



November 29, 2016

Carlotta S. Stauffer, Commission Clerk  
Office of Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, FL 32399

RE: Docket No. 160065-WU; Application for an increase in water rates in Charlotte County by  
Bocilla Utilities, Inc.  
Our File No. 47016.04

Dear Ms. Stauffer:

Attached are the responses of Bocilla Utilities, Inc., (“BUI”) to Staff’s Third Data Request dated November 8, 2016.

Please refer to the Utility’s response to Staff’s First Data Request.

1. In its response to item 15a, the Utility stated that the Officer compensation is approved annually at the Board of Director’s meeting.

a. Please provide a list showing the full name of each Board of Director.

Response: R. Craig Noden, Julie Lynn Merry, Raymond W. Flischel

b. What are the factors considered by the Board of Directors when approving the Officer’s salary?

Response: The Directors considered the varied duties of the President and the virtual 24/7 work schedule necessitated by a small staff. While no formal study was conducted, the Directors also reviewed salaries of other small utilities, including those approved in various rate cases.

c. Please explain the role of the Board of Directors and their duties.

Response: The Directors meet weekly. The major responsibilities of the board of directors are, 1) supervise, retain, evaluate and compensate the utility officers. 2) develop a strategic function in providing the vision, mission and goals of the organization, 3) developing a governance system for the business, including overall strategies and financings.

4) fiduciary duty to protect the organization's assets and shareholders's investment. The input from the Directors was particularly useful in considering the interconnection options versus a WTP upgrade and expansion, and the challenges of a small utility is obtaining financing.

- d. Please provide all of the Utility's calculations, basis, workpapers, and support documentation for Director's fees.

Response: The Utility has determined that \$10,800 (\$3,600 per Director) per year is reasonable. The Directors generally meet weekly, with a more formal annual meeting. Weekly meetings (assuming 50 weeks) lasting an hour is only \$72.00 per hour per Director.

- e. When did the Utility begin paying Director's fees?

Response: 2014.

2. In its response to item 15b, the Utility stated that the Officer's duties have increased after removing the water treatment plant from service.

- a. Please provide the total hours per month Mr. Noden spends tending to utility operations.

Response: Mr. Noden (officer) is on call 24/7 for all matters relating to water delivery and emergency situations. Because of the size of the Utility, it does not have the personnel to rotate the after-hours calls to anyone but the officer or operator. If the phone dialer at the boost station indicates a high flow it requires either the officer or the operator to drive the entire distribution system to look for the cause of the high flow. This is like fire, police or larger utilities except they have personnel on duty 24 hours a day. It is estimated that the officer's total time per month tending to Utility operations is 160 to 200 hours.

- b. Please provide a detailed list of monthly duties Mr. Noden performs for Bocilla along with an estimate of hours allocated to each duty.

Response: Monthly duties include field work 20% to 30 % of the time:

On-site coordinating of unidirectional flushing and super chlorination projects. Daily oversight of flushing operations, monthly meter reading, new meter installation, leaks, customer complaints, DEP reporting, working with staff to stay in compliance with all regulations, distribution projects, pro forma projects, meetings with engineers, attorneys, EWD, DEP, banking, insurance issues.

Monthly Administrative, Office, Clerical duties: 70% to 80 % Administrative duties include managing employees, payroll, regulation compliance with DEP, FPSC, Charlotte County, EWD, IRS, workman's compensation and liability issues and all reporting required by the above-named departments. Understanding, dealing with and designing plans to combat nitrification and bio-film issues negotiating with banking institutions, accounting procedures, all required record keeping, legal issues, engineering projects, short and long range planning.

The overall responsibility for all aspects of delivering safe drinking water to our customers. Office duties are done by the officer 4-6 days a week when the one part-time clerical position (currently 8 hours per week) is not in the office. See item 1a. in Staff's Second Data Request.

Please refer to the Utility's response to Staff's Second Data Request.

3. In its response to Staff's item 6b, the Utility stated that fuel compensation was reimbursement to employees for use of personal automobiles, this will be replaced by reimbursement for mileage on personal cars.
  - a. Please clarify the difference between reimbursement for use of personal automobiles and reimbursement for mileage on personal cars.

Response: The Utility in past years reimbursed employees for a tank of gas here and a tank there, not a business-like matter, as the current owned truck became more un-road worthy and the employees started to use personal autos more frequently. The terminology of this was reimbursement for use of personal automobiles. This is an unwise use and the better business practice starting in 2016 will be for employees to turn in requests for mileage reimbursements in accordance with IRS regulations stating the why, what, where, and when of the use of personal automobiles. When approved these miles will be reimbursed at the current IRS rate of .54 cents per mile thus the terminology reimbursement for mileage on personal cars. When the new truck is purchased it will cut down on use of personal automobiles but the reimbursement at .54 per mile will exceed the occasional reimbursement for use of personal automobiles. Thus not only the new truck is requested but the reimbursement that has occurred in the test year will be applied to the new mileage rate of .54 cents per mile to employees for use of personal automobiles.

- b. For each employee receiving mileage reimbursement, please identify who they are and state the purpose for their use of a personal vehicle during work hours.

Response: Every employee will be eligible for mileage reimbursement if asked to use their personal automobile for utility business. These include, officer, operator, part time field help and part time office help. Examples that would qualify for reimbursement for office help would be trips to office supply, trips to bank, trips to post office, trips to deliver water samples and other matters that require use of an automobile for utility business. Examples for part time help would be installation of meters, meter reading, water sampling at various points in the water supply system. Examples for operator would be deliver of water samples to mainland, testing and sampling of water supply at the interconnection point on the mainland, trips to hardware stores for supplies that are needed at the moment, as well as any other occasion that requires the use of personal automobile for utility business. As always the use of the company truck will be required if available, but on certain occasions if someone is on the mainland and the truck is on the island to pay the barge fee to get the truck off the island would be financially imprudent. There are many occasions that will arise which will warrant the use of personal automobiles, the company anticipates that these miles in a year will be 3,600 miles. Again the Utility will use best business practices and require each trip be approved and be submitted for reimbursement with the who, why, what and when of each trip.

4. In its response to item 11, the Utility stated that the meter replacement program is scheduled to replace 60 meters a year over the next four years.

- a. Please explain why the Commission should consider capitalizing the meter replacement program beyond the 24 month limit as defined in 367.081(2)(a)2., F.S.

Response: Section 367.081(2)(a)2, F.S., allows the Commission, in its discretion, to allow revenues for facilities to be constructed longer than 24 months after the historic test year if the property is needed to serve current customers. The Commission should do so in this case with regard to meter replacements. It is necessary to replace all of the water meters, and with the small utility staff they can only install about 60 meters a year without disrupting normal operations. Since it is likely the Utility will file another rate case in four years, the four year schedule is reasonable and should be approved.

- b. How many meters in total does the Utility have?

Response: As of the end of the test year there were 398 residential 5/8 x 3/4 meters, and two 1" meters. There is also one 4" private fire protection meter for the Charlotte County Fire Station, the Tariff for which was approved January 20, 2016.

Please refer to the Utility's response to the Staff Audit Report.

5. In response to the Staff Audit Report, the Utility stated that "The Utility expects the original cost study to show more original cost than the Utility has booked, therefore the Utility is requesting that the amount shown in its historical records be considered." If the Original Cost Study is an accurate estimate of the Utility's plant in service, please explain why the amount shown in the Utility's historical records should be used instead?

Response: The Utility now believes that the Original Cost Study more accurately reflects the cost of the assets and the proper break down and agrees to the use of the Original Cost Study.

Please refer to the Original Cost Study prepared by Frank Seidman submitted on October 18, 2016.

6. On page 2, the summary section states that the calculation of original cost is based on the Reproduction Cost Report prepared by Giffels-Webster Engineers, Inc. Please provide this report.

Response: The Report is attached as Attachment "3-6".

7. On page 2, the methodology section states that the reproduction cost was estimated based on September, 2016 pricing. Please provide a copy of the source(s) Mr. Seidman used for the prices of all assets.

Response: The source of pricing of the assets was provide in the Reproduction Cost Report prepared by Giffels-Webster Engineers, Inc., which is Attachment "3-6".

8. Please provide any records used to determine the date each asset was placed into service.

- a. If any asset in-service date is not directly supported by records, describe the method used to support the date used in the cost study.

Response: The in-service dates are reflected in permits granted for each section of the distribution system completed. These were shown to the auditors who apparently took no exception to them.

9. Did Mr. Seidman physically inspect the system in preparing the original cost study?

Response: No, Mr. Seidman did not inspect the system, nor was it necessary for him to do so to perform the Original Cost Study since he relied on the inspection of the system by Andy Wickerson, P.E. of Giffels-Webster Engineers in preparation of the Reproduction Cost Study dated 10/17/2016, which is Attachment “3-6”.

- a. If there were any assets Mr. Seidman did not physically inspect, how did he estimate their specifications, e.g. using known distances from above-ground features to estimate pipe length?

Response: Mr. Seidman relied upon the Reproduction Cost Report prepared by Giffels-Webster Engineers, Inc., which is Attachment “3-6”.

- b. If the lengths of any asset were estimated in this way, please provide all measurements or reference materials used to make the estimates.

Response: N.A.

10. Please provide the simple average plant and accumulated depreciation balances for the test period ended December 31, 2015, related to the estimated original costs contained in the Utility’s original cost study. In your response, please provide this information in the same format as MFR Schedule A-5 for plant and MFR Schedule A-9 for accumulated depreciation.

Response: Please see the Attachment “3-10”, which are Schedules A-5 and A-9 re-computed to reflect the Original Cost Study. Attachment “3-10” also includes the update Original Cost Study that corrected an error in the original draft as it related to depreciation.

11. Please list all of the plant assets from the original cost study that are subject to an allocation to KIU.

Please refer to the Utility’s response to OPC issues and concerns.

Response: There are no plant assets (building, storage facilities or equipment) allocated to KIU. KIU produced its own water and along with BUI have shut down production facilities with the advent of the interconnection. The allocation of distribution and transmissions lines that should be allocated are the main interconnect line, the subaqueous crossing and the interconnection with KIU on the island. KIU maintains all of its own lines.

12. In response to concern 1c., the Utility stated that “Approximately thirty-six percent (36%) of the transmission project (\$258,342) is allocated to KIU and not included in BUI rate base.” Does the \$258,342 figure account for all Bocilla Utilities assets that directly or indirectly benefit KIU?

Response: Yes.

- a. Should a similar allocation be made for any other assets, e.g., the new chloramine feed?

Response: - All allocations to KIU have been made using the 36%, the net amount after depreciation shown on the 2015 Annual Report is \$274,381 allocated to KIU. The amount referred to in the OPC Response just corresponds to the new interconnect line. The new chloramine feed system is required and is being added to the boost station regardless of KIU’s water usage. Chloramine chemicals, not equipment, needed (see Staff’s Second Data Request 9(c) for KIU water usage that should be prorated.

13. In its response to OPC’s concern 1d, the Utility stated that approximately 36 percent of the transmission project is allocated to KIU and not included in BUI rate base. Please provide all of the Utility’s calculations, basis, workpapers, and support documentation for the 36 percent allocation to KIU.

Response: All allocations are made based of the total ERCs that each utility can service:  
KIU = 400, BUI = 715.

14. In response to concern 3a, the Utility stated that the damage to the boost station was caused by the Charlotte County Fire Department. Please provide all documentation describing the event and all communication between the Utility and the Fire Department in regards to this incident.

Response: See Attachment “3-14”.

15. In response to concern 3c, the Utility stated that “These are all of the 6" distribution valves in the system that are 20+ years old and need to be replaced so that lines can be isolated for maintenance and in case of main breaks.” And that “Any remaining undepreciated value will be requested as a loss.” If the assets are not fully depreciated, does this indicate that they are being retired before their estimated useful life?

Response: Of the 6" distribution valves in the system, 80% (93 of 116) are 20 + years old. 84 % or (52 of 62) fire hydrants are over 20 years old. The more accurate statement is that five (5) of the 116 - 6" valves are broken and don't work. These valves are necessary to isolate fire hydrants and portions of the distribution system for line breaks, super chlorination and uni-directional flushing. The replacement of these five (5) valves is being requested as a proforma expense.

- a. If yes, please explain factors which may have lead to the valves requiring replacement before their estimated useful life.

Response: The harsh island environment causes facilities to deteriorate more rapidly than the average.

- b. Are these valves currently inoperable or is this a preventative replacement?

Response: Currently there are five valves not operable.

16. In response to concern 3d, the Utility stated that “the work [on the chloramine feed system is currently underway and expected to be completed by December 2016.” Please provide an update on the timetable and the actual costs of this project.

Response: The Chloramine feed system will not be completed by the end of 2016. The revised completion date is March 1, 2017. The design of the chemical feed system is complete and all the parts have been ordered but the layout of the feed equipment and chemicals on the small platform of the boost station has caused some redesign for safety and space requirements. There is also a cover being added to protect the feed equipment and chemicals. The lead time on some of the parts also pushed the completion time into next year.

17. In its response to concerns 9 and 13, the Utility stated that it has had over a year to evaluate the percentage of time spent on utility and non-utility business since connecting to the EWD.

- a. What time keeping measures does the Utility take to document time (i.e. timesheets)?

Response: Both the officer and certified operator are salaried so time sheets are not utilized. Non-utility business allocation of salaries is estimated based on day to day duties performed by both. It's probable that time sheets would show less than a 20 % non-utility allocation.

- b. Please provide all of the Utility's calculations, basis, workpapers, and support documentation for the 20 percent allocation to non-utility business.

Response: The management of the Utility has used it's best judgement to arrive at the allocation of the time spent on by personal on BUI and KIU.

18. In its response to concern 9a, the Utility stated that there will be no changes in salaries related to the looped line since any time savings is immaterial. Please provide all of the Utility's calculations, basis, workpapers, and support documentation for the immaterial amount.

Response: The loop has added two (2) valves to the distribution system that will need to be exercised. There are no extensive studies done to summarize time spent on a once a month blow out on the end of one line. These type of time items are again a request by the company for additional help to meet the requirements of the PSC. Management's estimate of time to accomplish this blow out is 1.5 hours. After the line is looped (project is now complete) this time will not be required,

but additional time will be required to exercise the 6" cut off valve. This valve will be opened once a month to allow for proper exercise, records of this and other time sensitive exercises will be kept by the administrative assistant, again the request for more time on clerical help, so that this item of exercise and others proper exercises may happen in a businesslike manner. This exercise program although somewhat less intensive in time than a blowout program will still require the presence of an employee, the driving to the location, and just the incidental time required to perform the task. Thus no time savings of any significance will be obtained by this loop, the loop is for water quality purposes.

19. In its response to concern 10, the Utility stated that it agrees that a percentage of payroll benefits and worker's comp insurance should be allocated to KIU. The following items relate to these allocations.

a. Please explain the type of work performed by BUI employees for KIU.

Response: BUI provides the licensed operator to KIU as is required by DEP. The duties include daily reading of Total Chlorine, PH., ORP, and temperature. Monthly reporting to DEP as dictated yearly. Working with KIU staff in distribution issues like main breaks, valve replacement, water loss, Bact's sampling and trips to the lab. Consulting on long term water and sewer projects and on call for emergency situations when KIU personnel are not available.

b. Please provide a list of all BUI employees also working for KIU.

Response: None. The certified operator is the only employee of the Utility that does any work on the KIU system.

c. Please provide all of the Utility's calculations, basis, workpapers, and support documentation for the proposed allocation of 20 percent for health insurance and 10 percent worker's comp insurance to KIU.

Response: Twenty percent (20%) of both workman's compensation and health insurance, of the operator's salary, should be coded to nonutility activities.

d. Please provide all of the Utility's calculations, basis, workpapers, and support documentation for the allocation of payroll taxes to non-utility activities.

Response: The management of the Utility has used it's best judgement to arrive at the allocation.

20. In its response to concern 11, the Utility stated that after going through the PSC audit, OPC requests, and FDEP requests, the amount of administrative time is growing.

a. What additional clerical work is required by the Utility besides any work related to processing this current rate case?



