FORM GEN. 160 (Rev. 6-80)

CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

DATE: August 25, 2017

TO: Timeyin Dafeta, Plant Manager
Hyperion Water Reclamation Plant

Mark Starr, Plant Manager
Terminal Island Water Reclamation Plant

FROM: Farhana Mohamed, Acting Division Manager FM
Environmental Monitoring Division

SUBJECT: **ASSESSMENT OF BIOSOLIDS FOR JULY 2017**

This report contains data from the analysis of composite biosolids and digested sludge samples collected in July 2017 at the Hyperion and Terminal Island Water Reclamation Plants. The samples were tested in accordance with EPA's Part 503 Sewage Sludge Regulations, Tables 1 and 3, to furnish a beneficial use assessment. Analyses were also performed to determine if pathogen and vector control requirements of Part 503 were met.

Hyperion Water Reclamation Plant

The metals and nutrient analyses data are presented in Tables 1 and 2 of this report. All metals detected in the composite sample were below their respective ceiling and pollutant concentration limits listed in EPA 40 CFR 503.13, Table 1. The results for Mercury and Organic-N were slightly higher than their 12-month average (Tables 1 and 3). Also, for July, fecal coliform and *Salmonella* results were below the EPA 40 CFR Part 503 limit for Class A biosolids (Table 6). The July helminth ova and enteric virus results were below the limits for Class A biosolids. The July polychlorinated biphenyl results were non-detect and dioxin data is not yet available (Table 5).

Terminal Island Water Reclamation Plant

Beginning in July 2010, TIWRP began injecting digested sludge into TIRE with a goal of 100% injection, but may occasionally produce biosolids due to operational logistics.

For July 2017, the metals and nutrient analyses data are presented in Tables 3 and 4. All metals detected in the composite sample were below their respective ceiling and pollutant concentration limits listed in EPA 40 CFR 503.13, Table 3. The results for Arsenic, Chromium, and Lead were slightly higher than their 12-month average (Table 3). Please note that the concentration of Selenium was higher than its 12-month average (Table 3). The July polychlorinated biphenyl results were non-detect and dioxin data is not yet available (Table 5). Fecal coliform and *Salmonella* were below the EPA 40 CFR Part 503 limit for Class A biosolids (Table 7).

Graphs of the concentrations of selected metals in HWRP and TIWRP biosolids and digested sludge over the past 24 months are shown in Figures 1 through 10.

If you have any questions about this report, please contact Stacee Karnya of my staff at (310) 648-5727.

RV/FM:rv

Attachment: Appendix 1 - Arizona ELAP-Certified Monthly Biosolids Monitoring Report with Class A and B Microbiological Requirements.

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Table 1. BENEFICIAL USE ASSESSMENT OF BIOSOLIDS AT HYPERION TREATMENT PLANT

Sampling Date	pH	%TS	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Molybdenum (Mo)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)
			mg/kg dry weight									
Jul-17	8.4	24.8	ND	10.1	37.7	629	19.0	21.4	1.26	48.0	ND	1,680
Jun-17	8.4	24.6	2.03	8.78	46.3	610	19.9	18.3	1.08	44.3	ND	1,650
May-17	8.6	25.2	2.78	10.2	30.8	552	17.5	17.5	1.15	42.1	ND	1,410
Apr-17	8.0	21.6	0.926	12.2	38.2	676	16.2	20.8	1.46	52.8	ND	1,600
Mar-17	8.4	26.0	ND	9.77	35.0	477	10.4	19.2	1.11	44.2	1.15	1,230
Feb-17	8.6	26.2	1.53	9.58	42.7	592	15.6	33.6	1.02	51.1	ND	1,650
Jan-17	8.2	25.4	ND	9.96	31.7	614	16.1	18.9	0.768	46.5	ND	1,660
Dec-16	8.5	25.0	ND	8.52	35.8	644	12.0	17.2	0.976	38.8	1.20	1,820
Nov-16	8.6	25.4	2.48	11.6	43.3	709	19.8	21.3	1.16	66.1	ND	1,870
Oct-16	8.1	26.7	ND	11.6	45.3	738	22.8	18.0	1.19	50.2	ND	1,510
Sep-16	8.6	25.2	ND	13.5	55.2	726	25.0	22.2	1.00	49.6	ND	1,490
Aug-16	8.1	27.2	ND	10.8	46.3	688	26.1	23.2	1.23	51.8	ND	1,290
Average	8.4	25.3	0.812	10.5	40.7	638	18.4	21.0	1.12	48.8	0.196	1,570
Maximum	8.6	27.2	2.78	13.5	55.2	738	26.1	33.6	1.46	66.1	1.20	1,870
Minimum	8.0	21.6	ND	8.52	30.8	477	10.4	17.2	0.768	38.8	ND	1,230
Ceiling Conc.*			75	85	***	4300	75	840	57	420	100	7500
Pollutant Conc.**			41	39	***	1500	***	300	17	420	100	2800

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* Ceiling concentration in Table 1 of EPA Part 503 Sludge Regulation.
** Pollutant concentration in Table 3 of EPA Part 503 Sludge Regulation
*** Limit was deleted according to Federal Register Vol. 60, No. 206 of Oct. 25, 1995

Table 2. HTP BIOSOLIDS - NUTRIENTS AND MISC. METALS - EVALUATION FOR LOADING PURPOSES

Sampling Date	%TS	Aluminum (Al)	Calcium (Ca)	Iron (Fe)	Potassium (K)	Magnesium (Mg)	Nitrate-N (NO3-N)	Phosphorus (Tot-P)	Sodium (Na)	Ammonia-N (NH3-N)	Organic-N (Org-N)
	mg/kg dry weight										
Jul-17	24.8	3,800	30,900	49,200	1,420	6,850	8.06	29,600	1,230	7,860	47,600
Jun-17	24.6	3,700	34,600	43,900	1,360	6,910	4.07	28,400	1,290	5,370	44,300
May-17	25.2	3,300	33,700	38,700	1,160	6,270	11.9	27,700	1,060	7,900	43,700
Apr-17	21.6	4,600	41,900	47,700	1,770	7,730	4.63	29,400	1,410	9,260	52,300
Mar-17	26.0	4,500	29,300	39,600	1,350	5,850	3.85	29,800	1,180	9,850	38,800
Feb-17	26.2	4,900	35,300	45,000	1,940	7,140	7.63	30,000	1,320	8,700	45,000
Jan-17	25.4	4,200	35,400	48,400	1,140	6,500	11.8	27,300	1,440	7,400	41,700
Dec-16	25.0	3,500	37,900	48,000	1,940	6,720	8.00	28,400	1,510	7,120	43,200
Nov-16	25.4	4,100	40,200	52,400	1,240	6,930	7.87	27,100	1,420	7,440	39,300
Oct-16	26.7	3,700	38,200	47,600	1,010	6,630	7.49	27,000	1,420	6,590	39,300
Sep-16	25.2	3,900	35,400	62,300	1,460	7,060	11.9	33,500	1,200	8,130	40,100
Aug-16	27.2	4,200	31,700	60,300	1,420	6,400	3.68	35,900	1,370	7,870	39,000
Average	25.3	4,030	35,400	48,600	1,430	6,750	7.58	29,500	1,320	7,790	42,900
Maximum	27.2	4,900	41,900	62,300	1,940	7,730	11.9	35,900	1,510	9,850	52,300
Minimum	21.6	3,300	29,300	38,700	1,010	5,850	3.68	27,000	1,060	5,370	38,800

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Table 3. BENEFICIAL USE ASSESSMENT OF BIOSOLIDS AT TERMINAL ISLAND WATER RECLAMATION PLANT

