



BIOSOLIDS MANAGEMENT PROGRAM &
ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

ANNUAL PERFORMANCE REPORT
2013-2014



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Contents

Program Summary	3
Introduction	3
Biosolids EMS Certification	3
Annual Performance Report	4
Section 1: Biosolids Management Program	4
Biosolids Production	4
Beneficial Reuse Options and Management Practices	5
Contractor Performance	6
City Oversight/Inspections	6
Monitoring and Measurement	7
Section 2: Environmental Management System (EMS) Performance	9
Environmental Management System (EMS)	9
National Biosolids Partnership	9
Timeline	9
Goals and Objectives	10
Corrective Action Notices (CANs)	10
Section 3: Legal Requirements	10
Section 4: Spills, Emergency Actions, and Response	10
Section 5: Public Outreach and Participation Program	11
Tours	11
Notification of Land Application Activities:	11
Website & Publications	11
Feedback Evaluation Process	11
Section 6: Future Plans/Advances in biosolids technology	12
Section 7: contact information	13
Appendix A: Corrective Action Notices 2013-2014	14
Appendix B: Goals and Objectives	18

PROGRAM SUMMARY

- During the past reporting year (August 1st, 2013-July 31st, 2014), the City of Fort Worth's Biosolids Program beneficially reused/recycled 91.26% (includes lime) of its Class A biosolids and landfilled 8.74% due to concerns regarding odors.
- During the past reporting year (August 1st, 2013-July 31st, 2014), Village Creek was able to produce approximately 11,155,531 kWh of energy. Overall energy improvements allowed the City to save approximately \$800,000 by reducing the amount of power purchased off the grid. The savings were used to help offset the cost of the plant improvement projects associated with the turbine waste heat recovery system and co-digestion of high strength wastes in the digesters. Due to two shut-down periods of the co-digestion system in 2014, Village Creek produced less digester gas than last year.
- During the third-party audit in October 2013, six minor nonconformances were found and four opportunities for improvement. All minor nonconformances and three opportunities for improvement were addressed with Corrective Action Notices. These can be viewed in Appendix A (CAN 2013-08 to CAN 2013-16). Additionally, it was noted that our biosolids program has made good use of the corrective action program through identifying formal corrective and preventive action plans to address nonconformances identified during routine operations and monitoring and measurement.
- In April 2014, an odor study was conducted to analyze the activities at the water treatment plants, Village Creek Water Reclamation Facility, and the dewatering facility at the Sludge Only Landfill. The purpose was to look at their respective effects on the overall quality of the biosolids material and its odors. The associated goal and objectives that was developed regarding this study can be seen in Appendix B.
- Public feedback has been documented more thoroughly following tours and presentations in an effort to better assess their applicability to the development of new goals.

INTRODUCTION

The biosolids program is a public/private partnership where the contractor, Renda Environmental, Inc. (REI), is responsible for processing, dewatering, transporting and performing beneficial land application of biosolids produced from the Village Creek Water Reclamation Facility. REI is under contract to provide these services until March 31, 2015.

Biosolids EMS Certification

In July 2005, the Fort Worth Biosolids Program obtained national certification from the National Biosolids Partnership (NBP) for the development and implementation of an Environmental Management System (EMS). To obtain this certification, the Fort Worth Biosolids Program underwent a thorough evaluation and audit of their EMS practices and processes. The audit was conducted by both internal auditors and "EMS certified" third party auditors. ***This made the City of Fort Worth the 7th agency in the United States and the 1st agency in Texas to receive this certification.***

One year later (July 2006), the Fort Worth Biosolids EMS Program successfully underwent internal and external audits and met requirements to maintain EMS certification and obtained the "Biosolids EMS – Tier 4 Platinum Certification" which *"represents the highest achievement in biosolids management and environmental stewardship recognized by the Water Environment Federation (WEF), National Association of Clean Water Agencies (NACWA), and the United States Environmental Protection Agency (EPA)."*

INTRODUCTION (CONT.)

The biosolids EMS program is audited on an annual basis to ensure proper program implementation. However, a comprehensive recertification audit is performed once every 5 years, with the last recertification audit performed in October of 2010. REI is an active partner in the biosolids EMS program and participates in the yearly audits.

Annual Performance Report

One of the requirements of the EMS Program (Element 15) is to provide an EMS Annual Performance Report (APR) outlining biosolids activities and operations during the previous year. This information is then made available to all interested parties.

This APR summarizes Fort Worth's biosolids management program performance, biosolids production and reuse, goals and objectives, EMS activities, public outreach, and the commitment towards continual improvement. This report and other biosolids information on operations and activities are detailed on the website, listed below.

http://fortworthtexas.gov/water/info/default.aspx?id=6102&ekmense1=73b29971_1308_2386_6102_4

SECTION 1: BIOSOLIDS MANAGEMENT PROGRAM

Annual Biosolids Report Period:	August 1 st , 2013 to July 31 st , 2014
Registration/Permit Number:	TPDES #10494-013
Class A Authorization Facility No.:	#720001
Transporter No.:	TCEQ--#21942 (Renda Environmental, Inc.) TXDOT--#45267C (Renda Environmental, Inc.)
Amount of biosolids beneficially reused/recycled:	26,215.68 dry tons (without lime)/year
Amount of biosolids beneficially reused/recycled:	23782.46 dry metric tons (without lime)/year
Percentage of biosolids beneficially reused/recycled:	91.26%
Type of biosolids produced:	Class A



Biosolids Production

The City of Fort Worth produces biosolids at the Village Creek Water Reclamation Facility (VC). During 2013-2014 VC produced 26,215.68 dry tons (without lime) of biosolids. Due to concerns regarding odor issues, 2,527.38 dry tons were landfilled (8.74% of total dry tons produced-with lime).

The biosolids that VC produces are anaerobically digested and dewatered by belt filter press to produce a cake product that is 17% to 19% solids.

