located nearby Well 4.

- Cap hole in wellhead flange.
- Air release valve discharge should be turned downward and terminated a minimum of 18" above concrete apron with a 24 mesh non-corrosion resistant screen.

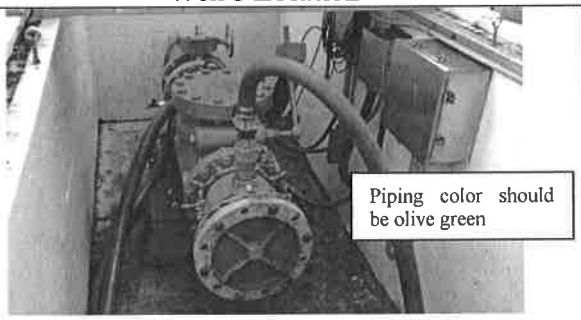
- Well vent should have a 24 mesh non-corrosive resistant insect screen.
- Sample tap should be relocated upstream of check valve.
- The level sensor is reportedly not working properly registering huge jumps in level.
- The digital pressure sensor is reportedly not working and is located downstream of check valve and only reports system pressure. Relocate upstream of check valve if possible.
- Paint piping olive green
- Replace existing 30 hp pump with new 40 hp pump
    - Set pump at 40 ft setting depth by extending existing pump column or replace with new 6" Certa-Lok column pipe.
    - Replace safety cable suitable for larger pump and motor
    - Replace wellhead assembly/discharge elbow with 3-inch port for camera access.
- Upgrade well pump control panel for 40 hp pump with the following electrical improvements:
    - Well 4 service and control panel are designed for up to a 50 hp well pump. The existing equipment data sheet shows a 30 hp well pump currently installed. To upgrade from 30 hp to a 40 hp the motor starter overload heaters would have to be upgraded for the higher horsepower full load amps.
    - Conduit and cable are to be installed to connect new pump.
- Well is suspected to be producing a lot of sand. This should be confirmed.

Well 5 Improvements

Well 5 Location

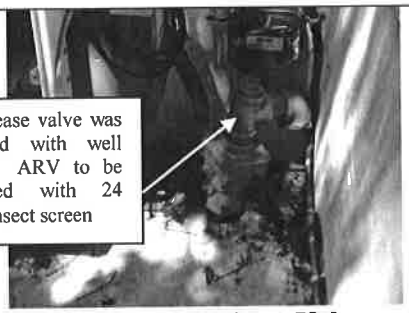


Well 5 Wellhead - Removed

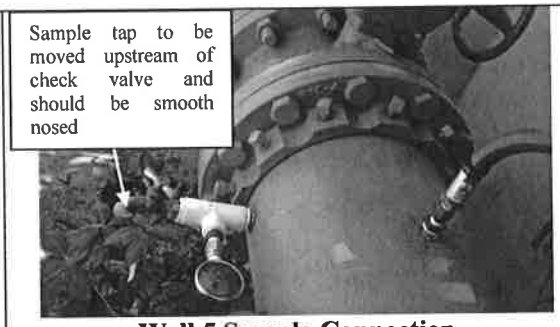


Well 5 Discharge Piping

Well 5 Discharge Piping



Well 5 – Air Release Valve



Well 5 Sample Connection

Well 5 is located in a park next to a private residence. The well structure is located in an elevated area under trees. The well piping is total enclosed by three walls, a locked gate, and a grated cover. Access is tight. Well 5 was out of service at time of inspection. The pump and wellhead was removed by the well contractor. The well casing has a hairline crack and is due for replacement by a well drilling contractor.

- Currently Ongoing: The cracked well casing is to be removed and replaced by a well contractor (AMPS). AMPS should raise the wellhead flange at least 12-inches above the 100-year flood elevation (flood elevation of 11.6 ft – 1929 NGVD) to meet the new rule.
- Electrical gauges, sensors will also need to be raised.
- Well 5 sits on an 11.4' x 5' concrete slab surround by walls on three sides. The top of the concrete slab is below finished grade although higher than the grade 20 ft away. The concrete pad should be at least 6' x 6' per FAC 62-532.500(3)(c) and be constructed on top of finished grade. CSID may consider demolishing the walls, re-grading the site, extending the concrete pad, and installing an 8 ft fence with green vinyl slats. The top of the fence could also be enclosed with fencing material. This would provide CSID staff better space and access for operation and maintenance. If concrete walls are removed, the electrical panels will need to be re-supported. Fencing will need to be approved by building department and possibly the home owner association.
- The existing air release valve was removed during the inspection but its insect screen appears to be larger than 24 mesh.
- Sample tap should be relocated upstream of check valve. Sample tap should be smooth nosed and not have treaded.
- Piping should be painted olive green
- Replace existing 30 hp pump with new 40 hp pump
    - Set pump at 40 ft setting depth by extending existing pump column or replace with new 6" Certa-Lok column pipe.
    - Replace safety cable suitable for larger pump and motor
    - Replace wellhead assembly/discharge elbow with 3-inch port for camera access.
- Upgrade well pump control panel for 40 hp pump with the following electrical improvements:
    - Well #5 service and control panel are designed for a 100 hp well pump. At the time of the site inspection/walk-thru no well pump was installed. Data sheet provided by CSID indicates the existing pump is 30 hp. The soft start will have to be programmed for the pump motor installed and the bypass motor starter overload heaters would have to be sized for the pump motor full load amps.
    - Conduit and cable are to be installed to connect new pump.
- Well is suspected to be producing a lot of sand. This should be confirmed and mitigated.
- Isolation valve needs to be installed downstream of tee so that the well can be pumped to waste.

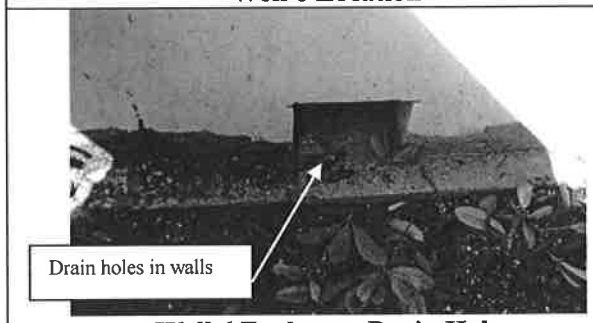
Since AMPS is reconfiguring the wellhead and the electrical changes are not great, CSID should consider

installing the new 40 hp pump in this well at this time.

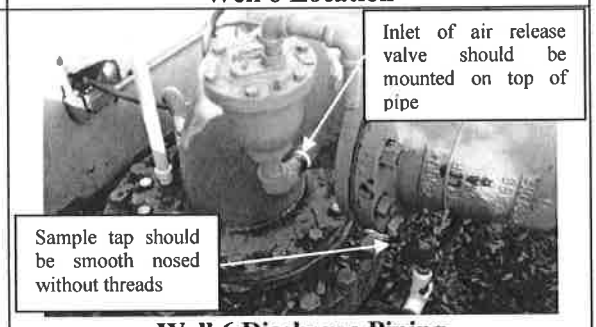
Well 6 Improvements


Well 6 Location


Well 6 Location



Well 6 Enclosure Drain Hole



Well 6 Discharge Piping

Well 6 Discharge Piping

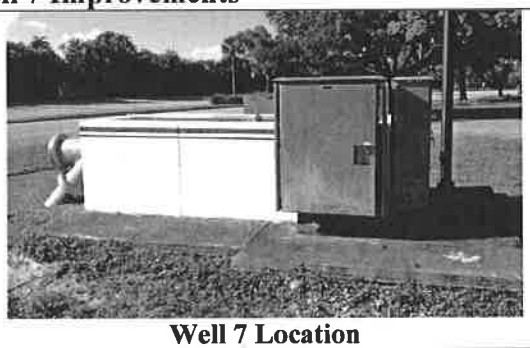

Well 6 Discharge Piping

Well 6 is located in a park next to a roadway under trees. The well piping is totally enclosed by four walls and aluminum grating on top.

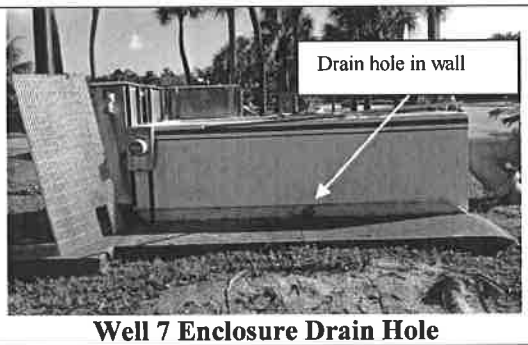
- The well casing is only 4.8" above the concrete floor but is at least 12" higher than the 100 year flood elevation. Since it was constructed prior to April 2002, does not have to meet the newer elevation requirement. However, if this well is modified the following should be considered to meet the newer regulations.
    - Raise the well casing by at least 12" by the addition of a 16" spool piece. The spool piece and existing wellhead flange should be encased in a concrete block that is 30"L x 30"W x 12" H.
    - Replace wellhead flange/discharge elbow. Provide larger 1 ½" port for vent and 3" port for future camera access.
    - The 12" discharge wye and associated 45 degree elbow may need to be changed to a 12" tee and 90 degree elbow. The existing wye and 45 degree elbow might be reusable if there is enough space before the next fitting. This will also require changes to the

concrete vault to relocate the pipe higher in the wall.
    - Consider adding an access gate in the north wall to provide better access to the piping and better drainage.
- If the wellhead is not modified the wellhead flange should be recoated.
- The existing air release valve is not in an ideal position on the side of the pipe. It should be relocated at the top of the pipe to function better.
- Piping should be painted olive green
- Replace existing 20 hp pump with new 40 hp pump
    - Replace existing 12" pump column pipe with 6" Certa-Lok column pipe suitable for larger/heavier pump, easier replacement by operation staff, and better access for instrumentation.
    - Replace safety cable suitable for larger pump and motor.
- Upgrade well pump control panel for 40 hp pump with the following electrical improvements:
    - Well 6 service and control panel are designed for up to a 75 hp well pump. CSID equipment data sheet shows a 30 hp well pump currently installed. To upgrade from 20 hp to a 40 hp the motor starter overload heaters would have to be upgraded for the higher horsepower full load amps.
    - Conduit and cable are to be installed to connect new pump.

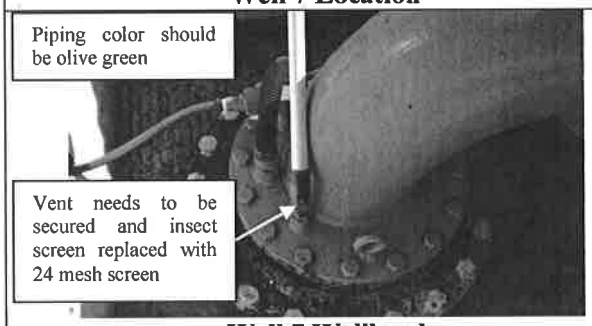
Well 7 Improvements



Well 7 Location



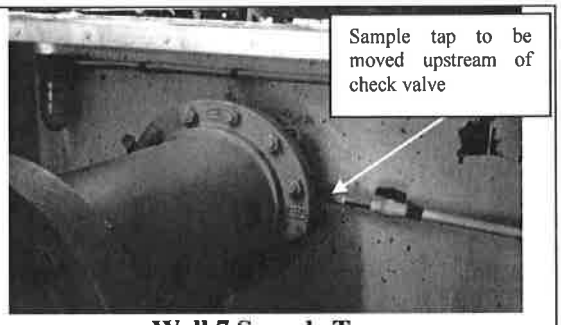
Well 7 Enclosure Drain Hole



Well 7 Wellhead

Well 7 Wellhead

Well 7 Discharge Piping

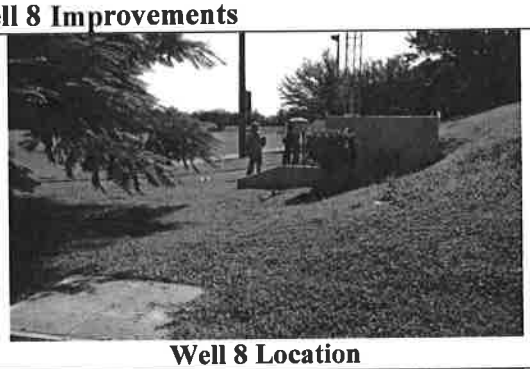


Well 7 Sample Tap

Well 7 is located in the median next to a roadway. The well piping is totally enclosed by four walls and aluminum grating on top.

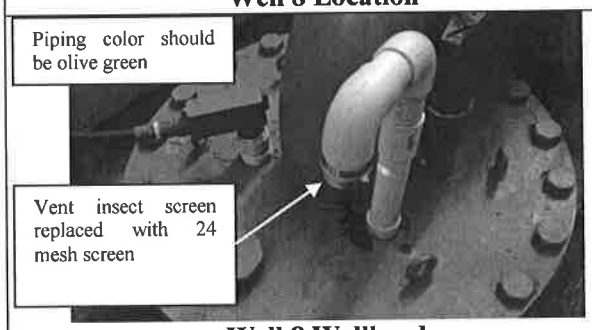
- The well casing is only 4.5" above the concrete floor and is also lower than the requirement to be 12" higher than the 100 year flood elevation. Since it was constructed prior to April 2002, does not have to meet the newer elevation requirements. However, this well is believed to be flow limited and should be modified. The following should be considered to meet the newer regulations.
    - Raise the well casing by at least 6" by the addition of a 16" spool piece. The spool piece and existing wellhead flange should be encased in a concrete block that is 30"L x 30"W x 12" H.
    - Replace wellhead flange/discharge elbow. Provide larger 1 ½" port for vent and 3" port for future camera access.
    - The 12" discharge wye and associated 45 degree elbow may need to be changed to a 12" tee and 90 degree elbow and will depend on the below piping connection. The existing wye and 45 degree elbow might be reusable if there is enough space before the next fitting. This will also require changes to the concrete vault to relocate the pipe higher in the wall.
    - Consider adding an access gate in the north or south wall to provide better access to the piping and provide more drainage.
- If the wellhead is not modified the wellhead flange should be recoated.
- Sample tap should be relocated upstream of check valve.
- Well vent to be secured. Screen on is to be replaced with 24 mesh screen.
- The digital pressure sensor is located downstream of check valve and only reports system pressure. Relocate upstream of check valve if possible.
- The well level sensor is reportedly not working properly and should be checked.
- Piping should be painted olive green
- Replace existing 20 hp pump with new 40 hp pump
    - Replace existing 12" pump column pipe with 6" Certa-Lok column pipe suitable for larger/heavier pump, easier replacement by operation staff, and better access for instrumentation.
    - Replace safety cable suitable for larger pump and motor.
- Upgrade well pump control panel for 40 hp pump with the following electrical improvements:
    - Well 7 service and control panel are designed for up to a 50 hp well pump. The existing equipment data sheet shows a 30 hp well pump currently installed. Upgrade from 30 hp to a 40 hp the motor starter overload heaters would have to be upgraded for the higher horsepower full load amps.
    - Conduit and cable are to be installed to connect new pump.

Well 8 Improvements

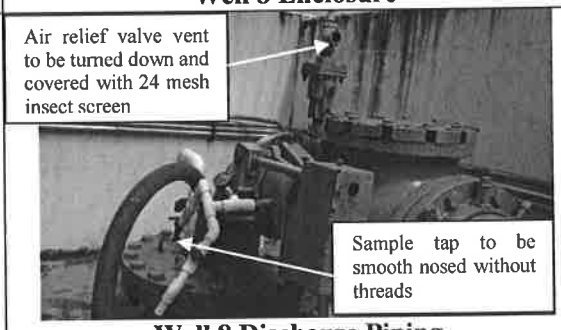


Well 8 Location

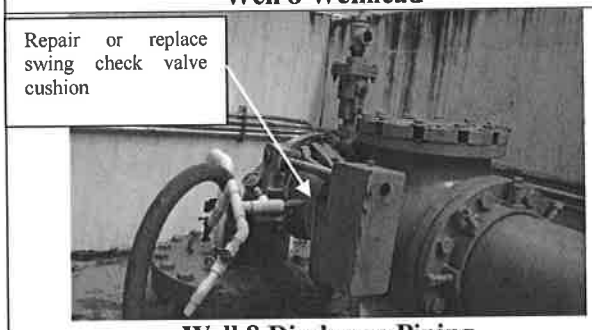
Well 8 Enclosure



Well 8 Wellhead



Well 8 Discharge Piping

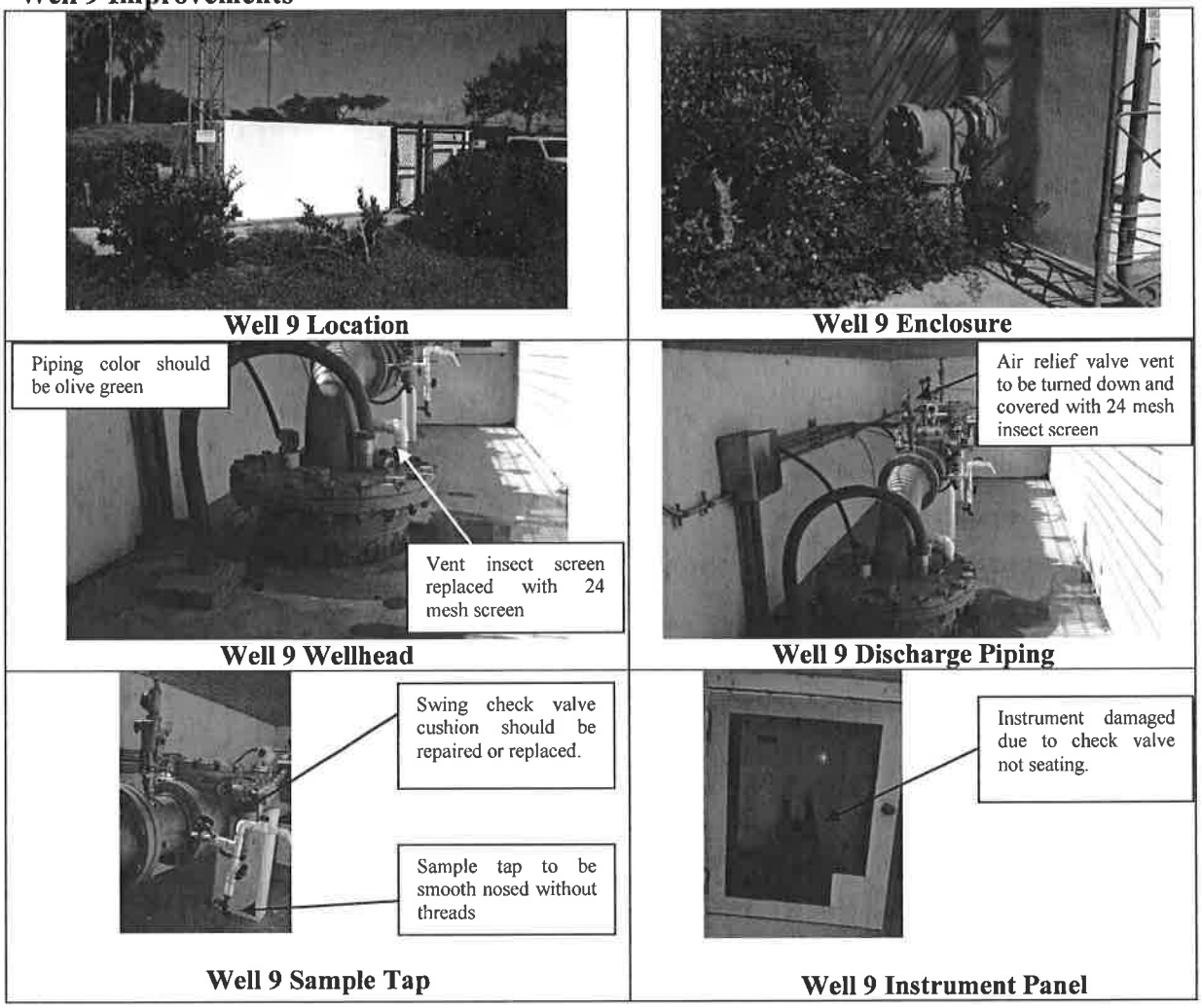


Well 8 Discharge Piping

Well 8 is located in a park. The concrete enclosure is built in the side of an earthen berm. The enclosure has a fence door and grating on top of the concrete enclosure.

