



Control Number: 42973



Item Number: 1

Addendum StartPage: 0

House Bill (HB) 1600 and Senate Bill (SB) 567 83<sup>rd</sup>  
Legislature, Regular Session, transferred the functions  
relating to the economic regulation of water and sewer  
utilities from the TCEQ to the PUC effective  
September 1, 2014.

Texas Commission on Environmental Quality  
Water Supply Division, Utilities and District Section, MC-153  
P.O. Box 13087  
Austin, TX 78711-3087

April 29, 2013

**Application for the Sale/ Transfer /Merger of multiple utility systems from the Lower Colorado River Authority to Corix Utilities (Texas) Inc.**

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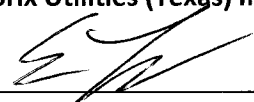
We are pleased to provide the TCEQ with our multiple STM applications for the transfer of the utility assets and operations from the Lower Colorado River Authority to Corix Utilities (Texas) Inc. We have provided ten individual binders for each STM application and request a docket be created for each separate application. In the case of where there is both water and wastewater utilities serving the same community, both utility systems are included in the same application. Pursuant to previous discussions with TCEQ staff, several of the STM applications request ~~minor adjustments to the Certificate of Convenience and Necessity (CCN) boundaries to reflect the actual coverage of the utility system.~~ Pursuant to previous discussions, we have provided four copies of the Purchase Sale Agreement between Corix and LCRA as this document covers the sale and purchase of all the utility systems noted herein.

Attached to this letter please find an Overview of the TCEQ filing, indicating the specific system(s) where we are requesting approval of the transfer and the issuance of a new CCN number or a new CCN for existing services. Also enclosed are applications for new Certificate of Convenience and Necessity for one of the utility systems. These systems were previously operated by LCRA without a CCN.

Our STM applications cover 14 of 18 utility systems being acquired by Corix. One system being acquired relates to the provision of raw water for irrigation purposes and is not subject to TCEQ jurisdiction. We are currently finalizing certain consents and agreements relating to the Windmill Ranch Wastewater System, the Lometa Water System and the Lometa Wastewater System, and will file our STM applications related to these utilities at a later date when these agreements are finalized.

We look forward to working with the Commission and other stakeholders with respect to this STM application. Should you have any questions, please contact me directly.

Yours truly,  
**Corix Utilities (Texas) Inc.**

  
\_\_\_\_\_  
Mr. Ed Yanoshita  
General Manager

Cc. John Shaw, Vice President, Corporate Development

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FILING CLERK

OVERVIEW OF CORIX TCEQ FILING

Utility	STM		New CCN for Existing Service	Tariff	WW Discharge Permit Transfer
	New CCN Number*	w/map amendment (boundary tweak for existing service area)			
Alleyton W	✓		✓	✓	
Alleyton WW	✓		✓	✓	✓
Matagorda Dunes W	✓	✓		✓	
Matagorda Dunes WW	✓		✓	✓	✓
Camp Swift WW	✓*			✓	✓
McKinney Roughs WW	✓*			✓	✓
Ridge Harbor W	✓	✓		✓	
Ridge Harbor WW	✓			✓	✓
Spicewood Beach W	✓	✓		✓	
Quail Creek W	✓			✓	
Smithwick Mills W	✓	✓		✓	
Sandy Harbor W	✓	✓		✓	
Buchanan Lake W	✓	✓		✓	
Paradise Point W	✓	✓		✓	

\* New CCN number, except for last W & WW utilities to potentially close next year, who then assume LCRA's old W & WW CCN numbers

**SPICEWOOD BEACH WATER  
SYSTEM**

**APPLICATION FOR SALE, TRANSFER  
OR MERGER OF A RETAIL PUBLIC  
UTILITY**

**FOR**

**THE TEXAS COMMISSION ON  
ENVIRONMENTAL QUALITY**

<b>Submitted to:</b>	<b>TEXAS COMMISSION ON ENVIRONMENTAL QUALITY</b> WATER SUPPLY DIVISION UTILITIES AND DISTRICTS SECTION, MC-153 P.O. BOX 13087 AUSTIN, TX 78711-3087 RECEPTION PHONE: (512) 239-1000
<b>By:</b>	<b>CORIX UTILITIES (TEXAS) INC.</b> SUITE 209, 6836 BEE CAVES ROAD AUSTIN, TX 78746 PHONE: (512) 306-4000 FAX: (512) 306-4009 CONTACT: EDWARD YANOSHITA GENERAL MANAGER, CORIX UTILITIES (TEXAS) INC. PHONE: (512) 659-2942 EMAIL: ED.YANOSHITA@CORIX.COM
<b>DATE:</b>	DECEMBER 2012



Building a World of Sustainable Communities



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## TCEQ APPLICATION: SPICEWOOD BEACH

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Corix is pleased to submit the following STM Application for Spicewood Beach.

B. Utility Name (if different than above): Same as above

Address: P.O. Box 220 Telephone: (AC) (512) 578-3541  
Austin, TX 78767

C. Contact person. Please provide information about the person to be contacted regarding this application. Indicate if this person is the owner, operator, engineer, attorney or accountant.

Name: Monica Masters Title: Sr. Category Manager  
Address: P.O. Box 220 Telephone: (AC) (512) 578-3541  
Fax: (512-473-4094 Email: monica.masters@lcra.org

4. About the last rate increase for the system or facilities being transferred: See Exhibit A – Current Rates

A. What was the effective date of the last rate increase? October 1<sup>st</sup>, 2010

B. Was notice of this increase provided to the Texas Commission on Environmental Quality or its predecessors?

☒ No ☐ Yes Application/Docket Number: \_\_\_\_\_ Date: \_\_\_\_\_

5. Please provide a list of all customers affected by this transaction who have deposits held by the transferor or seller utility, if any, and include the following information (attach additional sheets if necessary):

Name and Address of Utility Customer	Date of Deposit	Amount of Deposit	Amount of Unpaid Interest on Deposit
<b>See Exhibit B – Customer Deposits</b>			

Within 30 days of the actual transaction date, and prior to the transfer of the certificate by the TCEQ, the seller must provide proof to the Commission that these customer deposits were returned to the customers or transferred to the purchasing utility. Proof should include a sworn affidavit. (See PSA Amendment #1)

**QUESTIONS 6 THROUGH 16 REFER TO THE TRANSFEREE OR PURCHASER**

6. For the person or entity acquiring the facilities and/or CCN:

Applicant: Corix Utilities (Texas) Inc.  
(Individual, Corporation, or Other Legal Entity)

Utility Name: Same as above

(If different than above)

Utility Address: 6836 Bee Cave Road, Suite 209, Austin, TX 78746

Fax: (512) 306-4009 Email: ed.yanoshita@corix.com Telephone (AC): (512) 306-4003

CCN Numbers held prior to the filing of this application: N/A

7. Check the appropriate box and provide information regarding the legal status of the transferee applicant:
- ☐ Individual
- ☐ Home or Property Owners Association
- ☐ Partnership; attach copy of partnership agreement
- ☒ Corporation; provide charter number as recorded with the Office of the Secretary of State for Texas: #0801600117
- ☐ Non-profit, member-owned, member-controlled Cooperative Corporation (Article 1434(a) Water Supply or Sewer Service Corporation); provide charter number: \_\_\_\_\_
- ☐ Municipally-owned utility
- ☐ District (MUD, SUD, WCID, etc.)
- ☐ County
- ☐ Other (please explain): \_\_\_\_\_

8. If the applicant is an *Individual* or sole proprietorship, provide the following information. If not, skip to the next question.

Name: n/a Telephone (AC): \_\_\_\_\_

Fax: \_\_\_\_\_ Email: \_\_\_\_\_

Address: \_\_\_\_\_

9. If the applicant is other than an *Individual* provide the following information regarding the officers or partners of the legal entity applying for the transfer. You must complete either question 8 or question 9, whichever applies to the transferee applicant.

•Name: Brett Hodson Telephone (AC): (604) 697-6711

Address: 1160, 1188 West Georgia Street, Vancouver, BC V6E 4A2, Canada

Position: President Ownership % (if applicable): n/a

•Name: Hamish Cumming Telephone (AC): (604) 697-6714

Address: 1160, 1188 West Georgia Street, Vancouver, BC V6E 4A2, Canada

Position: Executive Vice President, Legal, Risk Management & Corporate Secretary Ownership % (if applicable): n/a

•Name: Albert Low Telephone (AC): (604) 697-6704

Address: 1160, 1188 West Georgia Street, Vancouver, BC V6E 4A2, Canada

Position: Executive Vice President, Support Services & Chief Financial Officer Ownership % (if applicable): n/a

•Name: Dietz Kellmann Telephone (AC): (604) 697-6742

Address: 1160, 1188 West Georgia Street, Vancouver, BC V6E 4A2, Canada

Position: Executive Vice President, Corporate Development Ownership % (if applicable): n/a

•Name: \_\_\_\_\_ Telephone (AC): \_\_\_\_\_

Address: \_\_\_\_\_



Position: \_\_\_\_\_ Ownership % (if applicable): \_\_\_\_\_

•Name: \_\_\_\_\_ Telephone (AC): \_\_\_\_\_

Address: \_\_\_\_\_

Position: \_\_\_\_\_ Ownership % (if applicable): \_\_\_\_\_

**See Exhibit C - Certification of Account Status**

10. Contact person. Please provide information about the person to be contacted regarding this application. Indicate if this person is the owner, operator, engineer, attorney or accountant.