Post-lime stabilization is performed after dewatering in order to meet VC's TPDES permit requirements for vector attraction reduction. The

SECTION 1: BIOSOLIDS MANAGEMENT PROGRAM (CONT.)

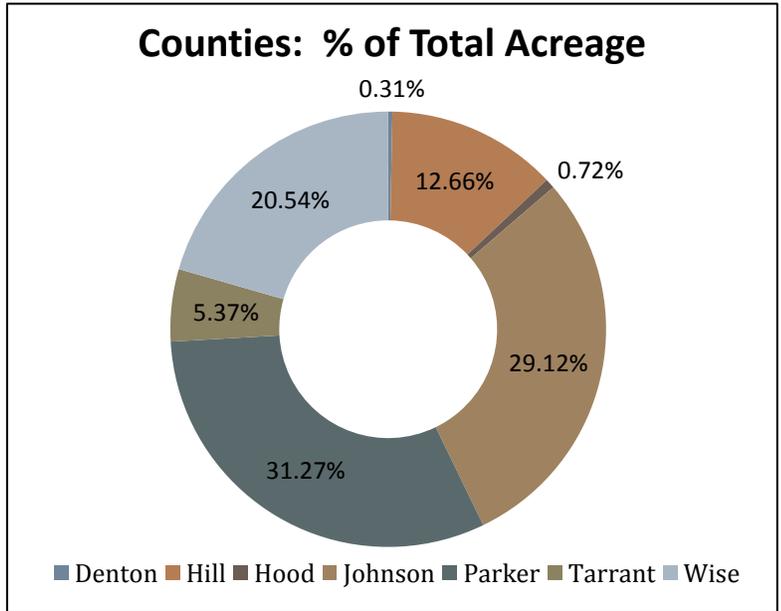
biosolids are then land applied by Renda Environmental, Inc.; the City’s contractor.



Beneficial Reuse Options and Management Practices

Biosolids produced at VC were properly processed, monitored, and agronomically land applied to thousands of acres of farm and pasture land in Tarrant and six surrounding counties in the North Texas area. The biosolids act as an excellent soil amendment and add to the nutrient value to crops and grasses.

The following map and table show landowner participation by county in the Fort Worth Beneficial Reuse/Recycling Program.



SECTION 1: BIOSOLIDS MANAGEMENT PROGRAM (CONT.)

BIOSOLIDS APPLICATION: AMOUNTS BY COUNTY

Counties	Landowners	Noticed Sites	Total Acreage	(%) of total acreage	Tons Applied (Includes lime) Aug 2013-Jul 2014
Denton	1	1	125.00	0.31%	-----
Hill	8	20	5,101.00	12.66%	5,362.09
Hood	2	2	291.00	0.72%	-----
Johnson	16	33	11,732.00	29.12%	13,138.99
Parker	6	6	12,599.00	31.27%	-----
Tarrant	4	4	2,162.00	5.37%	3,646.81
Wise	10	13	8,276.00	20.54%	6,974.78
TOTAL	47	79	40,286.00	100%	29,122.67

Contractor Performance

Biosolids operations in Fort Worth are handled by Renda Environmental, Inc. (REI), a contractor for the City.

REI is responsible for:

- Operation of the dewatering facility and further processing of the biosolids by belt-filter press dewatering;
- Stabilization by lime addition;
- Transportation, and;
- Land application to beneficially reuse the biosolids produced at VC.



REI operates and maintains the belt filter presses and all auxiliary equipment and continually monitors and tracks the amount of biosolids applied to each land application site. REI has been proactive in seeking input on biosolids transportation and operations by establishing a telephone number (817-571-9852) for the general public. This number has been placed on all trucks and equipment used to transport and spread biosolids. REI conducts tours of the biosolids dewatering facility and the application sites when requested.

City Oversight/Inspections

City personnel perform periodic unannounced visits and inspections to the dewatering facility and land application sites to ensure that the contractor is following best biosolids management practices concerning biosolids dewatering, transportation and land application.

SECTION 1: BIOSOLIDS MANAGEMENT PROGRAM (CONT.)

While a site is undergoing land application, City personnel will perform a site inspection detailing weather conditions, truck conditions, haul road conditions, and overall site conditions. An olfactometer used to help quantify odors and establish an odor monitoring history at the land application sites.

When a land application site reaches completion, a final close-out visit is conducted by City personnel. This final site visit is performed to ensure that all biosolids material has been properly applied and all equipment has been removed.

From August 1, 2013 to July 31, 2014, 114 land application site visits were performed by city personnel. These site visits include odor monitoring with an olfactometer.

Monitoring and Measurement

By City contract, REI uses an independent certified laboratory to analyze the biosolids produced at VC. Samples of biosolids are taken from the process areas and analyzed for fecal coliform, pathogens, metals, PCBs, pH, percent solids, and vector attraction reduction. Sampling frequency is established by the contract; which includes federal, state, and local regulatory reporting requirements and can be found summarized in the table on the next page.

TPDES CLASS A BIOSOLIDS MONITORING METHODS AND FREQUENCY

	30 TAC 312.82 (a) Alternative 4
Pathogen Reduction	<ul style="list-style-type: none"> Fecal Coliform Density <1000 MPN* Enteric Virus Density <1 Plaque-forming unit per 4 gram total solids** Viable Helminth Ova Density <1 per 4 grams total solids**
	30 TAC 312.83 (b) (1-8) Alternative 6
Vector Attraction Reduction	<ul style="list-style-type: none"> pH of sewage sludge shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for two hours and then remain at a pH of 11.5 or higher for an additional 22 hours
Monitored Item	Frequency
Fecal Coliform	Two (2) times per month
Pathogens	Two (2) times per month
Metals	Monthly
PCBs	Monthly
TCLP	Two (2) times per year
pH (Vector Attraction Reduction)	Operation Process-Daily; Regulatory Compliance Weekly
% Solids	Daily
<i>* Most Probable Number</i>	
<i>** Dry Weight Basis</i>	

SECTION 1: BIOSOLIDS MANAGEMENT PROGRAM (CONT.)

