

AR-41



Date:

From: Robert Pepin
NPDES Programs Branch, Section 2

To: Files

Subject: Comparison of the Effect of the Proposed Modified Effluent Limitations for ArcelorMittal (NPDES OH0000957) Submitted Pursuant to CWA 301(g) on Achieving State Water Quality Criteria for Ammonia

I was tasked to analyze the effect of the proposed modified effluent limitations (PMELs) on the achievement of ambient ammonia water quality criteria in the Cuyahoga River, specifically the portion designated as the Cuyahoga Ship Channel (CSC; river mile 5.6 to river mile 0.0).

Determination of Applicable Water Quality Criteria

The analysis is complex because the Ohio water quality criteria (WQC) for ammonia are seasonal, with one season lasting from March through November and the other season from December through February. Further, because ammonia WQC are pH and temperature-dependent, the appropriate selection of critical pH and temperature statistics are important. Ohio Administrative Code (OAC) 3745-2-04(E)(3)(a) states that pH and temperature data should be obtained according to the following seasons:

1. June through September for Summer
2. December through February for Winter
3. The period of data that best represents the season for alternate seasonal periods

Finally, the designated uses for the CSC (OAC 3745-1-26) are also seasonal but not consistent with the seasonality of the ammonia criteria. The designated uses for the CSC are as follows:

1. Limited Resource Water: from June through January
2. Limited Resource Water: from February through May when flows are less than 703 cfs at the Independence Road gaging station (USGS-04208000)
3. Fish Passage: from February through May when flows are greater than or equal to 703 cfs at the Independence Road gaging station

In order to complete this analysis an approach had to be developed to reconcile the differences in the seasonal periods of the numeric criteria and the applicable designated uses. The solution used was to determine seasons using best professional judgment that, combines the intent of OAC 3745-2-04(E)(3) and OAC 3745-1-26. Seasons were defined and are presented in Table 1.

Table 1

Season	Time Period	Basis
Fish Passage	Feb – May	Consistent with Fish Passage period in OAC 3745-1-26
Summer	Jun – Sep	Consistent with Summer defined in OAC 3745-2-04(E) excluding the months for fish passage
Winter	Dec - Jan	Consistent with Winter defined in OAC 3745-2-04(E) excluding the months for fish passage
Not Specified	Oct - Nov	Not specified

To complete this analysis temperature, ammonia-N, and pH data were obtained from the Independence Road gaging station through the USGS/USEPA Water Quality Portal (<http://www.waterqualitydata.us/index.jsp>). Table 2 provides summary meta-statistics on the data.

Table 2

Metastatistics for Independence Road Gaging Station USGS-04208000			
Parameter	Units	Period of Record	Data Count
Temperature	°C	2007-08-14 – 2014-04-09	57
pH	--	2007-08-14 – 2014-04-09	79
Ammonia	Mg/L	2011-04-04 – 2014-03-17	73

To determine the appropriate water quality criteria for each designated use, the 75th percentile pH and temperature were determined from the USGS-04208000 gaging station for each season defined in Table 1, above. The use of the 75th percentile is consistent with Ohio Administrative Code 3745-2-04(E)(3)(b). These values were used to obtain the appropriate ammonia WQC from 3745-1, table 7-2 (Warmwater habitat, modified warmwater habitat and limited resource water outside mixing zone maximum total ammonia-nitrogen criteria (mg/l)) and table 7-5 (Warmwater habitat outside mixing zone 30-day average total ammonia-nitrogen criteria (mg/l)). Table 3 provides the calculated 75th percentile pH and temperature, and corresponding WQC for each season.

Table 3

Limited Resource OMZM/Warm Water OMZM (Table 7-2)			
	WQC	Temp	pH
Feb-May	9.3	13	8.0
Jun-Sep (Summer)	5.9	24	8.2
Dec-Feb (Winter)	9.8	6	8.0
Oct-Nov	11.1	12	7.9

Warm Water OMZA/Fish Passage

	WQC	Temp	pH
Feb-May	2.7	13	8.0

OMZM = Outside Mixing Zone Maximum

OMZA – Outside Mixing Zone Average

Temperature in units of °C, pH in standard units, and ammonia in mg/L

Calculation of Expected Ambient Ammonia Concentrations from Discharge through Outfall 005

To calculate the expected maximum concentration of ammonia in the CSC a mass balance model was used:

$$C_d = \frac{L_r + L_e + L_n + L_b}{Q_r + Q_e}$$

Where:

C_d = ambient ammonia concentration after mixing downstream of Outfall 005 (mg/L)

L_r = ambient ammonia load upstream of Outfall 005 (kg/d)

L_e = PMEL (kg/d)

L_n = estimated ammonia load from NEORSD (kg/d)

L_b = estimated ammonia load from Big Creek (kg/d)

Q_r = CSC flow upstream of Outfall 005 (cfs)

Q_e = Effluent flow from Outfall 005 (cfs)

Because there are two PMELs, 30 day average and daily maximum, the model was run using both PMELs. The results using the 30-day average PMEL were compared to the limited resource WQC and warm water OMZA WQC to determine if any WQC would be exceeded. The results using the daily maximum PMEL were compared to the limited resource WQC and warm water OMZM WQC to determine if any WQC would be exceeded.

