

## **Mishawaka Utilities**

*James Schrader, General Manager*

Mishawaka Utilities was founded in 1903 as the Mishawaka Public Utilities Company and consisted of a Water Works and Electric Light Plant. Wastewater treatment was added to the Utilities in 1952. From humble beginnings long ago, Mishawaka Utilities has grown into a world class municipal utility that provides reliable electric service, clean and safe drinking water, and effective wastewater treatment. The Sewer Maintenance Department is funded by Wastewater Division revenue however the department is under the guidance of the City's Engineering Department. Utilities employees are dedicated to keeping the utility infrastructure reliable and up to date, with capacity to attract growth and development, helping to shape Mishawaka's future and keeping Mishawaka strong.

***Mishawaka Utilities is committed to providing the community with the best products and services in electric, water and wastewater treatment.***

The Utility Business Office provides customer service as well as support services to the three operating divisions. The Utilities are under the direction of General Manager Jim Schrader.

Hometown services provided by Mishawaka Utilities mean that residents and businesses can count on reliable, efficient and affordable water, electric and wastewater treatment.

The Utility's offices and crews are local. Personnel and can be dispatched quickly to respond to problems and emergencies. When customer contact with the Utilities is required, a friendly human being is ready to take your call. The Business Office is conveniently located in downtown. The employees of Mishawaka Utilities are its customers too.

### **Mission**

Mishawaka Utilities is committed to providing the 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 far exceed the expectations of our owners, our customers.

## **Mishawaka Utility Business Office**

*Virginia Fras, Business Office Manager*

The Business Office has continued to work hard this past year in order to convert our new Customer Information & Billing System Software. This software will help the utility increase productivity with workflow integration, turn system data into useful information to export into excel, and eliminate costly hardware and software upgrades, lowering maintenance and integration costs.

We began e-mail statements five years ago and are pleased with the continuous increase in the number of users. E-mail statements enable Mishawaka Utilities to reduce billing costs, while maintaining customer service and efficiency. Electronic invoice payment provides the following benefits:

- Reduction in costs associated with the production, handling, and mailing of paper invoices
- Dramatically improved customer service due to 24/7 customer self-service for invoice and payment histories
- Enhanced cash flow from quicker payments made electronically and aided by the automated collections manager, which allows the biller to send automated reminders of payment due, payment overdue, etc.
- Labor costs associated with dispute resolution and collections are reduced
- Customer satisfaction is improved by saving time and money by eliminating the need to write checks, fill out remittance forms, address envelopes or add postage
- Electronic payment provides security because sensitive personal information is transmitted, stored, and maintained using best practice PCI compliant systems

As we've advanced with new technology and options for making utility payments, we have made a cost-saving decision to close our Mishawaka Utilities drive-thru effective January 1, 2016. Many factors were considered in making this decision. First, there are numerous options for customers to make their payments and secondly, the volume of payments that were made at the drive-thru were mostly check payments, some needing a receipt, and some just dropping off their payment to the cashier with no receipt needed. Although we no longer have a person operating our drive-thru window, we will continue to provide a day/night deposit box located in the drive-thru area on the south side of our building for easy access to drop off payments. Payments dropped off in our deposit box during business hours are posted that same day.

***“...there are numerous options for customers to make their payments...”***

Other options to make payments include the following:

- In person at our Business Office
- Send payment by mail
- Through our website
- By calling our toll-free number
- Online bill pay through your bank or online service, or
- Enroll in EZ-Pay, an electronic funds transfer process through the Mishawaka Utilities

The Mishawaka Utilities Business Office welcomes a New Year and thanks their customers for giving us the opportunity to serve you. It's been our pleasure serving the citizens of Mishawaka and we hope to continue to provide "World Class Service" now and in the future.

## **Electric Division**

*Sedrick Springman, Division Manager*

The Electric Division is the second largest municipally-owned electric utility in Indiana, providing service to 27,435 customers. We have 11 substations located throughout the City. Our



*Mishawaka Utilities Electric Department*

47-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. 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.

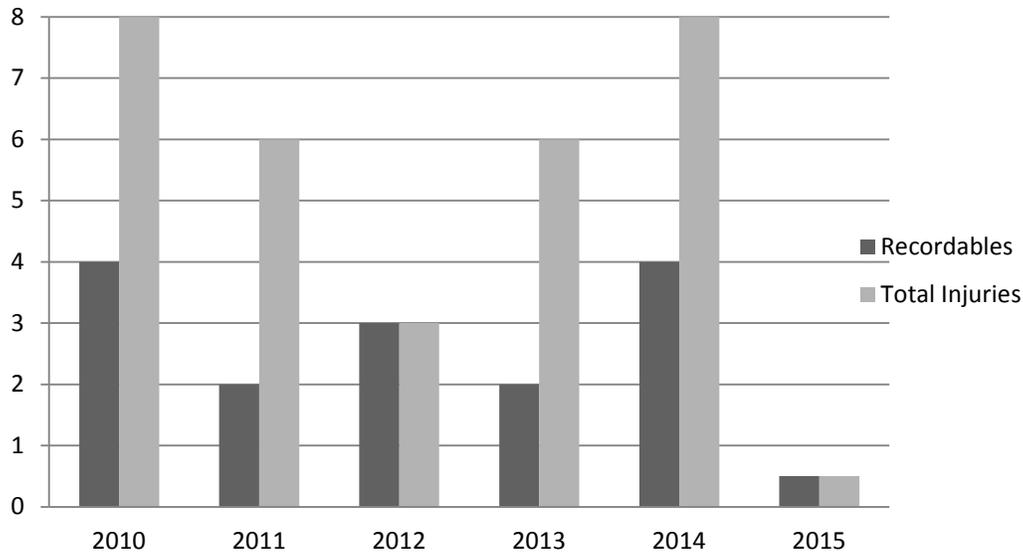
***“...electric bills that are lower than those of neighboring utilities”***

### **Electric Division Process Measures**

<b>Process Measure</b>	<b>2014</b>	<b>2015</b>	<b>Percent Change</b>
<b>Peak Demand Month (kW)</b>	August 129,444	September 128,001	-1.11
<b>Total Energy Purchased (kWh)</b>	614,024,446	608,730,253	-0.86
<b>Total Energy Sold (kWh)</b>	590,129,178	571,855,392	-3.1
<b>Total Number of Customers Billed</b>	27,331	27,435	0.38
<b>Engineering Projects Completed</b>	162	158	-2.47
<b>Number of Transformers Set</b>	68	62	-8.82
<b>Metering Department Work Orders Completed</b>	29,895	28,558	-4.4

### **Personal Safety**

All Construction personnel participated in bucket rescue and pole top rescue training administered by the IMEA at our Logan Street Training Facility. This is a recurring annual training item. Safety has been, and will continue to be, our main focus at the Electric Division.



### System Energy Consumption

In September, we reached our peak demand of 128 [MW] which was 13.1 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. Our energy consumption (total energy purchased) for the year was 608,730,253 (kWh), down .86 percent from the previous year.

### Reliability/Performance Enhancements

- Installed new radiator fins on University T1 substation transformer, and replaced old radiators that were leaking due to rust.
- Fixed Leaking Substation Transformers Borley T1 & Virgil T1
- Continued implementation of the Trip Coil Monitoring Panel (TCMP) by completing the design change at Logan substation. To date this design change has been implemented at 9 of our 11 substations. The design change is being implemented in response to a protective system fuse failure at Union substation that went undetected for a significant period of time.

### Employee Training and Lineman's Rodeo

Our apprenticeship program is in its 27th year. In February of 1988, we started our JATC program which 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.

Lineworker rodeo competitions showcase the talents of the lineworkers and are judged on national APPA safety regulations at international levels. Our employee teams have enjoyed much success in these competitions. Construction Department personnel participated in the 2015

APPA national rodeo held in Sacramento, California. The Journeyman team consisted of Captain Chuck Bailey, Jak Kudlacz, Shawn Bolinger and Matt Stull.

The next rodeo was the Fallen Lineman Rodeo in Pennsylvania. Our team consisted of Captain Chuck Bailey, Jak Kudlacz, Shawn Bolinger and Matt Stull. The team placed 3<sup>rd</sup> overall in the Hurtman Rescue.