Biosolids samples are analyzed monthly for metals and polychlorinated biphenyls (PCBs). For 2013-2014, all metal concentrations were significantly below Table 1 ceiling concentration limits and Table 3 pollutant concentrations as required by 40 CFR 503 and 30 TAC 312, for the use or disposal of sewage sludge. The metals and PCB concentrations are shown in the following table.

In addition, the City and REI collect biosolids samples which then undergo TCLP (Toxicity Characteristic Leaching Procedure) analysis. Three TCLP samples were collected during the 2013-2014 reporting year. All samples were compliant with TCLP standards.

METAL AND PCB CONCENTRATION (REPORTED IN MG/KG DRY WEIGHT BASIS)

Year	As	Cd	Cr	Cu	Pb	Hg	Mo	Ni	Se	Zn	PCB
2013-2014	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NPDES Permit Limits (Table 1)	75	85	3000	4300	840	57	75	420	100	7500	n/a
NPDES Permit Limits (Table 3)	41	39	1200	1500	300	17	***	420	36	2800	n/a
August	9.30	1.30	46.80	472.00	30.30	0.34	18.50	31.20	0.00	693	0.00
September	15.90	0.99	46.70	505.00	53.80	0.00	19.60	34.40	6.20	736	0.00
October	17.60	0.88	39.10	528.00	37.90	0.88	23.40	56.10	5.70	676	0.00
November	13.50	0.96	32.70	422.00	25.50	0.55	15.90	41.80	3.80	523	0.00
December	8.10	0.85	40.80	478.00	24.50	0.46	16.50	31.00	3.90	527	0.00
January	4.50	0.73	19.70	291.00	18.20	0.26	10.40	17.10	3.60	395	0.00
February	7.10	0.87	38.40	474.00	25.00	0.46	15.30	25.30	5.40	620	0.00
March	4.80	1.10	46.30	500.00	22.30	0.33	15.20	25.30	4.60	595	0.00
April	2.60	0.99	40.90	395.00	17.40	0.32	14.20	30.00	5.00	464	0.00
May	7.10	0.87	38.10	399.00	25.10	0.51	11.20	26.60	4.00	443	0.00
June	8.30	0.86	30.90	413.00	18.80	0.33	14.20	24.70	4.40	509	0.00
July	6.80	0.99	30.80	416.00	54.00	0.30	18.40	26.20	4.10	516	0.00
Yearly Avg. Metals Conc.	8.80	0.95	37.60	441.08	29.40	0.40	16.07	30.81	4.23	558	ND
Highest Monthly Conc.	17.60	1.30	46.80	528.00	54.00	0.88	23.40	56.10	6.20	736	ND

***No limit established by federal regulations

Pathogen Requirement Achieved: Class A
Pathogen Reduction Alternative Used: 4
Vector Attraction Reduction Alternative Used: 6

SECTION 2: ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) PERFORMANCE

Environmental Management System (EMS): The biosolids EMS is a systematic approach that helps the City to continually improve activities that are associated with environmental performance. The National Biosolids Partnership (NBP) sets standards and guidelines that the City’s EMS must achieve in order to receive and maintain NBP certification. A properly implemented EMS assists the City’s Biosolids Program with the following:

- Identifying the overall goals and objectives of the Biosolids Program
- Creating a series of management practices to meet the goals and objectives
- Managing biosolids and monitoring and measuring the effectiveness of the program
- Taking corrective and preventative measures if the management practices are not operating correctly
- Conducting audits of the Biosolids EMS Program
- Requiring management involvement to make changes to the program as needed

National Biosolids Partnership: The National Biosolids Partnership is a voluntary partnership between the National Association of Clean Water Agencies (NACWA) and Water Environment Federation (WEF). NBP is committed to developing and advancing environmentally sound and sustainable biosolids best management practices through comprehensive management systems.

The mission of the NBP is to advance the understanding and adoption of effective practices in biosolids management and offer:

- Education and training;
- Technical assistance;
- An information clearinghouse; and
- An EMS-based third-party certification program for biosolids management systems.

Timeline

The EMS manual was updated periodically throughout the reporting year. The following table indicates additional biosolids EMS activities conducted during the past year.

2013-2014 EMS Activities	Date
EMS Management Review	October 06, 2014
EMS Performance Report	September 30, 2014
EMS External Third Party Audit	October 8-10, 2014

SECTION 2: ENVIRONMENTAL MANAGEMENT (EMS) SYSTEM PERFORMANCE (CONT.)

Goals and Objectives

The City has established goals and objectives to help improve selected biosolids management activities. These goals are updated every quarter in order to track their progress and to establish new goals and objectives when appropriate. The list of goals and objectives as shown in the EMS manual are included in *Appendix B: Goals and Objectives* of this report.

Corrective Action Notices (CANs)

As defined in EMS Element 14, Corrective Actions are “specific actions and steps taken to correct an organization’s nonconformance(s) to environmental policies, procedures, and other requirements, and to mitigate any residual impacts to the environment.” It is the policy of the Fort Worth Biosolids EMS Program to create a CAN for any identified nonconformance as well as any identified opportunities for improvement, which are those changes that are recommended but not required. See *APPENDIX A: CORRECTIVE ACTION NOTICES 2013-2014* for a full listing of the Corrective Action Notices for August 2013-July 2014.

SECTION 3: LEGAL REQUIREMENTS

The Village Creek Water Reclamation Facility permit to discharge wastes (WQ0010494013) was authorized by the Texas Commission on Environmental Quality (TCEQ) and was issued on December 29, 2011.

