The City of Lafayette Water Works Plant Annual Report 2021

Ron Hurst, Assistant Superintendent

Lafayette Water Works Mission Statement

The Lafayette Water Works is municipally owned and operated water Utility. It is our purpose under the direction of the Mayor, Common Council, Board of Public Works and Safety and Superintendent, to provide its customers with potable water, with adequate pressure, quality and quantity and to work with the Fire Department to maintain the fire hydrants and distribution system that provides fire protection to its customers.

To accomplish this purpose we will pursue professional ethics that promotes public health and safety, consumer confidence, customer service, responsible operations, preventative maintenance, accurate laboratory testing, reliable reporting and compliance with EPA and the Indiana Department of Environmental Management Regulations, AWWA Standards and other safety programs, showing fiscal responsibility to maintain the best user rate possible for our customers.

Steve Moore: Safety Officer for the City of Lafayette and Chairperson of the Safety Steering Committee

As Safety Officer I am responsible for the enforcement of all City safety policies. As Chairperson for the Safety Steering Committee I preside over a Committee that is comprised of representatives from each City Department. We meet monthly at The Water Works Plant to discuss activity from Departmental Safety Committees; there we explore ways to prevent accidents to ensure the safety of all City Employees.

Mission Statement

It is the mission of the Safety Steering Committee of the City of Lafayette to increase and maintain the commitment of employees in health and safety issues; to increase awareness that supervisors and employees are primarily responsible for the prevention of workplace accidents; to make safety activities an integral part of the City of Lafayette`s procedures and culture; to provide an opportunity for the free discussion of safety problems and solutions; to help reduce the risks of workplace injuries; and to help ensure compliance with federal and state health and safety standards.

Jay Schnebly: Chief of Distribution

The Construction Department was able to assist other City Departments on many occasions in 2020. We help other departments with snow removal by plowing two routes on the North end. We also work closely with the Street Department during street paving to assure that we replace any broken valves or hydrants "before" the street is repaved. The Water, Street, Fire, Parks and Waste Water Departments have a long history of working together. In return, we have received help from them on any occasion that we have asked.

Distribution System Accomplishments for 2021:

- Fire hydrants replaced 17
- Fire hydrants repaired 28
- Leaks repaired 23
- Broken mains repaired 54
- Retire old lead services 1
- New services 175
- Side-taps 21
- 1" taps 1
- Updated Meter pits 4
- Salt pumps 0
- Valves replaced 6
- Valves Repaired 10

Utility Locator

Utility Locators perform an invaluable service for the Water Works and the City of Lafayette. They electronically locate the City's water mains and mark them on the ground with blue paint/flags. The Utility Locators are also responsible for marking the City owned fiber conduits along Greenbush Street and Brady Lane with orange paint/flags. Without these locations there could easily be a large service outage to business and citizens of Greater Lafayette and surrounding areas. Locators also respond to emergency locates that are called in after hours and on weekends and holidays.

In house projects include; maintaining the map log conversion to the grid system, log new maps into the map logs and grid system, complete ARC GIS corrections, updating the fire system, placing fire hydrant marker sticks on fire hydrants that are not easily seen,

Utility Locators 2021 Accomplishments:

- Reviewed and logged into the system new maps
- Drew new maps for the Distribution System.
- Number of utility locates completed 14,516 responded to 602 emergency locate requests and assisted contractors working in and around the city with locate information.
- Assisting Intra Water Works/Other City Departments.
- Continuation of the ARC GIS corrections.

Hydrant Flushing Program:

Each year, 6 workers flush nearly 3300 fire hydrants in the spring and fall flushing programs. Flushing mains help to determine what is happening in the system and shows any buildup of iron or manganese in specific areas. This is also an opportunity to operate the hydrants to assess the need for maintenance or repair. A census of the hydrants is also made at this time, which allows updating of information used by other City Departments.

Jay Schnebly: Chief of Customer Service

Our Customer Service Field Tech Staff has continued to meet the needs of our customers for the 2020 year. With the ongoing pandemic we have had to change some of our past practices when troubleshooting field operations with our customers. Social distancing, discontinue entering private dwellings, and following guidelines from the City of Lafayette, and the state of Indiana concerning disconnects for non-payment are just a few.

During this period it has never been more important to exercise patience and understanding for the people that we encounter. We are currently serving 29,793 water account customers. There were 14,748 service calls made by our Customer Service Field Tech staff. These service orders consisted of frozen meters, need readings, check for leaks, verify meter information, weekly checks to monitor water consumption, check for damage equipment, application and finals for new and existing services, repair meter, replace antenna, replace meter, test meter, repair or replace lid or bell assembly, and replace battery or MIU radio read unit. We also disconnected 1,757 services for nonpayment.