Response: The utility is requesting an additional eight (8) hours of clerical time per week which is unrelated to this rate case. 1) In many instances in the requests PSC or OPC has issued work papers and support documentation have been requested for various items. In order to provide this documentation time records on a weekly basis must now be studied and broken down by various activities performed by each employee. Proper allocation to capital items, proper allocation of time spent on KIU activities, proper allocation of time activities of the officer so as to properly report his time spent on utility business, these request for documentation can not be accomplished without good business practices at the source of the time recording. Excel worksheets will be established and kept on a weekly basis. Upon the next rate case, documentation of time requests will then have actual time records instead of the best estimate by management. 2) In the rate case proper records have not been kept as to asset additions, the company had to expend funds to do an original cost study, with this new basis a clean start was accomplished, the company must now keep accurate records on all asset additions and cost. This will dictate copying of all invoices, maintaining a file by chart of account asset number, placing each invoice into the proper folder allowing for documentation to support asset additions upon the next rate case. Also this now details that two complete set of accounting records be kept as by using the original cost study it will differ from the companies cost records, thus one set of books will be required for PSC and one complete set for IRS purposes, this will be additional time requirements. 3) Proper records for reimbursements for employee mileage must be maintained, this discussion has occurred both in the PSC and OPC requests. 4) Better documentation of normal operating expenses and cut off dates of expenses monthly. As noted in the audit of expenses certain items were disallowed because documentation was not available, to avoid this situation in the future all expenses will be documented on a monthly basis, and receipts verified.

These items that have been brought to light under the requests of the PSC and OPC, are in addition to the time the utility is requesting in the rate case, the utility still needs the time requested for many of the following reasons:

1). During the last five years the utility has changed billing programs, the new program is much better and provides more information. Without this program request of the PSC as related to water usage would have not been supplied. The program is more time intensive and also allows for the communication with customers by email, but only if information is input and kept current. The program allows for internet payments, but only if information is input and kept current. This new program is 100% operated by the part time administrative assistant, it is more time intensive than the simple excel program that was once used, but provides better management information, provides water usage information required by PSC, provides means to accept internet payments (requested by customers), and overall a more professional approach to the billing operations. The program is more time intensive and requires more expertise as to operation than just a normal billing clerk.

2). The accounting work that is completed by the part time employee will be recording all checks into QuickBooks, recording bulk deposits into QuickBooks, recording detail deposits by customers into the billing software, recording water meter readings into the billing software, prepare bills and mailing of monthly bills, reconciliation of bank accounts, reconciliation of monthly credit card accounts this accounts for 2 of the employees current 4 days a month. With the additional time requested for the part time employee the responsibility for accounts receivable reconciliation, recording of water revenue and recording of accounts payable will be allocated to that position.

3). The utility would like to expand on such items as better coding of accounting transactions, better tracking and recording of credit card transactions, more proactive correspondence with customers, better tracking of water adjustments, updating web site, proactive in requesting customers to pay by direct deposit, and many more small items that have lacked attention in the last few years as the utility tried to conserve finances.

4). The utility is currently behind in filing for 2016, at the moment no invoices have been filed for the current year, this is just one item of a few that the company is not up to date and the additional time request is to bring the utility up to date and maintain up to date on small items.

5). Monthly recording of board of director meetings, recording of committee meetings, proper documentation of annual meetings.

All of these items that are listed above are the reason the utility is requesting an additional 8 hours per week of clerical, administrative assistance, and accounting expertise from just one part time person.

- b. Does the part time employee currently working for BUI perform any work for KIU?

Response: No, the officer performs all the clerical work that is required by KIU.

- c. Will the requested new part time clerical position require performing any work for KIU?

Response: No. The Utility is not requesting an additional clerical position but only seeks to add eight (8) hours per week to the existing clerical position that only provides services to BUI.

- d. Please clarify how many clerical positions the Utility will have after filling the new clerical position.

Response: There will only be one (1) clerical part time position working sixteen (16) hours per week exclusively for BUI.

- e. Please identify the FDEP requests that have increased since 2010.

Response: The requests from FDEP changed when the RO plant was decommissioned in the Fall of 2014. It's anticipated that once BUI is retreating EWD water that there will be additional requirements from FDEP but that won't be known until the results of retreatment are analyzed..

Please refer to the Utility's 2012 Annual Report.

21. In the Utility's 2012 Annual Report, the first annual report filed since returning to the Commission's jurisdiction, Salaries & Wages – Employees was \$65,184.

<u>Response:</u>					
	2010	2012	2013	2014	2015
John Keaser	52,538	60,000	60,000	60,000	60,000
Plant operator					
Salary					
Eileen Montanez	8234	7,371	7,947	8,176	10,075
Administrative					
Asst.					
Hourly					
Roger Quick	25,348	12,320	14,160	10,360	-o-
Part Time					
Hourly					
Daniel Webster				8,800	33,390
Part Time					
Hourly					
Total Salaries	86,120	79,691	82,107	87,336	103,465

Also included in the compensation column of the annual report were 1099's for sub contract employees, these amounts were 6,152 in 2010, 7,867 in 2012, 8,392 in 2013, 6,326 in 2014, 7,760 in 2015.

The various years except for 2010 has salaries allocated to KIU, in 2010 no allocation was made. In 2015 there was almost 10,000 of salaries capitalized for meter installations, there were no meters installed in any other year, by subtracting the salary allocated to meter installation in 2015 this would bring gross salaries down to 93,465. Between 2010 and 2015 gross salaries increased by 7.9% and this entails the problems that were incurred with water flushing and chemicals in 2015. The utility believes salaries to be very similar over the last 6 years.

- a. According to MFR Schedule B-7, Salaries & Wages – Employees in 2010 was \$92,272. Please explain the decrease in employee salaries from 2010 to 2012. Please include allocations for non-utility activities.
- b. According to MFR Schedule B-7, Salaries & Wages – Employees in test year 2015 was \$94,466. Please explain the increase in employee salaries from 2012 to 2015. Please include allocations for non-utility activities.
- c. Please provide a list of all employees and their respective compensation for 2012, 2013, 2014 and 2015. Please include job titles, salary, hourly pay, and duties. Please include allocations for non-utility activities.

22. According to MFR schedule B-7, the Utility is requesting an increase of \$10,000 in Salaries & Wages - Employees due to more reporting and more customers. Please explain why a six percent increase in customers since 2010, as shown on MFR Schedule B-7, justifies the requested \$10,000 increase in employee's salaries.

Response: The \$ 10,000 yearly increase requested is to provide the additional eight (8) clerical hours per week as answered and described in Question # 20.

Should you or Staff have any questions regarding this filing, please do not hesitate to give me a call.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Martin S. Friedman".

MARTIN S. FRIEDMAN  
For the Firm

MSF/  
Attachments

cc: Craig Noden (via email)  
Ray Flischel (via email)  
Margo Leathers, Esquire (via email)  
Danielle Roth, Esquire (via email)

ATTACHMENT "3-6"

# REPORT OF UTILITIES ESTIMATES OF REPRODUCTION COSTS & BID COSTS

October 2016

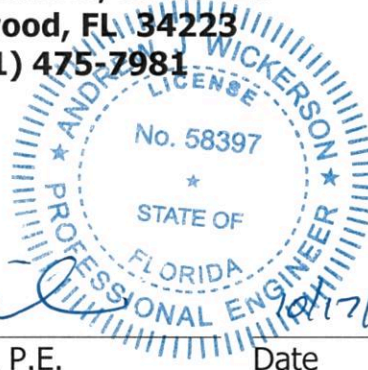
**FOR:**

## BOCILLA UTILITIES, INC.

ENGLEWOOD, FLORIDA

7025 Placida Road, Unit 4  
Charlotte County, Florida

**Giffels-Webster Engineers**  
**Certificate of Authorization No. 3607**  
**900 Pine Street, Suite 225**  
**Englewood, FL 34223**  
**(941) 475-7981**



*A. J. Wickerson* 10/17/2016

A. J. Wickerson, P.E.  
Registration #58397

Date

**ENGINEER'S ESTIMATE  
of  
REPRODUCTION COST  
  
ZONES 1 thru 8**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**

**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**SUMMARY OF ZONES 1 THRU 8 (Constructed 1991 - 2006)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>GENERAL CONSTRUCTION</b>				
1	MAINTENANCE OF TRAFFIC	LS	1	\$30,000.00	\$30,000.00
2	SEDIMENT CONTROL & WATER QUALITY	LS	1	\$30,000.00	\$30,000.00
3	CLEARING AND GRUBBING	LS	1	\$10,000.00	\$10,000.00
	<b>CONST POTABLE WATER DISTRIBUTION</b>				
U-1	2" PVC SDR-21 CL-200 WATER MAIN DIRECT BURY	LF	300	\$25.00	\$7,500.00
U-2	4" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	7,020	\$30.00	\$210,600.00
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	36,500	\$36.00	\$1,314,000.00
U-4	6" HDPE SDR-11 PE-3408 WATER MAIN DIRECTIONAL BORE (BRIDGE CROSSING 1)	LF	500	\$72.00	\$36,000.00
U-5	6" HDPE SDR-11 PE-3408 WATER MAIN DIRECTIONAL BORE (BRIDGE CROSSING 2)	LF	300	\$72.00	\$21,600.00
U-6	2" GATE VALVE	EA	1	\$750.00	\$750.00
U-7	4" GATE VALVE	EA	6	\$1,000.00	\$6,000.00
U-8	6" GATE VALVE	EA	64	\$1,200.00	\$76,800.00
U-9	AUTOMATIC AIR RELEASE VALVE - 2" COMPLETE ASSEMBLY	EA	2	\$3,000.00	\$6,000.00
U-10	MAIN END BLOW-OFF ASSEMBLY - 2"	EA	7	\$1,000.00	\$7,000.00
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	20	\$200.00	\$4,000.00
U-12	FIRE HYDRANT ASSEMBLY	EA	56	\$5,000.00	\$280,000.00
U-13	DUCTILE IRON FITTINGS	LBS	9,240	\$5.50	\$50,820.00
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	200	\$50.00	\$10,000.00
U-15	CONNECTION TO EXISTING WATER MAIN AT "ISLAND SIDE" OF DIRECTIONAL DRILL	EA	1	\$1,500.00	\$1,500.00
U-16	INTER-CONNECT TO SUPPLY KNIGHT ISLAND UTILITIES - PALM ISLAND RESORT	EA	1	\$25,000.00	\$25,000.00
U-17	WATER SERVICE (SHORT SIDE)	EA	200	\$300.00	\$60,000.00
U-18	WATER SERVICE (LONG SIDE)	EA	200	\$500.00	\$100,000.00
U-19	METER INSTALLED	EA	400	\$1,000.00	\$400,000.00



**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**

**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**SUMMARY OF ZONES 1 THRU 8 (Constructed 1991 - 2006)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<i>CONST RESTORATION/ COMPLETION</i>				
U-20	OPEN CUT TRENCH REPAIR - ASPHALT	SY	300	\$55.00	\$16,500.00
U-21	ASPHALT ROAD OVERLAY - 1.25" TYPE III	SY	2000	\$17.00	\$34,000.00
U-22	OPEN CUT TRENCH REPAIR - SAND/ SHELL	SY	3000	\$20.00	\$60,000.00
U-23	DRIVEWAY RESTORATION - SAND/ SHELL	SY	2000	\$10.00	\$20,000.00
U-24	DRIVEWAY RESTORATION - RESET PAVERS	SY	100	\$30.00	\$3,000.00
U-25	DRIVEWAY RESTORATION - 4" CONCRETE	SY	100	\$40.00	\$4,000.00
U-26	PERFORMANCE TURF, SOD (BAHIA)(WATERING INCIDENTAL)	SY	2,500	\$2.00	\$5,000.00
U-27	PREMIUM SOD (WATERING INCIDENTAL)	SY	1,000	\$3.00	\$3,000.00
U-28	CONST RECORD / AS-BUILT DRAWINGS	LS	1	\$50,000.00	\$50,000.00
				<b>SUBTOTAL</b>	<b>\$2,883,070.00</b>
	CONST MOBILIZE / DEMOBILIZATION (5%)				\$144,153.50
	LOCALITY ADJUSTMENT & BARGING COSTS FOR BRIDGE-LESS ISLAND (10%)				\$288,307.00
	ENGINEERING DESIGN / PERMITS (15%)				\$432,460.50

**BOCILLA UTILITIES, INC (Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)**  
**SUMMARY OF ZONES 1 THRU 8 (Constructed 1991 - 2006)**

**TOTAL      \$3,747,991.00**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**

**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONES 1 THRU 3 (Constructed 1991)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>GENERAL CONSTRUCTION</b>				
1	MAINTENANCE OF TRAFFIC	LS	1	\$18,000.00	\$18,000.00
2	SEDIMENT CONTROL & WATER QUALITY	LS	1	\$18,000.00	\$18,000.00
3	CLEARING AND GRUBBING	LS	1	\$6,000.00	\$6,000.00
	<b>CONST POTABLE WATER DISTRIBUTION</b>				
U-2	4" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	6,500	\$30.00	\$195,000.00
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	21,720	\$36.00	\$781,920.00
U-4	6" HDPE SDR-11 PE-3408 WATER MAIN DIRECTIONAL BORE (BRIDGE CROSSING 1)	LF	500	\$72.00	\$36,000.00
U-5	6" HDPE SDR-11 PE-3408 WATER MAIN DIRECTIONAL BORE (BRIDGE CROSSING 2)	LF	300	\$72.00	\$21,600.00
U-6	2" GATE VALVE	EA	1	\$750.00	\$750.00
U-7	4" GATE VALVE	EA	6	\$1,000.00	\$6,000.00
U-8	6" GATE VALVE	EA	42	\$1,200.00	\$50,400.00
U-9	AUTOMATIC AIR RELEASE VALVE - 2" COMPLETE ASSEMBLY	EA	2	\$3,000.00	\$6,000.00
U-10	MAIN END BLOW-OFF ASSEMBLY - 2"	EA	1	\$1,000.00	\$1,000.00
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	10	\$200.00	\$2,000.00
U-12	FIRE HYDRANT ASSEMBLY	EA	36	\$5,000.00	\$180,000.00
U-13	DUCTILE IRON FITTINGS	LBS	5,240	\$5.50	\$28,820.00
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	100	\$50.00	\$5,000.00
U-15	CONNECTION TO EXISTING WATER MAIN AT "ISLAND SIDE" OF DIRECTIONAL DRILL	EA	1	\$1,500.00	\$1,500.00
U-17	WATER SERVICE & METER (SHORT SIDE)	EA	125	\$300.00	\$37,500.00
U-18	WATER SERVICE & METER (LONG SIDE)	EA	125	\$500.00	\$62,500.00
U-19	METER INSTALLED	EA	250	\$1,000.00	\$250,000.00

**BOCILLA UTILITIES, INC.  
(Water Distribution System - On Island)**

**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)  
ZONES 1 THRU 3 (Constructed 1991)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>CONST RESTORATION/ COMPLETION</b>				
U-20	OPEN CUT TRENCH REPAIR - ASPHALT	SY	285	\$55.00	\$15,675.00
U-21	ASPHALT ROAD OVERLAY - 1.25" TYPE III	SY	1900	\$17.00	\$32,300.00
U-22	OPEN CUT TRENCH REPAIR - SAND/ SHELL	SY	1800	\$20.00	\$36,000.00
U-23	DRIVEWAY RESTORATION - SAND/ SHELL	SY	1200	\$10.00	\$12,000.00
U-24	DRIVEWAY RESTORATION - RESET PAVERS	SY	20	\$30.00	\$600.00
U-25	DRIVEWAY RESTORATION - 4" CONCRETE	SY	20	\$40.00	\$800.00
U-26	PERFORMANCE TURF, SOD (BAHIA)(WATERING INCIDENTAL)	SY	1,500	\$2.00	\$3,000.00
U-27	PREMIUM SOD (WATERING INCIDENTAL)	SY	200	\$3.00	\$600.00
U-28	CONST RECORD / AS-BUILT DRAWINGS	LS	1	\$30,000.00	\$30,000.00
				<b>SUBTOTAL</b>	<b>\$1,838,965.00</b>
	CONST MOBILIZE / DEMOBILIZATION (5%)				\$91,948.25
	LOCALITY ADJUSTMENT & BARGING COSTS FOR BRIDGE-LESS ISLAND (10%)				\$183,896.50
	ENGINEERING DESIGN / PERMITS (15%)				\$275,844.75