Sampling Date	pH	%TS	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Molybdenum (Mo)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)
	mg/kg dry weight											
Jul-17	7.3	1.9	ND	5.35	32.6	204	21.9	17.1	0.290	30.5	46.0	1,080
Jun-17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-17	7.6	1.6	ND	4.94	38.9	210	24.7	18.5	1.07	37.0	49.4	1,100
Apr-17	7.7	1.6	ND	5.81	37.4	181	25.8	19.4	0.955	38.7	38.7	1,050
Mar-17	7.6	1.6	ND	8.13	23.8	369	ND	12.5	1.29	31.3	ND	894
Feb-17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-17	7.3	1.5	ND	4.11	27.4	192	27.4	13.7	1.08	34.2	27.4	1,050
Dec-16	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-16	7.5	1.7	ND	4.24	ND	152	27.9	12.7	0.733	ND	21.8	915
Oct-16	7.5	1.3	ND	4.65	24.8	132	23.3	7.75	0.845	23.3	23.3	775
Sep-16	7.2	1.5	ND	4.55	27.3	273	32.5	13.0	0.987	32.5	51.9	1,030
Aug-16	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	7.5	1.6	ND	5.22	26.5	214	22.9	14.3	0.907	28.4	32.3	987
Maximum	7.7	1.9	ND	8.13	38.9	369	32.5	19.4	1.29	38.7	51.9	1,100
Minimum	7.2	1.3	ND	4.11	ND	132	ND	7.75	0.290	ND	ND	775
Ceiling Conc.*			75	85	***	4300	75	840	57	420	100	7500
Pollutant Conc.**			41	39	***	1500	***	300	17	420	100	2800

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WISARD - Biosolids Management - HTP TITP Biosolids

* Ceiling concentration in Table 1 of EPA Part 503 Sludge Regulation.
** Pollutant concentration in Table 3 of EPA Part 503 Sludge Regulation
*** Limit was deleted according to Federal Register Vol. 60, No. 206 of Oct. 25, 1995

Table 4. TIWRP BIOSOLIDS - NUTRIENTS AND MISC. METALS - EVALUATION FOR LOADING PURPOSES

Sampling Date	%TS	Aluminum (Al)	Calcium (Ca)	Iron (Fe)	Potassium (K)	Magnesium (Mg)	Nitrate-N (NO3-N)	Phosphorus (Tot-P)	Sodium (Na)	Ammonia-N (NH3-N)	Organic-N (Org-N)
	mg/kg dry weight										
Jul-17	1.9	7,400	16,500	42,900	11,700	11,000	ND	29,700	36,000	63,100	27,100
Jun-17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-17	1.6	6,400	16,500	43,900	11,700	10,700	ND	34,300	38,800	77,200	45,800
Apr-17	1.6	6,800	19,400	55,000	12,800	11,500	ND	36,800	37,400	67,700	47,700
Mar-17	1.6	25,800	43,600	49,900	19,400	26,800	ND	27,900	19,400	65,000	33,700
Feb-17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-17	1.5	5,600	29,000	42,100	13,100	13,000	ND	33,400	44,300	64,300	49,000
Dec-16	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-16	1.7	6,100	25,900	40,400	9,520	11,700	ND	34,200	44,600	67,300	24,200
Oct-16	1.3	5,100	23,600	36,100	11,300	13,000	ND	38,100	56,400	63,000	32,600
Sep-16	1.5	6,000	24,500	40,300	10,100	11,000	ND	31,000	46,900	47,700	32,200
Aug-16	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	1.6	8,700	24,900	43,800	12,500	13,600	ND	33,200	40,500	64,400	36,500
Maximum	1.9	25,800	43,600	55,000	19,400	26,800	ND	38,100	56,400	77,200	49,000
Minimum	1.3	5,100	16,500	36,100	9,520	10,700	ND	27,900	19,400	47,700	24,200

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NS No Sampling Required

Table 5. CONCENTRATIONS OF DIOXIN AND PCBs IN HTP AND TIWRP BIOSOLIDS

Sampling Date	Dioxin 2,3,7,8-TCDD (ppb ng/g wet wt.)	PCBs**							Total PCBs***
		AR 1016	AR 1221	AR 1232	AR 1242	AR 1248	AR 1254	AR 1260	
		ppm (mg/kg) wet weight							ppm (mg/kg wet wt.)
HTP BIOSOLIDS									
Jul-17	NA	<0.00230	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	ND
Jun-17	<10.00000 *	<0.00430	<0.02500	<0.02400	<0.00620	<0.00440	<0.00830	<0.00290	ND
May-17	<9.40000 *	<0.00230	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	ND
Apr-17	<0.00100 ^^	<0.00230	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	ND
Mar-17	<9.20000 *	<0.00230	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	ND
Feb-17	<9.30000 *	<0.00230	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	ND
Jan-17	<0.02000 ^^	<0.00230	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	ND
Dec-16	<0.00380 *	<0.00430	<0.02500	<0.02400	<0.00620	<0.00440	<0.00830	<0.00290	ND
Nov-16	<9.30000 *	<0.00430	<0.02500	<0.02400	<0.00620	<0.00440	<0.00830	<0.00290	ND
Oct-16	<0.00760 ^^	<0.00200	<0.03030	<0.01860	<0.01330	<0.00763	<0.00276	<0.00176	ND
Sep-16	<0.50000 *	<0.00200	<0.03030	<0.01860	<0.01330	<0.00763	<0.00276	<0.00176	ND
Aug-16	<0.50000 *	<0.00200	<0.03030	<0.01860	<0.01330	<0.00763	<0.00276	<0.00176	ND
TIWRP BIOSOLIDS / DIGESTED SLUDGE @, #									
Jul-17	NA	<0.00230	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	ND
Jun-17	NS	NS	NS	NS	NS	NS	NS	NS	NS
May-17	<22.00000 *	<0.00230	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	ND
Apr-17	<0.00100 ^^	<0.00230	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	ND
Mar-17	<25.00000 *	0.0209	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	0.0209
Feb-17	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-17	<0.03200 ^^	<0.00230	<0.00560	<0.00430	<0.01400	<0.00610	<0.00240	<0.00290	ND
Dec-16	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-16	<21.00000 *	<0.00430	<0.02500	<0.02400	<0.00620	<0.00440	<0.00830	<0.00290	ND
Oct-16	<0.03700 ^^	<0.00200	<0.03030	<0.01860	<0.01330	<0.00763	<0.00276	<0.00176	ND
Sep-16	<0.50000 *	<0.00200	<0.03030	<0.01860	<0.01330	<0.00763	<0.00276	<0.00176	ND
Aug-16	NS	NS	NS	NS	NS	NS	NS	NS	NS

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* Low Resolution 2,3,7,8-TCDD analysis by method EPA 8280A.
^^ High resolution 2,3,7,8-TCDD analysis by method EPA 1613B.
** Polychlorinated biphenyls (Arochlors)
*** Sum of AR 1016, AR 1221, AR 1232, AR 1242, AR 1248, AR 1254, AR 1260

NA Data not yet available
ND Not Detected
NS No Sampling Required
@ Sampling frequency for TIWRP is 6 months/year. The sampling months are: Jan, Mar, May, Jul, Sep and Nov.
\# TIWRP changed from analyzing Biosolids to analyzing Digested Sludge in July 2010

Note: California Title 22 lists 10 ppb for Dioxin and 50 ppm for PCBs as the Total Threshold Limit Concentration (TTLC) for hazardous waste

Table 6. HTP BIOSOLIDS - CLASS A COMPLIANCE MONITORING DATA

Sampling Date	%TS	FECAL COLIFORM MPN/gram TS (dry wt) Silo#/Farm		SALMONELLA, sp. MPN/4 grams TS (dry wt) Silo#/Farm		HELMINTH OVA Viable Helminth Ova/4 grams TS (dry wt) Raw Sludge	HELMINTH OVA Viable Helminth Ova/4 grams TS (dry wt) Silo#/Farm		ENTERIC VIRUS PFU/4 grams TS (dry wt) Raw Sludge	ENTERIC VIRUS PFU/4 grams TS (dry wt) Silo#/Farm	
July 11, 2017	23.7	Farm	<7.6	Farm	<1.7	8.8	Farm	<0.5	17.6	Farm	<0.5
June 6, 2017	22.1	Silo #6	<8.1	Silo #6	<1.9	7.8	Silo #6	<0.6	20.7	Silo #6	<0.6
May 9, 2017	23.4	Silo	<7.7	Silo	<1.9	21.4	Silo	<0.5	10.2	Silo	<0.5
April 4, 2017	24.5	Farm	<7.3	Farm	<1.8	6.7	Farm	<0.5	5.2	Farm	<0.5
March 7, 2017	25.1	Silo	<7.2	Silo	<1.7	9.4	Silo	<0.5	13.4	Silo	<0.5
February 7, 2017	25.2	Silo	<7.1	Silo	<1.7	6.3	Silo	<0.5	5.8	Silo	<0.5
January 1, 2017	26.0	Farm	6.9	Farm	<1.6	6.3	Farm	<0.5	2.7	Farm	<0.5
December 6, 2016	25.2	Silo #1	<7.1	Silo #1	<1.6	11.5	Silo #1	<0.5	12.6	Silo #1	<0.5
November 8, 2016	24.5	Silo	<7.3	Silo	<1.7	8.0	Silo	<0.5	25.0	Silo	<0.5
October 4, 2016	25.4	Farm	7.1	Farm	<1.6	16.7	Farm	<0.5	13.9	Farm	<0.5
September 13, 2016	24.6	Silo	<7.3	Silo	<1.8	5.8	Silo	<0.5	3.8	Silo	<0.5
August 9, 2016	25.8	Farm	<7.0	Farm	<1.6	NS	Farm	<0.5	NS	Farm	<0.5
August 2, 2016	24.2	Silo	<7.4	Silo	<1.7	16.8	Silo	<0.5	52.2	Silo	<0.5
Requirement**			<1000		<3			<1			<1