Considering the age of the Sensus handheld boxes used for collecting readings, and the 20 plus years of service on the existing 5,000 Sensus meters that are still deployed in our distribution system, it would be wise to consider that our two existing handheld collection boxes are no longer supported by Sensus. Therefore they will not service them if the need would arise. In conclusion the 5,000 existing Sensus meters should be changed out with the utmost urgency due to periodic electrical failure, and meter inaccuracy which effects the water utilities revenue base respectively.

Our Customer Service team also changed out 2,103 Sensus brand meters to Neptune R-900 radio read units. The Customer Service team consists of just 7 members eliminating 2 positions due to attrition. The Customer Service staff also serve in a support role for snow plowing, and broken water main repair. During the warmer months we maintain lawn maintenance on various City of Lafayette properties to ensure an excellent reflection on our customers, and community.

Pat Schultz: Maintenance Foreman

Staff

The Maintenance Department consists of one maintenance foreman and three maintenance personnel.

The main duties of this Department are to effectively monitor and perform maintenance on all the pumping equipment, recognizing small problems before they escalate to larger ones. We perform daily, bi-weekly, monthly, bi-monthly, quarterly, bi-annual, and annual testing on our pumping equipment, generators and the chemical feed systems. We tabulate the combined data to determine which wells and pumps are the best candidates for the Annual Well Rehabilitation Program. The data collecting, record keeping, presentation, and well maintenance forms have been acclaimed as the best in the State.

A preventive maintenance program is performed on all pumping equipment and chemical feed equipment, such as oil changes, greasing, calibration, and signal checking. The Maintenance staff also has the duties of Water Tower calibration, rinsing, cleaning and proper illumination and security testing.

Our staff also assists with security maintenance, installation of security lighting, repairing of motion detectors, testing of devices such as battery efficiency, and lighting devices. We are on call twenty-four hours a day, seven days a week. We have responded to calls such as SCADA malfunctions, pump motor problems, automatic valves not reacting properly, etc.

We have worked with the Distribution Department on repairing broken mains, unplugging water lines and repairing service line leaks. We have also assisted in helping the Customer Service Department in reading meters during severe weather conditions along with installing new water meters and snow plowing.

The staff also assists in the general up-keep of the Water Departments facilities, electric, plumbing, HVAC, and the buildings appearance.

The Maintenance Department goals are to provide a safe and continuous flow of quality water to our customers. Our thorough Well and Pump Testing, as well as our excellent preventive maintenance programs allow the Water Works Department to deliver the highest in quality and most cost efficient product to our customers.
This year we replaced fluorescent lights to LED at some locations at a substantial cost savings on lights and energy usage.

Inspections and Reports: Daily, Weekly, Bi-Weekly, Monthly, Quarterly, Annually

- Wells and Pumps, Flow Meters, Electrical, Packing, Construction Preventative, Alignments, Towers
- Water Treatment Systems, Chlorine equipment
- Electrical ~ Emergency Generators, Lighting & Batteries
- Tools ~ Inventory for Vehicles and Storage
- Calibration and testing Chlorine and Hydrogen sensors

Wells, Pumps & Gen-Sets

- Changed oil, oil filters and fuel filters in all three Gen-Sets
- Cleaned all drain-back valves, and repaired and replaced the not working ones.
- Assisted with annual hoist inspections
- Changed motor oil at all wells
- Packing adjusted at all wells
- Repaired air relief and drain back on Glick #5 well.
- Replaced solenoid valve shut off at fluoride tank at Glick Station.
- Installed 2 new batteries on Genset #2 at Canal.
- Replaced 3 fuel lines in Genset #1 at Canal.
- Installed new schedule 80 pvc piping for ammonia tank.
- Installed an underground chase for all chemical feed lines from main building to vault.
- Ran all new chemical feed lines from main building to vault.
- Overboard process of 14 wells to help determine well maintenance that may be need.

Water Treatment Process

- Cleaning of flow meter at Glick vault weekly and all pumping stations during the year and replaced flow sensor in vault at Glick Station.
- Replaced all chemical feed lines from Glick building to the vault.
- Maintain and repair as needed annually on Hypo-Generator like floats, wiring and salt motor and switches.
- Broke up concrete at Glick Station and trenched to outside vault to run new lines to distribute chemicals into the water system main.
- Replaced waters softener drain tube as per IDEM to keep Glick Station floor from flooding.
- Installed a new shut off valve in main where chlorine enters the system in the vault at Glick Station.
- Repairs to Ore-cle tank at Glick building.