**BOCILLA UTILITIES, INC (Water Distribution System - On Island)  
ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)  
ZONES 1 THRU 3 (Constructed 1991)**

**TOTAL            \$2,390,654.50**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 4 (Constructed 1995)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>GENERAL CONSTRUCTION</b>				
1	MAINTENANCE OF TRAFFIC	LS	1	\$4,500.00	\$4,500.00
2	SEDIMENT CONTROL & WATER QUALITY	LS	1	\$4,500.00	\$4,500.00
3	CLEARING AND GRUBBING	LS	1	\$1,500.00	\$1,500.00
	<b>CONST POTABLE WATER DISTRIBUTION</b>				
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	6,020	\$36.00	\$216,720.00
U-8	6" GATE VALVE	EA	5	\$1,200.00	\$6,000.00
U-10	MAIN END BLOW-OFF ASSEMBLY - 2"	EA	1	\$1,000.00	\$1,000.00
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	2	\$200.00	\$400.00
U-12	FIRE HYDRANT ASSEMBLY	EA	10	\$5,000.00	\$50,000.00
U-13	DUCTILE IRON FITTINGS	LBS	1,780	\$5.50	\$9,790.00
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	25	\$50.00	\$1,250.00
U-17	WATER SERVICE & METER (SHORT SIDE)	EA	30	\$300.00	\$9,000.00
U-18	WATER SERVICE & METER (LONG SIDE)	EA	30	\$500.00	\$15,000.00
U-19	METER INSTALLED	EA	60	\$1,000.00	\$60,000.00

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 4 (Constructed 1995)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>CONST RESTORATION/ COMPLETION</b>				
U-22	OPEN CUT TRENCH REPAIR - SAND/ SHELL	SY	450	\$20.00	\$9,000.00
U-23	DRIVEWAY RESTORATION - SAND/ SHELL	SY	320	\$10.00	\$3,200.00
U-24	DRIVEWAY RESTORATION - RESET PAVERS	SY	20	\$30.00	\$600.00
U-25	DRIVEWAY RESTORATION - 4" CONCRETE	SY	20	\$40.00	\$800.00
U-26	PERFORMANCE TURF, SOD (BAHIA)(WATERING INCIDENTAL)	SY	400	\$2.00	\$800.00
U-27	PREMIUM SOD (WATERING INCIDENTAL)	SY	200	\$3.00	\$600.00
U-28	CONST RECORD / AS-BUILT DRAWINGS	LS	1	\$8,000.00	\$8,000.00
				<b>SUBTOTAL</b>	<b>\$402,660.00</b>
	CONST MOBILIZE / DEMOBILIZATION (5%)				\$20,133.00
	LOCALITY ADJUSTMENT & BARGING COSTS FOR BRIDGE-LESS ISLAND (10%)				\$40,266.00
	ENGINEERING DESIGN / PERMITS (15%)				\$60,399.00

**BOCILLA UTILITIES, INC (Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)**  
**ZONE 4 (Constructed 1995)**

**TOTAL            \$523,458.00**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 5 (Constructed 1998)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>GENERAL CONSTRUCTION</b>				
1	MAINTENANCE OF TRAFFIC	LS	1	\$2,400.00	\$2,400.00
2	SEDIMENT CONTROL & WATER QUALITY	LS	1	\$2,400.00	\$2,400.00
3	CLEARING AND GRUBBING	LS	1	\$800.00	\$800.00
	<b>CONST POTABLE WATER DISTRIBUTION</b>				
U-2	4" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	520	\$30.00	\$15,600.00
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	2,650	\$36.00	\$95,400.00
U-8	6" GATE VALVE	EA	7	\$1,200.00	\$8,400.00
U-10	MAIN END BLOW-OFF ASSEMBLY - 2"	EA	2	\$1,000.00	\$2,000.00
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	2	\$200.00	\$400.00
U-12	FIRE HYDRANT ASSEMBLY	EA	3	\$5,000.00	\$15,000.00
U-13	DUCTILE IRON FITTINGS	LBS	540	\$5.50	\$2,970.00
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	20	\$50.00	\$1,000.00
U-17	WATER SERVICE & METER (SHORT SIDE)	EA	15	\$300.00	\$4,500.00
U-18	WATER SERVICE & METER (LONG SIDE)	EA	15	\$500.00	\$7,500.00
U-19	METER INSTALLED	EA	30	\$1,000.00	\$30,000.00

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 5 (Constructed 1998)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<i>CONST RESTORATION/ COMPLETION</i>				
U-22	OPEN CUT TRENCH REPAIR - SAND/ SHELL	SY	220	\$20.00	\$4,400.00
U-23	DRIVEWAY RESTORATION - SAND/ SHELL	SY	160	\$10.00	\$1,600.00
U-24	DRIVEWAY RESTORATION - RESET PAVERS	SY	20	\$30.00	\$600.00
U-25	DRIVEWAY RESTORATION - 4" CONCRETE	SY	20	\$40.00	\$800.00
U-26	PERFORMANCE TURF, SOD (BAHIA)(WATERING INCIDENTAL)	SY	200	\$2.00	\$400.00
U-27	PREMIUM SOD (WATERING INCIDENTAL)	SY	200	\$3.00	\$600.00
U-28	CONST RECORD / AS-BUILT DRAWINGS	LS	1	\$3,000.00	\$3,000.00
				<b>SUBTOTAL</b>	<b>\$199,770.00</b>
	CONST MOBILIZE / DEMOBILIZATION (5%)				\$9,988.50
	LOCALITY ADJUSTMENT & BARGING COSTS FOR BRIDGE-LESS ISLAND (10%)				\$19,977.00
	ENGINEERING DESIGN / PERMITS (15%)				\$29,965.50

**BOCILLA UTILITIES, INC (Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)**  
**ZONE 5 (Constructed 1998)**

**TOTAL            \$259,701.00**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 6 (Constructed 2004)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>GENERAL CONSTRUCTION</b>				
1	MAINTENANCE OF TRAFFIC	LS	1	\$300.00	\$300.00
2	SEDIMENT CONTROL & WATER QUALITY	LS	1	\$300.00	\$300.00
3	CLEARING AND GRUBBING	LS	1	\$100.00	\$100.00
	<b>CONST POTABLE WATER DISTRIBUTION</b>				
U-1	2" PVC SDR-21 CL-200 WATER MAIN DIRECT BURY	LF	300	\$25.00	\$7,500.00
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	250	\$36.00	\$9,000.00
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	2	\$200.00	\$400.00
U-12	FIRE HYDRANT ASSEMBLY	EA	1	\$5,000.00	\$5,000.00
U-13	DUCTILE IRON FITTINGS	LBS	320	\$5.50	\$1,760.00
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	5	\$50.00	\$250.00
U-16	INTER-CONNECT TO SUPPLY KNIGHT ISLAND UTILITIES - PALM ISLAND RESORT	EA	1	\$25,000.00	\$25,000.00
	<b>CONST RESTORATION/ COMPLETION</b>				
U-20	OPEN CUT TRENCH REPAIR - ASPHALT	SY	15	\$55.00	\$825.00
U-21	ASPHALT ROAD OVERLAY - 1.25" TYPE III	SY	100	\$17.00	\$1,700.00
U-22	OPEN CUT TRENCH REPAIR - SAND/ SHELL	SY	30	\$20.00	\$600.00
U-28	CONST RECORD / AS-BUILT DRAWINGS	LS	1	\$1,000.00	\$1,000.00



**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 6 (Constructed 2004)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
				<b>SUBTOTAL</b>	<b>\$53,735.00</b>
	CONST MOBILIZE / DEMOBILIZATION (5%)				\$2,686.75
	LOCALITY ADJUSTMENT & BARGING COSTS FOR BRIDGE-LESS ISLAND (10%)				\$5,373.50
	ENGINEERING DESIGN / PERMITS (15%)				\$8,060.25

**BOCILLA UTILITIES, INC (Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)**  
**ZONE 6 (Constructed 2004)**

**TOTAL            \$69,855.50**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 7 (Constructed 2005)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>GENERAL CONSTRUCTION</b>				
1	MAINTENANCE OF TRAFFIC	LS	1	\$2,400.00	\$2,400.00
2	SEDIMENT CONTROL & WATER QUALITY	LS	1	\$2,400.00	\$2,400.00
3	CLEARING AND GRUBBING	LS	1	\$800.00	\$800.00
	<b>CONST POTABLE WATER DISTRIBUTION</b>				
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	2,880	\$36.00	\$103,680.00
U-8	6" GATE VALVE	EA	7	\$1,200.00	\$8,400.00
U-10	MAIN END BLOW-OFF ASSEMBLY - 2"	EA	3	\$1,000.00	\$3,000.00
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	2	\$200.00	\$400.00
U-12	FIRE HYDRANT ASSEMBLY	EA	3	\$5,000.00	\$15,000.00
U-13	DUCTILE IRON FITTINGS	LBS	760	\$5.50	\$4,180.00
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	25	\$50.00	\$1,250.00
U-17	WATER SERVICE & METER (SHORT SIDE)	EA	15	\$300.00	\$4,500.00
U-18	WATER SERVICE & METER (LONG SIDE)	EA	15	\$500.00	\$7,500.00
U-19	METER INSTALLED	EA	30	\$1,000.00	\$30,000.00

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 7 (Constructed 2005)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>CONST RESTORATION/ COMPLETION</b>				
U-22	OPEN CUT TRENCH REPAIR - SAND/ SHELL	SY	250	\$20.00	\$5,000.00
U-23	DRIVEWAY RESTORATION - SAND/ SHELL	SY	160	\$10.00	\$1,600.00
U-24	DRIVEWAY RESTORATION - RESET PAVERS	SY	20	\$30.00	\$600.00
U-25	DRIVEWAY RESTORATION - 4" CONCRETE	SY	20	\$40.00	\$800.00
U-26	PERFORMANCE TURF, SOD (BAHIA)(WATERING INCIDENTAL)	SY	200	\$2.00	\$400.00
U-27	PREMIUM SOD (WATERING INCIDENTAL)	SY	200	\$3.00	\$600.00
U-28	CONST RECORD / AS-BUILT DRAWINGS	LS	1	\$4,000.00	\$4,000.00
				<b>SUBTOTAL</b>	<b>\$196,510.00</b>
	CONST MOBILIZE / DEMOBILIZATION (5%)				\$9,825.50
	LOCALITY ADJUSTMENT & BARGING COSTS FOR BRIDGE-LESS ISLAND (10%)				\$19,651.00
	ENGINEERING DESIGN / PERMITS (15%)				\$29,476.50

**BOCILLA UTILITIES, INC (Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)**  
**ZONE 7 (Constructed 2005)**

**TOTAL      \$255,463.00**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 8 (Constructed 2006)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>GENERAL CONSTRUCTION</b>				
1	MAINTENANCE OF TRAFFIC	LS	1	\$2,400.00	\$2,400.00
2	SEDIMENT CONTROL & WATER QUALITY	LS	1	\$2,400.00	\$2,400.00
3	CLEARING AND GRUBBING	LS	1	\$800.00	\$800.00
	<b>CONST POTABLE WATER DISTRIBUTION</b>				
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	2,980	\$36.00	\$107,280.00
U-8	6" GATE VALVE	EA	3	\$1,200.00	\$3,600.00
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	2	\$200.00	\$400.00
U-12	FIRE HYDRANT ASSEMBLY	EA	3	\$5,000.00	\$15,000.00
U-13	DUCTILE IRON FITTINGS	LBS	600	\$5.50	\$3,300.00
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	25	\$50.00	\$1,250.00
U-17	WATER SERVICE & METER (SHORT SIDE)	EA	15	\$300.00	\$4,500.00
U-18	WATER SERVICE & METER (LONG SIDE)	EA	15	\$500.00	\$7,500.00
U-19	METER INSTALLED	EA	30	\$1,000.00	\$30,000.00

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 8 (Constructed 2006)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<b>CONST RESTORATION/ COMPLETION</b>				
U-22	OPEN CUT TRENCH REPAIR - SAND/ SHELL	SY	250	\$20.00	\$5,000.00
U-23	DRIVEWAY RESTORATION - SAND/ SHELL	SY	160	\$10.00	\$1,600.00
U-24	DRIVEWAY RESTORATION - RESET PAVERS	SY	20	\$30.00	\$600.00
U-25	DRIVEWAY RESTORATION - 4" CONCRETE	SY	20	\$40.00	\$800.00
U-26	PERFORMANCE TURF, SOD (BAHIA)(WATERING INCIDENTAL)	SY	200	\$2.00	\$400.00
U-27	PREMIUM SOD (WATERING INCIDENTAL)	SY	200	\$3.00	\$600.00
U-28	CONST RECORD / AS-BUILT DRAWINGS	LS	1	\$4,000.00	\$4,000.00
				<b>SUBTOTAL</b>	<b>\$191,430.00</b>
	CONST MOBILIZE / DEMOBILIZATION (5%)				\$9,571.50
	LOCALITY ADJUSTMENT & BARGING COSTS FOR BRIDGE-LESS ISLAND (10%)				\$19,143.00
	ENGINEERING DESIGN / PERMITS (15%)				\$28,714.50

**BOCILLA UTILITIES, INC (Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)**  
**ZONE 8 (Constructed 2006)**

**TOTAL**                      **\$248,859.00**

**ENGINEER'S SUMMARY  
of  
BID COST  
  
ZONE 9**

**BOCILLA UTILITIES, INC.**  
**(Water Transmission Main - Interconnect with EWD)**  
**ENGINEER'S SUMMARY OF BID COST (with 15% mark-up for Engr/Design/Permitting)**  
**ZONE 9 (Constructed 2014)**

ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE
	<i><b>MAIN LINE CONSTRUCTION</b></i>				
	<i><b>FROM EWD CONNECTION TO BOCILLA BOOSTER PUMP</b></i>				
1	TOTAL BID (per attached)	LS	1	\$373,780.00	\$373,780.00
	<i><b>BOCILLA BOOSTER PUMPING STATION</b></i>				
2	TOTAL BID (per attached)	LS	1	\$103,180.00	\$103,180.00
	<i><b>SUB-AQUEOUS CROSSING OF LEMON BAY</b></i>				
	<i><b>FROM BOCILLA BOOSTER PUMP TO ON-ISLAND CONNECTION</b></i>				
3	TOTAL BID (per attached)	LS	1	\$138,570.00	\$138,570.00
				<b>SUBTOTAL</b>	<b>\$615,530.00</b>
	ENGINEERING DESIGN / PERMITS (15%)				\$92,329.50

**BOCILLA UTILITIES, INC (Water Trans Main - Interconnect with EWD)**  
**ENGINEER'S SUMMARY OF BID COST (& 15% Engr/Design/Permitting)**  
**ZONE 9 (Constructed 2014)**

**TOTAL            \$707,859.50**

UNIT PRICE/LINE ITEM BID LIST

Directional Drill

<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
<b>PIPE DIRECTIONAL DRILLING</b>			
8" HDPE DR 11 Transmission Main	8,800 LF	\$ <u>33<sup>00</sup></u>	\$ <u>290,400<sup>00</sup></u>
<b>VALVES</b>			
8" GATE VALVES (3 at Crossing 2 at Ester Street)	5 EA	\$ <u>2,000<sup>00</sup></u>	\$ <u>10,000<sup>00</sup></u>
6" GATE VALVES (Connection to crossing mains)	3 EA	\$ <u>2,500<sup>00</sup></u>	\$ <u>7,500<sup>00</sup></u>
8X8X8 TEE (Ester Street)	1 EA	\$ <u>2,000<sup>00</sup></u>	\$ <u>2,000<sup>00</sup></u>
8" CROSS (Connection to crossing mains)	1 EA	\$ <u>2,500<sup>00</sup></u>	\$ <u>2,500<sup>00</sup></u>
<b>SURFACE RESTORATION/REPAIR</b>			
LIMITED CLEAR & GRUB	2,000 SQFT	\$ <u>1<sup>00</sup></u>	\$ <u>2,000<sup>00</sup></u>
**SEED AND MULCH **(TO BE RESTORED IN KIND)	4,000 SQFT	\$ <u>1<sup>00</sup></u>	\$ <u>4,000<sup>00</sup></u>
<b>MISCELLANEOUS</b>			
2" BLOW-OFF ASSEMBLIES	6 EA	\$ <u>2,000<sup>00</sup></u>	\$ <u>12,000<sup>00</sup></u>
FIRE HYDRANT ASSEMBLY (Ferry Landing)	1 EA	\$ <u>5,400<sup>00</sup></u>	\$ <u>5,400<sup>00</sup></u>
SAMPLE TAP ASSEMBLY	2 EA	\$ <u>2,000<sup>00</sup></u>	\$ <u>2,000<sup>00</sup></u>
CONTINGENCY (10%)			\$ <u>33,980<sup>00</sup></u>
TOTAL			\$ <u>373,780<sup>00</sup></u>

