

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

*MONITORING AND RESEARCH
DEPARTMENT*

REPORT NO. 13-44

HARLEM AVENUE SOLIDS MANAGEMENT AREA

MONITORING REPORT FOR

THIRD QUARTER 2013

NOVEMBER 2013

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

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November 18, 2013

Mr. S. Alan Keller, P.E.
Manager, Permit Section
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276

Dear Mr. Keller:

Subject: Harlem Avenue Solids Management Area – Stickney Water Reclamation Plant, Illinois Environmental Protection Agency Permit No. 2009-AO-2715-1, Monitoring Report for July, August, and September 2013

The attached seven tables contain the monitoring data for the Harlem Avenue Solids Management Area for July, August, and September 2013 as required by Illinois Environmental Protection Agency (IEPA) Operating Permit No. 2009-AO-2715-1.

The data reported are as follows:

- Table 1, Analysis of Water from Lysimeters L-1N1 Through L-3N at the Harlem Avenue Solids Management Area Sampled on July 10, 2013
- Table 2, Analysis of Monthly Compositated Biosolids Placed in the Harlem Avenue Solids Management Drying Area During July 2013
- Table 3, Analysis of Monthly Compositated Biosolids Placed in the Harlem Avenue Solids Management Drying Area During August 2013
- Table 4, Analysis of Monthly Compositated Biosolids Placed in the Harlem Avenue Solids Management Drying Area During September 2013
- Table 5, Analysis of Monthly Compositated Processed Biosolids Removed from the Harlem Avenue Solids Management Drying Area During July 2013

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Table 6, Analysis of Monthly Compositated Processed Biosolids Removed from the Harlem Avenue Solids Management Drying Area During August 2013

Table 7, Analysis of Monthly Compositated Processed Biosolids Removed from the Harlem Avenue Solids Management Drying Area During September 2013

Biosolids were placed in the solids drying area and removed from the site during July, August, and September.

Very truly yours,

Thomas C. Granato, Ph.D.
Director
Monitoring and Research

TCG:PL:cm
Attachments
cc w/att: Mr. J. Patel, IEPA
Records Unit, IEPA

TABLE 1: ANALYSIS OF WATER FROM LYSIMETERS L-1N1 THROUGH L-3N AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON JULY 10, 2013

| Parameter | Unit | Lysimeter No. | | |
|--------------------------------------|------|-----------------|-----------------|-----------------|
| | | L-1N1 | L-2N | L-3N |
| pH ¹ | | 7.7 | 7.9 | 7.8 |
| EC | mS/m | 219 | 261 | 217 |
| Total Dissolved Solids | mg/L | 1,616 | 3,916 | 1,400 |
| Total Dissolved Organic Carbon | " | 25 | 4 | 8 |
| Cl ⁻ | " | 97 | 34 | 202 |
| SO ₄ ⁼ | " | 19 | 1,743 | 111 |
| Alkalinity as CaCO ₃ | " | NA ² | NA ² | NA ² |
| TKN | " | 6 | < 1 | < 1 |
| NH ₃ -N | " | 4 | < 0.1 | 0.4 |
| NO ₂ + NO ₃ -N | " | < 0.15 | 3.3 | < 0.15 |
| Total P | " | < 0.20 | < 0.20 | < 0.20 |
| Al | " | < 1.0 | < 1.0 | < 1.0 |
| Ca | " | 253 | 575 | 211 |
| Cd | " | < 0.001 | < 0.001 | < 0.001 |
| Cr | " | < 0.005 | < 0.005 | < 0.005 |
| Cu | " | < 0.005 | < 0.005 | < 0.005 |
| Fe | " | 4 | < 0.1 | 7 |
| Hg | μg/L | < 0.20 | < 0.20 | < 0.20 |
| K | mg/L | 3 | 2 | 3 |
| Mg | " | 159 | 188 | 89 |
| Mn | " | 0.264 | 2.22 | 0.550 |
| Na | " | 44 | 24 | 77 |
| Ni | " | < 0.005 | < 0.005 | < 0.005 |
| Pb | " | < 0.02 | < 0.02 | < 0.02 |
| Zn | " | < 0.01 | 0.02 | < 0.01 |

¹pH analyzed beyond recommended holding time of 15 minutes.

²No analysis; insufficient sample.

TABLE 2: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
 PLACED IN THE HARLEM AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING JULY 2013

| Parameter | Unit | Concentration ¹ |
|------------------------------------|------|----------------------------|
| pH | | 7.9 |
| Total Solids | % | 28.2 |
| Total Volatile Solids ² | " | 40.4 |

¹Values are the means of two samples.

