

2014 Periodic Biosolids Program Performance Report

Issued: February 2015

"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 16,075 million gallons in 2014. The GR-WWTP has a design capacity of 61.1 million gallons a day (MGD) and currently has an average daily flow of 44.04 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 we 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 recertification audit was performed by a third party auditor and we recertified platinum. In November of 2014, we successfully completed our eighth interim audit; thus retaining our platinum certification with the (NBP). In both 2013 and 2014, we received positive commendation for training and the knowledge of the program by department employees.

Our BMP has gone through many changes and improvements since its inception. It has matured into a productive and healthy program. The Environmental Services Division (ESD) continues to get employees involved in the BMP. Getting as many employees involved in the goal setting and critical control points keeps people in tune and keeps the BMP in the foreground.

During July of 2009, the Joint Biosolids Management Project Agreement was approved by the City of Grand Rapids and City of Wyoming. This 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 September of 2014, the GVRBA celebrated 5 years of operation with an anniversary celebration event at the GR-WWTP.

In 2014, many modifications, improvements and studies were completed and/or undertaken at the WWTP and collection system support facilities including:

- CIPP (Cured in place piping) lining at various locations
- ECSO – Contract 27
- Bostwick Ave / Lyon St to Crescent St
- State Street / Jefferson Ave to Lafayette Ave
- Livingston Pump Station 2nd discharge line (this is a huge project and will replace a few miles of sanitary because the watermain is going to take up so much room)
- Fuller Ave / Michigan St to Race St
- Sheldon Blvd / Weston to Fulton St
- Weston Ave / Sheldon Blvd to LaGrave
- Flood Protection Berm around WWTP
- Hydro – Vac Excavator
- Carlton Ave / Lake Drive to Fulton
- WWTP modeling using Primodal
- Butterworth Solar project
- Improvements to the North Secondary at the WWTP was completed in 2014
- WAS Sludge Thickening Project was completed and put online in 2014
- Hach Real Time Nitrogen Controller Project for the South aeration at the WWTP
- Primary Tank Upgrades (Sprockets, Chains, etc...)
- ZAPS Liquid Analyzer Project For Real Time Monitoring
- ESCO project in design with Chevron and City Engineering for HVAC improvements to reduce energy consumption was started in 2014 and almost completed.

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 and continued it into 2014. This was to create a new labor category and hire three employees to fill the newly created position of Utility Operator Maintainer. The new position combines operations responsibilities with maintenance responsibilities. The positions were not filled in 2013, but the test was given December 30, 2013. The goal was carried forward into 2014. The goal was to hire six (6) Utility Operator Maintainers by the end of calendar year 2014. In April of 2014, all six positions were filled from within. This position has been underway since April. Operators who were hired for the position are learning maintenance activities; Whereas mechanics hired for the position are learning operational duties. This position has helped bring the two work groups together. More positions may be added in the future, but the goal was fulfilled and considered complete. The goal was completed and it was not carried into 2015.
- A long term goal established in 2010 and continuing through 2014, 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. 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. It also significantly reduces the amount of 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 also applied to relations with interested parties, regulatory compliance, and environmental performance key outcome areas. This goal was taken as a win and has been put into our standard operating procedures as SOP # 7112.
- A goal established in 2010 and carried forward into 2013 was to monitor the BOD removal, nitrification / denitrification and phosphorus removal as a result of the North Plant Modification Project. During the 7th interim audit conducted in the fall of 2013, it was determined that this goal be restated. The goal was to reduce the use of ferrous chloride 25% in 2014 versus 2013. This goal continues to be monitored into 2015. The North project has since completed. Now that this project has completed, biological phosphorus removal should significantly reduce the amount of ferrous chloride used to remove phosphorus and increase the quality of the Biosolids. This is a strong goal and we will continue to monitor the ferrous chloride usage and keep it to a minimum by taking advantage of the biological phosphorus removal.

- Another goal and objective from 2011 through 2014 and related to “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. We have removed this as a goal in 2015, but continue to monitor as part of our standard operating procedures in the laboratory at the GRWWTP.