The upstream loads from background conditions, Big Creek, and the NEDORD discharge were calculated using information supplied in a Ohio EPA developed spreadsheet titled “cuyahoga ammonia wla 2.xls.” These loads were calculated as (Table 4):

Table 4

Input Load Source	Load (kg/d)
Background	273
Big Creek	31.9
NEORDS	5566

Seasonality was not considered in determining the instream concentrations downstream of Outfall 005 because no data were available to allow for such calculations. Using the mass balance model instream ammonia concentrations were calculated and these values were compared to the appropriate WQC. Table 5 shows the results of the comparisons. As can be seen, at no time will the projected instream concentrations exceed the minimum WQC for any season identified in Table 1.

Table 5

Season	Water Quality Criterion		Projected Instream Concentration	
	Limited Resource		PMEL Avg	PMEL Max
	Warm 'Water OMZM	Warm 'Water OMZA		
Feb-May (Fish Passage)	9.3	2.7	2.14	2.17
Jun-Sep (Summer)	5.9	--	2.14	2.17
Dec-Feb (Winter)	9.8	--	2.14	2.17
Oct-Nov	11.1	--	2.14	2.17

all values in mg/L

The following language is proposed to be added to the 301(g) decision document. Two spreadsheets accompany this memo: "Cuyahoga Water Quality Portal 2014-11-25 Analysis.xlsx" and "cuyahoga ammonia wla 2.xls."

Comparison of the proposed effluent quality to State water quality standards is difficult because the alignment on a calendar-basis of the designated uses for the Ship Channel to the ammonia water quality criteria (OAC 3745-1, tables 7-2 and 7-5). The designated uses for the Ship Channel change to fish passage between February and May when flows exceed 703 cfs, whereas the warmwater habitat ammonia criteria have two applicable periods, one from March through November and the second December through February. In order to address this mal-alignment, an analysis was conducted using month-specific pH and temperature statistics as measured at USGS monitoring station 04208000. The monthly water quality criteria for ammonia was compared to the expected effluent quality resulting from the proposed PMELs. At no time would the water quality criteria for ammonia be exceeded if the proposed PMELs are implemented.

	Ohio EPA WLA				Current 301(g) Limits		OEPA Recommended	
	Summer	Winter	BPT Limits	BAT Limits	Summer	Winter	301(g) Limits	
Monthly Average	NA	1018	451	24.5	62.4	81.6	183	
Daily Maximum	3135	2472	1353	73.6	85.6	211	294	

assumes NEORSR discharge is at 8 and 5 mg/L

	Dec-Feb (current)		Dec-Feb (new 301g)		Mar-Apr (current)		Mar-Apr (new 301g)		WLA 1	WLA 2	Load	WLA 3	Load	WLA 4	WLA 5
	Flow (cfs)	conc. (mg/l)	Flow (cfs)	conc. (mg/l)	Flow (cfs)	conc. (mg/l)	Flow (cfs)	conc. (mg/l)							
Cuyahoga ust NEORSR	745.6	0.15	745.6	0.15	745.6	0.15	745.6	0.15							
NEORSR 001	270.8	8	270.8	8	270.8	5	270.8	5	7.4689808	5.269194		5		5	8
Cuyahoga dst NEORSR	1016.4	2.241479732	1016.4	2.241479732	1016.4	1.442188115	1016.4	1.4421881							
Big Creek	26.7	0.49	26.7	0.49	26.7	0.49	26.7	0.49							
Cuyahoga dst Big Creek	1043.1	2.196647493	1043.1	2.196647493	1043.1	1.417815166	1043.1	1.4178152							
ArcMittal Intake 801	67.8	2.196647493	67.8	2.196647493	67.8	1.417815166	67.8	1.4178152				1.42		1.42	2.2
ArcMittal 604	0.43	50.13670855	0.43	137.6301803	0.43	50.13670855	0.43	137.63018							
ArcMittal 005	67.8	2.674939134	67.8	3.533916843	67.8	1.901046305	67.8	2.760024		5.269194	873.51885	5.733851	950.54902	10.422001	75.06151
Cuyahoga dst 005/ ust 014	1043.1	2.37051469	1043.1	2.426347006	1043.1	1.541380442	1043.1	1.5972128							
ArcMittal Intake 808	55.7	2.37051469	55.7	2.426347006	55.7	1.541380442	55.7	1.5972128							
ArcMittal 014	55.7	2.37051469	55.7	2.426347006	55.7	1.541380442	55.7	1.5972128		5.269194		5.733851	950.54902	1.6	2.42
Cuyahoga dst 014/ ust 023	1043.1	2.497096675	1043.1	2.555910354	1043.1	1.623687882	1043.1	1.6825016							
ArcMittal 023	0.324	20.37	0.324	20.37	0.324	20.37	0.324	20.37		5.269194		5.733851		10.422001	75.06151
Cuyahoga dst	1043.424	2.5026465	1043.424	2.561441916	1043.424	1.629508915	1043.424	1.6883043							
ArcMittal 301g avg.		81.6		224		81.6		224							
WQS avg.		7.1		7.1		2.1		2.1							
Additional 005 load		0		142.4				142.4							

