Mishawaka Utilities Business Office

Virginia Fras, Business Office Manager

Mission

We are part of an organization committed to providing our community with the best products and services in electric, water and wastewater treatment.

Mishawaka Utilities strives to:

- Provide reliable service at competitive rates,
- Maintain high professional and ethical standards in a courteous atmosphere,
- Promote continuing education for a safety-conscious and well-trained staff,
- Cooperate with and promote our community, and
- Provide products and services that exceed the expectations of our owners - our customers

The Mishawaka Utilities Business Office strives to provide service more efficiently while improving customer service and for this reason, we sometimes need to invest in new technology to improve service and keep your rates low. This important department provides centralized customer service, trash service support, billing, data processing, finance/accounting and administrative functions for our three operating divisions of Mishawaka Utilities: Electric, Water and Wastewater Treatment. Today, these three utilities serve a population of more than 47,000 people (27,000 customers).

It has been 33 years since Mishawaka Utilities Business Office last changed the billing system for its customers. We began the process of a long overdue update in 2013 and I am happy to report that we have completed our system upgrade and went live on November 1, 2016. The system is functioning well and allows us to be more customer friendly. Our goal in improving the system was to increase productivity, work flow, gather data more efficiently, accommodate a future Automated Meter Reading System and eliminate costly hardware and software upgrades while lowering maintenance costs. What was a very outdated system is now one that is current with a custom software system and hardware technology. Although the system is new and efficient there remains some ongoing changes that will in the end serve our customers much more effectively.

The Mishawaka Utilities management and staff have been preparing for this conversion over three years. This required extra hours for staff and management, putting daily work aside, to prepare for a very challenging task as preparation data was gathered from our older system to convert over to the new system. This conversion entailed taking information from billing, balancing the services, payments and other important data to ensure a clean transition. This required software and hardware specialists who had knowledge of how utilities in medium to large municipalities worked and how data could be tracked and then billed. Specialists then trained management and then management trained office staff. There was a steep learning curve and mastering the new system is time consuming. Training continues with our staff, but in the end, we hope our Mishawaka customers will be happy with the changes and better service they receive.

I would like to give a special thanks to you, our customers, for your patience through our conversion. As with any conversion, there our bumps in the road and we certainly had experienced some of those bumps and appreciate your understanding while these issues were corrected. The Mishawaka Utilities Business Office welcomes a new year and looks forward to the opportunity to better serve our customers.

Electric Division

Sedrick Springman, Division Manager

Mishawaka Utilities – Electric Division (MUE) is the second largest municipally owned electric utility in Indiana, providing service to 28,074 customers. We have 11 substations located throughout the city. Our 46-person staff, located at 1646 E. 12th Street, engineer, construct and maintain the distribution system, consisting of nearly 127 miles of overhead, 176 miles of underground distribution lines and seven miles of transmission lines, primarily 34.5 kV, with a small 69 kV section feeding our University Park substation. This system serves a population of 48,252 as of 2010 census. Mishawaka's electric rates are slightly below average for cities our size in Indiana, which is one of the nation's lowest-cost energy states. Consumers enjoy electric bills that are lower than those of neighboring utilities. While owned by the City of Mishawaka, we are not supported by tax dollars. We are a division of Mishawaka Utilities; our operation is totally financed by the customers we serve.

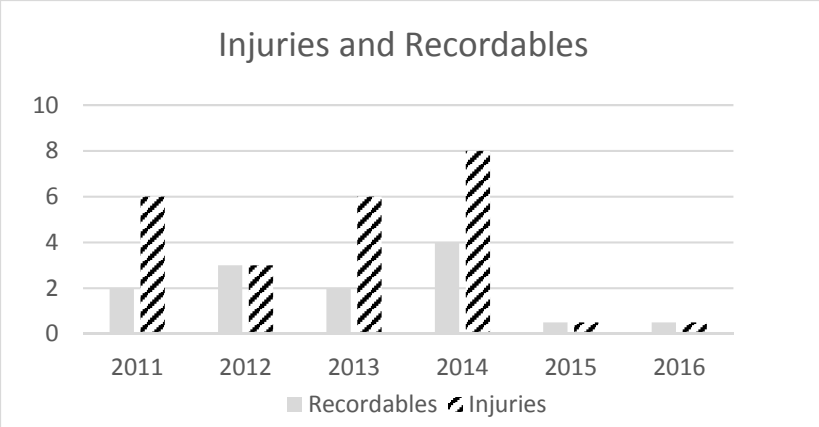
Mishawaka Utilities Electric Department

Electric Division Process Measures

Process Measure	2015	2016	Percent Change
Peak Demand Month (month and kW peak demand)	September 128,001	August 136,604	+6.72
Total Energy Purchased (kWh)	608,730,253	618,966,600	+1.70
Total Energy Sold (kWh)	571,855,392	583,460,972	+2.00
Total Number of Customers Billed	27,435	28,074	+2.30
Engineering Projects Completed	158	205	+29.75
Number of Transformers Set	62	50	-19.00
Number of Metering Department Work Orders Completed	28,558	23,808	-16.00

Personnel Safety

All Construction personnel participated in bucket rescue and pole top rescue at our Logan Street Training Facility. Training was administered by the IMEA. This is a recurring annual training item.



Safety always has been, and will continue to be, our main focus at the Electric Division.

System Energy Consumption

In August we hit our annual peak demand of 136.6 MW, 7.83 percent less than the previous high of 147.3 MW set in August 2006. All distribution equipment operated within design constraints. SCADA provided continuous up-to-date information of transformer loading and system supply voltages. Also, our energy consumption, total energy purchased for the year, was 618,966,660 kWh, up 1.7 percent from the previous year.

Reliability/Performance Enhancements

- Fixed leaking Logan T1.
- Installed new breaker at Union.
- Installed new relays at Clover.
- Replaced approximately twenty 34.5kV insulators at 12th substation
- Completed implementation of the Trip Coil Monitoring program (TCM). The design change was implemented in response to a protective system fuse failure at Union substation that went undetected for an unknown period of time.

Employee Training and Lineman's Rodeo

Our apprenticeship program is in its 29th year, having begun in February of 1988. The JATC program is a cooperative effort between Local Union IBEW 1392 and the Mishawaka Utilities Electric Division and is recognized and registered with the Department of Labor Bureau of Apprenticeship and Training.

- Lineman Rodeo competitions show the talents of the lineworker and are judged on national APPA safety regulations at international levels. We have very successful employees compete. Construction department personnel participated in the following Lineman Rodeos:
  - The 2016 APPA National Rodeo in Minneapolis Minnesota: We sent a Journeyman team consisting of Captain Chuck Bailey, Jak Kudlacz and Robert Verholstra.

- The Fallen Lineman Rodeo in Clearfield Pennsylvania: Our team consisted of Captain Chuck Bailey, Don Beck and Robert Verholstra. Sean Guzy also competed as an apprentice. Mishawaka's team and apprentice finished in the top ten of their respective divisions.

- The IMEA Rodeo in Lawrenceburg IN: We had a Journeyman team attend, Captain Chuck Bailey, Shane Reynolds and Robert Verholstra. We also had 3 apprentices, Seth Anglemyer, Ryan Francis and Tyler Sommers. Journeyman team: 1st place in the Cross Arm Change Out and 2nd place in Hurtman Rescue. The team also took 2nd place overall. Apprentices: Seth Anglemeyer 2nd place Mystery Event, Tyler Sommers 3rd place Mystery Event and Ryan Francis 1st place Dead End Change Out. Individual Journeyman: Chuck Bailey 1st place Hurtman Rescue, 2nd place Dead End Change Out and 2nd place Overall Journeyman. Mutual Aid Event: Chuck Baily 1st place and Tyler Sommers 3rd place

- The International held in Bonner Springs, Kansas: We sent a 3-man team Chuck Bailey, Don Beck, Robert Verholstra and one apprentice Sean Guzy. 206 teams from around the world competed with Mishawaka finishing 37th in their division. 284 apprentices from around the world competed and Sean Guzy finished 33rd in his division.