* - EPA 40 CFR Part 503 Class A requirements
NA - Data not yet available from Biovir.
NS - No Sampling Required

Table 7. TIWRP BIOSOLIDS - CLASS A COMPLIANCE MONITORING DATA

Sampling Date	TOTAL SOLIDS		FECAL COLIFORM		SALMONELLA, sp.	
	%		MPN/gram TS (dry wt)		MPN/4 grams TS (dry wt)	
	Silo#/Farm		Silo#/Farm		Silo#/Farm	
	6 Times/Year@		6 Times/Year@		Quarterly	
Jul-17	TIWRP Digester Sludge	1.82	TIWRP Digester Sludge	<9.9	TIWRP Digester Sludge	<1.7
Jun-17	NS	NS	NS	NS	NS	NS
May-17	TIWRP Digester Sludge	1.63	TIWRP Digester Sludge	<11.0	TIWRP Digester Sludge	<1.9
Apr-17	NS	NS	NS	NS	NS	NS
Mar-17	TIWRP Digester Sludge	1.6	TIWRP Digester Sludge	<11.3	TIWRP Digester Sludge	<1.7
Feb-17	NS	NS	NS	NS	NS	NS
Jan-17	TIWRP Digester Sludge	1.55	TIWRP Digester Sludge	<11.6	TIWRP Digester Sludge	<1.8
Dec-16	NS	NS	NS	NS	NS	NS
Nov-16	TIWRP Digester Sludge	2.09	TIWRP Digester Sludge	9.6	TIWRP Digester Sludge	<1.2
Oct-16	NS	NS	NS	NS	NS	NS
Sep-16	TIWRP Digester Sludge	1.53	TIWRP Digester Sludge	516.3	TIWRP Digester Sludge	<1.7
Aug-16	NS	NS	NS	NS	NS	NS
Jul-16	TIWRP Digester Sludge	2.0	NS	NS	TIWRP Digester Sludge	<1.6
Requirement*				<1000		<3

* - EPA 40 CFR Part 503 Class A requirements
NS - No Sampling Required
@ - Sampling frequency for TIWRP is 6 months/year. The sampling months are: Jan, Mar, May, Jul, Sep and Nov.

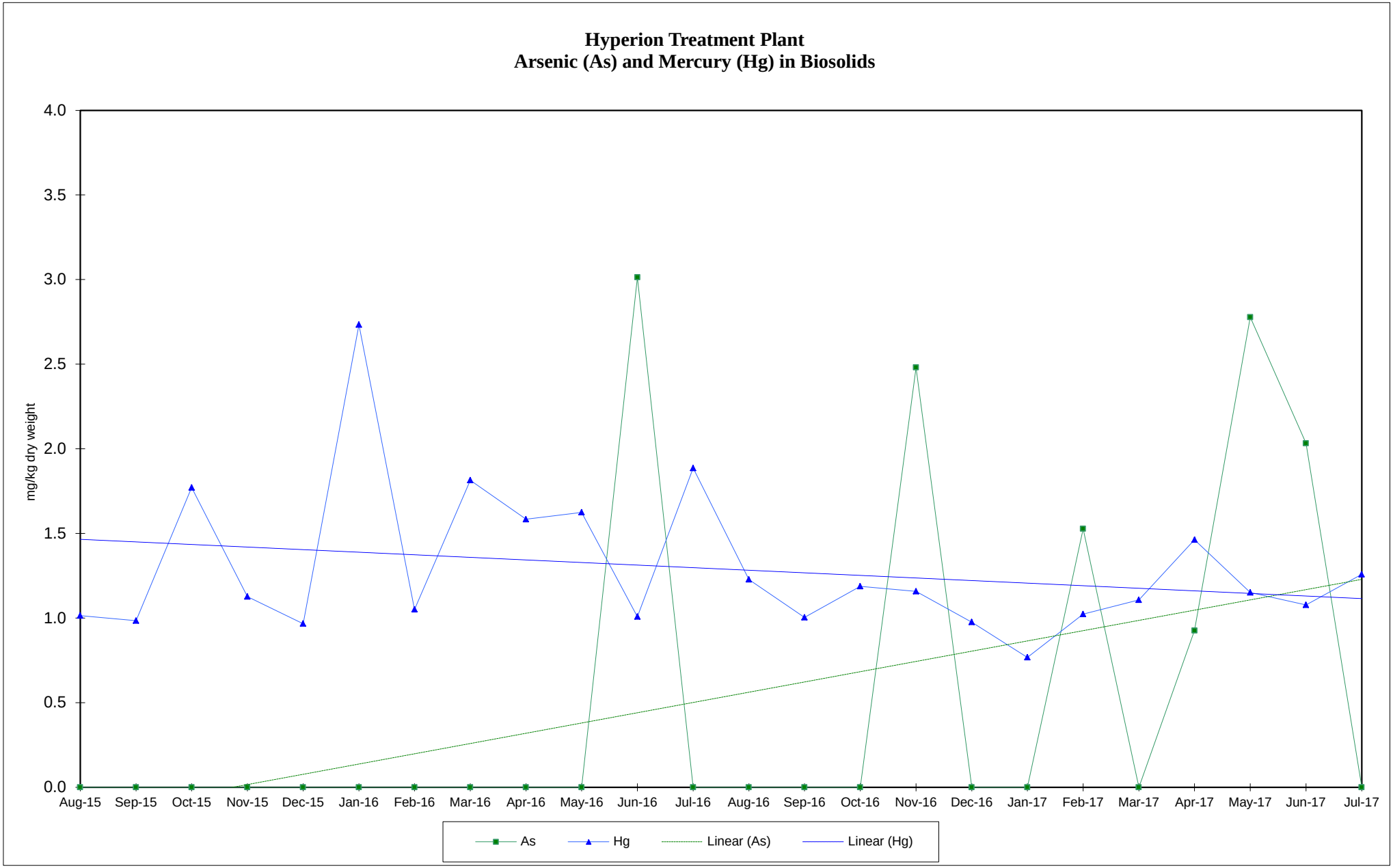

Figure 1. Concentrations of arsenic and mercury in HTP biosolids from August 2015 to July 2017

