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Internal Audit Department**

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Audit Report for

Water Resources Safety and Security Program

Department of Water Resources
Audit Plan Year 2020

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Background and Scope

The Department of Water Resources (DWR) provides Gwinnett County (the County) residents with high quality drinking water, effective wastewater treatment, and efficient stormwater services. Production facilities consist of the Lanier and Shoal Creek Filter Plants which produce drinking water. There are three wastewater treatment facilities at F. Wayne Hill, Yellow River, and Crooked Creek that clean and return water to the environment. DWR also maintains infrastructure of more than 9,000 miles of pipe with over 215 pump stations and 13 booster stations. In addition to providing residents with high quality water and services, DWR is committed to protecting the health of approximately 600 employees and preventing accidental injuries in a complex work environment. An employee's job responsibilities and working conditions at DWR primarily determine the likelihood of exposure to health hazards or workplace injuries, including the potential severity of those injuries. Generally, plants, treatment facilities, and field operations are riskier and require safety plans that are specific to their operating conditions. Examples of major worksite safety concerns include exposure to chemicals, confined spaces, fire, high voltage components, and trench excavations.

DWR maintains a comprehensive safety program that is designed to avert accidents and mitigate health risks primarily through employee accountability, awareness, and safe work behavior. Program components include employee training, facility security, hazard identification and remediation, and safety control activities. There is also a Safety Committee (the Committee) made up of representatives from DWR and Risk Management who meet to review accidents.

The purpose of this audit was to evaluate on a sample basis the adequacy and effectiveness of management's control activities that are designed to provide reasonable assurance of achieving safety program objectives. Internal Audit (IA) interviewed employees, observed performance of key safety control activities at worksites, and reviewed applicable safety documents as of November 2020. We believe the evidence provided a reasonable basis for our assessment. Due to the large scale of operations, IA primarily focused on major worksite safety concerns and oversight activities. See **Exhibit A** for a summary of our audit procedures. We excluded DWR's emergency response plan from this audit because it is regulated by the Environmental Protection Agency.

Assessment

DWR prioritizes the safety of its employees and work environment when conducting operations, but we believe management's control activities would benefit from additional structure to provide reasonable assurance of achieving safety plan objectives. We tested 11 key controls and included five recommendations to improve documentation, tracking, and oversight of safety review procedures. In addition to the five recommendations, we suggest management engage a third party who specializes in employee safety to thoroughly evaluate the effectiveness of DWR's safety program.

Recommendations

1. Employee work activities may not always adhere to mandatory safety standards.

DWR has a comprehensive Safety Manual and approximately 13 safety plans that contain specific guidelines employees must follow at worksites to prevent accidents. Employees are responsible for following all mandatory safety guidelines and rules that are applicable to their work areas. Supervisors are responsible for ensuring employees understand the rules and enforcing compliance. The DWR Safety and Security team conducts facility assessments to verify safety guidelines are being followed and enforced. Each facility is inspected annually. To observe the inspection process and confirm compliance with key safety guidelines, IA attended an inspection with DWR Safety Officers at the Lanier Filter Plant on August 4, 2020. DWR and IA observed multiple instances of noncompliance with safety guidelines related to the sufficiency and effectiveness of procedures, signage, equipment, storage, and other safety provisions. The inspection observations and related safety standards are detailed in **Exhibit B**.

Recommendation:

Operations should remediate the improvement opportunities identified through the Lanier Filter Plant inspection. The Safety and Security Section should re-inspect the facility to validate corrective action.

Management Response:

Thank you for performing the audit of the Department of Water Resources' Safety and Security program. The audit has provided DWR with a timely opportunity to assess the overall health of the safety and security program and further evaluate ongoing continuous improvement efforts. DWR has managed all aspects of a very large and complex safety program primarily with internal resources. Going forward, DWR will engage third-party assistance to enhance the safety program and controls and address any opportunities for improvement in a comprehensive manner.

DWR appreciates the auditor's assistance to help enhance control and oversight program activities through the recommendations in this report. Several planned process improvements to program controls are described in the management responses.

*A re-inspection of the facility has been performed to address the documented areas of concern. The items noted in **Exhibit B** have been addressed. Additionally, a comprehensive review of specific programs is underway to ensure controls are functioning as required. Further, each facility within DWR will be inspected for similar situations.*

2. Reporting of workplace incidents is manual and decentralized.

Incident reporting is very important for managing a safety program. Management may use documentation gathered about incidents to determine causes or contributing factors, process workers' compensation claims, and establish and track corrective action plans to prevent similar incidents. They may also analyze the data to identify patterns, discover anomalies, and assess the effectiveness of safety procedures. Ideally, incident reporting should not be limited to accidents, but should include information about significant hazards employees encounter at worksites.