Water Towers/Reservoir

- Maintain and repair Ethernet cables and connectors for communication for scada.
- Monthly tower inspections
- Maintain Security systems in towers/Reservoir.
- Retro fit LED lighting on the interior lighting fixtures Haggerty Tower and the Plaza Tower.
- Replaced door sensors to security system at the reservoir.
- Maintain Fences at towers replacing fence barbs, strap anchors, gate hinges and locks.
- Drained and refilled Haggerty Lane water tower. (2 million gallons – 3 days to drain – 2 days to fill)
- Plaza Tower – replaced all exterior lighting with new LED fixtures.
- Sweep floors in composite towers and clean out bugs in light assembly.

Electrical

- Maintain and replace solenoids, micro switches, in vaults and pumps @ pumping stations.
- Replaced sump pumps in vaults at wells, vaults in pumping stations
- Changed out more standard lights to LED in Buildings.
- Maintain and repaired or replaced security keypads, sensors and security lock systems.
- Maintain and repair or replace components on emergency lighting as needed.
- Maintained and replaced components as needed on North and South automatic gates.
- Repair locating devices as needed and some circuit boards on other devices for locator dept.
- Installed wire chases to protect wires from damage on magnetic contactor for security system door and jamb on steel water towers.
- Maintain and repair HVAC system components that can be legally be done.
- Removed gateway for reading water meters at fire station #5 and it had water in it. Dried it out and found the leak and repaired it and reinstalled gateway. Then there was no internet and found module to protect the circuit board was open so it was replaced.

Building Maintenance

- Installed new LED interior lighting within the Glick building.
- Installed new LED fixtures in the shipping and receiving building.
- Regular custodial cleaning of the Operations building
- The sanding and repainting of all interior metal doors and frames.

- Router out and cleaning of all floor drains within the Glick Building.
- Replaced filters and cleaned AC units at all facilities
- Changed oil in all air compressors
- Keeping sidewalks and entrances safe at water works locations during the winter
- Maintain all UPS backups at water works.
- Repair door locks and door handle on water works building and gates.
- Repair roof leaks on ladder roof systems on water works buildings.
- Repair window actuators on water works buildings.
- Repair HVAC systems on some boiler and electric and gas heating systems.
- Replaced the water heater at Glick Building.
- Retro fit interior LED lighting in the Administration building and Operations building at Canal location.
- Painted the executive offices, entry areas, break room, conference room and all hallways in the administration building.
- Painted handrails and railings within the administration building and truck bay areas.
- Pained all stair treads and trim within the administration building.

- Performed maintenance and repair on security systems on water works buildings

SCADA

- Provide maintenance on SCADA system and repair during the year.

Irrigation Maintenance

- Turn on in the spring and turn off in the fall on all irrigations systems this department is assigned.

Misc.

- Counting of the inventory in purchasing area.

- Assisting in the United Way Luncheon set up and clean up and tear down.

- Graffiti removal from various areas within the City of Lafayette.

- Assisting in mowing and landscape of all Water Works properties.

- Moving of vehicles to and from Fleet Maintenance vehicles.

Andrew Moore: Operations and Lab Foreman

STAFF
The Operations Department consists of one Operations & Lab Foreman, four System Operators, and one Lab Technician. All staff members, except a newer System Operator, retain WT2 or higher Water Treatment licenses. The Foreman, one System Operator, and Lab Technician all retain DSL Large Distribution System licenses.

Service
We provide service twenty-four hours a day, seven days a week, with assistance of an 'on-call' person. We received at least 1705 service calls in the year 2021, which averages out to 142 calls a month. These calls occurred during nights, weekends, and holidays, and consisted of turning on water service, changing out water meter chambers and screens, thawing frozen meters, and much more. There are emergency service requests that we respond to consisting of everything from broken mains, water pipe breaks in homes and businesses, and fire hydrants that have been broken off by vehicles, etc. We also assist the Customer Service Department, Distribution Department, and Maintenance Department here at the Water Works, plus assist the Police, Utility Billing, Facilities Maintenance, Parks, Water Pollution Control, and the Street Department when they are in need of assistance.

Quality
We perform, at a minimum, two rounds of inspections and tests per eight hour shift to ensure water quality and to ensure proper water treatment process operation at Canal Road Well Field, Glick Well Field, and Columbian Park Booster Pump Station. Cl_2 readings are taken at two remote locations within the city and all 14 wells and 6 booster pumps are inspected for proper pumping operation. Building maintenance/upkeep is a large undertaking and we make sure janitorial responsibilities are met, painting is kept up, and everything is in good repair.