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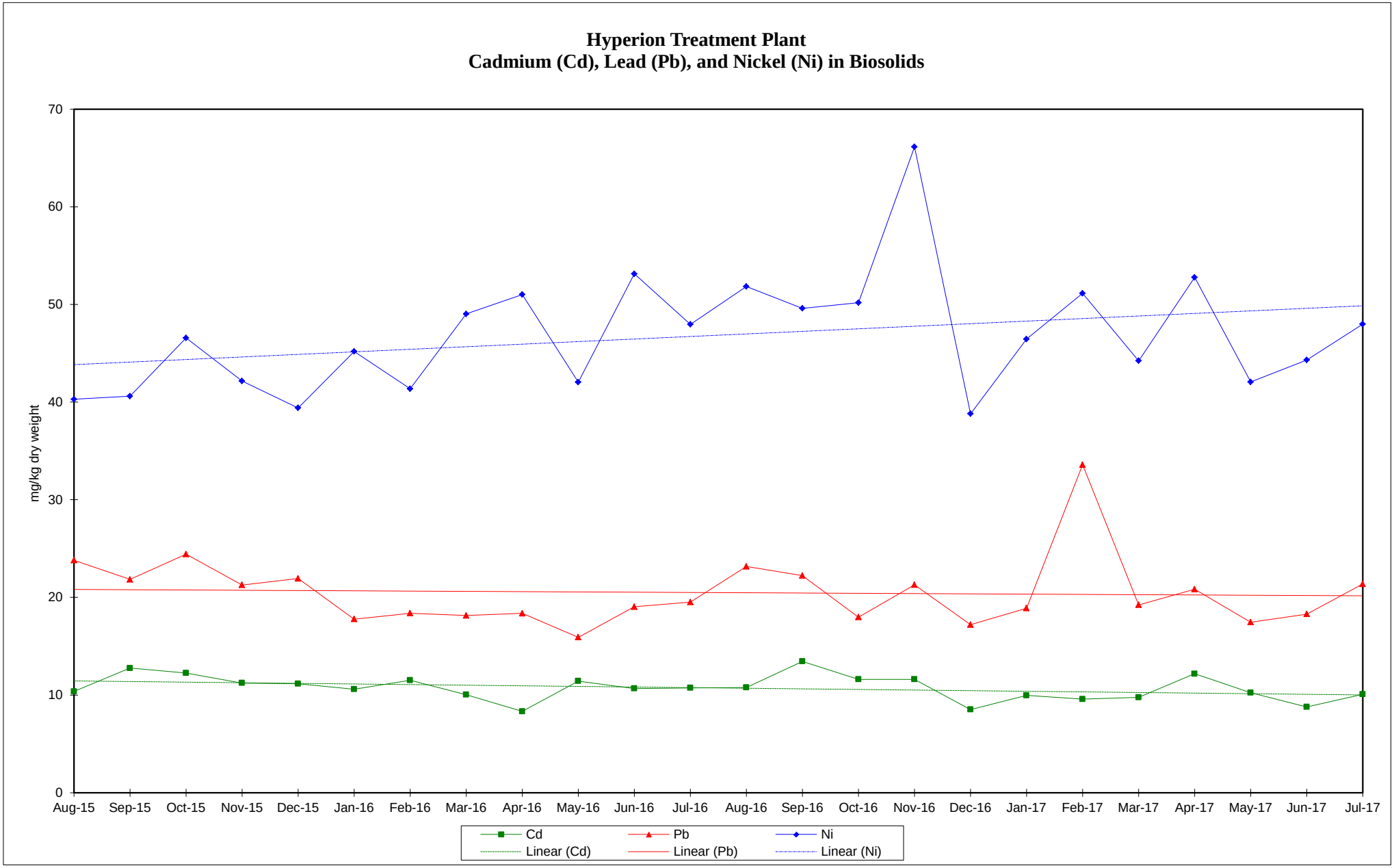

Figure 2. Concentrations of cadmium, lead, and nickel in HTP biosolids from August 2015 to July 2017

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WISARD - Biosolids Management - HTP TITP Biosolids

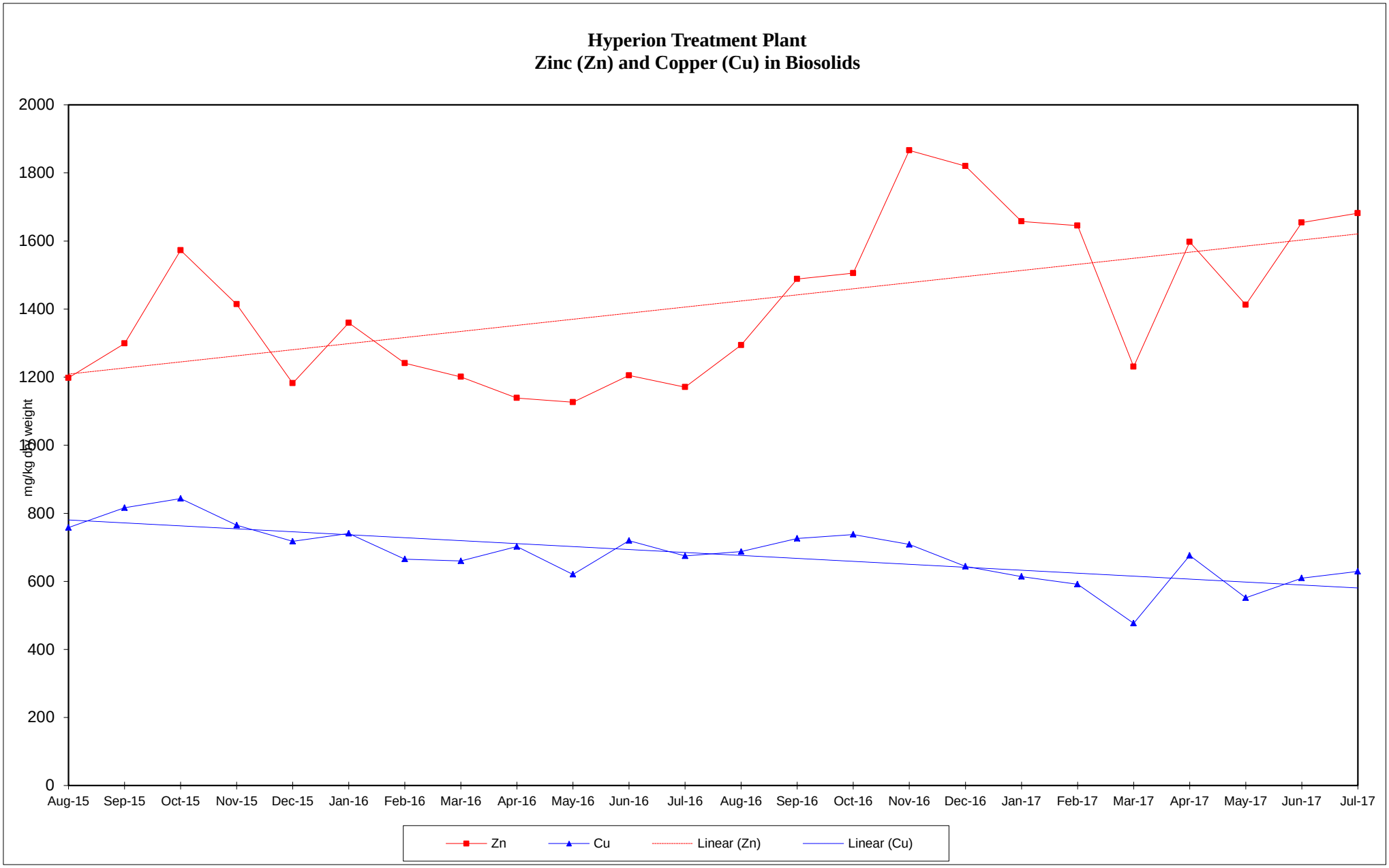

Figure 3. Concentrations of zinc and copper in HTP biosolids from August 2015 to July 2017

Generated by RVALENZUELA at 08/24/2017 12:03:03 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