Three hundred seventy three thousand seven hundred

(written amount)

eighty dollars <sup>XX</sup> / 100 (\$ 373,780<sup>00</sup>)



UNIT PRICE/LINE ITEM BID LIST

Mechanical

<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
8" CHECK VALVE (Booster Pump Station)	1 EA	\$ <u>7,600<sup>00</sup></u>	\$ <u>7,600<sup>00</sup></u>
8X8X6 TEE (Booster Pump Connection)	2 EA	\$ <u>1,300<sup>00</sup></u>	\$ <u>2,600<sup>00</sup></u>
8" Gate Valve (Booster Pump Connection)	4 EA	\$ <u>2,000<sup>00</sup></u>	\$ <u>8,000<sup>00</sup></u>
<b>EQUIPMENT</b>			
METER ASSEMBLY (Complete as shown)	1	\$ <u>16,000<sup>00</sup></u>	\$ <u>16,000<sup>00</sup></u>
DUPLEX BOOSTER PUMPING STATION COMPLETE	1	\$ <u>50,000<sup>00</sup></u>	\$ <u>50,000<sup>00</sup></u>
10X20 6" Thick Reinforced Concrete Slab for Booster Station	1	\$ <u>2,200<sup>00</sup></u>	\$ <u>2,200<sup>00</sup></u>
20'X6' 6" Thick Concrete Slab for Meter Assembly	1	\$ <u>1,200</u>	\$ <u>1,200<sup>00</sup></u>
All Power Electrical for Booster Pump Station	1	\$ <u>6,800</u>	\$ <u>6,800<sup>00</sup></u>
CONTINGENCY (10%)			\$ <u>9,380</u>

TOTAL \$ 103,180<sup>00</sup>

One Hundred three thousand one hundred eighty \$100

(written amount)

\$ 103,180<sup>00</sup>

NOTES:

- WHERE THE TERM COMPLETE OR ASSEMBLY/IES ARE UTILIZED IT IS TO MEAN A COMPLETE SYSTEM INCLUDING ALL VALVES AND APPURTENANCES AS SHOWN ON THE DRAWINGS'
- ELECTRICAL POWER FOR BOOSTER PUMP STATION IS LIMITED TO POWER WIRING ONLY AND DOES NOT INCLUDE CONTROLS WIRING. HOWEVER IT DOES INCLUDE PROVISION OF POWER TO THE CONTROL SYSTEM FOR THE BOOSTER STATION.

NRSS: BOOST STATION TOTAL \$ 476,960  
50,000

# Sylvester Excavating Inc.

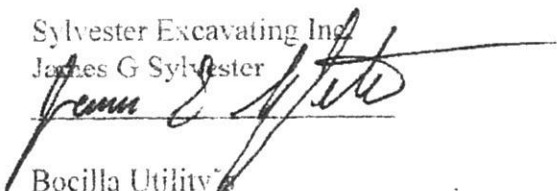
571 Paul Morris Dr.  
Englewood Fl. 34223  
Phone: 941-475-3388  
Fax: 941-475-6392  
Email: [jimsylexc@gmail.com](mailto:jimsylexc@gmail.com)

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## Sub aqueous crossing of Lemon Bay Phase 1

Water Crossing			
Pipe & Horizontal Directional Bore	1890'	\$33.00 per lf.	\$62370.00
6" HDPE DR11 Water Main			
Water line on Island			
Pipe & Horizontal Directional Bore	900'	\$33.00 per lf.	\$29700.00
6" HDPE DR 11 Water Main			
Valves	8 EA.	\$1500.00	\$12000.00
6" Valves			
Miscellaneous	1 LS	\$4000.00	\$4000.00
Fittings			
Wire Line Sub-Aqueous Locating	1 LS	\$25000.00	\$25000.00
Fire Hydrant Ass.	1 LS	\$5500.00	\$5500.00
Cost of any & all permits and Bonds not included. Sylvester Excavating will only bill footage used			
		Total	\$138,570.00

Sylvester Excavating Inc.  
James G Sylvester

  
Bocilla Utility  
Craig Noden

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Knight Island  
Dean Beakstead

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# **Owner's Timeline & Maps of Zones**

## BOCILLA UTILITIES DISTRIBUTION TIME LINE

1. 1991- Palm Island Estates- Unit 4-Don Pedro Island
2. 1991- North Gulf Blvd. – Palm Island
- × 3. 1993- Michael Kosinski & Anne Merry Bridge crossings with Ductile Iron pipe and air relief
4. 1995 – Palm Island Estates – Unit 3- Palm Island
5. 1998- Preserve of Don Pedro – Don Pedro Island
6. 2004- Interconnect with Knight Island Utilities -Palm Island (\$40,000)
7. 2005- Hidden Cove & Palm Island Estates Unit 3 (Blocks G & H)
8. 2006 - Beach Place & Adele Way
- × 9. 2014- Interconnect with Englewood Water District (meter set)- Subaqueous of Buck Creek- Placida Road HDPE- Panama Blvd HDPE- Boost station- Subaqueous Intracoastal Waterway – Interconnect with Knight Island Utilities (meter set)







ATTACHMENT “3-10”



**BOCILLA UTILITIES, INC.**  
**ORIGINAL COST OF SERVICE**  
and  
**ACCUMULATED DEPRECIATION as of DECEMBER 31, 2015**

**TRANSMISSION & DISTRIBUTION PLANT**  
**INCLUDING PUMPING PLANT between the Utility and the Englewood Water**  
**District (EWD)**

**Prepared by**  
**Management & Regulatory Consultants, Inc.**

**October, 2016**

Revised: 11.28.2016

**BOCILLA UTILITIES, INC.**  
**ORIGINAL COST OF SERVICE**  
and  
**ACCUMULATED DEPRECIATION as of DECEMBER 31, 2015**

**TRANSMISSION & DISTRIBUTION PLANT**  
**INCLUDING PUMPING PLANT between the Utility and the Englewood Water District**  
**(EWD)**

**1. SUMMARY**

This calculation of original cost and accumulated depreciation as of December 31, 2015 was prepared at the request of Bocilla Utilities, Inc. after a finding in Florida Public Service Commission (PSC) Staff Audit Control No. 16-187-2-1 that the utility could not provide support for transmission and distribution plant additions. When sufficient records are lacking to support the cost of plant in service, it has been PSC policy to recognize an original cost study as a basis for estimating those costs.<sup>1</sup>

The calculation of original cost is based on the Reproduction Cost Report prepared by Giffels-Webster Engineers, Inc. of Sarasota, FL. According to that report the estimated reproduction cost of the transmission & distribution plant, including pumping plant between the Utility and EWD, as of September, 2016, is \$4,455,850.60.

The **Original Cost** of the transmission & distribution plant, including pumping plant between the Utility and EWD, is estimated to be **\$2,361,741.35**.

The **Accumulated Depreciation** through December 31, 2015 is calculated to be **\$920,893.30**. *(Revised: 11.28.2016)*

The **Net Plant**, as of December 31, 2015, is estimated to be **\$1,440,848.05**. *(Revised: 11.28.2016)*

**2. METHODOLOGY**

The Reproduction Cost was estimated based on September, 2016 pricing. The original cost was estimated by applying the ratio of the Handy-Whitman Index (HWI)<sup>2</sup> for the year of installation, as provided by the Utility, to the January 1, 2016 HWI (the latest available), for each NARUC account line item.

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<sup>1</sup> See PSC Order Nos. PSC-94-1602-FOF-WS, 12/27/1994 and PSC-01-1792-PSS-SU, 9/5/2001.

<sup>2</sup> Cost Trends of Water Utility Construction, Bulletin No. 183, South Atlantic Region, published by Whitman, Requardt and Associates LLP.

### **3. ATTACHMENTS**

**SUMMARY** - a summary of the reproduction cost by year of installation, the original cost, by year of installation, by NARUC account no. and accumulated depreciation through December 31, 2015 for the plant installed in each year.

**SUPPORT TABLES** – detailed calculations of the original cost, annual depreciation expense and accumulated depreciation for each item in the Reproduction Cost Report.

## **SUMMARY**

BOCILLA UTILITIES, INC.

ORIGINAL COST OF SERVICE - SUMMARY

TRANSMISSION & DISTRIBUTION PLANT, INCLUDING PUMPING between the Utility and the Englewood Water District (EWD)

REVISED: 11-28-2016

	REPRODUCTION COST, SEPTEMBER, 2016 OF PLANT ADDITIONS IN YEAR OF INSTALLATION							
	1991	1995	1998	2004	2005	2006	2014	Total
PLANT IN SERVICE	\$ 2,390,654.50	\$ 523,458.00	\$ 259,701.00	\$ 69,855.60	\$ 255,463.00	\$ 248,859.00	\$ 707,859.50	\$ 4,455,850.60

Acct.	PLANT IN SERVICE BY ACCOUNT	ORIGINAL COST OF PLANT ADDITIONS IN YEAR OF INSTALLATION							
		1991	1995	1998	2004	2005	2006	2014	Total
311.2	Pumping Equipment							\$ 114,928.41	\$ 114,928.41
331.4	Transmission & Distribution Mains	\$ 665,204.94	\$ 141,554.24	\$ 60,939.83	\$ 33,841.33	\$ 102,508.73	\$ 106,702.09	\$ 551,554.70	\$ 1,682,305.85
333.4	Services	\$ 66,549.58	\$ 18,248.66	\$ 9,990.55	\$ -	\$ 12,200.79	\$ 14,202.31	\$ -	\$ 121,191.88
334.4	Meters Installed	\$ 156,215.29	\$ 42,887.80	\$ 22,318.30	\$ -	\$ 21,626.94	\$ 29,521.03	\$ -	\$ 272,589.36
335.4	Hydrants	\$ 99,563.26	\$ 28,265.71	\$ 10,821.19	\$ 4,325.63	\$ 13,283.76	\$ 14,486.28	\$ -	\$ 170,745.84
	<b>Total</b>	\$ 987,533.07	\$ 230,956.41	\$ 124,069.86	\$ 38,166.97	\$ 149,620.22	\$ 164,911.71	\$ 666,483.10	\$ 2,361,741.35

Acct.	ACCUMULATED DEPRECIATION	ACCUMULATED DEPRECIATION THROUGH DECEMBER, 2015 OF PLANT ADDITIONS IN YEAR OF INSTALLATION							
		1991	1995	1998	2004	2005	2006	2014	Total
311.2	Pumping Equipment							\$ 5,746.42	\$ 5,746.42
331.4	Transmission & Distribution Mains	\$ 371,277.17	\$ 65,839.18	\$ 31,999.47	\$ 8,657.09	\$ 23,839.24	\$ 22,333.00	\$ 12,826.85	\$ 536,772.00
333.4	Services	\$ 39,929.75	\$ 9,124.33	\$ 4,245.98	\$ -	\$ 3,050.20	\$ 3,195.52	\$ -	\$ 59,545.78
334.4	Meters Installed	\$ 156,215.29	\$ 42,887.80	\$ 18,970.55	\$ -	\$ 10,813.47	\$ 13,284.46	\$ -	\$ 242,171.58
335.4	Hydrants	\$ 53,100.41	\$ 12,562.54	\$ 4,088.01	\$ 1,057.38	\$ 2,951.95	\$ 2,897.26	\$ -	\$ 76,657.53
	<b>Total</b>	\$ 620,522.62	\$ 130,413.85	\$ 59,304.01	\$ 9,714.46	\$ 40,654.86	\$ 41,710.23	\$ 18,573.27	\$ 920,893.30
								<b>Net Plant</b>	\$ 1,440,848.05

## **SUPPORT TABLES**

Page 1	Original Cost, Installed, of 1991 construction
Page 2	Accum. Depreciation, as of 12/31/2015, of 1991 construction
Page 3	Original Cost, Installed, of 1995 construction
Page 4	Accum. Depreciation, as of 12/31/2015, of 1995 construction
Page 5	Original Cost, Installed, of 1998 construction
Page 6	Accum. Depreciation, as of 12/31/2015, of 1998 construction
Page 7	Original Cost, Installed, of 2004 construction
Page 8	Accum. Depreciation, as of 12/31/2015, of 2004 construction
Page 9	Original Cost, Installed, of 2005 construction
Page 10	Accum. Depreciation, as of 12/31/2015, of 2005 construction
Page 11	Original Cost, Installed, of 2006 construction
Page 12	Accum. Depreciation, as of 12/31/2015, of 2006 construction
Page 13	Original Cost, Installed, of 2014 construction
Page 14	Accum. Depreciation, as of 12/31/2015, of 2014 construction

**BOCILLA UTILITIES, INC.**  
 (Water Distribution System - On Island)  
 ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)  
 ZONES 1 THRU 3 (Constructed 1991)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE	GENERAL OVERHEADS	GENERAL CONST/RESTORATION/COMPLETION	TOTAL 2016 INSTALLED COST	HWI INDEX LINE NO.	HWI INDEX 1/1/2016	HWI INDEX 1991	TOTAL 1991 INSTALLED COST	NARUC ACCOUNT
	<b>CONST POTABLE WATER DISTRIBUTION</b>												
U-2	4" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	6,500	\$30.00	\$ 195,000.00	\$ 58,500.00	\$ 29,320.18	\$ 279,820.18	34	669.00	273.00	\$ 114,188.71	331.4
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	21,720	\$36.00	\$ 781,920.00	\$ 234,576.00	\$ 105,539.89	\$ 1,122,035.89	34	669.00	273.00	\$ 457,871.15	331.4
U-4	6" HDPE SDR-11 PE-3408 WATER MAIN DIRECTIONAL BORE (BRIDGE CROSSING 1)	LF	500	\$72.00	\$ 36,000.00	\$ 10,800.00	\$ 4,859.11	\$ 51,859.11	34	669.00	273.00	\$ 21,080.62	331.4
U-5	6" HDPE SDR-11 PE-3408 WATER MAIN DIRECTIONAL BORE (BRIDGE CROSSING 2)	LF	300	\$72.00	\$ 21,600.00	\$ 6,480.00	\$ 2,915.47	\$ 30,995.47	34	669.00	273.00	\$ 12,648.37	331.4
U-6	2" GATE VALVE	EA	1	\$730.00	\$ 730.00	\$ 225.00	\$ 101.23	\$ 1,078.23	34	669.00	273.00	\$ 439.18	331.4
U-7	4" GATE VALVE	EA	6	\$1,000.00	\$ 6,000.00	\$ 1,800.00	\$ 809.85	\$ 8,609.85	34	669.00	273.00	\$ 3,613.44	331.4
U-8	6" GATE VALVE	EA	42	\$1,200.00	\$ 50,400.00	\$ 15,120.00	\$ 6,802.76	\$ 72,322.76	34	669.00	273.00	\$ 29,512.87	331.4
U-9	AUTOMATIC AIR RELEASE VALVE - 2" COMPLETE ASSEMBLY	EA	2	\$3,000.00	\$ 6,000.00	\$ 1,800.00	\$ 809.85	\$ 8,609.85	34	669.00	273.00	\$ 3,613.44	331.4
U-10	MAIN END BLOW-OFF ASSEMBLY - 2"	EA	1	\$1,000.00	\$ 1,000.00	\$ 300.00	\$ 134.98	\$ 1,434.98	34	669.00	273.00	\$ 585.57	331.4
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	10	\$200.00	\$ 2,000.00	\$ 600.00	\$ 269.95	\$ 2,869.95	34	669.00	273.00	\$ 1,171.15	331.4
U-12	FIRE HYDRANT ASSEMBLY	EA	36	\$5,000.00	\$ 180,000.00	\$ 54,000.00	\$ 24,295.56	\$ 258,295.56	42	906.00	350.00	\$ 99,563.26	335.4
U-13	DUCTILE IRON FITTINGS	LRS	5,240	\$5.50	\$ 28,820.00	\$ 8,648.00	\$ 3,889.99	\$ 41,355.99	34	669.00	273.00	\$ 16,878.21	331.4
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	100	\$50.00	\$ 5,000.00	\$ 1,500.00	\$ 674.88	\$ 7,174.88	34	669.00	273.00	\$ 2,927.86	331.4
U-15	CONNECTION TO EXISTING WATER MAIN AT ISLAND SIDE OF DIRECTIONAL DRILL	EA	1	\$1,500.00	\$ 1,500.00	\$ 450.00	\$ 202.46	\$ 2,152.46	34	669.00	273.00	\$ 878.36	331.4
U-17	WATER SERVICE (SHORT SIDE)	EA	126	\$300.00	\$ 37,500.00	\$ 11,250.00	\$ 5,061.57	\$ 52,911.57	39	483.00	224.00	\$ 24,956.09	333.4
U-18	WATER SERVICE (LONG SIDE)	EA	125	\$500.00	\$ 62,500.00	\$ 18,750.00	\$ 8,435.96	\$ 80,685.96	39	483.00	224.00	\$ 41,593.49	333.4
U-19	METER INSTALLED	EA	250	\$1,000.00	\$ 250,000.00	\$ 75,000.00	\$ 33,743.82	\$ 358,743.82	(40-41)/2	498.00	212.50	\$ 156,215.29	334.4
				<b>SUBTOTAL</b>	<b>\$ 1,665,990.00</b>	<b>\$ 499,797.00</b>	<b>\$ 224,667.50</b>	<b>\$ 2,390,454.50</b>				<b>\$ 987,633.07</b>	