Relations with Interested Parties

In 2014, 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 fifth 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 35th 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. All City employees have taken this mandatory training required by the City Manager.
- Over 1200 people toured the wastewater plant in 53 tours in 2014. Popularity of these tours remains consistent; however we had almost 1500 tour the facility in 2013. Plant staff is optimistic about our field of work and encourages students to consider Wastewater Treatment as a career path.
- Continue to move forward and refine the new City “311” application for City departments. This customer service program enhances and improves customer service to City residents.
- Citizens can explore various areas of the wastewater treatment process and the Biosolids Management Program on our Environmental Services Department website at the City of Grand Rapids website www.grcity.us
- Previously, ESD had a goal each year to produce one “Environmental Tip” flyer on biosolids. We have done this several times in the past. It has been discussed that another one is due to be done. Although there is not currently a goal for this in 2015; The internal BMP team has discussed this and may make a goal to develop a new “tip” later in 2015. These are quarter page hand-outs that the City uses as an insert in all of the water/wastewater invoices that are mailed out. These types of hand outs help ESD maintain relations with interested parties. This is a good public outreach tool.

Regulatory Compliance

- ESD maintained 100% NPDES permit regulatory compliance at the WWTP and at our CSO retention basin (MARB) throughout 2014.
- The City established a comprehensive sanitary sewer cleaning program from 2010 through 2014 as was discussed above. This goal and objective not only improves the removal of solids from the collection system but also reduces sewer system backups attributable to blockages, and substantially decreasing the number and volume of SSOs. As mentioned above, this goal was incorporated into our standard operating procedures for the sewer maintenance division.
- As mentioned above, a goal from 2011 through 2014 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 land application ever become one of the options implemented by the City of Grand Rapids, we 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 is no longer a goal in 2015. This is standard testing procedure for the laboratory.
- Achieved 100% compliance with regulatory requirements as related to Biosolids in 2014.
- As stated last year, we are still waiting on the approval of the application for our new National Pollution Discharge Elimination System (NPDES) permit.

Environmental Performance

- A motivated staff striving to achieve 100% compliance with all regulatory requirements is focused on protecting the environment. The City of Grand Rapids Environmental Services Department staff operates in a highly effective and professional manner and consistently achieves regulatory compliance.
- In 2013 and 2014, 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. This unit saves 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%. The combined sewer separation project is very close to being completed.
- In the late fall of 2013, two ZAPS Liquid Analyzers were installed in the UV buildings. These units have run throughout 2014. They analyze samples collected from the effluent side of each the North and South UV areas, the influent, primary effluents and final effluent. 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 and UV Transmission. 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. Critical control points are checked annually in July and operational controls are checked annually in October. The information obtained from these annual checks helps us to identify any weaknesses, missing information, new information or any other ways in which the BMP 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 2014, 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 2014, 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 electronic reporting, called 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 – ¼" bar screens that were installed in 2004-2005 at the GR wastewater plant headworks area 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. This saves the WWTP from hauling the screening bin as often as we used to. Much less water weight is being hauled to 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 2004 -2005, scum is only pumped about once every three weeks instead of weekly. This alone has saved the City over 1200 man hours of labor over the ten years they have been in service. That is a savings of over \$45,000 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 had shown wear on many of the twelve tanks. Five of the tanks had new chains, sprockets and various mounts and bushings replaced in 2012 & 2013. Three more tanks received these major repairs as well 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 catastrophic failure.

Plant Lighting – Staff continued replacing the plant lighting with more energy efficient LED style units in 2014. The WWTP participated in a citywide program geared at reducing electrical consumption. Electric charges of over two million dollars annually keep us finding ways to try to cut electrical costs at ESD.

Raw Solids Storage – Biosolids are stored in the GVRBA primary storage tank. Currently the WAS tank is out of service and not being used, but is available for additional storage if needed. Conversion of the WAS tank to an additional primary storage tank has been discussed and is an option for the future. For the last 5.5 years,

the primary storage tank has been used to store a (blended) solids mixture of approximately 50% primary solids and 50% (WAS) waste activated solids. This will enable us to store an additional 1.1 million gallons of the (blended) combined primary and WAS solids.