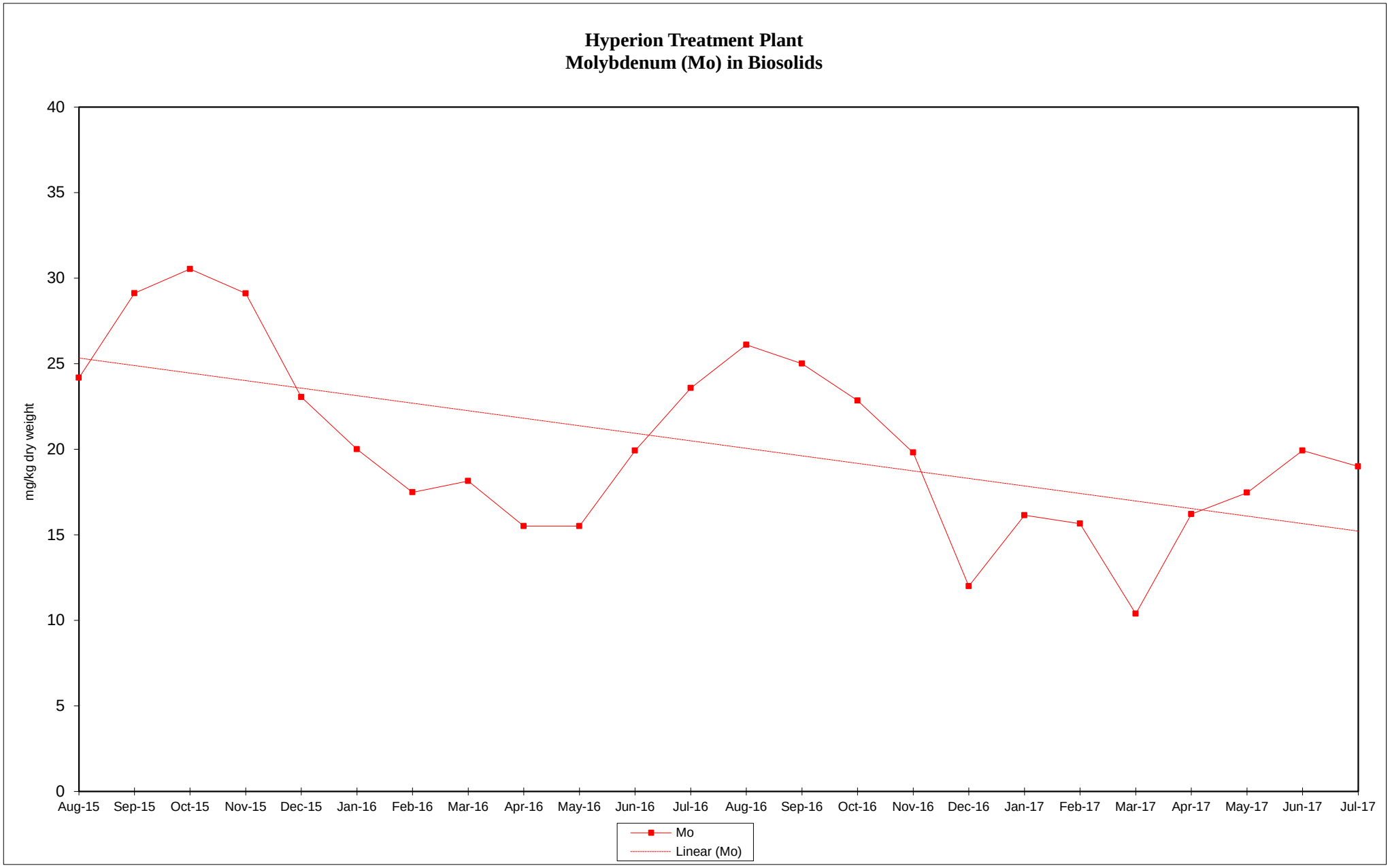

Figure 4. Concentrations of molybdenum in HTP biosolids from August 2015 to July 2017

Generated by RVALENZUELA at 08/24/2017 12:03:03 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

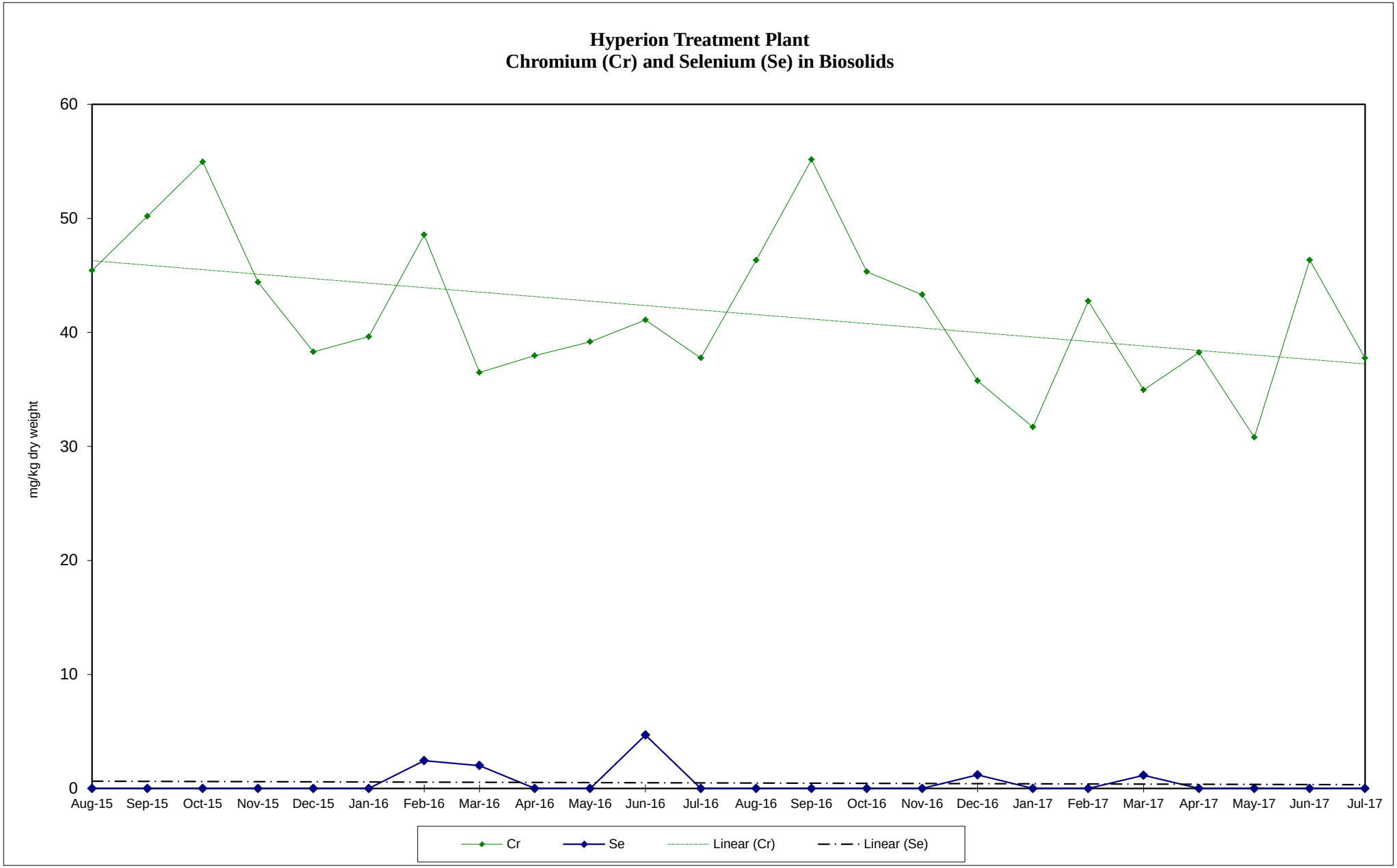

Figure 5. Concentrations of chromium and selenium in HTP biosolids from August 2015 to July 2017

Generated by RVALENZUELA at 08/24/2017 12:03:03 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