BOCILLA UTILITIES, INC (Water Distribution System - On Island)  
 ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)  
 ZONES 1 THRU 3 (Constructed 1991)  
**TOTAL \$2,390,654.50**

**BOCILLA UTILITIES, INC.**  
 (Water Distribution System - On Island)  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONES 1 THRU 3 (Constructed 1991)**

(1)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM No.	TOTAL 1991 INSTALLED COST	NARUC ACCOUNT	NARUC CLASS B LIFE	ANNUAL DEPREC. EXPENSE	Years	ACCUM. DEPREC. 12/31/2015
U-2	\$ 114,186.71	331.4	43	2,655.50	24.00	63,732.12
U-3	\$ 467,871.15	331.4	43	10,648.17	24.00	255,555.99
U-4	\$ 21,080.62	331.4	43	490.25	24.00	11,765.93
U-5	\$ 12,648.37	331.4	43	294.15	24.00	7,059.56
U-6	\$ 439.18	331.4	43	10.21	24.00	245.12
U-7	\$ 3,513.44	331.4	43	81.71	24.00	1,960.99
U-8	\$ 29,512.87	331.4	43	686.35	24.00	16,472.30
U-9	\$ 3,513.44	331.4	43	81.71	24.00	1,960.99
U-10	\$ 585.57	331.4	43	13.62	24.00	326.83
U-11	\$ 1,171.15	331.4	43	27.24	24.00	653.66
U-12	\$ 99,563.26	335.4	45	2,212.52	24.00	53,100.41
U-13	\$ 16,876.21	331.4	43	392.47	24.00	9,419.28
U-14	\$ 2,927.86	331.4	43	68.09	24.00	1,634.16
U-15	\$ 878.36	331.4	43	20.43	24.00	490.25
U-17	\$ 24,956.09	333.4	40	623.90	24.00	14,973.66
U-18	\$ 41,593.49	333.4	40	1,039.84	24.00	24,956.09
U-19	\$ 156,215.29	334.4	20	7,810.76	24.00	156,215.29
	\$ 987,533.07					\$ 620,522.62



**BOCILLA UTILITIES, INC.**  
 (Water Distribution System - On Island)  
 ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)  
 ZONE 4 (Constructed 1995)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE	GENERAL OVERHEADS	GENERAL CONST/RESTORATION/ COMPLETION	TOTAL INSTALLED COST	HWI INDEX LINE NO.	HWI INDEX 1/1/2016	HWI INDEX 1995	TOTAL 1995 INSTALLED COST	NARUC ACCOUNT
	<b>CONST POTABLE WATER DISTRIBUTION</b>												
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	8,020	\$36.00	\$216,720.00	65,016.00	25,569.57	\$07,302.57	34	669.00	284.00	\$ 130,454.31	331.4
U-8	6" GATE VALVE	EA	5	\$1,200.00	\$6,000.00	1,800.00	707.82	8,507.82	34	669.00	284.00	\$ 3,611.69	331.4
U-10	MAN END BLOW-OFF ASSEMBLY - 2"	EA	1	\$1,000.00	\$1,000.00	300.00	117.67	1,417.67	34	669.00	284.00	\$ 801.95	331.4
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	2	\$200.00	\$400.00	120.00	47.19	567.19	34	669.00	284.00	\$ 240.78	331.4
U-12	FIRE HYDRANT ASSEMBLY	EA	10	\$5,000.00	\$50,000.00	15,000.00	5,898.53	70,898.53	42	908.00	362.00	\$ 28,265.71	335.4
U-13	DUCTILE IRON FITTINGS	LBS	1,780	\$5.30	\$9,790.00	2,937.00	1,164.93	13,861.03	34	669.00	284.00	\$ 5,893.08	331.4
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	25	\$60.00	\$1,250.00	375.00	147.49	1,772.46	34	669.00	284.00	\$ 752.44	331.4
U-17	WATER SERVICE (SHORT SIDE)	EA	30	\$300.00	\$9,000.00	2,700.00	1,061.73	12,761.73	39	483.00	259.00	\$ 6,843.25	333.4
U-18	WATER SERVICE (LONG SIDE)	EA	30	\$500.00	\$15,000.00	4,500.00	1,769.56	21,269.56	39	483.00	259.00	\$ 11,405.42	333.4
U-19	METER INSTALLED	EA	60	\$1,000.00	\$60,000.00	18,000.00	7,079.23	85,079.23	(40-41)/2	486.00	246.00	\$ 42,867.80	334.4
				<b>SUBTOTAL</b>	<b>\$369,160.00</b>	<b>\$110,748.00</b>	<b>\$43,550.00</b>	<b>\$523,458.00</b>				<b>230,956.41</b>	

**BOCILLA UTILITIES, INC (Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)**  
**ZONE 4 (Constructed 1995)**  
**TOTAL      \$523,458.00**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 4 (Constructed 1995)**

Page 4 -  
Support

(1)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM No.	TOTAL 1995 INSTALLED COST	NARUC ACCOUNT	NARUC CLASS B LIFE	ANNUAL DEPREC. EXPENSE	Years	ACCUM. DEPREC. 12/31/2015
U-3	\$ 130,454.31	331.4	43	3,033.82	20.00	60,676.42
U-8	\$ 3,611.69	331.4	43	83.99	20.00	1,679.86
U-10	\$ 601.95	331.4	43	14.00	20.00	279.98
U-11	\$ 240.78	331.4	43	5.60	20.00	111.99
U-12	\$ 28,265.71	335.4	45	628.13	20.00	12,562.54
U-13	\$ 5,893.08	331.4	43	137.05	20.00	2,740.97
U-14	\$ 752.44	331.4	43	17.50	20.00	349.97
U-17	\$ 6,843.25	333.4	40	171.08	20.00	3,421.62
U-18	\$ 11,405.42	333.4	40	285.14	20.00	5,702.71
U-19	\$ 42,887.80	334.4	20	2,144.39	20.00	42,887.80
	230,956.41					130,413.85

BOCILLA UTILITIES, INC.  
(Water Distribution System - On Island)  
ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)  
ZONE 5 (Constructed 1998)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE	GENERAL OVERHEADS	GENERAL CONST/RESTORATION/ COMPLETION	TOTAL INSTALLED COST	HWI INDEX LINE NO.	HWI INDEX 1/1/2016	HWI INDEX 1998	TOTAL 1998 INSTALLED COST	NARUC ACCOUNT
<b>CONST POTABLE WATER DISTRIBUTION</b>													
U-2	4" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	520	\$30.00	\$16,800.00	\$ 4,680.00	\$ 1,886.31	\$22,166.31	34	689.00	303.00	\$ 10,039.45	331.4
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	2,650	\$38.00	\$95,400.00	\$ 28,620.00	\$ 11,535.48	\$138,555.48	34	689.00	303.00	\$ 61,395.08	331.4
U-8	6" GATE VALVE	EA	7	\$1,200.00	\$8,400.00	\$ 2,820.00	\$ 1,015.70	\$11,935.70	34	689.00	303.00	\$ 5,405.86	331.4
U-10	MAIN END BLOW-OFF ASSEMBLY - 2"	EA	2	\$1,000.00	\$2,000.00	\$ 600.00	\$ 241.83	\$2,841.83	34	689.00	303.00	\$ 1,287.11	331.4
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	2	\$200.00	\$400.00	\$ 120.00	\$ 48.37	\$568.37	34	689.00	303.00	\$ 257.42	331.4
U-12	FIRE HYDRANT ASSEMBLY	EA	3	\$5,000.00	\$15,000.00	\$ 4,500.00	\$ 1,813.75	\$21,313.75	42	908.00	461.00	\$ 10,821.19	335.4
U-13	DUCTILE IRON FITTINGS	LBS	540	\$5.50	\$2,970.00	\$ 891.00	\$ 359.12	\$4,220.12	34	689.00	303.00	\$ 1,911.38	331.4
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	20	\$50.00	\$1,000.00	\$ 300.00	\$ 120.92	\$1,420.92	34	689.00	303.00	\$ 643.66	331.4
U-17	WATER SERVICE (SHORT SIDE)	EA	15	\$300.00	\$4,500.00	\$ 1,350.00	\$ 544.13	\$6,394.13	39	483.00	283.00	\$ 3,746.46	333.4
U-18	WATER SERVICE (LONG SIDE)	EA	15	\$500.00	\$7,500.00	\$ 2,250.00	\$ 906.86	\$10,656.86	39	483.00	283.00	\$ 8,244.69	333.4
U-19	METER INSTALLED	EA	30	\$1,000.00	\$30,000.00	\$ 9,000.00	\$ 3,627.51	\$42,627.51	(40-41)Y2,	486.00	255.50	\$ 22,319.30	334.4
					<b>SUBTOTAL</b>	<b>\$182,770.00</b>	<b>\$54,831.00</b>	<b>\$22,100.00</b>				<b>\$124,069.88</b>	

BOCILLA UTILITIES, INC (Water Distribution System - On Island)  
ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)  
ZONE 5 (Constructed 1998)  
**TOTAL \$259,701.00**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 5 (Constructed 1998)**

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Support

(1)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM No.	TOTAL 1998 INSTALLED COST	NARUC ACCOUNT	NARUC CLASS B LIFE	ANNUAL DEPREC. EXPENSE	Years	ACCUM. DEPREC. 12/31/2015
U-2	\$ 10,039.45	331.4	43	233.48	17.00	3,969.08
U-3	\$ 61,395.08	331.4	43	1,427.79	17.00	24,272.47
U-8	\$ 5,405.86	331.4	43	125.72	17.00	2,137.20
U-10	\$ 1,287.11	331.4	43	29.93	17.00	508.86
U-11	\$ 257.42	331.4	43	5.99	17.00	101.77
U-12	\$ 10,821.19	335.4	45	240.47	17.00	4,088.01
U-13	\$ 1,911.36	331.4	43	44.45	17.00	755.65
U-14	\$ 643.55	331.4	43	14.97	17.00	254.43
U-17	\$ 3,746.46	333.4	40	93.66	17.00	1,592.24
U-18	\$ 6,244.09	333.4	40	156.10	17.00	2,653.74
U-19	\$ 22,318.30	334.4	20	1,115.91	17.00	18,970.55
	\$124,069.86					\$59,304.01

**BOCILLA UTILITIES, INC.**  
 (Water Distribution System - On Island)  
 ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2018 Pricing)  
 ZONE 6 (Constructed 2004)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE	GENERAL OVERHEADS	GENERAL CONST/RESTORATION/ COMPLETION	TOTAL INSTALLED COST	HWI INDEX LINE NO.	HWI INDEX 1/1/2018	HWI INDEX 7/1/2004	TOTAL 2004 INSTALLED COST	NARUC ACCOUNT
<b>CONST POTABLE WATER DISTRIBUTION</b>													
U-1	2" PVC SDR-21 CL-200 WATER MAIN DIRECT BURY	LF	300	\$25.00	\$7,500.00	\$ 2,250.00	\$ 961.84	\$ 10,711.84	34	659.00	361.00	\$ 5,780.23	331.4
U-3	8" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	250	\$36.00	\$9,000.00	\$ 2,700.00	\$ 1,154.21	\$ 12,854.21	34	659.00	361.00	\$ 8,935.26	331.4
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	2	\$200.00	\$400.00	\$ 120.00	\$ 51.30	\$ 571.30	34	669.00	361.00	\$ 305.28	331.4
U-12	FIRE HYDRANT ASSEMBLY	EA	1	\$5,000.00	\$5,000.00	\$ 1,500.00	\$ 641.23	\$ 7,141.23	42	908.00	550.00	\$ 4,325.63	335.4
U-13	DUCTILE IRON FITTINGS	LBS	320	\$5.50	\$1,760.00	\$ 528.00	\$ 225.71	\$ 2,513.71	34	669.00	361.00	\$ 1,356.43	331.4
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	5	\$50.00	\$250.00	\$ 75.00	\$ 32.06	\$ 357.06	34	669.00	361.00	\$ 192.67	331.4
U-16	INTER-CONNECT TO SUPPLY KNIGHT ISLAND UTILITIES - PALM ISLAND RESORT	EA	1	\$25,000.00	\$25,000.00	\$ 7,500.00	\$ 3,206.14	\$ 35,706.14	34	669.00	361.00	\$ 19,267.44	331.4
					<b>SUBTOTAL</b>	\$ 14,873.00	\$ 6,272.60	\$69,655.60				\$38,168.97	

BOCILLA UTILITIES, INC (Water Distribution System - On Island)  
 ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2018 Pricing)  
 ZONE 6 (Constructed 2004)  
**TOTAL \$69,655.60**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 6 (Constructed 2004)**

(1)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM No.	TOTAL 2004 INSTALLED COST	NARUC ACCOUNT	NARUC CLASS B LIFE	ANNUAL DEPREC. EXPENSE	Years	ACCUM. DEPREC. 12/31/2015
U-1	\$ 5,780.23	331.4	43	134.42	11.00	1,478.66
U-3	\$ 6,936.28	331.4	43	161.31	11.00	1,774.40
U-11	\$ 308.28	331.4	43	7.17	11.00	78.86
U-12	\$ 4,325.63	335.4	45	96.13	11.00	1,057.38
U-13	\$ 1,356.43	331.4	43	31.54	11.00	346.99
U-14	\$ 192.67	331.4	43	4.48	11.00	49.29
U-16	\$ 19,267.44	331.4	43	448.08	11.00	4,928.88
	\$38,166.97					\$9,714.46

**BOCILLA UTILITIES, INC.**  
 (Water Distribution System - On Island)  
 ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)  
 ZONE 7 (Constructed 2005)