The Department also had 4 Journeyman attend the IMEA rodeo in Scottsburg IN. Captain Chuck Bailey, Shawn Bolinger, Jak Kudlacz and Nate Prenkert participated along with five apprentices, Seth Anglemyer, Ryan Francis, Sean Guzzy, Mitch Miliken, and Robert Verhostra. The following awards were won at this rodeo:

- Journeyman team won first place in the Hurtman Rescue and first place in the 69 KV Armor Rod
- Chuck Bailey won first place, Hurtman Rescue and first overall Hurtman Rescue
- Nate Prenkert won third place 69 KV Armor Rod, third overall Indiana Journeyman, and third place transformer bank.
- Jak Kudlacz won first place 69 KV Armor rod, second place Hurtman Rescue, second place transformer and first place overall Indiana Journeyman, and
- Apprentices: Sean Guzzy won first place Dampener Change and Ryan Francis won third place Hurtman Rescue.

The final Rodeo International was held in Bonner Springs, Kansas. We sent 4 Journeymen Chuck Bailey, Shawn Bolinger, Jak Kudlacz and Nate Prenkert.

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 during the year:

- Adam Severns attended training on transformers in Talmadge Ohio
- Don Beck and Chuck Bailey attended National Training Institute (NJATC) training
- Jeff Persyn, Joe Schrader and Gary Kull attended *GLEM School* in Grand Rapids, Michigan

## **Organizational Changes**

Organizational changes this past year were as follows:

### Engineering Department

- Steve Whitfield was transferred from Project Coordinator to fill the position of Project Manager.
- Justin Overholser was promoted to Engineering Assistant from Service Representative in the Metering Department

### Construction Department

- Dennis Starrett was transferred from Journeyman to fill the position of Construction foreman

### Metering Department

- Jeff Persyn was promoted to Metering Manager from Service Representative

### Management

- Sedrick Springman was promoted to Division Manager from Metering Manager
- Kevin McGann was promoted to Superintendent from Construction Foreman
- Kevin Wasmer was promoted to System Reliability Supervisor from Project Manager

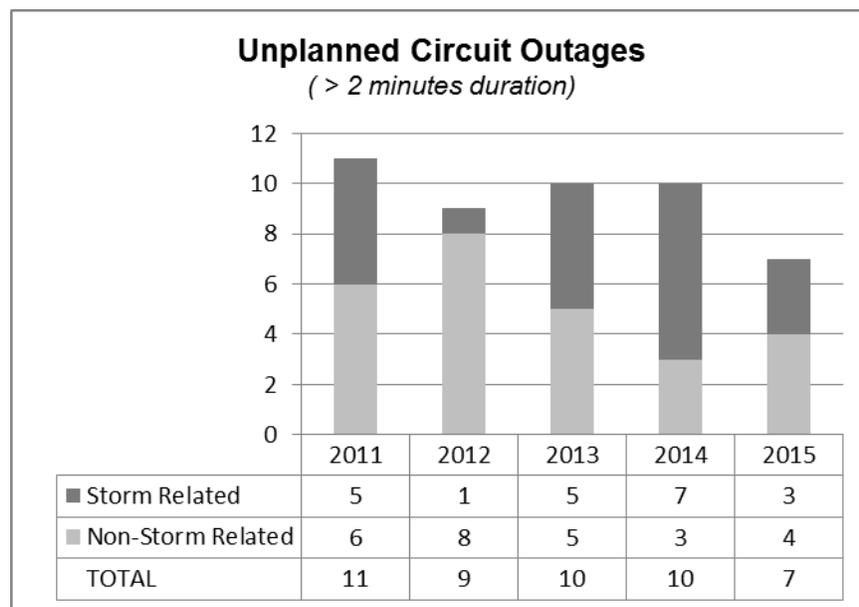
## **Engineering and Construction**

### Unplanned Outages

There were 7 unplanned circuit outages in 2015, with a cumulative unplanned outage time of 9 hours. The number of unplanned outages was down 30% from the previous year (10 in 2014).

The system as a whole continues to provide reliable power. This is due to multiple reasons including ongoing review 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.

The chart below depicts our unplanned circuit outage trend for the past 5 years.



## **Support Services**

Annual support services were provided for Summerfest, Summer Concert Series, Memorial Day Parade (Beutter Park and Battell Park), Kamm Island Festival, Heritage Festival, as well as decorations for the Holidays (wreaths and tree 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, through its relational database features, to determine in extent of the outage. The MUE GIS implementation expanded further throughout 2015 with daily application of the data collected and maintained in the GIS system. For example:

- Maintained construction and street light work flow
- Maintained the street light database, and created reports for monthly billing for Business Office
- Attended monthly online software training with Futura to help maintain correct GIS data and Futura databases
- Maintained circuit maps updates, Futura updates (GPS included), and the transformer database
- Maintained all laptop computers and iPad's 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
- Assisted Alden in the citywide pole attachment audit
- Implemented new 'Notify' software to help maintain up-to-date correct pole attachment data.

## **Project Engineering Activities**

The biggest project of 2015 was the new Central Park development. We installed just over 4000 feet of wire and set 40 new LED lights in the park. Mishawaka Avenue was rebuilt from Main Street to Willow Street which required the wood poles and overhead wires to be replaced with new underground wires which made a big difference. New LED lights were also installed the length of the project to match the lights in Central Park.

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

- **Electric distribution improvements (line maintenance projects)**
  - Field pole attachment audit
  - Borley Sub 52-2 Primary rebuild
  - Lakeshore Trailer Park Underground Single Phase rebuild
  - Russ Sub 52-3 Circuit tie to Grape 52-5
  
- **Substation Support**
  - Scheduled projects to support
    - Switching
    - Circuit Load Balance
    - Recloser upgrades and change outs
  
- **Major City Jobs**
  - Central Park rebuild
  - River Rock Apartments
  - Mishawaka Ave Phases 2 & 3
  - Battell Center Renovation
  - PSAP 911 Call Center
  - Trinity Road Re-alignment for new V.A. Clinic
  - The new City Motor Pool
  - Grandview Apartments on Gumwood Road
  
- **System PM**
  - Vault Hazard Testing
  - SF6 gas inspection and servicing of all puffers in service
  - Pedestal verification and inspections

## **Metering**

The number of electric customers increased from 27,331 to 27,435 or 38%. The Metering Department's service trucks completed 18,862 install/removal work orders this year with electric and water. The Meter Technicians completed 1,242 work orders and several power quality test and recording procedures. The Meter Technicians are also responsible for obtaining readings from the Automated Meter Reading (AMR) until the system is operational. These readings prevent estimating customers who have meters that are not accessible. The Metering Department has been able to keep the monthly reading schedule at or near 30 days in addition to completing over 3,686 re-read work orders.

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

<b>Work Orders</b>	<b>2014</b>	<b>2015</b>	<b>Percent Change</b>
<b>Removals</b>	11,818	11,879	0.51
<b>Installs</b>	11,706	11,665	-0.35
<b>Sets</b>	81	112	38.2
<b>Re-Reads</b>	4,707	3,686	-21.6
<b>Change Meters</b>	831	1,071	28.8
<b>Miscellaneous</b>	752	145	-80.7
<b>Totals</b>	<b>29,895</b>	<b>28,558</b>	<b>-1.12</b>

The disconnect truck completed shut-off lists on 141 days this year which included 2,736 customers and they completed 1,752 reconnects during working hours. The disconnect truck does follow-up visits to disconnected accounts to check for tampering and theft. The disconnect truck also fills in on service trucks and reading meters when necessary. The truck completed 293 removals and install work orders, generating \$68,400 in reconnect and tampering fees. They also completed 135 after-hours reconnects.

The Electric Department is making great strides in changing meters from three-phase mechanical thermal demand metering to electronic solid state metering along with single phase A-type base adaptor upgrades. The Metering Department continues to move toward an AMR system by using the new Itron handhelds when reading routes in Village Green and Reverewood. The number of re-reads has decreased ensuring that accurate readings are obtained. With Itron's assistance, the hardware and software has been tested and found to be compatible with the Customer Information System (CIS) that the Business Office plans to upgrade to in the future.

