

# 2013 Periodic Biosolids Program Performance Report

Issued: February 2014

*"It is the goal of the City to manage biosolids processing, handling, and final disposal in a manner which meets public acceptance and to produce a product that complies with all state and federal regulatory requirements."*

## Introduction

The Grand Rapids Wastewater Treatment Plant (GRWWTP), located in Grand Rapids, MI, provides wastewater collection and treatment for the City of Grand Rapids and 9 surrounding communities totaling approximately 270,000 customers within a 200 square mile geographical area. The Wastewater plant treated 15,752 million gallons in 2013. The GR-WWTP has a design capacity of 61.1 million gallons a day (MGD) and currently has an average daily flow of 43.93 MGD. The facility was constructed in the 1920's and treatment consisted of primary clarification, anaerobic digestion, and drying beds. The Biosolids from the drying beds were bagged and sold to businesses and homeowners for fertilizer for many years. In the mid 1950's the plant was expanded to include secondary treatment capability utilizing activated sludge as the biological treatment process along with increased primary treatment capacity and disinfection. In the 1970's the facility was again expanded to increase flow capacity and solids handling processes. Solids handling converted from anaerobic digestion to thermal heat treatment using low pressure oxidation.



The GRWWTP was part of a third round of agencies participating in the National Biosolids Partnership (NBP) Environmental Management System (EMS) for Biosolids. Terminology for the program evolved in 2011 with Biosolids Management Program (BMP) replacing EMS. Development of our BMP started in early 2005 with the creation of an internal BMP team. Team members attended four (4) NBP sponsored workshops which helped guide the development of our BMP. The GRWWTP BMP was formally certified by the NBP in December 2006 and successfully completed our first annual interim audit in November 2007. During 2008 an internal audit was performed. In October of 2009 we successfully completed our second interim audit. We completed

internal audits during the first quarters of 2010 and 2011. We successfully completed our recertification audit in October of 2011. We used our internal audit from 2012 for our interim audit. In October of 2013, our seventh interim external audit was performed by a third party auditor.

Our BMP has gone through many changes and improvements since its inception. It is maturing into a productive and healthy program, which makes us better at what we do.

During July of 2009, the Joint Biosolids Management Project Agreement was approved by the City of Grand Rapids and City of Wyoming which finalized the creation of the Grand Valley Regional Biosolids Authority (GVRBA). On July 1, 2009 the GVRBA became responsible for processing 100% of the biosolids from the City of Grand Rapids Wastewater Plant and the City of Wyoming Clean Water Plant.

In 2013, several modifications and improvements were completed and/or undertaken at the WWTP and the collection system support facilities including:

- ECSO – Contract 21 (Washington / College) half completed in 2013
- ECSO – Contract 26A
- ECSO – Contract 26B
- Taylor / Grove Sewer Improvements
- CIPP (Cured In Place Piping) lining in various locations
- Valve replacement in the MARB CSO Retention Basin
- WAS Sludge Thickening Project
- Demolition and Removal of Sludge Storage Tanks and Appurtenant Structures
- Hach Real Time Nitrogen Controller Project
- Collection system flow meters and software
- Primary Tank Upgrades (Sprockets, Chains, etc...)
- ZAPS LiqID Analyzer Project For Real Time Monitoring
- North Secondary Improvements Project (Delayed due to high groundwater)
- ESCO project in design with Chevron and City Engineering for HVAC improvements to reduce energy consumption.

### **Outcomes Matter**

The NBP has identified key outcomes which serve as good indicators of successful and well managed Biosolids Management practices. Efforts undertaken by GRWWTP during the past year in support of these outcomes are detailed below.

### **Quality Management Practices**

- The City established a new goal and objective in 2013 to create a new labor category and hire three employees to fill this new position. The new position combines operations responsibilities with maintenance responsibilities and is entitled Utility Operator Maintainer. This position will improve the efficiency of the operations and maintenance at the critical control points. The positions were not filled in 2013, but the test was given December 30, 2013. The goal was carried forward into 2014. Three new positions are anticipated to be hired sometime in early 2014.