Kevin McGann continues to serve on the Indiana State Lineman's Rodeo committee as well as the National Joint Apprenticeship and training committee.

Also, the following training was attended:

- Don Beck and Chuck Bailey attended National Training Institute (NJATC) training 7/23-7/29

Organizational Changes

Organizational changes this past year were as follows:

<u>Engineering Department</u>

- Adam Severns was promoted from Substation Technician to Substation Supervisor.
- Gary Kull was promoted to Substation Technician from Service Rep in the Metering Department.

<u>Construction Department</u>

- We hired 4 Apprentices last year:
  1. Jon Hurley
  2. Justin McCloskey
  3. Michael Miller
  4. Tyler Somers

Metering Department

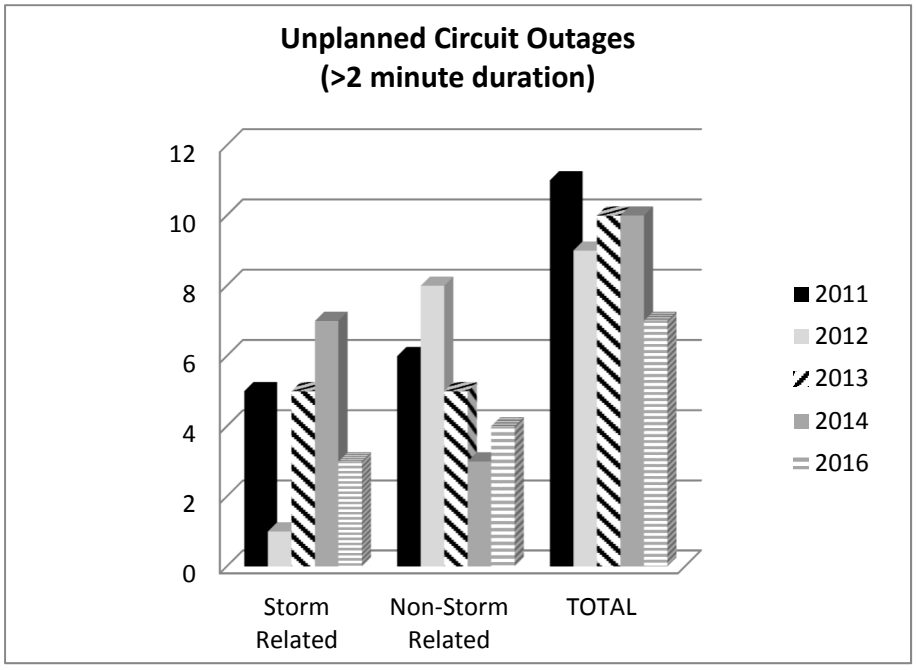
- Adam Maust was hired as Meter Reader.
- Paul Dorbin was promoted from Meter Reader to Service Representative

Engineering and Construction

Unplanned Outages

There were 11 unplanned circuit outages in 2016, with a cumulative unplanned outage time of 25 hours. The number of unplanned outages was 57% more than the 7 outages in 2015.

The system as a whole continues to provide reliable power. This is due to multiple reasons including ongoing reviews and analysis of system reliability and operational issues, with appropriate actions taken to address areas requiring improvement. Performance has also been positively affected by implementation of reliability driven design changes, an effective preventive maintenance (PM) program, effective implementation of the fuse coordination program, and effective preparation, review and approval of technical procedures.



Support Services

Annual support services were provided for Summerfest, Summer Concert Series, Memorial Day Parade, Kamms Island Festival, Heritage Festival, as well as decorations for the Holidays, including wreaths and the trees downtown and at Battell Park. Our support role includes providing both personnel and vehicle resources for setup and removal.

Preventive Maintenance (PM)

We are continuing with our substation PM program to help prevent and mitigate failures and prolong equipment life.

GIS (Geographic Information System)

The Electric Division has effectively used its GIS base map to assist outage response teams. GIS information provides both a concise location of the affected residence or business and the necessary information to hone in on the outage extent.

The MUE GIS implementation expanded further throughout 2016 with daily application of the data collected and maintained in the GIS system. For example:

- Maintained construction and street light work flow.
- Maintained Street Light Database and created reports for monthly billing for Business Office.
- Implementing new Futura Field Pro Inspection Software for crews to use in the field.
- Maintained Circuit Maps updates, Futura updates (GPS included) and the transformer database.
- Maintained all laptop computers and iPads for Engineering and Construction crews. Continued training crews on Futura software to help Construction Workflow to be more efficient.
- Trained new Engineering staff on Futura Editing and Staking
- Supported Construction with detailed maps for underground facility inspections.
- Maintained Pole Quality Inspection reports. Alerted crews when Pole change outs were necessary
- Currently working on the completion of the Pole Attachment Reporting. Will help generate Revenue to the Electric department.

Project Engineering Activities

2016 was another busy year for the Electric Department Projects staff. Joe Watkins and Justin Overholser oversaw 205 new projects for the year. Included in that number were 55 new underground electric house services installed, 3 new hotels, 4 new restaurants, 3 new service stations, a new Beacon Healthcare facility and a new V.A. Clinic. Also installed were 30 single phase transformers and 15,000 feet of single phase primary, 18 three phase transformers and 20,000 feet of three phase wire. Todd Fizer managed the inspection of 2000 utility poles performed by a private testing company. Todd's other duties include keeping the electric departments mapping system updated and managing the departments pole attachments account.

The most demanding projects, those requiring in excess of 160 hours per crew, included the following:

- Electric distribution improvements (line maintenance projects):
  - Utility Pole Ultrasonic Testing
  - Replaced over 90 Condemned poles from testing results
  - Installed new MOAB on Douglas Rd.
  - Installed 600 amp switches to reduce outage times

- Substation Support:
  - Scheduled projects to support:
    - Switching
    - Nyloncraft Transformer Testing
    - Breaker Testing Switching

- Major City Jobs:
  - Holiday Inn at Toscana
  - Holiday Inn on Douglas Rd.
  - Candlewood Inn on Douglas Rd.
  - The V.A. Clinic on Trinity Pl.
  - Beacon Healthcare on Beacon Parkway
  - Longhorn Restaurant
  - Grandview Apartments on Gumwood Road.

- System PM:
  - Vault Hazard Testing
  - SF6 gas inspection and servicing of all puffers in service
  - Transformer and Closure verification and inspections

Metering

The number of electric customers increased 2.3% from 27,435 to 28,074. The Metering Department service trucks completed 17,455 install/removal work orders this year. The Meter Technicians completed 1,678 work orders and several power quality tests and recording procedures. The Meter Technicians are responsible for replacing existing meters throughout the city, to radio read meters (AMR – Automated Meter Reading). By installing an AMR meter, an accurate reading is obtained monthly without requiring meter access. The AMR meter is not only time efficient for the Metering Department but is also a convenience for the customer who no longer has to provide access. The Metering Department has been able to keep the monthly reading schedule at or near 30 days in addition to completing over 2,559 re-read work orders.

The following table depicts performance in the area of work orders:

Work Orders	2015	2016	Percent Change
Removals	11,879	8,755	-26%
Installs	11,665	8,700	-25%
Sets	112	428	+282%
Re-reads	3,686	2,559	-30%
Change Meters	1,071	1,570	+46%
Miscellaneous	145	148	+2%
Totals	**28,558**	**23,808**	**-16%**

The disconnect truck completed 114 disconnect lists which included 2,243 customers. The list was for both scheduled monthly disconnects along with special disconnects. In addition to performing disconnects the truck reconnected 1,887 customers resulting in $50,060 in charges.

The disconnect truck during follow-up visits found 30 customers had tampered with the disconnected meter resulting in the customers receiving tampering fees. The disconnect truck is also able to read meters and help the service trucks when necessary.

The Metering Department is making great strides to change meters from three-phase mechanical thermal demand meters to electronic solid-state meters. In addition, single-phase A-type base adaptor upgrades were also performed. This year, with the support of Itron and the business office successful implementation of the FC300 handhelds was accomplished. The decrease in the number of re-reads is ensuring that accurate readings are being obtained through the use of the new FC300 handhelds.