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

<b>Shut-offs</b>	<b>2014</b>	<b>2015</b>	<b>Percent Change</b>
<b>Past-Due Amount</b>	\$373,496	\$271,707	-27.3
<b>Total Amount Due</b>	\$743,093	\$539,191	-27.4
<b>Shut-Offs</b>	2,861	2,179	-28.8
<b>Bad Checks</b>	26	19	-26.9
<b>Payment Plans &amp; Extensions</b>	121	68	-43.8
<b>Payment Plans Deposits</b>	226	169	-25.2
<b>Shut-Off Totals</b>	<b>3,326</b>	<b>2,435</b>	<b>-26.7</b>

Over the past year the Metering Department sent Joe Schrader and Gary Kull to the Great Lakes Electric Metering School in Grand Rapids. This was Joe's second year at the school where he qualified and received his three-phase certification. The Metering Department hosted their first annual metering school in October. The Metering Department attends bi-monthly IMEA safety training and several in-house training sessions throughout the year. The Metering Department

continues to move forward with the AMR program to ensure the best quality service for 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

2015 proved to be a little less financially active in terms of new acquisitions, changes and additions than the previous year. On the transportation equipment front, we replaced 2 aged vehicles in the fleet with two new Ford F150 4-wheel drive pickup trucks going to management personnel. In 2014, the Electric Division ordered a new construction vehicle to add to the working fleet. It is a 45-foot two-man insulated aerial platform, or bucket truck. The unit was built on an International 4-wheel drive chassis by Altec Industries in their Creedmoor, North Carolina plant. The new truck was completed and delivered in May of 2015, and will find primary function as our street light maintenance rig. However, it can be pressed into service as a fully-equipped line unit if necessary. We traded an aged bucket truck that was no longer safe to use on the purchase of the new Altec unit.

We continue our partnership with Anixter Power Solutions (formerly HD Supply Utilities) 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 material.

The following chart breaks down our inventory spending, comparing 2015 to 2014.

Item	Dollars Spent		Change
	2014	2015	
<b>Aerial Transformers</b>	\$89,496	\$200,454	+110,958
<b>Padmounted Transformers</b>	\$167,205	\$172,348	+5,143
<b>Transformer Accessories</b>	\$30,268	\$159,318	+129,050
<b>Pipe</b>	\$45,370	\$67,999	+22,629
<b>Pipe Accessories</b>	\$6,165	\$3,568	-2,597
<b>Meters</b>	\$31,815	\$104,333	+72,518
<b>Meter Accessories</b>	\$17,126	\$22,916	+5,790
<b>Wire</b>	\$294,447	\$507,197	+212,750
<b>Wire Accessories</b>	\$57,303	\$49,078	-8,225
<b>Poles</b>	\$47,202	\$29,163	-18,039
<b>Pole Accessories</b>	\$32,471	\$14,289	-18,182
<b>Street Light Poles</b>	\$0	\$87,348	+87,348
<b>Lighting Accessories</b>	\$73,413	\$284,825	+211,412
<b>Service Materials</b>	\$83,484	\$146,759	+63,275

Another 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, we reached an agreement 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 toward the purchase of transformers from their company. By forming this 3-way alliance, the credit issued to Anixter is 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 334 line transformers as salvage and received over \$19,665.00 in usable credit with Anixter. We were able to use this credit toward 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.

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 2015 totaled \$150,296.00. This figure includes billings to install new light fixtures in Blair Hills for the Greenfield Farms Neighborhood Association, to support Kingsford Heights Municipal on mutual aid trouble calls and to assist with two house moves from Bremen Hwy. to Ireland Rd. and from Gumwood Rd. to University Drive Ct.

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 who provide critical support to the rest of the Electric Division.

## **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 Department has twelve dedicated and conscientious employees who are both versatile and enthusiastic. Responsibilities of the Department include televising, cleaning, repairing minor defects in the sanitary and storm sewer systems, and cleaning leaves or snow off of storm inlets.

The Department also responds to residential calls for sewer concerns, inspects new construction sewer taps and locates sewer lines for contractors. Working with the City GIS and Engineering Departments, televising sewer laterals from homes to determine if problems are covered by sewer insurance, is also a function of the Department.



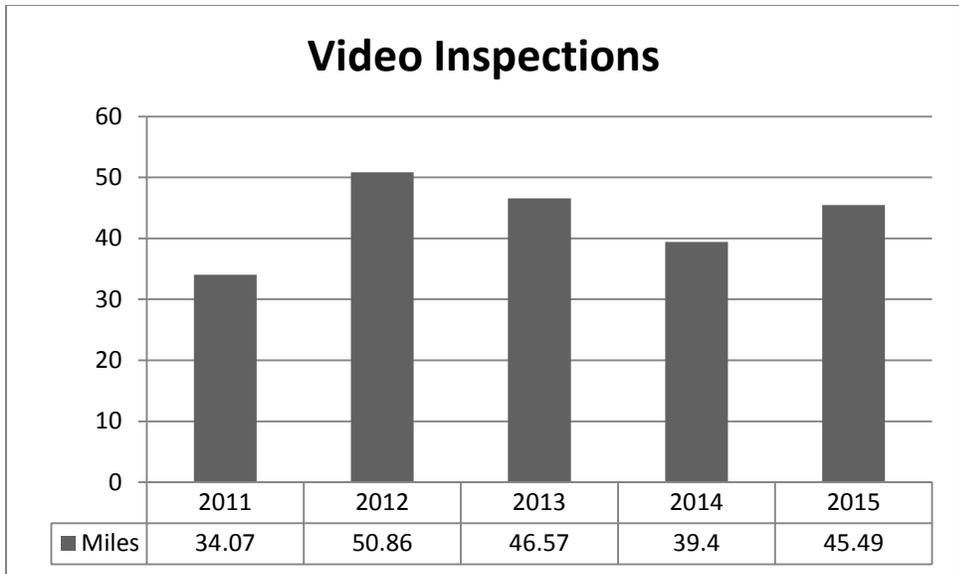
The primary responsibility of the Sewer Department is to maximize the volume of flow transported to the Wastewater Treatment Plant. This is accomplished by preventive maintenance and inspection of the sewers on a well-planned, rigorous schedule. This includes all sanitary manholes, storm sewers, inlets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

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



The video inspection crew is well-equipped and includes two state-of-the-art camera systems which can travel up to 1,200 feet in length, take videos, still pictures, record data to a computer in the camera truck and print reports.

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 Map. Inspections of new sewer system extensions through sewer televising are conducted to insure that the construction meets our City specifications.



*In 2015,  
over 7,019  
feet of  
residential  
laterals  
were  
televised  
with the  
push cam...*

The video inspection trucks are also equipped with a lateral launch system that gives us the ability to televise residential laterals from the main line in the street up to the house to detect 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 2015, over 7,019 feet of residential laterals were televised with the push cam system.

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 2015.

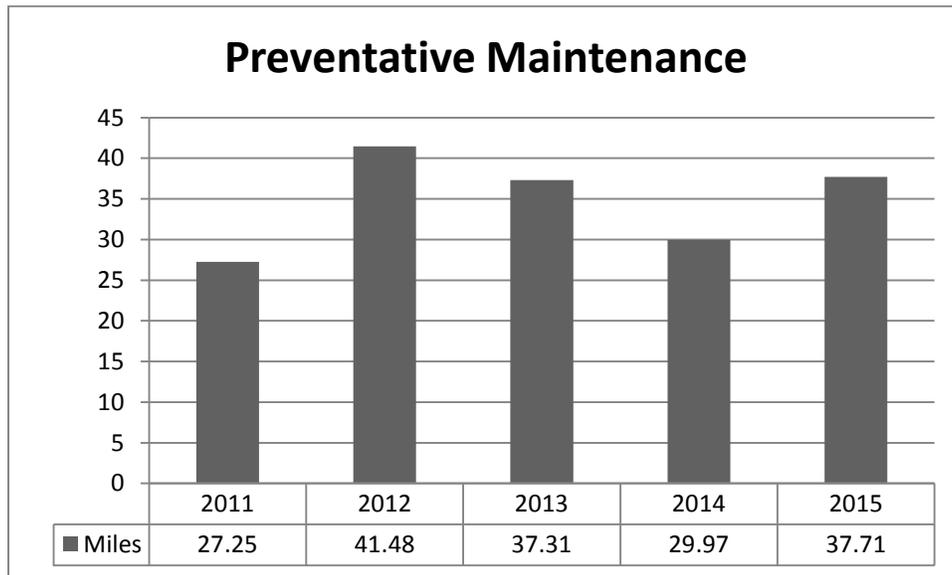
The Department performs scheduled preventative maintenance cleaning on a daily basis. Between two combination trucks, 199,150 feet of sewer lines were cleaned during the year. One of these trucks will assist the video inspection crew by cleaning lines before televising them, while the other cleans inlets, and catch basins.

As a result of the preventive maintenance schedule we have been able to minimize sewer discharges into basements, increase the volume of flow to the wastewater treatment plant, and decrease combined sewer overflows.