- A long term goal established in 2010 and continuing through 2013, was to implement a comprehensive sanitary sewer cleaning program; i.e. routine cleaning of all sewers 15-inches and smaller once every five years. Because of the success of this program it was expanded the following year to include all sewers 24-inches and smaller and the frequency reduced to once every four years. The program reduces both the accumulation of inorganic materials in the sewer lines as well as removing insoluble organic materials that cause fats, oils and grease blockages and eliminating foul materials from reaching the treatment facilities, where it causes odors and reduction in biosolids quality. As a result of this program the number of citizens calling in complaints after normal business hours from sewer blockages has decreased from once a night to fewer than once per week. Additionally the sanitary sewer overflows (SSOs) have decreased in number by 90% and in volume by 80%. In addition to quality management practices, this goal and objective can equally be applied to quality management practices, regulatory compliance, and relations with interested parties outcome areas.
- A goal established in 2010 and carried forward through 2013 because of the long term nature of construction BOD removal, nitrification / denitrification and phosphorus removal as a result of the North Plant Modification Project. During the 7<sup>th</sup> interim audit conducted in the fall of 2013, it was determined that the goal be restated. The goal was modified to reduce the use of ferrous chloride 10% in 2013 versus 2012. The new goal was carried forward into 2014. Once project is completed, biological phosphorus removal should significantly reduce the amount of ferrous chloride used to remove phosphorus and increase the quality of the Biosolids. Although construction completion was scheduled for October 2012, groundwater has made it take much longer. Currently, one aeration tank and one final clarifier remain to be completed.
- Another goal and objective for 2011, 2012 and 2013, related to the quality management practices was mentioned in the regulatory compliance outcome area and dealt with quarterly monitoring of the Biosolids for the 503 regulations concerning heavy metals content. We have performed quarterly analyses on the WWTP biosolids and compared results to the tables found in Federal Regulations 503. This testing has provided us with data that ensures our Biosolids are well below the 503 thresholds and ensures that we have a safe product acceptable for exceptional quality Biosolids.
- Our long term customer service goal has been monitored since 2010. In our audit from the fall of 2013, it was determined an opportunity for improvement to consider this goal as a win. We have consistently surpassed our goal four years straight. We removed it from our 2014 goals and have incorporated it into element 9. A customer service feedback card was constructed and is being given out to customers by the Collection System Asset Technicians. This is part of our continual improvement process and provides us additional communication and public outreach with our rate payers.
- ESD staff completed City of Grand Rapids customer service training in 2013. All City staff were required to attend this training. This training was a requirement of the City Manager and is part of our continual improvement process and quality management practices.

## Relations with Interested Parties

In 2013, we focused on the many educational opportunities that were afforded to us in the Grand Rapids metropolitan area and within the Environmental Services Department (ESD). In most cases, the associated costs were limited to staff time and printing costs for educational materials that we passed out to interested parties.

- For the fourth time, several staff members have volunteered at an informational booth at the upcoming March “Home and Garden Show”. This event is the largest of this type of event in West Michigan with attendance in excess of 30,000. This was the Home and Garden Show’s 34<sup>th</sup> season and will be held at the De Vos Center in downtown Grand Rapids. Staff from a variety of workgroups has volunteered for this event in the past.
- The City required customer service training also relates to the maintaining of relations with interested parties. Good customer service skills helps to build trust with citizens and maintains good working relationships with the public.
- 1482 students were scheduled for tours of the Wastewater Treatment Facility in 2013. The popularity of these tours continues to grow. Plant staff is optimistic about our field of work and encourages students to consider Wastewater Treatment a career path.
- Moved forward with the development of a “311” application for City departments to enhance and improve customer service.
- Citizens can explore various areas of the wastewater treatment process and the Biosolids Management Program on our ESD website at the City of Grand Rapids website.
- Another goal established for 2011 in this outcome area was to produce one “Environmental Tip” flyer on biosolids, similar to four similar documents that have been published over the past few years. This is a quarter page hand-out that the City uses as an insert in all of the water/wastewater bills mailed. This goal was carried over into 2012 and 2013. The three new Tips published included: Environmental Protection Tip # 5 – Report it don’t ignore it (English & Spanish), Environmental Protection Tip # 6 – Did you know we never close (English & Spanish), and Environmental Protection Tip # 7 – Maintain the Drain (English & Spanish). During our audit, it was pointed out that storm water was not a critical control point. This was considered a minor nonconformance. This goal was removed from 2014, but another tip is anticipated in the future. This helps maintain relations with interested parties and is good public outreach. If one is done in the future, it will be related to the BMP and be associated with a critical control point.

## Regulatory Compliance

- The City experienced major flooding in April of 2013. Plant staff endured extreme high flows and record river levels. The plant and staff were tested during this time. Many precautions were taken and we were lucky the river did not get higher than it did. The WWTP endured maximum plant flows for several days. We are proud to say that we maintained 100% regulatory compliance at the WWTP and at our CSO retention basin (MARB).
- The City established a comprehensive sanitary sewer cleaning program from 2010 through 2013 as was discussed previously. This goal and objective reduces sewer system backups attributable to blockages, and has

significantly decreased the number and volume of sanitary sewer overflows (SSO's). This goal will continue in 2014.