Name: Derek Seal Title: Attorney

Address: 401 Congress Ave., Suite 2100, Austin, Texas 78701 Telephone (AC): 512-370-2807

Fax # 512-370-2850 Email dseal@winstead.com

Relationship to the applicant: Outside Counsel

11. Please respond to each of the following questions. Attach additional sheets if necessary.

A. Describe the experience and qualifications of the applicant to provide adequate utility service to the requested area:

**See Exhibit D - Experience & Qualifications**

B. Has the applicant acquiring the CCN or facilities or an affiliated interest of the applicant been under enforcement action by the TCEQ, Texas Department of Health (TDH), the Office of the Attorney General (OAG) or the Environmental Protection Agency (EPA) in the past for noncompliance with rules, orders or State Statutes?

     Yes **X** No

If yes, please attach copies of any correspondence with these regulatory agencies concerning these enforcement actions and describe any actions and efforts to comply with those requirements. Attach additional sheets if needed.

C. Describe the source and availability of funds required to make the planned or required improvements, if any, to meet minimum requirements of the TCEQ and ensure continuous and adequate service.

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The source and availability of funds required to make the planned or required improvements as identified in Exhibit K (Q.17.c), if any, will be from a combination of intercompany debt, equity funding from Corix Infrastructure (US) Inc., and internal cash flow from operations.

**See Exhibit E – Corix Organizational Charts**

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D. Describe the anticipated impact of this transaction on the quality of utility service and explain any anticipated changes in the quality of service.

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Corix anticipates the quality of utility service will be the same or better subsequent to this transaction. Corix has an extensive proven track record of providing water and wastewater utility services to similar sizes and types of systems as the system subject to this transaction.

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Corix Operating Plan and Quality Management Plan for the system is attached as per **Exhibit F – Utility Service Quality**

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E. How will the transaction serve the public interest?

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Based on 30 Texas Administrative Code Section 291.112(c)(5) of TCEQ's rules, which describes the factors that TCEQ must consider in determining whether the transaction is in the public interest, Corix will provide proper notice, and as described in more detail in other provisions of the application, Corix is capable of rendering adequate and continuous service to every consumer within the certificated area, has extensive experience as a utility service provider, has a history of complying with regulatory requirements that apply to regulated public utilities and of properly managing or using revenues as a utility service provider, and has the ability to provide the necessary capital investment to ensure the provision of continuous and adequate service to the customers of the public utilities.

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12 Please describe the nature of the proposed transaction:

In November 2010, the Lower Colorado River Authority (LCRA) announced its intention to divest itself of the retail and wholesale water and wastewater utility systems that it owned. In August of 2012, after undertaking a national solicitation process, LCRA announced that Corix was the preferred proponent to acquire substantially all of the utility systems that LCRA was seeking to divest. In November, 2011, Corix and LCRA entered into a Memorandum of Understanding to acquire 18 utility systems in the Hill Country and in the S.E. Region of Central Texas. On March 31<sup>st</sup>, 2012 Corix and LCRA executed a Purchase Sale Agreement which provided a base purchase price, an allocation of the purchase price between systems and a closing price adjustment mechanism (to account for changes in asset values between June 30<sup>th</sup>, 2011 and the closing date to acquire these 18 utility systems). On October 1<sup>st</sup>, 2012, Corix and LCRA also executed a Confirmation and Supplemental Agreement related to the utility systems, but excluding Lometa water and wastewater system.

The 18 systems subject to this purchase sale transaction are listed below:

1. Alleyton Water Utility System
2. Alleyton Wastewater Utility System
3. Matagorda Dunes Water Utility System
4. Matagorda Dunes Wastewater Utility System
5. Camp Swift Wastewater Utility System
6. McKinney Roughs Wastewater Utility System
7. Ridge Harbor Water Utility System
8. Ridge Harbor Wastewater Utility System
9. Spicewood Beach Water Utility System
10. Quail Creek Water Utility System
11. Smithwick Mills Water Utility System
12. Sandy Harbor Water Utility System
13. Lake Buchanan Water Utility System
14. Paradise Point Water Utility System
15. Lometa Water Utility System (*subject to ROFR by City of Lometa, expired*)
16. Lometa Wastewater Utility System (*subject to ROFR by City of Lometa, expired*)
17. Windmill Ranch Wastewater Utility System (Pending)
18. Windmill Ranch Raw Water Transportation System (*not subject to TCEQ jurisdiction*) (Pending)

In addition, under the terms of the Purchase Sale Agreement, Corix and LCRA will work collaboratively with the respective stakeholders to develop a plan of action to replace the non-compliant water supply at Bonanza Beach and Tow Village (the "Environmentally Excluded Assets") with a new water supply, such that LCRA can become fully divested of these two remaining utility systems within 2 years of the financial close of the divestiture of other systems to Corix. Notwithstanding, Corix is under no obligation to acquire the original water distribution system assets.

The Right of First Refusal held by the City of Lometa expired on July 3<sup>rd</sup> unexercised.

Corix, pursuant to an Transitional Operations & Maintenance Agreement with LCRA has commenced operations of the 18 systems on July 1<sup>st</sup>, 2012. This operational contract will terminate on the financial closing and transfer of each individual system from LCRA to Corix. The proposed transaction represents a unique utility privatization transaction in the State of Texas, where a public agency is divesting itself of 17 retail utility systems and a raw water supply system to an investor owned utility.

13 If the transferee applicant is an Investor Owned Utility (IOU) and will be under the rate jurisdiction of the TCEQ, please provide the following information.

See Exhibit G - Price & Utility Cost Data

- A.
- Total Purchase Price: \_\_\_\_\_
  - Total Original Cost (as recorded on books of seller or merging entity): \_\_\_\_\_
  - Accumulated Depreciation as of the proposed effective date of the transaction: \_\_\_\_\_
  - Contributions in Aid of Construction:
    - Specific surcharges approved by TCEQ: \_\_\_\_\_
    - Revenues from explicit customer agreements: \_\_\_\_\_
    - Developer Contributions (please explain): \_\_\_\_\_
    - Other Contributions (please explain): \_\_\_\_\_

Total Contributions in Aid of Construction \_\_\_\_\_

• Net Book Value: \_\_\_\_\_

If the Original Cost or any of the above items has been established in a rate case proceeding by the PUC, the TWC or the TCEQ, please provide the Application/Docket Number and date:

Application/Docket Number: n/a Date: n/a

B. Please provide any other information concerning the nature of the transaction you believe should be given consideration if not explained elsewhere in the application

See Exhibit H – Other Transaction Considerations

C. Complete the following proposed entries listed below as shown in books of purchasing (or surviving) company. Additional entries may be made; the following are suggested only, and not intended to pose descriptive limitations.

See Exhibit G: Price & Utility Cost Data

- Utility Plant in Service: \_\_\_\_\_
- Plant Acquisition Adjustment: \_\_\_\_\_
- Extraordinary Loss on Purchase: \_\_\_\_\_
- Accumulated Depreciation of Plant: \_\_\_\_\_
- Cash: \_\_\_\_\_
- Notes Payable: \_\_\_\_\_
- Mortgage Payable: \_\_\_\_\_
- Others (please list): \_\_\_\_\_

As the purchaser, I understand that it is **my responsibility** in any future rate proceeding to provide written evidence and support for the original cost and installation date of all facilities used and useful for providing utility service.

Purchaser's Initials:   *CF*   Date: December 31, 2012

14. Please indicate the proposed effect of this transaction on the rates to be charged to the affected customers:

- ☒ All the customers will be charged the same rates as they were charged before the transaction.  
☐ Some ☐ All customers will be charged different rates than they were charged before the transaction.

If rates are changing, please explain:

Corix proposes to adopt the existing rates currently charged by LCRA and maintain those rates following our acquisition of the utilities until Corix has better information about the required costs of services. Corix current plans are to undertake detailed cost of service studies, and based on the results of the cost of service studies, Corix will be better able to determine any required rate adjustments. Please refer also to Section 5.3 of the Corix-LCRA Purchase Sale Agreement regarding possible rate impact mitigation measures that have been agreed to between the Parties.

- ☒ Applicant is an IOU and intends to file with the Commission or municipal regulatory authority an application to change rates of some/all of its customers as a result of this transaction. If so, please explain: Following the close of this transaction, Corix current plans are to undertake detailed cost of service studies, and based on the results of the cost of services studies, Corix will be better able to determine any required rate adjustments. Depending on any required rate adjustments, and subject to Section 11.3 of the Corix-LCRA Purchase Sale Agreement, Corix will file its application to change rates with the Commission at that time.

☒ Other. Please explain:

Corix proposes to adopt the existing rates charged by LCRA and maintain those rates following our acquisition of the utilities. Notwithstanding the foregoing, some of the fees charged in the former LCRA Tariff are not allowed to be charged by a Investor Owned Utility, and have been removed by Corix in its proposed Tariff Terms and Conditions. Please refer: **Exhibit I (Tariff Terms & Conditions (including Drought Contingency Plan))**

15. List all neighboring water and /or sewer utilities, cities, and political subdivisions providing the same service within two (2) miles of area affected by this proposed transaction. This information should be available from the water utility database (WUD) or Applicant's licensed water operator.

- Lower Colorado River Authority
- Waterford MUD #1
- Lost Cove WSC
- Windermere Oaks WSC
- Vista Del Rio POA, Inc.

- Lower Colorado River Authority
- Waterford MUD #1
- Lost Cove WSC
- Windermere Oaks WSC
- Vista Del Rio POA, Inc.

16. Financial, Managerial and Technical information for the acquiring entity.

**See Exhibit J – Corix Infrastructure (US) Inc. Historical Financial Statements**

The financial information presented is for **Corix Infrastructure (US) Inc.**, which is the parent company of **Corix Utilities (Texas) Inc.** (the acquiring entity). As Corix Utilities (Texas) Inc. was incorporated to undertake the acquisition of the LCRA water and wastewater systems, it has no historical financial information. Pursuant to discussions with TCEQ staff, projected financial statements for Corix Utilities (Texas) Inc. are not required.