Generally, supervisors prepare initial accident reports, which may then be presented to the Committee. The Committee reviews accidents to determine whether they were preventable and whether employee actions were consistent with regulations. Conclusions and recommendations are forwarded to the DWR Director and may include demotions or remedial training for preventable incidents. Formal follow-up procedures are not in place to assess whether supervisors implemented approved recommendations.

The primary sources for hazard information have historically been Safety and Security Section audits, crew assessments, and peer observations. Safety observations from audits are tracked in SharePoint, but crew assessments, which assess the usage of standard safety procedures at worksites, are not documented. Peer observations were previously tracked in a SharePoint list, but at the time of fieldwork, that list had been inactive since 2017.

Recommendations:

The following are recommendations to improve oversight and incident reporting processes:

- A. Establish a standard incident reporting form with an automated workflow. Ideally, this will include an online portal that employees can access at work and will allow reports to be routed to supervisors and senior management.
- B. Expand incident reporting to include both accidents and hazards.
- C. Reactivate peer observations. Document and track crew assessments. Add a hotline so employees can confidentially report incidents and hazards.
- D. Adopt a safety management or reporting system that will consolidate accident, peer observation, and Safety and Security Section inspection records. The Committee and division directors should use the system to manage incidents from submission to closeout. The information should also be used to manage and evaluate the department's overall safety program (see **Recommendation 3**).
- E. Modify Committee procedures to include confirming remediation before closing incident reports.

Management Response:

DWR agrees to explore the IA recommendation for process automation. Currently, DWR's Safety Committee strives to follow all guidelines set forth by Gwinnett County's County Administrator Admin Policy - CA-ADM-501. The current practice is a manual process versus an online automated portal process but does exist and is fully activated. The procedure requires all accident report forms to be completed by the local manager and submitted to their respective Deputy Director's Administrative Assistant. The Administrative Assistant submits the completed form to Gwinnett County's Risk Management division, if needed, and to the Safety Committee's Administrative Assistant for review at the next month's Safety Committee meeting. All accident forms are stored on the Field Ops shared drive in the Safety Committee folder. The reports are organized by year and month. Meeting minutes for the corresponding months are also stored in these folders. Two forms are currently used, the Supervisor's Report of On-The-Job injury form and the Automobile Loss Notice form. These forms are provided on the County's Risk Management intranet site.

- A. DWR will examine existing software solutions, including SharePoint, iAuditor, Maximo, and the County's RiskKconnect systems as well as other external resources for workflow capabilities. DWR agrees that an online portal would benefit the entire process. If these solutions fail to provide the needed functionality, there are many safety program related system cloud solutions on the market and the best alternatives will be explored.*
- B. DWR agrees there is a need to formalize hazard identification reporting and DWR will examine how to best capture these types of interactions in a shared database solution as noted in item A above.*
- C. Peer observation program has been active and remains activated. The Safety and Security team will re-evaluate the value and effectiveness of the Peer Observations Submission Form and the Safety Suggestions/Unsafe Condition/Practice Report which are available on the Safety and Security team's SharePoint site for DWR employees to report safety or security concerns. To date, neither of these forms have proven to be communication methods of choice for reporting safety or security related issues. Employees have preferred to interact directly with local management or the Safety and Security team members to bring attention to safety or security concerns.*

DWR has decided to not pursue a 24/7 hotline for capturing anonymous submission for safety and security but rather is going to work holistically and in conjunction with Human Resources to develop an anonymous reporting structure to address acts of job safety and questionable morality on a broad scale including, but not limited to, environmental, safety, security and acts of impropriety or discrimination. DWR agrees that crew assessments should be formally documented. The Safety and Security team will examine the best method for capture of crew assessments and begin documentation of this information in 2021.

- D. DWR supports implementation of a single reporting system to capture all safety program activities such as incident and accident documentation, hazards identification, peer observations, and facility and crew assessments. Additionally, a single reporting system would allow for the capture of mitigation efforts and more effective means for assessing the benefit and impact of the safety program's practices. A cloud-based subscription service may present the best approach.
- E. DWR agrees to enhance the current accident reporting process cycle through follow-up with management to ensure the Safety Committee recommendations are implemented. The Committee will modify the process to provide a more visible closure of incidents reviewed by the Committee.

IA Comments: We could not evaluate the effectiveness of management's accident reporting and resolution procedures during fieldwork. IA will review the available documentation and modification of procedures described by DWR and validate reporting of workplace incidents during corrective action follow-up.