- As mentioned above, a goal for 2011, 2012 and 2013 was to perform quarterly heavy metals analyses on the final biosolids product and comparing the results to the heavy metal concentration standards contained in the Section 503 regulations governing land application of biosolids, should that ever become one of the options implemented by the City and the GVRBA. All analyses have demonstrated that most of the metals are routinely 90% to 95% below the exceptional quality (EQ) pollutant concentrations standards, with the exception of Zinc and Copper which typically are 80% and 85% below the limits, respectively. This goal for monitoring carries into 2014.
- Achieved 100% compliance with regulatory requirements as related to Biosolids and our NPDES permit.
- As stated last year, we are still waiting on the approval of the application for our new National Pollution Discharge Elimination System (NPDES) permit as submitted in 2010.
- Maintained 100% compliance with NPDES permit in 2013.
- A new goal established for 2013 was to change to an alternative approved method for analyzing wastewater samples for chloride that would not generate any hazardous waste. This goal is substantially accomplished with the purchase of new testing equipment. Development of standard operating laboratory procedures and the purchase of the electrode is all that remains to be done to implement the change. This goal is being dropped in 2014 as a result of our 2013 interim audit.
- Another new goal established for 2013 in this outcome area was to ensure compliance with new regulations related to amalgam separator installation at dental offices. The goal was to have 100% compliance with all dental offices in our system. The action plan was to track all dental offices that required such installations to ensure the required separators were installed. As of the end of 2013, 97% had complied. IPP will continue to follow up with the four remaining dental offices until amalgam traps have been installed. Consequently, this will not be a goal in 2014.
- A new goal for 2013 in this outcome area was the reduction of significant noncompliance incidents by 25% in 2013. The number of incidents maintained for EPA records are a rolling average and typically in the range of 6. Based on the method of tracking this goal it is unclear if it has been or will be met due to the time it takes to get information by the time goal reporting is done. This goal was not carried into 2014 for this reason. There is just not a good way to timely measure it. This goal is not easily measured in the amount of time that the reporting for goals is due. This goal was dropped for 2014.

## Environmental Performance

- Another similar and somewhat related objective included upgrading the "Computer Maintenance Management Program (CMMS) in 2011 to Maximo 7.1 and then again in 2013 to Maximo version 7.5. The initial objective was to obtain reliable data on the variables through upgrading the computer software (upgrades to Maximo 7.1 and then 7.5), which was accomplished. The next goal was to provide greater focus on costs, including equipment,

material and labor. The goal further evolved in 2013 to capture spare parts and non stock items to accurately track asset costs and labor costs related to the critical control points. In late 2013, specific data was being collected on critical assets. Having this critical data in our CMMS ensures equipment is kept up to date. The site was also moved to a server in the cloud through Projotech. This gives us technical support from experts working with Maximo.

- A motivated staff striving to achieve 100% compliance with all regulatory requirements is focused on protecting the environment. The ESD staff operates in a highly effective and professional manner and consistently achieves regulatory compliance.
- In 2013, a Hach real time nitrogen controller was installed in the South secondary. This unit monitors incoming and outgoing ammonia levels and throttles the blower or blowers automatically, which uses the least amount of air to oxidize the ammonia. This saves a considerable amount of electricity due to lower blower amps needed. A rebate check just over \$58,000 was received by the City from Consumers Energy. It is anticipated to save the City over \$62,000 annually in electrical costs.
- For more than 20 years, the City of Grand Rapids has worked aggressively to reduce Combined Sewer Overflow volumes by 99.9% and is continuing work to remove the remaining 0.1%.
- In the late fall of 2013, two ZAPS Liquid Analyzers were installed in the UV buildings. They analyze samples collected from the effluent side of each the North and South UV areas. These units are designed to analyze multi-parameters and do not require any chemical reagents. Our analyzers have been configured to analyze for CBOD, COD, E. coli, ammonia, nitrate/nitrites, temperature, total suspended solids, turbidity, and UV Transmittance. It is anticipated that the results from these units can be used in reporting for our Monthly Operating Report on many of these parameters, which will reduce laboratory costs in the future. This will require less testing and labor associated with it. The units monitor in “real time” and will be used to determine the dosage of the UV. The units tell us immediately what dosage of UV is needed and will take the guess work out of determining the correct dosage. A lower UV dosage will lengthen lamp life and reduce energy consumption significantly.

### **Biosolids Value Chain - Monitoring and Measurement Report and Progress**

Monitoring and measurement provides critical input to the organization relative to the effectiveness of its operational controls and related SOP's in relation to the critical control points. This information helps to identify any weaknesses or other areas in which the program can be improved. As new SOP's are made, they are incorporated into the BMP. This annual check of operational controls assures any relevant monitoring and measurement is done and that the correct SOP's are in place. The department continues to develop and utilize more accurate and easily maintained monitoring equipment.

## Wastewater Collection and Pretreatment

*Significant Industrial Users (SIU)* – In 2013, the industrial Pretreatment Program, (IPP), staff worked with industrial users and State regulators to maintain compliance with local, state and federal discharge laws. In September 2013, the Michigan Department of Environmental Quality, (MDEQ) performed their annual inspection utilizing Onbase for the first time. Onbase is the document management system used by IPP. There are eighty six (86) Significant Industrial Users monitored by the Industrial Pretreatment Program, five (5) were added in 2013. IPP utilizes Linko Data System for tracking compliance for Industrial Users. IPP continues to expand the utilization of functionality of Linko and currently is partnering with Linko in pursuing approval by the EPA for Cross Media Reporting Requirements (CROMERR).