- The swing check cushion has been hanging the check valve open in Wells 8-11. The cushions are showing sign of corrosion and should be repaired or replaced.
- Air release-vacuum valve vent is to be terminated in a down-turned position at least 18 inches above floor and covered with 24 mesh corrosive resistant screen.
- Screen for well vent is to be replaced with 24 mesh screen.
- Sample tap is to be smooth nosed without threads.
- The well control valve reportedly needs maintenance.
- Piping should be painted olive green
- Replace existing 40 hp pump and motor with new 40 hp pump and motor. If the old pump motor can be adapted to the new pump, they can be saved as a potential spare motor. No significant electrical improvements are needed to switch pump but to connect the new pump cable.
- Modify or replace wellhead assembly/discharge elbow to include 3-inch port for camera access.

Well 9 Improvements



Well 9 is located in a park. The enclosure has a fence door and grating on top of the concrete enclosure.

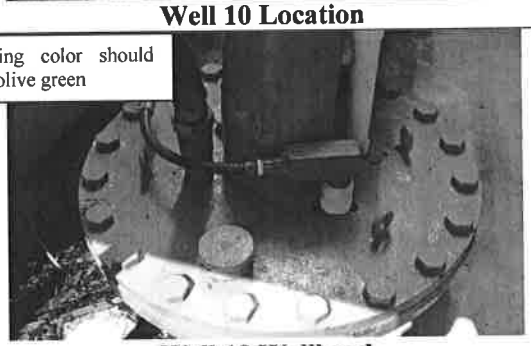
- Replace existing 40 hp pump and motor with new 40 hp pump and motor. If the old pump motor can be adapted to the new pump, they can be saved as a potential spare motor. No significant electrical improvements are needed to switch pump but to connect the new pump cable.
- Modify or replace wellhead assembly/discharge elbow to include 3-inch port for camera access.
- Insert 6-inch tall 16" diameter filler flange at well head and 6-inch tall 8" diameter filler flange at discharge tee to raise the well head up. Wall will need to be cut, chipped, and repaired to raise pipe. Concrete supports will also need to be raised.
- The swing check cushion has been hanging the check valve open in Wells 8-11. On Well 9 the check valve did not close properly causing water to back feed into the instrument panel shown above. The cushions are showing sign of corrosion and should be repaired or replaced.
- Repair damaged instrument – flow meter (ongoing by staff).
- Air release-vacuum valve vent is to be terminated in a down-turned position at least 18 inches above floor and covered with 24 mesh corrosive resistant screen.
- Screen for well vent is to be replaced with 24 mesh screen.
- Sample tap is to be smooth nosed without threads.

- The well control valve reportedly needs maintenance.
- Piping should be painted olive green

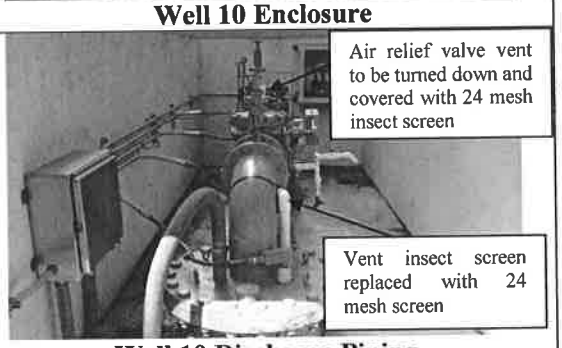
Well 10 Improvements

Well 10 Location

Well 10 Enclosure



Well 10 Wellhead



Well 10 Discharge Piping

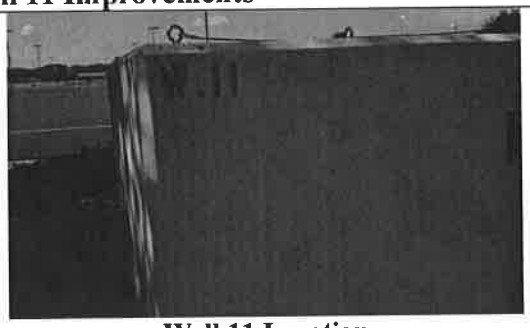
Well 10 Sample Tap

Well 10 is located in a park. The enclosure has a fence door and grating on top of the concrete enclosure.

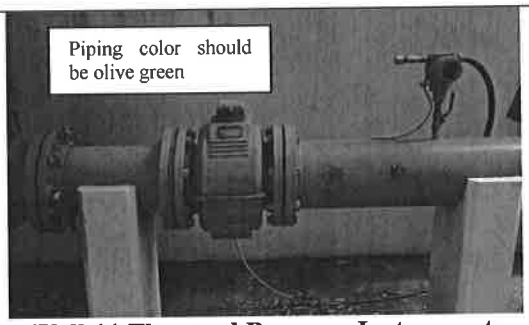
- Replace existing 40 hp pump and motor with new 40 hp pump and motor. If the old pump motor can be adapted to the new pump, they can be saved as a potential spare motor. No significant electrical improvements are needed to switch pump but to connect the new pump cable.
- Modify or replace wellhead assembly/discharge elbow to include 3-inch port for camera access.
- Insert 6-inch tall 16" diameter filler flange at well head and 6-inch tall 8" diameter filler flange at discharge tee to raise the well head up. Wall will need to be cut, chipped, and repaired to raise pipe. Concrete supports will also need to be raised.
- The swing check cushion has been hanging the check valve open in Wells 8-11. The cushions are showing sign of corrosion and should be repaired or replaced.
- Air release-vacuum valve vent is to be terminated in a down-turned position at least 18 inches above floor and covered with 24 mesh corrosive resistant screen.
- Screen for well vent is to be replaced with 24 mesh screen.
- Sample tap is to be smooth nosed without threads

- Piping should be painted olive green
- Staff indicates this well pump flow has declined significantly over the past year from 1100 gpm to 622 gpm going to the lime plant. They suspect the pump might be damaged.

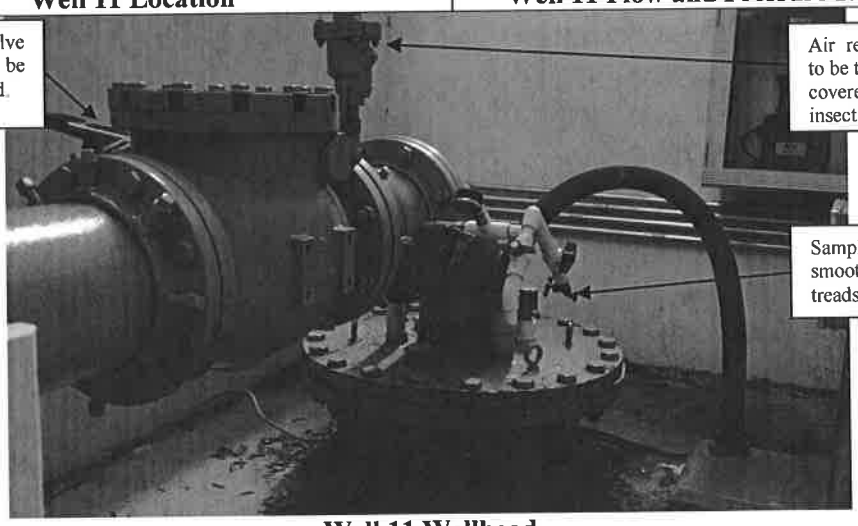
Well 11 Improvements



Well 11 Location



Well 11 Flow and Pressure Instruments



Well 11 Wellhead

Well 11 is located in a park. The enclosure has a fence door and grating on top of the concrete enclosure.

- The swing check cushion has been hanging the check valve open in Wells 8-11. The cushions are showing sign of corrosion and should be repaired or replaced.
- Air release-vacuum valve vent is to be terminated in a down-turned position at least 18 inches above floor and covered with 24 mesh corrosive resistant screen.
- Screen for well vent is to be replaced with 24 mesh screen.
- Sample tap is to be smooth nosed without threads.
- The well control valve reportedly needs maintenance.
- Piping should be painted olive green
- Replace existing 40 hp pump and motor with new 40 hp pump and motor. If the old pump motor can be adapted to the new pump, they can be saved as a potential spare motor. No significant electrical improvements are needed to switch pump but to connect the new pump cable.
- Modify or replace wellhead assembly/discharge elbow to include 3-inch port for camera access.

6. Recommendations

This section provides recommendations only for modifying the well pumps, wellheads, and well enclosures. The previous section (Section 5) provided a list of all the observed and reported issues with the wells. Some of these issues are considered maintenance (such as painting of the pipe, changing screen, instrumentation repair) and are not included in the recommendations below and are assumed to be taken care of by plant staff. .

Pump Replacement Priority

While the goal is to eventually replace all the well pumps to use a single type pump for redundancy, the replacement will be phased. **Table 4** below provides a scoring method to determine the order of the well and pump modifications.

- Scores are based on a value of 1 to 5 with 5 being the most critical.
- Based on operational testing and hydraulic modeling, Wells 1, 4, 5, 6, 7, and 10 are determined to be the most critical based on flow to the RO WTP and given a score of 5.
- Well 5 has a cracked casing and was given a high priority.
- Wells 6 and 7 had wellhead flange elevations below the recommended 12" above the 100 year flood elevation. They were given a score of 4 as the next critical issue.
- Wells 5, 6, 7 had well flange elevations significantly less than the required 12" above the concrete apron and were given a score of 3 while Wells 9 and 10 were given a score of 2 since the heights were closer to the required 12".
- If the well could be easily converted electrically, it was given a score of 5 as this provided an easier means of installing the new 40 hp pumps. Wells 1, 2, and 3 require the most electrical work and were given a value of one.

Table 4: Priority Ranking of Pump Replacement/Wellhead Modifications.

Issues	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W-10	W-11
Flow Capacity	5	1	1	5	5	5	5	1	1	5	1
Crack Casing	0	0	0	0	5	0	0	0	0	0	0
Flange flood elev.	0	0	0	0	4	0	4	0	0	0	0
Flange height above conc. apron	0	0	0	0	3	3	3	0	2	2	0
Vent Size	0	0	0	0	0	2	2	0	0	0	0
Ease of Electrical Conversion	1	1	1	4	4	4	4	5	5	4	5
Total Score	6	2	2	9	21	14	18	6	8	11	6
Priority Ranking	**7**	**10**	**11**	**5**	**1**	**3**	**2**	**8**	**6**	**4**	**9**

Based on the ranking, the well work should occur in the following sequence:

1. Well 5 (Currently On-going)
2. Well 7
3. Well 6
4. Well 10
5. Well 4
6. Well 9
7. Well 1
8. Well 8
9. Well 11
10. Well 2
11. Well 3

Based on the ranking the following phases are recommended:

- Phase 1 - Wells 5, 6, and 7
- Phase 2 - Wells 4, 9, and 10
- Phase 3 - Wells 8 and 11
- Phase 4 - Wells 1, 2, and 3

Phases 1 and 2 should be done within a year to provide additional flow and pressure to the RO WTP. Phase 3 and 4 can be done within the next 2 to 5 years. Wells 1, 2, and 3 are grouped in Phase 4 because of the related electrical changes that need to be made for these wells.

7. Order of Magnitude Cost Estimate

A summary of the order of magnitude cost estimate for each phase is provided in **Table 5** below. Cost assumptions are provided below and their estimated cost can be found in **Attachment C**.

For each Phase and associated wells, a conceptual scope of work was developed which is described below. Based on the conceptual scope of work, an order of magnitude cost was estimated assuming the project will be executed in a design-build fashion. For a better cost estimate, the existing site conditions and scope of work will need to be investigated in more depth and a final design established. The cost estimates provided are preliminary order of magnitude estimates based on generalized projections for equipment needs, experience with similar projects, and some vendor/ manufacturers prices for assumed equipment. Estimates prepared in this manner are normally within +30 percent to -30 percent of actual cost. Final cost will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, and project delivery methods.

Table 5: Summary of Order of Magnitude Cost Estimated Well Improvement Phases

Improvements	Estimated Construction Cost	15% Contingency	Estimated Engineering Costs	Order of Magnitude Total Cost
Phase 1: Wells 5, 6, and 7	$257,476	$38,600	$30,900	$326,976
Phase 2: Wells 4, 9, and 10	$217,545	$32,600	$26,200	$276,345
Phase 3: Wells 8 and 11	$86,873	$13,000	$10,500	$110,373
Phase 4: Wells 1, 2, and 3	$212,226	$25,500	$25,500	$263,226
Total	**$774,120**	**$109,700**	**$93,100**	**$976,920**

Note: Does not including bonding cost

Phase 1 – Wells 5, 6, and 7 Improvements

The estimated engineering and construction cost for Phase 1 is $326,976 which includes a 15% contingency for the following work.

Well 5

- Some improvements are already underway for Well 5. CSID has contracted with AMPS (well driller) to replace the cracked well casing and raise the well head flange and piping. AMPS is currently slated to reinstall the existing pump into the repaired well. AMPS work is NOT included the estimated cost indicated above.
- Estimated costs assume work by AMPS is complete and the modifications are being done after AMPS has de-mobilized.
- Replace existing 30 hp pump and motor with a 40 hp pump and motor. The safety cable, well column pipe, well head assembly/discharge elbow is also to be replaced.

- Program existing soft-start for the new pump motor and replace the bypass motor starter overload heaters so that they are sized for the new pump motor full load amps.
- Pending building department and home owner's association approval, demolish one walls of the well enclosure and re-grade site so that the concrete slab is above grade. The existing concrete slab is to be extended. The removed wall will be replaced with a gate to allow for better access to the well.
- Determine if an isolation valve is installed downstream of discharge tee. If none is found, install isolation valve so well can be pumped to waste.
- Relocate sample tap upstream of check valve. Sample tap should be smooth nosed and not have threads.
- Install 3" port for camera in wellhead flange.
- Touch up paint affected piping.
- Restore surround landscaping / sod

Well 6

- Replace existing 30 hp pump and motor with new 40 hp pump and motor. Replace wellhead flange/discharge elbow. Provide larger 1 ½" port for vent and 3" port for future camera access. Replace existing 12" pump column pipe with 6" pump column pipe for better access for instrumentation. Replace existing safety cable.
- Upgrade overload heaters for the higher horsepower full load amps and install required conduit and cable for the new pump.
- Raise the well casing by at least 12" by the addition of a 16" spool piece. Encase existing wellhead flange and portion of new spool piece in concrete block that is 30"L x 30"W x 12" H to serve as a sanitary seal.
- Raise associated discharge piping and instrumentation. The 12" discharge wye and associated 45 degree elbow may need to be changed to a 12" tee and 90 degree elbow. The existing wye and 45 degree elbow might be re-useable if there is enough space before the next fitting. This will also require changes to the concrete vault to relocate the pipe higher in the wall.
- Cut concrete wall and add an access gate in the wall of the well enclosure to provide better access to the piping and better drainage if acceptable to building department.
- Relocate the air release valve so it is on top of the pipe to function better.
- Touch up paint affected piping.
- Restore surround landscaping / sod.

Well 7

- Replace existing 30 hp pump and motor with new 40 hp pump and motor. Replace wellhead flange/discharge elbow. Provide larger 1 ½" port for vent and 3" port for future camera access. Replace existing 12" pump column pipe with 6" pump column pipe for better access for instrumentation.
- Upgrade overload heaters for the higher horsepower full load amps and install required conduit and cable for the new pump.
- Raise the well casing by at least 6" by the addition of a 16" spool piece. The spool piece and existing wellhead flange should be encased in a concrete block that is 30"L x 30"W x 12" H.
- Raise associated discharge piping and instrumentation. The 12" discharge wye and associated 45 degree elbow may need to be changed to a 12" tee and 90 degree elbow. The existing wye and 45 degree elbow might be reusable if there is enough space before the next fitting. This will also require changes to the concrete vault to relocate the pipe higher in the wall
- Cut concrete wall and add an access gate in the wall of the well enclosure to provide better access to the piping and better drainage if acceptable to building department.
- Relocate sample tap upstream of check valve.

- Relocate digital pressure sensor upstream of check valve.
- Touch up paint affected piping.
- Restore surround landscaping / sod.

Phase 2 – Wells 4, 9, and 10 Improvements

The estimated engineering and construction cost for Phase 2 is $276,345 which includes a 15% contingency for the following work.

Well 4

- Replace existing 30 hp pump and motor with new 40 hp pump and motor. Replace column pipe, wellhead flange/discharge elbow, and safety cable.
- Upgrade overload heaters for the higher horsepower full load amps and install required conduit and cable for the new pump.
- Relocate digital pressure sensor upstream of check valve.
- Touch up paint affected piping.
- Restore surround landscaping / sod.

Well 9

- Replace existing 40 hp pump and motor with new 40 hp pump and motor. Replace wellhead flange/discharge elbow.
- Upgrade motor starters as needed.
- Install 6-inch tall 16" diameter filler flange at well head and 6-inch tall 8" diameter filler flange at discharge tee to raise the well head up. Modify and repair wall as required to raise pipe. Modify pipe supports needed.
- Touch up paint affected piping.
- Restore surround landscaping / sod.

Well 10

- Replace existing 40 hp pump and motor with new 40 hp pump and motor. Replace wellhead flange/discharge elbow.
- Upgrade motor starters as needed.
- Insert 6-inch tall 16" diameter filler flange at well head and 6-inch tall 8" diameter filler flange at discharge tee to raise the well head up. Modify and repair wall as required to raise pipe. Modify pipe supports needed.
- Touch up paint affected piping.
- Restore surround landscaping / sod.

Phase 3 – Wells 8 and 11 Improvements

The estimated engineering and construction cost for Phase 3 is $110,373 which includes a 15% contingency for the following work.

Well 8

- Replace existing 40 hp pump and motor with new 40 hp pump and motor. Replace wellhead flange/discharge elbow. Install required conduit and cable for the new pump.

- Touch up paint affected piping.
- Restore surround landscaping / sod.

Well 11

- Replace existing 40 hp pump and motor with new 40 hp pump and motor. Replace wellhead flange/discharge elbow. Install required conduit and cable for the new pump.
- Touch up paint affected piping.
- Restore surround landscaping / sod.

Phase 4 – Wells 1, 2, and 3 Improvements

The estimated engineering and construction cost for Phase 3 is $263,226 which includes a 15% contingency for the following work.

Common Electrical Improvements for Wells 1, 2, and 3

- Wells 1, 2 and 3 are fed from existing panel PP-3 in the High Service Building. PP-3 will require upgrading to accommodate the additional loads and the larger breakers required for the upgrade of the well pumps from 30 hp to 40 hp.
- Wells 2 and 3 are fed from a single feeder that will have to be upgraded for the additional horse power.

Well 1

- Replace existing 30 hp pump and motor with new 40 hp pump and motor. Install required conduit and cable for the new pump.
- Upgrade well pump control panel from 30 hp to 40 hp
    - Upgrade Well 1 Control Panel main breaker from 80A to 90A
    - Upgrade overload heaters required upgrade for 40 hp well pump.
    - Relocate Well 1 Control Panel a minimum of 10 inches or rotated 90 degrees to meet the National Electrical Code minimum working clearance requirements.
    - Conduit and cable are to be installed to connect new pump.
- Add flow to waste connection consisting of a 6" x 4" tee, 4" butterfly valve, and 4" quick connect between flow control valve and flow meter.
- Touch up paint affected piping.
- Restore surround landscaping / sod.