17. - 22. **PLEASE ANSWER QUESTIONS 17 THROUGH 22 ON A DIFFERENT SHEET FOR EACH PHYSICALLY DISTINCT SYSTEM BEING TRANSFERRED OR ACQUIRED**

**See Exhibit K – System Specific Technical Data**

23. List the name, class, and license number of the operator(s) that will be responsible for the system:

Name	Class / License#		
<b>Hill Country:</b>	<b>Water - Surface</b>	<b>Water- Groundwater</b>	<b>Wastewater</b>
Gregg Goldsmith	A, WO0019383	A, WO0019383	B, WW0014975
Gaylin Griffin	C, WS0010294	n/a	C, WW0044585
Rockey Layton	B, WS0000537	C, WG0011888	C, WW0037426
Tim Simon	A, WO0018590	A, WO0018590	B, WW0039702
Tommy Collier	A, WO0012271	A, WO0012271	n/a
Hillman Hockett	B, WS0002599	C, WG0002675	B, WW0026967
Matt Molter	B, WS0008134	B, WG0009332	B, WW0033713
David Miller	D, WO0031067	n/a	D, WW0046560
Greg Preseley	C, WS0009023	B, WG0003228	B, WW0005270
Michael Stone	n/a	C, WG00012159	n/a
<b>South East Region:</b>	<b>Water - Surface</b>	<b>Water- Groundwater</b>	<b>Wastewater</b>
Don Nolen	n/a	C, WG0010233	B, WW0027951
Dennis Ramsey	n/a	C, WG0001854	C, WW0001468
Glenn Smith	n/a	D, WO0010233	B, WW0029926
James Elam	n/a	D, WO0016971	C, WW0010297
Jason Murry	n/a	C, WG0004252	II, WW0034303

- b. One large scale map showing the proposed service area boundaries being sold, transferred, or merged and, if available, the existing and proposed facilities. Color coding should be used to differentiate existing from proposed facilities. Facilities and service area boundaries should be shown with such exactness that they can be located on the ground.

If transferring area not currently in a CCN or a portion of an existing CCN area please attach the following hard copy maps with each copy of the application:

1. A general location map delineating the proposed service area with enough detail to accurately locate the proposed area within the county.
2. A map showing only the proposed area by:
  - i. metes and bounds survey certified by a licensed state or registered professional land surveyor; or
  - ii. projectable digital data with metadata (proposed areas should be in a single record and clearly labeled, data disk should be included); or
  - iii. following verifiable natural and man-made landmarks, or
  - iv. a copy of recorded plat map with metes and bounds.
3. A written description of the proposed service area.

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**EXHIBIT A: CURRENT RATES**

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**SPICEWOOD SYSTEM*****Hill Country Water (Spicewood Beach Water)***

Effective October 1, 2010

*\*Please refer to Exhibit I - Section 1 (Tariffs) for additional rate information.*



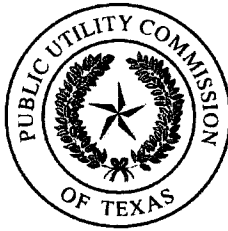


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## EXHIBIT B: CUSTOMER DEPOSITS

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Please refer to the following page for Exhibit B.



*House Bill (HB) 1600 and Senate Bill (SB) 567 83<sup>rd</sup> Legislature, Regular Session, transferred the functions and records relating to the economic regulation of water and sewer utilities from the TCEQ to the PUC effective September 1, 2014.*

## **Central Records Personally Identifiable Information Audit**

### **NOTICE OF REDACTION**

**Documents containing Personally Identifiable Information\* have been redacted from electronic posting, in accordance with Texas privacy statutes.**

\*"Personally Identifiable Information" (PII) is defined to include information that alone or in conjunction with other information identifies an individual, including an individual's: Social security or employer taxpayer identification number, driver's license number, government-issued identification card number, or passport numbers, checking and savings account numbers, credit card numbers, debit card numbers, unique electronic identification number, address, or routing code, electronic mail names or addresses, internet account numbers, or internet identification names, digital signatures, unique biometric data, and mother's maiden name, marriage and any other numbers or information used to access an individual's financial account.



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## EXHIBIT C: CERTIFICATE OF ACCOUNT STATUS

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Please refer to the following page for Exhibit C.

**TEXAS COMPTROLLER OF PUBLIC ACCOUNTS**  
SUSAN COMBS • COMPTROLLER • AUSTIN, TEXAS 78774

August 14, 2012

**CERTIFICATE OF ACCOUNT STATUS**THE STATE OF TEXAS  
COUNTY OF TRAVISI, Susan Combs, Comptroller of Public Accounts of the State of Texas, DO  
HEREBY CERTIFY that according to the records of this office**CORIX UTILITIES (TEXAS) INC.**is, as of this date, in good standing with this office having no franchise  
tax reports or payments due at this time. This certificate is valid through  
the date that the next franchise tax report will be due May 15, 2013.This certificate does not make a representation as to the status of the  
entity's registration, if any, with the Texas Secretary of State.This certificate is valid for the purpose of conversion when the converted  
entity is subject to franchise tax as required by law. This certificate is  
not valid for any other filing with the Texas Secretary of State.GIVEN UNDER MY HAND AND  
SEAL OF OFFICE in the City of  
Austin, this 14th day of  
August 2012 A.D.Susan Combs  
Texas ComptrollerTaxpayer number: 32048021474  
File number: 0801600117

← charter No.

Form 05-304 (Rev. 12-07/17)



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## EXHIBIT D: EXPERIENCE & QUALIFICATIONS

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Please refer to the following pages for Exhibit D.

## CORIX EXPERIENCE AND QUALIFICATIONS

### ***Corix Utilities (Texas) Inc.***

Corix Utilities (Texas) Inc. (the "applicant") is a newly formed, wholly-owned subsidiary of Corix Infrastructure (US) Inc. The Company was established to acquire the assets and operations of 18 small utility systems from LCRA and to undertake additional utility operations and activities in the State of Texas. On July 1, 2012, Corix Utilities (Texas) Inc. assumed day-to-day operations, maintenance and asset management responsibility for the 18 utility systems subject to this transaction under contract with LCRA. Corix Utilities (Texas) Inc. has hired many of the utility operating staff from LCRA and so there has not been loss of system knowledge arising from the transition of operations. Corix Utilities (Texas) Inc. has been providing high quality operation, maintenance and asset management services, as well as customer care and billing services, on an on-going basis. Corix Utilities (Texas) Inc. is part of the Corix Group which provides utility services to small and medium sized communities across North America. As such, Corix Utilities (Texas) Inc. has access to organizational support and technical expertise in order to provide a continuing level of quality services.

### ***Corix Group***

Corix is a recognized leader in the implementation of sustainable water, wastewater and energy infrastructure solutions for communities across North America. Corix designs, supplies, builds, installs, finances and manages utility infrastructure on behalf of municipal, institutional, military and private-sector customers.

Corix currently has over 2,500 employees, in three business groups, dedicated to providing high quality utilities, services and products across North America. Combined with its subsidiaries, Corix brings 70 years of experience, financial stability and cost effective, efficient approaches to operating and maintaining community utility infrastructure. The combination of operations and maintenance expertise, in-house management capabilities, financial resources, and vertical integration of products, systems and services all together guarantees sustainable solutions to almost any multi-utility project. The Corix team also offers a wide range of professional, qualified operators and technicians in all fields of sustainable energy, potable and non-potable water and wastewater. With its national operational governance, technical supervision and training, Corix assures high quality operational performance and safety in the systems it operates.

Corix has a history of stable revenue generation and operating cash flow. We have the benefits of strong management, focused governance, and financial conservatism that has served us well over the past decade. Corix has a diversified revenue base across various regions in the United States and Canada and across three core business divisions: utility operations, utility services, and utility products.

This integrated business model allows Corix to bring unique benefits to our utility operations by leveraging our in-house utility services and products, and manufacturing and control solutions capacity. In the United States, Corix now operates in 30 States, (*refer map below*), with large operations in southern California, on the East Coast, and in the Midwest. Our Corix Water Products Group also maintains a network of branch offices in California. "Corix Utility" operations currently has over 500 staff in the United States serving over 350,000 people with water, wastewater and multi-utility systems. We operate utilities in 18 States, through seven regional offices and over 80 subsidiary companies. On March 30, 2012 Corix also announced its agreement to acquire 20 small water and wastewater utility systems in Central Texas from the Lower Colorado River Authority. These acquisitions significantly bolstered our water and wastewater holdings and overall institutional capacity.

### ***Lines of Business***

Corix has a unique "economies of scope" business model that integrates three distinct but highly complementary lines of business: Utilities, Utility Services and Utility Products as noted in the chart below:

Operational Focus and Expertise



Corix Utilities

Corix focus is placed on providing utility ownership and management across multiple utilities at the local level. Utilities under management by Corix include water treatment and distribution, wastewater collection and treatment, combined heat & power (CHP) plants & heat distribution systems, natural gas and electricity distribution, and chilled water plants and distribution systems.

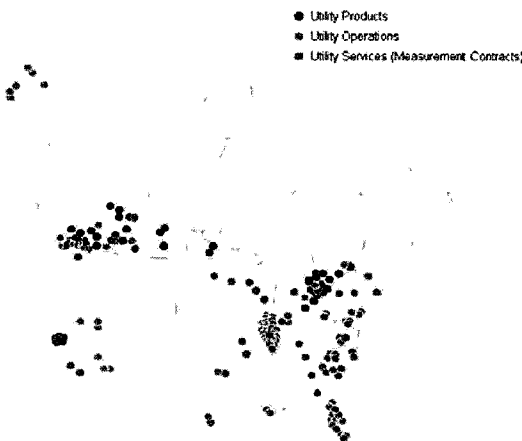
Utility Services

Corix provides measurement and metering services to municipalities, utilities, and cooperatives throughout North America. The services provided include automated meter reading deployment, maintenance and support, meter changes and retrofits, contract meter reading, code compliance, utility field installation services and other special field services. Corix also provides water & wastewater contract operations and turnkey design-build water systems and fire hydrant leak detection, maintenance, and repair.

