

# OKLAHOMA CITY: FIRST YEAR ACCOMPLISHMENTS

## BACKGROUND

After outsourcing the management, operation and maintenance of its wastewater facilities for over 30 years, Oklahoma City elected to select Inframark for its focus on improving culture, compliance and cost.

Oklahoma City, the capital of Oklahoma has a population of 638,367 and covers an area of 620 square miles. It has the 8th largest land base in the U.S., larger in fact than Houston or Phoenix. The following wastewater facilities serve the city:

- North Canadian WWTP – 80 MGD
- Witcher Pump Station – 75 MGD
- Deer Creek WWTP – 15 MGD
- Gaillardia Recycle Facility (operated at the Deer Creek WWTP)
- South Canadian WWTP – 6 MGD
- Chisolm Creek WWTP – 5 MGD
- An Industrial Pretreatment Program – monitoring over 2,000 commercial and industrial locations per year
- Treat and beneficially reuse 21,000 dry tons of class B biosolids.

## CITY'S OBJECTIVES

The city sought new and innovative solutions with a focus on the following:

- Strict adherence to compliance regulations
- Protection and preservation of the facilities
- Maximizing operational efficiencies and minimizing energy consumption
- Staffing and culture improvements
- Odor management capabilities and techniques
- Public / employee health and safety and community engagement
- Improvement of the biosolids disposal and

beneficial land application program

- Standardization and documentation of work practices in place at the treatment facilities



## OUTCOME

January 1st, 2017 marked the start of a new chapter in Oklahoma City's wastewater management history, when the partnership with Inframark was fully implemented. The following are key improvements and noteworthy activities that Inframark accomplished towards the City's goals within the first year of this new partnership. Much of the first-year success is due to the cultivation of a strong working partnership with the Oklahoma City Water Utilities Trust (OCWUT) Utilities Department Staff. Inframark worked alongside the Utilities Department staff for 9 full months prior to the January start date.

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## OVERALL PROJECT MANAGEMENT

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*The Management Team, Leadership Team and Employee Council are charged with specific activities focused on continual improvement of culture, compliance, operations, maintenance, health and safety or employee welfare.*

To facilitate numerous company initiatives and improve efficiency, Inframark established three leadership groups within the project: Management Team, Leadership Team and Employee Council. These teams are charged with specific activities focused on continual improvement of culture, compliance, operations, maintenance, health and safety, or employee welfare.

The Management team is composed of the senior managers at the project: Project Manager, Operations Manager, Maintenance Manager, Lab Manager, Quality Assurance Manager and the H&S Manager. This group meets monthly to address the project level strategic improvement plan and to address cross departmental challenges. The Leadership Team is composed of all supervisors and managers. This group has the most direct interaction with all employees and is responsible for implementing all company and project initiatives. To ensure continual professional development of this group they meet quarterly for a half a day to collaborate and focus on a given area of improvement such as emotional intelligence, company policies, and guiding employee development. The Employee Council is made up of representatives from each department who are not in a supervisory or management role. This group follows an ethos focusing on employee safety, communications and employee training and development.

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## COMPLIANCE

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*Within the first 60 days, an electronic environmental data management system (EDMS) was implemented and within 90 days all regulatory environmental reports were*

*generated and validated in the EDMS.*

At the Chisholm Creek plant, in order to meet the new discharge permit requirements, Inframark modified the treatment process by relocating the disinfection application point. The change resulted in a 75% reduction in dichlorobromomethane, a regulated disinfection byproduct. This action will close out a state issued consent order relating to this issue.

Inframark evaluated seven odor removal technologies for installation but ultimately implemented process changes that lowered hydrogen sulfide production. The lower production combined with more effective operation of existing odor scrubbers reduced odor complaints from several a month to only 1 in 2017.