3. Periodic evaluations of the safety program lacked measurable goals and outcomes.

The Occupational Safety and Health Administration recommends organizations periodically evaluate whether their safety programs are making progress toward achieving safety goals and whether there should be any improvements. They suggest organizations evaluate their safety programs by monitoring key performance indicators (KPIs) over time. The KPIs should include a combination of quantitative measures that track safety performance and progress. This information combined with inspections, investigations, and employee feedback should be used to make improvements to the program if needed.

DWR management, including the Safety and Security Section, lacks measurable safety goals and KPIs to evaluate their safety program. Also, the Committee does not analyze the number and type of accidents or workers' compensation claims over time to determine whether their conclusions and recommendations reduce accidents and claims. Risk Management completed a six-year trend analysis for reported incidents and workers' compensation claims from 2014-2019. The report suggested some unfavorable safety trends which management indicated they will address through training and other safety controls.

Recommendations:

DWR should periodically evaluate whether their overall safety program is effective and on track to achieve safety goals. These evaluations should help determine which components of the safety programs are working and which ones need improvement. To be meaningful, program evaluations should be based on comparisons of measurable safety goals or KPIs to actual outcomes over time - monthly, quarterly, or annually. Management should drill down on significant anomalies or unfavorable trends to determine contributing factors and, if needed, any potential changes to safety activities. The number and type of metrics will depend on safety risks and severity of outcomes, but they should be enough to evaluate the entire program. See **Exhibit C** for some suggested KPIs to monitor.

Managers, supervisors, and workers should all participate in the evaluations. The Committee should also monitor relevant outcomes to assess whether their conclusions were effective and if supervisors followed through on recommendations.

Management Response:

DWR agrees with the recommendation regarding the increased use of performance metrics, and this is a key objective in the 2021-2023 strategic plan. Work is underway using Tableau to develop a performance dashboard and a more extensive metrics repository. The team has worked with Risk Management to obtain access to accident data from RisKonnnect, the County's risk management software. Even though DWR has been engaged in performance metrics tracking, there is still a need for greater analysis of safety and security related data to determine root causes and develop data-driven risk mitigation strategies.

4. Worksite permits were not kept for the minimum one year required.

Hot work and confined space duties are inherently more dangerous to employees than most other jobs. Hot work refers to jobs such as welding that produce flames, heat, or sparks which could injure employees or generate worksite fires. Job sites often include confined workspaces which can entrap employees and expose them to toxic chemicals or other materials that could engulf them. DWR classifies both work activities as permit required due to their inherent operational risk. Among other requirements, supervisors must inspect locations for compliance with applicable safety standards and issue entry or job permits before work can begin. Permits are mandatory before work can begin. Also, employees assigned to these jobs must receive applicable safety training and, in the case of confined spaces, obtain certifications. All completed permits and training records associated with hot work and confined spaces must be kept for a minimum of one year.

DWR does not keep work permits in a central repository, such as SharePoint, for the required period and the documents were not readily available for review. We also were unable to determine how many jobs required permits the past year because the department's work order system does not include these descriptions. We therefore could not evaluate the effectiveness of these control procedures.

Recommendations:

Supervisors should comply with all permit requirements and keep associated documents for one year, preferably on a shared site. The department's work order system should include permit mandatory descriptions. The completion of job site permits, and assignment of certified employees should be added to planning or approval workflows in the work order system. In addition to supporting compliance, these enhancements will improve safety documentation. The Safety and Security Section should periodically check for permit compliance on a sample basis and report significant deficiencies to senior management.

Management Response:

DWR agrees there is a need to improve retention practices for hot-work and confined-space permits and will work with involved leadership to establish improved controls to ensure these forms can be easily procured when needed, are consistently captured, are centrally archived, and are easily retrievable for review and auditing purposes. DWR will also explore adding the hot-work and confined-space permit forms to specific maintenance tasks within Maximo and Lucity. Regarding assigning certified employees to planning or approval workflows, DWR will examine Maximo and Lucity user profile functionality to determine if task assignments can be aligned with an employee's qualifications.

5. Functional inspections of safety devices may not be complete.

DWR maintains several devices to prevent exposure to hazardous materials and provide emergency aid for employees injured at job sites. The devices must work properly to minimize injuries or save lives. Qualified individuals must periodically inspect the devices for proper components and functionality. See **Exhibit D** for a description of the devices and related inspections. The Safety and Security Section obtains evidence of inspections for some devices during their periodic facility safety audits, but we do not believe this is sufficient to determine whether all devices have been inspected in a timely manner and that there are an adequate number of certified devices placed throughout the various facilities (see **Recommendation 1**).