Utility Products

Corix operates 38 utility products branches across North America, distributing a full line of pipes, valves, meters, pumps, irrigation equipment, service, and repair products and other components that are used to transport clean water and wastewater. Corix also serves the oil, gas, and industrial products sector by providing measurement and flow control equipment.

Corix Operational Locations Map



### **Key Staff**

The following offers a brief overview of Corix Utilities (Texas) Inc. personnel qualifications and experience (also refer to the staff organizational chart in *Exhibit E*):

- Kevin G. Meagher - Vice President and Chief Operating Officer - Corix Utilities (US) Inc.

Kevin Meagher is Vice President and Chief Operating Officer for Corix Utilities (US) Inc. Drawing on over 30 years of utility experience, Kevin is responsible for the overall US operations of Corix Utilities, Oklahoma, Texas and Infrastructure (US) Inc. with more than 1,100 employees and currently over twenty utility and municipal projects that continue to expand. Under Kevin's leadership and guidance, Corix Utilities (US) has evolved to become one of the leading Infrastructure, Automated Meter Installation/Automated Meter Reading (AMI/AMR) project management and services contractors in the country. Kevin has played a major role in the development of Corix's systems and processes while continuing to build on the founding principles of employee safety, high quality value added services and customer satisfaction. He has also played a key role in the transition and integration of the Oklahoma University utility project.

- Edward T. Yanoshita, P.Eng., JD, General Manager, Corix Utilities (Texas) Inc.

Edward Yanoshita is a professional engineer and also a lawyer. Prior to attending law school where he earned a business law degree, Ed had a 25 year career in business, engineering and technical sales of process equipment, specializing in water and wastewater treatment equipment. Ed is currently utilizing his range of skills and experience overseeing the transition of multi-utility operations to Corix in the southwest US.

- R. Darrin Barker, MBA, Utilities Operations Manager, Corix Utilities (Texas) Inc.

Darrin Barker is the Utility Operations Manager for Corix in Texas. He was hired by Corix in July of 2012. Prior to that, Darrin was the Operations Manager for LCRA's water and wastewater utilities. Following three years as City Manager for the City of San Saba, Darrin was employed by LCRA where he remained for 18 years. Darrin has also served as a rate design analyst and management analyst for the Public Utility Commission of Texas from 1989 to 1992. Darrin has a BSc. in Agriculture Economics and MBA (Texas A&M University).

- Gloria L. Broussard, Senior Environmental Coordinator, Corix Utilities (Texas) Inc.

Gloria Broussard has been involved in the water and wastewater industry since 1974, holding Water Operator, Lab Analyst, Laboratory Supervisor, Wastewater Superintendent and Water Quality (pretreatment program) Administrator positions. With 11 years experience as a Senior Environmental Coordinator, and a Wastewater Operations License, Gloria is responsible for the regulatory compliance of water and wastewater facilities at Corix, including all regulatory reporting to state agencies such as the Texas Commission on Environmental Quality, Texas Water Development Board, and local groundwater conservation districts. Current duties at Corix also involve addressing public water quality enquiries and training water and wastewater operators on new regulations.

- Gregg Goldsmith, Supervisor, Corix Utilities (Texas) Inc.

Gregg Goldsmith has both Surface Water License and B Wastewater license. Gregg began his water and wastewater career in 1992 at LBJ MUD in Horseshoe Bay, working in all areas of field and plant operations. In 1999, Gregg accepted a job offer for employment with the LCRA to operate the Uplands water system in Bee Caves. In 2000 he was promoted to Area Supervisor for the Hill Country Region. He began his position with Corix in 2012 as a Hill Country Supervisor, overseeing numerous surface and ground water plants, water systems, wastewater plants and a composting facility.



- Jason Murry

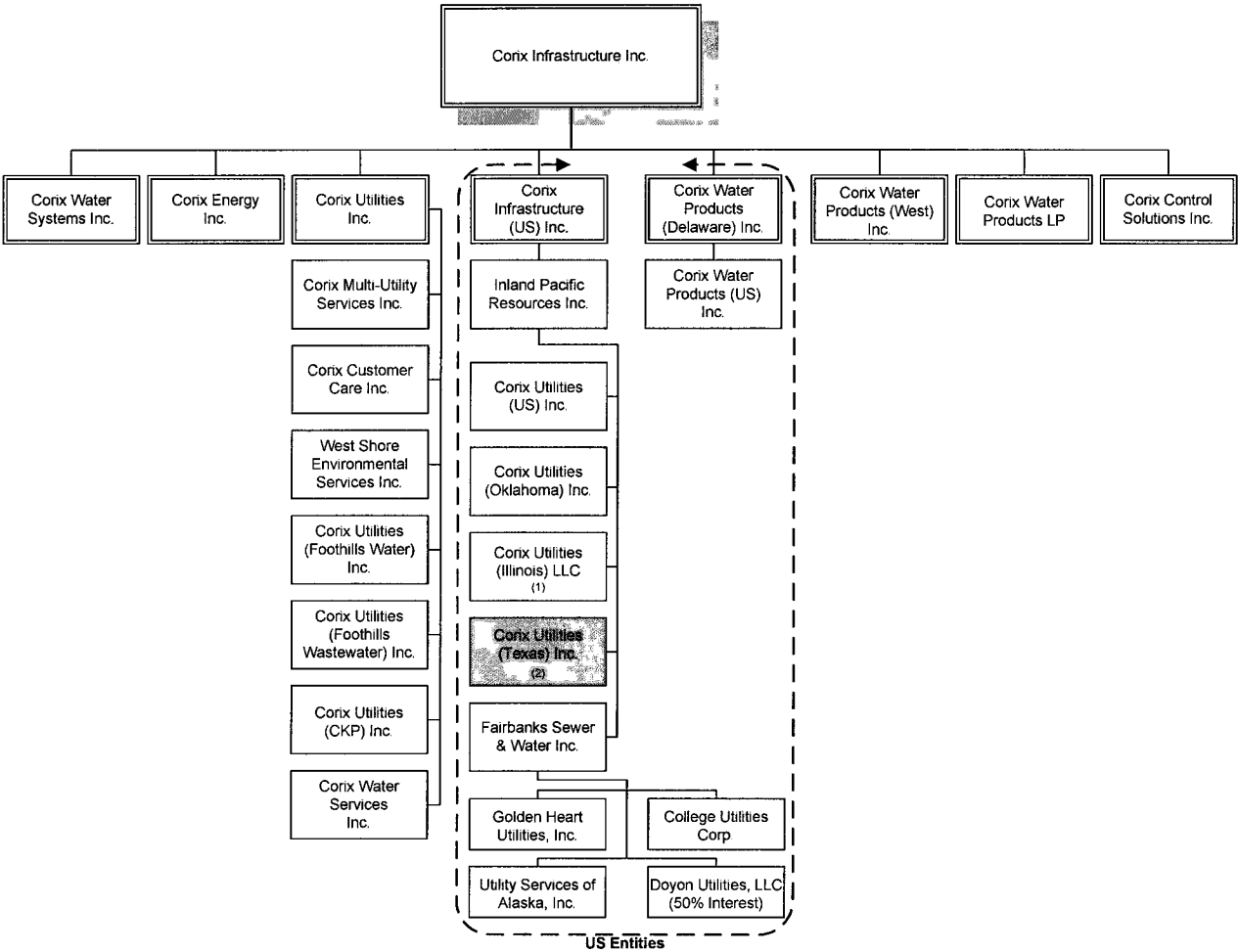
Jason Murry is currently Operations Supervisor for Corix Utilities (Texas) Inc for the Southeast Region which includes water and wastewater utility systems in the Bastrop, Camp Swift, Alleyton and Matagorda areas. Jason has more than 10 years supervisory experience in the operation, repair and construction of water/wastewater distribution systems, leak repair and new service connections/extensions



EXHIBIT E: CORIX ORGANIZATIONAL CHART

Please refer to the following pages for Exhibit E.