Secondary Treatment – Biological phosphorus facilities in the south aeration plant continue to be exceptionally effective. At the end of 2014, we have completed our North Secondary Project; but still have some final punchlist items to finish up on. Now, all four aeration basins have selector zones for BioP (biological phosphorus removal). We have looked forward to this project being completed and are now gathering data with regards to secondary effluent total phosphorus and ferrous chloride used.

The Grand Rapids plant is now thickening its (WAS) waste activated solids from secondary treatment. We have installed three new “PW Tech” volute thickeners. We are thickening these solids and sending them to the dewatering facility at GVRBA instead of co-settling our WAS in the primary tanks. The intent of this project was to take the burden of the thinner WAS solids off our primary tanks to help reduce odors and make thicker primary solids. It also is intended to reduce the BOD and phosphorus loading to secondary treatment. This should reduce the amount of dry tons of secondary solids produced. More testing will be done in 2015 to optimize the WAS thickening equipment as the project punchlist comes to a close. New SOP’s and operational controls will be developed and implemented for this new critical control point in 2015.

Changes in Flows – Billed volume remains stable and economic conditions seem to be improving. Elimination of a majority of the combined sewers has had a dramatic effect on stabilization of plant flows during rain events and winter thaws. Disconnection of footing drains that are discharging to the sanitary should further minimize influent flow peaks. The average plant flow for 2014 was 44.04 MGD versus 43.93 MGD in 2013; so there was a slight increase in plant flows.

Solids Stabilization, Conditioning, and Handling

Centrifuge Dewatering – Centrifuge operation went well in 2014. 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 GR-WWTP O&M staff were awarded the opportunity to run the GVRBA dewatering facility.

WAS (Waste Activated Sludge) Thickening – The Improvements to the Waste Activated Sludge (WAS) Thickening System project was substantially completed in 2014. As of the end of the year, the project is coming to a close. The old 200 hp WAS thickening centrifuges were removed and replaced with very energy efficient 6.6 hp volute thickeners. It eliminates the previous practice of co-settling WAS in the primary settling tanks. Co-settling these solids in the primary settling tanks placed an excessive load on the primary tanks and was a cause of odors. It also thinned down the primary solids and caused more primary solids pumping. The new practice reduces the flow to the GVRBA with an increase in feed solids to the GVRBA dewatering centrifuges. During our eighth interim audit, it was noted that new SOP’s and operational controls will be set up for the new volute thickeners as part of our commitment to continual improvement.

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 air quality permit with the Michigan Department of Environmental Quality. Carbon media for the dewatering facility was replaced in April of 2014 and again in late January of 2015. The carbon media for the two solids storage tanks were replaced in 2011 and replacement is scheduled for one of the units in early spring of 2015 and the other unit in mid to late summer of 2015. Regular monitoring continues to assure the media has remaining useful life.

Solids Storage and Transportation

Truck Loading – The contractor (Cordes Trucking Inc.) 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. The contractor maintains their SOP's and spill plans at their main location and all the drivers are familiar with the SOP's. At least two employees of the contractor are audited each quarter during the year to assure that current SOP's are in each truck driver's possession; and that the copies in the trucks are the current versions of those SOP's.

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 and GVRBA to discontinue composting due to a problem with the location and acquisition of raw materials. Grand Rapids and the GVRBA keep this critical control point in our Biosolids Management Program and would entertain composting again in the future. In 2013, the Grand Rapids provided over 2400 dry tons of Biosolids for composting. However, in 2014, no solids were used for compost.

Annual Operational Controls Review

Annual review of operational controls was conducted in October of 2014 by operations staff. Elements 3, 7, 10 and 13 were reviewed for any changes that needed to be made with standard operating procedures and monitoring and measurement criteria. Corrections were made as needed to the operational controls.

Internal Audit

An internal audit of the City's BMP was conducted during the first quarter of 2014 and completed March 25, 2014. During the audit, two opportunities for improvement were made during our seventh interim audit.

Element 5 was changed to allow for the addition of goals at any time during the year. In addition, element 14 was changed to remove the multiple pages of nonconformances from 2006 to the present. This returned the BMP element 14 back to the original five page document. The other 15 pages were made into "Addendum D" on the ESD Sharepoint site as a location and listing of nonconformances since the inception of the BMP program back in 2006. The list of nonconformances is now kept in this appendix instead of in the element itself. This also keeps the element from having to be checked out in Sharepoint every time a nonconformance needed to be logged and tracked.

