DATE: May 7, 2019

TO: Clayton Edwards
                 Joan Arthur

FROM: Cathy Criswell, City Auditor   *Cathy Criswell*

SUBJECT: Asset Management Framework Compliance Review

The Director of the Water and Sewer Department (WSD) requested assistance from the Office of the City Auditor (OCA) to develop a process and train Water and Sewer staff to conduct internal audits of compliance with the Asset Management Framework (AMF) and ISO 55001. To carry out this project, OCA completed the following procedures:

- Created a checklist form to be used in the field when completing internal audits.
- Completed pilot testing using the audit checklists in December 2017. OCA worked with WSD staff to determine critical AMF policies to be included in the pilot testing and updated the checklists after testing.
- Discussed status and reviewed evidence related to compliance with AMF policies in June 2018.
- Reviewed compliance with 15 of the 26 policies in the AMF framework. The results of the March 2019 compliance review are attached to this memo.

ASSET MANAGEMENT FRAMEWORK - SUMMARY OF AUDIT RESULTS AS OF 3/31/19

	AMF No.	Title	Date Created	Date Revised	Summary of AMF Key Points	Audit Test	Compliance Status (Complies, partially complies or does not comply with policy)	Improvement Opportunity
	001	Table of Contents						
1	900	Asset Management Framework	10/1/14	1/10/19	The Asset Management Framework is documented and regularly updated.	Review the Asset Management Framework documentation to determine the framework body contains all the required elements listed in 900.2 Framework Structure. Review whether all sections have been recently updated.	Partially complies. The Asset Management Framework was near completion as of 3/31/19.	None
2	901	Asset Management Policy	8/14/13	1/10/19	1. The policy is written and approved. 2. The policy is updated for any significant internal or external changes.	1. Obtain and read the Asset Management Policy. Review minutes documenting the policy's approval, noting the approval date matches the date of the last revision of the written policy. 2. Discuss significant changes with the Special Project Engineer - Asset Manager. Determine whether the policy has been updated to reflect these changes.	AMF 901 was not tested	N/A
3	902	Asset Management Strategy	10/1/14	1/10/19	1. The asset management strategy is written and approved. 2. A detailed strategy is prepared and linked to TMUA objectives.	1. Obtain and read the Asset Management Strategy. Review Asset Management Committee minutes documenting approval of the strategy. 2. Review action plans to determine if they will achieve the strategy.	Complies - AMF 902 version 4 was approved by Asset Management Committee on 1/10/19. Action plans were made to achieve the strategy.	None
4	903	Asset Management Objectives	10/1/14	1/11/18	1. Objectives, related initiatives and target dates are documented. 2. Asset management objectives are reviewed and updated annually. 3. Asset management initiatives are aligned with the department's business plan.	1. Obtain and read the Asset Management Initiatives and Milestones. Determine if they include all the elements of SMART objectives. 2. Review evidence of management review, such as managers' sign-off or meeting minutes.	Partially complies - AMF 903 includes objectives, related initiatives and target dates. AMF 903 was approved by Asset Management Committee on 1/19/17. Formattng changes were approved on 2/8/18.	Review and revise objectives to ensure all meet SMART criteria (specific, measurable, achievable, realistic and time-bound) as required by ISO 55002 6.2.

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5	904	Stakeholders	12/14/14	1/11/18	1. Internal and external stakeholders are identified and documented. 2. Stakeholder needs, service level requirements and related risks are determined and communicated.	1. Review record of internal and external stakeholders. Evaluate whether the record is complete. 2. Review the statement of stakeholder needs and evaluate whether the record is complete and accurate.	Partially complies - Record of internal and external stakeholders is complete. AMF 904 was updated 1/11/18. The 2018 communications plan lists internal and external stakeholders, key messages and action items. The 2016 WSD business plan lists performance commitments, risks, goals and KPIs.	Review and update policy on an annual basis.
6	905	Employee Training and Development	2/8/87	1/11/18	1. Training requirements and methods are identified. 2. Individual employee training is planned during annual performance planning and review. 3. Training opportunities are communicated.	1. Obtain and review the competency analysis and action plan for providing necessary training and development. Review records specifically related to the training action plan to determine whether action items were completed. Records to be examined may include job descriptions, progression plans and training rosters. 2. Select a sample of employees with asset management responsibilities. Obtain each selected employee's job description and progression plan. Review the employee's training history to determine whether required training has been completed. Obtain documentation that demonstrates the employee holds and maintains required professional certification. Records to be examined may include files maintained by Human Resources, WSD employee files, or files kept by the selected employee. 3. Inquire about methods used to communicate training opportunities and view examples of this communication.	Partially complies - Sewer Operations and Maintenance and Water Pollution Control divisions comply with AMF 905. Some Water Supply training documents selected for the audit sample were not complete. Water Distribution is nearing completion of formalized training and progression plan.	Continue initiative to record all training in Lucity. Design a uniform method for tracking required and completed training.
7	906	Resources	2/8/87	1/11/18	As part of the annual budget process, a resource assessment is made and planning to ensure sufficient resources is prepared.	Review the most recent budget calculations. Ensure the documentation required by AMF 906 has been submitted and that the budget calculations and submission reflect the resource planning decisions.	Complies - All divisions use Munis budget module for budget submission.	None