The following table depicts performance in the area of shut-offs:

Shut-offs	2015	2016	Percentage Change
Past-Due Amount	$271,707	$277,514	+2%
Totals Amount Due	$539,191	$563,213	+4%
Shut-Offs (#of Customers)	2,179	2,243	+2%
Bad Checks	19	13	-31%
Payment Plans & Extensions	68	68	0
Payment Plans Deposits	169	115	-31%
# of Non-Pay	12	64	+433%
Shut-Off Totals	**2,447**	**2,490**	**+1.75%**

Over the past year, the Metering Department sent Paul Dorbin to the Great Lakes Electric Metering School in Grand Rapids to further his education. The Metering Department attended several training sessions including bi-monthly IMEA safety training and in-house training sessions. The Metering Department continues to move forward with the AMR program to ensure the best quality service for the citizens of Mishawaka.

Operations

Within the Mishawaka Utilities Electric Division, the Engineering, Construction and Metering Departments all rely on the Operations Department for support. The Operations Department purchases, coordinates and maintains all goods, services and rolling stock for the Electric Division. In conjunction with the Business Office, the Operations Department generates bills for contracted services set up by Engineering and damage claims to our facilities due to traffic accidents and contractor dig-ins. The Operations Department also assists the Accounting Department in keeping accurate material and accounts payable records and by generating all purchase orders and job costing reports.

Other key functions of the Operations Department include:

- Dispatching crews and providing assistance to both customers and other divisions over the telephone and two-way radio.
- Maintaining all records for use by Accounting, Engineering and Construction pertaining to transformers, meters and inventory material.

- Maintaining the storeroom and issuing materials to construction crews.
- Issuing polyphase meter sockets to electrical contractors.
- Tracking the SCADA system that monitors the entire substation network.

An ongoing alliance that we continue to benefit from is the transformer salvage program with our partners at Anixter and transformer vendors Solomon Electric in Solomon, Kansas. In today's market, many transformer salvage companies charge to destroy used transformers. However, the agreement we reached with Solomon to have them process non-functioning or technologically out-of-date transformers, allowing us to receive credit based on the salvage values of the recovered materials. Normally, we would only be allowed to use this credit with Solomon towards the purchase of transformers from their company. But, by forming this 3-way alliance, the credit is issued to Anixter and saved on account for to us for use on any equipment, material or services that Anixter would sell to us outside of the VMI agreement. Last year, we declared 108 line transformers as salvage and received over $28,490.00 in usable credit with Anixter. We were able to use this credit towards invoices for line materials, tools, inspection services and other miscellaneous items. Normally, the credit dollars would be higher, but we also had Solomon recycle barrels of reclaimed transformer oil, PCB contaminated transformers and obsolete pad mounted switches. Costs for those items were paid out of the initial salvage dollars before the credits were issued.

We also continue our partnership with Anixter Power Solutions of Mattoon, Illinois by utilizing their Vendor Managed Inventory system, or VMI. Mishawaka Utilities entered into this partnership in January of 2009 to institute an inventory management system with Anixter acting as our primary vendor for line construction and maintenance materials.

The following chart breaks down our inventory spending, comparing 2016 to 2015.

Item	Dollars Spent		Change
	2015	2016	
Aerial Transformers	$200,454	*$23,596*	-176,858
Pad mounted Transformers	$172,348	*$497,921*	+325,573
Transformer Accessories	$159,318	*$74,622*	-84,696
Pipe	$67,999	*$26,440*	-41,559
Pipe Accessories	$3,568	*$14,612*	+11,044
Meters	$104,333	*$149,225*	+44,892
Meter Accessories	$22,916	*$23,425*	+509
Wire	$507,197	*$307,497*	-199,700
Wire Accessories	$49,078	*$67,043*	+17,965
Poles	$29,163	*$60,931*	+31,768
Pole Accessories	$14,289	*$52,171*	+37,882
Street Light Poles	$87,348	*$0*	-87,348
Lighting Accessories	$248,825	*$39,295*	-209,530
Service Materials	$146,759	*$103,669*	-43,090

In 2016, our inventory purchases were down almost $400,000.00 compared to purchases in 2015. This was achieved despite the fact that we were forced to replace roughly 240 condemned wood poles found in our system after an inspection conducted by American Energy Services, Inc.

2016 proved to be a little more active than in 2015 in terms of new acquisitions to our fleet. We replaced four aged vehicles in the fleet with four new Ford Escape AWD SUVs for supervision and metering. We also replaced an aged service truck with a new 2016 F350 Super Crew utility body pickup truck. One of our bucket trucks was condemned and deemed unfit for use, so that unit was replaced with a new Freightliner truck equipped with an Altec 2-man insulated aerial platform (bucket). Finally, it was necessary to replace two 3-phase wire reel trailers deemed hazardous to use with one new Brooks wire reel/job trailer.

Operations assists in generating additional revenue for the Electric Division by processing billings for traffic accidents, damage to facilities by contractors and construction costs outside the normal scope of service. Billings generated in 2016 totaled over $30,875.00. This figure includes billings to support Kingsford Heights Municipal and City of Bremen on mutual aid trouble calls, to install a special service for the ice rink at University Park Mall and to bill for damages from traffic accidents.

On the personnel side of the Operations Department, we are staffed by Chuck Brunner, the senior member and crew leader in the Dispatch Office. Chuck is in his eighteenth year as a Clerk Dispatcher A. Working with Chuck is Jeff Erickson, who is in his second year as Clerk Dispatcher A. Both Chuck and Jeff continue to be strong, capable employees that provide critical support to the rest of the Electric Division. As I enter my 32nd year with the Mishawaka Utilities, I rely on these very capable people each and every day to keep the Operations Department running smoothly. I am confident that they will be up to the task again this year.

The Operations Department strives for efficiency in the administration of procurement and accounting, the management of materials and services and the maintenance of the fleet and facilities. We serve as an integral support department for the Electric Division. We are also here to aid other divisions within Mishawaka Utilities and departments in the City of Mishawaka with any tasks that we can. As the Operations Department looks ahead to meeting the new challenges of 2017, we welcome the opportunity to build upon our accomplishments and to develop our future success.

Sewer Maintenance Department

Tom Dolly, Manager

The Sewer Department is responsible for the maintenance and rehabilitation of the collection system which includes over 200 miles of sanitary sewers and storm lines. The responsibilities of the Department include televising, cleaning, repairing minor defects in the sanitary and storm sewer systems, and cleaning leaves or snow off storm inlets, responding to residential calls for sewer concerns, inspecting new construction sewer taps and locating sewer lines for contractors.

Cleaning and Jetting of Lines

The significant responsibility of the Sewer Department is to maximize the volume of flow transported to the Wastewater Treatment Plant. This is accomplished by preventive maintenance and inspection of the sewers on a well-planned, rigorous schedule. the department cleaned 230,975 feet in 2016. This includes all sanitary manholes, storm sewers, inlets and catch basins.

Video Surveillance Program

The Department has a planned video surveillance program with precise documentation on the condition of the sewers. The video inspection crew checks the integrity of the pipe, the condition of sanitary sewer laterals and validates repairs or lining.

On the two video inspection trucks, there are two robotic cameras that can drive down any sewer pipe from 8" to 60" in diameter and up to 1,200 feet in length. The cameras have articulating heads with zoom, as well as pan and tilt capabilities. The computers that drive these cameras can record all visual data and all manually documented information entered by our camera technicians. This information is uploaded to the City GIS Department and Engineering for further study and updating of the City GIS sewer map. Inspections of new sewer system extensions through sewer televising are conducted to ensure that the construction meets our City specifications.

In 2016, over 5,965 feet of residential laterals were televised with the push cam system…

The video inspection trucks are also equipped with a lateral launch camera system that gives us the ability to televise residential laterals from the main line in the street up to the house to determine blockages or damage. We are also able to take our mini push cam system into homes to televise from the house to the street to determine blockages or damage. In 2016, over 5,965 feet of residential laterals were

televised with the push cam system for a grand total of 305,610 feet of main line and lateral lines televised.