The internal audit for 2015 is currently in process and has not been completed at the time this report was constructed. Audit information for 2015 will be noted in next years report.

Third Party Eighth Interim Audit

In the late summer of 2014, the BMP Coordinator contacted NSF International Strategic Registrations, our third party auditing firm to have our eighth interim third party audit. The eighth (8th) interim audit was performed by William Hancuff. The Environmental Services Department appreciates the input received from the external auditor in keeping our BMP program healthy. The main objective of the interim audit was to ensure our program's health with review of our progress toward goals and objectives, corrective and preventive action requests and responses, actions to correct minor nonconformances and review of key outcome areas. This external audit keeps us in check and makes sure we stay within the guidelines necessary to maintain our platinum certification with the National Biosolids Partnership. 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). As our BMP continues to mature, we strive to 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 audit was successful and Grand Rapids received a platinum level certification letter and award for our tier 4 platinum level achievement in our Biosolids Management Program. Copies of both are at the end of this report. A summary of the audit nonconformances and opportunities for improvement are listed below.

- Our BMP is viewed by the National Biosolids Partnership as a model in the industry, and audit observations show that our organization's training program has resulted in a high level of knowledge and understanding regarding biosolids management, and continues to demonstrate outstanding implementation. The Grand Rapids staff has grown with the BMP over the last several years. Many staff have become extremely familiar with the program and it shows. The hard work and dedication of the internal BMP team was acknowledged.

Summary of Non-Conformances

In addition to the positive observation for employee knowledge of the BMP, the department received 4 (four) 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 – The goal to determine the construction material of 50% of the sanitary sewer pipelines with unknown composition does not appear to meet all of the SMART criteria. It is not clear how identification of the sewer construction material is “relevant” to the biosolids value chain or any outcome areas. Updated third and fourth quarter reports were completed. After discussion with the internal BMP team, it was determined not to move forward with this goal as part of the BMP goals and objectives.
- Requirement 12.2(d) – The document control procedure SOP 1110 does not ensure that documents are properly marked with the version number in the header box. The document 1110 was reworked to show the version number in the header box. Also noted in the SOP that the version number and dates must match the next major version number in Sharepoint. This allows for other SOP's to be modified. The ESD Manager is working with our Information Technology Department (IT) to make the versions automatically populate in the header. Permission was asked by our third party auditor for an extension until early spring of 2015 to get this completed. The auditor agreed that projects that involve IT departments can take some time to complete.
- Requirement 12.2 – Grand Rapids has not implemented the procedures described in SOP 1110 for the BMP element procedures or for all the other SOP's. As noted above, the SOP 1110 is being tested with the IT department and the ESD Manager to make the version numbers automatic. The BMP Manual and all elements therein have been modified to the correct header template. The balance of the SOP's are in progress and it is anticipated that completion will be in early spring (as agreed by the BMP auditor).

- Requirement 17.1 – Table 17.1 – Periodic Management Review of Performance Report for 2013 was not signed by the ESD Manager and did not provide adequate details in each of the report content boxes; or completely address the follow-up actions to be taken by the management and staff. It was found that a copy of the report form was sent to the manager for signature, but the form was lost. The original was found in the BMP file. The form was reconstructed with the proper documentation and comments and signed by the ESD Manager. In the future, the form will be signed immediately following the Periodic Management Review of Performance.

Opportunities For Improvement

There were also eight (8) opportunities for improvement. They were as follows...

- Requirement 1.2 – Consider having the newly hired Wastewater Plant Superintendent provide a comprehensive review and edit (as necessary) over the next year each of the BMP element procedures such that he may officially approve the BMP manual.
- Requirement 3.5 – Ensure that when the new WAS low energy / low shear volute thickeners become fully operational; formal notification is provided to the third party auditor of this additional critical control point to the biosolids value chain. Also, ensure that the SOP for this process is prepared and approved in accordance with SOP 1110.
- Requirement 5.6 – When reporting progress on the goal associated with cleaning all sanitary sewers twenty-four inches and smaller in diameter once every five years, consider including in each quarterly report a running cumulative total of the number of feet of sewer cleaned, as well as a percentage of the total number of feet cleaned established as the target for the year.
- Requirement 5.6 – Consider developing an attachment or Appendix to Element 5 – Goals and Objectives procedure to track current and past goals and objectives to update the current progress or status, and / or record the history of past accomplishments.
- Requirement 5.6 – Consider removing specific goals and objectives identified as a corrective action or are now adequately addressed to become a standard operating procedure.
- Requirement 8.2 – Consider having the newly hired Wastewater Plant Superintendent attend a 36 hour ISO 14001 lead auditor training course.