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE	GENERAL OVERHEADS	GENERAL CONST/RESTORATION/ COMPLETION	TOTAL INSTALLED COST	HVI INDEX LINE NO.	HVI INDEX 1/1/2016	HVI INDEX 7/1/2005	TOTAL 2005 INSTALLED COST	NARUC ACCOUNT
<b>CONST POTABLE WATER DISTRIBUTION</b>													
U-3	6" PVC C800 DR-14 WATER MAIN DIRECT BURY	LF	2,880	\$36.00	\$103,680.00	\$ 31,104.00	\$ 14,091.30	\$ 148,875.30	34	689.00	395.00	\$ 87,900.96	331.4
U-8	6" GATE VALVE	EA	7	\$1,200.00	\$8,400.00	\$ 2,520.00	\$ 1,141.66	\$ 12,061.66	34	689.00	395.00	\$ 7,121.61	331.4
U-10	MAIN END BLOW-OFF ASSEMBLY - 2'	EA	3	\$1,000.00	\$3,000.00	\$ 600.00	\$ 407.73	\$ 4,307.73	34	689.00	395.00	\$ 2,543.43	331.4
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	2	\$200.00	\$400.00	\$ 120.00	\$ 54.36	\$ 574.36	34	689.00	395.00	\$ 339.12	331.4
U-12	FIRE HYDRANT ASSEMBLY	EA	3	\$5,000.00	\$15,000.00	\$ 4,500.00	\$ 2,038.67	\$ 21,538.67	34	908.00	560.00	\$ 13,283.78	335.4
U-13	DUCTILE IRON FITTINGS	LBS	760	\$5.50	\$4,180.00	\$ 1,254.00	\$ 588.11	\$ 6,002.11	42	689.00	395.00	\$ 3,543.85	331.4
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	25	\$50.00	\$1,250.00	\$ 375.00	\$ 169.89	\$ 1,794.89	34	689.00	395.00	\$ 1,059.78	331.4
U-17	WATER SERVICE (SHORT SIDE)	EA	15	\$300.00	\$4,500.00	\$ 1,350.00	\$ 611.60	\$ 6,461.60	39	483.00	342.00	\$ 4,575.30	333.4
U-18	WATER SERVICE (LONG SIDE)	EA	15	\$500.00	\$7,500.00	\$ 2,250.00	\$ 1,019.34	\$ 10,769.34	39	483.00	342.00	\$ 7,625.49	333.4
U-19	METER INSTALLED	EA	30	\$1,000.00	\$30,000.00	\$ 9,000.00	\$ 4,077.34	\$ 43,077.34	(40-41)/2	488.00	245.00	\$ 21,626.94	334.4
				<b>SUBTOTAL</b>	\$177,910.00	\$53,373.00	\$24,180.00	\$255,463.00				\$149,620.22	

**BOCILLA UTILITIES, INC (Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)**  
**ZONE 7 (Constructed 2005)**  
**TOTAL \$255,463.00**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 7 (Constructed 2005)**

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(1)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM No.	TOTAL 2005 INSTALLED COST	NARUC ACCOUNT	NARUC CLASS B LIFE	ANNUAL DEPREC. EXPENSE	Years	ACCUM. DEPREC. 12/31/2015
U-3	\$ 87,900.96	331.4	43	2,044.21	10.00	20,442.08
U-8	\$ 7,121.61	331.4	43	165.62	10.00	1,656.19
U-10	\$ 2,543.43	331.4	43	59.15	10.00	591.50
U-11	\$ 339.12	331.4	43	7.89	10.00	78.87
U-12	\$ 13,283.76	335.4	45	295.19	10.00	2,951.95
U-13	\$ 3,543.85	331.4	43	82.42	10.00	824.15
U-14	\$ 1,059.76	331.4	43	24.65	10.00	246.46
U-17	\$ 4,575.30	333.4	40	114.38	10.00	1,143.82
U-18	\$ 7,625.49	333.4	40	190.64	10.00	1,906.37
U-19	\$ 21,626.94	334.4	20	1,081.35	10.00	10,813.47
	\$149,620.22					\$40,654.86



**BOCILLA UTILITIES, INC.**  
 (Water Distribution System - On Island)  
 ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)  
 ZONE 8 (Constructed 2006)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE	GENERAL OVERHEADS	GENERAL CONST/RESTORATION/ COMPLETION	TOTAL INSTALLED COST	H/W INDEX LINE NO.	H/W INDEX 1/1/2016	H/W INDEX 7/1/2006	TOTAL 2006 INSTALLED COST	NARUC ACCOUNT
	<b>CONST POTABLE WATER DISTRIBUTION</b>												
U-3	6" PVC C900 DR-14 WATER MAIN DIRECT BURY	LF	2,980	\$36.00	\$107,280.00	\$ 32,184.00	\$ 15,009.14	\$154,473.14	34	669.00	428.00	\$ 98,825.87	331.4
U-8	6" GATE VALVE	EA	3	\$1,200.00	\$3,600.00	\$ 1,080.00	\$ 503.66	\$5,183.66	34	669.00	428.00	\$ 3,315.30	331.4
U-11	SAMPLE POINT, TEMPORARY BACTI - 1"	EA	2	\$200.00	\$400.00	\$ 120.00	\$ 55.66	\$575.66	34	669.00	428.00	\$ 368.48	331.4
U-12	FIRE HYDRANT ASSEMBLY	EA	3	\$5,000.00	\$15,000.00	\$ 4,600.00	\$ 2,098.59	\$21,698.59	42	906.00	609.00	\$ 14,486.28	335.4
U-13	DUCTILE IRON FITTINGS	LBS	800	\$3.60	\$3,300.00	\$ 960.00	\$ 461.69	\$4,761.69	34	669.00	428.00	\$ 3,038.95	331.4
U-14	LOCATE BALLS AND MARKER TAPE WATER MAIN	EA	25	\$60.00	\$1,250.00	\$ 375.00	\$ 174.68	\$1,799.68	34	669.00	428.00	\$ 1,151.49	331.4
U-17	WATER SERVICE (SHORT SIDE)	EA	15	\$300.00	\$4,500.00	\$ 1,350.00	\$ 629.55	\$6,479.55	39	483.00	397.00	\$ 5,326.86	333.4
U-18	WATER SERVICE (LONG SIDE)	EA	15	\$600.00	\$7,600.00	\$ 2,250.00	\$ 1,049.30	\$10,799.30	39	483.00	397.00	\$ 8,876.44	333.4
U-19	METER INSTALLED	EA	30	\$1,000.00	\$30,000.00	\$ 9,000.00	\$ 4,167.18	\$43,167.18	(40-41)X2	488.00	333.00	\$ 29,621.03	334.4
					<b>SUBTOTAL</b>	<b>\$172,830.00</b>	<b>\$51,649.00</b>	<b>\$24,160.00</b>				<b>\$164,911.71</b>	

BOCILLA UTILITIES, INC (Water Distribution System - On Island)  
 ENGINEER'S ESTIMATE OF REPRODUCTION (September, 2016 Pricing)  
 ZONE 8 (Constructed 2006)  
**TOTAL \$248,859.00**

**BOCILLA UTILITIES, INC.**  
**(Water Distribution System - On Island)**  
**ENGINEER'S ESTIMATE OF REPRODUCTION COST (September, 2016 Pricing)**  
**ZONE 8 (Constructed 2006)**

(1)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM No.	TOTAL 2006 INSTALLED COST	NARUC ACCOUNT	NARUC CLASS B LIFE	ANNUAL DEPREC. EXPENSE	Years	ACCUM. DEPREC. 12/31/2015
U-3	\$ 98,825.87	331.4	43	2,298.28	9.00	20,684.48
U-8	\$ 3,316.30	331.4	43	77.12	9.00	694.11
U-11	\$ 368.48	331.4	43	8.57	9.00	77.12
U-12	\$ 14,486.28	335.4	45	321.92	9.00	2,897.26
U-13	\$ 3,039.95	331.4	43	70.70	9.00	636.27
U-14	\$ 1,151.49	331.4	43	26.78	9.00	241.01
U-17	\$ 5,325.86	333.4	40	133.15	9.00	1,198.32
U-18	\$ 8,876.44	333.4	40	221.91	9.00	1,997.20
U-19	\$ 29,521.03	334.4	20	1,476.05	9.00	13,284.46
	\$164,911.71					\$41,710.23

**BOCILLA UTILITIES, INC.**  
 (Water Transmission Main - Interconnect with EWD)  
 ENGINEER'S SUMMARY OF BID COST (with 15% mark-up for Engr/Design/Permitting) ZONE 9 (Constructed 2014)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ITEM No.	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENDED PRICE	GENERAL OVERHEADS	GENERAL CONST/RESTORATION/ COMPLETION	TOTAL INSTALLED COST	HWI INDEX LINE NO.	HWI INDEX 1/1/2018	HWI INDEX 7/1/2014	TOTAL 2014 INSTALLED COST	NARUC ACCOUNT
	<i>MAIN LINE CONSTRUCTION</i>												
1	FROM EWD CONNECTION TO BOCILLA BOOSTER PUMP	LS	1	\$373,780.00	\$373,780.00	\$ 55,057.00	\$0.00	\$429,847.00	9	690.00	900.00	\$ 390,770.00	331.4
2	BOCILLA BOOSTER PUMPING STATION	LS	1	\$103,180.00	\$103,180.00	\$ 15,477.00	\$0.00	\$118,657.00	8	641.00	624.00	\$ 114,926.41	311.2
	<i>SUB-AQUEOUS CROSSING OF LEMON BAY</i>												
3	FROM BOCILLA BOOSTER PUMP TO ON-ISLAND CONNECTION	LS	1	\$138,570.00	\$138,570.00	\$ 20,765.50	\$0.00	\$159,335.50	34	659.00	675.00	\$ 160,784.70	331.4
				TOTAL less Overheads	\$615,538.00	\$ 92,329.50	\$0.00	\$707,869.50				\$666,483.10	
	ENGINEERING DESIGN / PERMITS (15%)				\$92,329.50								
				TOTAL	707,869.50								

BOCILLA UTILITIES, INC (Water Trans Main - Interconnect with EWD)  
 ENGINEER'S SUMMARY OF BID COST (& 15% Engr/Design/Permitting) ZONE 9 (Constructed 2014)  
**TOTAL \$707,869.50**

**BOCILLA UTILITIES, INC.**  
**(Water Transmission Main - Interconnect with EWD)**  
**ENGINEER'S SUMMARY OF BID COST (with 15% mark-up for**  
**Engr/Design/Permitting) ZONE 9 (Constructed 2014)**

(1)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM No.	TOTAL 2014 INSTALLED COST	NARUC ACCOUNT	NARUC CLASS B LIFE	ANNUAL DEPREC. EXPENSE	Years	ACCUM. DEPREC. 12/31/2015
1	\$ 390,770.00	331.4	43	9,087.67	1.00	9,087.67
2	\$ 114,928.41	311.2	20	5,746.42	1.00	5,746.42
3	\$ 160,784.70	331.4	43	3,739.18	1.00	3,739.18
	\$666,483.10					\$18,573.27

Schedule of Water Plant in Service By Primary Account  
 Test Year Average Balance

Florida Public Service Commission

Company: Bocilla Utilities, Inc  
 Docket No.: 160065-WU  
 Schedule Year Ended: 12/31/2015  
 Historic [ ] Projected [ ] Cost Study [x]

Schedule: A-5  
 Page 1 of 1  
 Preparer: Raymond Flischel

Recap Schedules: A-1, A-4

Line No.	(1) Account No. and Name	(2) Prior Year 12/31/14	(3) Test Year 12/31/15	(4) Average Balance	(5) Adjustments*	(6) Adjusted Average	(7) Non-Used & Useful %	(8) Non-Used & Amount
1	<b>PLANT IN SERVICE</b>							
2	311.2 Pumping Equipment	114,928	114,928	114,928		114,928	0.00%	-
3								
4	<b>TRANSMISSION &amp; DISTRIBUTION PLANT</b>						0.00%	-
5	331.4 Transm. & Distribution Mains	1,682,306	1,682,306	1,682,306	-	1,682,306	0.00%	-
6	333.4 Services	121,192	121,192	121,192		121,192	0.00%	-
7	334.4 Meters & Meter Installations	272,569	272,569	272,569		272,569	0.00%	-
8	335.4 Hydrants	170,746	170,746	170,746		170,746	0.00%	-
9	Total Original Cost Study Report	\$ 2,361,741	\$ 2,361,741	\$ 2,361,741		\$ 2,361,741		

Schedule of Water Accumulated Depreciation By Primary Account

Test Year Average Balance

Company: Bocilla Utilities, Inc

Docket No.: 160065-WU

Schedule Year Ended: 12/31/2015

Historic  Projected  Cost Study

Florida Public Service Commission

Schedule: A-9

Page 1 of 1

Preparer: Raymond Flischel

Recap Schedules: A-1, A-8

Line No.	(1) Account No. and Name	(2) Prior Year 12/31/14	(3) Test Year 12/31/15	(4) Test Year Average Balance	(5) Adjustments*	(6) Adjusted Average	(7) Non-Used & Useful %	(8) Non-Used & Amount
1	PLANT IN SERVICE							
2	311.2 Pumping Equipment		(5,746)	(2,873)	0	(2,873)	0%	
3								
4	TRANSMISSION & DISTRIBUTION PLANT							
5	331.4 Transm. & Distribution Mains	(498,020)	(537,915)	(517,968)		(517,968)	0%	
6	333.4 Services	(55,842)	(58,402)	(57,122)		(57,122)	0%	
7	334.4 Meters & Meter Installations	(236,355)	(242,172)	(239,264)		(239,264)	0%	
8	335.4 Hydrants	(73,186)	(75,658)	(74,922)		(74,922)	0%	
9	Total Original Cost Study Report	\$ (863,403)	\$ (920,893)	\$ (892,148)	\$ 0	\$ (892,148)		

ATTACHMENT “3-14”

*We must not, in trying to think about how we can make a big difference, ignore the small daily differences we can make, which over time, add up to big differences that we often cannot foresee.*

*-Marian Wright Edelman*

**From:** CRAIG NODEN [<mailto:craig@bocillautilities.com>]  
**Sent:** Thursday, March 10, 2016 3:32 PM  
**To:** Taylor, Marianne <[Marianne.Taylor@charlottecountyfl.gov](mailto:Marianne.Taylor@charlottecountyfl.gov)>  
**Cc:** 'Jim Elder' <[jelder@dmkassoc.com](mailto:jelder@dmkassoc.com)>  
**Subject:** Water interruption March 9, 2016

Yesterday afternoon a neighbor called and had low water pressure. He lives next to the Fire House on Don Pedro so he went looking around and firefighters from the station were filling a tank or truck from one of our fire hydrants behind the station on Gasparilla Way.

The neighbor went home and assumed the pressure would return, well he now had no water pressure, and called me to report the problem. The next call I got was from the utility office saying calls were coming in from all over the island and there was no water, and there wasn't ! Bocilla Utilities is connected directly to the Englewood Water District to supply water to the island. So it must have been a break in the main line. What we found was ductile iron pipe and fittings blown apart at our boost station on Panama Blvd.

Our engineer, James Elder, is investigating and drafting a report to determine the probable cause.

Water was interrupted for about 1 ½ hours until the main could be repaired.

I would like to further discuss this water outage with you once we have Mr. Elder's report.

Sincerely,

Craig Noden  
Bocilla Utilities



## CRAIG NODEN

---

**From:** CRAIG NODEN <craig@bocillautilities.com>  
**Sent:** Wednesday, April 20, 2016 7:30 AM  
**To:** 'Taylor, Marianne'  
**Cc:** 'Jim Elder'  
**Subject:** RE: Water interruption March 9, 2016  
**Attachments:** Booster Station Report.pdf

Good morning Marianne,  
Attached please find Mr. Elder's report on the March 9, 2016 event. Once you have had a chance to review please let me know a convenient time to discuss this event and use of the Bocilla Utilities fire hydrants.

Sincerely,

Craig Noden, President  
Bocilla Utilities, Inc.

**From:** Taylor, Marianne [mailto:Marianne.Taylor@charlottecountyfl.gov]  
**Sent:** Wednesday, March 30, 2016 11:31 AM  
**To:** CRAIG NODEN <craig@bocillautilities.com>  
**Subject:** RE: Water interruption March 9, 2016

Hello Mr. Noden,

I look forward to discussing this issue with you. Please contact me at the number below when you have received the report from Mr. Elder.