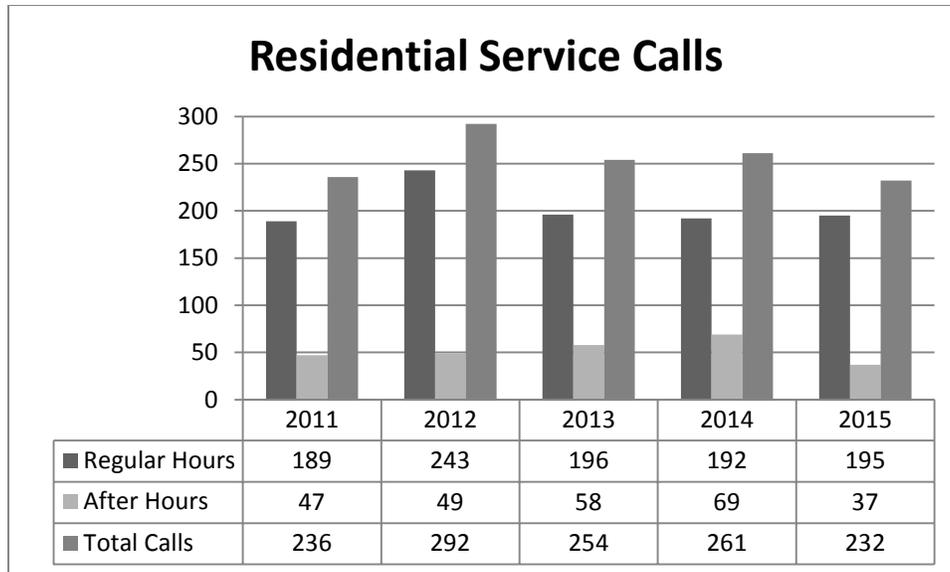




Over the past year, 195 calls were received from residents during normal working hours and 37 after-hours requests for our personnel to check the sewer main. These calls ranged from homes with sewer problems, odors coming from the sewer line, water standing in the street or follow up to contractor cleaned laterals. Of the 232 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 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 the City’s website.



### GIS Projects-Mini-cam Mapping Layer

The Sewer database, created and maintained by the Sewer Department Office Coordinator, Melanie Weber, has kept archives on all mini-cam inspections performed by the sewer department. This particular database has records dating back to 1996 and gives us the ability to 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 is plotted as a point on the map, as its own unique feature, matching the appropriate address. Each point contains 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 are 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 effort 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 of a residents lateral by simply locating their address on the map and selecting the icon. This also gives GIS users insights as to 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 City's 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 2015

As part of ongoing infrastructure improvements, Cured-in-Place-Pipe (CIPP) lining is utilized to rehabilitate various key sewer lines and those determined to be subpar in inspections by the Sewer Department. This project included CIPP of pipe from 10" diameter to 20", all associated testing, bypass, coordination with residents and the railroad with a total footage of 6,598. The project also included the structural rehabilitation of 39 manholes with polyurethane lining. The total CIPP project investment was \$678,930.

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 2015.

## PREVENTATIVE MAINTENANCE SUMMARY

	Number	Feet	Miles
Sanitary Sewer Jetted and Vactored		119,399	22.61
Sanitary Sewer Root Cut		247	.05
Sanitary Sewer Dragged		0	0
Combined Sewer Jetted/Vactored		79,229	15.00
Combined Sewer Root Cut		275	.05
Combined Sewer Dragged		0	0
Storm Sewer Jetted and Vactored		0	0
Storm Sewer Root Cut		0	0
Storm Sewer Dragged		0	0
Inlets Cleaned	307		
Catch Basins Cleaned	1,069		
Drywells Cleaned	0		
Manholes Cleaned	0		
Vactoring Hours	1,887		
Sanitary Sewer Back-Up	0		
Storm Sewer Back-up	0		
<b>MISCELLANEOUS: 37.71 Total Miles of Maintenance</b>			

## VIDEO INSPECTIONS

		Feet	Miles
Sanitary Sewer TV Inspected	Existing	126,055	23.87
	New	9,460	1.79
Storm Sewer TV Inspected	Existing	365	.07
	New	0	0
Combined Sewer TV Inspected	Existing	97,315	18.43
Service Lateral TV Inspected	Existing	7,019	1.33
113	New	0	0
	Total	240,214	45.49
<b>MISCELLANEOUS:</b> 45.49 Total Miles Televised			

## MAINTENANCE REPAIR SUMMARY

Sanitary & Combined Manhole Entry	
Sanitary Main Repairs	
Sanitary Manhole Repairs	
Sanitary Manholes Replaced	
Sanitary Manhole Invert Repairs	
Sanitary Manhole Bench Repairs	
Storm Grate Replaced or Repaired	
Combined Manhole Raised to Grade or Exposed	
Storm Main Repairs	
Storm Manhole Repairs	
Combined Manhole Invert/Bench Repair	
Storm Manhole Invert/Bench Repair	
Storm Inlet Repairs/Replaced	
Storm Catch Basin Repairs/Replaced	
Combined Catch Basin Replaced/Repaired	
Combined Inlets Repaired/Replaced	
Bags of Concrete	
Castings	
Risers	
Pre-Fabs	
Sewer Permit Inspections	116
Water Tap Inspections	44
"As-Built" Inspections	4

## **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.



Mishawaka's wastewater treatment facility serves over 17,000 residential, commercial, and industrial accounts. The population served exceeds 50 thousand. In 2015 over 3.4 billion gallons of wastewater were treated and over 6.1 million pounds of pollutants were removed prior to discharge into the St. Joseph River. In 2015, there were no exceedances of effluent limits.

***“In 2015 over 3.4 billion gallons of wastewater were treated and over 6.1 million pounds of pollutants were removed ...”***

The treatment facility operates 24 hours per day, 365 days a year. The twenty-six employees of the Wastewater Division have over 433 years of combined wastewater experience. Eight members of the staff hold Indiana's highest level of professional operator certification.

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 2015, almost 900 tons of biosolids were processed. 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 seven permitted Significant Industrial Users and several non-permitted industries that are routinely monitored and inspected. SIUs are required to reduce, alter, or prevent pollutants from being discharged into the sewer collection system before ending up at the Wastewater Treatment Facility.

The Pretreatment program is also responsible for FOG (Fats, Oils, and Grease) management. Through education and monitoring, the FOG management program works directly with food service establishments to prevent the discharge of fats, oil, and grease directly into the sewer collection system. FOG can accumulate in the sewage collection system resulting in blockages and sewage backups or overflows from the system, causing damage and creating a health hazard.

## **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.

Critical stations are equipped with stand-by generators in case of power outages and the remainder have transfer switches and receptacles to allow for portable generator operation. Since newer lift stations tend to be further from the treatment facility, in the outer reaches of the collection system, all new stations are required to have permanent stand-by generators.

There are 5 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. The laboratory conducts analyses that are 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.

As part of the NPDES permit requirements, the laboratory collects samples for heavy metals cadmium, chromium, copper, lead, nickel and zinc, bio-monitoring and organic pollutant monitoring. The heavy metals are tested quarterly, and the bio-monitoring and organic pollutants are tested twice per year on the influent and effluent of the wastewater treatment facility.

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. As part of this certification, the laboratory is required to correctly analyze ten unknown bacterial cultures as a performance evaluation. In 2015, the laboratory correctly identified all ten.

Every year the laboratory is required to participate in the EPA's Discharge Monitoring Report - Quality Control (DMR-QC) 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 2015, 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.

Organic pollutants and ammonia, phosphorus, and heavy metals are removed in the process. Ammonia removal is required because it is toxic to aquatic life and it creates an oxygen demand, lowering the level of dissolved oxygen in the river.

Phosphorus is removed both biologically and by chemical precipitation using ferrous chloride. Phosphorus removal is required because excess amounts in the river can cause oxygen depleting algae blooms that harm aquatic life.

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.

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. Hot water generated by the



*Digester gas booster pumps*

boilers is used to heat the facility’s buildings and to also heat the anaerobic digester tanks. 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 thousand cubic feet per day is generated, replacing purchased natural gas.

The treated effluent from the facility is disinfected with sodium hypochlorite and then treated with sodium bisulfite to remove any remaining chlorine. At the very end of the process the effluent is aerated to add dissolved oxygen just before discharge to the river.

### Statistics

In 2015, the wastewater facility treated over 3.42 billion gallons, averaging 285 million gallons monthly and 9.4 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.

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 2015 was 65 MGD on July 17th. The maximum total flow treated on a single day was 19.8 million gallons also on July 17th.