Recommendations:

The Business and Staff Services Division should maintain inventory lists of all safety devices by serial number, description, and location. The lists should be used to track operational status and inspection dates. Management should periodically evaluate whether there are enough devices in each location to support timely emergency responses. We realize there may be several third-party vendors who perform inspections. In those cases, management should periodically obtain inventory lists from the vendors with inspection results and applicable maintenance and repair schedules.

Management Response:

DWR agrees with IA and will conduct an operational-wide evaluation of safety-related equipment using third-party support to account for all related devices and equipment. The evaluation will inventory the equipment, determine if sufficient equipment exists, determine the inspection status of equipment, and evaluate current practices for routine inspection of the equipment. All inspection records for AED, eyewash & safety showers, and fire extinguishers will be kept in Maximo. The Safety and Security team will utilize this information in program and facility assessments going forward. Facility assessments and targeted oversight campaigns will be revised to include sampling of system information to account for the presence of all safety equipment, confirm the inspection status of the equipment, and validate that required testing has been performed.

Other Considerations

We observed opportunities to improve the sufficiency of safety procedures for DWR. These observations are for management's consideration only and do not require a written response.

- A third-party vendor called Caduceus conducts drug and alcohol testing of DWR employees on a sample basis. Currently, DWR only receives communications when employees fail drug or alcohol testing. DWR should obtain positive and negative test results and review Caduceus's sampling methodology to determine if enough personnel are being tested given the inherent safety risk. DWR should also consider obtaining annual assurances from vendors who work at County facilities about similar tests.

Management Response:

DWR will work with the Department of Human Resources to determine if a list of employees passing the drug tests can be provided as part of the process.

The Purchasing division was contacted to assist in determining if a contractual requirement is in place for DWR to obtain annual assurances from vendors who work at County facilities. There is currently no requirement in County agreements, except for specific grant-related contracts requiring the existence of a drug-free work environment.

- We reviewed fire evacuation drill documents and noted that there were no Fire Department approvals. DWR should include the Fire Department in evacuations drills with performance assessments. This may also provide an opportunity for Fire to discuss pertinent safety precautions.

Management Response:

DWR agrees with IA's assessment and will work with facilities staff and Fire and Emergency Services to conduct annual drills at the six major facilities. Even though we have accomplished these types of drills periodically in the past, DWR will accomplish all safety-related drills annually going forward. Schedules and completion of these drills will be tracked in Maximo.

Exhibit A
Summary of Audit Procedures

IA performed the following procedures to evaluate the adequacy and effectiveness of control activities:

- Interviewed safety officers and management to identify key control activities. Walked through the activities to confirm understanding and validate procedures used for safety at facilities, booster stations, and pump stations.
- Reviewed 2019 and 2020 facility safety and security assessments for completeness and adherence to applicable policies.
- Walked-through the Lanier Filter Plant to observe compliance with applicable safety standards (**Recommendation 1**).
- Reviewed handling of a safety violation reported to management (**Recommendation 2**).
- Reviewed six-year analysis of safety-based outcomes to determine safety trends (**Recommendation 3**).
- Performed walk-throughs of Lucy and Maximo work order systems. Evaluated DWR training program compliance (**Recommendation 4**).
- Requested July 2020 inventory of multi-gas meter alarms and evidence of most recent date of annual alarm calibration (**Recommendation 5**).
- Examined card access review procedures. Also, obtained Galaxy card permissions as of July 2020 and compared to Outlook employment status for appropriateness for a random sample of 111 card users out of a population of 1,112.
- Analyzed Safety Committee meeting minutes from January 2019 to February 2020.
- Reviewed procedures for drug and alcohol testing for DWR Commercial Driver's License and safety sensitive positions.
- Reviewed fire evacuation drill documents for management and Fire Department approvals.

**Exhibit B
Internal Audit’s Lanier Filter Plant (LFP) Inspection Results**

As part of a facility inspection on August 4, 2020, DWR and IA observed and documented the following instances of non-compliance with safety standards (**Recommendation 1**).