The employees assigned to push cam inspections may also be assigned to do sewer locates for contractors and follow-ups to residential issues. These employees performed 116 sewer excavation inspections in 2016.

Sewer Insurance Program

Over the past year, 237 calls were received from residents during normal working hours and 42 after hours requests for our personnel to check the sewer main. These calls ranged from homes with sewer problems, odors coming from the sewer line, water standing in the street or follow-up to contractor cleaned laterals. Of the 279 calls, 62 residents qualified for the sewer insurance program. These 62 sewer insurance work order calls were taken, set-up and completed by our office personnel.

These residents had repairs that ranged from a simple second opinion cleaning and 1 year guarantee against tree roots, to a more in-depth project such as an excavation and lateral repair. This program has proven to be very successful in assisting Mishawaka's residents offset the high cost of sewer lateral repairs. More of the specifics regarding the sewer insurance program can be found on our City's website.

GIS Projects - Mini-cam Mapping Layer

The Sewer database, created and maintained by the Sewer Department, contains archives of all mini-cam operations performed by the sewer department. This database has records dating back to 1996 and gives us the ability go back and review a particular inspection work order.

Using this information and the city's GIS software, Sewer GIS coordinator Bill Moody has created a GIS file dataset that will provide a visual and geographical point to be viewed on the Sewer Department's maps. Each inspection will be plotted as a point on the map, as its own unique feature, matching the appropriate address. Each point will contain an attribute table, with information like dates of inspections, whether or not the sewer insurance program was utilized and which contractor performed the work. To supplement this information, we will be able to pull up links to the individual

inspection sheets, filled out by the operators, as well as, links to the video files. All this is done easily with the software just by clicking on the points on the map.

The main purpose of this is to promote efficiency by consolidating all pertinent data collected by our operators, management, video equipment and the sewer database, into one user friendly location. We will be able to find all the relevant information about a resident's lateral by simply locating their address on the map and selecting the icon. This also gives GIS users insights into which areas of the city have tendencies for sewer lateral backups by visually displaying trends or clusters of points in a particular neighborhood or section of town.

GPS Collection

The Sewer Department will continue to add features and update changes to both the Sanitary and Storm sewer systems on the cities GIS. This gives us an accurate inventory of structures and pipe laid into the ground. It also provides an essential reference for our development projects, cleaning and televising crews, utility locators and for sewer backups and emergencies.

CIPP Sewer Rehabilitation Various Locations 2016

As part of ongoing infrastructure improvements, Cured-in-Place Pipe (CIPP) lining was installed in a total of 5,552 feet to rehabilitate 17 various key sewer lines. The project also included the structural rehabilitation of 33 manholes with polyurethane lining. The total project investment was $500,000.

The Sewer Department continues to strive to improve its preventative maintenance programs and, through cost-effective measures, maintain the current level of services provided. Through its various programs, the division endeavors to preserve and maintain its major infrastructure system investment. Working together as a team with all Departments has proven to be one of the most important keys to success in 2016.

Wastewater Division

Karl R. Kopec, Manager

Overview

The mission of the Wastewater Division is to protect public health and the water environment of the community and to provide efficient service at a reasonable cost. Mishawaka's wastewater treatment plant is a Class IV facility with an average design capacity of 20 million gallons per day (MGD). Class IV facilities comprise the largest and most complex treatment facilities in the state.

The service area that contributes flow to the wastewater facility extends beyond the city limits. Areas served include new developments in Osceola and parts of the county north, east and south of the city limits. Expanding the service area protects groundwater, our drinking water source and increases the customer base, lowering the overall wastewater cost per household. In 2016 there were 14,823 inside city customers and 691 customers outside the city limits.

Mishawaka's wastewater treatment facility serves residential, commercial and industrial accounts. The population served exceeds 50,000. In 2016, over 3.9 billion gallons of wastewater were treated and over 6.1 million pounds of pollutants were removed prior to discharge into the St. Joseph River.

The treatment facility operates 24 hours per day, 365 days a year. The twenty six employees of the Wastewater Division have over 328 years of combined wastewater experience. Eight members of the staff hold Indiana's highest level of professional operator certification.

"In 2016, over 3.9 billion gallons of wastewater were treated and over 6.1 million pounds of pollutants were removed …"

In addition to the daily operation of the treatment plant, the Division is also responsible for the Biosolids Facility, Industrial Pretreatment Program, Lift stations and biofilters and CSO structures.

Biosolids Facility

The Biosolids Facility is located on South Logan Street. This site is the location for the solids dewatering operation and the storage of biosolids prior to land application. Biosolids, the stabilized solid material resulting from the treatment of wastewater, are land applied on area farm fields. In 2016, 1351 tons of biosolids were produced. Farmers desire biosolids because it contains nitrogen and phosphorus, reducing the amount of commercial fertilizer that must be used. It also improves the quality of the soil.

Industrial Pretreatment

The Industrial Pretreatment program is responsible for enforcing all federal, state and local environmental regulations. This includes the monitoring and inspecting of all Significant Industrial Users (SIUs) within the City. The City currently has six permitted Significant Industrial Users and several non-permitted industries that are routinely monitored and inspected. Pretreatment programs are intended to prevent industrial pollutant discharges from causing interference, upset, or pass through at municipal wastewater treatment plants.

Lift stations and Biofilters

There are 29 remote sewage pump lift stations in Mishawaka that pump sewage from areas where it cannot flow by gravity. Mishawaka's lift stations range in size from 150 gallons per minute (gpm) to 4,000 gpm.

There are five remote odor control facilities. The Wastewater Division is responsible for the maintenance of these systems. Monitoring and reporting on the activity of the 21 combined sewer overflow (CSO) structures and the operation of the combined sewer overflow control program is also a Division responsibility.

Laboratory

The Wastewater Division operates a laboratory that provides process control testing and regulatory compliance analysis required in our NPDES permit. This includes analysis of samples from each process to ensure optimum efficiency, monitoring of the effluent to comply with discharge limitations and analysis of industrial samples to ensure compliance with Federal and local pretreatment standards.

During the summer, the laboratory performs bacteriological tests for Mishawaka's swimming pools and the splash pad at Central Park. The laboratory conducts the bacterial analysis through its Indiana State Department of Health Certificate, which is required in order to perform bacteriological testing of drinking water and pools.

Every year the laboratory is required to participate in the EPA's Discharge Monitoring Report - Quality Assurance (DMR-QA) program. This Federal program consists of analyzing samples with unknown concentrations for all of the parameters of the NPDES permit, including biomonitoring. The results of the testing give the EPA and the Indiana Department of Environmental Management assurance that the data we submitted is accurate. In 2016, all the parameters were analyzed correctly.

The Treatment Process

Mishawaka's wastewater treatment consists of the following processes: influent screening, grit removal, primary settling, activated sludge secondary treatment, final clarification, disinfection, post aeration and anaerobic digestion. The treatment facility operates in a conventional activated sludge mode. The activated sludge process is a biological treatment process in which a mixture of wastewater and activated sludge bacteria are aerated and mixed. Single stage nitrification is used to convert toxic ammonia to nitrate. Phosphorus is removed by chemical precipitation.

Solids generated in the treatment process are biologically converted in an anaerobic environment to simple organic compounds and become known as biosolids. These biosolids are dewatered at the Biosolids Facility and are land applied on area farm fields for soil conditioning and fertilizing. Land application of biosolids is recycling in its truest sense.

Digester gas booster pumps

A byproduct of anaerobic digestion is methane gas. This gas is 65% methane and is captured, compressed and is used as a fuel in the treatment plant boilers. Digester gas is a free and renewable source of energy. Utilizing digester gas offsets the amount of natural gas that must be purchased and significantly reduces carbon dioxide emissions from the facility. Approximately 60,000 cubic feet per day is generated, replacing purchased natural gas.