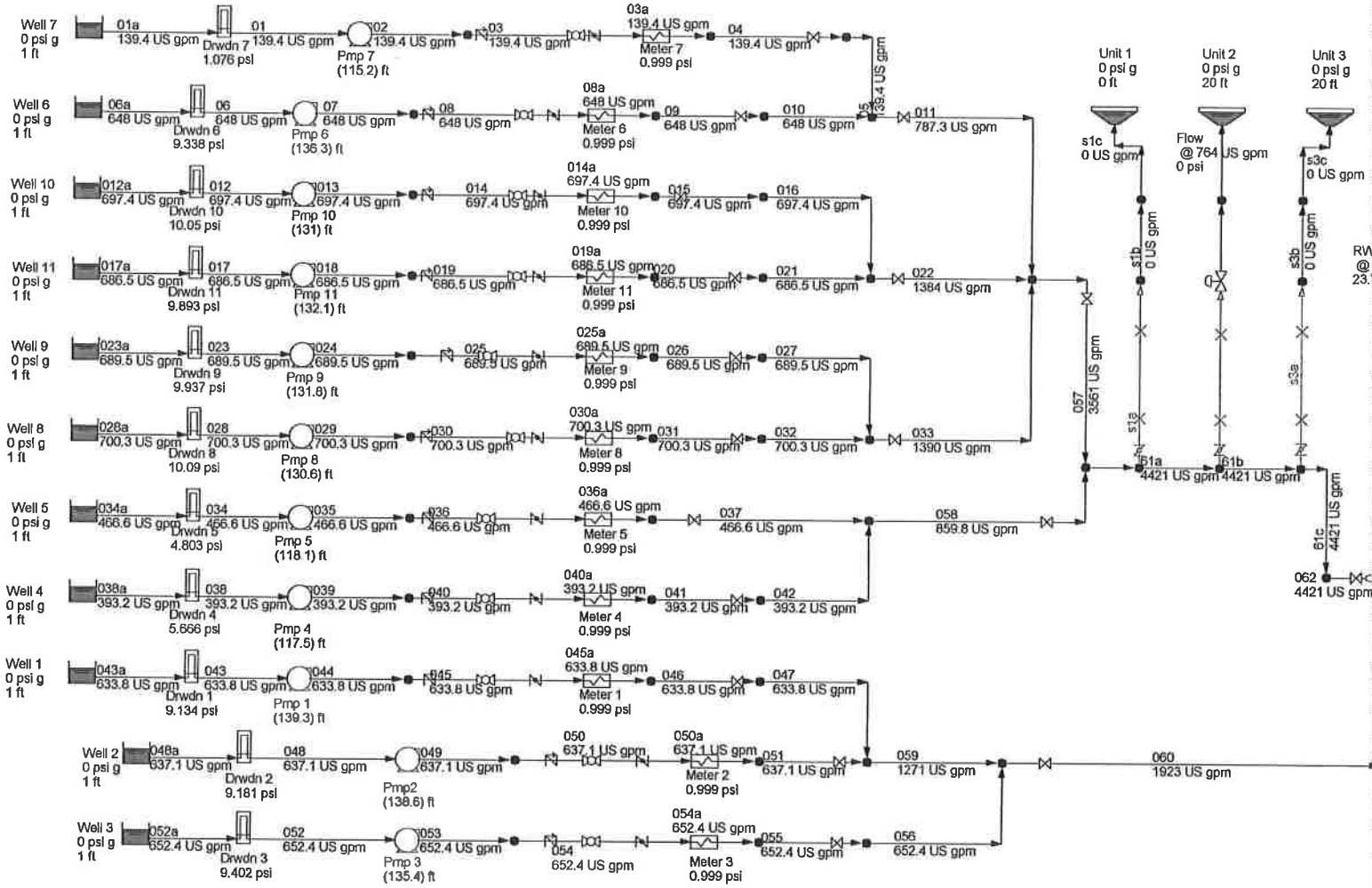
Well 2

- Replace existing 30 hp pump with new 40 hp pump. Install required conduit and cable for the new pump.
- Upgrade well pump control panel from 30 hp to 40 hp
    - Upgrade Well 2 Control Panel main breaker from 80A to 90A
    - Upgrade overload heaters required for 40HP well pump
    - Relocate Well 2 Control Panel a minimum of 12 inches or rotated 90 degrees to meet the National Electrical Code minimum working clearance requirements.
- Add flow to waste connection consisting of a 6" x 4" tee, 4" butterfly valve, and 4" quick connect between flow control valve and flow meter.
- Touch up paint affected piping
- Restore surround landscaping / sod.

Well 3

- Replace existing 30 hp pump with new 40 hp pump. Install required conduit and cable for the new pump.
- Upgrade well pump control panel from 30 hp to 40 hp
    - Upgrade Well 3 Control Panel main breaker from 80A to 90A
    - Upgrade overload heaters required for 40HP well pump
- Add flow to waste connection consisting of a 6" x 4" tee, 4" butterfly valve, and 4" quick connect between flow control valve and flow meter.
- Touch up paint affected piping
- Restore surround landscaping / sod.

Attachment A
Well Pumping System
Hydraulic Model


Well 7
0 psi g
1 ft
01a
139.4 US gpm
Drwdn 7
1.076 psi
01
139.4 US gpm
Pmp 7
(115.2) ft
02
139.4 US gpm
03
139.4 US gpm
03a
139.4 US gpm
Meter 7
0.999 psi
04
139.4 US gpm
Well 6
0 psi g
1 ft
06a
648 US gpm
Drwdn 6
9.338 psi
06
648 US gpm
Pmp 6
(136.3) ft
07
648 US gpm
08
648 US gpm
08a
648 US gpm
Meter 6
0.999 psi
09
648 US gpm
010
648 US gpm
011
787.3 US gpm
Well 10
0 psi g
1 ft
012a
697.4 US gpm
Drwdn 10
10.05 psi
012
697.4 US gpm
Pmp 10
(131) ft
013
697.4 US gpm
014
697.4 US gpm
014a
697.4 US gpm
Meter 10
0.999 psi
015
697.4 US gpm
016
697.4 US gpm
Well 11
0 psi g
1 ft
017a
686.5 US gpm
Drwdn 11
9.893 psi
017
686.5 US gpm
Pmp 11
(132.1) ft
018
686.5 US gpm
019
686.5 US gpm
019a
686.5 US gpm
Meter 11
0.999 psi
020
686.5 US gpm
021
686.5 US gpm
022
1384 US gpm
Well 9
0 psi g
1 ft
023a
689.5 US gpm
Drwdn 9
9.937 psi
023
689.5 US gpm
Pmp 9
(131.8) ft
024
689.5 US gpm
025
689.5 US gpm
025a
689.5 US gpm
Meter 9
0.999 psi
026
689.5 US gpm
027
689.5 US gpm
Well 8
0 psi g
1 ft
028a
700.3 US gpm
Drwdn 8
10.09 psi
028
700.3 US gpm
Pmp 8
(130.6) ft
029
700.3 US gpm
030
700.3 US gpm
030a
700.3 US gpm
Meter 8
0.999 psi
031
700.3 US gpm
032
700.3 US gpm
033
1390 US gpm
Well 5
0 psi g
1 ft
034a
466.6 US gpm
Drwdn 5
4.803 psi
034
466.6 US gpm
Pmp 5
(118.1) ft
035
466.6 US gpm
036
466.6 US gpm
036a
466.6 US gpm
Meter 5
0.999 psi
037
466.6 US gpm
058
859.8 US gpm
Well 4
0 psi g
1 ft
038a
393.2 US gpm
Drwdn 4
5.666 psi
038
393.2 US gpm
Pmp 4
(117.5) ft
039
393.2 US gpm
040
393.2 US gpm
040a
393.2 US gpm
Meter 4
0.999 psi
041
393.2 US gpm
042
393.2 US gpm
Well 1
0 psi g
1 ft
043a
633.8 US gpm
Drwdn 1
9.134 psi
043
633.8 US gpm
Pmp 1
(139.3) ft
044
633.8 US gpm
045
633.8 US gpm
045a
633.8 US gpm
Meter 1
0.999 psi
046
633.8 US gpm
047
633.8 US gpm
Well 2
0 psi g
1 ft
048a
637.1 US gpm
Drwdn 2
9.181 psi
048
637.1 US gpm
Pmp2
(138.6) ft
049
637.1 US gpm
050
637.1 US gpm
050a
637.1 US gpm
Meter 2
0.999 psi
051
637.1 US gpm
059
1271 US gpm
060
1923 US gpm
Well 3
0 psi g
1 ft
052a
652.4 US gpm
Drwdn 3
9.402 psi
052
652.4 US gpm
Pmp 3
(135.4) ft
053
652.4 US gpm
054
652.4 US gpm
054a
652.4 US gpm
Meter 3
0.999 psi
055
652.4 US gpm
056
652.4 US gpm
057
3361 US gpm
Unit 1
0 psi g
0 ft
Unit 2
0 psi g
20 ft
Unit 3
0 psi g
20 ft
s1c
0 US gpm
s1b
0 US gpm
s1a
Flow
@ 764 US gpm
0 psi
s3c
0 US gpm
s3b
0 US gpm
s3a
RW
@
23.
061a
4421 US gpm
061b
4421 US gpm
061c
4421 US gpm
062
4421 US gpm

Attachment B
Proposed Pump

PUMP DATA SHEET Submersible Stainless Steel

Company: Hudson Pump & EquipmentCustomer:
Name:
Date: 07/05/12 Order No:

Pump:

Size: 7TSHC (2 stages)
Type: Submersible SST Speed: 3450 rpm
Synch speed: 3600 rpm Dia: 4.75 in
Curve:
Specific Speeds: Ns: 3619
Pump Notes for Standard Sizes:
Discharge also available in 6". Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.
Vertical Turbine: Bowl size: 7.5 in
Max lateral: --- in
Thrust K factor: 4.56 lb/ft

Search Criteria:

Flow: 660 US gpm Head: 136 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: 40 hp
Speed: 3600

Sizing criteria: Max Power on Design Curve

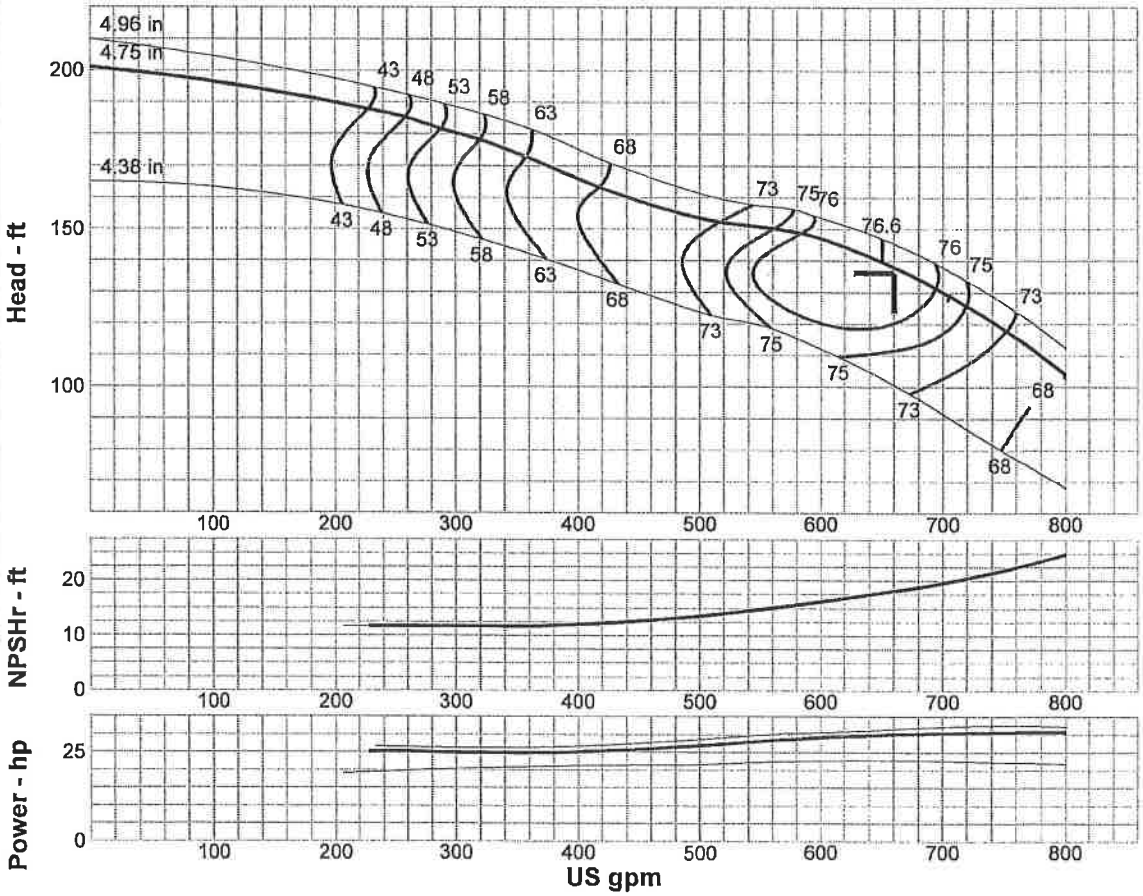
Pump Limits for Standard Construction:

Temperature: --- °F Pressure: 450 psi g
Sphere size: --- in

---- Data Point ----
Flow: 660 US gpm
Head: 138 ft
Eff: 76.4%
Power: 30 hp
NPSHr: 18.1 ft

-- Design Curve --
Shutoff Head: 201 ft
Shutoff dP: 86.9 psi
Min Flow: --- US gpm
BEP: 76.6% eff
@ 650 US gpm
NOL Pwr: 30.7 hp
@ 800 US gpm

-- Max Curve --
Max Pwr: 32.5 hp
@ 760 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
792	3450	106	69.2	30.7	24.4
660	3450	138	76.4	30	18.1
528	3450	152	73.5	27.5	14.3
396	3450	167	66.2	25.1	12
264	3450	185	49	25.1	11.7

Turbine V9

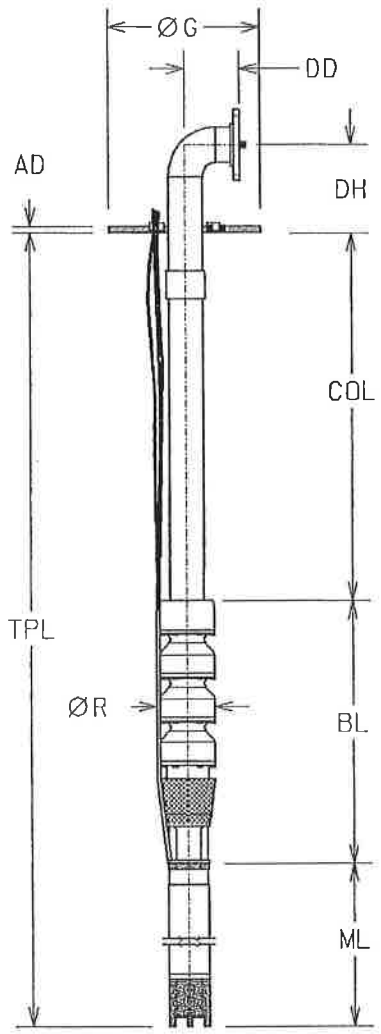
Selected from catalog: Goulds Sub SST 60Hz Vers: 3.36

Hudson Pump & Equipment

DIMENSIONAL OUTLINE

VIS-WT-SST

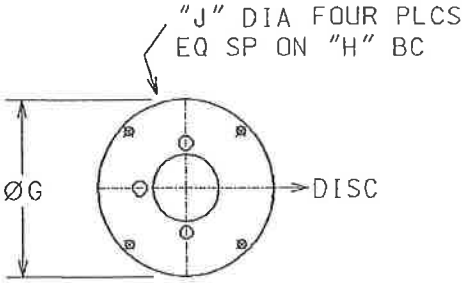
2 Stage 6x7TSHC



AD:	1.13
AG:	
BL:	27.06
CD:	
CL:	N/A
COL:	56.62'
DD:	10.88
MIN SUB:	17.9
DH:	16.50
G:	16.00
H:	14.25
HH:	
J:	1.13
R:	7.50
ML:	40.60
TPL:	62.3'
UG:	N/A
V:	
W:	
X:	
SD:	
Y:	
Z:	

Pump Data

Size:	7TSHC
Stages:	2
BowlShaft:	1.19"
LineShaft:	N/A
LineShaft Type:	N/A
Column:	
Column:	6" Threaded
Bearing Spacing:	N/A
Section Length:	10 feet
Head:	Well Head
Flange (Disch.):	6"- RF
Suct.:	
Seal:	N/A
Strainer:	None
SubBase:	N/A
Motor Diameter:	6"



WELL HEAD

Hydraulic Data

Flow (gpm):	660
Pump Head (ft):	125.5
TDH (ft):	138.0
Speed (rpm):	3450
Fluid:	Water
Temperature (F):	60
Viscosity:	1.105
Spec.Grav:	1

Miscellaneous

Thrust At Design (lb):	639
Thrust At Shutoff (lb):	927
Pumping Level(in):	120

Weight

Pump (lb):	1215
Motor (lb):	225
Total (lb):	1440

Motor Data

Model:	
Make:	
HP:	40
RPM:	3600
Type:	SUB
Efficiency:	84.0
Nominal Dia:	6"
Voltage:	460

Version: 4.16P

Customer:

Date: 07-05-2012

Attachment C
Order of Magnitude Cost Estimate

Summary of Order of Magnitude Costs

Improvements	Estimated Construction Cost	15% Contingency	Estimated Engineering Costs	Estimated Total Cost
Phase 1: Wells 5, 6, and 7	$257,476	$38,600	$30,900	$326,976
Phase 2: Wells 4, 9, and 10	$217,545	$32,600	$26,200	$276,345
Phase 3: Wells 8 and 11	$86,873	$13,000	$10,500	$110,373
Phase 4: Wells 1, 2, and 3	$212,226	$25,500	$25,500	$263,226
Total	**$774,120**	**$109,700**	**$93,100**	**$976,920**

Note: Does not including bonding cost

Phase 1 – Wells 5, 6, and 7 Improvements
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Well 5 Improvements					
40 HP pump	1	EA	$6,704.50	$6,704.50	
40 HP motor w/ power cable	1	EA	$8,533.00	$8,533.00	
Safety cable	1	EA	$121.90	$121.90	
Certalock well column pipe (40 ft) & adapter	1	EA	$1,828.50	$1,828.50	
Wellhead assembly / discharge elbow	1	EA	$7,314.00	$7,314.00	
Remove pump and install new pump & motor	1	LS	$3,680.00	$3,680.00	
Disinfect well	1	LS	$345.00	$345.00	
Program soft start	1	LS	$345.00	$345.00	
Conduit/cable installation/connection	1	LS	$690.00	$690.00	
Wall and slab modifications	1	LS	$3,450.00	$3,450.00	
Landscaping/sod restoration	1	LS	$2,300.00	$2,300.00	
Fencing/gate	1	LS	$4,370.00	$4,370.00	
3-man Const Crew	10	DY	$1,400.00	$14,000.00	
Project PM and Construction Oversite	1	LS	$5,000.00	$5,000.00	
Subtotal					**$58,681.90**
Well 6 Improvements					
40 HP pump	1	EA	$6,704.50	$6,704.50	
40 HP motor w/ power cable	1	EA	$8,533.00	$8,533.00	
Safety cable	1	EA	$121.90	$121.90	
Certa-Lok well column pipe (40 ft) & adapter	1	EA	$1,828.50	$1,828.50	
Wellhead assembly / discharge elbow	1	EA	$7,314.00	$7,314.00	
Well head riser (16" dia x 12"L)	1	EA	$8,050.00	$8,050.00	
Disharge piping modifications	1	EA	$9,000.00	$9,000.00	
Remove pump and install new pump & motor	1	LS	$3,680.00	$3,680.00	
Disinfect well	1	LS	$345.00	$345.00	
Upgrade motor starter heaters	1	LS	$230.00	$230.00	
Conduit/cable installation/connection	1	LS	$690.00	$690.00	
Concrete block around well casing	1	LS	$2,875.00	$2,875.00	
Modify pipe supports	1	LS	$2,000.00	$2,000.00	
Sod restoration	1	LS	$1,000.00	$1,000.00	
Gate/wall modifications	1	LS	$3,450.00	$3,450.00	
3-man Const Crew	10	DY	$1,400.00	$14,000.00	
Project PM and Construction Oversite	1	LS	$5,000.00	$5,000.00	
Subtotal					**$74,821.90**
Well 7 Improvements					
40 HP pump	1	EA	$6,704.50	$6,704.50	
40 HP motor w/ power cable	1	EA	$8,533.00	$8,533.00	
Safety cable	1	EA	$121.90	$121.90	
Certa-Lok well column pipe (40 ft) & adapter	1	EA	$1,828.50	$1,828.50	
Wellhead assembly / discharge elbow	1	EA	$7,314.00	$7,314.00	
Well head riser (16" dia x 6"L)	1	EA	$6,900.00	$6,900.00	
Disharge piping modifications	1	EA	$12,000.00	$12,000.00	
Remove pump and install new pump & motor	1	LS	$3,680.00	$3,680.00	
Disinfect Well	1	LS	$345.00	$345.00	
Upgrade motor starter heaters	1	LS	$230.00	$230.00	
Conduit/cable installation/connection	1	LS	$690.00	$690.00	
Concrete block around well casing	1	LS	$2,875.00	$2,875.00	
Modify pipe supports	1	LS	$2,000.00	$2,000.00	
Sod restoration	1	LS	$1,000.00	$1,000.00	