Sincerely,

Marianne Taylor  
Public Safety Director / Fire Chief  
Charlotte County  
office: 941-833-5601  
cell: 941-628-5248  
fax: 941-833-5630  
[marianne.taylor@charlottecountyfl.gov](mailto:marianne.taylor@charlottecountyfl.gov)

"To Exceed Expectations in the Delivery of Public Services"



April 14, 2016

R. Craig Noden  
President Bocilla Utilities Inc.  
7025 Placida Road  
Englewood, Florida 34242

RE: Uni-flange mechanical connection failure and Mag Meter Damage at the Booster Station located on Panama Blvd, Englewood, Florida

Craig;

At your request I have reviewed the damages at the station and have made the following conclusion based on the current information as well as manufacture's data. Below are the items that are known:

- 1) The Mag Meter controller was full of water indicating a breach of the electrode seals
- 2) The Mag Meter maximum operating range is 150 psi and it is given a 300 psi short term factory test for leakage before leaving the factory
- 3) The Uni – Flange mechanical connection to the 6" pipe failed
- 4) The Uni-Flange specified maximum working pressure is 250 psi and it was field tested to 150 psi per the construction specifications
- 5) Just prior to the water system complete loss of water pressure, 2 residents reported a low pressure issue. These residences both observed a Fire Department truck at a hydrant west of the Station located on Gasparilla Way and a significant amount of water on the ground next to the hydrant indicating it had been operated for some purpose.

The key item in this review was the electrode seal breach of the Mag Meter. This seal breach indicates that a line pressure exceeding 300 psi had occurred. Based on the system design, it is physically impossible for the pump station to generate the pressure necessary to cause the Mag Meter failure that was observed. The only reasonable explanation for the generation of the pressure needed to cause the Mag Meter failure (300+) psi would be from a water hammer event. In order to cause a water hammer event, a high flow rate would need to be stopped rapidly enough to cause a hydraulic shock wave, generating the water hammer, increasing the discharge pressure at the booster pump station to exceed the pumps maximum output of 105 psi. This event would cause the check valves on the discharge of the booster pump to slam shut, creating the high pressure necessary to breach the Mag Meter seals and cause the mechanical connection between the flanged ell and the Uni-Flange to fail. The failure of the uni-flange connection kept the damages isolated to the booster station location through a rapid release of pressure and flow upon separation.

No other unusual flows or system operations have been identified other than the report from the residents that a low pressure occurred at their residences causing them to go investigate and see if there was something going on, noting the presence of the Fire Truck at the hydrant west of the Fire Station and water on the ground around the hydrant. Fire Hydrants easily generate flows significantly large enough to cause water hammer events if not properly operated. The most reasonable conclusion based on what has been presented or observed, is that a flow rate large enough to affect the residential system pressure occurred. This flow was

stopped at a rate rapid enough to generate the water hammer that resulted in the damage to the Mag Meter and the failure of the mechanical joint. A Fire Truck was observed by 2 residences just prior to the total loss of system pressure next to the fire hydrant located to the west of the Fire Station house and water was observed on the ground around the hydrant. A fire hydrant is more than capable of generating the flows necessary to create a system low pressure event as well as water hammer if it is not properly operated during opening and closing. A separation of the piping occurred at the booster station causing a complete loss of pressure and flow to the island and based on the attached review is the result of a water hammer event. This failure caused localized flooding at the booster station and loss of supply pressure to the Island. The low pressure on the Island caused the utility, per regulation, to have to provide boil water notices to its residences until bacteriological testing could confirm that there were no quality issues. Based on the type of mechanical failure at the booster station, the observed occurrence by the residences and the timeframe of their observations as it relates to the booster pumping stations line failure, the most reasonable conclusion is that the damages to the booster station that occurred on March 9, 2016 are a direct result of the improper operation of the fire hydrant that was observed by the residents.

Sincerely;

A handwritten signature in black ink, appearing to read 'James A. Elder', with a long horizontal flourish extending to the right.

James A. Elder P.E.  
DMK Associates, Inc.  
421 Commercial Ct. Suite C  
Venice, FL 34292  
Office – (941) 412 - 1293  
Mobile – (941) 726 - 4712

## **Bocilla Utilities Booster Station Discharge Line Separation Review**

### **Incident**

Uni-flange separation on discharge side of pump station and breach of Mag Meter Electrode Seals occurred at the booster pumping station on March 9, 2016.

### **Equipment Ratings**

#### **Uni-flange**

The uni-flange restrained joint system uses set screws as the mechanical connection as shown on attachment 1. This type of connection utilizes friction and deformation to provide a high strength connection to the 6" pipe. Deformation is the predominant mechanical method of attachment as shown in attachment 1. This method of mechanical connection was installed and pressure tested to 150 psi or 2.3 times normal operating pressure of 65 psi. The mechanical connection is factory rated for a pressure of 250 psi and a thrust restraint capacity of 4.3 tons.

#### **Toshiba Mag Meter**

Toshiba rates the meter for continuous pressure operation at 150 psi and the flow tube electrode seals are tested at a pressure of 300 psi for 15 min at the factory. A cutaway showing the flow tube and electrode penetrations are attached for clarification.

### **Potential Causes**

#### **Pump Station**

Based on the failure at the booster station it is clear, based on the equipment ratings that excessive pressure above 300 psi occurred. The booster pump station pumps peak boost pressure is hydraulically limited to 60 psi. Under no flow conditions with the pump inlet pressure being 55 psi the maximum output of the booster station would be 105 psi under a no flow condition. The potential for a resonant cycling of the pumps via the control system could also be a potential cause, this was also reviewed and with the current settings the ramp up and ramp down times as well as the system gain are set so as to eliminate any pumping resonance. Therefore the booster pump station is not considered capable of causing the issue.

#### **Water Hammer**

Water hammer or hydraulic shock can create extremely high pressure waves in water pipelines caused by sudden reduction in flows and the damages caused by it are well documented. Water hammer is induced when a significant flow change rapidly occurs. This can happen by sudden flow rate change in either the output or the discharge. With distribution systems, water hammer can occur during large flow occurrences such as filling an empty pipeline or reservoir or stopping of a large flow occurrence by closing a valve. Of the ways to induce water hammer, closing a valve too rapidly is the most frequent cause. To eliminate the effects of water hammer, water system operating personnel are trained to slowly open and close valves in the distribution system. It is to be noted that a fire hydrant is nothing more than a high flow valve. For most systems the only non – system personnel that have authorization to operate hydrants would be Fire Department personnel in the event of an emergency unless there are other agreements made with the Utility. The Fire Department personnel should be trained in the proper use and operation of fire hydrants so that system water hammer is avoided during opening and closing of the hydrants. To illustrate the level of importance that should be given to the closing of a hydrant I have included attachments 4 & 5 that are excerpts from the American Flow Control and M&H valve companies regarding closing of hydrants and the possible dangers of improper operation of hydrants.

Severity of water hammer is governed by the level of flow and the closing time of the valve. There are few instances in a system that can cause the flows necessary to generate damaging water hammer. One would be a main break generating a high flow where due to urgency, isolation valves were closed too quickly; the other would be operation

of a fire hydrant for flow testing and improper closing of the hydrant. In this instance there was no main break and no hydrants to my knowledge were being operated for any reported purpose so these scenarios are not applicable.

However, it was reported to the Utility that the Fire Department appeared to be utilizing a hydrant to the west of the fire station on Gasparilla Way which was causing, initially low pressure at their residence, indicating the hydrant was flowing at a high rate. Then all system pressure and flow were lost, likely the uni-flange failure occurred at that point from water hammer induced when the hydrant was closed. It is reasonable to conclude from this that the failure at the booster station was a direct result of the hydrant being operated for an unknown purpose. The shock wave/ water hammer generated from the rapid reduction in pressure from closing the hydrant, traveled back up the pipeline at a rate of 4,720 fps. With the distance from the hydrant in question to the booster station being 3500 feet the shock wave would have gotten to the station in less than 1 second at that point causing the pump discharge check valves to close rapidly. This rapid closure of the check valves would occur once the pressure exceeded the pumps out put pressure of 105 psi causing a flow reversal. Based on the attached spreadsheet assuming that:

- 1) Fill rate of 400 gpm( enough to cause a system pressure dip that is noticeable)
- 2) Hydrant closure of 5 seconds
- 3) Initial system pressure of 45 psi(flowing hydrant pressure loss enough for resident to take notice)
- 4) Check valve closure time .5 seconds
- 5) 3500 feet of PVC pipe dampens out the pressure wave by 50%

Based on these assumptions the booster station would have seen a pressure wave of approximately 137 psi which would have closed the check valves resulting in a return pressure wave of an estimated 1200 psi. The high pressure of the return wave explains the location of the failure and the failure itself killing the system pressure and flow, stopping the progression of the wave and additional system damages. Due to the rated thrust capacity of the uni-flange equating to 308 psi (thrust/pipe area) it is unlikely that the system pressure reached anywhere near the 1200 psi, but based on the damage to the Mag Meter and the manufactures testing, it is a reasonable assumption that the pressure seen at the booster station location was above 300 but less than the estimated maximum of 1200 psi. Based on the information available at this point it is a reasonable assumption that this uni-flange failure and damage to the Mag Meter were caused by a secondary high pressure wave generated at the booster station from improper operation of the observed fire hydrant utilized for unknown purposes.

Water Hammer Calculation Bocilla				
Dia	Length	weight lbs	mass slugs	
6	3,591	43,695	1357	
initial pressure	105	PSI		
Check valve closure time	0.5	seconds		
Flow gpm	Flow ft <sup>3</sup> /s	Velocity ft/s	Momentary Shock Pressure PSI Check Valve Closure	Shock Pressure seen at Booster Station PSI 50%
10	0.02	0.11	162	81
20	0.04	0.23	220	110
30	0.07	0.34	277	139
40	0.09	0.46	335	167
50	0.11	0.57	392	196
60	0.13	0.69	450	225
70	0.16	0.80	507	254
80	0.18	0.91	565	282
90	0.20	1.03	622	311
100.00	0.22	1.14	679	340
200.00	0.45	2.29	1,254	627
300.00	0.67	3.43	1,828	914
400.00	0.89	4.57	2,403	1,201
500.00	1.11	5.71	2,977	1,489

Pressure increase from water hammer formula

$$P = 0.07 * VL / t + P_i$$

V = Flow velocity

L = pipe length

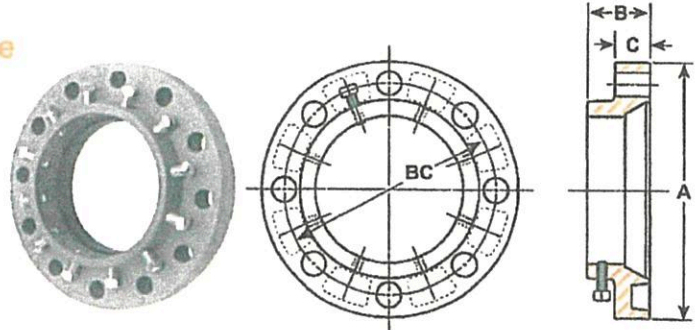
t = Closing time

P<sub>i</sub> = Inlet pressure

- 1) It is assumed that the discharge pressure at the booster station just prior to the event the system pressure is 105 psi
- 2) It is assumed the check valve closure time is .5 seconds based on being a ball check
- 3) Speed of shockwave travel in pipeline is 4720 fps therefore it takes .76 seconds for the pressure wave to get from the closure event to the booster pump station

# Uni-Flange® Adapter Flanges

Series 420 Extra Heavy Adapter Flange  
for Steel and Ductile Iron Pipe  
Flange Drilling ANSI B16.1 250 lb. /  
ANSI B16.5 300 lb.  
(MATCHES CLASS F FLANGE)  
WORKING PRESSURE - 2" THROUGH 12" 400 PSI



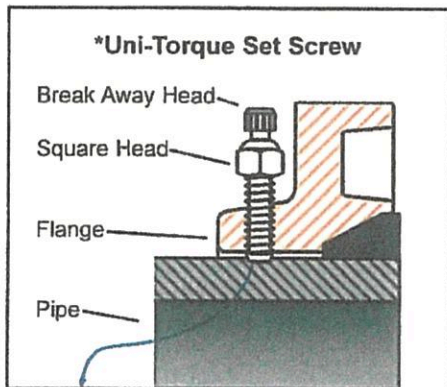
NOM. PIPE SIZE	STEEL PIPE		DUCTILE IRON PIPE		APPROX. WT. LBS.	DIMENSIONS					SET SCREWS	
	O.D. (INCHES)	CATALOG NUMBER	O.D. (INCHES)	CATALOG NUMBER		A	B	BC	C	BOLT HOLE DIA.	SET SCREWS	
											No.	SIZE
2"	2.38	UFA420-S-2	2.50	UFA420-C-2	7.0	6-1/2"	2-1/4"	5"	1.12"	3/4"	8	1/2" x 1"
3"	3.50	UFA420-S-3	3.96	UFA420-C-3	13.0	8-1/4"	2-7/16"	6-5/8"	1.12"	7/8"	8	1/2" x 1"
4"	4.50	UFA420-S-4	4.80	UFA420-C-4	21.0	10"	2-7/16"	7-7/8"	1.25"	7/8"	8	1/2" x 1"
5"	5.56	UFA420-S-5	-	-	27.0	11"	2-9/16"	9-1/4"	1.38"	7/8"	8	5/8" x 1-1/4"
6"	6.63	UFA420-S-6	6.90	UFA420-C-6	38.0	12-1/2"	2-9/16"	10-5/8"	1.44"	7/8"	12	5/8" x 1-1/4"
8"	8.63	UFA420-S-8	9.05	UFA420-C-8	57.0	15"	2-5/8"	13"	1.62"	1"	12	5/8" x 1-1/4"
10"	10.75	UFA420-S-10	11.10	UFA420-C-10	74.0	17-1/2"	2-5/8"	15-1/4"	1.88"	1-1/8"	16	5/8" x 1-1/4"
12"	12.75	UFA420-S-12	13.20	UFA420-C-12	104.0	20-1/2"	3"	17-3/4"	2.00"	1-1/4"	16	5/8" x 1-1/4"

**Options:** To order with \*Uni-Torque set screw add -UT to the catalog number. Example: UFA420-S-2-UT  
To order with \*Uni-Torque set screws and EPDM gasket add -UT-EPDM to the catalog number.  
Example: UFA420-S-2-UT-EPDM  
To order with Stainless Steel set screws, sizes 2"-12", add -SS to the catalog number. Example UFA420-S-2-SS.

\* **Caution:** Uni-Torque set screws should not be used on steel pipe thinner than schedule 40 or ductile iron pipe thinner than class 52.

*Example of how Set screw system works*

## \*Optional Uni-Torque Set Screws



*Deformation*

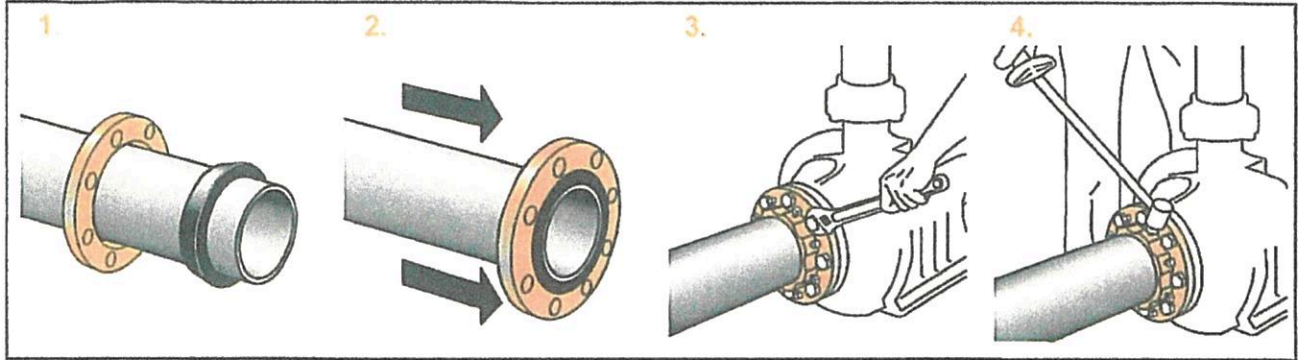
Optional Uni-Torque Set Screws are available for use with Uni-Flange® Adapters, 2" through 16" nominal pipe sizes with the pipe thickness shown in the table below. These set screws feature a "break away head" that shears at the recommended torque for the recommended pipe (see table below), leaving a square head that can be used if future removal of the flange is required. To order an adapter flange with Uni-Torque set screws add "-UT" to the catalog number. Example: UFA200-S-2-UT.