Treating flow in excess of the design capacity requires skillful operation and a well maintained facility. Pollutants removed during 2015 included 5.7 million pounds of organic compounds, 64 thousand pounds of phosphorus, and 373 thousand pounds of ammonia nitrogen.

<b>2015 Statistical Summary</b>						
	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Average Flow (MGD)</b>	10.16	11.43	9.19	9.92	9.69	9.35
<b>Peak Flow (MGD)</b>	58.8	59.7	58.0	60.4	60.9	65.2
<b>BOD Removed (%)</b>	98	98	98	98	98	98
<b>Phosphorus Removed (%)</b>	79	79	80	80	82	85
<b>Ammonia Removed (%)</b>	93	90	95	92	95	96
<b>Solids Removed (%)</b>	98	97	98	97	98	98
<b>Biosolids Produced (dry tons)</b>	1115	1093	1121	1053	915	1059
<b>Electricity Use (MkWH)</b>	4.874	4.922	4.992	5.075	4.934	5.168
<b>Natural Gas Use (Mcf)</b>	7.691	7.055	5.378	6.633	6.398	5.115
<b>Total Precipitation (inches)</b>	33.7	43.33	34.52	38.17	41.44	35.92

### 2015 Accomplishments

#### A Quarter Century of 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, 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.

**1990 Baseline**

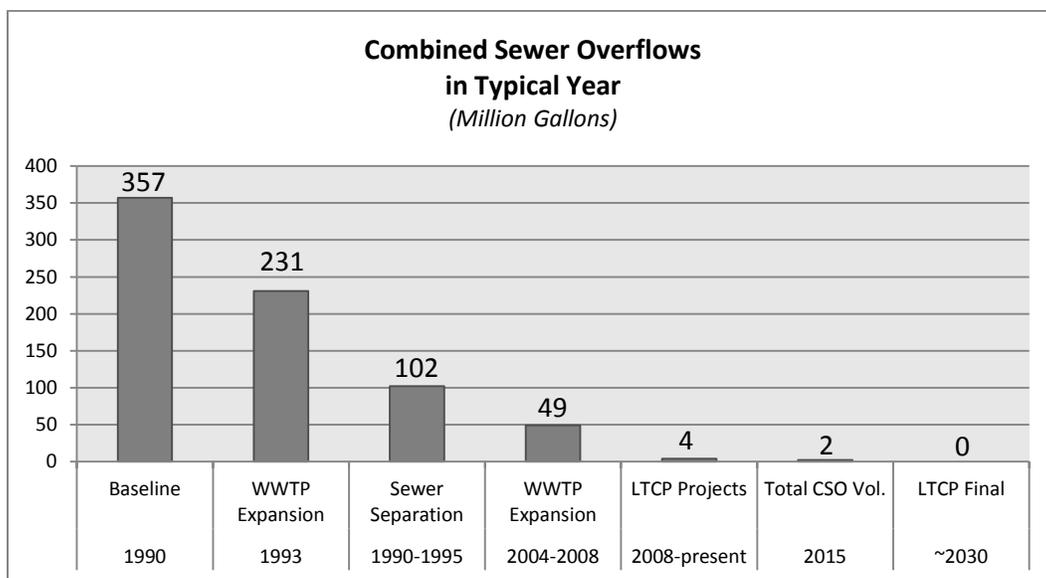
In 1990, the City’s flow model estimated that there was over 314 million gallons of CSOs in a typical year. Some separation had occurred in Mishawaka before 1990 and continues to this date. All new sewers are constructed for sanitary flows only. Storm sewers are run separately and do not go to the wastewater plant.

In 1993, Mishawaka expanded the wastewater treatment plant. Although the expansion was primarily for dry weather capacity, the treatment of wet weather flows increased also. Subsequently CSOs were reduced by over 35%.

In 2008, Mishawaka completed its second major treatment plant expansion. Along with continued separation in the collection system, CSO volume was reduced to approximately 50 million gallons annually.

The year 2014 marked a milestone year as 10 years of negotiating with the EPA, and the U.S. Department of Justice yielded a signed consent decree for Mishawaka’s Long Term Control Plan for CSOs. Implementations of the LTCP elements so far have decreased CSOs to 4 million gallons in a typical year. Mishawaka’s LTCP is designed to eliminate CSOs in a typical year by the end of the 20 year consent decree.

Last year Mishawaka’s collection system flow model estimated that there was only 2 million gallons of combined sewer overflows.



## 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.

## Bond Refunding

In 2015, five outstanding wastewater revenue bonds were refinanced to take advantage of lower bond interest rates. The refinancing resulted in an annual debt service savings of \$250,000 and a total net savings of \$3,000,000 over the life of the bonds.

## 2015 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.

Also, during the summer, the Central Park biofilter had the carbon from air scrubber removed and replaced.

## Staff Changes

In 2015, two long-time employees retired from the Wastewater Division. Chief Chemist Ken Botka retired after 30 years. Ken was replaced by Jill Norton who was promoted from a Chemist. Lindsey Grossman was hired to fill the vacant Chemist position. Marge Pieters, Project Coordinator, retired after 23 years. Marge was the "glue" that held the Division together. Her dedication and professionalism were outstanding. Marge was replaced by Maureen Hunt, a new hire from outside the Utility. As sad as we were to see Marge and Ken leave, we are excited by the energy and enthusiasm of their replacements.

## Award Winning

The Mishawaka Wastewater Division was recognized at the Indiana Water Environment Association Annual Conference, held in Indianapolis November 18–20. The Mishawaka Wastewater Laboratory received the Laboratory Excellence Award for the 14th consecutive year.



*Primary Tank 3 Rebuild*

Chief Chemist Jill Norton served as President of the Indiana Water Environment Association (IWEA) in 2015. IWEA is one of 75 affiliated member organizations of the Water Environment Federation (WEF) that represents water quality professionals around the world. Jill brings distinction to Mishawaka as she has been on the IWEA board of directors for the past four years and is a leader in the State's water quality association.



*IWEA President Jill Norton*

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 3 shifts with 2 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.

### **Safety Milestone**

By the end of 2015 the Wastewater Division reached 2,563 days without a lost time injury. This amounts to over 362,000 person hours worked during this impressive stretch of safe work days. The wastewater industry presents numerous hazards and records higher than average occupational injury rates. The staff deserves credit for working smartly and keeping safety a high priority.

Mishawaka is fortunate to have a modern wastewater treatment plant with capacity to keep Mishawaka moving forward. 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*

In 2015 Mishawaka Water looked to the future with our “Needs Assessment Update” that was finished in June. This plan updates the capital projects that need to be completed over the next 5 to 10 years by factoring in growth projections and evaluating existing distribution systems and treatment facilities. Infrastructure recommendations are then made that anticipate the needs of the Mishawaka Utilities Water Division. The plan also updated and recalibrated our water model to provide more accurate analysis of our system.

The assessment recommends that a new treatment plant and well field is needed to replace the Gumwood well field. The Gumwood field is antiquated and cannot sustain the growth projections of future development. Most of the water in the University Park Pressure District is pumped north by booster stations. A new well field would alleviate this process which is costly and lacks redundancy. Currently, the Gumwood wellfield can produce roughly 4.5 million gallons a day. The new treatment plant would be capable of 11.5 million gallons a day and be able to supply not only the University Park Pressure District, but also our entire system and provide needed redundancy.

A development and purchase agreement has been reached with the Rogers Family, owners of Juday Creek Golf Course, and the Penn Family, property owners to the east of Juday Creek, to purchase land that will be developed into a new well field and water treatment facility. This process started almost 3 years ago with an extensive search to identify acceptable locations, and once identified, testing the water and researching the hydrology to see if the site would be sustainable and able to support an 11.5 million gallon a day well field. As with our well field at Eberhart Golf Course, Juday Creek will provide an ideal location for a well field as it will be protected from development.

The City of Mishawaka has no intention of running another golf course. The property will be leased back to the former owners and continue to be Juday Creek Golf Course. The City will, however, own the land. Three holes on the golf course will be relocated as this development occurs, and roadway and infrastructure improvements will have to be made along Douglas Road to support this project.

Mishawaka Utilities Water strives to supply World Class Service each and every 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 314 miles of water distribution main.