We monitor, with the assistance of our Supervisory Control And Data Acquisition (SCADA) system, the water levels in our (1) five million gallon enclosed reservoir located at Columbian Park, our (1) two million gallon elevated water tower located at Haggerty Lane, and our (3) one million gallon elevated water towers located at Union Street, Fairgrounds, and Plaza South. The system will alarm when a problem occurs with high/low water levels, well and pump failures, electrical power failures, and security. If the operator is away from the office the SCADA system will send notifications to a smart-phone carried by the operator to let them know about problems as they occur.

Security
On a daily basis we provide a level of security at all locations making sure the areas are well lit and locked. We ensure security systems at each of our locations are working

properly by logging into a smart-phone application and making sure they are armed and ready at the end of each day.

Aim

We in Operations are dedicated to moving the City of Lafayette Water Works Operations Department forward in giving our customers the best quality water possible by keeping up with Federal and State regulations, streamlining our processes for better efficiency, providing the customers the quantities of water needed by maintaining suitable water levels, assisting with keeping our production of water up, and improving and updating our water system's security from attack.

Summary

It has been my personal goal as the foreman of this department to identify and patch up any weak points at our treatment plants that could disrupt our ability to provide safe and potable drinking water. In 2021 research was done on new in-line analyzing equipment to replace the chlorine and fluoride analyzers that had been in service for the past 15 years or longer. This equipment was purchased and the Operations staff assisted the Maintenance department with the installations at Glick Station, the Canal Road Plant, and at our two composite water towers. These chlorine and fluoride analyzers are critical for notifying operators of treatment process problems, especially during after-hours when we are not staffed. We have also purchased backup flow meters for both plants. The flow meters are essentially the backbone of our plant automation and govern when feed pumps speed up or slow down. They are also essential for recording accurate flow data that is reported to the State, and having backups on hand in case of an equipment failure will ensure we are always prepared to keep our plants running smoothly.

Throughout 2021 we worked with GRW Engineering on plans for upgrading our chemical feed systems at the Canal Road treatment plant. There were some setbacks along the way due to the original engineer leaving the company, which resulted in time getting the new engineer up to speed. There was also difficulty getting in contact with the manufacturers of equipment needed for the upgrade, presumably due to the pandemic. The final design was completed in Fall 2021 and we are currently working on purchasing equipment for installation. Our aim is to have the Canal Road plant feed systems upgraded by the end of Spring 2022.

Progress has continued on upgrading our SCADA system, as well as working with Bowen Engineering, Wessler Engineering, and Frakes Engineering to implement screens, control logic, and features for the soon to be completed Murdock Park Booster Station. New SCADA client machines were deployed by Frakes Engineering in 2021 that now include the graphical interfaces for Murdock Park. This work will continue into 2022 and throughout the phases of bringing Murdock Park into service.

Water Works Laboratory

Wellhead Protection Program

As part of the Well Head Protection program, wells at the Canal and Glick well fields and the adjacent old City Golf Course are sampled and tested for volatile organic compounds. Nine Canal & five Glick production wells are tested once a year. Forty-one monitoring wells are tested annually or more times for volatile organic compounds at the old City Golf Course. Samples are sent to independent certified labs for analysis.

As the Water Works Lab Technician, we keep updated files of all WHP test results, updating and comparing results monthly. We also complete monthly IDEM Reports.

Lead and Copper Project

In 2021, No homes were tested for lead and copper. As in the past we organize and supervise this program, communicating with a certified chemistry lab. We also supply residents with preserved sample bottles and collect paperwork. Results are reported to IDEM and test results are mailed to all residents.

Results: Ninety percent of samples were at or below:

2019	Lafayette	EPA'S Maximum Allowed
COPPER	.672 mg/L	1.3 ppm
LEAD	1.1 ug/L	15 ppb

Lafayette adds a specially blended polyphosphate designed to minimize corrosion scale, and red water conditions (Iron). Since we continue to be in compliance with State and EPA lead and copper regulations, we have been granted "reduced monitoring" status for the upcoming years, testing once every three years.

Consumer Confidence Report (CCR)

2021 was the 24th year for the annual water quality report for customers or "Consumer Confidence Report. The finished report contains water quality information and testing results, including charts explaining the presence of any man-made or natural chemicals, minerals, etc. Information is also supplied to the Town of Dayton. Even though they purchase water from us, they still need to create their own CCR Report. The report was approved by IDEM, mailed out with water bills and posted on the Internet.