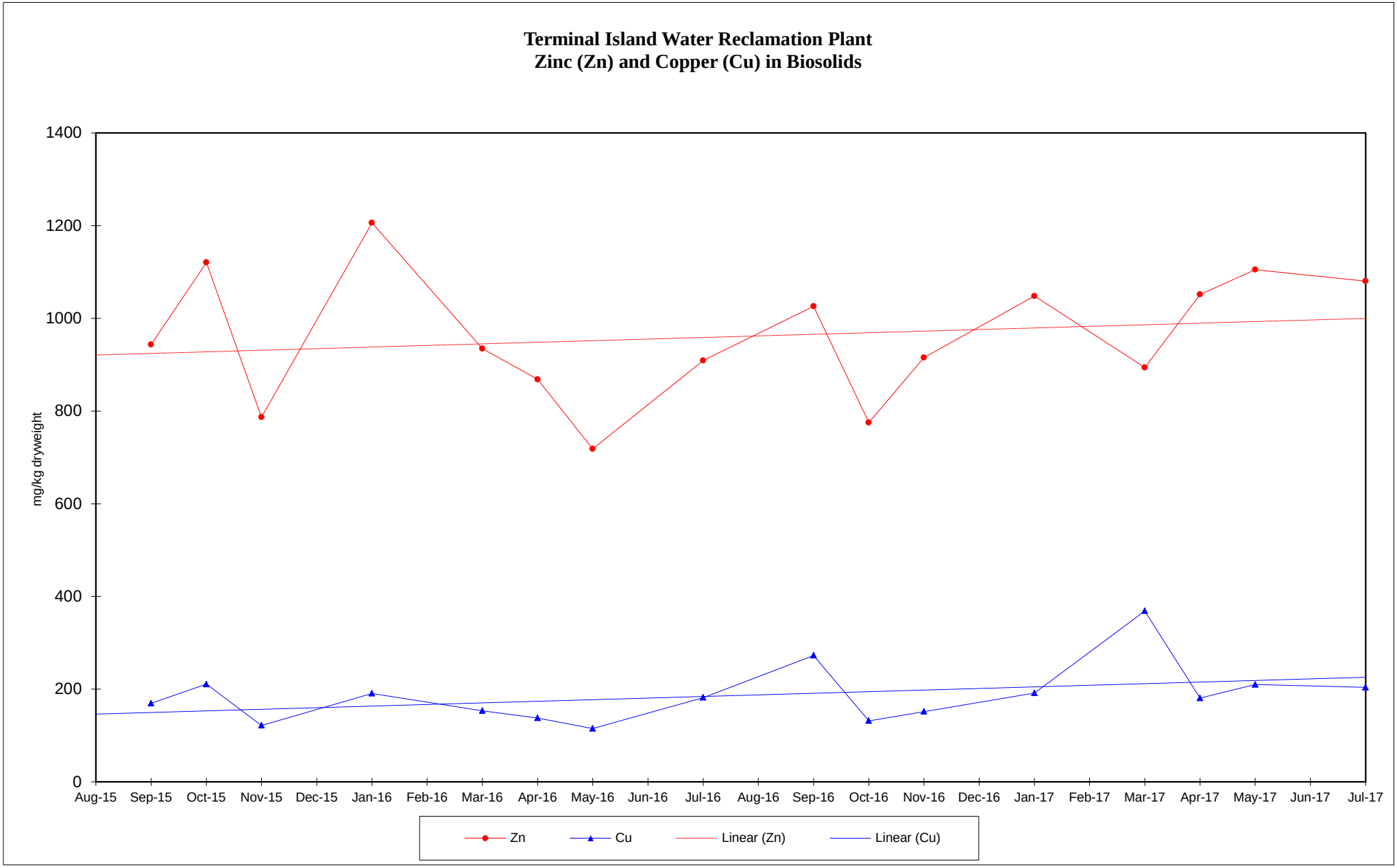

Figure 6. Concentrations of zinc and copper in TIWRP biosolids from August 2015 to July 2017

Generated by RVALENZUELA at 08/24/2017 12:03:03 PM using the Production Database and WISARD V3.0
WISARD - Biosolids Management - HTP TITP Biosolids

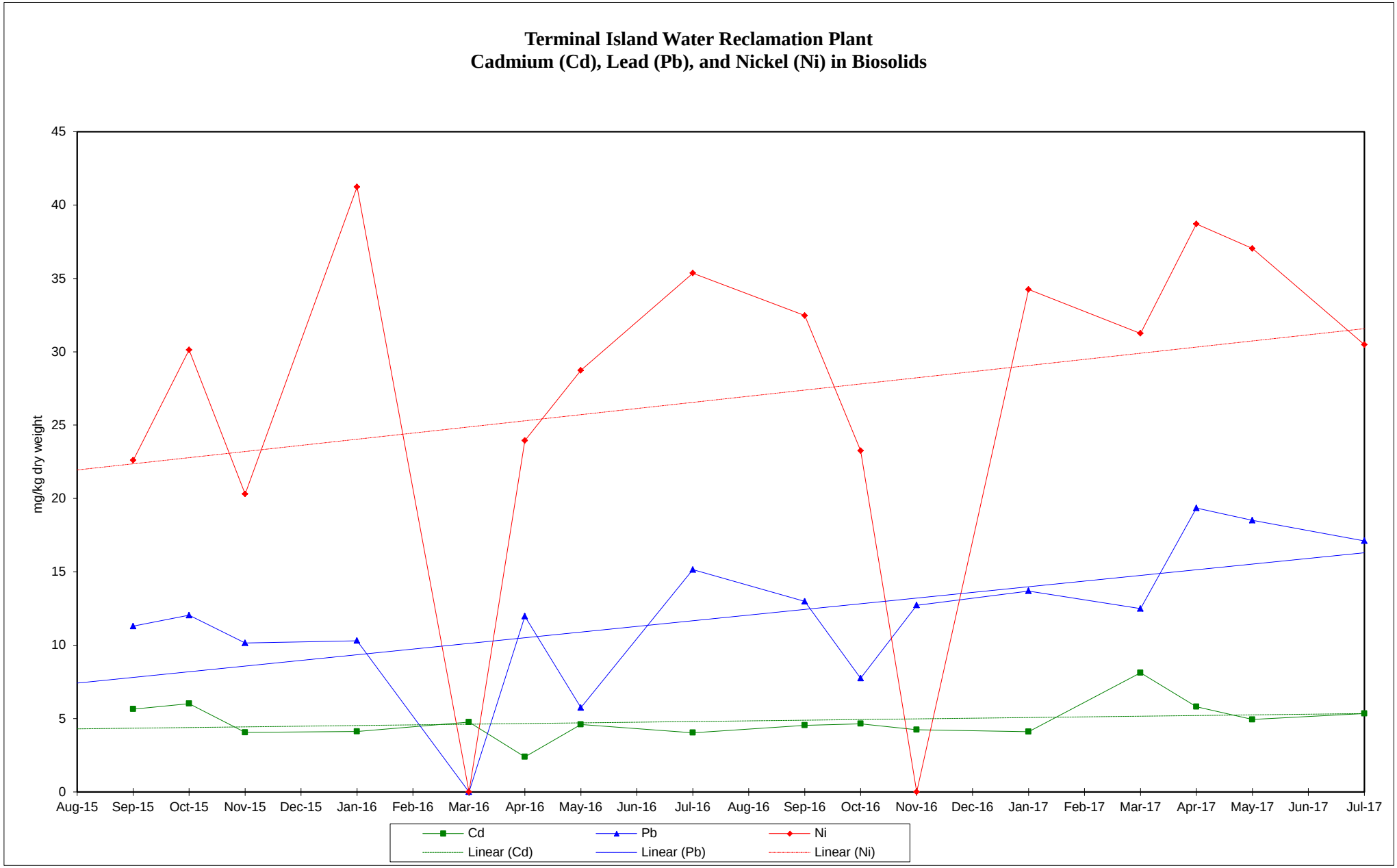

Figure 7. Concentrations of cadmium, lead, and nickel in TIWRP biosolids from August 2015 to July 2017

Generated by RVALENZUELA at 08/24/2017 12:03:03 PM using the Production Database and WISARD V3.0
WISARD - Biosolids Management - HTP TITP Biosolids