On September 10th, 2014 the Texas Commission on Environmental Quality (TCEQ) amended the existing biosolids regulations as defined in 30 TAC Chapter 312. The revised regulations included a new designation for biosolids (Class AB) as well as requirements for odor control plans and the posting of signage at land applications sites. The new provisions will be effective on October 2, 2014 at which time the Fort Worth land application activities will be subject to the new “Class AB” classification. To find out more information on biosolids rules, regulations and requirements, visit the Secretary of State’s website and view the Texas Administrative Code for 30 TAC 312 which details Sludge (Biosolids) Use, Disposal and Transportation:

[http://info.sos.state.tx.us/pls/pub/readtac\\$ext.ViewTAC?tac_view=4&ti=30&pt=1&ch=312](http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=30&pt=1&ch=312)

In addition, a summary of regulations applicable to the VC Biosolids program that exists in the EMS manual can be found on the City’s website:

<http://fortworthtexas.gov/uploadedFiles/Water/Wastewater/Biosolids/Element%20No.%204%20-%20Legal%20Procedure.pdf>

SECTION 4: SPILLS, EMERGENCY ACTIONS, AND RESPONSE

The biosolids produced at the Dewatering Facility have been characterized by an overall decrease in percent solids. During the spring of 2014 this led to difficulties while transporting the biosolids to land application sites. Specifically the biosolids were inadvertently leaking out through the back of trucks. In response to this a corrective action notice was issued on March 20, 2014. All seals and latches were inspected and replaced if needed on all dump trucks and pup trailers. An additional latch was also installed on all dump trucks and pup trailers to create more pressure against the seal. An update to EMS-SOP-TRN-8 was made and all drivers were retrained on this SOP.

SECTION 5: PUBLIC OUTREACH AND PARTICIPATION PROGRAM

A main component of the City's EMS is to further develop and expand public outreach and public participation programs.

Tours: The City conducts tours of Village Creek and the Dewatering Facility. In 2013-2014, forty-three (43) tours were conducted at Village Creek. In all, 1238 individuals visited and toured the Village Creek facilities. During the tours, visitors are shown a presentation that includes information on the biosolids program and the dewatering facility. In January and April 2014, presentations were given to two local high schools that detailed the wastewater treatment process at Village Creek and the biosolids program and land application process.

In November 2013, a meeting was held at Renda Environmental Inc. (REI), which included county officials from Wise County, TCEQ officials and representatives from the City of Fort Worth and REI. The twenty-five (25) tour participants visited a land application site near Boyd, TX and toured the dewatering facility. The goal of the meeting and tour was to discuss the biosolids program with tour participants and hear their concerns and questions regarding odor issues, biosolids quality and monitoring oversight at the land application sites.

During new employee orientation at Village Creek, employees are given a tour of the dewatering facility as well as a brief introduction to the EMS and biosolids program during the orientation presentation.

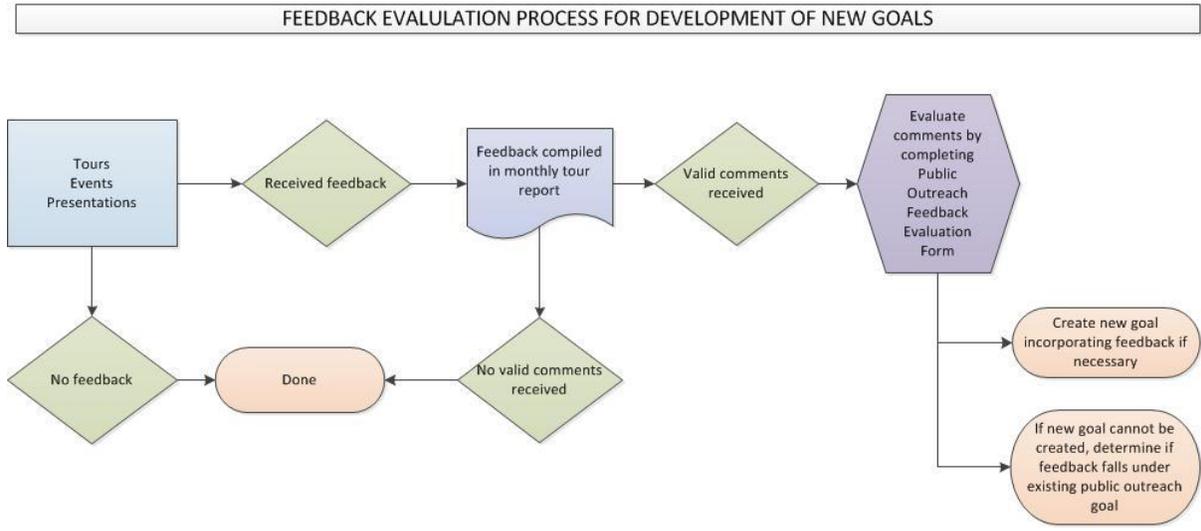
Notification of Land Application Activities: City personnel notify county commissioners of land application activities in their precinct. This gives opportunities for county officials to ask questions about biosolids and land application should they have any.

Website & Publications: The biosolids EMS website is periodically updated on the City's internet site to promote information sharing and opportunities for public input and feedback in a timely manner. The website includes links to various audit reports, annual performance reports, and the elements of the Biosolids EMS Manual. An email address specifically for the biosolids program (biosolids@fortworthtexas.gov) was made in order to allow the public a direct route to express any concerns or questions about biosolids.

The City has two biosolids brochures; one brochure gives basic biosolids and program information, the other brochure gives technical information which includes monitoring and measurement details. These brochures are available to the public during facility tours, at all presentations, and on the City's biosolids website.

Feedback Evaluation Process: In January 2014, a feedback evaluation process was developed in order to document the process in which public feedback and comments are assessed for the development of new goals (see flow chart on next page). While feedback seemed to increase this past year, it is most likely due to the more thorough documentation process that is now in effect. Feedback usually concerns: cost to the landowner or the City, food crop safety, storm water runoff issues and odors.

SECTION 5: PUBLIC OUTREACH AND PARTICIPATION PROGRAM (CONT.)



SECTION 6: FUTURE PLANS/ADVANCES IN BIOSOLIDS TECHNOLOGY

Facility Improvements/Upgrades: Due to an aging infrastructure at the dewatering facility, improvements and upgrades will be occurring during the winter and spring of 2014-2015. Some of the changes will include the installation of a 6th belt press, an upgraded polymer feed system and an upgraded liming system. It is hopeful that these changes will help biosolids quality and maintenance issues.