- Requirement 12.2(d) – Grand Rapids uses Sharepoint to track replaced or superceded SOP's; therefore consider removing the revision section from all Element procedures in the BMP and all other SOP's.

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 2015. The City appreciates all responses it receives back from the public in regards to our goals and objectives.
- The City will continue to keep interested parties apprised of our efforts to seek input as part of our continuous improvement process. The City has also incorporated our customer service goal into element 9 and made that part of our BMP. Near the end of 2013 and moving into 2014, the Collection System Asset Technicians (in the sewer maintenance division of ESD) have been distributing comment cards to customers so they may be filled out and returned. The feedback has been valuable information and helps assure excellent customer service. This allows us to see our strengths and improve on areas where we may be weak.
- One request for information was received in 2014. A neighbor to the WWTP was concerned about truck odors. He had followed a Biosolids truck on its way to the landfill for about five miles. I called the complainant and explained our BMP program and what we do here at Environmental Services. I explained the dewatering facility and our affiliation with the City of Wyoming as well as the Grand Valley Regional Biosolids Authority. I also sent him information in regards to our Biosolids Management Program and sent an email with the link to our BMP on the City of Grand Rapids website. The air quality and Biosolids divisions of the DEQ were notified of our response to the complainant. We also received positive feedback from the DEQ and our BMP auditor during our eighth interim audit on how we handled this situation. This was a good opportunity to reach out to a neighbor of ours and explain our process to him. We assured the complainant that we wish to be good neighbors. We also contacted our trucking contractor; reassuring that the truck cover, truck washing and cleaning SOP's were being adhered to. Our contractor confirmed that the SOP's were being followed.

2015 - 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:

Ferrous Chloride Reduction

- Reduce the amount of ferrous chloride feed by 15% in 2015 versus 2014; 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 now complete and we are seeing some additional biological phosphorus removal. 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 5% in 2015 versus 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.

Optimize the new waste activated sludge (WAS) thickening process

- Optimize the new waste activated sludge (WAS) thickening process by monitoring pounds of solids captured per dollar of polymer expended. This new critical control point recently went into operation. As the project and punchlist items come to a close, preventive maintenance and SOP's are in the process of being created. Training on the system is currently scheduled and the WWTP team is looking forward to optimization of this process. The GRWWTP is no longer co-settling these solids in the primary tanks. Now, it is being thickened prior to dewatering at the GVRBA.

Monitor the new Hach Real Time Nitrogen Controller at the WWTP.

- Monitor the new Hach Real Time Nitrogen Controller in the South plant of the GRWWTP secondary treatment process. Our intent here is to monitor and compare the power consumption in kWh (kilowatt hours) saved and percentage of power reduced versus previous years when it was not in use. This unit monitors the incoming and outgoing ammonia in the aeration basins. This unit throttles the blowers as low as possible to obtain adequate nitrification with the least amount of air. This is a significant cost savings. We feel this is a strong goal and that the power consumption savings is relevant to take credit for in our Biosolids Management Program (BMP).

Upgrade one of the GVRBA dewatering facility cake pumps.

- Upgrade one of the GVRBA dewatering facility cake pumps to a new Netzsch cake pump to replace the existing Moyno screw feeder and cake pump

system; and to have a pump system that will consistently output 4000 pounds of dry solids per hour. Since 2009, when the GVRBA dewatering facility started generating Biosolids, the Moyno pump system has struggled to be able to output 4000 lbs. of solids per hour. The GVRBA centrifuges can easily output this amount. This new pump is anticipated to output 20-25% more solids. The unit also comes with an anti bridging mechanism, which will keep cake from bridging in the hopper. The GVRBA board has approved a capital investment to retrofit this new pump in the future. Pump design has been reviewed and we have had the factory representative involved with the project manager of GVRBA to move forward with procurement of the pump. Once installed, solids will be monitored to measure the increase in output. If this goal is a major success, it is anticipated that the other two system will be retrofit in the future. This will cut down on the amount of hours that a second machine needs to be run. It is also possible that when only Grand Rapids solids are being processed; that a second centrifuge and cake pump may not be needed, which will save on electricity use.