***“Our three water treatment facilities can put out a maximum of 31.5 million gallons a day...”***

Last year was again a wetter, cooler summer and our pumping total reflected this. We treated 2.26 billion gallons of water in 2015 for a daily average of 6.18 million gallons per day. Our employees worked 1,131 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

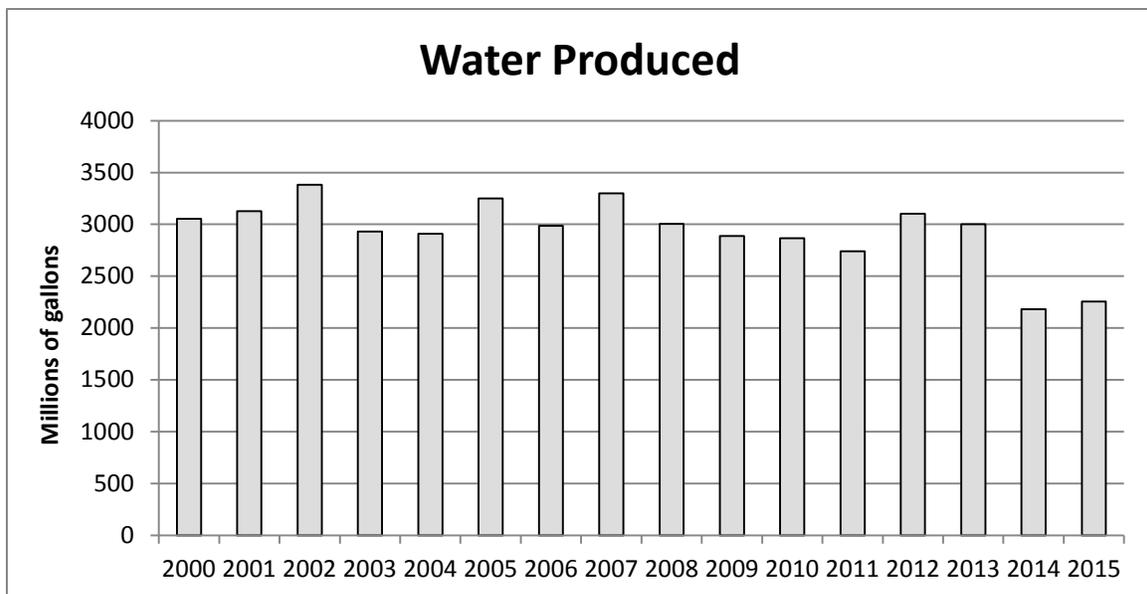
Water Quality staff tests the water to be sure it meets and exceeds the standards set by the Environmental Protection Agency, and Indiana Department of Environmental Management. Supervised by Tony Galassi, this dedicated group performed over 20,000 tests to ensure Mishawaka has a safe supply of water. This testing also helps us monitor our treatment facilities and make adjustments to treatment as necessary.

For the 13<sup>th</sup> year in a row our lab received the state Fluoridation Award for maintaining proper residuals of fluoride to help promote dental health. This past year the Department of Health and Human Services modified their recommendation for optimal fluoride levels. The new recommendation is 0.7 parts per million, replacing the old range of 0.7 to 1.2 parts per million. Now that Americans have more access to fluoride from sources such as toothpaste and mouthwash, our dosage guidelines have been reduced. This is also a cost savings to us of approximately \$8000.00 per year on chemicals.

Along with testing, this group is responsible for all state reporting requirements. The Water Quality team was busy this past year preparing a sampling plan for the revised Total Coliform rule, renewing our National Pollution Discharge permit and new requirements for electronically filing documents.

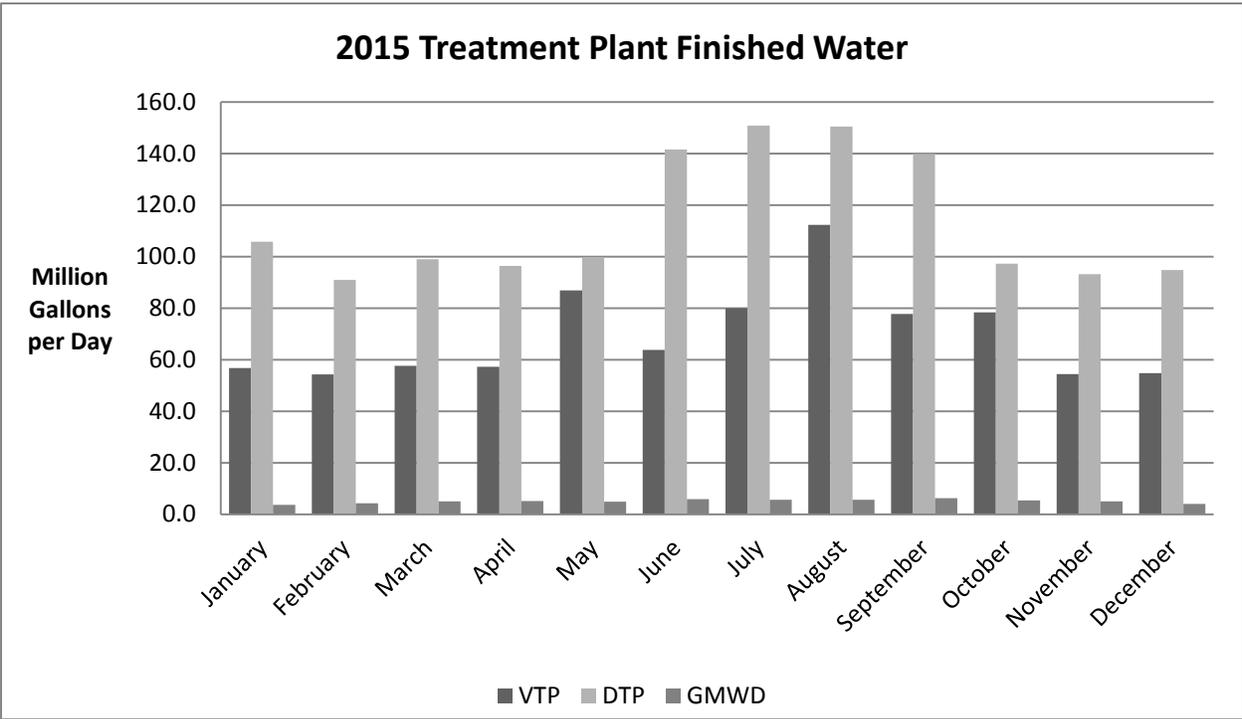
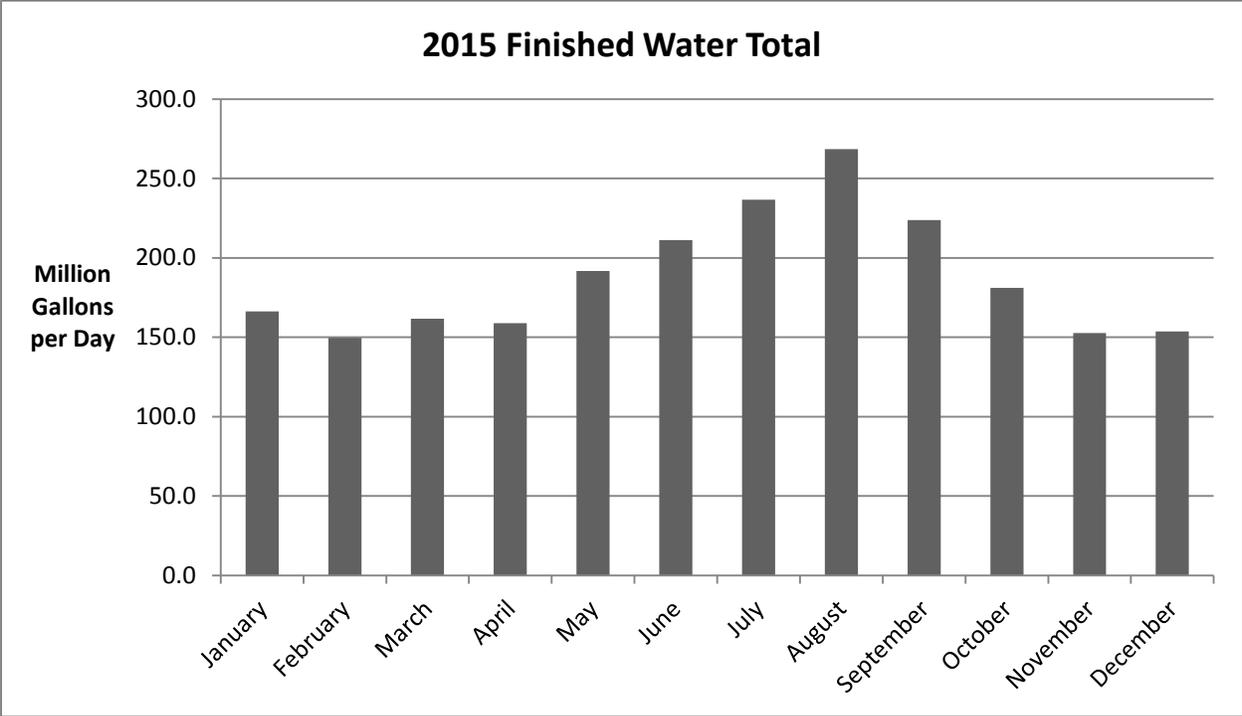
Water Quality also played a large role in helping our consulting engineer put together our Needs Assessment Plan. The Water Quality group also supervised a contingent of summer help this past summer that painted approximately 1,000 of the City's 3,000 hydrants.