Phase 1 – Wells 5, 6, and 7 Improvements
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Gate/wall modifications	1	LS	$3,450.00	$3,450.00	
3-man Const Crew	10	DY	$1,400.00	$14,000.00	
Project PM and Construction Oversite	1	LS	$5,000.00	$5,000.00	
Subtotal					**$76,671.90**
Subtotal Construction Direct Costs					**$210,176.00**
Indirect Construction Cost					
Health Department Permit				$1,000.00	
Building Permit (0.50% of Subtotal)				$1,100.00	
Builder's Risk Insurance (1.5% of Subtotal)				$3,200.00	
General Liability Insurance (1% of Subtotal)				$2,100.00	
Mobilization (3% of Subtotal)				$6,300.00	
Subtotal Prior to OH&P					**$223,876.00**
OH & P					
GC General Field Conditions (7% of Subtotal)				$15,700.00	
GC Indirect, OH & Profit (8% of Subtotal)				$17,900.00	
Subtotal After OH&P					**$257,476.00**
Construction Contingency					
Contingency (15% of Construction Subtotal)				$38,600.00	
Total Construction Costs					**$296,076.00**
Non Construction Cost					
Engineering				$30,900.00	
Total Engineering & Construction					**$326,976.00**
Notes:					

Phase 2 – Wells 4, 9, and 10 Improvements
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Well 4 Improvements					
40 HP pump	1	EA	$6,704.50	$6,704.50	
40 HP motor w/ power cable	1	EA	$8,533.00	$8,533.00	
Motor cooling shroud	1	EA	$914.25	$914.25	
Safety cable	1	EA	$121.90	$121.90	
Certalock well column pipe (40 ft) & adapter	1	EA	$1,828.50	$1,828.50	
Wellhead assembly / discharge elbow	1	EA	$7,314.00	$7,314.00	
Remove pump and install new pump & motor	1	LS	$3,450.00	$3,450.00	
Disinfect well	1	LS	$316.25	$316.25	
Minor piping modifications	1	EA	$2,000.00	$2,000.00	
Upgrade motor starter heaters	1	LS	$230.00	$230.00	
Conduit/cable instalaltion/connection	1	LS	$690.00	$690.00	
Sod restoration	1	LS	$1,000.00	$1,000.00	
3-man Const Crew	3	DY	$1,400.00	$4,200.00	
Project PM and Construction Oversite	1	LS	$4,400.00	$4,400.00	
Subtotal					**$41,702.40**
Well 9 Improvements					
40 HP pump	1	EA	$6,704.50	$6,704.50	
40 HP motor w/ power cable	1	EA	$8,533.00	$8,533.00	
Wellhead assembly / discharge elbow	1	EA	$7,314.00	$7,314.00	
Well head riser (16" dia x 6"L)	1	EA	$6,900.00	$6,900.00	
Disharge piping modifications	1	EA	$8,000.00	$8,000.00	
Remove pump and install new pump & motor	1	LS	$3,680.00	$3,680.00	
Disinfect well	1	LS	$345.00	$345.00	
Upgrade motor starter heaters	1	LS	$230.00	$230.00	
Conduit/cable installaltion/connection	1	LS	$690.00	$690.00	
Concrete block around well casing	1	LS	$2,875.00	$2,875.00	
Modify concrete pipe supports	1	LS	$3,000.00	$3,000.00	
Sod restoration	1	LS	$1,000.00	$1,000.00	
3-man Const Crew	10	DY	$1,400.00	$14,000.00	
Project PM and Construction Oversite	1	LS	$4,400.00	$4,400.00	
Subtotal					**$67,671.50**
Well 10 Improvements					
40 HP pump	1	EA	$6,704.50	$6,704.50	
40 HP motor w/ power cable	1	EA	$8,533.00	$8,533.00	
Wellhead Assembly / discharge elbow	1	EA	$7,314.00	$7,314.00	
Well head riser (16" dia x 6"L)	1	EA	$6,900.00	$6,900.00	
Disharge Piping Modifications	1	EA	$8,000.00	$8,000.00	
Remove pump and install new pump & motor	1	LS	$3,680.00	$3,680.00	
Disinfect well	1	LS	$345.00	$345.00	
Upgrade motor starter heaters	1	LS	$230.00	$230.00	
Conduit/cable installaltion/connection	1	LS	$690.00	$690.00	
Concrete block around well casing	1	LS	$2,875.00	$2,875.00	
Modify concrete pipe supports	1	LS	$3,000.00	$3,000.00	
Sod restoration	1	LS	$1,000.00	$1,000.00	
3-man Const Crew	10	DY	$1,400.00	$14,000.00	
Project PM and Construction Oversite	1	LS	$4,400.00	$4,400.00	
Subtotal					**$67,671.50**
Subtotal Construction Direct Costs					**$177,045.00**

Phase 2 – Wells 4, 9, and 10 Improvements
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Indirect Construction Cost					
Health Department Permit				$1,500.00	
Building Permit (0.50% of Subtotal)				$900.00	
Builder's Risk Insurance (1.5% of Subtotal)				$2,700.00	
General Liability Insurance (1% of Subtotal)				$1,800.00	
Mobilization (3% of Subtotal)				$5,300.00	
Subtotal Prior to OH&P					**$189,245.00**
OH & P					
GC General Field Conditions (7% of Subtotal)				$13,200.00	
GC Indirect, OH & Profit (8% of Subtotal)				$15,100.00	
Subtotal After OH&P					**$217,545.00**
Construction Contingency					
Contingency (15% of Construction Subtotal)				$32,600.00	
Total Construction Costs					**$250,145.00**
Non Construction Cost					
Engineering				$26,200.00	
Total Engineering & Construction					**$276,345.00**
Notes:					

Phase 3 – Wells 8 and 11 Improvements
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Well 8 Improvements					
40 HP pump	1	EA	$6,704.50	$6,704.50	
40 HP motor w/ power cable	1	EA	$8,533.00	$8,533.00	
Wellhead assembly / discharge elbow	1	EA	$7,314.00	$7,314.00	
Remove pump and install new pump & motor	1	LS	$3,680.00	$3,680.00	
Disinfect well	1	LS	$345.00	$345.00	
Cable installation/connection	1	LS	$460.00	$460.00	
Sod restoration	1	LS	$1,000.00	$1,000.00	
3-man Const Crew	3	DY	$1,400.00	$4,200.00	
Project PM and Construction Oversite	1	LS	$3,100.00	$3,100.00	
Subtotal					**$35,336.50**
Well 11 Improvements					
40 HP pump	1	EA	$6,704.50	$6,704.50	
40 HP motor w/ power cable	1	EA	$8,533.00	$8,533.00	
Wellhead assembly / discharge elbow	1	EA	$7,314.00	$7,314.00	
Remove pump and install new pump & motor	1	LS	$3,680.00	$3,680.00	
Disinfect well	1	LS	$345.00	$345.00	
Cable installation/connection	1	LS	$460.00	$460.00	
Sod restoration	1	LS	$1,000.00	$1,000.00	
3-man Const Crew	3	DY	$1,400.00	$4,200.00	
Project PM and Construction Oversite	1	LS	$3,100.00	$3,100.00	
Subtotal					**$35,336.50**
Subtotal Construction Direct Costs					**$70,673.00**
Indirect Construction Cost					
Health Department Permit				$1,000.00	
Building Permit (0.50% of Subtotal) - NA				$0.00	
Builder's Risk Insurance (1.5% of Subtotal)				$1,100.00	
General Liability Insurance (1% of Subtotal)				$700.00	
Mobilization (3% of Subtotal)				$2,100.00	
Subtotal Prior to OH&P					**$75,573.00**
OH & P					
GC General Field Conditions (7% of Subtotal)				$5,300.00	
GC Indirect, OH & Profit (8% of Subtotal)				$6,000.00	
Subtotal After OH&P					**$86,873.00**
Construction Contingency					
Contingency (15% of Construction Subtotal)				$13,000.00	
Total Construction Costs					**$99,873.00**
Non Construction Cost					
Engineering				$10,500.00	
Total Engineering & Construction					**$110,373.00**
Notes:					

Phase 4 – Wells 1, 2, and 3 Improvements
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Common Electrical Improvements for Well 1, 2, and 3					
Upgrade Panel PP-3	1	EA	$18,929.00	$18,929.00	
Upgrade conduit and cable from Well 2 & 3 feeder	1	EA	$32,062.00	$32,062.00	
Project PM and Construction Oversite	1	LS	$3,100.00	$3,100.00	
Subtotal					**$54,091.00**
Well 1 Improvements					
40 HP pump	1	EA	$6,704.50	$6,704.50	
40 HP motor w/ power cable	1	EA	$8,533.00	$8,533.00	
Safety cable	1	EA	$121.90	$121.90	
Certa-Lok well column pipe (40 ft) & adapter	1	EA	$1,828.50	$1,828.50	
Remove pump and install new pump & motor	1	LS	$3,680.00	$3,680.00	
Disinfect well	1	LS	$345.00	$345.00	
Minor piping modifications - Waste connection	1	EA	$5,000.00	$5,000.00	
Upgrade well panel breaker to 90A	1	LS	$1,667.50	$1,667.50	
Upgrade motor starter heaters	1	LS	$230.00	$230.00	
Re-orient panel to meet NEC work clearance	1	LS	$1,380.00	$1,380.00	
Conduit/cable installation/connection	1	LS	$690.00	$690.00	
Sod restoration	1	LS	$1,000.00	$1,000.00	
3-man Const Crew	5	DY	$1,400.00	$7,000.00	
Project PM and Construction Oversite	1	LS	$3,700.00	$3,700.00	
Subtotal					**$41,880.40**
Well 2 Improvements					
40 HP pump	1	EA	$5,500.00	$5,500.00	
40 HP motor w/ power cable	1	EA	$7,000.00	$7,000.00	
Safety Cable	1	EA	$100.00	$100.00	
Certa-Lok well column pipe (40 ft) & adapter	1	EA	$1,725.00	$1,725.00	
Minor Piping Modifications - Waste connection	1	EA	$5,000.00	$5,000.00	
Remove pump and install new pump & motor	1	LS	$3,680.00	$3,680.00	
Disinfect well	1	LS	$345.00	$345.00	
Upgrade well panel breaker to 90A	1	LS	$1,667.50	$1,667.50	
Upgrade motor starter heaters	1	LS	$230.00	$230.00	
Re-orient panel to meet NEC work clearance	1	LS	$1,380.00	$1,380.00	
Conduit/cable installation/connection	1	LS	$690.00	$690.00	
Sod restoration	1	LS	$1,000.00	$1,000.00	
3-man Const Crew	5	DY	$1,400.00	$7,000.00	
Project PM and Construction Oversite	1	LS	$3,700.00	$3,700.00	
Subtotal					**$39,017.50**
Well 3 Improvements					
40 HP pump	1	EA	$5,500.00	$5,500.00	
40 HP motor w/ power cable	1	EA	$7,000.00	$7,000.00	
Safety Cable	1	EA	$100.00	$100.00	
Certa-Lok well column pipe (40 ft) & adapter	1	EA	$1,725.00	$1,725.00	
Minor Piping Modifications - Waste connection	1	EA	$5,000.00	$5,000.00	
Remove pump and install new pump & motor	1	LS	$3,680.00	$3,680.00	
Disinfect well	1	LS	$345.00	$345.00	
Upgrade well panel breaker to 90A	1	LS	$1,667.50	$1,667.50	
Upgrade motor starter heaters	1	LS	$230.00	$230.00	
Conduit/cable installation/connection	1	LS	$690.00	$690.00	
Sod restoration	1	LS	$1,000.00	$1,000.00	
3-man Const Crew	5	DY	$1,400.00	$7,000.00	

Phase 4 – Wells 1, 2, and 3 Improvements
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Project PM and Construction Oversite	1	LS	$3,700.00	$3,700.00	
Subtotal					**$37,637.50**
Subtotal Construction Direct Costs					**$172,626.00**
Indirect Construction Cost					
Health Department Permit				$1,500.00	
Building Permit (0.50% of Subtotal)				$900.00	
Builder's Risk Insurance (1.5% of Subtotal)				$2,600.00	
General Liability Insurance (1% of Subtotal)				$1,700.00	
Mobilization (3% of Subtotal)				$5,200.00	
Subtotal Prior to OH&P					**$184,526.00**
OH & P					
GC General Field Conditions (7% of Subtotal)				$12,900.00	
GC Indirect, OH & Profit (8% of Subtotal)				$14,800.00	
Subtotal After OH&P					**$212,226.00**
Construction Contingency					
Contingency (15% of Construction Subtotal)				$31,800.00	
Total Construction Costs					**$244,026.00**
Non Construction Cost					
Engineering				$25,500.00	
Total Engineering & Construction					**$269,526.00**
Notes:					

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To:	Ed Stover/CSID Ken Cassel/CSID Dan Daly/CSID	**CC:**	Alvan Jones/CSID Joe Stevens/CSID
From:	Troy Lyn, PE	**Date:**	11/06/12
Re:	CSID RO WTP Degasifier Odor Control Technical Memorandum		

ES. Executive Summary

Six options for the dispersion or removal of hydrogen sulfide from the off-gas of the reverse osmosis (RO) water treatment plant (WTP) degasifiers are discussed. For the six options considered in this Technical Memorandum, Option 1 is recommended if it can be approved by the Health Department. Option 1 proposes the addition of a no-loss exhaust stack on each degasifier to disperse the hydrogen sulfide laden off-gas upward into the atmosphere. This option represents a simple low cost method that can be implemented quickly and appears to have a good chance of dissipating the hydrogen sulfide gases. It should be attempted before more costly options. This option is contingent upon Health Department acceptance in which the Health Department will consider if the option will prevent contamination from rain water or birds.

If Option 1 is not approved by the Health Department, there will be difficulty in approving Options 2 and 3. Option 4 (Mixed Flow Fan) and Option 6 (Biological Scrubbers) should then be considered because of their relatively low operation and maintenance cost. Of these two options, Option 6 would be recommended as it provides treatment/removal of hydrogen sulfide instead of dilution.

Table ES-1 provides a summary of the order of magnitude cost for the options considered.

Table ES-1: Summary of Order of Magnitude Cost Estimated for RO WTP Degasifier Odor Control

Improvements	Estimated Construction Cost	15% Contingency	Estimated Engineering Costs	Order of Magnitude Cost
Option 1: No-Loss Stack on Each Degasifier	$46,102	$6,900	$4,200	$57,202
Option 2: Single No-Loss Stack with 36" Ductwork	$190,080	$28,500	$36,800	$255,380
Option 3: Single No-Loss Stack with 42" Ductwork and Future Scrubber Connection	$202,669	$30,400	$37,675	$270,744
Option 4: Mixed Flow Fan with 36" Ductwork	$537,412	$80,600	$73,600	$691,612
Option 5: Chemical Scrubbers	$1,157,750	$173,700	$122,000	$1,453,450
Option 6: Biological Scrubbers	$1,275,585	$191,300	$95,600	$1,562,485
Note: Cost does not include Bond or Permitting Fees.				

1. Introduction

The RO WTP was constructed with two degasifier towers to remove hydrogen sulfide from the membrane permeate before the water is ready for distribution as finished water. Currently, the exhausts of the degasifier towers discharge to atmosphere utilizing gooseneck/candy cane exhaust stacks as shown below in **Figure 1**. While the gooseneck stack configuration prevents birds or their waste from contaminating the towers, the gooseneck exhaust configuration forces the removed hydrogen sulfide downward which are odorous, toxic, and corrosive to metal.

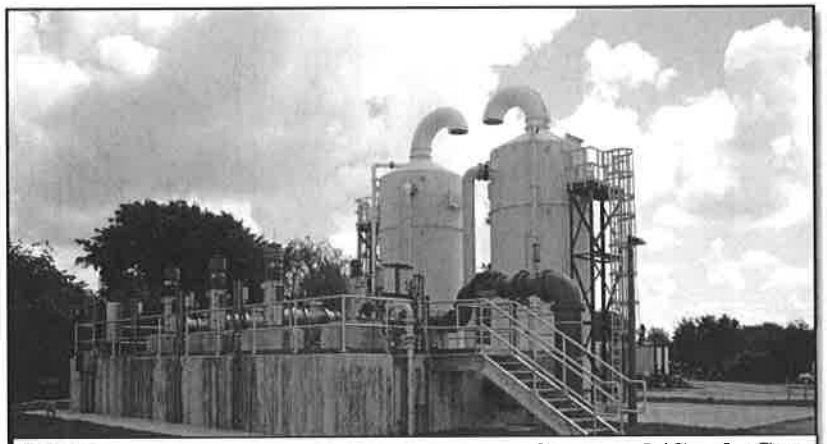

Figure 1: Existing Degasifier Towers with Gooseneck/Candy Cane Exhaust Stacks

Various options are evaluated in this TM to mitigate the hydrogen sulfide discharge and builds on some of the work already conducted by the previous District Engineer (CH2M Hill). We generally concur with CH2M Hill that the gooseneck stacks should be eliminated and that the hydrogen sulfide should be vented upward or an odor treatment control system be added. The following provides additional information, options, and order of magnitude cost.

2. Dispersion Options

CH2M Hill conducted various air dispersion modeling using EPA SCREEN3 and AERMOD as presented to CSID. The modeling suggests that the hydrogen sulfide from the degasifier towers could be exhausted upward at a height of 45 to 50 feet to maintain concentrations typically below 7 ppbv. The 7 ppbv threshold was chosen as the upper level where odor complaints are generally reported according to CH2M Hill. Some exceedances (approximately 9) above 7 ppbv are to be expected throughout the year due to atmospheric conditions.

For dispersion to work properly, the two main issues are height and an upward exhaust which were investigated further.

Height. Preliminary discussions with the Coral Springs Building Department indicate a maximum height limitation of 50 ft is likely if dispersion is to be used. The plant site is designated General Utilities and the code does not specify height limits but similar districts are maintaining a 50 ft limit. The Coral Springs believes the 50 ft height limitation is appropriate for the area and would be open to discussion regarding the application. Therefore, the exhaust stack could be raised to the 50 ft limit pending approval

of the Building Department.

Upward Exhaust. Cursory discussions with the Broward County Health Department (BCHD) regarding the stack discharge configuration did not result in any firm direction or suggestions about what type of stack configuration would be allowed. The BCHD did indicate that openings to the atmosphere for potable water applications must prevent the entrance of rainwater as indicated in Section 7 of ***Recommended Standards for Water Works***, 1997 Edition, as incorporated into Rule 62-555.330. While the section is primarily written for finished water storage structures, it does provide the following applicable guidelines that should be considered for this application.

1. Vents shall prevent entrance of surface water and rainwater
2. Vents shall exclude birds and animals
3. Vents should exclude insects and dust, as much as this function can be made compatible with effective venting.
4. Vents shall open downward and be fitted with either four mesh non-corrodible screen, or with finer mesh non-corrodible screen

These guidelines probably lead to the existing gooseneck stack configuration with a downward exhaust.

Discussion with the tower manufacturer/vendor did not result in any absolute solution to meet the guidelines as an unobstructed vertical discharge is required to improve dispersion. Options to add a cap over the stack discharge to prevent the entrance of rain and potential contaminants were discussed but were deemed undesirable as a cap would result in the hydrogen sulfide being discharged horizontally than vertically. The manufacturer/vendor also indicated that a cover over the top of the discharge would increase backpressure that may affect the performance of the existing blowers.