Statistics

In 2016, the wastewater facility treated over 3.86 billion gallons, averaging 322 million gallons monthly and 10.6 million gallons per day. Over 6.1 million pounds of pollutants were removed in the treatment process and the quality of treated discharge to the Saint Joseph River was exceptional. Pollutants removed during 2016 included 5.7 million pounds of organic compounds, 62,000 pounds of phosphorus and 371,000 pounds of ammonia nitrogen.

Mishawaka's wastewater facility has an average design flow capacity of 20 million gallons per day (MGD) and a peak design flow capacity of 42 MGD. The highest peak flow rate treated in 2016 was 70 MGD on August 16th. The maximum total flow treated on a single day was 34.7 million gallons also on August 16th.

Epic Rainstorm

At 1:00 p.m. on August 15th, rain began falling in Mishawaka. When the rainfall ended at 9:00 a.m. the next day, Mishawaka had experienced a thousand-year rainstorm. The treatment plant rain gauge measured 8.1 inches of precipitation over a 20-hour period. A thousand-year storm has a 0.1% chance of occurring in any given year. Some areas reported up to 11 inches of rain. It was the largest rainstorm in Mishawaka's recorded history.

The 8.1 inches of rainfall over the 11,400 acre Mishawaka city limits equals 2.5 billion gallons of water. This is enough water to fill 3,785 Merrifield pools or to flood an area of 1,168 acres six feet deep.

In spite of severe and widespread flooding in neighboring communities, Mishawaka's sewer system and wastewater treatment plant handled this tremendous volume of water with few serious problems. Years of investment in sewer system and treatment plant upgrades along with rigorous maintenance of the collection system paid huge dividends in protecting our city from calamity during this historic storm.

2016 Statistical Summary						
Category	2011	2012	2013	2014	2015	2016
Average Flow (MGD)	11.43	9.19	9.92	9.69	9.35	10.57
Peak Flow (MGD)	59.7	58.0	60.4	60.9	65.2	70.0
BOD Removed (%)	98	98	98	98	98	98
Phosphorus Removed (%)	79	80	80	82	85	82
Ammonia Removed (%)	90	95	92	95	96	94
Solids Removed (%)	97	98	97	98	98	98
Biosolids Produced (dry tons)	1078	1105	1040	1047	1169	1351
Electricity Use (MkWH)	4.9	4.9	5.1	4.9	5.2	5.3
Natural Gas Use (Mcf)	7.1	5.4	6.6	6.4	5.1	4.9
Total Precipitation (inches)	43.33	34.52	38.17	41.44	35.92	46.70

2016 Accomplishments

Combined Sewer Overflow Reduction Efforts

One of the greatest and most expensive accomplishments of the Wastewater Division has been its work on the reduction of Combined Sewer Overflows (CSO). As the City prepares to begin its largest public works project ever, to meet federally mandated further reduction in CSO it is important to look back over the past 25 years of improvements that have occurred.

Although the City recognized and worked on CSO issues much earlier than 1990, that year marks the beginning of intense effort and expense aimed at CSO reduction.

Through sewer separation projects, sewer system capacity upgrades, two expansions of the wastewater treatment facility and aggressive sewer maintenance, the total combined sewer overflow volume discharged to the river in 2016 was 17.5 million gallons, a 94% reduction from our 1990 baseline. Of the 17.5 million gallons of overflow in 2016, 7.3 million gallons was from one storm on August 15 and 16 when over 8 inches of rain fell on Mishawaka.

As part of our LTCP a 7,000 foot long, 10-foot diameter tunnel was planned to be installed under 3rd Street to store wet weather flow when the treatment plant had reached its hydraulic capacity during rainstorms. As design began, soil borings along the tunnel route indicated that the planned tunnel depth of 30 feet would have placed the tunnel in very poor soils for a tunneling operation and there was also a high probability of encountering boulders. It was determined that lowering the tunnel depth to 70 feet placed it much better soil conditions. Original cost estimates of approximately $40 million for the shallower tunnel grew to over $100 million as design of the deep tunnel progressed. It was decided that this cost escalation was not acceptable and the tunnel design was suspended.

While the cost of the remaining CSO mitigation work is significant the City has and will continue to look at alternative means and methods to optimize the projects and technologies necessary to comply with the federal regulatory requirements while striving to limit the costs incurred by the rate payers.

Potential CSO Ban

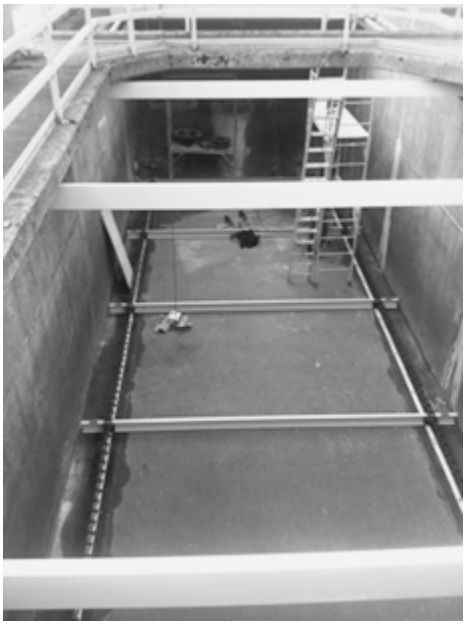
The 2016 Federal Budget Bill initially contained a provision that would have prohibited any CSO discharges into tributaries of the Great Lakes by 2035. Discharges after this date would have resulted in fines of $100,000 per occurrence. This ban of CSOs from the 184 Great Lakes CSO communities would have cost an estimated $16.5 billion to comply with. Total elimination of CSOs is impossible in many cases when extreme rain events occur. Spending billions to attempt to meet an unattainable standard, with minimal, if any measurable water quality benefit, is a poor use of public funds

Mishawaka joined forces with many Great Lakes CSO communities as well as several national professional wastewater associations to lobby Congress to remove the provision from the 2016 Budget Bill. Our efforts resulted in the removal of the CSO ban provision, protecting ratepayers from needless and excessive expenditures.

2016 Projects

During the year, a primary clarifier was completely rebuilt with new flights, chains, shafts and sprockets. The drive unit for the clarifier was also replaced. This clarifier was one of the plant's original units from 1952.

Number three aeration tank was taken down for service during the summer. The tank was cleaned and had diffuser membranes replaced and then returned to service.



Primary Tank 3 Rebuild

Also, during the summer, the Central Park biofilter had the carbon from air scrubber removed and replaced. The spent carbon had an extremely low pH and had to be disposed of as a hazardous waste.

The Number 4 aeration tank was taken offline and its contents were transferred to aeration tank 5. Only one of these two tanks is required for current plant flow and loadings. Switching tanks is a tricky operation. The contents of the tanks are living biological systems. Care must be taken to not cause an upset of the biomass which would affect treatment efficiency.

Work began in late 2016 on the replacement of the Oakland Ave. Lift Station. Equipment delays caused this project to extend into 2017.

In 2016 there were four leaks in the plant's underground sodium hypochlorite circulation loop. This piping loop is continuously circulating and delivers chlorine to the east and west contact tanks. The largest leak resulted in a loss of 3,500 gallons of hypochlorite into the ground. All of the leaks required pavement removal and hydro-excavation to expose the sections needing repair. The contaminated soils were hauled to our Biosolids Facility for remediation. All leaks occurred at elbows or couplings in the 2-½ inch PVC piping. It appears that over time the hypochlorite

dissolves the glue used to solvent weld the pipe. We have begun looking at alternatives to the underground piping loop to avoid future probable leaks.

Award Winning

The Mishawaka Wastewater Division was recognized at the Indiana Water Environment Association Annual Conference, held in Indianapolis August 17–19. The Mishawaka Wastewater Laboratory received the Laboratory Excellence Award for the 15th consecutive year.