*Industrial/Commercial User Discharges* – A change has been made in the generation and completion of non-domestic user surveys, which utilizes Cayenta Utilities Software. A business requesting new water service or to transfer a water service requires submittal of a completed survey prior to activation of water service. This completed survey is scanned by the Utility Billing Office into Cayenta Utilities Software. IPP then reviews the completed survey and determines if the user requires an industrial user permit.

*Discharge Authorizations* – Discharge requests are for one-time or short-term discharges, or for discharges that do not meet the criteria for a Significant Industrial User. A discharge request containing Material Safety Data Sheets (MSDS), waste characterization, flow volumes, discharge rates and location is submitted by potential dischargers. The proposed discharge is reviewed by IPP staff to determine potential impacts to the POTW. An administrative fee of \$400.00 is charged for each Discharge Authorization, which is new to the City's Sewer Use Ordinance (SUO) in 2013. The user receives an approval or denial letter for the discharge.

*Pollutant Minimization* – Toxic metals, including mercury, are the main focus for pollutant minimization for IPP staff. Toxic metals are tracked by collecting and analyzing six trunkline locations daily, while mercury is analyzed monthly from each of the six locations. Permitted industries are sampled annually by IPP while individual user self-monitoring is performed a minimum of semi-annually. POTW influent mercury is sampled and analyzed monthly, with low level influent and final effluent sampling performed quarterly.

## Wastewater Treatment and Solids Generation

*Solids Screening and Grit Collection* – Bar screens in the Wastewater plant headworks continue to significantly reduce screening type debris in the biosolids. The screenings compactor at the end of the screen conveyor washes the screenings with final effluent water; then compresses the screenings removing much of the water. The screenings are much drier than they were in past years. This alone has saved the City well over \$30,000 in hauling fees due to less water weight being hauled to the landfill.

*Scum* – This product consists of greases and oils which enter the wastewater plant through the collection system. A proactive program to capture and remove grease and oil at lift stations by cleaning the wet wells on a routine basis continues to help reduce grease and oils contained in the biosolids. Schedules for cleaning wet wells are

continually adjusted according to condition of the well at last cleaning. The captured grease and oil is collected and transported to local landfills for disposal. We continue to educate the public about grease in the sewers during WWTP tours. Since the installation of the bar screens in 2005, scum is only pumped about once every three weeks instead of weekly. This alone has saved the City over 1000 man hours of labor over the nine years they have been in service. That is a savings in labor of over \$40,000 alone on labor and electricity charges due to less handling and pumping.

*Primary Treatment* – We have been very proactive in maintaining our primary tank mechanisms and associated equipment during “fair weather” months so that repairs during the winter months are minimized and/or not necessary. The newer Kaizer compressed air system along with air driers continue to work well. Primary tank main components have been found to be worn on many of the twelve tanks. Five of our tanks have had new chains, sprockets and various mounts and bushings replaced in late 2012 and 2013. Three more are slotted to be done in 2014 as part of a capital improvement project. These main components had reached the end of their life cycle after approximately twenty years of service. The WWTP preventive maintenance program enables us to find these issues and get them fixed prior to failure.

*Plant Lighting* – Staff continues to replace plant lighting with more energy efficient units and LED style units as time and funding allows. The WWTP is participating in a citywide program geared at reducing electrical consumption.

*Raw Solids Storage* – Biosolids are stored in the GVRBA primary storage tank. Currently the WAS tank is out of service and not being used. The tank is there for use if desired, however. It is being discussed to possibly make the WAS tank and blended tank, which is how the primary storage tanks has been used the last 4.5 years. This will enable us to store an additional 1.1 million gallons of combined primary and WAS solids. The Grand Rapids plant will be thickening it’s WAS soon with the new volute thickeners once the project is completed in mid 2014. Currently, waste activated solids are co-settled in the primary settling tanks in primary treatment. The blended primary and WAS solids are pumped from the Grand Rapids primary tanks to the GVRBA primary solids tank. The tank holds 1.1 million gallons and is held in this tank prior to centrifuge dewatering. Alternative blending methods have been discussed and may be used in the future.

*Secondary Treatment* – BioP facilities in the south aeration plant continue to be exceptionally effective. We continue trying to complete our North Secondary Project, but ground water has kept us from completing on time. Currently, one aeration basin and one final clarifier have yet to be completed. The system has not been able to be checked as a whole yet. We are looking forward to completing this project and take advantage of the Bio P. We are also in the middle of a WAS thickening project for secondary solids. This will allow us to thicken the secondary solids before sending them to GVRBA for dewatering. This will reduce pumping volumes and reduce odors by eliminating the flow of secondary solids to the primary tanks.

### **Solids Stabilization, Conditioning, and Handling**

*Centrifuge Dewatering* – Centrifuge operation went well in 2013. The Biosolids Program Manager and Operations & Maintenance Supervisors monitor the performance of the units. Operations staff strives for 25% cake solids, polymer dosage less than 20 lbs per dry ton, and a 95% capture rate. Various SOP’s have been developed since 2009 when the WWTP took over the dewatering contract through GVRBA.