	AMF No.	Title	Date Created	Date Revised	Summary of AMF Key Points	Audit Test	Compliance Status (Complies, partially complies or does not comply with policy)	Improvement Opportunity
8	907	Communication	2/8/87	1/11/18	1. An annual communications strategy and plan is developed, supported and implemented. 2. The communications plan is developed and approved during the annual budget process to ensure resources are available to support the plan. 3. A crisis communication plan is annually updated, approved and distributed.	1. Review the annual communications plan to determine whether all the required elements are in the plan, including identification of stakeholders and prioritized communication strategies. 2. Review the budget for the latest fiscal year to determine whether funding for the communications plan is included. 3. Review the crisis communications plan to determine it has been annually updated, approved and distributed.	Complies - All divisions have established communication methods.	None
9	910	Organization, Roles, and Responsibilities	10/1/14	7/12/18	1. Roles and responsibilities for asset management are identified and described. 2. Responsibilities of the Water and Sewer Asset Management Committee are described.	Review the Asset Management Framework documentation to determine whether it contains defined organization structures for Water and Sewer and Engineering Services; summary of responsibilities for Water & Sewer Asset Management Committee, TMUA and other departments; and defined roles and responsibilities of TMUA and Water and Sewer Management. Review the policy revision date to determine if it has been recently updated.	Complies - Documentation included organization structures and responsibilities. AMF 910 was updated 7/12/18.	Review and update policy on an annual basis.
10	918	Legal and Regulatory Requirements	10/1/14	1/11/18	Legal and regulatory requirements are documented and regularly updated.	Review the Asset Management Framework documentation to determine whether it contains an analysis of legal and regulatory requirements. Review the policy revision date to determine if it has been recently updated.	Partially complies - AMF 918 was last updated 1/11/18.	Due to the importance of having up-to-date legal and regulatory requirements, AMF 918 should be updated at least annually.
11	920	Asset Management Plans	*Pending*	*Pending*	*Pending*	*Pending*	N/A	N/A

	AMF No.	Title	Date Created	Date Revised	Summary of AMF Key Points	Audit Test	Compliance Status (Complies, partially complies or does not comply with policy)	Improvement Opportunity
12	925	Capital Planning Process	3/6/14	3/8/18	1. All capital project proposed for inclusion in the CIP Inventory, CIP Optimization Model and the 5-year CIP Funding Plan are analyzed following the process flow in AMF 925. 2. The TMUA Business Case Development Project Form documents in a required format the scope of the project, estimated costs, and planning assumptions that will be used in the capital prioritization and optimization process. 3. The Asset Management Committee approves projects before they are forwarded to TMUA board for approval.	1. Select a sample from the CIP inventory and review records to determine whether each step in the process flow was completed, including Asset Management Committee (AMC) approval before business case development is started, business case developed when required, AMC approval of business case, and CIP modeling and prioritization, and rate modeling and recommendation. 2. For each sample item selected above, review the Business Case Development Project Form to determine the forms contain all the information required by AMF 926. 3. For each sample item, verify the Asset Management Committee approved the project.	AMF 925 was not tested	N/A
13	926	Business Case Form Guidance	12/17/14	3/8/18	The TMUA Business Case Development Project Form documents in a required format the scope of the project, estimated costs, and planning assumptions that will be used in the capital prioritization and optimization process.	See AMF 925 audit checklist. Audit testing will be combined for AMF 925 and 926.	AMF 926 was not tested	N/A
14	927	CIP Optimization Model	4/12/18	None	Audit has not identified key points for this AMF section	Audit checklist has not been developed	AMF 927 was not tested	N/A
15	930	Capital Delivery Process	12/15/16	6/21/18	The capital delivery process will consist of prescribed steps described in AMF 930.	Select a sample of capital projects. Review the project records with a representative from the Engineering Department to determine all the required steps were completed.	AMF 930 was not tested	N/A
16	931	Concept Report Guidance	12/14/14	4/12/18	Audit has not identified key points for this AMF section	Audit checklist has not been developed	AMF 931 was not tested	N/A
17	932	Asset Delivery	*Pending*	*Pending*	*Pending*	*Pending*	N/A	N/A
18	940	Operations and Maintenance	6/21/18	None	Audit has not identified key points for this AMF section	Audit checklist has not been developed	AMF 940 was not tested	N/A