	Safety Standard	Lanier Filter Plant Observation(s)
1	<i>Chemical and Hazardous Communications</i> Storage containing chemicals and other hazardous materials should be labeled according to the National Fire Protection Association (NFPA) color-coded numbering system, so employees and emergency personnel are alerted to their degree of hazard. Proper signage related to hazards is to be posted in the appropriate areas.	The outside of the Polymer Building was not properly labeled according to the numbering system. Tanks in the Dewatering Building should be labeled according to their contents. All storage and buildings containing hazardous materials should be properly labeled. Surveillance or security monitoring signage is needed on the plant’s perimeter fence. Required workplace posters should be moved from the old administrative building to the new one. A confined space sign should be placed at the diversion vault inside the Filter Building. Also, place fall protection signage at the sedimentation basin ladders.
2	<i>Emergency Eyewash and Shower</i> Eyewash units are supposed to be inspected every month to ensure they work. Inspections should be documented and kept near the units.	Several eyewash stations were not inspected within the last month per inspection tags. Inspections should be current.
3	<i>First Aid Safety and Awareness</i> The optimum emergency response time is three minutes or less for injured employees. There are dedicated phone lines to place emergency calls (911).	An Automated External Defibrillator (AED) is currently installed in the Operator area, but not the Administrative Building. Given the distances between them, another AED should be kept in the Administrative Building to meet this standard. Multiple telephones at the Lanier Filter Plant were inoperable and there were no comparable devices such as dedicated call boxes, push buttons, or programmable lines for emergencies.
4	<i>Lockout/Tagout (LOTO)</i> Certified employees who lock out power to equipment for repairs or service are required to follow the LOTO checklist and update continuity binders with clearance information.	Lockout tag records were not always updated. For example, one in an electrical room was not updated since 2016. All logbooks for LOTO records appeared to be out-of-date throughout the plant. Logs should be complete and current.
5	<i>Storage of Flammables (Safety Manual)</i> Flammables must be stored in fireproof containers with cages to restrict access. Chemicals must be secured. (Safety Manual)	There were chemicals kept in unlocked containers outside individual buildings. Chemicals should be stored in locked containers.
6	<i>Work Area Debris (Safety Manual)</i> Employees should remove all scrap and debris from work areas when jobs are complete or by the end of the day.	The Basin Building had significant dust and debris. This should be removed from the building. There were hoses at the Sedimentation Basin and in the Dewatering Facility that are a trip hazard concern.

Exhibit C

Suggested Safety Program Performance and Progress KPIs

Managers, supervisors, and workers should assess how well safety procedures work by analyzing KPIs over time, particularly lagging indicators (**Recommendation 3**). Management should analyze root causes of unfavorable trend anomalies in lagging indicators or those that do not meet plan goals and modify specific safety activities to reduce them. The following are examples of KPIs:

Lagging Indicators
<i>Accidents or near misses that have already occurred</i>
<ul style="list-style-type: none"> • Number and severity of injuries by location • Workers’ compensation claims by injury, location, and payout • Reported accidents, exposures, and near misses • Equipment and property damage

Leading Indicators
<i>Activities to prevent accidents or reduce severity</i>
<ul style="list-style-type: none"> • Number of workers who completed safety training • 100% certified and re-certified equipment operators • Timely completion of preventative maintenance of equipment • Number of hazards identified during audit inspections • Age and number of open audit inspection deficiencies • Staffing levels by location of AED certified workers and designated competent persons • Inspection results (verify functionality) of all AEDs, first aid kits, and water stations • Worker feedback and surveys

**Exhibit D
Safety Devices and Inspections**

The following describes DWR devices and related inspections (**Recommendation 5**):

Device	Inspection Purpose
<p><i>AEDs</i> AEDs are used to resuscitate employees who have experienced sudden cardiac arrest.</p>	<p>Inspections ensure readiness indicators are acceptable. They review expiration dates for electrodes, pads, and batteries.</p>
<p><i>Emergency Eyewashes and Showers</i> Emergency eyewash stations use a steady stream of water to flush irritants from the eyes to treat and prevent eye injuries. They are installed in areas where employees are exposed to harmful chemicals or materials.</p>	<p>Basic inspections are to ensure the eyewash stands work and have the proper level of water pressure to quickly drench the eyes and face.</p>
<p><i>Emergency Phones</i> Dedicated phones are available to place calls (911) for ambulatory and medical services if employees are injured at work. DWR's emergency phones are standard landline phones.</p>	<p>Basic inspections are to ensure phones can be used to call Emergency Medical Services in the event of an employee injury.</p>
<p><i>Fire Extinguishers</i> Portable devices can be used to extinguish or manage fires in confined spaces.</p>	<p>Visual inspections ensure devices are in required locations, check for any damage, and make sure devices are charged and operational.</p>
<p><i>First Aid Kits</i> Stored medical supplies are used to respond or treat common injuries and emergencies at job sites.</p>	<p>Kits are inspected to ensure they contain the required contents and are usable. Depleted or expired items are restocked.</p>
<p><i>Portable Multi-gas Meter Alarms</i> Portable meters are carried by employees to monitor air quality at job sites with potential hazardous chemicals and gases.</p>	<p>Tests of functionality ensure alarms and sensors work. Tests include calibration tests to confirm accuracy of chemical measurements.</p>