The manufacturer/vendor suggested the possible use of a no-loss stack illustrated in **Figure 2** below to prevent rain from entering the tower if the Health Department would approve it. The Health Department would not provide an opinion at this time regarding this stack except as indicated previously. The no-loss stack has a slightly large diameter sleeve than discharge duct/exhaust. The general concept is that rain does not fall completely vertical and is shielded or collected by the sidewall of the no-loss stack before it can enter the duct/exhaust. The no-loss stack would be susceptible to contamination if there is no air flow allowing birds to perch on top of the stack.

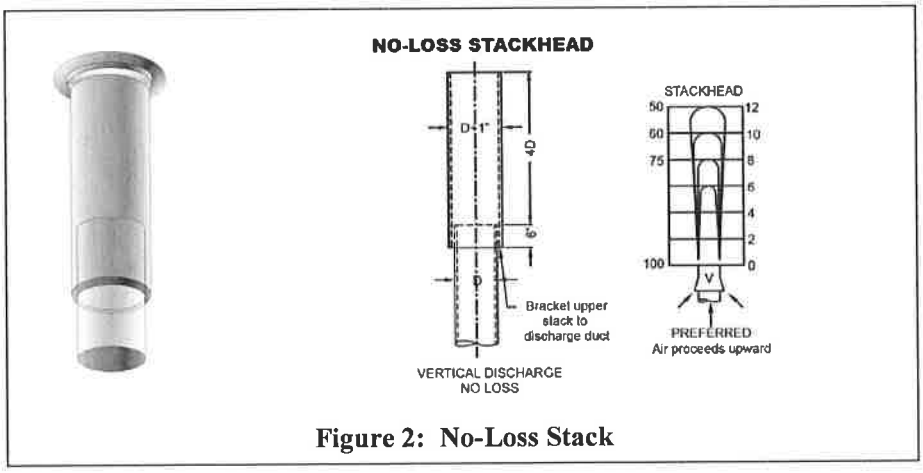

Figure 2: No-Loss Stack

The following no-loss stack options were considered viable pending Health Department acceptance.

Option 1 - No-Loss Stack on Each Degasifier. For this option, the existing gooseneck exhausts would be removed and replaced with no-loss stack. The hydrogen sulfide would be dispersed in the atmosphere. This is the simplest solution pending Health Department approval. The degasifier tower vendor believes an 8 ft tall no-loss stack could be added to the top of the degasifier without any addition supports but this will need to be confirmed if chosen to be used. The taller stack would make the discharge point approximately 45 ft high. The top of the stack would need to be outfitted with four mesh stainless steel screen. The blowers may need to be on continuously to prevent contamination from birds or airborne debris.

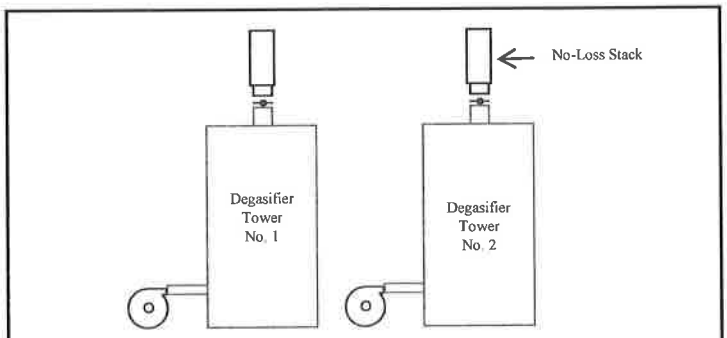

Figure 3: Option 1- No-Loss Stack on Each Degasifier

Option 2 – Single No-Loss Stack with 36-inch Ductwork. This option is very similar to the option proposed by CH2M Hill except the ductwork is larger. A more standard size 36-inch ductwork is assumed than the 32-inch ductwork proposed by CH2M Hill. The exhaust from the degasifiers would be joined together into a single no-loss stack. This improves the likelihood that air will be moving through the stack more consistently. However, a support structure will be needed to support the ductwork and stack. Chain wheels on the exhaust dampeners are recommended should one of the towers need to be taken out of service for an extended period of time. A drip leg could also be added beneath the no-loss stack to trap any water to prevent it from contaminating the towers. The valve on the drip leg would be open when both blowers are turned off to prevent rain water from going back to the degasifiers. Again the use of the no-loss stack is contingent on Health Department approval. The top of the stack would need to be outfitted with four mesh stainless steel screen.

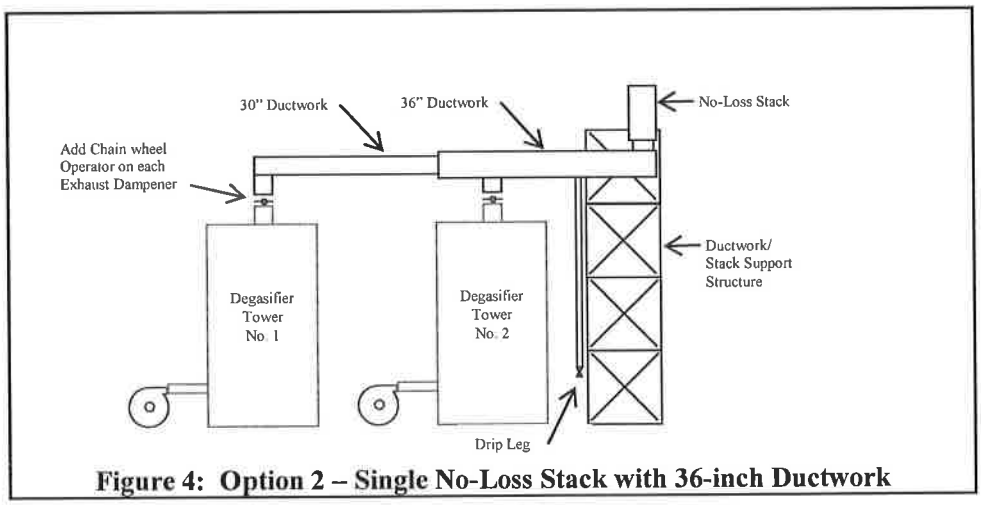

Figure 4: Option 2 – Single No-Loss Stack with 36-inch Ductwork

Option 3 – Single No-Loss Stack with 42-inch Ductwork and Future Scrubber Connection. This

option is very similar to Option 2 above and provides a future connection for a scrubber system. A standard size 42-inch ductwork is assumed to reduce backpressure if a scrubber is connected. Like Option 2, this option assumes the addition of chain wheel operators on the discharge dampeners of each degasifier, a support structure for the ductwork and stack, and a drip leg. The future scrubber connection would be isolated with a blind flange. Again the use of the no-loss stack is contingent on Health Department approval.

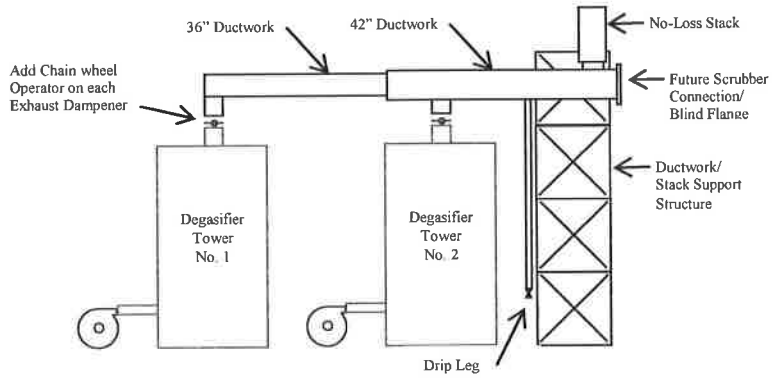

Figure 4: Option 3 – Single No-Loss Stack with 42-inch Ductwork and Future Scrubber Connection

Option 4: Mixed Flow Fans with 36" ductwork. In lieu of a discharge stack(s), mixed flow fans illustrated in **Figure 5** were also considered to improve dispersion. The fans would be located at ground level and would replace the existing degasifier blowers and exhaust stacks. The fan would pull air through the degasifier and mix the hydrogen sulfide laden air with atmospheric air as it creates a "jet plume" to discharge the exhaust high in the air. Noise may be an issue with is option and should be evaluated further if chosen.

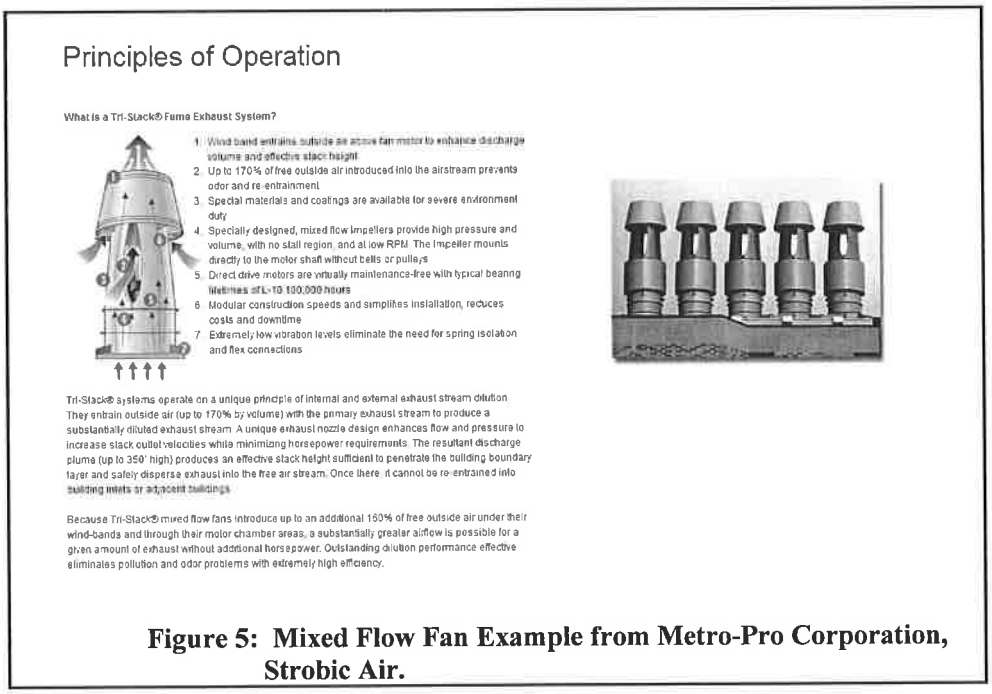

Figure 5: Mixed Flow Fan Example from Metro-Pro Corporation, Strobic Air.

Figure 6 provides a simplified schematic of the installation. Support structures will be needed to bring the exhausts down from each degasifier to the mixed flow fan. Of the dispersion options considered, this option will likely be more acceptable to the Health Department and will be best to disperse the hydrogen sulfide without building an extremely tall discharge stack.

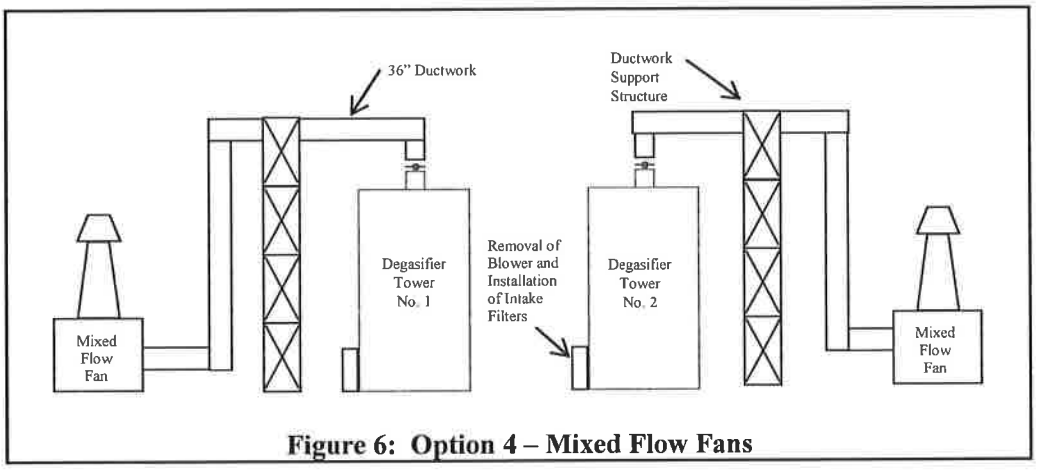

Figure 6: Option 4 – Mixed Flow Fans

3. Odor Control Treatment Options

While there are many types of systems to treat hydrogen sulfides in air, the two most widely used and the ones that are recommended for this large volume of air flow stream from the degasifiers are chemical wet scrubbers and biological scrubbers. A brief description of each is provided below along with the require equipment/facilities. A summary of their advantages and disadvantages are provided in **Table 1**.

Table 1: Summary of Chemical and Biological Scrubber Advantages and Disadvantages

Treatment	Cost Factors	Advantages	Disadvantages
Chemical Wet Scrubbers	Moderate Capital Cost and high O&M costs	• Effective and reliable • Long track record • Flexible to change in hydrogen sulfide loading	• High pH spent chemical must be disposed of that can scale. • High chemical consumption and cost • Packing fouling
Biological Scrubbers	Low capital and low O&M costs	• Simple • Minimal operation and maintenance	• Low pH waste stream must be disposed of. • Requires periodic media replacement • Does not react quickly to hydrogen sulfide load changes. • Larger footprint • Potential for flow channeling

Option 5 - Chemical Wet Scrubbers. The chemical wet scrubber consists of vessel(s) with an air inlet, packing bed, packing irrigation system, and air outlet. The chemical wet scrubbing for hydrogen sulfide uses a caustic scrubbing solution in contact with the contaminant-laden air causing a mass transfer between the two media in which the contaminant molecules are absorbed into the liquid. The packing bed is the region where this mass transfer occurs. The scrubbing solution is usually recirculated through the system while its pH and/or oxidation reduction potential (ORP) are continually monitored and adjusted. Often the system is comprised of two towers in series to improve the removal efficiency. Sometimes chlorine is used to oxide the hydrogen sulfide in a second stage unit. Sodium hydroxide (caustic) and/or

sodium hypochlorite (chlorine) has to be continuously added to the system. A high pH (pH of 10 to 12) waste stream of 10 to 50 gpm is generated and will need to be disposed.

In order to install a chemical wet scrubber for the CSID RO WTP, the following would be required.

- Concrete pad to house the scrubber vessels
- Two chemical scrubbers with packing, recirculation pumps, pH meter/probe, and ORP meters/probe. Scrubber system is assumed to be two stage system providing 90 to 95% removal of hydrogen sulfide from the inlet air.
- Ductwork from the two existing degasifiers to the new scrubber vessels
- Support structure for ductwork.
- Addition of a sodium hydroxide system dedicated to the chemical scrubbers consisting of three feed pumps and 1000 gallon HDPE tank. It assumed that the new system can be housed in the chemical room of the RO building. At 50% caustic, a 1000 gallon tank would be required.
- Addition of a sodium hypochlorite system dedicated to the chemical scrubbers consisting of two feed pumps. It assumed that the new system can be housed in the sodium hypochlorite storage building. Approximately 1700 gallons per month of 12% sodium hypochlorite will be needed. It is assumed that the existing bulk sodium hypochlorite tanks can accommodate the extra demand but this will need to be confirmed.

Option 5 - Biological Scrubbers. Biological scrubbers use a porous media on which biomass grows that absorbs hydrogen sulfide from an airstream. The media can be organic (wood chips, soil, compost) or plastic and is housed in vessel(s) similar to the chemical scrubbers. Recirculation pumps are used to keep the media moist. Nutrients are added to promote the growth of the biomass. A low pH (pH of 3 to 4) waste stream of approximately 10 gpm is generated from the decomposition of the hydrogen sulfide. In the past, biological scrubbers have not been used for odor control on RO WTP but are gaining popularity due to associated low operation and maintenance costs. Hydrogen sulfide removals are on par with chemical scrubbers but they are not as flexible in completely treating changes in hydrogen sulfide concentrations.

Biological scrubbers were originally specified for the RO system by CH2M Hill but were eliminated. The original system called for three biofilter towers to treat a peak concentration of 100 ppmv of hydrogen sulfide. However; the actual hydrogen sulfide concentration lower and is on the order of 60 ppmv and potentially can result in a smaller system.

In order to install a biological scrubber for the CSID RO WTP, the following would be required.

- Concrete pad to house the scrubber vessels
- Two or three biofilter scrubber towers with media, recirculation pumps, and nutrient feed systems.
- Ductwork from the two existing degasifiers to the new scrubber vessels
- Support structure for ductwork.
- Addition of a sodium hydroxide system dedicated to the chemical scrubbers consisting of three feed pumps and 1000 gallon HDPE tank. It assumed that the new system can be housed in the chemical room of the RO building. At 50% caustic, a 1000 gallon tank would be required.
- Addition of a sodium hypochlorite system dedicated to the chemical scrubbers consisting of two feed pumps. It assumed that the new system can be housed in the sodium hypochlorite storage building. Approximately 1700 gallons per month of 12% sodium hypochlorite will be needed. It is assumed that the existing bulk sodium hypochlorite tanks can accommodate the extra demand but this will need to be confirmed.

4. Order of Magnitude Cost Estimate

A summary of the order of magnitude cost estimate for each option discussed above is provided in **Table 2** below. Additional detail on the cost assumptions can be found in **Attachment A**.

Table 2: Summary of Order of Magnitude Cost Estimated for RO WTP Degasifier Odor Control

Improvements	Estimated Construction Cost	15% Contingency	Estimated Engineering Costs	Order of Magnitude Cost
Option 1: No-Loss Stack on Each Degasifier	$46,102	$6,900	$4,200	$57,202
Option 2: Single No-Loss Stack with 36" Ductwork	$190,080	$28,500	$36,800	$255,380
Option 3: Single No-Loss Stack with 42" Ductwork and Future Scrubber Connection	$202,669	$30,400	$37,675	$270,744
Option 4: Mixed Flow Fan with 36" Ductwork	$537,412	$80,600	$73,600	$691,612
Option 5: Chemical Scrubbers	$1,157,750	$173,700	$122,000	$1,453,450
Option 6: Biological Scrubbers	$1,275,585	$191,300	$95,600	$1,562,485

Note: Cost does not include Bond or Permitting Fees.

For each option, a conceptual scope of work was developed. Based on the conceptual scope of work, an order of magnitude cost was estimated assuming the project will be executed in a design-build fashion. For a better cost estimate, the scope of work will need to be investigated in more depth and a final design established. The cost estimates provided are preliminary order of magnitude estimates based on generalized projections for equipment needs, experience with similar projects, and some vendor/ manufacturers prices for assumed equipment. Estimates prepared in this manner are normally within +30 percent to -30 percent of actual cost. Final cost will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, and project delivery methods.

5. Recommendation

For the six options considered in this TM, Option 1 is recommended if it can be approved by the Health Department. Option 1 (No-Loss Stack on Each Degasifier) represents a simple low cost method that can be implemented quickly and appears to have a good chance of dissipating the hydrogen sulfide gases. This option should be attempted before more costly options.

If Option 1 is not approved by the Health Department, there will be difficulty in approving Options 2 and 3. Option 4 (Mixed Flow Fan) and Option 6 (Biological Scrubbers) should then be considered because of their relatively low operation and maintenance cost. Of these two options, Option 6 would be recommended as it provides removal of hydrogen sulfide instead of dilution.

Attachment A
Order of Magnitude Cost Estimate

Summary of Order of Magnitude Costs for Odor Control Optons

Improvements	Estimated Construction Cost	15% Contingency	Estimated Engineering Costs	Estimated Total Cost
Option 1: No-Loss Stack on Each Degasifier	$46,102	$6,900	$4,200	$57,202
Option 2: Single No-Loss Stack with 36" Ductwork	$190,080	$28,500	$36,800	$255,380
Option 3: Single No-Loss Stack with 42" Ductwork and Future Scrubber Connection	$202,669	$30,400	$37,675	$270,744
Option 4: Mixed Flow Fan with 36" Ductwork	$537,412	$80,600	$73,600	$691,612
Option 5: Chemical Scrubbers	$1,157,750	$173,700	$122,000	$1,453,450
Option 6: Biological Scrubbers	$1,275,585	$191,300	$95,600	$1,562,485

Note: Does not including bonding cost or Health Department permitting fees.