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19	945	Reliability-Centered Maintenance	1/19/17	3/8/18	1. Preventive maintenance is performed based on a determined time period or criteria standards set for a specific asset. Maintenance is planned and scheduled based on the established criteria. 2. A predictive maintenance program supports maintenance planning and scheduling. 3. Utilize Standard Maintenance Guidelines (SMGs) that have been written and approved by the Asset Management Committee. 4. Key performance indicator (KPIs) for preventive and predictive maintenance – Work orders to be greater than 75% of total work orders. 5. Staff with dedicated reliability-centered maintenance duties will attain 12 hours of training per year. 6. Staff with dedicated reliability-centered maintenance duties will obtain Certified Maintenance Reliability professional certification.	1. Select a sample of preventive maintenance (PM) work orders. Determine whether PM was completed based on established the criteria established. Information about the asset's PM criteria is available in the asset's instruction manual. The instruction manual may be stored with the asset or may be available on-line. 2. Target implementation of PM is in FY 2019. Audit tests will be developed when PM procedures are complete. 3. Verify what SMGs have been written and approved, along with SMGs planned to be written. Target implementation of SMGs is in FY19. 4. Prepare or obtain a custom report with information regarding percentage of work orders done for preventive and predictive maintenance. Target implementation of KPIs is FY19. 5. Select a sample of employees with reliability-centered maintenance duties. Review their training records to determine whether they received required training. 12 hour training requirement is effective for FY19. 6. Select a sample of employees with reliability-centered maintenance duties. Review their employee files for evidence of required certification. Certification requirement is effective for FY19 and FY20.	Partially complies - Asset purchase contracts stipulate vendors provide a recommended preventive maintenance schedule. These are being added to asset records. Predictive maintenance is done on a case-by-case basis. Six of approximately twenty Standard Maintenance Guidelines have been written and approved. Reports are available for tracking percentages of preventive vs. predictive maintenance. Progress on reliability-centered maintenance training was noted. Staff certification has not begun.	Use experience with policy compliance efforts to re-evaluate policy.
20	948	Asset Disposal	*Pending*	*Pending*	*Pending*	*Pending*	N/A	N/A
21	950	Performance Assessment	*Pending*	*Pending*	*Pending*	*Pending*	N/A	N/A
22	951	Asset Management KPIs	*Pending*	*Pending*	*Pending*	*Pending*	N/A	N/A
23	955	Internal Audit Checklist	*Pending*	*Pending*	*Pending*	*Pending*	N/A	N/A

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24	960	Risk Management	10/1/14	4/12/18	1. TMUA is responsible for the risk management policy, reviewing enterprise level risks and approving proposed actions. 2. The Asset Management Committee is responsible for maintaining and developing the risk management framework, reviewing asset and project level risks, and approving proposed actions. 3. A multi-tier risk assessment framework and a risk assessment process are used for risk assessment.	Audit checklist has not been developed.	AMF 960 was not tested	N/A
25	961	Enterprise Risk Management	*Pending*	*Pending*	*Pending*	*Pending*	N/A	N/A
26	962	CIP Planning Criteria	*Pending*	*Pending*	*Pending*	*Pending*	N/A	N/A
27	963	Strategic Asset Management System (SAMS)	1/10/19	None	This section is under review by WSD.	Audit checklist has not been developed.	N/A	N/A
28	964	InfoMaster	*Pending*	*Pending*	*Pending*	*Pending*	N/A	N/A
29	965	Condition Assessment for Facilities	7/6/16	1/11/18	A condition assessment protocol provides a guide for all facility assets when and if condition assessments are performed.	Select a sample of condition assessments and determine if they were performed following the AMF 956 protocol.	Partially complies - Three divisions had established criteria and completed condition assessments. Water Distribution is developing criteria.	None
30	966	Consequence of Failure for Facilities	8/1/17	3/8/18	A consequence of failure protocol defines the process used to systematically review the potential impact or aftermath resulting from an asset failure.	Select a sample of consequence of failure analyses and determine if they were performed following the AMF 966 protocol.	Partially complies - Progress has been made on compliance. A process clarification document is being prepared.	None
31	967	Incident Investigation and Root Cause Analysis	1/11/18	None	Incident investigation is required for specific triggers. An Incident Investigation Report is used to record investigation results. Root cause analysis is required for specific triggers.	Select a sample of Incident Investigation Reports. Determine if the investigation was done in accordance with policy and fully documented. If a root cause trigger occurred, review documentation of the root cause analysis to determine it was completed in compliance with AMF 967 requirements.	Complies - All divisions have done at least one incident investigation.	None