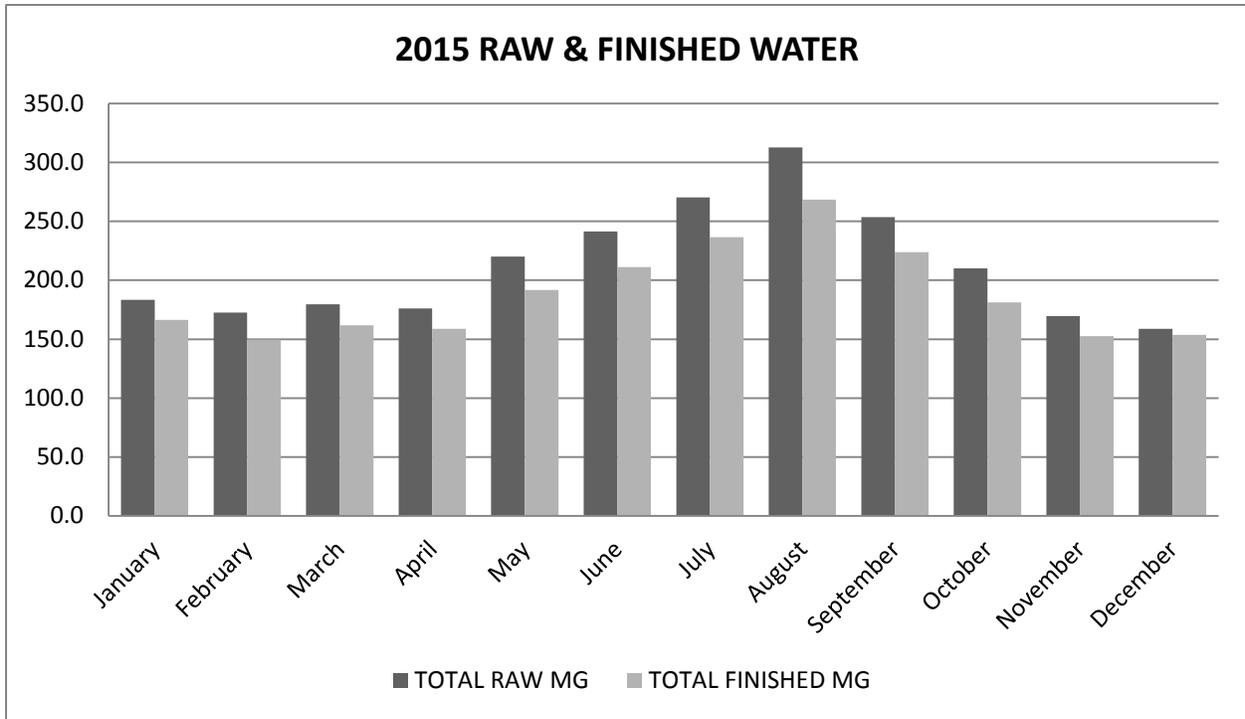
Over 2.26 billion gallons of water was treated in 2015 for a daily average of 6.18 million gallons per day. Over the last 16 years we have averaged 8 million gallons a day.



**Mishawaka Utilities Water Division  
Total Water Quality Laboratory Tests 2015**

Test / Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Conductivity	132	120	154	132	126	154	138	126	154	154	126	138	1,654
Manganese	132	120	154	132	126	154	138	126	154	154	126	138	1,654
Iron	132	120	154	132	126	154	138	126	154	154	126	138	1,654
Hardness-Calcium	132	120	154	132	126	154	138	126	154	154	126	138	1,654
Alkalinity	132	120	154	132	126	154	138	126	154	154	126	138	1,654
Total Hardness	132	120	154	132	126	154	138	126	154	154	126	138	1,654
Fluoride	124	112	146	120	124	142	124	124	142	146	120	124	1,548
Phosphate	88	80	88	88	80	88	92	84	88	88	84	92	1,040
Free Chlorine	174	170	178	170	174	170	177	174	174	182	175	176	2,094
Total Chlorine	174	170	178	170	174	170	177	174	174	182	175	176	2,094
pH	132	120	154	132	126	154	138	126	154	154	126	138	1,654
Temperature	132	120	154	132	126	154	138	126	154	154	126	138	1,654
Routine Bacti	50	50	50	50	50	50	50	50	50	50	50	50	600
Other Bacti	0	0	4	0	0	0	3	0	4	8	5	2	26
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	0	0	0	0	0	0	0	0	0
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	1,668	1,568	1,900	1,698	1,636	1,876	1,729	1,679	1,888	1,912	1,643	1,726	20,923
Total Tests completed for 2015 - 20,923													





### Well Head Protection

The protection of our aquifer is the responsibility of our Well Head Protection Coordinator. In 2015, Janice Winn identified and confirmed potential sources of contamination. These activities include locating and abandoning wells, septic tanks, and catch basins. Commercial and industrial activities that have the potential to contaminate the ground water must also be identified. Jan was instrumental in compiling the information for our 2015 Needs Assessment update. She 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 aquifer and gain insight on what is happening throughout the water industry.



*Well Cleaning Virgil Street*

### Maintenance

Our Maintenance Staff under the oversight of Chief Mechanic Patrick Deka helps keep our treatment plants and well fields running smoothly and efficiently. With 3 treatment plants, 22 wells, 4 elevated tanks, 2 in-ground storage reservoirs, 6 booster stations, and a new pressure monitoring station along with our operations center and numerous sample stations, this small but dedicated group is responsible for over 30 buildings.

Some of the projects completed this past year included putting a new pump in the Schmucker booster station, a new roof on the East Tank booster station, cleaning and rehabilitation of 2 wells, and continuing our multi-year project of painting and mortar work at our Jefferson Street operations center.

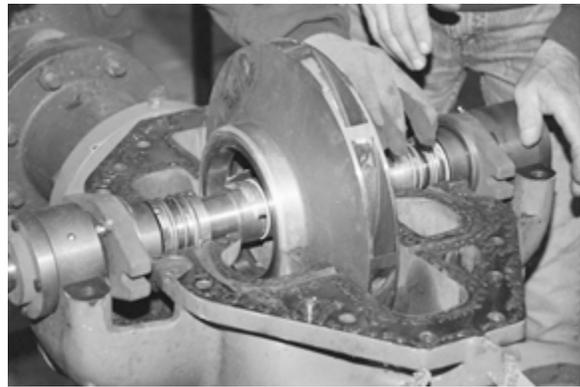


*Valve Maintenance at Virgil Treatment Plant*

This past year a major undertaking at our Virgil plant was the rehabilitation of our control valves. A serious corrosion problem was fixed and all valves have been repaired or replaced. We also did a compressive study of our SCADA system that controls the Distribution system. Our SCADA and Electrical Technicians Kent Osborn and Dave Smith, with the help a consulting engineer, looked to see where we can upgrade and make improvements.