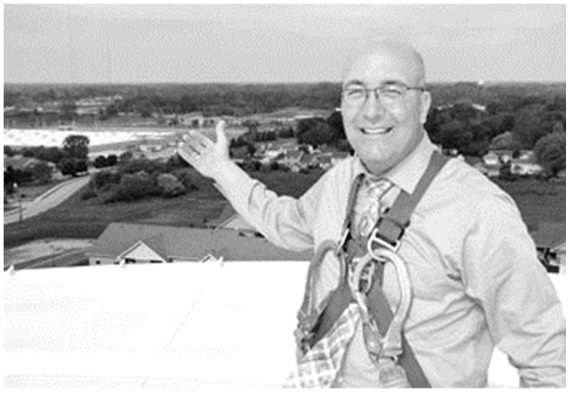
The operation of the treatment facility is accomplished by a team of dedicated operators who provide coverage 24 hours a day, seven days a week. This includes three shifts with two operators on each shift, two swing shift operators and two utility operators. Each pair of operators is responsible for making process control decisions on their shift. On off-shifts, weekends and holidays the facility is staffed solely by these two-person crews.

Mishawaka is fortunate to have a modern wastewater treatment plant with capacity to keep Mishawaka able to accept flow increases associated with growth and development. Aggressive combined sewer overflow control efforts have positioned the city well ahead of many Indiana communities. Protecting and enhancing the Saint Joseph River as well as promoting health in the community are benefits that help to make Mishawaka the Best Hometown in America.

Water Division

Dave Majewski, Manager

Towards the end of 2016, the City was getting close to the final acquisition of Juday Creek Golf Course and the Penn family farm, the site of our new Well Field and Treatment Facility. Phase 1 of our advanced facility plan was completed in 2016 and gave us guidance on our backwash treatment. Phase 2 of the plan will include a pilot treatment plant study which will give us the best options for finished water treatment. The pilot plant will function like a fullsize water treatment facility and the data we capture will be crucial to the design of the new well field and water treatment process. Upgrades on Douglas Road east of Fir will begin in 2017, as new infrastructure needs to be installed to serve the new plant.



Mayor Wood looking over Mishawaka from atop the Blair Hills Water Tower

The other major infrastructure project the Department is working on includes building a new 2-million-gallon reservoir on the south side of Mishawaka. This will allow us to take our 88-year-old 3-million-gallon reservoir offline for rehabilitation. When this project is done, it will provide redundancy to the Southside of Mishawaka and give us another 2 million gallons of water storage. These tanks will complement each other as they will be interconnected. Work began in 2016 with a site assessment of where the new tank will be placed and a conceptual layout on possible designs. While these projects are early in their design, we are diligently working every day to bring these concepts to reality over the coming years.

Mishawaka Utility Water strives to supply world class service each day to our roughly 46,500 customers by delivering potable water that meets and exceeds Federal and State requirements via 17,000 plus service connections. Our three water treatment facilities can put out a maximum of 31.5 million gallons a day of water into our distribution system if needed which encompasses 316 miles of water distribution main.

In 2016 we treated 2.34 billion gallons of water for a daily average of 6.41 million gallons per day. The last two years we have seen modest increases in water usage amount to just over a 7% gain. Our employees worked 965 hours of overtime as we have people on call 24 hours a day, 7 days a week to monitor and repair distribution system and treatment facility issues.

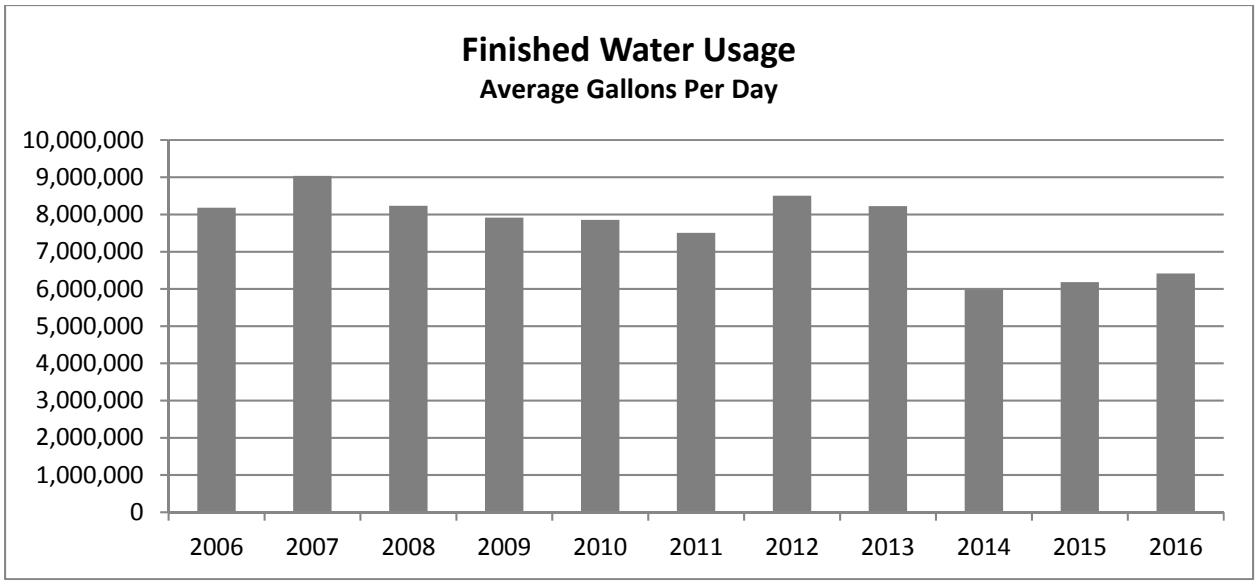
Water Quality

Our Water Quality staff, led by Tony Galassi, is here 365 days a year to test and make sure water quality meets and exceeds the standards set by the Environmental Protection Agency and Indiana Department of Environmental Management. The Water Quality staff performed almost 21,000 tests on our drinking water in 2016. Every 3 years the state conducts a sanitary survey of all water department sites. We are happy to report after this year's survey no serious deficiencies were found. For the 14th year in a row, our lab has received the Fluoridation Award from the State of Indiana for maintaining proper residuals of fluoride to help promote dental health. Along with testing, this group is responsible for all state reporting requirements.

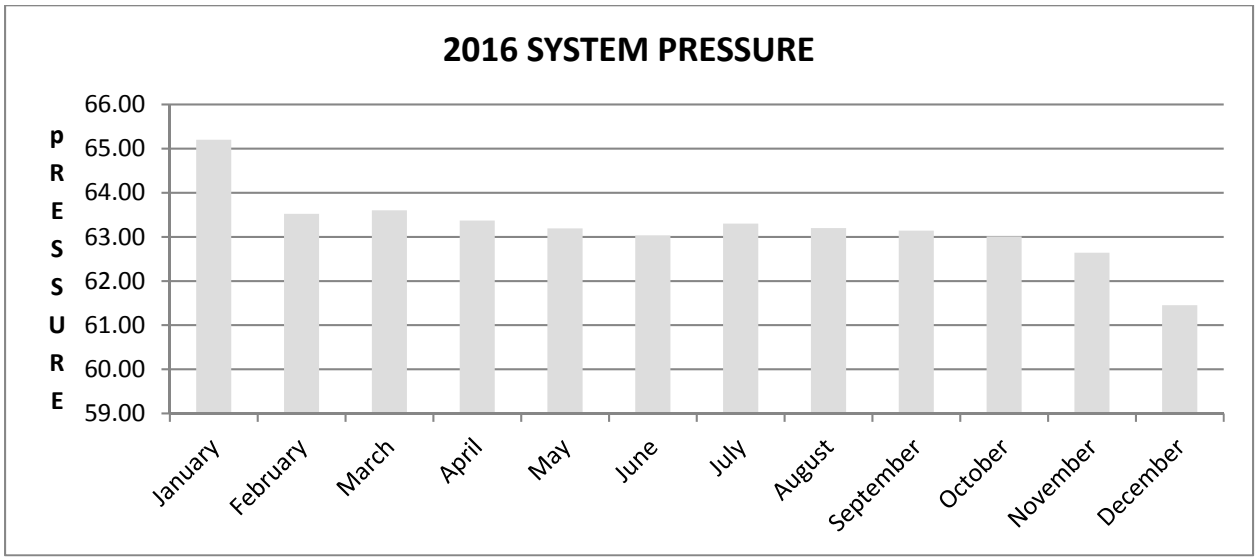
The Water Quality team is preparing for lead and copper sampling in 2017 along with possible revisions to the lead/copper rule. On the horizon, we are looking at UCMR 4, which is sampling for unregulated contaminants. Water Quality must keep abreast of new and ever changing technology and rules as the Flint, Michigan crisis brought national attention to lead contamination in drinking water. The Water Quality group also supervised a contingent of summer help this past summer as that crew painted approximately 1000 of the city's 3000 hydrants. With the 1000 that were done in 2015 we have painted approximately 2000 total the last two years. Educating the public about our drinking water is one of our primary missions. We have acquired a water model, which provides a cut a way view of our aquifer. It is a great teaching tool on how the water below us flows and reacts to contamination.