Option 1 - 30-inch No-Loss Stack on Each Degasifier
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Stack Replacement					
No-Loss Stack	2	EA	$11,946.20	$23,892.40	
Crane - 1 day	1	DY	$1,500.00	$1,500.00	
Manlift - 1 day	1	DY	$610.00	$610.00	
Disposal of Old stacks	1	LS	$500.00	$500.00	
3-man Const Crew	4	DY	$1,400.00	$5,600.00	
Project PM and Construction Oversite	1	LS	$ 5,900.00	$5,900.00	
Subtotal					**$38,002.40**
Subtotal Construction Direct Costs					**$38,002.00**
Indirect Construction Cost					
Building Permit (0.50% of Subtotal) - NA				$0.00	
Builder's Risk Insurance (1.5% of Subtotal)				$600.00	
General Liability Insurance (1% of Subtotal)				$400.00	
Mobilization (3% of Subtotal)				$1,100.00	
Subtotal Prior to OH&P					**$40,102.00**
OH & P					
GC General Field Conditions (7% of Subtotal)				$2,800.00	
GC Indirect, OH & Profit (8% of Subtotal)				$3,200.00	
Subtotal After OH&P					**$46,102.00**
Construction Contingency					
Contingency (15% of Construction Subtotal)				$6,900.00	
Total Construction Costs					**$53,002.00**
Non Construction Cost					
Engineering				$4,200.00	
Total Engineering & Construction					**$57,202.00**
Notes:					

Option2 - 36-inch Duct Manifold and Single No-Loss Stack
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Manifolded Exhaust Stack to Single No-Loss Stack					
No-Loss Stack	1	EA	$11,946.20	$11,946.20	
Chainwheel Operator for dampener	2	EA	$2,500.00	$5,000.00	
36-inch Duct Manifold	1	EA	$44,884.00	$44,884.00	
Duct/Stack Support Structure	1	EA	$50,000.00	$50,000.00	
Crane	3	DY	$1,500.00	$4,500.00	
Manlift	3	WK	$950.00	$2,850.00	
Disposal of Old stacks	1	LS	$500.00	$500.00	
3-man Const Crew	16	DY	$1,400.00	$22,400.00	
Welder	5	DY	$1,000.00	$5,000.00	
Project PM and Construction Oversite	1	LS	$ 8,800.00	$8,800.00	
Subtotal					**$155,880.20**
Subtotal Construction Direct Costs					**$155,880.00**
Indirect Construction Cost					
Building Permit (0.50% of Subtotal)				$800.00	
Builder's Risk Insurance (1.5% of Subtotal)				$2,300.00	
General Liability Insurance (1% of Subtotal)				$1,600.00	
Mobilization (3% of Subtotal)				$4,700.00	
Subtotal Prior to OH&P					**$165,280.00**
OH & P					
GC General Field Conditions (7% of Subtotal)				$11,600.00	
GC Indirect, OH & Profit (8% of Subtotal)				$13,200.00	
Subtotal After OH&P					**$190,080.00**
Construction Contingency					
Contingency (15% of Construction Subtotal)				$28,500.00	
Total Construction Costs					**$218,580.00**
Non Construction Cost					
Engineering/Permitting				$36,800.00	
Total Engineering & Construction					**$255,380.00**
Notes:					

Option 3 - 42-inch Duct Manifold with Single No-Loss Stack and Future Connection for Scurbbers

Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Manifolded Exhaust Stack to Single No-Loss Stack					
No-Loss Stack	1	EA	$11,727.20	$11,727.20	
36 & 42-inch Duct Manifold	1	EA	$49,760.00	$49,760.00	
42-inch Tee and blind flange	1	EA	$1,731.40	$1,731.40	
Chainwheel Operator for dampener	2	EA	$2,500.00	$5,000.00	
Duct/Stack Support Structure	1	EA	$50,000.00	$50,000.00	
Crane	3	DY	$1,500.00	$4,500.00	
Manlift	3	WK	$950.00	$2,850.00	
Disposal of Old stacks	1	LS	$500.00	$500.00	
3-man Const Crew	18	DY	$1,400.00	$25,200.00	
Welder	5	DY	$1,000.00	$5,000.00	
Project PM and Construction Oversite	1	LS	$ 10,000.00	$10,000.00	
Subtotal					**$166,268.60**
Subtotal Construction Direct Costs					**$166,269.00**
Indirect Construction Cost					
Building Permit (0.50% of Subtotal)				$800.00	
Builder's Risk Insurance (1.5% of Subtotal)				$2,500.00	
General Liability Insurance (1% of Subtotal)				$1,700.00	
Mobilization (3% of Subtotal)				$5,000.00	
Subtotal Prior to OH&P					**$176,269.00**
OH & P					
GC General Field Conditions (7% of Subtotal)				$12,300.00	
GC Indirect, OH & Profit (8% of Subtotal)				$14,100.00	
Subtotal After OH&P					**$202,669.00**
Construction Contingency					
Contingency (15% of Construction Subtotal)				$30,400.00	
Total Construction Costs					**$233,069.00**
Non Construction Cost					
Engineering/Permitting				$37,675.00	
Total Engineering & Construction					**$270,744.00**
Notes:					

Option4 - Mixed Flow Fans
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Manifolded Exhaust Stack to Single No-Loss Stack					
Mixed Flow Fan	2	EA	$35,351.00	$70,702.00	
36-inch Duct to Fan	2	EA	$54,855.00	$109,710.00	
Sitework/Slab	1	EA	$17,250.00	$17,250.00	
Duct/Stack Support Structure	2	EA	$50,000.00	$100,000.00	
Existing Blower Removal/Intake Modifications	2	EA	$12,000.00	$24,000.00	
Disposal of Old stacks	1	LS	$500.00	$500.00	
Crane	4	DY	$1,500.00	$6,000.00	
Manlift	5	WK	$950.00	$4,750.00	
3-man Const Crew	40	DY	$1,400.00	$56,000.00	
Welder	5	DY	$1,000.00	$5,000.00	
Electrical/I&C	1	LS	$23,000.00	$23,000.00	
SCADA/Programming	1	LS	$11,500.00	$11,500.00	
Project PM and Construction Oversite	1	LS	$12,500.00	$12,500.00	
Subtotal					**$440,912.00**
Subtotal Construction Direct Costs					**$440,912.00**
Indirect Construction Cost					
Building Permit (0.50% of Subtotal)				$2,200.00	
Builder's Risk Insurance (1.5% of Subtotal)				$6,600.00	
General Liability Insurance (1% of Subtotal)				$4,400.00	
Mobilization (3% of Subtotal)				$13,200.00	
Subtotal Prior to OH&P					**$467,312.00**
OH & P					
GC General Field Conditions (7% of Subtotal)				$32,700.00	
GC Indirect, OH & Profit (8% of Subtotal)				$37,400.00	
Subtotal After OH&P					**$537,412.00**
Construction Contingency					
Contingency (15% of Construction Subtotal)				$80,600.00	
Total Construction Costs					**$618,012.00**
Non Construction Cost					
Engineering/Permitting				$73,600.00	
Total Engineering & Construction					**$691,612.00**
Notes:					

Option 5 - Chemical Scrubbers
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Chemical Scrubbers					
Chemical Scrubber - Two towers (2-Stage), recirulation pumps.	1	EA	$609,500.00	$609,500.00	
Chainwheel Operator for dampener	2	EA	$2,500.00	$5,000.00	
Duct/Stack Support Structure	1	EA	$50,000.00	$50,000.00	
Sitework/Slab	1	EA	$34,500.00	$34,500.00	
Caustic System Modifications	1	EA	$28,750.00	$28,750.00	
Sodium Hypochlorite Storage System Mods	1	EA	$40,250.00	$40,250.00	
Wasteline	1	EA	$5,000.00	$5,000.00	
Disposal of Old stacks	1	LS	$500.00	$500.00	
Crane	5	DY	$1,500.00	$7,500.00	
Manlift	8	WK	$950.00	$7,600.00	
3-man Const Crew	60	DY	$1,400.00	$84,000.00	
Welder	5	DY	$1,000.00	$5,000.00	
Electrical/I&C	1	LS	$34,500.00	$34,500.00	
SCADA/Programming	1	LS	$11,500.00	$11,500.00	
Project PM and Construction Oversite	1	LS	$26,250.00	$26,250.00	
Subtotal					**$949,850.00**
Subtotal Construction Direct Costs					**$949,850.00**
Indirect Construction Cost					
Building Permit (0.50% of Subtotal)				$4,700.00	
Builder's Risk Insurance (1.5% of Subtotal)				$14,200.00	
General Liability Insurance (1% of Subtotal)				$9,500.00	
Mobilization (3% of Subtotal)				$28,500.00	
Subtotal Prior to OH&P					**$1,006,750.00**
OH & P					
GC General Field Conditions (7% of Subtotal)				$70,500.00	
GC Indirect, OH & Profit (8% of Subtotal)				$80,500.00	
Subtotal After OH&P					**$1,157,750.00**
Construction Contingency					
Contingency (15% of Construction Subtotal)				$173,700.00	
Total Construction Costs					**$1,331,450.00**
Non Construction Cost					
Engineering/Permitting				$122,000.00	
Total Engineering & Construction					**$1,453,450.00**
Notes:					

Option 6 - Biological Scrubbers
Order of Magnitude Capital Cost Estimate

Item	Qty	Unit	Unit Cost	Total Amount	Subtotal
Biological Scrubbers					
Biological Scrubber System - Two towers, Two pumps, two control panels, Ductwork	1	EA	$810,635.00	$810,635.00	
Sitework/Slab (37' x 66' x 1')	1	EA	$34,500.00	$34,500.00	
Chainwheel Operator for dampener	2	EA	$2,500.00	$5,000.00	
Duct/Stack Support Structure	1	EA	$50,000.00	$50,000.00	
Wasteline	1	EA	$5,000.00	$5,000.00	
Disposal of Old stacks	1	LS	$500.00	$500.00	
Crane	5	DY	$1,500.00	$7,500.00	
Manlift	8	WK	$950.00	$7,600.00	
3-man Const Crew	45	DY	$1,400.00	$63,000.00	
Welder	5	DY	$1,000.00	$5,000.00	
Electrical/I&C	1	LS	$23,000.00	$23,000.00	
SCADA/Programming	1	LS	$11,500.00	$11,500.00	
Project PM and Construction Oversite	1	LS	$23,250.00	$23,250.00	
Subtotal					**$1,046,485.00**
Subtotal Construction Direct Costs					**$1,046,485.00**
Indirect Construction Cost					
Building Permit (0.50% of Subtotal)				$5,200.00	
Builder's Risk Insurance (1.5% of Subtotal)				$15,700.00	
General Liability Insurance (1% of Subtotal)				$10,500.00	
Mobilization (3% of Subtotal)				$31,400.00	
Subtotal Prior to OH&P					**$1,109,285.00**
OH & P					
GC General Field Conditions (7% of Subtotal)				$77,600.00	
GC Indirect, OH & Profit (8% of Subtotal)				$88,700.00	
Subtotal After OH&P					**$1,275,585.00**
Construction Contingency					
Contingency (15% of Construction Subtotal)				$191,300.00	
Total Construction Costs					**$1,466,885.00**
Non Construction Cost					
Engineering/Permitting				$95,600.00	
Total Engineering & Construction					**$1,562,485.00**
Notes:					

Financials

Coral Springs Improvement District

Financial Reporting
for
OCTOBER 2012

November 19, 2012
Board of Supervisors Meeting

Coral Springs Improvement District

Balance Sheet
All Fund Types and Account Groups

October 31, 2012

Description	General Fund	Water & Sewer Fund	General Fixed Assets	Totals
ASSETS				
Cash & Cash Equivalents:				
Checking Accounts	$ 3,741,742	$ 8,272,257	$ -	$ 12,013,999
Cash on Hand	-	500	-	500
Money Market Accounts	3,232,938	4,749,728	-	7,982,666
State Board of Admin. (Net)	10,492	61,836	-	72,328
Certificates of Deposit	258,849	257,486	-	516,335
Restricted Cash	-	-	-	-
Restricted Investments	-	9,508,839	-	9,508,839
Accounts Receivable	-	1,061,003	-	1,061,003
Unbilled Utility Revenues Receivable	-	680,051	-	680,051
Accrued Interest Receivable	522	-	-	522
Due from Other Funds	-	-	-	-
Prepaid Expenses	32,069	359,362	-	391,431
Bond Costs (2007 Series)	-	888,758	-	888,758
Bond Finance Costs	-	47,398	-	47,398
Land	-	361,739	553,200	914,939
Easements	-	394,998	-	394,998
Meters in Field (Net)	-	102,975	-	102,975
Machinery & Equipment (Net)	-	220,856	646,005	866,861
Imp. Other than Bldgs (Net)	-	33,339,866	6,633,976	39,973,842
Buildings (Net)	-	188,189	-	188,189
Construction in Progress	-	27,486,314	-	27,486,314
Total Assets	**$ 7,276,612**	**$ 87,982,155**	**$ 7,833,181**	**$ 103,091,948**

Coral Springs Improvement District
Balance Sheet
All Fund Types and Account Groups

October 31, 2012

Description	General Fund	Water & Sewer Fund	General Fixed Assets	Totals
LIABILITIES				
Accounts Payable	$ 22,061	$ 119,060	$ -	$ 141,121
Contracts Payable	-	-	-	-
Retainage Payable	-	-	-	-
Accrued P & I Payable	-	-	-	-
Accrued Int Payable-2002 Series	-	61,875		61,875
Accrued Int Payable-2007 Series	-	824,231	-	824,231
Accrued R & R Reserve	-	-	-	-
Accrued Wages Payable	5,400	38,554	-	43,954
Accrued Vac/Sick Time Payable	-	146,510	-	146,510
Pension Payable	-	4,462	-	4,462
Utility Tax Payable	-	-	-	-
Payroll Taxes Payable	-	-	-	-
Deposits	2,500	491,029	-	493,529
Due to Other Funds	-	-	-	-
Bonds Payable	-	47,241,667	-	47,241,667
Bond Discount-2007 Series	-	(751,819)	-	(751,819)
Deferred Loss (2002 Series)	-	(94,983)	-	(94,983)
Total Liabilities	29,961	48,080,586	-	48,110,547
FUND BALANCE / NET ASSETS				
Fund Balance:				
Unspendable	32,069	-	-	32,069
Assigned	6,554,732			6,554,732
Unassigned	659,850	-	-	659,850
Net Assets	-	39,901,569	-	39,901,569
Investment in GFA	-	-	7,833,181	7,833,181
Total Fund Balance / Net Assets	7,246,651	39,901,569	7,833,181	54,981,401
Total Liabilities & Fund Balance / Net Assets	**$ 7,276,612**	**$ 87,982,155**	**$ 7,833,181**	**$ 103,091,948**

Coral Springs Improvement District
General Fund
Statement of Revenues, Expenditures and Change In Fund Balance

For the Period Ending October 31, 2012

	Adopted Budget FYE 2013	Prorated Budget Thru 10-31-12	Actual 1 Month Ending 10-31-12	Variance Favorable (Unfavorable)
REVENUES:				
Assessments (Net)	$ 2,074,946	$ -	$ -	$ -
Permit Review Fees	1,200	100	-	(100)
Miscellaneous Revenue	-	-	-	-
Interest Income	2,400	200	814	614
Unrealized Loss-SBA	-	-	-	-
Shared Personnel Rev.	28,387	2,366	2,366	-
Carry Forward Assigned Funds	275,900	-	-	-
Total Revenues	**2,382,833**	**2,666**	**3,180**	**514**
EXPENDITURES:				
Administrative				
Supervisor Fees	7,200	600	600	-
Salaries/Wages	95,883	7,376	7,238	138
Special Pay	224	-	-	-
FICA Taxes	7,887	607	600	7
Pension Expense	9,588	738	436	302
Health Insurance	25,189	2,099	2,212	(113)
Workers Comp. Ins.	2,576	215	20	195
Engineering Fees	12,000	1,000	300	700
Attorney Fees	36,000	3,000	2,500	500
Special Consulting Services	50,000	-	-	-
Annual Audit	7,868	656	-	656
Actuarial Computation-OPEB	454	-	-	-
Management Fees	48,000	4,000	4,000	-
Communications-Telephone	2,961	247	247	-
Postage	636	53	53	-
Printing & Binding	2,520	210	210	-
Building Rent	12,000	1,000	1,000	-
Insurance	28,326	2,361	299	2,062
Legal Advertising	1,980	165	-	165
Contingencies/Other Current Charges	2,400	200	253	(53)
Fire & EMS Assessments	7,847	-	-	-
Technology Expense	22,000	1,833	1,833	-
Digital Record Management	25,000	-	-	-
Office Supplies	3,420	285	285	-
Dues, Subscriptions	5,000	417	-	417
Promotional Expenses	12,000	-	-	-
Capital Outlay	-	-	-	-
Total Administrative	**428,959**	**27,062**	**22,086**	**4,976**

Coral Springs Improvement District
General Fund
Statement of Revenues, Expenditures and Change in Fund Balance

For the Period Ending October 31, 2012

	Adopted Budget FYE 2013	Prorated Budget Thru 10-31-12	Actual 1 Month Ending 10-31-12	Variance Favorable (Unfavorable)
Field Operations				
Salaries and Wages	245,126	18,856	18,726	130
Special Pay	1,016	-	-	-
FICA Taxes	18,752	1,442	1,413	29
Pension Expense	24,512	1,886	1,124	762
Health Insurance	55,688	4,641	5,024	(383)
Worker's Comp. Insurance	6,269	522	822	(300)
Water Quality Testing	4,000	333	-	333
Communications-Radios/Cellphones	1,104	92	75	17
Electric Expense	1,383	115	98	17
Rentals & Leases	20,000	1,667	-	1,667
Insurance	20,564	1,714	1,775	(61)
R & M - General	21,291	1,774	4,306	(2,532)
R & M - Culvert Inspection & Cleaning	65,000	-	-	-
R & M - Canal Dredging & Maintenance	200,000	-	-	-
Operating Supplies - General	18,375	1,531	48	1,483
Operating Supplies - Chemicals	137,036	11,420	18,932	(7,512)
Operating Supplies - Uniforms	1,678	140	87	53
Operating Supplies - Motor Fuels	44,210	3,684	700	2,984
Dues, Licenses	1,020	85	-	85
Capital Outlay-Equipment	850	-	-	-
Capital Improvements	316,000	-	-	-
Total Field	**1,203,874**	**49,902**	**53,130**	**(3,228)**
Total Expenditures	**1,632,833**	**76,964**	**75,216**	**1,748**
Reserves:				
Reserved for 1st Qtr Operating	450,000	37,500	-	37,500
Reserved for Projects & Emergencies	300,000	25,000	-	25,000
Total Reserves	750,000	62,500	-	62,500
Total Expenditures & Reserves	2,382,833	139,464	75,216	64,248
Excess Revenues Over (Under) Expenditures & Reserves	$ -	$ (136,798)	$ (72,036)	$ 64,762
Fund Balance Beginning			7,318,687	
Fund Balance Ending			$ 7,246,651	

Coral Springs Improvement District

Water and Sewer Fund

Statement of Revenues, Expenses and Change in Net Assets

For the Period Ending October 31, 2012

	Adopted Budget FYE 2013	Prorated Budget Thru 10-31-12	Actual 1 Month Ending 10-31-12	Variance Favorable (Unfavorable)
REVENUES:				
Water Revenue	$ 6,467,008	$ 538,917	$ 502,271	$ (36,646)
Sewer Revenue	5,852,977	487,748	469,023	(18,725)
Standby Revenue	1,872	156	209	53
Processing Fees	12,000	1,000	1,140	140
Lien Information Fees	9,000	750	1,300	550
Deliquent Fees	50,000	4,167	5,860	1,693
Contract Utility Billing Services	48,358	4,030	12,391	8,361
Contract HR & Payroll Services	10,805	900	900	-
Facility Connection Fees	-	-	-	-
Meter Fees	1,000	83	-	(83)
Line Connection Fees	-	-	-	-
Interest Income-SBA	-	-	1	1
Interest Income-2007 Bonds	-	-	475	475
Interest Income-Other Restricted	-	-	276	276
Interest Income-Other	-	-	1,129	1,129
Unrealized Gain (Loss)-SBA	-	-	-	-
Rental Income	53,911	4,493	4,581	88
Technology Sharing Revenue	21,138	1,762	1,833	71
Misc. Revenues	12,000	1,000	1,173	173
Transfer from R & R Fund	467,800	-	-	-
Carryforward Prior Yr Fund Balance	115,420	-	-	-
Total Revenues	13,123,289	1,045,006	1,002,562	(42,444)