Biosolids Master Plan: In June 2013, the City of Fort Worth kicked off workshops and meetings to discuss the long term plans for the biosolids program. The purpose of the biosolids master plan is to identify improvements and cost savings for the short term and identify and evaluate alternatives for the long term in regards to solids management.

Scum System: In spring 2014, a project to utilize scum screenings as an organic source for co-digestion was started. When the systems is completed, the goal is to see an increase in gas prodction and increased solids stability.

Thermal Dyers: In July 2014 the City of Fort Worth implemented a pilot project to evaluate whether or not indirect dryers are effective in producing Class A biosolids. Fort Worth tested two dryers from competing companies and evaluated them for overall treatability as well as odor reducing potential. While the pilot project has been completed the evaluation of the data is still ongoing.

Grit System: In June 2014, a project was started to evaluate the feasibility of a grit removal system. The purpose of the grit removal system would be to divert all grit to the landfill for final disposal instead of it being sent to the digesters.

SECTION 7: CONTACT INFORMATION

If you have comments on this report or any other biosolids related items please call:

Village Creek Water Reclamation Facility **817-392-4960**

Biosolids EMS Manager **817-392-4965**

To find out more information about the City of Fort Worth Biosolids Beneficial Reuse/Recycling program and the EMS visit our website:

http://fortworthtexas.gov/water/info/default.aspx?id=6094&ekmense1=73b29971_1308_2386_6094_2

To find out more information on biosolids in general, biosolids facts, regulation requirements, and about the national Biosolids Partnership EMS program, visit the website: <http://www.biosolids.org>

2013-2014

City of Fort Worth, Texas
Water Department
Village Creek Water Reclamation Facility
Biosolids Management Program and EMS Performance Report

APPENDIX A: CORRECTIVE ACTION NOTICES 2013-2014

2013-2014

CORRECTIVE ACTION NOTICES AUGUST 2013-JULY 2014

CAN #	Date	Non-Conformance Issue	Scheduled Completion Date	Actual Completion Date	Close-Out Date
2013-04	08-13-2013	Requirement 13.2: Record monitoring and measurement results and maintain records as established in the recordkeeping procedures under Element 12.0. Two site visits performed in the spring of 2013 were not typed up and signed and the original hand written reports were lost.	08-13-2013	08-13-2013	09-19-2013
2013-05	10-01-2013	Requirement 10.1: Develop and implement standard operating procedures, work management practices or other appropriate methods at all critical control points throughout the biosolids value chain to effectively manage potential environmental impacts. On July 10, 2013 TCEQ issued 2 Notice of Violations to Renda Environmental for failing to obtain written authorization prior to constructing a sludge storage area in accordance with the requirements found in Title 30TAC 312.50(a)(1).	01-01-2014	08-08-2014	09-02-2014
2013-06	10-01-2013	Requirement 8.1: The training program shall provide general awareness of the EMS and how each employee's assigned roles and responsibilities relate to the entire biosolids value chain. Village Creek staff has not been provided with EMS training.	12-01-2013	02-13-2014	02-13-2014
2013-07	10-15-2013	Element 15: The EMS planning schedule requires that the EMS Performance Report is completed by September 30 th . The report was not finalized until October 10, 2013. An original draft was completed by September 30 th but was replaced by a version with minor corrections on October 10, 2013. The original report was not retained and therefore we could not show that we completed the report on time.	10-15-2013	10-15-2013	10-15-2013
2013-08	10-25-2013	Minor Nonconformance-Requirement 5.3: Input from interested parties developed through proactive public participation must be considered in developing program goals and objectives. The development of program goals and objectives did not specifically consider the input received from the public gathered during plant tours, namely concern in applying biosolids to food crops (Jan. 18, 2013) and purchase of biosolids from the city (May 23, 2013).	12-31-2013	12-31-2013	01-09-2014

CORRECTIVE ACTION NOTICES AUGUST 2013- JULY 2014 (CONT.)

CAN #	Date	Non-Conformance Issue	Scheduled Completion Date	Actual Completion Date	Close-Out Date
2013-09	10-25-2013	<p>Opportunity for Improvement-Requirements 5.1 and 5.3: Consider using input received from regulators during the interim audit in developing future goals and objectives related to relations with interested parties; namely 1) providing information to the public that ensures runoff from land application sites is controlled, 2) provide brochures, pamphlets or other information to everyone that may be impacted by biosolids land application, i.e. all immediate land owners and or leasers of adjacent properties to land application sites; 3) providing notification to all county commissioners on the land application benefits and proposed schedules of biosolids distribution in their county, 4) providing land application schedule or other general information to the TCEQ regulators in the regions where land application will take place, 5) providing to the regulators the names of those who own or lease land adjacent to the land application sites.</p>	12-31-2013	12-24-2013	01-09-2014
2013-10	10-25-2013	<p>Minor Nonconformance-Requirement 5.5: Some of the program goals did not adequately use the SMART (specific, measureable, achievable, relevant, and time bound) criteria in their development. More specifically, the measurability was not clearly defined in all cases. For example, measurable odor constituents reduction (subjective or scientific).</p>	12-31-2013	12-31-2013	01-09-2014
2013-11	10-25-2013	<p>Minor Nonconformance-Requirement 9.1: Fort Worth has not developed a proactive communication program for addressing odor concerns to interested parties and the public consistent with the local circumstances, method of biosolids management, public communication history and the degree of current interest in biosolids management activities.</p>	12-31-2013	02-11-2014	02-12-2014
2013-12	10-25-2013	<p>Minor Nonconformance-Requirement 9.3: In the Fort Worth EMS Element 16.0, it indicates the independent third party audit results are handled in the same manner as the internal audit results and the method of providing the internal audit results to the public are discussed in Element 6.0 and 9.0. In Element 9.0 in the External Communications Section it indicates the City of Fort Worth EMS Manual, annual progress, reports, and audit results are posted on the Biosolids page within http://fortworthtexas.gov/water.</p>	11-22-2013	10-30-2013	10-30-2013

CORRECTIVE ACTION NOTICES AUGUST 2013- JULY 2014 (CONT.)