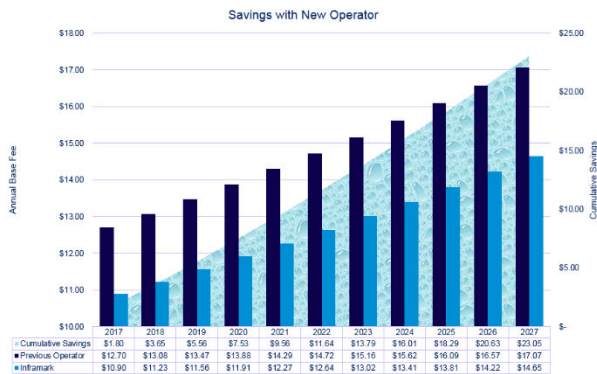
Inframark partnered with HACH to design and implement a real-time effluent monitoring station that provides instantaneous measurement of total chlorine residual, pH, temperature, turbidity and ammonia. The application of the turbidity monitor on wastewater treatment effluent is the first of its kind and will serve as a model installation for wastewater treatment plants across the country. The real time monitoring allows the operations staff to react quicker to potential plant operational challenges that would normally be delayed 12-24 hours while waiting for lab results prior to making plant adjustments.



Compliance with Key Performance Indicators (KPIs) is outlined in a matrix that addresses management, environmental compliance and maintenance practices. Inframark partnered with the City to create this risk/reward sharing practice, and voluntarily doubled the fees associated with non-compliance. To date no penalties have been assessed under this agreement provision.

## COST SAVINGS

The below chart represents cumulative savings for the city, after exploring the market in order to pursue scope changes, and a new outsourcing partner. \$23.1M of anticipated savings to be realized over the next ten years (new contract term).



Under the electrical usage kWh baseline guarantee there is a prescribed methodology in which power savings can be shared. In 2017 Inframark reduced the power consumption to the lowest it has been in 5 years, saving OCVUT just over \$100K for 2017.

Inframark adjusted the operational strategy for the South Canadian SBR digester to reduce electrical usage which will result in an estimated \$1.3M Kwh reduction in power use and savings approximately \$150K per year beginning in 2018.

## OPERATIONAL & MAINTENANCE EFFICIENCIES

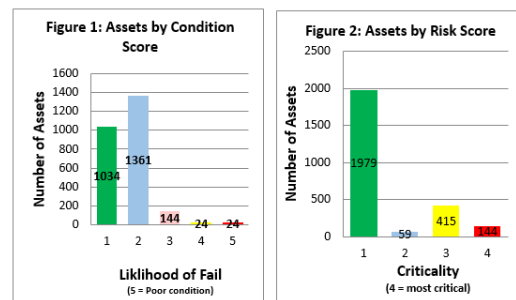
Within the first ninety days of operation, Inframark established Process Control Management Plans (PCMPs); within the first six months, we completed 32 backloged work orders. Inframark also reduced the average maintenance work order open time by over two weeks, a 28% improvement.

During the yearlong transition period, Inframark reviewed, revised or authored 43 written plans to document and standardize compliance, operations and maintenance programs. Over 1,400 pages of best practices were created to establish a road map of key improvements for the project.

Within the first ninety days of operation Inframark established Process Control Management Plans (PCMPs) that outlined plant performance criteria which assisted in Inframark seamlessly integrating 9 different SCADA platforms to Inframark specific operations parameters.

Inframark developed and initiated a structured work order management program that includes electronic submission of work order requests, planning and evaluation of proposed work as well as tracking and recordkeeping requirements. This initiative helped reduce the average maintenance work order open time by over two weeks, a 28% improvement.

A baseline condition report on over 6,000 pieces of equipment was completed during transition and through the first year. This report was then expanded to contain a status of the condition, capacity and criticality of



equipment. This report will be used to focus the preventive maintenance program, develop and maintain critical equipment inventory levels and allow for better long term capital improvement plans. The charts above are an example of the condition and risk score of one facility.