Coral Springs Improvement District

Water and Sewer Fund

Statement of Revenues, Expenses and Change in Net Assets

For the Period Ending October 31, 2012

	Adopted Budget FYE 2013	Prorated Budget Thru 10-31-12	Actual 1 Month Ending 10-31-12	Variance Favorable (Unfavorable)
EXPENSES:				
Administrative				
Salaries/Wages/Overtime	584,936	44,995	44,430	565
Contract Personnel	-	-	-	-
Special Pay	1,742	-	-	-
FICA Taxes	44,748	3,442	3,365	77
Pension Expense	58,494	4,500	2,526	1,974
Health Insurance	102,911	8,576	8,612	(36)
Workers Comp. Insurance	14,594	1,216	109	1,107
Unemployment Comp	3,000	250	-	250
Engineering Fees	12,000	1,000	700	300
Trustee Fees and Other Exp.	18,900	1,575	-	1,575
Attorney Fees	30,000	2,500	750	1,750
Special Council Services	50,000	4,167	-	4,167
Travel & Per Diem	5,000	417	-	417
Annual Audit	11,640	970	-	970
Actuarial Computation-OPEB	1,800	-	-	-
Management Fees	72,000	6,000	6,000	-
Telephone	7,200	600	621	(21)
Postage	50,000	4,167	7,842	(3,675)
Printing & Binding	24,000	2,000	565	1,435
Electric	14,400	1,200	1,100	100
Rentals and Leases	3,600	300	227	73
Insurance	19,313	1,609	1,021	588
Repair and Maintenance	18,460	1,538	530	1,008
Legal Advertising	2,400	200	-	200
Other Current Charges	24,000	2,000	2,224	(224)
Credit Card Merchant Fees	48,000	4,000	5,183	(1,183)
Technology Expense	40,000	3,333	926	2,407
Digital Record Management	20,000	1,667	-	1,667
Toilet Rebate	-	-	-	-
Office Supplies	10,000	833	961	(128)
Dues, Memberships, Etc	6,000	500	2,536	(2,036)
Promotional Expenses	18,000	-	-	-
Capital Outlay	5,000	-	-	-
Total Administrative	1,322,138	103,555	90,228	13,327

Coral Springs Improvement District

Water and Sewer Fund

Statement of Revenues, Expenses and Change in Net Assets

For the Period Ending October 31, 2012

	Adopted Budget FYE 2013	Prorated Budget Thru 10-31-12	Actual 1 Month Ending 10-31-12	Variance Favorable (Unfavorable)
Plant Operations				
Salaries and Wages	1,415,763	108,905	102,568	6,337
Special Pay	2,653	-	-	-
FICA Taxes	106,235	8,172	7,769	403
Pension Expense	131,731	10,133	5,780	4,353
Health Insurance	278,676	23,223	22,743	480
Worker's Comp. Insurance	36,472	3,039	3,365	(326)
Water Quality Testing	163,174	13,598	3,463	10,135
Naturescape Irrigation Serv	3,000	-	-	-
Telephone	9,240	770	319	451
Electric Expense	848,209	70,684	41,000	29,684
Insurance	221,179	18,432	17,587	845
Repair & Maint-General	344,964	28,747	54,996	(26,249)
Repair & Maint-Filters for Nano Plant	180,452	-	-	-
Sludge Management-Water	58,954	4,913	-	4,913
Sludge Management-Sewer	249,600	20,800	-	20,800
Advertisment for Employment	6,000	500	-	500
Office Supplies	6,900	575	299	276
Operating Supplies-General	21,500	1,792	7,300	(5,508)
Operating Supplies-Chemicals	480,860	40,072	28,462	11,610
Operating Supplies-Uniforms	7,000	583	530	53
Operating Supplies-Motor Fuels	176,295	14,691	376	14,315
Dues, Licenses, Etc.	33,866	2,822	1,169	1,653
Capital Outlay	336,546	-	-	-
Renewal & Replacement Expense	467,800	-	-	-
Total Plant Operations	5,587,069	372,451	297,726	74,725

Coral Springs Improvement District

Water and Sewer Fund

Statement of Revenues, Expenses and Change in Net Assets

For the Period Ending October 31, 2012

	Adopted Budget FYE 2013	Prorated Budget Thru 10-31-12	Actual 1 Month Ending 10-31-12	Variance Favorable (Unfavorable)
Field Operations				
Salaries/ Wages/Overtime	639,110	49,162	44,042	5,120
Temporary Help	37,440	-	-	-
Special Pay	2,086	1,700	-	1,700
FICA Taxes	48,489	3,730	3,302	428
Pension Expense	58,868	4,528	2,643	1,885
Health Insurance	157,644	13,137	13,551	(414)
Worker's Comp. Insurance	16,291	1,358	2,167	(809)
Telephone	10,800	900	350	550
Electric	132,000	11,000	13,300	(2,300)
Rent Expense-SCADA	60,000	5,000	4,670	330
Insurance	37,921	3,160	3,143	17
Repair and Maintenace	199,846	16,654	886	15,768
Meters-Replacement Program	95,496	-	-	-
Meters-New Connections	4,100	-	-	-
Meters-Supplies	1,000	83	472	(389)
Office Supplies	4,800	400	17	383
Operating Supplies-General	18,500	1,542	2,604	(1,062)
Operating Supplies-Uniforms	5,394	450	410	40
Operating Supplies-Motor Fuels	42,275	3,523	5,886	(2,363)
Dues, Licenses, Etc	3,600	300	398	(98)
Capital Outlay	231,100	-	-	-
Renewal & Replacement	-	-	-	-
Total Field Operations	1,806,760	116,627	97,841	18,786
Total Operating Expenses	8,715,967	592,633	485,795	106,838
Reserves:				
Required Reserve for R & R	-	-	-	-
Total Operating Exp & Reserve	8,715,967	592,633	485,795	106,838
Available for Debt Service	4,407,322	452,373	516,767	64,394
Debt Service				
Principal				
2002 Series	1,880,000	156,667	156,667	-
2007 Series	-	-	-	-
Interest				
2002 Series	148,500	12,375	12,375	-
2007 Series	1,978,156	164,846	164,846	-
			-	
Total Debt Service	4,006,656	333,888	333,888	-
Excess Revenues (Expenses)	$ 400,666	$ 118,485	$ 182,879	$ 64,394
Net Assets Beginning			39,718,690	
Net Assets Ending			$ 39,901,569	

Coral Springs Improvement District

Water and Sewer Fund

Statement of Revenues, Expenses and Change in Net Assets

For the Period Ending October 31, 2012

	Adopted Budget FYE 2013	Prorated Budget Thru 10-31-12	Actual 1 Month Ending 10-31-12	Variance Favorable (Unfavorable)
Summary of Operations and Debt Service Coverage				
Revenues			1,002,562	
Operating Expenditures:				
Operating Expenditures-Admin			90,228	
Operating Expenditures-Plant			297,726	
Operating Expenditures-Field			97,841	
Total Operating Expenditures			485,795	
Required Reserve for R&R			-	
Total Operating Exp & Reserves			485,795	
				Debt Service Coverage
Available for Debt Service			516,767	1.55
Less: Debt Service			333,888	
Excess Revenues (Exp)			182,879	

CORAL SPRINGS IMPROVEMENT DISTRICT
ASSESSMENT COLLECTIONS FOR FYE 2013

October 31, 2012

Date	Assessments Collected (net of all Commissions & Fees)
10-15-2012	$ -
Totals	$ -

Coral Springs Improvement District

Check Registers

October 2012

Fund	Check Date	Check No.		Amount
General Fund	10-01-2012 thru 10-31-2012	2938 - 2953	$	108,352.73
Total			**$**	**108,352.73**
Water and Sewer	10-01-2012 thru 10-31-2012	13391 - 13557	$	1,347,815.24
Total			**$**	**1,347,815.24**

*** CHECK NOS. 002938-002953
CSID - GENERAL FUND
BANK A CHECKING - GENERAL F

CHECK DATE	VEND#	INVOICE DATE	INVOICE NUMBER	EXPENSED TO YRMO	FND	DPT	ACCT#	SUB	VENDOR NAME	STATUS	AMOUNT	CHECK AMOUNT	CHECK #
10/08/12	00023		121 NW 93RD TER PS 1 12000 SW 1ST ST PS 2						FLORIDA POWER & LIGHT CO.			98.55	002938
10/08/12	00064		TRASH SERV-CSID GF 09/12 TRASH SERV-PINETREE 09/12 TRASH SERV-SUNSHINE 09/12						WASTE MANAGEMENT			1,812.05	002939
10/11/12	00051		UNIFORMS 09/2012 GASOLINE 09/2012 NEXTEL 09/06/12 NATIONWIDE-NEWSLTR 09/12 SUNSENT-NOT 09/10 MEETING SUNSENT-NOT OF FY2013MEET SUNSENT-BID AQUAWEED CONT SAM'S-COOKIES/WTR 9/10/12 SAM'S-FIELD SUPP 09/23/12 AMEX-TIJ.TAXI LUNCH 9/12 PHONE 10/12 POSTAGE 10/12 PRINTING 10/12 RENT 10/12 TECH SHARING 10/12 OFFICE SUPPLIES 10/12 HEALTH INS - ADMIN 10/12 HEALTH INS - FIELD 10/12 GAP INS - ADMIN 10/12 GAP INS - FIELD 10/12						CORAL SPRINGS IMPROVEMENT DIST WS			13,743.30	002941
10/11/12	00248		LEGAL SERVICES 09/12						LEWIS, LONGMAN & WALKER, P.A.			2,752.02	002942
10/11/12	00008		FUEL FOR PUMP STATION						SUN GAS			2,098.46	002943
10/18/12	00267		PERM.APPR.CHASE BANK 9/12						GLOBALTECH			700.00	002944
10/18/12	00033		SHOP SUPPLIES DRAINAGE						HOME DEPOT			47.71	002945
10/18/12	00186		GEN'L ENGINEERING 09/12						MCKUNE & ASSOCIATES, INC.			300.00	002946
10/18/12	00232		FLAGS SHIPPING AND HANDLING						SMART FLAGS & BANNERS			278.50	002947
10/23/12	00271		DONATE-SHIRLEY FREDERICK						ST. PAUL'S EPISCOPAL CHURCH			25.00	002948
10/23/12	00270		DONATE-SHIRLEY FREDERICK						STEIN HOSPICE SERVICES			75.00	002949
10/29/12	00237		ALLIGARE 90 GLYPHOSATE						ALLIGARE, LLC			1,329.00	002950
10/29/12	00080		AMOUNT DUE WS 10/29/2012						CORAL SPRINGS IMPROVEMENT DIST WS			77,484.89	002951
10/29/12	00269		STILLING WELL-HYDROLOGIC						HYDROGAGE, INC.			3,608.25	002952
10/29/12	00037		MANAGEMENT FEES 10/12						SEVERN TRENT ENVIRONMENTAL SERVICES			4,000.00	002953
									TOTAL FOR BANK A			108,352.73	

CSID -----CSID---- KWOOD

CHECK DATE	VEND#	.....INVOICE..... DATE	NUMBER	...EXPENSED TO... YRMO	FND	DPT	ACCT#	SUB	VENDOR NAME	STATUS	AMOUNT	....CHECK..... AMOUNT	#
									TOTAL FOR REGISTER		108,352.73		

CHECK DATE	VEND#	INVOICE DATE	INVOICE NUMBER	EXPENSED TO YRMO	FND	DPT	ACCT#	SUB	VENDOR NAME	STATUS	AMOUNT	CHECK AMOUNT	CHECK #
10/04/12	01354												
			INS P/R DEDUCT 10/12										
			INS DB-M.POINTE 10/12										
			INS DB-PINETREE 10/12										
			INS W/S ADMIN 10/12										
			INS W/S PLT-WTR 10/12										
			INS W/S PLT-WW 10/12										
			INS W/S PLT-M 10/12										
			INS W/S FIELD 10/12										
			INS DB CSID GF ADM 10/12										
			INS DB CSID GF FLD 10/12						AMERICAN PUBLIC LIFE INSURANCE			1,730.17	013391
10/04/12	01314												
			CLASS 3 DIST SYS OPER LIC						BERRINGER, DAVID			50.00	013392
10/04/12	00352												
			UTILITY TAXES 09/12						CITY OF CORAL SPRINGS			49,450.82	013393
10/04/12	01155												
			TRAVELERS INS.PKG&WC FY13										
			LLOYDS LONDON PROP&MARINE										
			ACE AMER. POLL&STORAGE TK										
			FL TAXES & FEES						EGIS INSURANCE ADVISORS, LLC			363,671.00	013394
10/04/12	00615												
			MEMBERSHIP DUES SEPT.2012						FW&PCOA			600.00	013395
10/04/12	01356												
			TIRES FOR UNIT #45										
			TIRE DISPOSAL										
			NEW VALVE STEM										
			WHEEL BALANCE										
			OIL CHANGE										
			DISPOSAL FEE										
			ADDITIONAL OIL										
			SERVICE COUPON CREDIT										
			STATE TIRE FEE						GOLD COAST TIRE OF CORAL WEST			483.45	013396
10/04/12	01093												
			LANDSCAPE MAINT 09/12										
			LANDSCAPE MAINT 10/12						JLS LANDSCAPE SERVICES, INC.			7,800.82	013397
10/04/12	01341												
			WS-01/SWR MAIN CLEAN&INSP						LMK PIPE RENEWAL LLC			112,790.00	013398
10/04/12	01231												
			DISABILITY-M.FLORES 09/12						MUTUAL OF OMAHA			273.48	013399
10/04/12	00398												
			RETURN PMT ENVEL.10,000						NATIONWIDE GRAPHICS-USE VENDOR 1380			584.42	013400
10/04/12	01284												
			1.5 HR @ 8/28/12 CALL BOX										
			SERVICE CHARGE										
			CALL BOXES NEW										
			TECH TIME										
			TECH TIME 9/5/12										
			SERVICE CHARGE										
			SHIPPING						SAMCO SYSTEMS, INC.			6,681.62	013401
10/04/12	01375												
			SAND BLAST ON PLANT E						SOUTHLAND PAINTING CORP.			23,500.00	013402
10/04/12	00751												
			PRINCIPAL 2002 SER 10/12						US BANK			160,000.00	013403
10/04/12	01098												
			INTEREST 2002 SER 10/12						US BANK			12,375.00	013404

CHECK DATE	VEND#	.....INVOICE..... DATE	NUMBER	...EXPENSED TO... YRMO	FND	DPT	ACCT#	SUB	VENDOR NAME	STATUS	AMOUNT	....CHECK..... AMOUNT	#
10/04/12	01183												
			INTEREST 2007 SER 10/12						US BANK			164,847.00	013405
10/04/12	01330												
			STABILIZER										
			CALCIUM						CHAPPY'S POOL STORE			32.00	013406
10/04/12	01256												
			SOD/PIECE						CORAL SPRINGS NURSERY, INC.			94.50	013407
10/04/12	00017												
			OVERNIGHT SERV - CSID WS						FEDEX			113.99	013408
10/04/12	00018												
			PARTS FOR REPAIRS						FERGUSON ENTERPRISES, INC.			3,212.89	013409
10/04/12	00056												
			MONTIORING WELLS										
			MWC 01 SAMPLING EVENT										
			CBOD & TSS										
			DISINFECTION TEST										
			CBOD & TSS										
			CBOD & TSS										
			CBOD & TSS						FLORIDA SPECTRUM ENV. SERVICES, INC			1,335.60	013410
10/04/12	00950												
			11 DRAW ROLL CAB										
			DRILL										
			DIGITAL CLAMP						HARBOR FREIGHT TOOLS			216.47	013411
10/04/12	01046												
			SUB PUMP										
			USABB ADAPT						HD SUPPLY WATERWORKS, LTD			1,857.00	013412
10/04/12	00074												
			GASOLINE-FIELD										
			GASOLINE-PLANT						HOLLINGSWORTH OIL CO., INC			7,438.00	013413
10/04/12	00033												
			A/C WINDOW UNIT REPL.WP										
			ELECTRICAL SUPPLIES										
			MAT FOR WWTP						HOME DEPOT			611.08	013414
10/04/12	01308												
			FUEL @ 25.18 TN @ 23.50%=										
			RAIL/BARGE										
			LIME										
			ADJ TO ACTUAL						LHOIST NORTH AMERICA OF ALABAMA,LLC			6,139.54	013415
10/04/12	01051												
			MH 50 BULB										
			PHOTOCELL 120V KNUCKLE										
			PHOTO CELL POLE										
			MED PROTECTED										
			BULBS FOR CAT WALK WWTP						LIGHT BULBS UNLIMITED			268.94	013416
10/04/12	01150												
			5X8 PADS DUE BY SUNSHINE										
			PLANNER/LABELS- FIELD						OFFICE DEPOT			46.90	013417
10/04/12	00183												
			ASPHALT REPAIR-12 ADDRESS						PENCE SEALCOATING CORP.			5,100.00	013418
10/04/12	01259												
			SHUT OFF TOOL										
			FEED SCREW										
			THRUST WASHER										
			SPRING NUT										

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			DETENT SHAFT SET SCREW FREIGHT						POLLARDWATER.COM - EAST			406.65	013419
10/04/12	01326		6"INSTA VALVE INSERT LS32						RANGELINE TAPPING SERVICES INC.			1,850.00	013420
10/04/12	01042		12 X 10 BAUER PIPE-NANO 12" 45 DEGREE BEND-NANO 12"BAUER SOCK/FLANGE-NANO RENTAL PROTECTION-NANO						SUNBELT RENTALS			1,207.50	013421
10/04/12	00200		NOT.OF MEETING 09/10-GF NOT.OF MEETINGS FY2012-GF AQUAWEED CHEM.BID-DUE GF AQUAWEED CHEM.BID-PINETR AQUAWEED CHEM.BID-S.SHINE GARAGE REROOF WS-2012-04						SUN-SENTINEL (SOUTH FLORIDA)			1,188.40	013422
10/04/12	00066		5 GAL DISTILLED WATER 5 GAL BOTTLE DEPOSIT 5 GAL BOTTLE RETURN OIL/FUEL						ZEPHYRHILLS			5.79	013423
10/04/12	88888		600184211 MOLINA JOSE						*JOSE MOLINA			54.44	013424
10/04/12	88888		900494507 AMODIO RAYMOND						RAYMOND AMODIO			3.42	013425
10/04/12	88888		010436605 MAZZELLI EDWARD						EDWARD MAZZELLI			2.61	013426
10/04/12	88888		010881702 DOMINOS PIZZA #						DOMINOS PIZZA #5188			1,413.91	013427
10/04/12	88888		510927019 WESVY *SHANTE						*SHANTE WESBY			60.33	013428
10/04/12	88888		011631905 MARTZ BENNY						BENNY MARTZ			103.90	013429
10/04/12	88888		420103210 DAVIDOWITZ JOYC						JOYCE DAVIDOWITZ			64.32	013430
10/04/12	88888		520937104 *BAILEY MARIA						*MARIA BAILEY			14.19	013431
10/04/12	88888		840100004 MILIAN ANDRES						ANDRES MILIAN			5.19	013432
10/04/12	88888		840816303 LLOYD ROBERT						ROBERT LLOYD			1.53	013433
10/04/12	88888		940825604 COURTENAY CLIVE						CLIVE COURTENAY			35.70	013434
10/04/12	88888		350165804 GMAC MTG						GMAC MTG % DAVID A GOODMAN			65.82	013435
10/04/12	88888		050357104 HUGLEY MARVIN/M						MARVIN/MELINDA HUGLEY			62.07	013436
10/04/12	88888		650420106 PALACIO CAMILO						CAMILO PALACIO			68.33	013437
10/04/12	88888		260461910 ROBINS *MICHAEL						*MICHAEL ROBINS			27.75	013438
10/04/12	88888		060635006 GRAFMAN CINDY						*CINDY GRAFMAN			231.42	013439