Mishawaka Utilities Water Division
Water Quality Laboratory Testing Totals 2016

TEST / MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Conductivity	126	126	160	126	132	154	126	138	154	148	132	132	1,654
Manganese	126	126	160	126	132	154	126	138	154	148	132	132	1,654
Iron	126	126	160	126	132	154	126	138	154	148	132	132	1,654
Hardness-Calcium	126	126	160	126	132	154	126	138	154	148	132	132	1,654
Alkalinity	126	126	160	126	132	154	126	138	154	148	132	132	1,654
Total Hardness	126	126	160	126	132	154	126	138	154	148	132	132	1,654
Fluoride	114	108	138	111	115	134	114	116	134	136	112	115	1,447
Phosphate	84	84	92	84	88	88	84	92	88	84	88	88	1,044
Free Chlorine	174	166	191	174	174	177	178	184	181	177	172	176	2,124
Total Chlorine	174	166	191	174	174	177	178	184	181	177	172	176	2,124
pH	126	126	160	126	132	154	126	138	154	148	132	132	1,654
Temperature	126	126	160	126	132	154	126	138	154	148	132	132	1,654
Routine Bacti	50	50	50	50	50	50	50	50	50	50	50	50	600
Other Bacti	0	0	13	0	0	7	4	10	11	3	2	2	52
Raw Bacti	0	0	22	0	0	22	0	0	22	22	0	0	88
TSS	2	2	2	2	2	2	2	2	2	2	2	2	24
Lead & Copper	0	0	0	0	0	0	0	0	0	0	0	0	0
VOC	0	0	0	0	0	0	0	0	0	0	0	0	0
SOC	0	0	0	39	0	0	0	39	0	0	0	0	78
IOC	0	0	0	0	0	0	0	0	0	0	0	0	0
Radionuclides	0	0	0	0	3	0	0	0	0	0	0	0	3
Nitrate	0	0	0	3	0	0	0	0	0	0	0	0	3
TTHM/HAA5	0	24	0	0	24	0	0	24	0	0	24	0	96
Monthly Totals	1,606	1,608	1,979	1,645	1,686	1,889	1,618	1,805	1,901	1,835	1,678	1,665	20,915
Total Tests completed for 2016 - 20,915													



In 2016, 2.34 billion gallons of water were treated for a daily average of 6.41 million gallons. Over the last 17 years we have averaged 8 million gallons a day



Well Head Protection

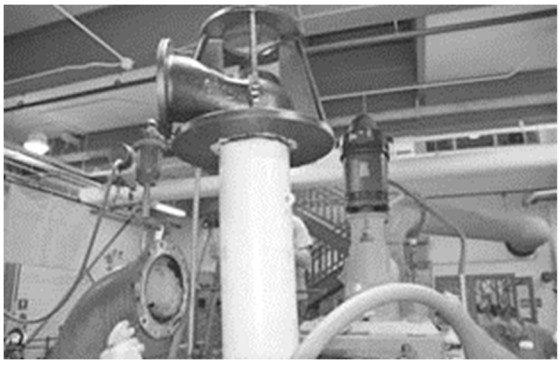
The protection of our aquifer is overseen by our Well Head Protection Coordinator, Jan Winn. In 2016, potential sources of contamination were identified and confirmed. These activities include locating and abandoning wells, septic tanks and catch basins. The identification of commercial and industrial activities that have the potential to contaminate the ground water must also be identified. One of Wellhead groups major projects in 2016 was to work on the proposed wellhead protection time of travel area for the proposed Juday Creek Wellfield. Wellhead protection also coordinates the compilation of our Consumer Confidence Report and keeps track

of new and emerging water security measures that can help us protect our aquifers and gain insight on what is happening throughout the water industry.

Maintenance

Our Maintenance staff is a small but dedicated group. They maintain our three treatment plants and over 30 buildings which include wells, booster pumps, water tanks and in-ground storage reservoirs, along with our operations center and numerous sample stations. Some of the projects this past year included the exterior cleaning of East Tank, a new heating and air unit at Division Treatment Plant, a new booster pump at our Day Road Station, rehabilitation of High Service Pump #1 at Division Street and well cleanings at Virgil Street. This group also led inspections of the interior of our elevated tanks. Each tank was inspected by a remote control ROV unit, which looked at the condition of the tanks. No serious defects were found.

Exterior Tank Cleaning East Tank



High Service Pump Rehabilitation at Division Treatment Plant

Ongoing maintenance of our main offices at Jefferson continued as brickwork and painting is nearly finished. We acquired a vactor truck from our Sewer Maintenance Division this past year to help us with hydro excavating. Ron Austin and Randy Ellsworth rehabbed the truck in house for a savings of $80,000. Our Scada and electrical engineering team kept things running smoothly. New more robust battery back-ups were placed at Virgil and Division to keep our computers running longer in case of power failure. We also continued the task of replacing our chemical feed pumps at our plants. This group lost a longtime member to retirement in 2016 as John Gibson said goodbye to the Water Department after 25 years of meritorious service.