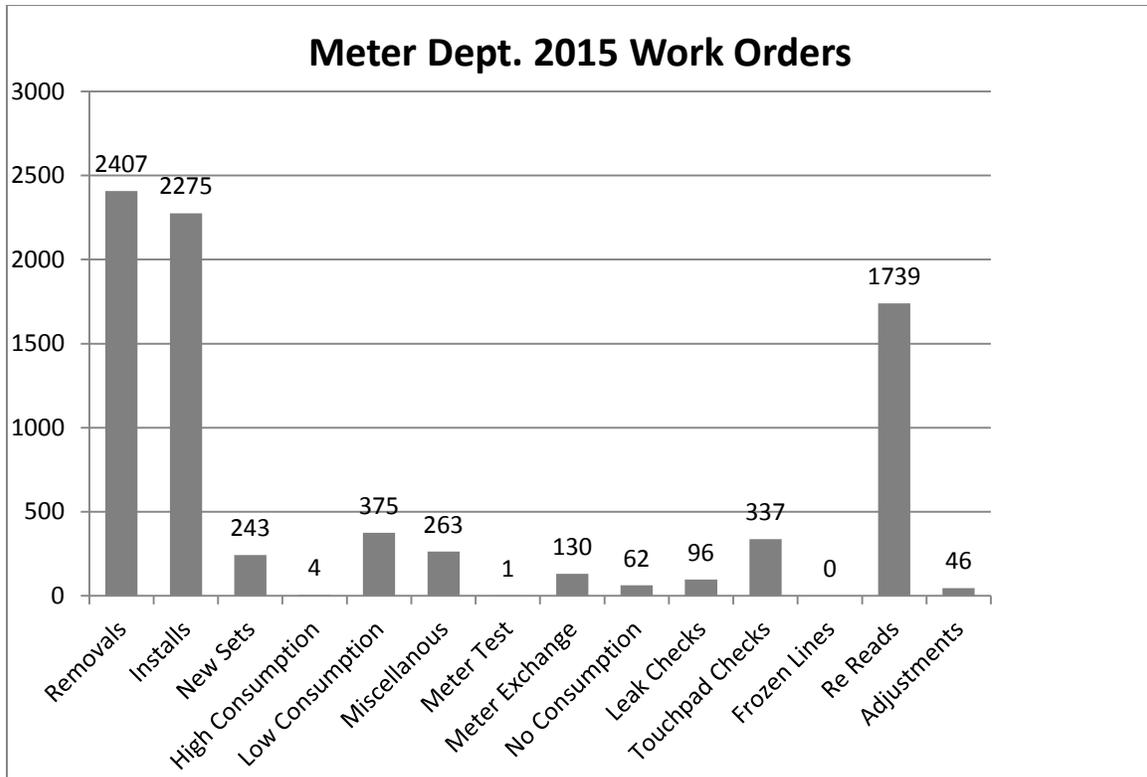
### **Meter & Backflow**

The Water Metering / Backflow / Cross Connection Group works to install, remove and test our water meters. Frank Unruh leads this group that has the task of taking care of all scheduled meter and backflow work, and also takes care of emergency shut-offs for leaks, low pressure calls, and many other customer questions that may present themselves during the day. This group managed 7,978 work orders in 2015. That's an average of 22 per day.



*New Pump Schmucker Booster Station*

In addition to those work orders we also tested 3,704 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

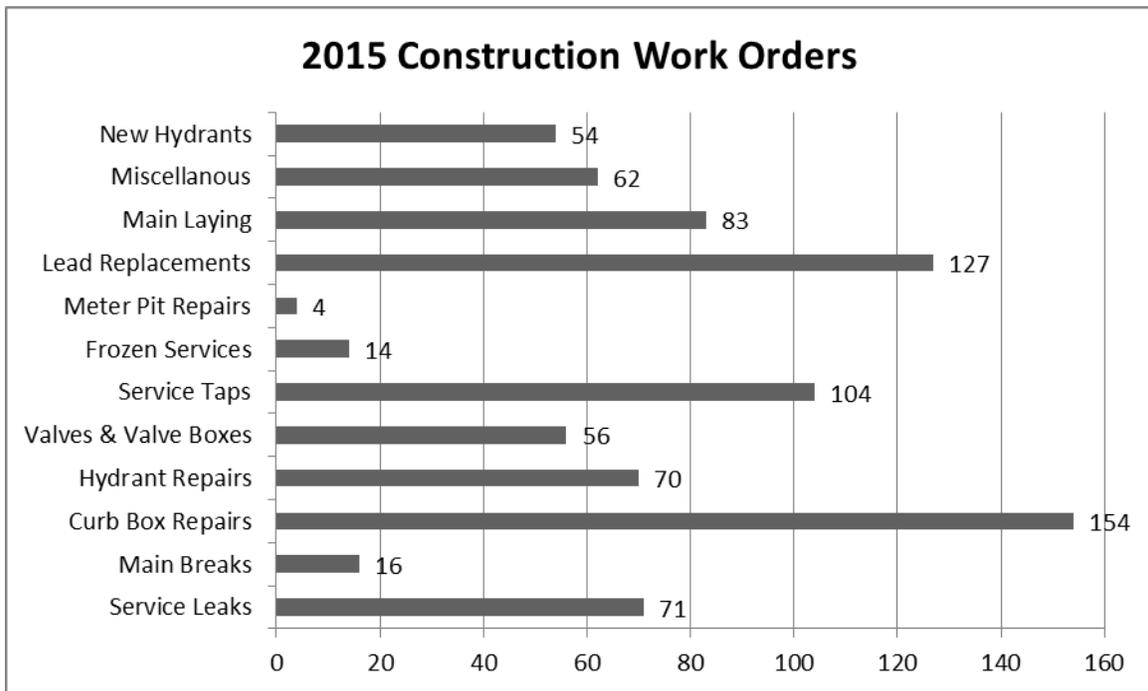
The Water Distribution System Maintenance and Construction group is led by Fabian Chavez. Although not as severe as 2014, the winter of 2015 started off with 2 major water main breaks on the same day on opposite sides of town with temperatures well below zero. Our crews worked around the clock in these adverse conditions to fix the problem. After winter subsided our crews installed new water main at Bell Tower Health and Rehab, Gumwood Outlet Center, Grandview apartments, and replaced an aging 2-inch water main on O'Connor Street with a 6-inch line that added fire protection to this street.

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. In 2015, the Water Division added 17,665 feet of water main to our distribution system, over 3 miles, bringing our total distribution system to 314 miles. The water main installed on Brick and Fir Road was 7,540 feet alone. This loop provides redundancy and increased fire protection as water is now fed from two directions. Fifty-four new fire hydrants were installed this year bringing the total to almost 3000 in the City. The construction crew is also responsible for flushing and maintenance on all of our public hydrants.



*Insertion Valve Cedar and 4th Street*

During the year we also replaced a 103-year-old valve using a relatively new installation method. Advanced Valve Technology put a new valve in-line on an active 20-inch water main without having to shut down any other valves and avoiding a system shut-down. With our Engineering Department's assistance, and in conjunction with their sewer and road project on Cedar Street, they helped us introduce this technology. Keeping track of these projects, inventory, and purchasing, is a daunting task. Keith Cooper does an exceptional job organizing our operations and making sure our crews have the equipment and supplies they need.



*Grandview*



*Hydrants for Grandview Apartments*

## CONSTRUCTION PROJECTS

Installed by MU Water	Assisted by MU Water
<ul style="list-style-type: none"> <li>• Bell Tower Assisted Living</li> <li>• Gumwood Outlet</li> <li>• Grandview Apartments</li> <li>• O'Connor Street Water Main Replacement</li> </ul>	<ul style="list-style-type: none"> <li>• Brick and Fir Road Water Main Installation</li> <li>• Pine St./Ell St. Water Main Installation</li> <li>• Trinity Water Main Relocation</li> <li>• Elizabeth Street</li> </ul>

## LEAD REPLACEMENTS

<ul style="list-style-type: none"> <li>• E. Mishawaka Avenue- 61 Lead Replacements</li> <li>• W. Mishawaka Avenue -10 Lead Replacements</li> <li>• W. Grove Street -19 Lead Replacements</li> </ul>
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*Fixing Water Main Break on LWE*



*New Pressure Monitoring Station Brick Road*

Service to the community and the world is very important to our employees. The Mishawaka Utilities Water for People program raises money to help fund clean drinking water and adequate sanitation for people throughout the world. This past year with the proceeds from our 16th annual pie sale Mishawaka employees presented a check for \$1,000.00 to the National Water for People organization.

There are almost 170,000 public drinking water systems in the United States, and maintaining and extending the life expectancy of this infrastructure is a top priority. The American Society of Civil Engineers estimates that it will take nearly one trillion dollars in capital investment over the next 20 years to keep America's drinking water infrastructure up to date.

We are working diligently in Mishawaka to maintain and replace our infrastructure to keep our system strong for years to come. We look forward to 2016 as The Mishawaka Utilities Water Division continues to strive for excellence in providing World Class Service to our customers and to forge a plan that will bring a new wellfield to Mishawaka in the not so distant future.



*Seasonal help Painting Fire Hydrants*



*Making 6" tap at Battell Center*