Summary

The 2014 Periodic Management Review of Performance was conducted just after the February 28, 2015 deadline the first week in March. Three of the goals for the year had not had proper paperwork filled out by the internal team and goal owners as required in element 5. Nonconformances were written up for each of the three late goal forms as well as the late management review of performance. Action plans for corrections to the nonconformances were also constructed.

Effective February 20, 2015, our new plant superintendent William (Bill) Kaiser was appointed by the ESD Manager the role of BMP Coordinator. During the upcoming year, Bill will be taking over the responsibilities of the coordinator position. During this transition, I will still have an active role in assisting Bill with the transition. We also anticipate a restructuring of the internal team due to upcoming retirements of some current internal BMP team members.

Continual improvement of our Biosolids management practices and BMP is an ongoing process that continues to improve as the program matures. Our 7th interim (external) audit in late 2013 was a recertification audit. This required an outside audit to recertify us at the platinum level. It was a success. In fact, we decided in 2014 to have our 8th audit be an external one as well. This proved to be a good decision. Having the outside audit two years in a row kept the program in check and cut down considerably on nonconformances.

The BMP has evolved in the eight years it has been in place and become a strong program. It shows that we support excellence in Biosolids best management practices and regulatory compliance, environmental performance and protection of the environment. It also allows for opportunities to communicate with interested parties, stakeholders and the general public from a public participation standpoint.

The Water Environment Federation with the National Biosolids Partnership view our program as a model in the industry. Our audit observations also show that our training

program and knowledge of the BMP by all employees is at an exceptional level. We continue to demonstrate outstanding implementation of our BMP and leadership in Biosolids management.

The BMP enables us to do our jobs better. Staff has become more involved in the program. Being involved increases knowledge to all staff members.

Staff has a good understanding of the Biosolids value chain and the critical control points in that value chain.

Due to this, it is much easier for the team to get ESD staff more involved in the deeper areas of the BMP with regards to operational controls, critical control points, roles and responsibilities and legal requirements.

In 2015, the BMP training will reinforce the value chain and critical control points as it has always done in the past, but this year, we will also focus on staff's knowledge of our goals and how they relate to our key outcomes. It will also dive into element 7 and reinforce roles and responsibilities. This keeps staff in tune with how their job relates to the BMP. Training in 2015 will also touch base heavily on element 14, which deals with nonconformances. Plant staff needs to be aware of how and when we were out of conformance. This gives plant staff an understanding of the consequences of not adhering to the requirements of our BMP manual.

We will continue in 2015 identify new ideas and goal ideas for 2016 and beyond. Success of our BMP has been achieved through the hard work and dedication of ESD staff, the Internal BMP Team, interested parties, the public, our external audits and the National Biosolids Partnership (NBP).

David J. Harris
City of Grand Rapids BMP Coordinator



Working to ensure environmental excellence in biosolids management

NBP Advisory Committee

Vince De Lange, East Bay Municipal Utility District, CA (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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December 15, 2014

Re: Platinum Level Certification

Dear David,

On behalf of the National Biosolids Partnership (NBP), we once again congratulate you and all of the staff of the City of Grand Rapids, Environmental Services Department on completion of the eighth 2014 interim audit for continued Platinum Level Certification. Congratulations!

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.

Your program is viewed as a model in the industry, and audit observations shown that your organization's training program has resulted in a high level of knowledge and understanding regarding biosolids management, and continues demonstrate outstanding implementation. 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



TIER



REPRESENTING ACHIEVEMENT IN
BIOSOLIDS MANAGEMENT AND ENVIRONMENT STEWARDSHIP

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 participati




Vince De Lange, Chair, NBP Advisory Committee

2014