²Total volatile solids as a percentage of total solids.

TABLE 3: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
PLACED IN THE HARLEM AVENUE SOLIDS MANAGEMENT DRYING AREA
DURING AUGUST 2013

| Parameter | Unit | Concentration ¹ |
|------------------------------------|------|----------------------------|
| pH | | 7.3 |
| Total Solids | % | 7.5 |
| Total Volatile Solids ² | " | 47.5 |

¹Values are the means of five samples.

²Total volatile solids as a percentage of total solids.

TABLE 4: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
 PLACED IN THE HARLEM AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING SEPTEMBER 2013

| Parameter | Unit | Concentration ¹ |
|------------------------------------|------|----------------------------|
| pH | | 7.2 |
| Total Solids | % | 8.1 |
| Total Volatile Solids ² | " | 46.3 |

¹ Values are the means of seven samples.

² Total volatile solids as a percentage of total solids.

TABLE 5: ANALYSIS OF MONTHLY COMPOSITED PROCESSED
 BIOSOLIDS REMOVED FROM THE HARLEM AVENUE SOLIDS
 MANAGEMENT DRYING AREA DURING JULY 2013

| Parameter | Unit | Concentration ¹ |
|------------------------------------|-------|----------------------------|
| pH | | 6.9 |
| Total Solids | % | 81.6 |
| Total Volatile Solids ² | " | 52.3 |
| TKN | mg/kg | 20,666 |
| NH ₃ -N | " | 2,649 |
| Total P | " | 17,292 |
| Al | " | 15,415 |
| Ca | " | 34,903 |
| Cd | " | 2 |
| Cr | " | 125 |
| Cu | " | 412 |
| Fe | " | 19,613 |
| Hg | " | 0.93 |
| K | " | 2,811 |
| Mg | " | 13,946 |
| Mn | " | 566 |
| Mo | " | 8 |
| Na | " | 737 |
| Ni | " | 41 |
| Pb | " | 96 |
| Zn | " | 707 |

¹Values are the means of three samples.

²Total volatile solids as a percentage of total solids.

TABLE 6: ANALYSIS OF MONTHLY COMPOSITED PROCESSED BIOSOLIDS REMOVED FROM THE HARLEM AVENUE SOLIDS MANAGEMENT DRYING AREA DURING AUGUST 2013

| Parameter | Unit | Concentration ¹ |
|------------------------------------|-------|----------------------------|
| pH | | 6.7 |
| Total Solids | % | 78.2 |
| Total Volatile Solids ² | " | 46.4 |
| TKN | mg/kg | 27,179 |
| NH ₃ -N | " | 3,879 |
| Total P | " | 20,905 |
| Al | " | 16,661 |
| Ca | " | 35,620 |
| Cd | " | 2 |
| Cr | " | 136 |
| Cu | " | 502 |
| Fe | " | 24,813 |
| Hg | " | 1.1 |
| K | " | 2,628 |
| Mg | " | 14,003 |
| Mn | " | 562 |
| Mo | " | 9 |
| Na | " | 876 |
| Ni | " | 49 |
| Pb | " | 97 |
| Zn | " | 809 |

¹Values are the means of nine samples.

²Total volatile solids as a percentage of total solids.

TABLE 7: ANALYSIS OF MONTHLY COMPOSITED PROCESSED
 BIOSOLIDS REMOVED FROM THE HARLEM AVENUE SOLIDS
 MANAGEMENT DRYING AREA DURING SEPTEMBER 2013

| Parameter | Unit | Concentration ¹ |
|------------------------------------|-------|----------------------------|
| pH | | 7.8 |
| Total Solids | % | 63.2 |
| Total Volatile Solids ² | " | 38.5 |
| TKN | mg/kg | 24,020 |
| NH ₃ -N | " | 5,828 |
| Total P | " | 19,465 |
| Al | " | 15,539 |
| Ca | " | 43,903 |
| Cd | " | 4 |
| Cr | " | 130 |
| Cu | " | 527 |
| Fe | " | 22,052 |
| Hg | " | 1.4 |
| K | " | 1,729 |
| Mg | " | 19,925 |
| Mn | " | 493 |
| Mo | " | 9 |
| Na | " | 690 |
| Ni | " | 48 |
| Pb | " | 133 |
| Zn | " | 898 |

¹Values are for one sample.

²Total volatile solids as a percentage of total solids.