Bacteria Testing in the Distribution System

Public water systems must collect total Coliform samples at sites that are representative of water throughout the distribution system. This is done according to a written sitting plan approved by the commissioner. The monitoring frequency for total Coliforms for community water systems is based on the population served by the system. This requires Lafayette Water Works to collect 70 bacteria samples a month, derived from population base (59,001-70,000). We monitor within the outer boundary of the system monthly. These samples are sent to a State Certified Lab, and tested for Total Coliforms. The test results are faxed to IDEM within forty-eight hours, and are kept on file.

Other Duties

- Oversee daily operation of lab and equipment
- Keep inventory and order supplies
- Prepare reagents
- Keep accurate, up-to-date records
- Keep up on current and proposed regulations
- Create new report forms, charts, graphs, etc.
- Quality control tests
- Responsible for various reports:
  - Monthly Report Operations(MRO)
  - Daily Lab Report
  - Lead and Copper Report(Pb-Cu)
  - Consumer Confidence Report(CCR)
  - THM's & HAA5 (Trihalomethanes-Haloacetic Acids)

2021 Water Sampling and Analysis

TEST	SITES	FREQUENCY
Lead and Copper	**Residents' homes**	**30/ Every three yrs.**
42 Volatile Organics	Individual Canal and Glick Wells, WHP as well	Several times each year
42 Volatile Organics	Canal and Glick Entry Points	2nd Qtr. Only. (Waiver)
Bacteria Samples	Distribution System	70/ month—840 in 2021
Alkalinity, pH, Phosphate, Temperature	Distribution System	10 sites at least 2X year
13 Inorganics	Canal and Glick Entry Points	Waiver/ Every three yrs.
Synthetic Organic	Canal and Glick Entry Points	Reduced monitoring
THM's /HAA5	Distribution System	4 / Sites per Qtr.
Combined Chlorine, Phosphate, Fluoride, pH	Canal and Glick Entry Points	4X Daily (by System Operators)
Nitrates	Canal and Glick Entry Points	Yearly

Public Works Inspectors

The Inspector for the Lafayette Water Works Plant is responsible for hydrostatic, bacteria testing and facility inspections. These duties are performed according to a set of guidelines to assure that all new water connections are done according to City Standards.

- Performed 19 Hydrostatic tests
- Performed 60 Bacteria tests
- Performed 0 Well Separation inspection
- Attended 15 Preconstruction Meetings
- Reviewed new maps
- Inspected and checked right of ways on 143 fire hydrants
- Performed 547 site and facility inspections
- Performed 90 meter and meter pit inspections
- Performed 12 Hard flush on Fire lines
- Assisted with utility line locations
- Assisted Construction and Meter Department crews
- Filled 14 systems
- Witnessed chlorination 15
- Witnessed de-chlorination 13
- Assisted Customer Service as needed
- Flushed system 140
- Attended Training Events 0
- Turn off 91 / Turn on 110
- Valve located / repaired 5
- Painted Fire Hydrants 15
- Check for leaks 7
- Started A Data Base for Fire Hydrant Painting

Joe Davenport: Backflow/Cross Connection Inspector

The Backflow/Cross Connection Inspector is responsible for tracking the annual backflow test results for all backflow devices in the City of Lafayette's potable water system, performing annual site surveys to identify any new hazards at a facility, assist in identifying the appropriate backflow device(s) required in new construction, tracking the annual gauge calibration certificates for all backflow testers who submit results and helping with continuing education of local backflow device testers.

- Performed 35 Site Surveys
- Performed 329 Inspections
- Helped Water Facility Inspectors as needed
- Delivered 5 Notices to Install backflow assemblies
- Performed one Well Separation Inspection
- Delivered 46 Notices to Test backflow assemblies
- Helped to log and file incoming maps
- Filled in for our Utility Locators as needed
- Made corrections to ARC/GIS and MyGIS manager online mapping
- Continuing to verify fire line sizes for our Utility Billing Dept.
- Continuing to update and maintain our online Database of Backflow assembly test results through BSIonline and in our Laser fiche system
- Oversaw Irrigation startup, winterization and maintenance
- Assisted with Fire Line Inspections at City Buildings
- Conducted Water Works staff training on MyGISmanager application and mapping
- Attended Pipeline Safety Training
- Submitted Payroll reports in the absence of our Admin Assistant
- Cleared and sprayed around fire hydrants per LFD requests
- Covered several Operation's Shifts