2013-13	10-25-2013	Minor Nonconformance-Requirement 10.1: The treatment plant has not completely developed and implemented standard operating procedures (SOPs), work management practices or other appropriate methods at all critical control points throughout the biosolids value chain to effectively manage potential environmental impacts.	12-31-2014	pending	pending
2013-14	10-25-2013	Opportunity for Improvement-Requirement 15.1: Consider including in the annual Biosolids Management Program Performance Report a summary of the dollars saved or generated by accomplishment of the goals and objectives and the summation of all money saved by attaining goals and objectives. Consider placing this summary in an Executive Summary in the opening section of the Performance Report.	11-22-2014	01-02-2014	01-09-2014
2013-15	10-25-2013	Opportunity for Improvement-Requirement 16.3: Consider providing a more detailed description of the internal audit frequency, methodology, protocol, scope and schedule.	12-01-2013	12-24-2013	01-09-2014
2013-16	10-25-2013	Minor Nonconformance-Requirement 16.1: Village Creek did not perform the required internal audit in 2013.	12-31-2013	12-24-2013	01-09-2014
2014-01	03-20-2014	Requirement 10.1: Requirement 10.1- Develop and implement standard operating procedures, work management practices or other appropriate methods at all critical control points throughout the biosolids value chain to effectively manage potential environmental impacts. Trucks hauling biosolids to land application sites are inadvertently leaking material onto public roadways.	04-30-2014	06-26-2014	06-27-2014
2014-02	07-08-2014	Opportunity for Improvement-Requirement 9.5: Communicate relevant information about biosolids management activities and all 17 BMP elements to employees and outside contractors, consistent with assigned roles and responsibilities. Monthly meetings with Renda stopped from September 2013 to May 2014.	07-31-2014	07-31-2014	07-22-2014

2013-2014

City of Fort Worth, Texas
Water Department
Village Creek Water Reclamation Facility
Biosolids Management Program and EMS Performance Report

APPENDIX B: GOALS AND OBJECTIVES

GOAL: Sludge De-Gritting Disposal					
Objective	Milestone	Responsible Party	Targeted Completion Date	Status	Key Outcomes
1. Quantify grit removal by clarifiers	Complete/not complete	Ana Pena-Sr. Professional Engineer	June 30, 2014	Complete (March 13, 2014) (May 27, 2014) (June 9, 2014)	Environmental Performance Regulatory Compliance Improve Biosolids Management Practices
2. Install grit removal alternative (grit dewatering and storage)	Complete/not complete	Ana Pena-Sr. Professional Engineer	July 16, 2014	Complete (September 12, 2014)	
3. Collect grit sample to verify compliance with landfill disposal requirements	Complete/not complete	Ana Pena-Sr. Professional Engineer	July 16, 2014	Complete (July 16, 2014)	
4. Installation of grit washer	Complete/not complete	Ana Pena-Sr. Professional Engineer	September 15, 2014	Complete (September 15, 2014)	
5. Begin hauling grit to landfill	Complete/not complete	Ana Pena-Sr. Professional Engineer	August 1, 2014	Complete (September 19, 2014)	
6. One month trial period to evaluate effectiveness	Complete/not complete	Ana Pena-Sr. Professional Engineer	October, 15 2014	Not Complete	
Divert 100% of collected grit to landfill	Complete/not complete	Ana Pena-Sr. Professional Engineer	November 1, 2014	Not complete	
<p>An initial trial of the grit removal system occurred on 6-16-14 and continued overnight. The initial grit removed on 6-16-14 was collected as well as another sample collected on the morning of 6-17-14. They were submitted together as one sample for a paint filter test and TCLP. The grit removal system incurred some issues after it ran overnight. The dates for objectives 2 and 3 were modified to reflect when the grit removal system would be ready again.</p>					

GOAL: Create a Biosolids Master Plan					
Objective	Milestone	Responsible Party	Targeted Completion Date	Status	Key Outcomes
1. Award Contract for project	Complete/not complete	Steven L. Nutter Biosolids EMS Manager	April 30, 2012	Complete	Environmental Performance Improve Biosolids Management Practices Regulatory Compliance
2. Workshop 1(Kickoff)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	June 7, 2013	Complete	
3. Submit formal data request	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	June 21, 2013	Complete	
4. TMs 1 and2 Draft (Regulatory & Data)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	July 26, 2013	Complete (September 24, 2013)	
5. Workshop 2(Criteria & Long List Selection)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	August 26, 2013	Complete (September 25, 2013)	
6. TM3 Draft (Model and short-term)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	September 23, 2013	Complete (October 22, 2013)	
7. Workshop 3(Screen Alternatives)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	November 19, 2013	Complete (September 26, 2013)	
8. TM 4 Draft (Market Analysis)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	December 20, 2013	Complete (November 18, 2013)	
9. TM 5 Draft (Detailed Analysis)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	January 7 & 8, 2014	Complete (January 7&8 2014)	
10. Workshop 4 (Detailed Analysis)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	March 17, 2014	Complete (March 17, 2014)	
11. TM 6 Draft (Long Term Plan)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	March 28, 2014	Complete (March 14, 2014)	
12. Workshop 5(Long Term Plant)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	April 14, 2014	Complete (March 17, 2014)	
13. Draft Master Plan Report	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	June 9, 2014	Complete (July 18, 2014)	
14. Final Master Plan Report	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	July 14, 2014	Not Complete	
15. Contract Review Workshop	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	March 14, 2014	Not Complete	
16. TM & Draft (Contract Review)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	April 28, 2014	Not Complete	
17. Evaluate final master plan	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	July 31, 2014	Not Complete	
18. Develop action plan	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	December 31, 2014	Not Complete	
Reduce odor complaints to Year 2008 level	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	December 31, 2016	Not Complete	