UNI-TORQUE SET SCREW SIZE	PRE-SET TORQUE VALUE	*RECOMMENDED PIPE THICKNESS
1/2"x1"	65 ft-lb ± 7	Ductile Iron, Class 52-56 Steel, Schedule 40 and up
5/8"x2"	87 ft-lb ± 7	Ductile Iron, Class 52-56, Steel, Schedule 40 and up

Note: 1/2" x 1" Uni-Torque Set Screws require a 3/8", 12 point, deep socket. 5/8" x 2" Uni-Torque Set Screws require a 7/16", 12 point, deep socket.

\* **Caution:** Uni-Torque set screws should not be used on steel pipe thinner than schedule 40 or ductile iron pipe thinner than class 52.

# Uni-Flange® Installation Instructions



1. Pipe end should be cut square for most installations. (Deflected joints may require angular cut. See deflection chart on page 11.) Remove burrs and bevels. Scrape and clean the plain end of the pipe to ensure proper bare metal surface for set screw engagement and gasket seal. Thoroughly lubricate the pipe and gasket with a soap based pipe lubricant. Slide the flange onto the pipe with the gasket cavity facing the end of the pipe. Slide the lubricated gasket over the pipe end with the tapered end facing the gasket cavity in the flange. (No other gasket is necessary or should be used to seal the flange faces.)
2. Slide the flange forward until the gasket is evenly seated in the flange cavity and the Uni-Flange® face is flush with the end of the pipe. (The end of the pipe should butt against the facing flange, it cannot be more than 1/4" from the facing flange.) Hand tighten the set screws against the pipe surface.
3. Using conventional flange bolts, mate the Uni-Flange® to the standard flange. Be sure to evenly tighten the bolts alternately on opposite sides. (Use the star method like tightening the lug nuts on a car wheel.) Do not over-tighten the flange bolts. It is not necessary to bring the Uni-Flange® Adapter to a face-to-face contact with the standard flange. A gap of approximately 1/8" between the flanges is normal.
4. Advance all set screws to the pipe surface before applying torque. Tighten in an alternating manner (star method) to the torque values shown in the appropriate table on page 10. Use of a torque wrench is highly recommended and required to verify proper torque.

**Note:** In installations where rapid or excessive surges may occur, or extreme thrusts encountered (e.g. near pumps or 90° bends), Ford engineers recommend the use of tie rods for additional thrust restraint.

Consult the Ford Meter Box website for the most current installation instructions.

## Hydrostatic Test Pressures

The Uni-Flange® Adapter Flange Series is capable of withstanding the following hydrostatic test pressures without leakage: (Note: For hydrostatic seal only, not applicable to thrust restraint)

### Series 200 - 125 lb. / 150 lb. Drilling

2 inch - 8 inch: 600 PSI  
10 inch - 12 inch: 525 PSI

### Series 400 - 125 lb. / 150 lb. Drilling

2 inch - 12 inch: 750 PSI  
14 inch - 24 inch: 300 PSI  
30 inch - 48 inch: 150 PSI

### Series 420 - 250 lb. / 300lb. Drilling

2 inch - 12 inch: 800 PSI

## Recommended Water Working Pressure

The Uni-Flange® Adapter Flange Series is designed to handle the following water working pressures at a temperature of -20°F to 150°F.

### Series 200 - 125 lb. / 150 lb. Drilling

2 inch - 8 inch: 200 PSI  
10 inch - 12 inch: 175 PSI

### Series 400 - 125 lb. / 150 lb. Drilling

2 inch - 12 inch: 250 PSI  
14 inch - 24 inch: 150 PSI  
30 inch - 48 inch: 100 PSI

### Series 420 - 250 lb. / 300lb. Drilling

2 inch - 12 inch: 400 PSI

**Flange Drilling:** 125 lb., ANSI B16.1 for class 125 cast iron flanges  
150 lb., ANSI B16.5 for steel flanges  
250 lb., ANSI B16.1 for class 250 cast iron flanges  
300 lb., ANSI B16.5 for steel flanges



# Deflection Chart

## Series 200 / 400 / 420

Uni-Flange® Adapters may be used to join flanged pipes and fittings that are slightly misaligned. They offer the following deflection capabilities, at full rated working pressure of the flange. Maximum angles of deflection may require an angular pipe cut to provide sufficient pipe insertion for proper gasket compression.

NOM. PIPE SIZE	DUCTILE IRON PIPE O.D. (IN.)	STEEL PIPE O.D. (IN.)	MAXIMUM ANGLE DEFLECTION	DEFLECTION IN./18 FT. LGTH. -(IN.)
2"	2.50	2.375	4° - 2'	15.23
2-1/2"	N/A	2.875	3° - 56'	14.85
3"	3.96	3.500	3° - 50'	14.47
3-1/2"	N/A	4.000	3° - 47'	14.28
4"	4.80	4.500	3° - 44'	14.09
5"	N/A	5.563	3° - 41'	13.91
6"	6.90	6.625	3° - 36'	13.59
8"	9.06	8.625	3° - 20'	12.58
10"	11.10	10.750	3° - 13'	12.14
12"	13.20	12.750	2° - 35'	9.12
14"	15.30	14.000	2° - 20'	8.80
16"	17.40	16.000	2° - 5'	7.86
18"	19.50	18.000	2° - 0'	7.54
20"	21.60	20.000	1° - 56'	7.29
24"	25.80	24.000	1° - 37'	6.10
30"	32.00	30.000	1° - 35'	5.97
36"	38.30	36.000	1° - 23'	5.22
42"	44.50	42.000	1° - 11'	4.46
48"	50.80	48.000	1° - 2'	3.89

## Thrust Restraint

The Uni-Flange® Adapter Series offers the following thrust restraint capabilities.

NOM. PIPE SIZE	SERIES 200		SERIES 400		SERIES 420	
	WWP RATING (PSI)	THRUST AT RATED PRESSURE (LBS.)	WWP RATING (PSI)	THRUST AT RATED PRESSURE (LBS.)	WWP RATING (PSI)	THRUST AT RATED PRESSURE (LBS.)
2"	200	892	250	1,115	400	1,784
3"	200	1,922	250	2,403	400	3,844
4"	200	3,181	250	3,975	400	6,360
6"	200	6,924	250	8,655	400	13,848
8"	200	11,724	250	14,655	400	23,448
10"	175	15,911	250	22,730	400	36,368
12"	175	22,375	250	31,965	400	51,144
14"	-	-	150	23,091	-	-
16"	-	-	150	30,159	-	-
18"	-	-	150	38,170	-	-
20"	-	-	150	47,124	-	-
24"	-	-	150	67,858	-	-
30"	-	-	100	70,686	-	-
36"	-	-	100	101,790	-	-
42"	-	-	100	138,540	-	-
48"	-	-	100	180,956	-	-

These values are calculated using steel pipe outside diameter dimensions.

insing  
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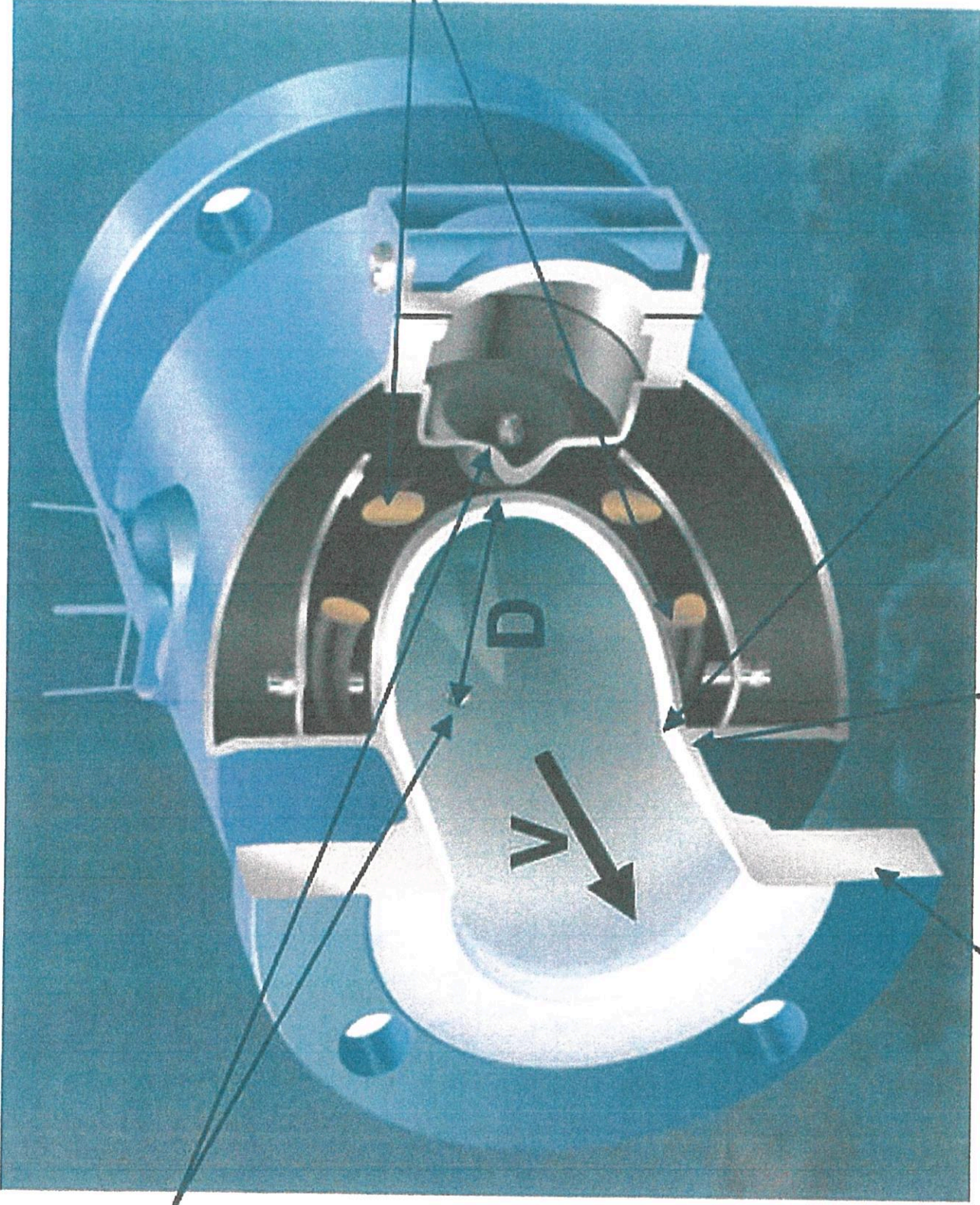
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V

Lining

SST Pipe

Flange



# OPERATION AND MAINTENANCE MANUAL

5-1/4" B-84-B-5  
FIRE HYDRANT



AMERICAN

FLOW CONTROL

THE RIGHT WAY



## **M&H Valve Co.**

*Division of McWANE, Inc.*

*605 West 23<sup>rd</sup> Street*

*P.O. Box 2088*

*Anniston, AL 36202*

*Telephone (256) 237-3521*

*Fax (888) 549-5309*

### **FIRE HYDRANT SUMMARIES**

The following information regarding AWWA C502 fire hydrants is provided in three separate documents to reflect aspects of installation, operation, and maintenance.

The Installation section focuses on the aspects of the construction process, being the contract specification, installation and initial testing. This targets the interest of the project engineer, installer and construction inspector.

The Operation section addresses the three most common operational factors that can result in damage to the hydrant or water system. This information should be considered by anyone who operates fire hydrants.

The Maintenance information is supplemental to published maintenance manuals and provides a general review of the five key mechanical components.

The short summaries provided represent only partial information. Detailed information is available within the AWWA C502 standard, or available from the manufacturer upon request.

If hydrant chattering is common to specific areas of the water system, provisions should be considered to purge air. This is most likely to exist with hydrants at the high points of the system in conjunction with higher pressures and/or velocities. A hydrant with one or multiple extensions may contribute to this condition due to an accumulation of stem assembly tolerances.

When using hose nozzle valves, use only multi turn gate valves. Do not use lever operated quarter turn valves, which are likely to instigate a water hammer.

A water hammer situation can also occur if the stem lock nut - which retains the operating nut - backs out of the bonnet while closing the hydrant. The stem lock nut is designed to tighten when absorbing the higher thrust when opening. In closing, it is conceivable, the stem lock nut can be carried out if inadequately restrained. This is not obvious, but it is detectable if the operating nut is rising during closing. Several methods are used to add retention forces - being lock pins, lock tite, dinging the threads, and over time - a little corrosion serves well at this location.

Do not flow a partially disassembled hydrant - where the bonnet and/or operating nut assembly is removed and the main valve assembly remains in the barrel. This has been known to occur during repair procedures to flush debris from the line - with the auxiliary valve being used for control. When a hydrant is partially disassembled the main valve will generally fall to the open position. Since a center stem compression fire hydrant is a normally closed valve, flushing without the restraint of the operating nut assembly will allow flow to drive the main valve closed.

All of the potential pitfalls of improper hydrant operation are intensified at high pressures. Production testing which meets - or exceeds - AWWA C502, Section 5.1, does not duplicate possible field conditions of high velocity, compressed air, or water hammer induced by closing too quickly.

## **B) OVER TORQUING**

For AWWA C-502 center stem compression fire hydrants, the most common maintenance issue is damage to the main valve. Rocks or other debris becoming lodged in the seating area at installation generally causes main valve damage.

When an obstruction to seating of the main valve occurs, it is important to avoid the use of excessive force in attempts to achieve closure. Excessive closure torques can accelerate damage to the main valve or induce damage to other related parts. The suggested

## CRAIG NODEN

---

**From:** Patel, Pooja <Pooja.Patel@charlottecountyfl.gov>  
**Sent:** Tuesday, June 14, 2016 2:36 PM  
**To:** craig@bocillautilities.com  
**Cc:** Miller, Marilyn  
**Subject:** Bocilla Utilities Invoice Number 1153

Dear Mr. Noden:

Charlotte County is declining to pay invoice number 1153 dated June 2, 2016 in the amount of \$7,970.00 regarding the incident dated March 9, 2016 due to issues regarding causation of the damages and incorrect assumptions contained within your engineer's report.

Charlotte County does not object to your request to receive prior reasonable verbal notice to either John Keaser at 941-769-8486 or you at 941-769-0033 regarding future use of your fire hydrants in a non-emergency situation. Thank you.

Pooja Patel, Assistant County Attorney  
Charlotte County Attorney's Office  
18500 Murdock Circle, Suite 573  
Port Charlotte, FL 33948-1094  
Tel: (941) 743-1330 Fax: (941) 743-1550

[www.CharlotteCountyFL.gov](http://www.CharlotteCountyFL.gov)

"To Exceed Expectations in the Delivery of Public Services"

**Bocilla Utilities Inc.**  
 7025-A PLACIDA ROAD  
 ENGLEWOOD, FL 34224 US  
 (941) 769-0561  
 office@bocillautilities.com  
 www.bocillautilities.com

**Invoice**



**BILL TO**  
 Public Safety  
 Charlotte County

<b>INVOICE #</b>	<b>DATE</b>	<b>TOTAL DUE</b>	<b>TERMS</b>	<b>ENCLOSED</b>
1153	06/02/2016	\$7,970.00	Due on receipt	

ACTIVITY	QTY	RATE	AMOUNT
<b>Misc Reimb</b> Estimated Water Loss: 45,000 Gallons - N/C	0	0.00	0.00
<b>Misc Reimb</b> Engineer's Probable Cause Report	1	3,100.00	3,100.00
<b>Misc Reimb</b> Toshiba LF620 Series Electromagnetic Flow Meter	1	2,750.00	2,750.00
<b>Misc Reimb</b> Boil Water Notice & Rescission (Hand Delivered 700 Customers)	1	1,560.00	1,560.00
<b>Misc Reimb</b> Repair to 6" Ductile Iron Water Main at Boost Station	1	300.00	300.00
<b>Misc Reimb</b> BacT's and lab travel time to clear Water Main	1	260.00	260.00
RE: Water Interruption March 9, 2016			
		<b>BALANCE DUE</b>	<b>\$7,970.00</b>