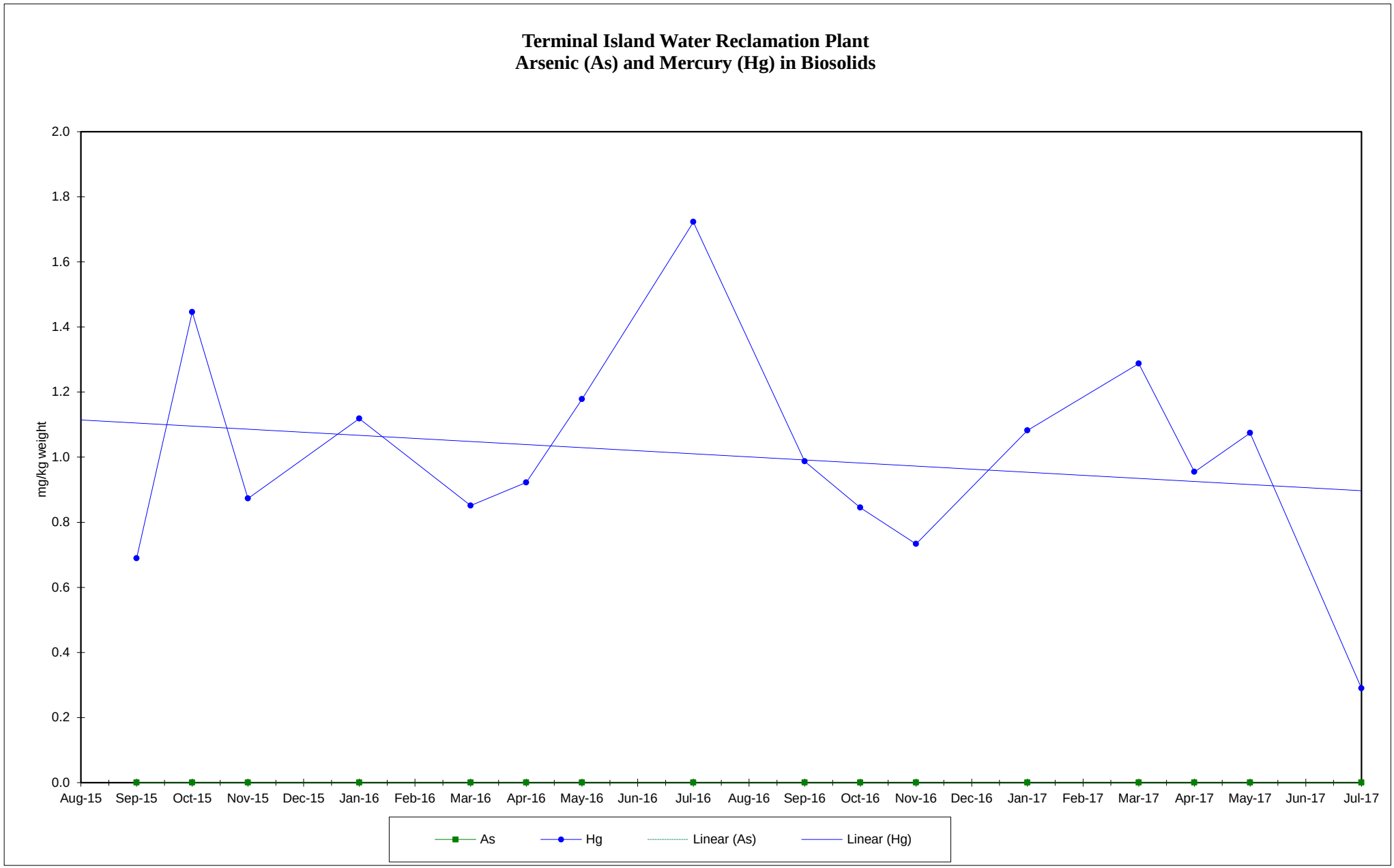

Figure 8. Concentrations of arsenic and mercury in TIWRP biosolids from August 2015 to July 2017

Generated by RVALENZUELA at 08/24/2017 12:03:03 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

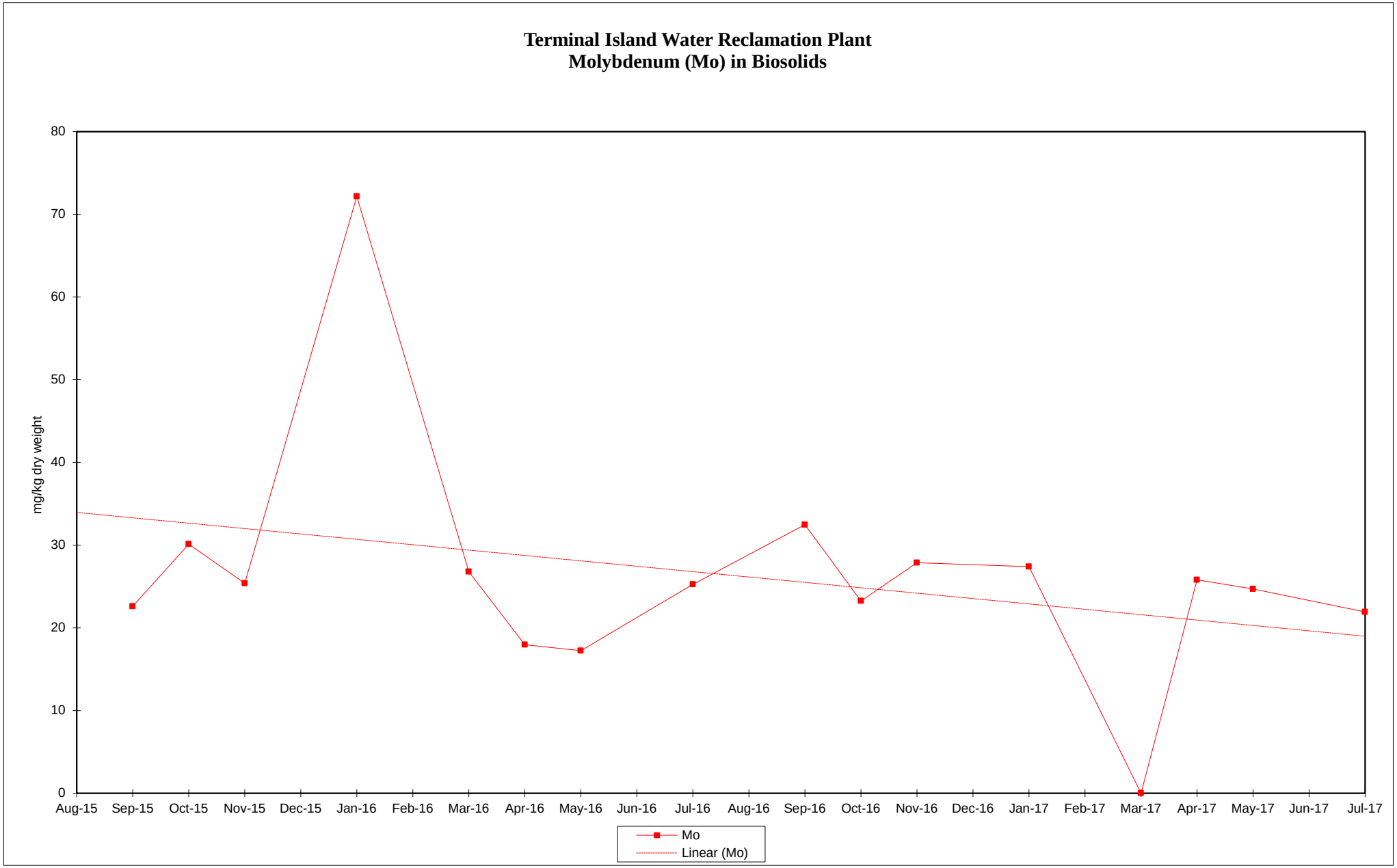

Figure 9. Concentrations of molybdenum in TIWRP Biosolids from August 2015 to July 2017

Generated by RVALENZUELA at 08/24/2017 12:03:03 PM using the Production Database and WISARD V3.0