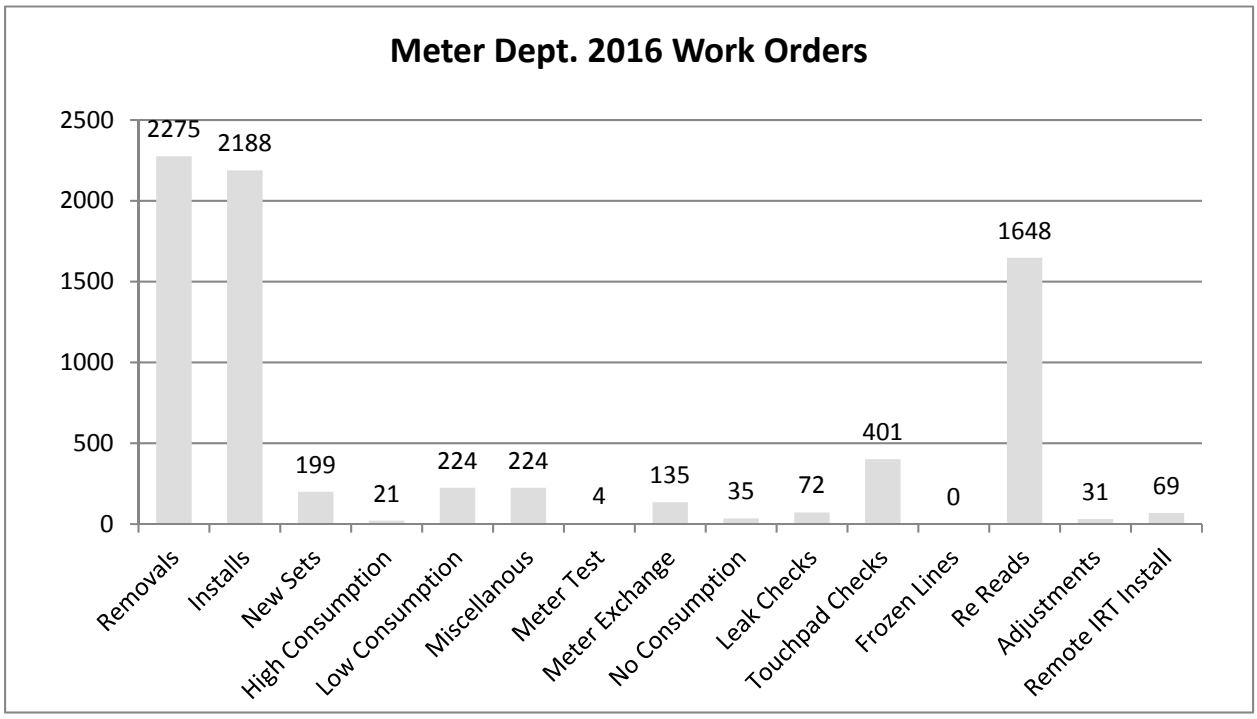
Meter and Backflow

The Water Metering/Backflow/Cross Connection Group works to install, remove and test our water meters. After 42 years of service, we said goodbye to Meter Backflow Supervisor Frank Unruh who retired. Brian Galletti stepped right in and did not miss a beat, as he will lead this group with his knowledge and expertise for years to come. This group has the task of not only taking care of all scheduled meter and backflow work but also takes care of emergency shut offs for leaks, low pressure calls and many other customer questions that may present

Steel Plate used for valve removal and minimize water outage.

themselves during the day.

This group completed 7,526 work orders in 2016, which is an average of 21 per day. In addition to those work orders, we also tested 3,814 backflow devices. The purpose of these devices is to prevent the back siphoning of potentially harmful contaminants from commercial, industrial, or irrigation activities into Mishawaka's potable water supply. Backflow devices are required on all commercial and industrial buildings and on all irrigation systems that receive water from Mishawaka Utilities.



Distribution

Site assessment work at proposed 2 mg reservoir

The Water Distribution System Maintenance and Construction group is under the leadership of Fabian Chavez. Whether it be running a new water main, a new service line, fixing a main break, or handling miscellaneous work orders there is almost nothing these dedicated workers can't do. 6,845 feet of new water main was added to our distribution system in 2016 bringing the total length of pipe to 316 miles in our system. The ductile iron pipe we use is made up of 98% recycled content. In just a mile of 24" water main, the pipe can have up to 150 recycled cars in it. Our crews are also responsible for assisting contractors on other projects associated with our water main. On these jobs we may replace old valves, lead services, hydrants and relocate water main, along with

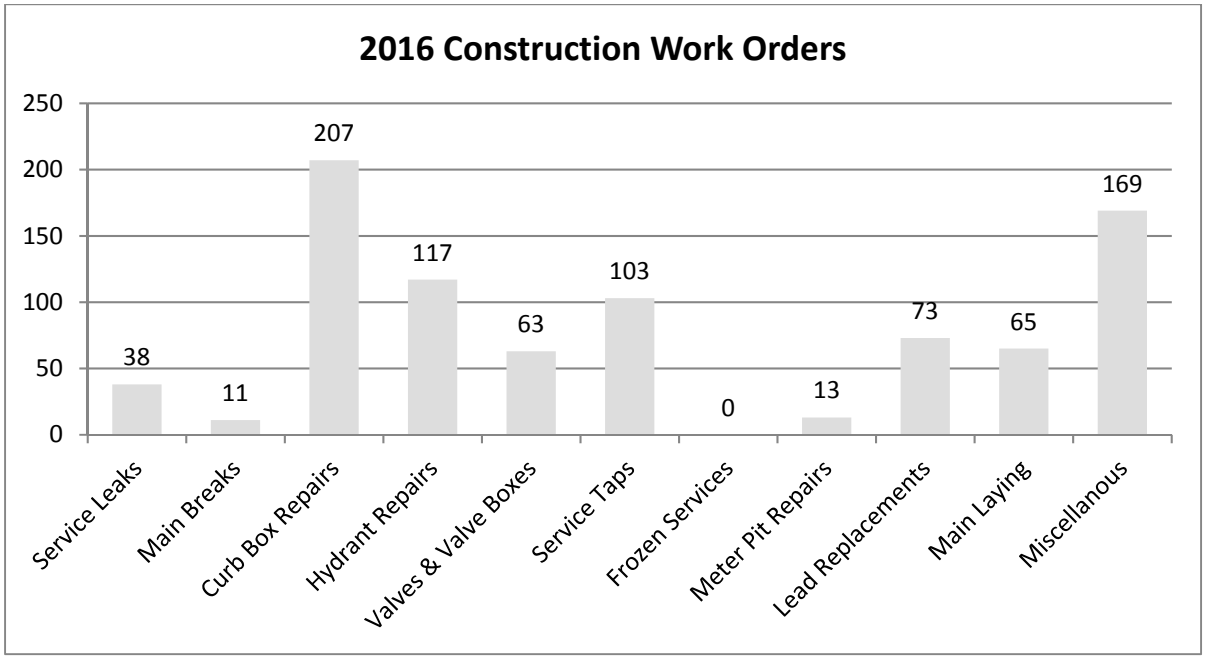
inspecting and testing any water main installed by a contractor. The construction crew is also responsible for flushing and maintenance on all of our public hydrants. In 2016, 117 work orders were created for fire hydrants, a 67% increase over 2015. Most of these were caused by vehicles leaving the road and striking the hydrant.

Over time it is our goal to replace all the lead service connections in Mishawaka. In 2016, 73 lead lines were replaced with copper service connections. We also replaced three valves dating back to 1912, two of which were 20 inch, one was 6 inch. Our construction crew came up with a plan to have stainless steel plates fabricated by a local machine shop to limit water outages

1912 -20" Valve replaced this year

during these valve replacements. We were able to remove the top section keeping the base in place and what could have been a 12-hour job turned into a 2-hour job with minimal interruption in service. It was an outstanding effort by all. Properly functioning valves are vital to the health of the distribution system.

We welcomed a new pipefitter this past year. William Mudd joined our team and brings years of experience in the utility construction field.



Construction Projects 2016
(Installed by MU Water)

V.A. Clinic
Pine Street
Elizabeth Street
Newbury Point
Fir Road Meadows
Family Express Douglas Road & Edison Road
Fiera Vista Villas
Rosetta Place
Home 2 Suites
Potbelly Subs/Pie Five

Construction Projects 2016
(Assisted by MU Water)

State Road 23

Lead Replacements 2016

East 4th Street 36 Lead Replacements
Pine Street 3 Lead replacements
Liberty and Mishawaka Avenue 15 Lead replacements
Miscellaneous locations 25 Lead Replacements

Service to the community and the world is very important to our employee's. The Mishawaka Utilities Water for People section raises money to help fund clean drinking water and adequate sanitation for people throughout the world. This past year with the efforts of our annual pie sale for the 17th consecutive year, Mishawaka employees presented a check of at least $ 1,000 to the National Water for People organization. Employees also served on other Water for People Committees that brought an additional $30,000 to Water for People.

Presenting check to Water for People at the annual conference

Four of our employees were honored in 2016. Brian Galletti and John Gibson each received the Hurty Award for service in the water industry. The Governor of Indiana signs this award and to be eligible you must have at least 25 years of service. Mario Brioli and Janice Winn each received a 30-year pin for service. These four employees have a combined total of 110 years' experience in the water industry.

Janice Winn, 30-year Service Award;
John Gibson, Hurty Award Recipient

Mario Brioli, 30-year Service Award;
Brian Galletti, Hurty Award Recipient

John Gibson adds his name to retirement board.
25 years of service

Frank Unruh adds his name to retirement board.
42 years of service.

Moving forward, water is our future. *The average American household spends 47% of monthly utility costs on phone, internet and cable services and only 8% on water and wastewater services.* We are blessed in Mishawaka with an almost limitless supply of drinking water as we sit atop one of the most prolific aquifers in the state, if not the world. It is our job to protect and use this resource wisely. That is the mission of our staff, and we take this responsibility seriously and are proud to serve the Citizens of Mishawaka. WATER IS LIFE!