*Centrifuge Thickening (WAS)* – The Improvements to the Waste Activated Sludge (WAS) Thickening System project is well into the construction phase. The old 200 hp WAS thickening centrifuges have been removed and the project is well into construction. They are being replaced with very energy efficient 6.6 hp rotary drum thickeners. It will eliminate the current practice of co-settling WAS in the primary tanks. Co-settling these solids in the primary tanks places an excessive load on the primary tanks and can be a cause of odors. It also thins down the primary solids and causes more primary solids pumping. The new practice will reduce the flow to the GVRBA and allow for a drier, higher quality product. Completion of the project is anticipated in mid 2014. At that time, new SOP's and operational controls will be set up for the new volute thickeners; and the WAS thickening centrifuges will be removed.

*Odor Control* – There are three carbon adsorption units at the Grand Rapids (GVRBA) facilities. Odor control is of primary concern for proper operation of the facility. These are maintained by regular checking of the units through preventive maintenance and through our Odor Minimization Plant (OMP) and Malfunction Abatement Plan (MAP). This plan (GVRBA SOP #12) was set up to minimize the potential for unreasonable odors to migration beyond the property line; to provide for proper operation and maintenance of the odor control units, and satisfy the Nuisance Minimization and Malfunction Abatement Plan requirements of our permit to install PTI 28-13. The OMP and MAP were revised in 2013 due to oversight in 2009 regarding the permit to install. Plant staff worked with the air quality division of the DEQ to get this accomplished. Carbon media for the dewatering facility was replaced in February of 2013. The carbon media for the two solids storage tanks were replaced in 2011. Regular monitoring continues to assure the media has remaining useful life.

### **Solids Storage and Transportation**

*Truck Loading* – The contractor (Cordes) maintains log-sheets and inspects each truck before departure from the site to ensure that there is no leakage or trucking issues. A camera system was installed at the contractor loading site so that trailers could be filled and allow the contractor to be able to see the levels of the solids in the trailers while filling. This new system has a lens protective wheel that can be moved and cleaned as needed. This keeps the line of vision as good as possible and prevents the overfilling of trailers. This also saves much time in loading.

*Truck Cover* – All trucks are covered during transport to the landfill site in accordance with state law.

*Truck Transport to Landfill* – The contractor maintains records of dates, driver(s) and landfill destination site(s) for each load leaving the site.

*Truck Washing Procedures* – The contractor maintains procedures to wash and inspect trucks to minimize odors and biosolids tracking issues.

### **Biosolids End Use or Disposal**

*Landfill* – The contractor works with the three landfills to properly incorporate the biosolids into the municipal trash. This augments the decomposition process and maximizes the potential for methane gas which is recovered and beneficially used.

*Compost Facility* – The GVRBA entered a contract in which Biosolids went to a compost facility. This was utilized from March 2013 until the end of June 2013. At that time, it was determined by the contractor (Spurt Industries) and GVRBA to discontinue composting due to a problem with the location. The GVRBA keeps this option open and would entertain composting again in the future. In 2013, the Grand Rapids provided over 2400 dry tons of Biosolids for composting.

## **Annual Operational Controls Review**

### **Internal Audit**

An internal audit of the City's BMP was conducted during the first quarter of 2013 and reported in April 2013.

### **Third Party Seventh Interim Audit**

In the fall of 2013, the BMP Coordinator contacted NSF International Strategic Registrations our third party auditor to have our required third party audit. The seventh (7<sup>th</sup>) interim audit was performed by William Hancuff. ESD appreciates the input received from the external auditor in keeping our BMP program healthy. This external audit keeps us in check and makes sure we stay within the guidelines necessary to maintain our platinum certification with the NBP. The feedback we receive through this process is of great assistance in our commitment of continual improvement as well as our four key outcomes of the program...(Quality Management Practices, Credibility with Interested Parties, Regulatory Compliance and Protection of the Environment). We will continue to expand our horizons and encourage the public, educators, representatives of local and state agencies, ESD staff and other interested parties to become more knowledgeable and involved in our BMP.

- The department received positive observations for our personnel having an excellent knowledge and understanding of the BMP. Personnel were also recognized for their outstanding achievements and the exceptional features of our BMP. The hard work and dedication of the EMS management team was acknowledged.

## **Summary of Non-Conformances**

In addition to the positive observations the department received 9 (nine) minor non-conformances. All minor non-conformances were addressed on non-conformance numbers 2013-12 through 2013-20. It was determined that ESD was using the wrong SMART criteria for our goals and the form was redone accordingly to NBP guidelines.

