



# Wastewater Plant Biosolids BMP Internal Audit Report

City of Richmond, Virginia  
Wastewater Treatment Plant

The Wastewater Treatment Facility operates along the south bank of the James River. The facility is permitted to treat 45 MGD dry weather flow and a minimum of 75 MGD wet weather flow. Richmond's Wastewater Treatment Facility serves customers in the City, Henrico, Chesterfield, and Goochland counties. The facility is one of the largest of its kind in Virginia. The Wastewater Utility also operates and maintains 1,500 miles of sanitary sewer, pumping stations, 38 miles of intercepting sewer lines, the Shockoe Retention Basin and McCloy Tunnel, and operates the combined sewer overflow (CSO) control program. The facility has Pretreatment, Laboratory, Technical Services, Engineering, and Financial/Administrative sections to support plant operations and maintenance.

Audit Performed By: Wastewater Plant Internal Audit Team  
- Donald Carter - Project Management Analyst  
- Jan Wyatt - Program Manager  
- Audrey Brubeck - Chief Chemist

Audit Dates: October 25th & October 26th, 2011

Report Date: November 3rd, 2011

References: NBP BMP Elements  
National Manual of Good Practice for Biosolids  
NBP – Third Party Verification Auditor Guidance – November 2002  
Wastewater Plant Biosolids Management Program (BMP)

List of Auditees: BMP Team  
BMP Supervisor  
Chief Chemist  
Operator Superintendant II  
City Communications Department  
Program Manager - Facilities  
Contractor

Introduction: The Internal Audit Team investigated whether the City of Richmond's Wastewater Treatment Plant's EMS Biosolids System supports improvements in four key outcome areas. Those areas are: Quality Management Practices, Relations with Interested Parties, Regulatory Compliance & Environmental Performance. The Internal Audit Team verified those areas by performing the following: Document and Records Review, Interviews & Direct Observation.

Scope & Objectives: The Audit Scope applies to the entire Biosolids value chain and the BMP. Our objective was to determine whether the City of Richmond's Wastewater Treatment Plant is effectively meeting its Biosolids Management Policy, program requirements, program goals and objectives.



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<u>Methodology:</u>	We followed the guidelines provided in the NBP Third Party Verification Auditor Guidance Manual. We reviewed each of the BMP Elements and determined if they conformed to the NBP Elements for an BMP. We used a Question Checklist Document to cover all of the BMP Elements. The Questions came from the NBP Third Party Verification Auditor Guidance Manual.
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<u>Overall Evaluation:</u>	Based on our Audit Results we feel that the City of Richmond's Wastewater Treatment Plant is in conformance with its Biosolids Management Policy, program requirements, program goals and objectives. There are opportunities for improvement that the facility representatives acknowledge and have committed to addressing. Continuous improvement is a vital part of the BMP and the Internal Audit Team agrees that the BMP is continually improving.
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<b>Element 1:</b>	<b>Documentation</b>
<b>Finding:</b>	The Internal Audit Team agrees that Element 1 - Documentation is in Conformance. The Biosolids Team has prepared a well written and thorough Manual. The Team has a Hard Copy as well as a Electronic Copy on the common P: Drive in the BMP - Biosolids folder.
<b>Recommendation:</b>	Migrate all of the BMP documents to Sharepoint.

<b>Element 2:</b>	<b>Biosolids Management Policy</b>
<b>Finding:</b>	The Internal Audit Team agrees that Element 2 - Biosolids Management Policy is in Conformance. The Biosolids Management Policy follows the guidelines set forth by the NBP Code of Good Practice and is communicated to employees, contractors and interested parties thru safety meetings, posters and Utility Review.
<b>Recommendation:</b>	Continue to improve our Communication efforts for the BMP.

<b>Element 3:</b>	<b>Critical Control Points</b>
<b>Finding:</b>	The Internal Audit Team agrees that Element 3 - Critical Control Points is in Conformance. The Critical Control Points are regularly reviewed, updated and tracked in a Table.
<b>Recommendation:</b>	Continue to organize Electronic Files with a regimented File Naming Convention so that they are easy to find & organize.

<b>Element 4:</b>	<b>Legal and Other Requirements</b>
<b>Finding:</b>	The Internal Audit Team agrees that Element 4 - Legal and Other Requirements is in Conformance. The Legal and other Requirements are regularly reviewed, updated and tracked in a Table. The Deputy Director & Utility Plant Superintendant are responsible for identifying & tracking the requirements.
<b>Recommendation:</b>	Subscribe to an Internet based Legal Update Service.