GOAL: Study to Evaluate Biosolids Odors Associated With High Strength Wastes.					
Objective	Milestone	Responsible Party	Targeted Completion Date	Status	Key Outcomes
1. Hire consultant	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	July 5, 2013	Complete	Environmental Performance Improve Biosolids Management Practices Regulatory Compliance
2. Consultant-Develop scope of work and sampling plan	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager Perkins Engineering Consultants, Inc.	July 31, 2013	Complete (July 30, 2013)	
3.a Perform sampling and analysis to evaluate odors associated with lime addition	Complete/not complete	Village Creek Personnel & Perkins Engineering Consultants, Inc.	October 31, 2013	Complete (October 21, 2013)	
3.b Perform sampling and analysis to evaluate odors associated with high strength wastes	Complete/not complete	Village Creek Personnel & Perkins Engineering Consultants, Inc.	October 31, 2013	Complete (October 14, 2013)	
3.c Perform sampling and analysis to evaluate odors associated with polymers	Complete/not complete	Village Creek Personnel & Perkins Engineering Consultants, Inc.	November 18, 2013	Complete (November 18, 2013)	
3.d Perform sampling and analysis to evaluate odors associated with lime dosage	Complete/not complete	Village Creek Personnel & Perkins Engineering Consultants, Inc.	December 10, 2013	Complete (December 10, 2013)	
4. Consultant-Produce Technical report summarizing issues found during study	Complete/not complete	Perkins Engineering Consultants, Inc.	June 30, 2014	Complete (June 30, 2014)	
5. Evaluate report & develop action plan	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	July 31, 2014	Complete (June 30, 2014)	
Reduce odor complaints to Year 2008 level	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	December 31, 2016	Not complete	
The technical report shows conclusively that lime has a profound impact on odor generation. As such a new Goal & Objective has been developed for determining the feasibility of eliminating lime from the process (i.e. switching from vector attraction reduction alternative #6 to alternative #1)					

GOAL: Increase Biosolids Outreach Activities in Response to Public Concerns					
Objective	Milestone	Responsible Party	Targeted Completion Date	Status	Key Outcomes
1. Identify four (4) public/third party concerns related to the biosolids value chain	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	September 25, 2014	Complete	Improved Public Relations
1.a For each concern, either contact three (3) external agencies or conduct presentation with one (1) external agency	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	September 25, 2014	Complete (November 8, 2013) (April 17 & 18, 2014)	
2. Create online complaint form for citizens to submit directly to biosolids program	Complete/not complete	Magan Lersch-Sr. Environmental Specialist	February 28, 2014	Complete (February 5, 2014)	
3. Update biosolids webpages and include information regarding odor issues/odor monitoring	Complete/not complete	Magan Lersch-Sr. Environmental Specialist	February 28, 2014	Complete (February 5, 2014)	
Determine if feedback has increased due to public outreach activities	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager Magan Lersch-Sr. Environmental Specialist	September 25, 2014	Complete (September 25, 2014)	
See Attachment 1 for details regarding objectives 1. and 1.a From 2012-2013 there were approximately 4 comments received during tours. During 2013-2014, approximately 23 comments were received.					

GOAL: Utilize Scum Screenings as Organic Source for Co-Digestion					
Objective	Milestone	Responsible Party	Targeted Completion Date	Status	Key Outcomes
<i>Task 1: Design Phase</i>					
1. Kick-off/Chartering Meeting	Complete/not complete	Ana Pena-Sr. Professional Engineer	March 5, 2014	Complete (March 5, 2014)	Environmental Performance Improve Biosolids Management Practices
2. Submit Preliminary Design	Complete/not complete	Ana Pena-Sr. Professional Engineer	April 17, 2014	Complete (April 17, 2014)	
3. Preliminary Design Review Meeting	Complete/not complete	Ana Pena-Sr. Professional Engineer	May 2, 2014	Complete (May 2, 2014)	
4. Final Design Review Meeting	Complete/not complete	Ana Pena-Sr. Professional Engineer	June 17, 2014	Complete (May 22, 2014)	
5. Deliver Construction Documents	Complete/not complete	Ana Pena-Sr. Professional Engineer	July 2, 2014	Complete (June 2, 2014)	
<i>Task 2: Construction Phase</i>					
1. Begin construction	Complete/not complete	Ana Pena-Sr. Professional Engineer	November 26, 2014	Not complete	Regulatory Compliance
2. Complete construction	Complete/not complete	Ana Pena-Sr. Professional Engineer	December 31, 2014	Not complete	
Increase gas production by at least 5%	Complete/not complete	Ana Pena-Sr. Professional Engineer	December 31, 2014	Not complete	

GOAL: Install 3 rd GBT Unit to Increase Solids Stability					
Objective	Milestone	Responsible Party	Targeted Completion Date	Status	Key Outcomes
<i>Task 1: Design Phase</i>					
1. Conception Design	Complete/not complete	Ana Pena-Sr. Professional Engineer	December 2012	Complete (December 2012)	Environmental Performance
2. Final Design	Complete/not complete	Ana Pena-Sr. Professional Engineer	May 2013	Complete (May 2013)	
<i>Task 2: Construction Phase</i>					
1. Begin construction	Complete/not complete	Ana Pena-Sr. Professional Engineer	November 20, 2012	Complete (November 20, 2012)	Improve Biosolids Management Practices
2. Complete construction	Complete/not complete	Ana Pena-Sr. Professional Engineer	November 26, 2014	Not complete	Regulatory Compliance
Increase digested sludge percent solids to at least 2.5%	Complete/not complete	Ana Pena-Sr. Professional Engineer	December 31, 2014	Not complete	