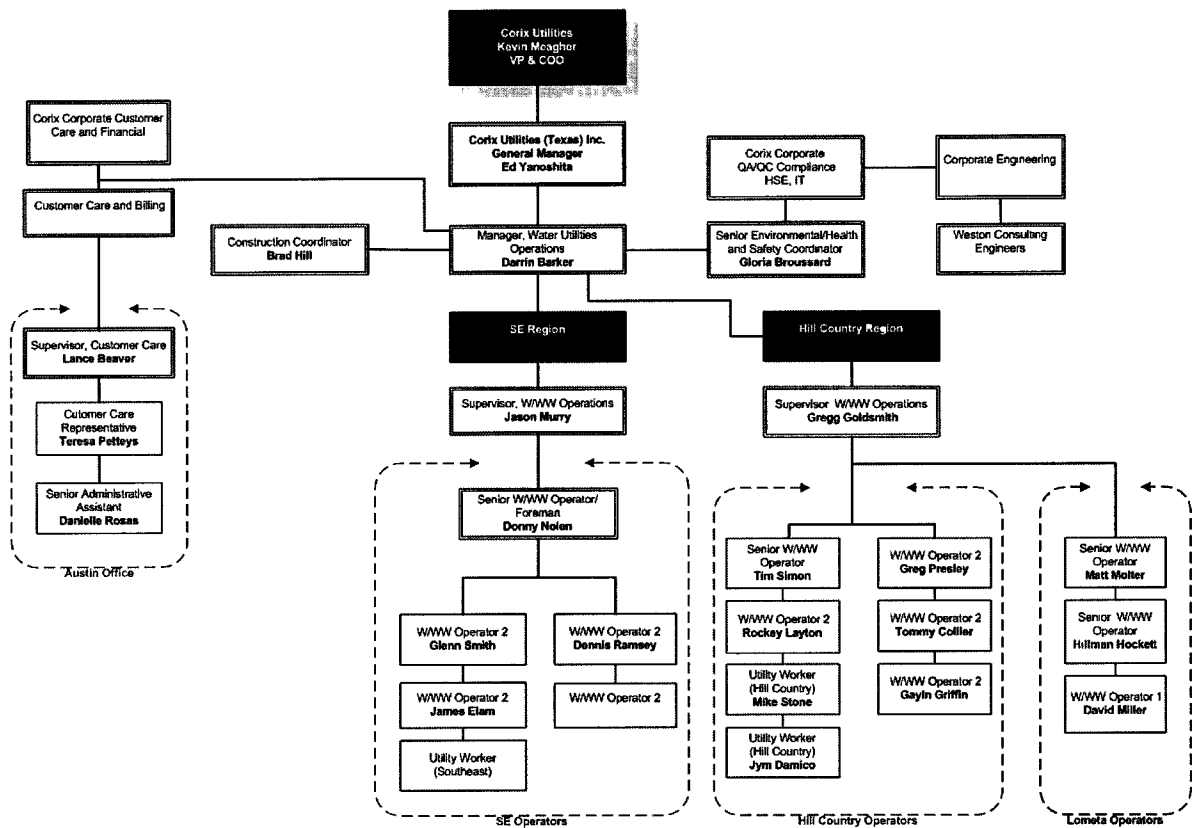
CORIX ORGANIZATIONAL STRUCTURE



**Corix Corporate Organizational Chart**  
Note: Reflects material operating subsidiaries only and is not the full or legal organization structure. December 2012

Please refer to the following page for an overview of Corix Utilities (Texas) Inc. and staff structure.

CORIX UTILITIES (TEXAS) INC.  
Organizational Structure



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**EXHIBIT F: UTILITY SERVICE QUALITY**

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Please refer to the following pages for Exhibit F.

# **CORIX OPERATING PLAN AND QUALITY MANAGEMENT PLAN**

**FOR**

**LOWER COLORADO RIVER  
AUTHORITY**

---

**Submitted to:**

**LOWER COLORADO RIVER AUTHORITY**  
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**DATE:**

**DECEMBER 2012**



Building a World of Sustainable Communities

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## **OPERATIONS AND MAINTENANCE PLAN**

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### **1 WATER & WASTEWATER OPERATIONS & MAINTENANCE PLAN**

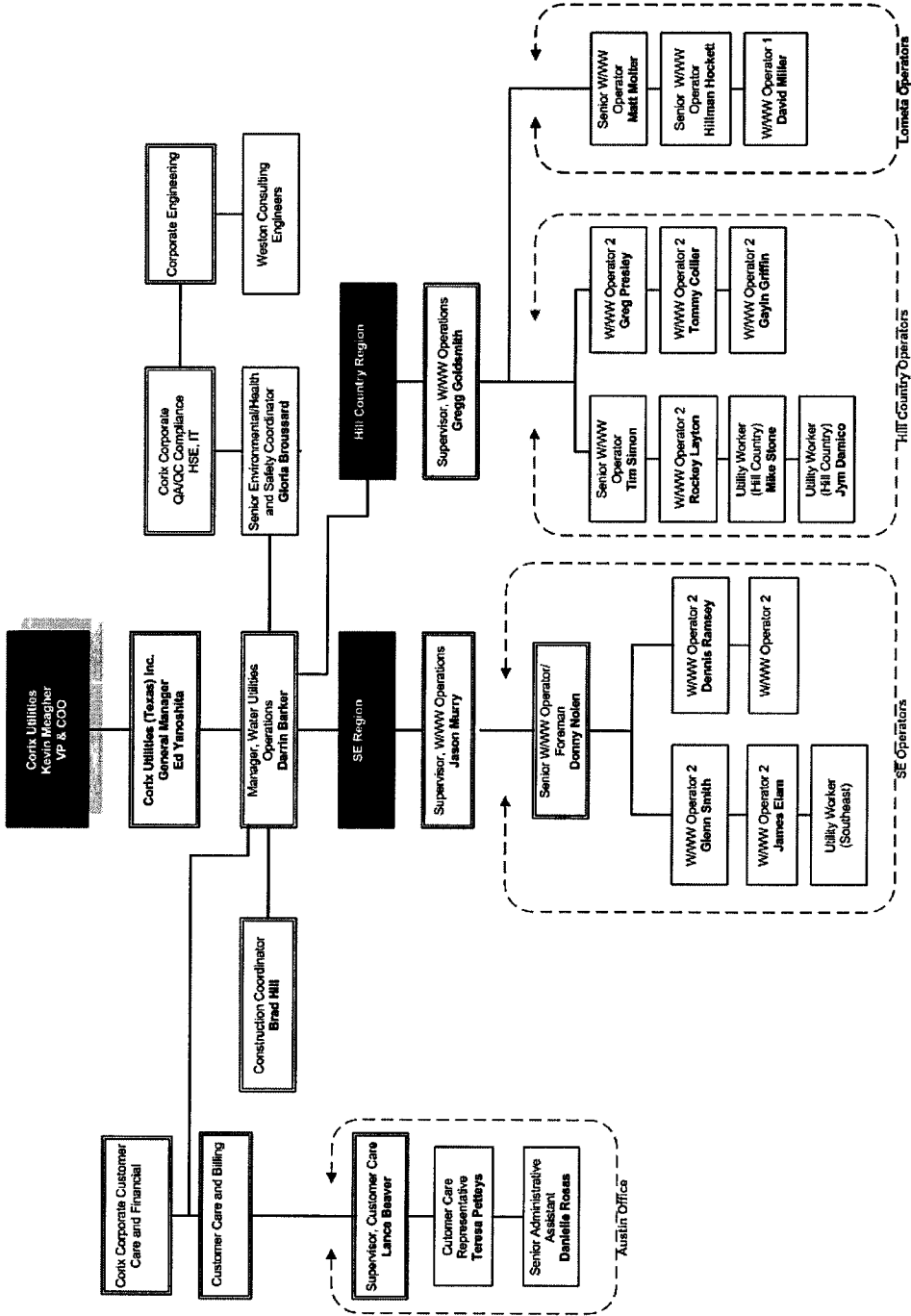
Corix will maintain or increase system performance and ensure the provision of reliable, cost effective, and compliant services over the term of the contract. Our approach includes strategies that guarantee a significant increase in value of services provided.

#### **1.1 STAFFING PLAN THAT OPTIMIZES CROSS TRAINING AND CERTIFICATION**

Corix owns and operates both regulated and non-regulated utilities using a cost of service tariff approach. Corix has the skill sets to operate the water treatment and distribution, wastewater treatment and collection systems in Central Texas.

The multi-utility operations will have employees located permanently up and down the Colorado River Basin so that they are available to respond and support the O&M of the utility systems with many cross trained so as to have capacity to provide services on all of the systems. Corix may have supplemental on-site labor through contractors working under the direction of the Manager of Water Utilities Operations.

Figure 1: Corix Utilities Staffing Organization Chart





**CORIX<sup>®</sup>**  
Utilities



Operating and Quality Management Plans  
Corix Utilities (Texas) Inc.

**1.2 PROCESS OPTIMIZATION OVERVIEW**

Corix’s primary process control objective is to consistently meet or exceed current standards for quality imposed by Federal and State regulatory agencies. We will meet this objective by using the following established process control strategies:

- **Process Control Strategy** - All process control strategies will be in written format. Monitoring, control parameters, and target values will be established for each process and each utility system will be electronically recorded.
- **Process Data Management** - All data will be maintained electronically.
- **Maintenance Management** - As part of the system inventory, Corix will develop a Master Equipment List (Asset List) and maintain it within the MIS. Problems and trends that cause failures can be tracked and responded to accordingly.
- **Information** - Information will be collected, this data can be used to develop measurement tools such as Key Performance Indicators (KPI’s) to determine the effectiveness of the process.

Corix will optimize utility processes by developing an operating plan for each utility which will include:

- Standard Operating Procedures (SOPs)
- Trend Charts for Process Control

To ensure efficient operation of the water and wastewater systems and compliance with regulatory requirements, Corix has established process optimization goals for the LCRA facilities. Table 1 presents these goals.

**Table 1: Process Optimization Actions**

FUNCTION	IMPROVEMENT ACTION(S)
Compliance	Comply with all federal, state, and local water quality requirements: 100% compliance, 100% of the time.
Reliability and Redundancy	Ensure redundancy of critical processes and reliability of all electromechanical equipment by implementing comprehensive predictive and process maintenance programs.
Chemical	Develop Chemical Management Plan to track and optimize treatment chemical usage. Implement necessary safety improvements and complete a Process Safety Plan.
Energy	Reduce pumping and process energy demand by tracking usage and optimizing pump/motor efficiencies and hydraulic profile especially at water pump stations and lift stations. Use variable speed drive equipment where possible to reduce electrical usage.  Develop measurement system to identify overloaded components and insulators breaking down and replacement plans to reduce system losses through these replacements.
O&M Cost	Reduce O&M cost through best management practices of labor and

FUNCTION	IMPROVEMENT ACTION(S)
	resources.
Staffing	Train and utilize qualified existing staff for available positions to the full benefit of the utilities. Cross-train staff for multiple functions.
Conservation	Strive for less than 10% unaccounted for water (UAW). Strive for less than 15% wastewater inflow & Infiltration (I&I)

**1.3 STANDARD OPERATING PROCEDURES**

These SOPs will be based on operating the utility at an optimum performance level, and therefore cannot be fully developed in advance. To the extent that there are existing SOPs, these will serve as the starting point for Corix’s review and establishment of appropriate SOPs. Typically, the O&M Manual is developed at three levels — the individual component level, the systems level, and the utility level. The component-level data, which is provided by manufacturers and equipment vendors, will be assembled and organized in a consistent, indexed format for easy reference. Upon reviewing this information on equipment and systems and developing a basic understanding of their operation — as well as studying the LCRA facility designs—our operations specialists will extract pertinent data developed by the various disciplines (e.g. operating limits, warnings, notes) and integrate them into an overall, system-wide and utility-wide O&M Manual.