- Requirement 5.5 – In Form 5.3 – SMART Goals and Assessment Worksheet the criteria are not properly identified as Specific, Measureable, Achievable, Relevant, and Time-bounded. Additionally the examples provided for those criteria do not accurately reflect the intent for application to criteria for the BMP. This was resolved by correcting the SMART form.
- Requirement 5.5 – The goal and objective to procure and hire three operator/maintainer positions does not identify in sufficient detail each of the SMART criteria associated with this goal. A new SMART form was completed.
- Requirement 5.5 and 5.7 – The goal and objective associated with the amalgam separators in dental offices did not defined the specific goal and objective or the measureable criteria to determine improvement. Additionally a step by step action plan describing the improvement activities was not prepared. A new SMART form was completed and goal was restated.
- Requirement 5.5 – The goal and objective associated with improving BOD, nitrification/denitrification and phosphorus removal did not clearly identify that the specific goal was to reduce the amount of ferrous used without lowering the water quality discharged below the permit limits. Also the measurements in 2013 were not related to this specific objective. New SMART form completed and goal was restated and carried forward into 2014.
- Requirement 5.5 – The goal and objective associated with monitoring the product from the centrifuge for 503 Regulations did not identify that the specific objective was to ensure that the product meets the metal concentration for exemplary quality (EQ) for potential land application. Restated goal and SMART form as needed.
- Requirement 5.5 - The goal and objective associated with reducing the number of industries in significant noncompliance (SNC) did not accurately reflect the improvement year over year due to possible double counting. Goal was not easily measured due to time frames for reporting of goals. It was determined that his goal was not an adequate goal to monitor in the BMP. It was dropped in 2014.
- Requirement 5.5 – The goal and objective associated with producing an environmental tip brochure associated with a “critical control point” in the BMP was entitled “Adopt a Drain” which is not a critical control point in the BMP. The goal was dropped due to it not being a critical control point. A corrective action plan was put in place to avoid this happening in the future.
- Requirement 12.2 – The document control procedures do not ensure that documents are properly marked with the version number, effective date(s), and approved by authorized personnel. The Element procedures and some of the

SOPs do not have revision numbers on the documents, have the original effective dates as opposed to the most recent version's effective date, and are approved by the person who first created the document as opposed to the personnel authorized to approve the document at the time the most recent revision was made. (Note: consider whether the creator of the revision should be identified on the document, in addition to the individual who is authorized to approve it). The auditor was contacted by the BMP Coordinator asking for an extension on this nonconformance due to the Sharepoint site being switched to the City Sharepoint site. The auditor agreed that we needed to wait until we could correct the situation in early 2014.

- Requirement 12.2 – SOP 1110 does not define who has authority for evaluating and approving recommendations for SOP changes. It was observed that each of the sections of this procedure may have different and/or multiple authorized individual. A corrective action plan was put in place stating who had the authority to modify SOP's in any particular area. SOP # 1110 now defines this.

## Opportunities For Improvement

There were also eleven (11) opportunities for improvement. They were as follows...

- Overall – Consider encouraging the use of the terms “solids” and “biosolids” in place of the term “sludge.”
- Requirement 5.3 – Per staff recommendation consider establishing a goal and objective for centrate clarity from the new centrifuges.
- Requirement 5.5 – The BMP takes no credit for cost savings attributable to improved operations resulting from the accomplishment of biosolids goals and objectives.
- Requirement 5.6 – Consider clarifying in Element 5 procedure for Goals and Objectives that in addition to the minimum requirement of establishing goals annually by the first of the year, additional goals and objectives may be added at any time to allow programs and action plans to be developed quickly and ensure a dynamic program of accomplishments.
- Requirement 5.6 – The goal and objective to provide commendable customer service by maintaining a 75% satisfaction rating has been consistently accomplished over the past two years with a performance in the 95% satisfaction range. Consider declaring this goal accomplished and moving it to a procedure to be continued in either Element 6 or Element 9.
- Element 9 – Review Element 9 (and 6) procedure to update its contents and specifically define how the City will increase public involvement in determining biosolids goals and objective.

- Requirement 10.5 – The contractor, Cordes Trucking Inc's Vehicle Inspection Plan – 2009-1 does not include the truck inspection log sheet as a figure or table as part of the procedure (plan).
- Element 12 – Element 12 procedure related to document control does not clearly indicate that the EMS Document Revision History as it appears in each document is no longer used to record document changes but instead SharePoint automatically records the history of changes to each document. Consider including in the last revision history entry to all element documents entered on 3/28/2008 that this is the last entry in this format and all future document revision histories will be documented in SharePoint. Additionally some of the description of changes recorded in the SharePoint revision history is not described in sufficient detail. Also consider specifically identifying in the history of revisions those document changes that result from audit findings.
- Requirement 13.1 – Consider purchasing a Nasal Ranger or other olfactometer to scientifically monitor odors associated with solids and/or biosolids at critical control points to establish baseline and variability of odors. Results may be used to establish future goals and objectives.
- Requirement 14.6 – Consider referencing Table 14.1 – Nonconformance Summary and Response Time as a template in Element 14 procedure and employing it separately from the Element 14 procedure to track finding closures.
- Element 15 – Consider including costs and savings associated with biosolids operations and the BMP in the periodic biosolids program performance report.