GOAL: Arcadis Biosolids Study-Evaluate Solids Production at Village Creek and SOL					
Objective	Milestone	Responsible Party	Targeted Completion Date	Status	Key Outcomes
1. Arcadis hired to perform study	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	April 2, 2014	Complete (2 April 2014)	Environmental Performance Improve Biosolids Management Practices Regulatory Compliance
2. Arcadis performs site visits of Fort Worth Facilities	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	May 1, 2014	Complete (1 May 2014)	
3. Data acquisition begins-creation of Arcadis server for uploading files	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	May 6, 2014	Complete (6 May 2014)	
4. Arcadis performs site visit and review of the dewatering facility	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	May 28, 2014	Complete (28 May 2014)	
5. Arcadis submits technical memo on dewatering facility site visit	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	June 19, 2014	Complete (19 June 2014)	
6. Biosolids odor sampling	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	June 24-25, 2014 July 23-24, 2014	Complete (June 24-25, 2014) (July 23-24, 2014)	
7. Arcadis submits technical memo on odor monitoring (draft)	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	September 1, 2014	Complete (September 16, 2014)	
8. Draft Report Issued	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	November 1, 2014	Not complete	
9. Final Report Issued	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	January 1, 2015	Not complete	
Increase percent solids of biosolids (prior to lime addition) to 18%	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	December 31, 2015	Not complete	

This goal was added in response to public feedback regarding the consistency of the biosolids product- See Public Outreach Evaluation Form from November 8, 2013. This is a comprehensive study that is analyzing the activities at the water treatment plants, Village Creek Water Reclamation Facility, and the dewatering facility at the Sludge Only Landfill and their effect on the overall quality of the biosolids material and its odors.

GOAL: DAFT Overflow Project					
Objective	Milestone	Responsible Party	Targeted Completion Date	Status	Key Outcomes
1. Design	Complete/not complete	Water Dept. Engineering	March 17, 2014	Complete (March 17, 2014)	Environmental Performance
2. Construction	Complete/not complete	Gary LaGasey-Assst. Water Sys Supt (Operations)	April 29, 2014	Complete (April 29, 2014)	
3. Complete construction	Complete/not complete	Gary LaGasey-Assst. Water Sys Supt (Operations)	June 13, 2014	Complete (June 11, 2014)	
4. 3 month trial period to Evaluate effectiveness	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager, Magan Lersch-Sr. Environmental Specialist	October 31, 2014	Not complete	Improve Biosolids Management Practices
Increase percent solids of biosolids(prior to lime addition) by 2%	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager, Magan Lersch-Sr. Environmental Specialist	October 31 2014	Not complete	Regulatory Compliance
Adding 21 days to the construction end date (6-11-14) to account for digester detention time will result in a starting date of 08-01-14 for the 3 month trial period. The trial period will be completed on 10-31-14 to determine if percent solids have increased. A graph will be attached at the end of the trial period that illustrates the percent solids performance.					

GOAL: Dewatering Facility Upgrades					
Objective	Milestone	Responsible Party	Targeted Completion Date	Status	Key Outcomes
1. Hire consultant	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	April 18, 2014	Complete (April 18, 2014)	Environmental Performance
2. Electrical System Evaluation	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	July 11, 2014	Complete (August 27, 2014)	
3. Design	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	September 30, 2014	Not complete	
4. Install 6 th belt press	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	February 28, 2015	Not complete	Improve Biosolids Management Practices
5. Upgrade polymer feed system	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	February 28, 2015	Not complete	
6. Upgrade lime system	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	February 28, 2015	Not Complete	Regulatory Compliance
Increase percent solids of biosolids (prior to lime addition) by 3% for the 6th belt press only	Complete/not complete	Steven L. Nutter-Biosolids EMS Manager	31 December 2015	Not complete	

GOAL: Minimize Struvite at Belt Filter Presses					
Objective	Milestone	Responsible Party	Targeted Completion Date	Status	Key Outcomes
1. Corroborate presence of struvite (collect samples)	Complete/not complete	Ana Pena-Sr. Professional Engineer	July 7, 2014	Complete (July 7, 2014)	Environmental Performance Improve Biosolids Management Practices
2. Install ferric addition station	Complete/not complete	Ana Pena-Sr. Professional Engineer	August 18, 2014	Complete (August 18, 2014)	
3. Optimize dosage of ferric sulfate	Complete/not complete	Ana Pena-Sr. Professional Engineer	December 31, 2014	Complete	
4. Optimize location of ferric addition station	Complete/not complete	Ana Pena-Sr. Professional Engineer	March 31, 2015	Not complete	
Reduce orthophosphate levels by 50%	Complete/not complete	Ana Pena-Sr. Professional Engineer	March 31, 2015	Not complete	

Attachment 1

GOAL: Increase Biosolids Outreach Activities in Response to Public Concerns			
Objective			
1. Identify four (4) public/third party concerns related to the biosolids value chain			
1.a For each concern, either contact three (3) external agencies or conduct presentation with one (1) external agency			
1. Concern	1.a Action Taken	Targeted Completion Date	Status
Odor	Tour and presentation given to local city, county and state officials.	November 8, 2013	Complete (8 November 8, 2013)
Stormwater Runoff/Environmental Safety	Presentation given to Central High School and plant tour the next day.	April 17 & 18, 2014	Complete (April 17, 2014)
Food Crop Safety	Presentation given to Central High School and plant tour the next day.	April 17 & 18, 2014	Complete (April 17, 2014)
Cost to City	Presentation given to Central High School and plant tour the next day.	April 17 & 18, 2014	Complete (April 17, 2014)

GOAL: DAFT Overflow Project	
Objective	
4. 3 month trial period to Evaluate effectiveness	
<i>Adding 21 days to the construction end date (6-11-14) to account for digester detention time will result in a starting date of 08-01-14 for the 3 month trial period. The trial period will be completed on 10-31-14 to determine if percent solids have increased. A graph will be attached at the end of the trial period that illustrates the percent solids performance.</i>	

Monthly Averages	
August	15.14 %
September	15.38 %
October	TBD