The purpose of the O&M Manual is to consolidate data on the background, principles, and purpose of each process in the facilities and utility. The manual will provide the staff with a clear understanding of the utility facilities goals and process objectives, and will serve as a single reference for locating all the information and approaches necessary to successfully operate the utilities.

For the management team, the O&M Manual will provide a single document to record and list the process goals, objectives, and basic operating parameters for each facility process.

The facility’s O&M Manual includes SOPs, which will be updated annually if necessary or whenever the process or equipment is modified or changed. We will retain the SOPs electronically within our secure data center to provide ready access for reference, field use, and updating.

SOPs are the backbone of any facility operation strategy. Operators create process SOPs to explain the operations of an entire process. Equipment SOPs detail the operation of a single piece of equipment, such as a pump. Whether the SOP is for a process or for a piece of equipment, the SOP is a basic guideline to be followed to ensure proper operation. SOPs are written in a form that reduces each step of the process or equipment operation to action words or phrases. A secondary use of SOPs includes training a new operator on the proper operation of the process or equipment. SOPs are not intended to replace well-organized and prepared training programs used for new operators.

SOPs include instructive guidelines for start-up, shutdown, and emergency operations. Each SOP includes safety notes, warnings, and cautions. For clarity and to facilitate comprehension, SOPs also include tables, diagrams, and drawings as appropriate. Corix will refine and expand current SOPs as needed for all aspects of the LCRA facilities.

SOPs provide operators with a quick reference to verify proper procedures. They will be placed in key areas to be easily accessible.

SOPs are useful in training new operators to operate specific pieces of equipment or perform testing procedures and in reminding operators of the specific procedures to follow before they start a task that they may not have performed recently.

**Table 2: Dependability and Operation & Maintenance of WTS & WDS Utilities**

WATER TREATMENT AND DISTRIBUTION SYSTEM (WTS & WDS) STANDARD OPERATING PROCEDURES	
1.	Water operators inspect critical equipment and facilities on a recurring basis.
2.	Routine monitoring of water system pressures to immediately detect any pressure drops that would indicate a distribution system leak.
3.	Operate all water treatment filters, chemical systems and related equipment according to the operating plan.
4.	Routine monitoring of chlorine residuals in the system.
5.	Routine flushing of hydrants ensures proper functioning of valves and adequate flows.
6.	Periodic exercising of all valves in the water distribution system.
7.	Continuous monitoring of pump operating conditions. Pumps that exhibit over-heating, seal failures or leakage or high vibrations are pulled off line and repaired or replaced.
8.	Circulating pumps are regularly serviced and inspected.
9.	Water meters are used to monitor water usage and loss in the utility systems.
10.	Water systems maintained by Corix will strive to have built in redundancy.
11.	Use of MIS to record routine maintenance and testing in accordance with the published maintenance program.
12.	An inventory of water related repair parts is maintained allowing timely response to problem situations.
13.	Maintain vendor accounts with parts suppliers both statewide and regionally.
14.	All water distribution operators are licensed by the Texas Commission on Environmental Quality (TCEQ) and part of their continuing licensing is obtaining continuing education credits.
15.	Corix may use subcontractors in Texas as augmentation of the workforce when needed.

**Table 3: Dependability and Operation & Maintenance of  
WWTS & WWCS Utilities**

WASTEWATER TREATMENT AND COLLECTIONS SYSTEM (WWTS & WWCS) STANDARD OPERATING PROCEDURES	
1.	Wastewater operators inspect critical equipment and facilities on a recurring basis.
2.	Routine monitoring of wastewater system pressures where force mains are used to immediately detect any backups that would indicate a collection system capacity issue or blockage within the sewer.

**WASTEWATER TREATMENT AND COLLECTIONS SYSTEM (WWTS & WWCS)  
STANDARD OPERATING PROCEDURES**

3. Operate the treatment plants, residual handling facilities and related equipment according to the operating plan
4. Periodic exercising of all valves in the wastewater collection system.
5. Continuous monitoring of treatment and lift station pumps operating conditions. Treatment and lift station pumps that exhibit over-heating, seal failures or leakage or high vibration are pulled off line and repaired.
6. Use SCADA, hour meters and data loggers to monitor the efficiency of treatment and lift station pumps and related equipment.
7. Inflow and infiltration studies will be used to monitor water inflow into the wastewater treatment plants and collection system.
8. Use of MIS to record routine maintenance and testing in accordance with the published maintenance program.
9. An inventory of wastewater related repair parts is maintained allowing timely response to problem situations.
10. Maintain vendor accounts with parts suppliers both statewide and regionally.
11. All wastewater treatment and collection system operators are licensed by the TCEQ and part of their continuing licensing is obtaining continuing education credits.
12. Corix may use subcontractors in Texas as augmentation of the workforce when needed.

**1.4 TREND CHARTS FOR PROCESS CONTROL**

Trend charts will be prepared which will allow operators to follow the trends in these parameters and anticipate what is happening in the unit process. This allows operators to be proactive to operational problems rather than reactive when the process is in trouble. Corix staff will develop trend charts for all relevant operational parameters. Typical trend chart parameters include power consumption, raw water quality, treated water quality, plant loading, and chemical usage. Control limits will be established with identified links to the related SOP.

**1.5 NEW METER INSTALLATIONS AND REPLACEMENTS**

Corix will install new meters as requests for new service are processed and payment for service received.

The new meters will be installed in accordance with AWWA standards. However, meters will be continually added or removed from the system as needed. Corix will work with the LCRA to optimize the meter reading system as well as use that information to enhance conservation efforts.

**1.6 COMPREHENSIVE MANAGEMENT INFORMATION SYSTEM (MIS)**

Corix proposes to use a computer software system to maximize quality of the O&M of the LCRA utilities.

Our goals for implementation of the MIS work order program include:

- Install a full-featured MIS that is easy to use
- Maintain the integrity of the existing equipment data for future use
- Integrate with other plant functions such as operations, inventory, laboratory and administration
- Enable access to plant operations and MIS data

As part of this implementation, we will gather any additional information which will be necessary in order to achieve maximum system benefit. The MIS will have the capability, at a minimum, of:

- Maintaining repair records for each piece of Master Equipment List (MEL) equipment within the utility
- Scheduling and monitoring Preventive Maintenance (PM) activities
- Issuing work orders and purchase order requisitions
- Maintaining spare parts inventories
- Tracking repair warranties
- Issuing exception reports, equipment status reports, and equipment repair priority reports

The MIS will provide concise, easy-to-read equipment reports that provide specific information based on manufacturer, type, location, or operating system and subsystem. This information can include life cycle costs, maintenance frequencies and histories, and status reports on all maintenance functions. Reports can focus on issues such as job completion, work order status, and manpower utilization.

The operation and maintenance staff will be responsible for obtaining the following kinds of data for entry in the MIS:

- All existing nameplate data and other pertinent information such as in-service date, and equipment specifications for each piece of equipment
- Equipment identification number, equipment description (name), and location.

The MIS will be maintained through the corporate Information Technology (IT) office. The database will be populated during the O&M phase of the project as part of the system-wide surveys and assessments and will continue until all major elements of the utilities are incorporated once the users are trained on the program. The database will be continuously updated.

## **1.7 WATER TREATMENT AND DISTRIBUTION SYSTEM OPERATIONS**

Corix provides operations, maintenance, and management for all components of the water treatment and distribution systems including chlorine dosing systems, pumps, valves, existing and future meters, control systems, air release valves, fire hydrants, cathodic protection systems, and all piping. Corix has responsibility for the system, up to the point of demarcation. Corix will maintain volume and pressure in the system to meet required codes.

The first step to developing a strategy to operate the water facilities will be to evaluate the current status of operations. Benefits of our strategy are highlighted in Table 4. Maintenance needs will be catalogued and prioritized at all facilities according to the following requirements:



- A. Maintaining required water quality
- B. Maintaining service to LCRA customers
- C. Cost

Table 4: Operational & Maintenance Strategy for  
Water Treatment and Distribution System

OPERATIONAL CONDITIONS	CORIX	BENEFITS
Operator Quality Assurance/Quality Control (QA/QC)	Perform distribution system testing. Perform lab functions at the treatment facilities. Focused QA/QC targets; targeted to process optimization and regulatory scrutiny.	Lower operating costs and complete adherence to regulatory requirements imposed by Federal and State agencies.
Preventive Maintenance (PM) Scheduling	Condition-based scheduling of PM tasks.	Lower life-cycle equipment costs; increased reliability of water system.
Predictive Maintenance (PDM)	Use predictive maintenance schedule to preclude unplanned failure of critical equipment	Establish baseline equipment condition and set up proper PM.
Inventory Management	Automated order point and expense analysis.	Lower inventory costs; increased reliability of critical systems.
Water Balance Calculation	Conduct annual water balance for the water distribution system.	Assess water loss and identify sources.
Remote Monitoring	Evaluate existing monitoring system Evaluate remote terminal unit at critical locations.	Optimize operations and detect problems proactively

Corix will staff the water treatment and distribution systems 5 days a week. Additionally these employees will be available for emergency call out 24/7. As part of our standard approach to water distribution system maintenance, we will:

- Respond to trouble calls 24/7 to investigate distributions.
- Track the locations of service calls and high-maintenance areas to prioritize repair and PM activities on the systems.