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10/04/12	88888		180825104 GABRIEL SHAWN						*SHAWN GABRIEL			56.49	013440
10/04/12	88888		790200509 GOERNITZ *MARTI						*MARTIN GOERNITZ			37.24	013441
10/04/12	88888		090864606 LIEBERHER PHILI						PHILIP LIEBERHER			153.88	013442
10/04/12	88888		890904703 PECK MICHAEL						MICHAEL PECK			36.00	013443
10/04/12	88888		890911704 MONTEIRO HENRIQ						HENRIQUE B MONTEIRO			36.27	013444
10/05/12	99999		VOID CHECK						******INVALID VENDOR NUMBER******			.00	013445
10/05/12	01130		INTERBAY-POSTAGE SUPPLIES										
			TIJUANA TAXI-DUE BY GF										
			POSTAGE METER REFILL										
			NORTON RENEW-ANA VIVIAN										
			SE DESALT-JOANNE-MEMB/CEU										
			AMER.MEMB-ED SEDA WKSHOP										
			AMER.MEMB-DAVID-SEDA WKSP										
			SE DESALT-MEMBER-DAVID M										
			NORTON RENEW-ED STOVER										
			MICHAELS-PICT.FRAMES-NANO										
			TYPE II BARICADES										
			SHIPPING										
			TOW-1996 TRACTOR VIN 7546										
			TOW-1996 TRACTOR VIN 7546										
			OPENLEFT ASSY. 6"(2)										
			CONVENIENCE FEE										
			CELL PHONE CAR CHARGERS										
			PAKMAIL-DATA FLOW SYS RET						AMERICAN EXPRESS			8,554.48	013446
10/05/12	00023		ADMIN ELECTRIC 09/12										
			PLANT ELECTRIC 09/12										
			FIELD ELECTRIC 09/12						FLORIDA POWER & LIGHT CO.			55,626.28	013447
10/08/12	00940		XFER UB PAYMENT-SUNSHINE						CORAL SPRINGS IMPROVEMENT DISTRICT			52.00	013448
10/08/12	00514		SLUDGE MGMT SEWER 09/12						H & H LIQUID SLUDGE DISPOSAL, INC.			8,816.64	013449
10/08/12	00398		DOOR HANGERS-2 CASES										
			PRINTONIX P300/600RIBBONS						NATIONWIDE GRAPHICS-USE VENDOR 1380			999.89	013450
10/08/12	00155		ADMIN NEXTEL 09/12										
			PLANT NEXTEL 09/12										
			FIELD NEXTEL 09/12										
			NEXTEL 09/12 DUE CSID GF										
			NEXTEL 09/12 DUE SUNSHINE						NEXTEL COMMUNICATIONS			1,048.08	013451
10/08/12	00782		MONTHLY ASSESSMENT BILL.						SUNSHINE STATE ONE CALL OF FLA.			90.37	013452
10/08/12	01175		UNIFORMS-PLANT WATER										
			UNIFORMS-PLANT WASTE										
			UNIFORMS-PLANT MAINT										

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			UNIFORMS-FIELD										
			UNIFORMS-DUE GF						UNIFIRST CORPORATION			184.64	013453
10/08/12	00064		TRASH SERVICE 10/12						WASTE MANAGEMENT			486.44	013454
10/08/12	01011		COPY MACHINE LEASE 09/12						XEROX CORPORATION			238.77	013455
10/11/12	01085		BOLY EYE 3/8										
			DROP IN ANCHOR										
			WASHER FENDER 1/4"						A. TARLER, INC.			61.00	013456
10/11/12	01135		BAL.ON HYPO CONT.SYS-NANO										
			XL REPORTER-A FORMAT-NANO										
			TECH TIME 7/20/12-SCADA										
			TECH TIME 8/23/12-SCADA						ADS ENGINEERING, PLLC			4,120.00	013457
10/11/12	01040		INTERNET CONN 10/12						ADVANCED CABLE COMMUNICATIONS			168.53	013458
10/11/12	00005		COT SOD HYPO										
			FUEL						ALLIED UNIVERSAL CORP.			3,475.82	013459
10/11/12	00963		LONG DISTANCE 09/2012						AT & T (LONG DISTANCE)			37.34	013460
10/11/12	00889		HEX CAP 3/4- 10 X 3										
			FINISHED HEX NUT						BROWARD BOLT			175.00	013461
10/11/12	00056		COLIFORM										
			FLUORIDE										
			PLATE COUNT										
			COLIFORM										
			COLIFORM										
			CBOD & TSS										
			CBOD & TSS										
			CBOD & TSS										
			RO CONCENTRATE										
			CBOD & TSS						FLORIDA SPECTRUM ENV. SERVICES, INC			2,172.60	013462
10/11/12	01378		E PLANT PROJ 45% COMPLETE						HMT, INC.			50,859.00	013463
10/11/12	01329		IRA-10/09/12 PLAN 705880						VANTAGEPOINT TRANSFER AGENTS-705880			470.00	013464
10/11/12	01201		401-10/09/12 PLAN 106832						VANTAGEPOINT TRANSFER AGENTS-106832			6,276.50	013465
10/11/12	01202		457-10/09/12 PLAN 306644						VANTAGEPOINT TRANSFER AGENTS-306644			2,841.25	013466
10/11/12	01302		LEGAL/LEGISLATION 09/12						LEWIS, LONGMAN & WALKER, P.A.			453.85	013467
10/11/12	01302		BOND-LEGAL 09/12-NANO										
			BOND-LEGAL 09/12-PLANT F						LEWIS, LONGMAN & WALKER, P.A.			4,754.03	013468
10/11/12	01302		LEGAL SERVICES 09/12						LEWIS, LONGMAN & WALKER, P.A.			504.88	013469
10/11/12	01379		CREDIT DUE M.RICHARD 7/12						NSID - HERON BAY COMMONS			52.06	013470
10/11/12	00044		BANK ENDORSEMT STAMP-CSID										

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			BANK ENDORSEMT STAMP-NSID						OFFICE DEPOT CREDIT PLAN			45.98	013471
10/11/12	00425												
			ADMIN COFFEE SUPP/WATER										
			PLANT COFFEE SUPPLIES										
			FIELD COFFEE SUPPLIES										
			ADMIN-CLEANING/PAPER SUPP										
			FIELD-CLEANING/PAPER SUPP										
			COOKIES FOR 9/10 MEETING						SAM'S CLUB/GEMB			737.96	013472
10/11/12	01175												
			UNIFORMS-PLANT WATER										
			UNIFORMS-PLANT WASTE										
			UNIFORMS-PLANT MAINT										
			UNIFORMS-FIELD										
			UNIFORMS-DUE GF						UNIFIRST CORPORATION			188.82	013473
10/11/12	00996												
			SODA ASH						HARCROS CHEMICALS			1,739.50	013474
10/11/12	01239												
			MILEAGE AND ROAD EXPENSES										
			INSPECTION OF REPAIRS TO										
			REMOVE AND REPLACE FUEL P										
			DRAIN COOLANT,REMOVE AND										
			3803403RX WATER PUMP										
			3090942RX FUEL PUMP										
			4026171 FUEL GASKET										
			3046200 SIPDER JAW										
			3803894 SEAL KIT										
			O RING ELBOW 25038 10 C50										
			3109 FUEL FILTER										
			MOBILE PERMAZONE ANITFREE										
			SHOP SMALL PARTS AND FEES						RUSS DIESEL, INC.			2,497.75	013475
10/15/12	00822												
			AFLAC P/R DEDUCT 10/2012						AFLAC			2,601.86	013476
10/15/12	01373												
			PAYABLE DENTAL 11/12										
			ADMIN DENTAL 11/12										
			WATER DENTAL 11/12										
			WASTE DENTAL 11/12										
			MAINT DENTAL 11/12										
			FIELD DENTAL 11/12						AMERITAS LIFE INSURANCE CORP-DENTAL			3,661.72	013477
10/15/12	01374												
			PAYABLE VISION 11/12										
			ADMIN VISION 11/12										
			WATER VISION 11/12										
			WASTE VISION 11/12										
			MAINT VISION 11/12										
			FIELD VISION 11/12										
			MISC CREDIT ON ACCT 11/12						AMERITAS LIFE INSURANCE CORP-VISION			762.72	013478
10/15/12	00694												
			TECH SUPP 08/26-09/25/12										
			CREDIT FTP & DR PROGRAM						ASSOCIATED SYSTEMS, INC.			1,201.87	013479
10/15/12	00999												
			BACKGROUND CK-CSID WS-WTR						FEDERAL BACKGROUND SERVICES, INC			55.00	013480
10/15/12	00155												
			ADMIN NEXTEL 10/12										

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			PLANT-WATER NEXTEL 10/12 FIELD NEXTEL 10/12 NEXTEL 10/12 DUE CSID GF NEXTEL 10/12 DUE SUNSHINE						NEXTEL COMMUNICATIONS			283.81	013481
10/15/12	00874		TOP HEALTH-JAN-DEC 2013						OAKSTONE WELLNESS			359.40	013482
10/15/12	01264		ADMIN PHONE 10/12 FIELD PHONE 10/12						WINDSTREAM NUVOX, INC.			131.48	013483
10/15/12	01264		ADMIN PHONE 10/12 PLANT-WASTE PHONE 10/12 PLANT PHONE 10/12						WINDSTREAM NUVOX, INC.			174.09	013484
10/15/12	01264		ADMIN PHONE 10/12 FIELD PHONE 10/12						WINDSTREAM NUVOX, INC.			529.73	013485
10/17/12	00174		MONITOR FEE 10/1-12/31/12 MONITOR FEE 10/1-12/31/12						CYPRESS TRACE SECURITY INC.			141.00	013486
10/17/12	01360		REQS 302-304 REQ 307						GLOBALTECH			400.00	013487
10/17/12	01360		REV.O&M MANUAL DRAFT2NANO						GLOBALTECH			1,575.00	013488
10/17/12	01360		REIMB.PERMIT FEE WA-65						GLOBALTECH			50.00	013489
10/17/12	01378		E PLANT PROJ ADDL 25% COM ADJ TO 70% BASED ON CONTR						HMT, INC.			23,005.00	013490
10/17/12	01308		BOL 108590031-NOT OURS CHARGE BK-OVER CREDITED LIME FUEL 25.40TN @ 24.50%= 71 RAIL/BARGE FUEL SURCHARGE FULL CREDIT BOL 108590031						LHOIST NORTH AMERICA OF ALABAMA,LLC			6,479.30	013491
10/17/12	01150		COPY PAPER/SUPPLIES-ADMIN TAPE-ADMIN UNIBALL PENS-DUE SUNSHINE						OFFICE DEPOT			354.49	013492
10/17/12	01264		PHONE MAINT & GATE 10/12						WINDSTREAM NUVOX, INC.			178.44	013493
10/18/12	00017		OVERNIGHT SERV - CSID WS						FEDEX			12.36	013494
10/18/12	00020		SULFURIC ACID GLOVES ORBECO CHLORINE CHOLRINE						FISHER SCIENTIFIC COMPANY LLC.			297.55	013495
10/18/12	00056		CBOD & TSS CBOD & TSS RO CONCENTRATE						FLORIDA SPECTRUM ENV. SERVICES, INC			264.00	013496
10/18/12	00138		ROCK STAMPER RENTAL										

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			FUEL CHARGE						GENERAL RENTAL CENTER			50.25	013497
10/18/12	00027		POLYMER UNLIMITED						GENERIC CHEMICAL			1,875.00	013498
10/18/12	01356		TIRES UNIT 106										
			TIRE DISPOSAL										
			NEW VALVE STEM										
			WHEEL BALANCE										
			ROTATE TIRES										
			OIL CHANGE										
			RECYCLE FLUIDS										
			ADDITIONAL OIL										
			SERVICE COUPON										
			SHOP FEE						GOLD COAST TIRE OF CORAL WEST			413.45	013499
10/18/12	00063		FREEZER BASKET										
			COMPRESSOR AIR										
			SECURITY SEAL										
			PRESSURE SWITCH						GRAINGER, INC.			585.01	013500
10/18/12	00377		TURF SAVER										
			MOUNT TIRE										
			TIRE DISPOSAL										
			VALVE STEM SMALL						GREEN THUMB LAWN & GARDEN LLC			107.16	013501
10/18/12	00033		ANGLE BAR/WOOD										
			SPLINE ROLLER										
			BLACK SCREEN										
			CHARC.FIBERGLASS SCREEN										
			SCREEN SPLINE										
			CREDIT-SCREEN SPLINE										
			TIW DOWN STRAPS AND SUPP										
			SCREENING AND SUPPLIES										
			PARTS-REP.AIRLINE SLUDGE3										
			PARTS FOR SLUDGE # 3										
			WOOD-FOR INFRONT OF PLT E										
			FABRIC										
			CAUTION BULBS										
			PLANT SUPPLIES										
			TOOLS/SUPPLIES						HOME DEPOT			858.60	013503
10/18/12	01056		BOND ENGINEER-09/12 NANO										
			BOND ENGINEER-09/12 AMMON										
			GEN'L ENGINEERING 09/12						MCKUNE & ASSOCIATES, INC.			1,755.00	013504
10/18/12	01380		CSID 1PLY REMINDERS 5,500						NGC HOLDINGS, INC.			324.96	013505
10/18/12	00045		WIPER BLADES										
			LAVA BAR										
			GRREN ABSORBER										
			ARMOR ALL TIRE FOAM										
			TERRY TOWELS						PEP BOYS			60.21	013506
10/18/12	00053		PAINT FOR WELL OLIVE GRN										

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			FUEL SURCHAGRE 25.11TN @ RAIL/BARGE SURCHARGE LIME- 25.05TN @ 237.77 = FUEL SURCHARGE-25.05 TN @ RAIL/BARGE SURCHARGE						LHOIST NORTH AMERICA OF ALABAMA,LLC			12,259.22	013536
10/29/12	01355		DR-NOVEMBER-2012						OFFICESTREAM, INC.			330.00	013537
10/29/12	00351		LASER LITE UNCORED MASK RESPIRATOR SPENBW95V PART. RESPIRATOR SPENBW95 RAINCOAT-VASCO GLOVES LATEX XL RTZL924 GLOVES LATEX LARGE LATEX GLOVES RTZL924 LATEX GLOVES LARGE RTZL92						RITZ SAFETY EQUIPMENT, LLC			582.25	013538
10/29/12	00672		REIMB-MEALS-SEDA COURSE REIMB-MILES-SEDA COURSE						STOVER, EDWARD			149.44	013539
10/29/12	01042		12 X 10 BAUER PIPE-NANO 12" 45 DEGREE BEND-NANO 12" BAUER SOCKET-NANO RENTAL PROTECTION-NANO						SUNBELT RENTALS			1,207.50	013540
10/29/12	00441		GLASS FIBER FILTER REPLACEMENT PROBE GUARD CHART PENS SERIES 39 PH TEST STRIPS DRIERITE INDICATING DESSI PARTLOW CIRCULAR CHART BX OR LIQUID DPD FREIGHT						USA BLUEBOOK			557.07	013541
10/29/12	01280		ADMIN HEALTH INS 11/12 WATER HEALTH INS 11/12 WASTE HEALTH INS 11/12 MAINT HEALTH INS 11/12 FIELD HEALTH INS 11/12 COBRA HLTH-ZICH 11/12 PAYABLE HEALTH INS 11/12						CONNECTICUT GENERAL LIFE INS COMP.			47,746.54	013542
10/29/12	00122		ADDL DENTAL ADMIN 11/12 ADDL DENTAL PLT-M 11/12						COMPBENEFITS COMPANY			73.40	013543
10/29/12	01378		E PLANT PROJ ADDL 15% COM ADDL DUE @ 85% COMPLETION						HMT, INC.			22,203.00	013544
10/29/12	01231		ADMIN LIFE INS 11/12 WATER LIFE INS 11/12 WASTE LIFE INS 11/12 MAINT LIFE INS 11/12 FIELD LIFE INS 11/12 PAYABLE LIFE INS 11/12						MUTUAL OF OMAHA			4,399.41	013545

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10/29/12	00072												
			MANAGEMENT FEE 10/12										
			POSTAGE 10/12										
			COPIES 10/12										
			PHONE 10/12						SEVERN TRENT ENVIRONMENTAL SERVICES			6,030.96	013546
10/29/12	01175												
			UNIFORMS-PLANT WATER										
			UNIFORMS-PLANT WASTE										
			UNIFORMS-PLANT MAINT										
			UNIFORMS-FIELD										
			UNIFORMS-DUE GF						UNIFIRST CORPORATION			188.82	013547
10/31/12	99999												
			VOID CHECK						******INVALID VENDOR NUMBER******			.00	013548
10/31/12	99999												
			VOID CHECK						******INVALID VENDOR NUMBER******			.00	013549
10/31/12	01130												
			ALUM ANGLE GRATING PAD										
			FUEL CHARGE										
			FRED PRYOR-ED S-MEMBERSHI										
			FRED PRYOR-ALVAN-MEMBERSH										
			FRED PRYOR-MARK N-MEMBERS										
			FRED PRYOR-DAVID M-MEMBER										
			FRED PRYOR-CURT-MEMBERSHI										
			FRED PRYOR-STEVE S-MEMBER										
			SHIPPING TO DATA FLOW SYS										
			FRED PRYOR-RACHEL-MEMBERS										
			CAMERA FOR VIEW WELLS										
			SHIPPING										
			MINERAL OIL										
			GLYCERINE										
			SHIPPING										
			DAVID M.CEU'S										
			T.G.GIFTCARDS-ADMIN										
			T.G.GIFTCARDS-WATER										
			T.G.GIFTCARDS-WASTE										
			T.G.GIFTCARDS-MAINT										
			T.G.GIFTCARDS-FIELD										
			T.G.GIFTCARDS-GF										
			T.G.GIFTCARDS-MAILCOURIER										
			T.G.GIFTCARDS-PINETREE										
			CMC & ASSOC-TED MENA-GF										
			FRANCOTYP-POSTAGE REFILL										
			SAMMSOFT"SPYWARE" JODI										
			TR PROF-FIXED ASSETS										
			DLT SOLUT.-AUTOCAD RENEW										
			INTERBAY-POSTAGE INK						AMERICAN EXPRESS			5,215.80	013550
10/31/12	01354												
			INS W/S ADMIN 11/12										
			INS W/S PLT-WTR 11/12										
			INS W/S PLT-WW 11/12										
			INS W/S PLT-M 11/12										
			INS W/S FIELD 11/12										
			INS DB CSID GF ADM 11/12										
			INS DB CSID GF FLD 11/12										

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			INS P/R DEDUCT 11/12										
			INS DB-M.POINTE 11/12										
			INS DB-PINETREE 11/12						AMERICAN PUBLIC LIFE INSURANCE			1,700.78	013551
10/31/12	00857												
			INSTALL-GOLFCART COVER						CAPITAL ONE			375.00	013552
10/31/12	00017												
			OVERNIGHT SERV - CSID WS						FEDEX			70.47	013553
10/31/12	00683												
			ADJ FAN BELTS DW GENER#5										
			MILES TRAVELED 30 MILES										
			LABOR #6 N.BLOWER ROOM						O-K GENERATORS			772.50	013554
10/31/12	01150												
			CORRECTION TAPE-ADMIN										
			DRY MARKERS/PENS-WASTE										
			DIVIDERS-ADMIN										
			SHREDDER-ADMIN						OFFICE DEPOT			234.59	013555
10/31/12	00425												
			ADMIN-POOL SUPPLIES										
			WASTE-COFFEE SUPPLIES										
			FIELD-COFFEE SUPPLIES										
			COOKIES FOR 10/15 MEET-GF						SAM'S CLUB/GEMB			145.46	013556
10/31/12	00162												
			REIMB-MEALS-EMP LAW CLASS										
			REIMB-MILEAGE										
			REIMB-PARKING						ZILMER, JAN			85.90	013557
									TOTAL FOR BANK E		1,347,815.24		
									TOTAL FOR REGISTER		1,347,815.24		