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32	970	Asset Management Information System	2/25/17	2/8/18	The TMUA Asset Management Information Systems Group meets twice monthly to review IT needs affecting the operation of the water and sewer utility. This group reviews and approves all system changes and implementations.	Review meeting minutes to determine they met twice per month. Review the matters discussed to determine there is regular consideration of information needs, and that system changes and implementations were discussed and approved.	AMF 970 was not tested.	N/A
33	971	Maintaining Digital Asset Records	*Pending*	*Pending*	*Pending*	*Pending*	N/A	N/A
34	975	Emergency Management Procedures	12/28/16	2/8/18	1. Emergency Operations Plans, Emergency Action Plans, and Risk Management Plans are required to be prepared and regularly updated. These include planning for the physical and human assets of the water and wastewater utility. 2. Each plan shall have an effective date and a revised date on the cover page along with a Record of Change worksheet within the document. Plans shall be updated annually or more frequently, if needed. 3. Emergency plans shall be provided to individuals on each plan's distribution list and stored on the department's shared network drive. 4. Exercises shall be performed annually to test each plan in advance of the update. 5. Department shall maintain an updated Emergency Management Training Record and electronic copies of training certificates.	1. Obtain and review Emergency Operations Plans, Emergency Action Plans, and Risk Management Plans listed in AMF 975. 2. Verify effective and revised dates on cover page and Record of Change worksheet. Determine that plans have been updated at least annually. 3. Determine whether the plans have been distributed per distribution list and recorded on shared network drive. 4. Review documentation of the exercise results and any resulting changes to the plan. Note whether lessons learned were communicated. 5. Review the Emergency Management Training Record and note whether it is kept updated. 6. Review a sample of electronic copies of training certificates	Complies - All plans were up-to-date. Plans had been distributed and exercised. Training had been completed.	Clarify what emergency management procedures documentation is to be distributed and retained.
35	980	Energy Management Policy	2/8/17	2/8/18	The Water and Sewer Department will prepare and provide an Energy Conservation and Efficiency Plan as part of the Annual Budget and Capital Plan.	Review the latest Annual Budget and Capital Plan to determine if it includes the Energy Conservation and Efficiency Plan.	AMF 980 was not tested.	N/A

	AMF No.	Title	Date Created	Date Revised	Summary of AMF Key Points	Audit Test	Compliance Status (Complies, partially complies or does not comply with policy)	Improvement Opportunity
36	985	Safety/Security	2/8/17	2/8/18	1. Each department and division shall establish their own safety committee. 2. The Water and Sewer Department will prepare and provide a security plan as part of the Annual Budget and Capital Plan. 3. City of Tulsa Security will run comprehensive background checks on all Water and Sewer employees and on contractors working in all Water and Sewer facilities.	1. Obtain documentation to verify safety committees are meeting regularly. 2. Review the latest Annual Budget and Capital Plan to determine if a security plan was included. 3. Select a sample of employees and review personnel records to determine whether a background check was completed. Select a sample of contractors working at a water or sewer facility. Obtain and review the background check.	Complies - Safety meetings are held monthly. Security plan is updated annually. Employee backgrounds are checked. A sample of background checks was not tested based on auditor review of security controls.	Safety committee meetings documentation should be uploaded to share drive.
	995	Glossary of Asset Management Terms	*Pending*	*Pending*	N/A	N/A	N/A	N/A