### Interested Parties Input/Participation

- During the last quarter of each year the City develops a list of goals and objectives for the next year. As part of this process we seek input from our interested parties regarding concerns and issues they may have. We did receive goal ranking form back from one interested party helping us to prioritize our goals for 2014. The City appreciates all responses it receives back from the public in regards to our goals.
- The City will continue to keep interested parties apprised of our efforts to seek input as part of our continuous improvement process. As an opportunity for improvement from the external audit in 2013, The City has also incorporated our customer service goal into element 9 and made that part of our BMP. Starting in late 2013, the Collection System Asset Technicians have been distributing comment cards to be filled out and returned. The feedback has been valuable information and helps assure excellent customer service. This also allows us to improve where necessary.
- One request for information was received in 2013. A surcharge customer was interested in our internal audits from 2011 and 2012. This information was

located on our [grcity.us](http://grcity.us) website. The customer was advised of its location and how to find it on the website.

## **2014 - Current Year Goals & Objectives**

An important component of our Biosolids BMP is continual improvement. Annually, goals are identified based on key outcomes, Biosolids value chain, or BMP improvements. During the past year staff determined the following new goals would help us achieve these objectives:

### **Permit Renewal Letters to Significant Industrial Users**

- Industrial Pretreatment Personnel (IPP) shall send permit renewal letters to significant industrial users ninety (90) days prior to permit expiration date.

### **Completion of Permit Renewals Prior to Expiration Date**

- Industrial Pretreatment Personnel (IPP) shall complete permit renewals to significant industrial users prior to permit expiration date.

### **Biosolids Quality**

- Perform quarterly analysis on WWTP biosolids and compare results with those found in tables associated with Federal Regulations 503 to help assess the impact of changes made in the North Plant Improvement Project which should result in the reduction/elimination of the ferrous addition for phosphorus removal.

### **Maintenance & Cleaning of Sanitary Sewers**

- Clean all sanitary sewers 24" and smaller in diameter once every five (5) years. This goal has been ongoing and continues. Persistence here has paid off significantly by reducing the amount of Sanitary Sewer Overflows (SSO's) by 90%. It is critical to maintain our sanitary sewers in order to maintain the integrity of the biosolids, protect the environment and avoid system upset. This helps to prevent sanitary sewer back-ups in residences and business facilities. It also prevents any violation of applicable local, state and federal regulations and reduces threats to public health and safety.

### **Ferrous Chloride Reduction**

- Reduce the amount of ferrous chloride feed by 25% in 2014 versus 2013; without lowering the final effluent quality below the NPDES permit limits. This goal was too broad in previous years. The external audit of 2013 suggested we refine the goal to make it more specific and measurable. Our North project is not complete, but we are seeing some biological phosphorus

removal. Plant anticipates completion as soon as ground water allows the final aeration tank to be completed. As part of our continual improvement process and striving for 100% environmental compliance, this goal serves us well in our quest to increase the quality of the Biosolids.

### **Reduction of Total Suspended Solids in Recycle Stream**

- Reduce the GVRBA recycle stream total suspended solids (TSS) by 10% in 2014 versus 2013. This would be an improvement from 1752 mg/L average in 2013 to 1577 mg/L average in 2014. Quality of the recycle stream places less loading on the Grand Rapids WW treatment plant. The more solids that are captured means that less solids have to be retreated. Good capture in dewatering reduces phosphorus, BOD and ammonia. This also reduces pumping costs and the amount of air in secondary treatment needed to retreat the solids a second time.

### **Operator Maintainer**

- To procure and hire six (6) Utilities Operator Maintainer positions by the end of calendar year 2014. This goal was carried forward from 2013. We fell short in 2013, but still made great strides in getting this position ready. A civil service exam was constructed and a job posting was made in December of 2013. Testing was scheduled for mid February of 2014. The action plan for this goal is to hire (3) positions by March 31, 2014. (3) more positions become available July 1, 2014. The goal of (6) is attainable. This goal reinforces our commitment to continual improvement. The work force has been flattened and operations and maintenance staff are developing additional skills in each area of O&M. This enables more workers to have more skills. Employees with both mechanical aptitude and operational skills allows us more flexibility with scheduling and helps ensure a quality Biosolids product, environmental compliance and protection of the environment.

### **Determine the Material of 50% of the 3700 Unknown Pipe Sections**

- Determine the construction material of 50% of the sanitary sewer pipelines with unknown composition. There are currently 3700 unknown pipe sections. This goal is attainable, but stretches us considerably. It is noted that we must focus on the warmer weather months to accomplish this goal. It is anticipated that we have one crew on this task each weekday or as the needs of service allow.

## **Summary**

The Periodic Management Review of Performance was conducted late in 2013 and resulted in a nonconformance. The program performance report and the periodic management review was conducted late. This resulted in nonconformances 2013-8 through 2013-10. Corrective action plans were put in place to avoid this in the future.