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## LAB & INDUSTRIAL PRETREATMENT PROGRAM

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*The expanded scope of lab capabilities allows for a quicker return on operational data and ensures that operations can address plant operations concerns at the earliest possible time.*

Inframark developed and implemented an improved method of routing of the monthly field inspections to allow more flexibility in the daily schedules and accommodate short notice or emergency inspections in addition to reducing overall travel time between inspections.



The in-house laboratory at North Canadian is certified to analyze 38 wastewater parameters; 11 new analyses alone were added in 2017 which reduced the dependency and expense of using an outside lab. The expanded scope of lab capabilities allows for a quicker return on operational data and ensures that operations can address concerns at the earliest possible time. Inframark developed and distributed “slug kits” to each WWTP and to the IPP department which consisted of sample containers and procedures to use in the event that a suspected hazardous substance was being discharged to the treatment plant; the slug kits assist the operations staff in quickly identifying a substance in order to implement process control options that either treat the substance or prevent an environmental compliance issue. In December of 2017, the deployment of these kits at North Canadian allowed the plant to react 72 hours sooner than had happened in previous similar events; this

allowed operations to make significant changes to the plant, preventing any negative compliance events.

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## BIOSOLIDS MANAGEMENT

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*Over \$3M in capital was invested in the biosolids disposal program for new transportation equipment, biosolids handling equipment and field application equipment.*

Inframark worked with others to expand the available land for the biosolids land application program from 4,412 usable acres to 8,006 usable acres in 2017.

Processes were implemented to improve the efficiency of the biosolids land application program which resulted in improved communications between the agricultural community, operations and the biosolids hauling partner. Inframark improved biosolids odor control and material integrity by improving material handling procedures and adding covered storage capabilities during wet weather events.



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## STAFFING

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*Inframark upgraded key management roles to train and support existing staff to meet a higher level of work standards.*

During transition and through the first year of operations numerous internal company resources were brought to the project to support the local team with technical, financial, procurement and other support services. These resources and broader teams allowed for quicker establishment of company programs and it had no

negative impact to plant operations during the transition from the previous contractor. Inframark assumed operation on January 1, 2017 with the 85 required positions filled. Inframark upgraded key management roles to train and support existing staff to meet a higher level of work standards. Inframark restructured the maintenance department to incorporate 8 additional positions.

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## HEALTH & SAFETY

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*Inframark provided a dedicated on-site H&S manager responsible for implementing safety programs and projects, ensuring employee safety and regulatory compliance.*

Numerous EPA and OSHA programs such as the RMP for Highly Hazardous Chemicals, the Spill Prevention Control and Countermeasures Plan, the Storm Water Pollution Prevention Plan were all rewritten under the oversight of the H&S Manager.

After evaluating the volume of maintenance activities occurring in Confined Spaces, Inframark determined a fully staffed and equipped Confined Space Rescue team was needed due to the remote location of the treatment plants and lack of a local emergency response team. Over \$20K was invested in rescue equipment and training of 18 personnel.



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## COMMUNITY OUTREACH & PROFESSIONAL DEVELOPMENT

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*Inframark partnered with Rose State College, a local community college that offers certificate and operator training programs for the water and wastewater industry, to recruit talent.*

Inframark initiated a partnership with Oklahoma City University to utilize the treatment plants and labs for research work on water and wastewater related programs. Beginning in 2018 graduate students will be initiating a study looking at the impact of microplastics on wastewater treatment.

\$2,500 dollars' worth of excess laboratory glassware was donated to the local high school in Jones, OK and Inframark awarded the top two science students with \$500 scholarships.

Inframark conducted four operator certification training classes attended by local staff and participants from around the state.

Inframark partnered with Rose State College, a local community college that offers certificate and operator training programs for the water and wastewater industry, to recruit talent. Future plans with Rose State College include developing an intern or on-the-job training element as a supplemental program using Inframark operated facilities throughout the State of Oklahoma.