WISARD - Biosolids Management - HTP TITP Biosolids

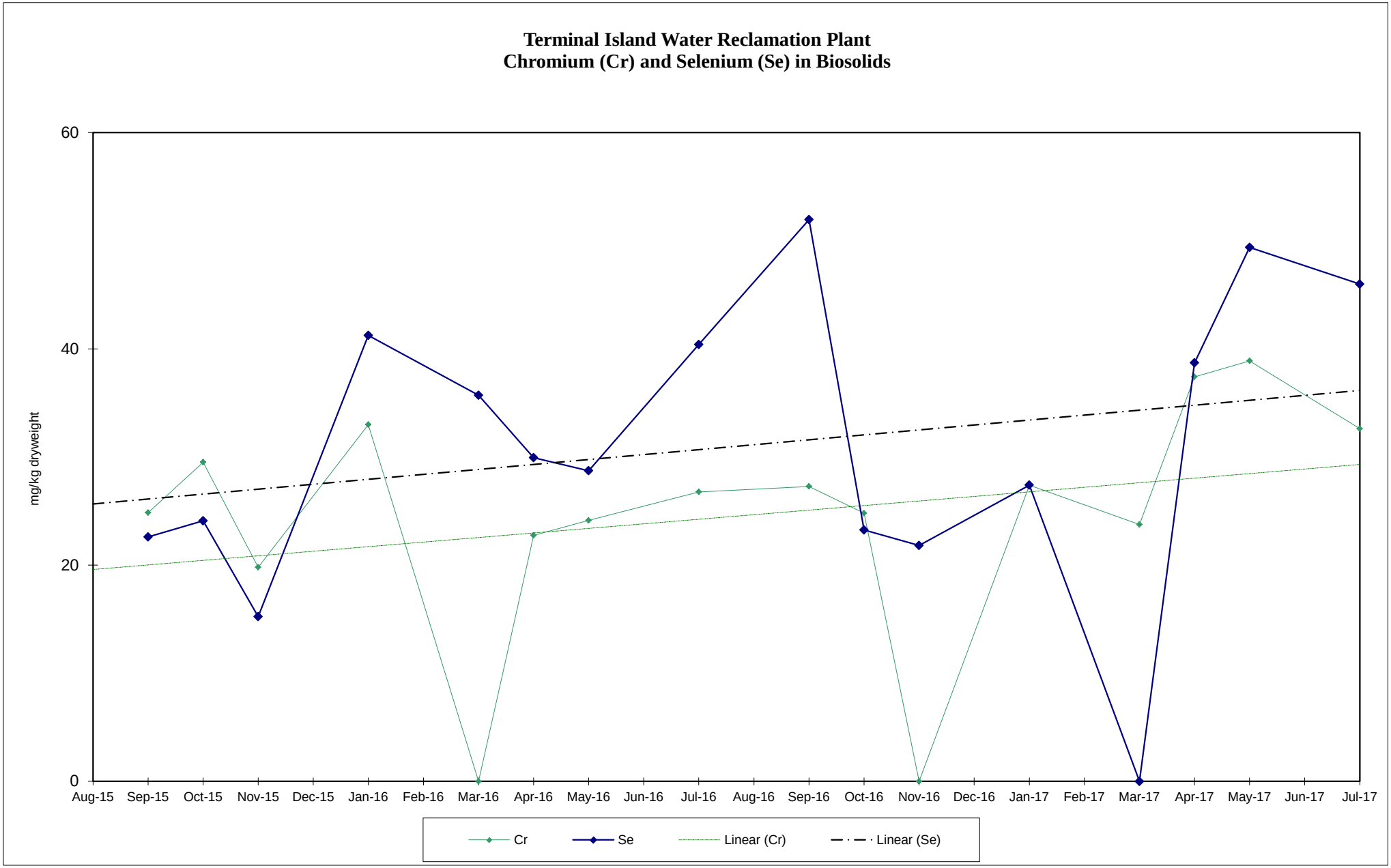

Figure 10. Concentrations of chromium and selenium in TIWRP biosolids from August 2015 to July 2017

Generated by RVALENZUELA at 08/24/2017 12:03:03 PM using the Production Database and WISARD V3.0
WISARD - Biosolids Management - HTP TITP Biosolids

Appendix 1

Monthly Biosolids Monitoring Report

HYPERION TREATMENT PLANT
MONTHLY BIOSOLIDS MONITORING REPORT FOR ARIZONA STATE
July 2017

Analyzed by Environmental Monitoring Division : Arizona ELAP Lic. No. AZ0690
Dept. of Public Works/ Bureau of Sanitation
City of Los Angeles, CA

Table 1. TOTAL SOLIDS AND TOTAL VOLATILE SOLIDS

Sample date: 07/07/2017

Method No. SM 2540 G

Sample*	Total Solids %	Total Volatile Solids %
Raw Sludge	2.5	83.4
TWAS	4.6	82.6
Digested Sludge	1.8	68.8

Table 2. BENEFICIAL USE ASSESSMENT OF BIOSOLIDS* : METALS DATA

Sample date: 07/07/2017

Parameters	Total Solids	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Molybdenum (Mo)	Lead (Pb)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)	Mercury (Hg)
Method No.	SM 2540 G	EPA 3050/ EPA 6010B									EPA 7471A
Unit	%	mg/kg dry weight									
Results	24.8	ND	10.1	37.7	629	19.0	21.4	48.0	ND	1,680	1.26
Ceiling Conc.**	----	75	85	****	4300	75	840	420	100	7500	57
Pollutant Conc.***	----	41	39	****	1500	****	300	420	100	2800	17

TABLE 3. BIOSOLIDS^ - CLASS B COMPLIANCE MICROBIOLOGICAL MONITORING DATA

Sample Date				11-Jul	12-Jul	13-Jul	14-Jul	17-Jul	18-Jul	20-Jul	Geomean
PARAMETERS	Method #	Unit	Req #								
Total Solids	SM 2540G	%	-----	1.88	2.03	1.79	1.91	1.80	1.88	1.78	
Fecal Coliform	SM 9221E	MPN/gram TS(dry wt.)	<2,000,000	1.2E+05	5.4E+04	9.5E+04	2.6E+05	1.8E+05	2.4E+05	9.6E+04	1.3E+05

Table 4. HTP BIOSOLIDS - CLASS A COMPLIANCE MONITORING DATA

Analyzed by Environmental Monitoring Division : Arizona ELAP Lic. No. AZ0690 Helminth Ova and Enteric Virus analyzed by Aerotech, an Arizona ELAP Lic No. AZ0611

Sample date	Parameters	FECAL COLIFORM		SALMONELLA, sp.		HELMINTH OVA*			ENTERIC VIRUS*		
		MPN/gram TS (dry wt)		MPN/4 grams TS (dry wt)		Viable Helminth Ova/4 grams TS (dry wt)			MPN IU/4 grams TS (dry wt)^^		
	%TS	Silo#/Farm		Silo#/Farm		Sludge	Silo#/Farm		Sludge	Silo#/Farm	
7/11/2017	23.7	Farm	<7.6	Farm	<1.7	*****	Farm	*****	*****	Farm	*****

* - 24- Hour composite sample
** - Ceiling concentration in Table 1 of EPA Part 503 Sludge Regulation
*** - Pollutant concentration in Table 3 of EPA Part 503 Sludge Regulation
**** - Limit was deleted according to Federal Register Vol. 60, No. 206 of Oct. 25, 1995
***** - No lab with Arizona certification available
^ - Grab sample of digested sludge
# - EPA 40 CFR Part 503 Class B requirement
SM - Standard Methods, 20th Ed. 1998

TERMINAL ISLAND WATER RECLAMATION PLANT
MONTHLY BIOSOLIDS MONITORING REPORT FOR ARIZONA STATE
July 2017

Analyzed by Environmental Monitoring Division : Arizona ELAP Lic. No. AZ0690
Dept. of Public Works/ Bureau of Sanitation
City of Los Angeles, CA

Table 1. TOTAL SOLIDS AND VOLATILE SOLIDS

Sample date: 7/17/2017

Method No. SM 2540 G

Sample*	Total Solids %	Total Volatile Solids %
Raw Sludge	1.67	68.9
TWAS	4.08	77.9
Digested Sludge	1.87	61.3

Table 2. BENEFICIAL USE ASSESSMENT OF BIOSOLIDS*: METALS DATA

Sample date: 07/07/2017

Parameters	Total Solids	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Molybdenum (Mo)	Lead (Pb)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)	Mercury (Hg)
Method No.	SM 2540 G	EPA 3050/ EPA 6010B									EPA 7471A
Unit	%	mg/kg dry weight									
Results	1.9	ND	5.35	32.6	204	21.9	17.1	30.5	46.0	1,080	0.290
Ceiling Conc.**	----	75	85	****	4300	75	840	420	100	7500	57
Pollutant Conc.***	----	41	39	****	1500	****	300	420	100	2800	17

TABLE 3. BIOSOLIDS^ - CLASS A COMPLIANCE MICROBIOLOGICAL MONITORING DATA

Sample Date: 07/11/2017

Parameters	TOTAL SOLIDS	FECAL COLIFORM	SALMONELLA, sp.
Method No.	SM2540G	SM 9221E	SM 9260D
Unit	%	MPN/gram TS (dry wt)	MPN/4 grams TS (dry wt)
Frequency	6 Times/Year@	6 Times/Year@	Quarterly
Results	1.82	<9.9	<1.7
Requirement#		<1000	<3

* - 24-Hour composite sample
** - Ceiling concentration in Table 1 of EPA Part 503 Sludge Regulation
*** - Pollutant concentration in Table 3 of EPA Part 503 Sludge Regulation
**** - Limit was deleted according to Federal Register Vol. 60, No. 206 of Oct. 25, 1995
@ - Sampling frequency for TIWRP is 6 months/year. The months are: Jan, Mar, May, Jul, Sep and Nov.
# - EPA 40 CFR Part 503 Class A requirements
^ - Grab sample from Farm
NS - Sampling not required
SM - Standard Methods, 20th Ed. 1998