1.8 WASTEWATER TREATMENT AND COLLECTION OPERATIONS

Corix will be operating and maintaining the wastewater treatment and collection systems. The Manager, Utility Operations will guide the efforts of the staff. Corix will apply the operational strategies shown in Table 5. The wastewater operations plan will emphasize:

- Implementation of proven, documented systems for process control and optimization. Documentation of strategies and procedures.

- Electrical conservation to ensure cost effective operation in compliance with standards and regulations.
- Optimization of existing processes to ensure compliance in the short term.
- Working with engineers and construction contractors to commission new equipment and transition to new processes.

**Table 5: Operational & Maintenance Strategies of Wastewater Collection**

OPERATIONAL CONDITIONS	CORIX	BENEFITS
Operator Quality Assurance/Quality Control (QA/QC)	Perform lab functions at treatment plants. Focused QA/QC targets; targeted to process optimization and regulatory scrutiny.	Lower operating costs, and complete adherence to regulatory requirements imposed by Federal and State agencies.
Preventive Maintenance (PM) Scheduling	Condition-based scheduling of PM tasks.	Lower life-cycle equipment costs; increased reliability of wastewater collection systems
Predictive Maintenance (PDM)	Pump hour meter monitoring. Use PDM schedule to preclude unplanned failure of critical equipment.	Establish baseline equipment condition and set up proper PM.
Inventory Management	Automated order point and expense analysis.	Lower inventory costs; increased reliability of critical systems.
I/I Investigation	Identify trouble areas in the collection system in need of immediate attention as well as sources of likely infiltration.	Periodically assess collection system integrity, and mitigate stoppages as well as infiltration of the system.
Remote Monitoring	Evaluate existing monitoring system.	Optimize operations and detect problems proactively.

As part of our standard approach to wastewater treatment and collection system maintenance, we will:

- Respond to trouble calls 24/7 to investigate and clear blockages and plant alarms.
- Investigate all sewer main backups and take the necessary steps to alleviate the problem.
- Track the locations of service calls and high-maintenance areas to prioritize repair and PM activities on the systems.
- Temporary connections, if required, will be provided in a safe manner in the most timely and most cost effective manner as determined by the operator.

**2 PREVENTIVE MAINTENANCE**

Corix's maintenance program has the following objectives:

- Maintain the facilities and systems to the highest standard of care to protect against deterioration.
- Maintain equipment and appurtenances in a manner that maximizes operational life and endeavor to prevent unexpected repairs due to untimely failure.
- Provide timely and cost-effective response to both typical and emergency conditions.
- Ensure system performance through equipment reliability, uninterrupted service, and maximum uptime.
- Protect capital investments.
- Ensure the safety of personnel and equipment.
- Enforce equipment warranties.
- Control overall maintenance costs by reducing corrective and emergency/reactive maintenance costs.
- Corix will utilize the MIS to monitor the condition of the facilities and schedule routine inspections, maintenance, and repairs. The MIS will allow us to track performance, service history, and repair costs. The data generated will be used to evaluate the need to replace or rehabilitate any portion of the system.

The maintenance strategy for equipment will be based on three levels of maintenance:

- **Preventive Maintenance (PM)** is defined as routine and/or repetitive activities required or recommended by the equipment or facility manufacturer or Corix to maximize the service life and reliability of the system components. Proper PM is the all-important first line of defense against deterioration and failure.
- **Corrective Maintenance (CM)** encompasses activities required for operational continuity, safety, and performance. The status of CM work orders will be maintained in the MIS and work will be scheduled to the extent possible with groups of equipment to save time and reduce labor requirements. Upon completion of Corix's maintenance evaluation, critical spare parts will be stocked onsite or at a Corix operations warehouse to ensure that downtime is minimal. Each type of maintenance will be scheduled and its completion monitored using the MIS.
- **Predictive Maintenance (PDM)** virtually eliminates unexpected equipment failure because of normal wear. PDM activities will range from simple, periodic inspections to sophisticated condition measurements. The baseline condition for each critical piece of equipment will be identified and the equipment will be monitored against selected critical performance criteria.

The following outlines the basic components of Corix's maintenance approach. It provides an overview of our plan for maintenance as well as the implementation of the MIS.

## 2.1 PREVENTIVE MAINTENANCE PLAN (PM)

Corix's approach to minor (routine) maintenance focuses on PM. Proper PM decreases the total lifecycle cost of equipment or facilities. The lifecycle cost of equipment and facilities that have been properly maintained is a fraction of that which has been poorly maintained.

Corix will create a Master Equipment List (MEL). All equipment identified in the MEL will be assigned a unique asset number and location code and entered into the MIS. Once this is completed, the detailed nameplate data will be entered for each asset. We will then enter PM tasks and frequencies.

Specific tasks, frequencies and PM procedures will be based on the manufacturer's O&M manual, and standards developed by Corix.

Each PM task will be assigned an identification number that will be unique to the task being performed. This unique PM task will describe the procedure needed, tools required, materials needed, and all safety requirements.

Each individual PM task will contain the date of the last revision, drawing reference numbers, O&M manual number, and location as well as any other documents that relate to the operation or maintenance of the equipment requiring maintenance.

## **2.2 CORRECTIVE MAINTENANCE PLAN (CM)**

CM is defined as those non-repetitive activities necessary to correct a malfunction or replace a failing component of the facilities for operational continuity, safety, and performance. Planned CM is the result of proactive PM and PDM processes that identify the equipment's needs before a failure occurs. There are many reasons why planned CM is preferred to unplanned. For example, it provides:

- Increased process reliance due to decreased critical equipment failure.
- Reduced manpower costs due to improved job planning and scheduling.
- Reduced overall repair costs due to proactive repairs of minor issues before they cause more equipment damage.
- Reduced capital improvement costs due to increased equipment life spans.

## **2.3 PREDICTIVE MAINTENANCE PLAN (PDM)**

Corix proposes to provide a level of PDM services that can considerably reduce unexpected equipment failure due to normal "wear and tear" or improper repair. The benefits of PDM include:

- Increased process reliability due to decreased equipment failure.
- Improved job planning and scheduling.
- Reduced overall repair costs.
- Reduced capital improvement costs.

Corix will establish a baseline condition for each critical piece of equipment identified, and periodically monitor the equipment for critical performance criteria. The information provided on the following pages defines these elements in detail.

As described, we will perform the initial evaluation to establish equipment condition and provide specific, detailed recommendations for any remedial repair needed. Monitoring will be performed, with additional performance criteria added, and at a frequency that will be dictated by the condition of equipment as monitoring occurs. In every case, this approach will improve the predictability of equipment performance and quality of service.

## **2.4 INITIAL EQUIPMENT CONDITION EVALUATION**

The equipment condition evaluation will establish a baseline for PDM service. It will define what actions need to be taken immediately to avoid immediate and expensive failure, as well as

prescribe when monitoring levels must be adjusted to protect equipment. The results will be entered into the MIS for tracking and modeling.

To provide a continual baseline for all pieces of equipment at the plants, special inspections will be conducted similar to the initial evaluations performed. These follow-up inspections are recommended whenever a new piece of equipment is installed or when existing equipment is overhauled. This policy has the advantage of identifying equipment or facility repair problems early in the warranty periods. Alignment inspection may be provided for the initial evaluation as a method to pinpoint vibration or cause of premature bearing/seal failure.

All data, measurements, remarks, and conditions for each piece of equipment will be entered into the MIS as field data or text (as appropriate). Equipment needing repairs will automatically be assigned a work order with the appropriate priority level.

Run time meters can be installed and monitored in order to generate more precise data on equipment operation between monitoring periods. Data can be collected on run time and compared with readings on equipment; this information can also be useful in PM programs.

## **2.5 THE ASSET GUARDIAN (CMMS)**

Corix has a wealth of experience with Asset Management and preventive maintenance solutions, including recent experience with projects such as the US Army, Fairbanks Sewer & Water and the University of Oklahoma. One of our strong "learnings" with starting to manage existing facilities is that to successfully achieve operational efficiencies requires close cooperation and a team approach with the existing operational professionals and the owner's design team combined with the expertise and knowledge of the Corix professionals.

This 'transition' project team then leverages all the available data and information as well as reviewing and auditing the processes. This is done to determine where opportunities may be achieved through changes to operational activities, upgrades to systems with capital investments or added technology.

On the Alaska project, Corix reviewed the operational efficiency of each utility and found that the lack of investment in things like basic SCADA technology resulted in poor operational efficiency. At the wastewater treatment plant, operators needed to manually undertake operations in the primary sludge treatment area, which would normally have been automated. Our business plan entails the systematic upgrade to system control and data acquisition functions to both improve overall efficiency, but also to improve employee safety and quality on job.

Corix utilizes a Microsoft-based software business solution tool for our Computerized Maintenance Management Software (CMMS) called Dynamics NAV. Our CMMS software, "The Asset Guardian" (TAG), an add-on module for Dynamics NAV, is ideal for managing assets that require scheduled maintenance, unscheduled repairs and inspection as part of a facilities life cycle. TAG can also be utilized for key personnel to manage technicians and customized on a day to day basis with required work orders. The following figures show typical screen captures of the TAG system.

Figure 2: TAG Work Procedures Card incl. Validation Results Card

FLSH-WDS - Work Procedures Card

General Results

No. . . . . FLSH-WDS

Description . . . . . Flush Water Distribution System

Description 2 . . . . .