Continual improvement of our Biosolids management practices and BMP is an ongoing process that continues to improve as the program matures. The BMP has evolved in the seven years it has been in place. The program makes us better at what we do. Staff is becoming more involved in the program each year. Now that the staff has a thorough understanding of the Biosolids value chain and the critical control points in that chain, it is easier to get them more involved in the deeper areas of the BMP. In 2014, the training will reinforce the value chain and critical control points; but will focus more on elements 5,6 and 9. Staff will be educated more on the importance of goals and how those goals affect the quality of the Biosolids product and how they relate to our key outcomes. They will also be made aware of how we interact with interested parties and the public through outreach, solicitations and events. We have and continue to identify new ideas and goals for 2014 and beyond, which we feel will further improve our Biosolids quality and management practices. Success of our BMP has only been achieved through the hard work and dedication of ESD staff, the Internal BMP Team, interested parties, the public, our external audits and the NBP.

We try to keep nonconformances to a minimum level, but we have learned that they are a learning tool that helps assist us in strengthening our BMP.

David J. Harris  
City of Grand Rapids BMP Coordinator





REPRESENTING ACHIEVEMENT IN  
BIOSOLIDS MANAGEMENT AND ENVIRONMENT STEWARDSHIP

TIER



# PLATINUM LEVEL AWARD

The Platinum Level recognizes that the organization has completed third party BMP verification audit and at least one third-party interim audit with a commitment to a regular schedule of third party interim audits and internal audits. To maintain platinum-level certification, the organization must complete interim audits (at least two third party interim audits between verification audits), must submit interim or internal audit reports to NBP annually, and complete another third party verification audit (or re-verification) after five years.

This organization,

## City of Grand Rapids, MI Environmental Protection Services Department

has successfully met the Platinum Level requirements for the

National Biosolids Partnership  
Biosolids Management Program

that supports excellence in biosolids management practices, augments regulatory compliance obligations, environmental performance and provides meaningful opportunities for public participation.



Vince De Lange, Chair, NBP Advisory Committee

2013



Working to ensure environmental excellence in biosolids management

**NBP Advisory Committee**

**Vince De Lange**, East Bay Municipal Utility District, CA (Chair)

**Alicia Gilley**, Metro Wastewater Reclamation District, CO (Vice Chair)

**Bruce Bartel**, NEW Water (Green Bay Metropolitan Sewerage District), Green Bay, WI

**Sally Brown**, University of Washington

**Dan Collins**, Metropolitan Water Reclamation District of Greater Chicago, Chicago, IL

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**Chris Hornback**, NACWA

**Greg Kester**, CASA

**Lisa McFadden**, WEF

**Matthew Snyder**, City of Chattanooga, TN

**Rick Stevens**, US EPA, OGWDW, Washington, DC

**Jim Tallent**, Littleton/Englewood, CO Wastewater Treatment Plant, Englewood, CO

**Todd Williams**, CH2M Hill

**NBP Blue Ribbon Panel and Appeals Board**

**Cathy Gerali**, Metro Wastewater Reclamation District, Denver, CO

**Dick Kuchenrither**, University of Colorado (B&V ret.)

**Tom Granato**, Metropolitan Water Reclamation District of Greater Chicago (MWRD), Chicago, IL

**Jim Horne**, US EPA, Office of Wastewater Management, DC (Advisory)

**Mike Moore**, HDR, Los Angeles, CA

**Chris Peot**, DC Water, Washington, DC

**Dave Taylor**, Madison, WI

**William Toffey**, Mid-Atlantic Biosolids Association

**Jim Welp**, Black & Veatch, Cincinnati, OH

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David Harris, Wastewater Plant Superintendent/BMP Coordinator  
City of Grand Rapids  
Environmental Services Department  
1300 Market Ave. SW  
Grand Rapids, MI 49503

December 12, 2013

**Re: Platinum Level Certification**

Dear David,

On behalf of the National Biosolids Partnership (NBP), we congratulate you and all of the staff of the City of Grand Rapids, Environmental Services Department on the successful completion of an interim audit for continued Platinum Level Certification. Well done!

This designation recognizes that your BMS meets the NBP program requirements and supports excellence in biosolids management practices, augments regulatory compliance, advances environmental performance, and provides meaningful opportunities for public participation.

We are aware of the amount of effort required to satisfy the NBP requirements. We also know that demonstrating and verifying excellence in biosolids management is good for the reputation of your organization, the local environment, and the well-being of your community.

Your program is viewed as a model by those water resource recovery facilities and other organizations following the EMS path. We are pleased to continue to have the City of Grand Rapids as a part of this international program, demonstrating excellence and leadership in biosolids management.

Sincerely,

Vince De Lange  
Chair, NBP Advisory Committee

Lisa McFadden  
Senior Program Manager  
WEF Water, Science & Engineering Center