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<b>Element 5: Goals and Objectives for Continuous Improvement</b>	
Finding:	The Internal Audit Team agrees that Element 5 - Goals and Objectives for Continuous Improvement is in Conformance. The Goals and Objectives have been identified and met. They are regularly reviewed, updated and tracked in a Table and Chart.
Recommendation:	No formal recommendation other than continuous improvement.

<b>Element 6: Public Participation Planning</b>	
Finding:	The Internal Audit Team agrees that Element 6 - Public Participation Planning is in Conformance. Nutriblend assists in this Element and the goals are communicated thru the City Website, Annual Reports and Utility Review.
Recommendation:	No formal recommendation other than continuous improvement.

<b>Element 7: Roles and Responsibilities</b>	
Finding:	The Internal Audit Team agrees that Element 7 - Roles and Responsibilities is in Conformance. Roles and Responsibilities are documented in a table. Sufficient resources, funds and technical skills have been allocated to the Biosolids BMP.
Recommendation:	No formal recommendation other than continuous improvement.

<b>Element 8: Training</b>	
Finding:	The Internal Audit Team agrees that Element 8 - Training is in Conformance. Training is performed and documented for existing & new employees. We also saw evidence of Contractor Training documents. The Documentation is kept in a Training Log. Training is also tracked in the CMMS System (Mainsaver).
Recommendation:	No formal recommendation other than continuous improvement.

<b>Element 9: Communication and Outreach</b>	
Finding:	The Internal Audit Team agrees that Element 9 - Communication and Outreach is in Conformance. This is accomplished thru the City's Communication Division and the efforts of Recyc.
Recommendation:	No formal recommendation other than continuous improvement.

<b>Element 10: Operation Control of Critical Points</b>	
Finding:	The Internal Audit Team agrees that Element 10 - Operation Control of Critical Points is in Conformance. SOP's are complete for Dewatering. Preventive and Corrective Maintenance activities are handled by Mainsaver (Maintenance System).
Recommendation:	Recommend monitoring Open Work Orders that are old and on Critical Equipment that needs to be fixed.



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<b>Element 11: Emergency Preparedness and Response</b>	
Finding:	The Internal Audit Team agrees that Element 11 - Emergency Preparedness and Response is in Conformance. SOP's are complete for Emergencies and Sewer Maintenance has the equipment ready. Recyc also has a spill response manual and equipment for their emergencies.
Recommendation:	No formal recommendation other than continuous improvement.
<b>Element 12: EMS Documentation, Document Control &amp; Record Keeping</b>	
Finding:	The Internal Audit Team agrees that Element 12 - BMP Documentation, Document Control & Record Keeping is in Conformance. All relevant Documents are written and available on the P:\ Drive in the BMP - Biosolids folder.
Recommendation:	Continue to organize Electronic Files with a regimented File Naming Convention so that they are easy to find & organize.
<b>Element 13: Monitoring and Measurement</b>	
Finding:	The Internal Audit Team agrees that Element 13 - Monitoring and Measurement is in Conformance. Monitoring and Measurement is captured on LIMS, OP10 and various Excel Spreadsheets. Recyc, Microbac and other contractors records were also verified.
Recommendation:	No formal recommendation other than continuous improvement.
<b>Element 14: Nonconformance - Preventive &amp; Corrective Action</b>	
Finding:	The Internal Audit Team agrees that Element 14 - Nonconformance - Preventive & Corrective Action is in Conformance. Verified that procedures are being followed and corrective actions are initiated when required.
Recommendation:	No formal recommendation other than continuous improvement.
<b>Element 15: Performance Report</b>	
Finding:	The Internal Audit Team agrees that Element 15 - Performance Report is in Conformance. Verified that procedures are being followed and corrective actions are initiated when required.
Recommendation:	No formal recommendation other than continuous improvement.
<b>Element 16: Internal EMS Audit</b>	
Finding:	The Internal Audit Team agrees that Element 16 - Internal BMP Audit is in Conformance. The Internal Audit Checklist helped us verify that the Internal Audit Team covered every Element.
Recommendation:	Formally train at least one Internal Auditor.



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<b>Element 17: Periodic Management Review of Performance</b>	
<b>Finding:</b>	The Internal Audit Team agrees that Element 17 - Periodic Management Review of Performance is in Conformance. The Internal Audit Team verified that regular Periodic Management Reviews took place. Reviewed meeting minutes & sign-in sheets.
<b>Recommendation:</b>	<b>Recommend that a dedicated resource be given for document &amp; meeting management.</b>

<b>Internal Audit Conclusion</b>	
The Internal Audit Team reviewed the Biosolids BMP Manual and all of the 17 Elements. We have concluded that the Biosolids BMP System is in compliance. We have presented recommendations and noted minor nonconformances. Corrective actions will be initiated to correct these nonconformances.	