Standard Time . . . . . 0.00

Estimated Step Time . . . . . 0.00

Sub-Steps Total Standard Time . . . . . 0.00

Sub-Steps Total Estimated Time . . . . . 0.00

Sub-Steps Exist . . . . . ☒

Requirements Exist . . . . . ☐

Qualifications Exist . . . . . ☐

Attachments Exist . . . . . ☐

Search Description . . . . . FLUSH WATER DI...

Work Code . . . . . FLSH-WDS

Planned Work Orders . . . . . 0

Released Work Orders . . . . . 0

Finished Work Orders . . . . . 1

Assigned Templates . . . . . 0

Assigned Date Meters . . . . . 1

Creation Date . . . . . 09/03/10

Last Date Modified . . . . . 09/03/10

Procedures Help

FLSH-WDS - Work Procedures Card

General Results

No. Prior Results to Print . . . . . 0

Results Input Required . . . . . ☐

Validation Required . . . . . ☐

Input Type . . . . . Numeric

Default Unit of Measure . . . . .

Date/Time Option . . . . . None

Acceptable Low Value . . . . . 0.00

Acceptable High Value . . . . . 0.00

Validation 1 Low . . . . . 0.00

Validation 1 High . . . . . 0.00

Validation 1 Message . . . . .

Validation 2 Low . . . . . 0.00

Validation 2 High . . . . . 0.00

Validation 2 Message . . . . .

Specific Value Required . . . . .

Positive Value . . . . .

Negative Value . . . . .

Symbol Allowed . . . . . Choose Only One

None . . . . . ☒ <> (Not Equal To) ☐ < (Less Than) ☐ > (Greater Than) ☐ <= (Less Than or Equal To) ☐ >= (Greater Than or Equal To) ☐ = (Equal To) ☐ +/- (Plus or Minus)

Procedures Help

Figure 3: TAG Typical Supervisor Menu

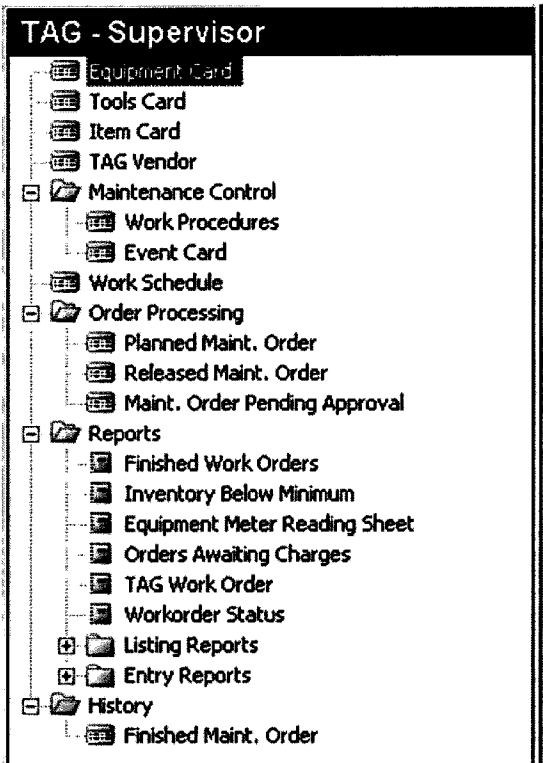


Figure 4: TAG Typical Administrator Menu

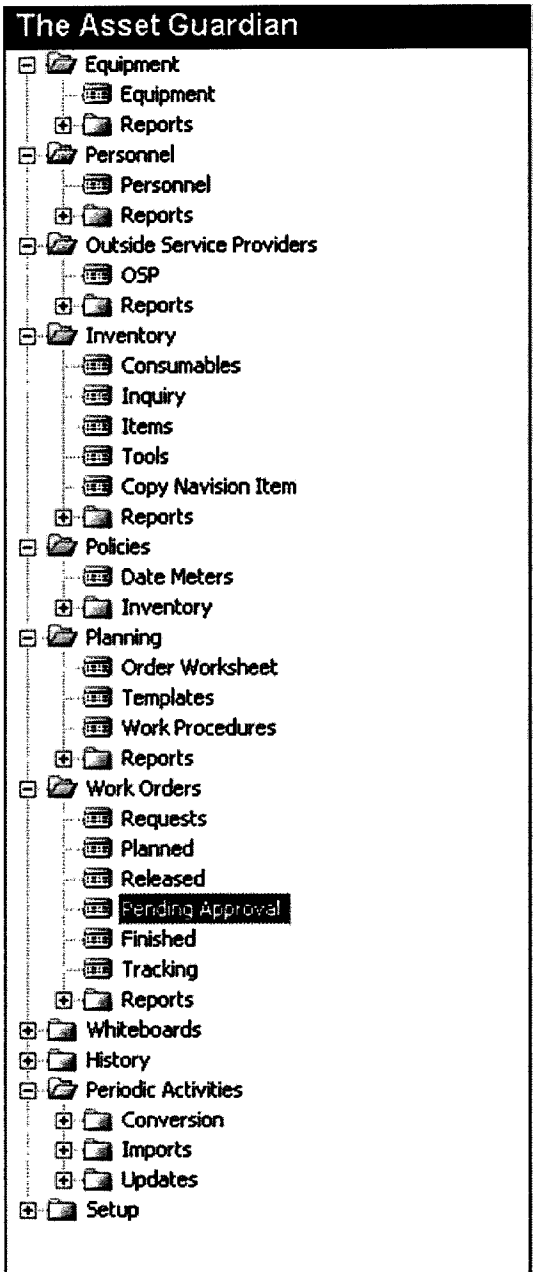




Figure 5: TAG Date Meter Maintenance Policy Card

17 Date Meter Maintenance Policy

General Assigned Equipment Values Tracking Lead Time Cost

No. 11 Priority Routine

Description Lindel Beach Flush WDS Job No. 2008J0800972

Description 2 Main. Type PREVENT

Work Order Description Lindel Beach Flush WDS Reason Code MAINT

Standard Time 0.00 Problem Code

Estimated Time 0.00 Order Type BI-ANNUAL

Allow Duplicates if Necessary Status CREATED

Released Order Older Than Days 0 Work Code FLSH-WDS

Planned Order Older Than Days 0 Blocked

Member of Group

Work Procedure Step	Description	Technician Code	Equipment ID	Results Input Re.	Unit of Measure	Substeps Edit	Standard Time	Estimated Time	Due Date	Work Code
FLSH-WDS	Flush Water Distribution System	JBMG05	TEST070...			✓	0.00	0.00	03/03/10	FLSH-WDS

policy Unit Frequency Help

17 Date Meter Maintenance Policy

General Assigned Equipment Values Tracking Lead Time Cost

Date Meter Type 11

Meter Scheduling

Activate Meter ☒

Frequency 2

Occurrence Interval 0

Next Meter Service 0

Last Service Meter 0.00

Current Meter 0.00

Current Meter Date

Activate Date ☒

Occurrence Interval 6M

Next Service Date 03/03/11

Last Service Date 09/03/10

Last Service Time 11:57:41 AM

Work Procedure Step	Description	Technician Code	Equipment ID	Results Input Re.	Unit of Measure	Substeps Edit	Standard Time	Estimated Time	Due Date	Work Code
FLSH-WDS	Flush Water Distribution System	JBMG05	TEST070...			✓	0.00	0.00	03/03/10	FLSH-WDS

policy Unit Frequency Help

Figure 6: TAG Technician Whiteboard

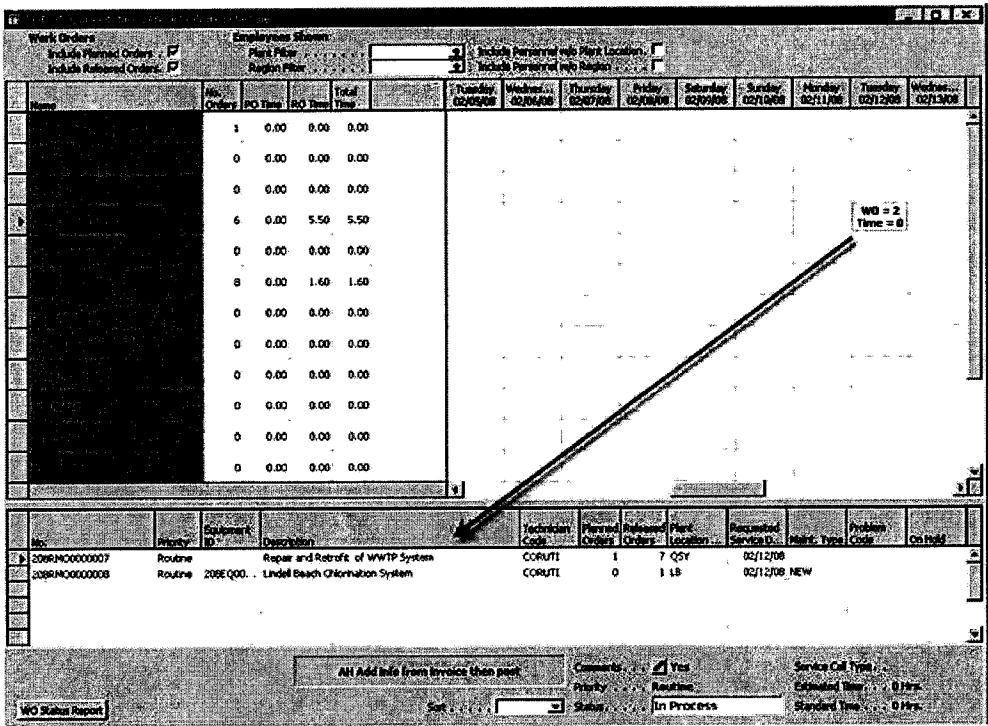


Figure 7: TAG Released Work Order