assumes NEORSR discharge is at 12 and 7 mg/L

	Dec-Feb (current)		Dec-Feb (new 301g)		Mar-Apr (current)		Mar-Apr (new 301g)	
	Flow (cfs)	conc. (mg/l)	Flow (cfs)	conc. (mg/l)	Flow (cfs)	conc. (mg/l)	Flow (cfs)	conc. (mg/l)
Cuyahoga ust NEORSR	745.6	0.15	745.6	0.15	745.6	0.15	745.6	0.15
NEORSR 001	270.8	12	270.8	12	270.8	7	270.8	7
Cuyahoga dst NEORSR	1016.4	3.307201889	1016.4	3.307201889	1016.4	1.975049193	1016.4	1.9750492
Big Creek	26.7	0.49	26.7	0.49	26.7	0.49	26.7	0.49
Cuyahoga dst Big Creek	1043.1	3.235090595	1043.1	3.235090595	1043.1	1.937036717	1043.1	1.9370367
ArcMittal Intake 801	67.8	3.235090595	67.8	3.235090595	67.8	1.937036717	67.8	1.9370367
ArcMittal 604	0.43	50.13670855	0.43	137.6301803	0.43	50.13670855	0.43	137.63018
ArcMittal 005	67.8	3.70679624	67.8	4.565773949	67.8	2.416974858	67.8	3.2759526
Cuyahoga dst 005/ ust 014	1043.1	3.476027021	1043.1	3.531859336	1043.1	2.094136608	1043.1	2.1499689
ArcMittal Intake 808	55.7	3.476027021	55.7	3.531859336	55.7	2.094136608	55.7	2.1499689
ArcMittal 014	55.7	3.476027021	55.7	3.531859336	55.7	2.094136608	55.7	2.1499689
Cuyahoga dst 014/ ust 023	1043.1	3.661641732	1043.1	3.720455411	1043.1	2.205960411	1043.1	2.2647741
ArcMittal 023	0.324	20.37	0.324	20.37	0.324	20.37	0.324	20.37
Cuyahoga dst	1043.424	3.666829947	1043.424	3.725625363	1043.424	2.211600638	1043.424	2.2703961
ArcMittal 301g avg.		81.6		224		81.6		224
WQS avg.		7.1		7.1		2.1		2.1
Additional 005 load				142.4				142.4

increased mar-apr flows and concs at NEORSR

0.00% Station	Waterbody	Type	MonitoringLocationDescriptionText	LatitudeMeasure	LongitudeMeasure
21OHIO-F01E01	LTV (WEST) 022 OUTFALL TO CUYAHOGA R	Facility Industrial		41.4633	-81.6811
21OHIO-F01E02	LTV (EAST) 005 OUTFALL TO CUYAHOGA R	Facility Industrial		41.4653	-81.6731
21OHIO-F01E03	LTV (WEST) 027 OUTFALL TO CUYAHOGA R	Facility Industrial		41.4703	-81.6694
21OHIO-F01E04	LTV (WEST) 014 OUTFALL TO CUYAHOGA R	Facility Industrial		41.4733	-81.67
21OHIO-F01E06	LTV (EAST) 017 OUTFALL TO CUYAHOGA R	Facility Industrial		41.475	-81.6711
21OHIO-F01E07	LTV (WEST) 024 OUTFALL TO CUYAHOGA R	Facility Industrial		41.465	-81.6792
21OHIO-F01E09	LTV (EAST) 002 OUTFALL TO CUYAHOGA R	Facility Industrial		41.4517	-81.6819
21OHIO-F01A17	CLEVELAND SOUTHERLY WWTP OUTFALL TO CUYAHOGA R	Facility Municipal Sewage (POTW)		41.4189	-81.6486
11NPSWRD-CUVA_NPS_RORO	Cuyahoga River at Rockside Road Bridge	River/Stream	Station is located at the Rockside Road bridge crossing over the Cuyahoga River.	41.3944055	-81.6295233
11NPSWRD-CUVA_NPS_STRB	Cuyahoga River at Station Road Bridge	River/Stream	Station is located at the Station Road bridge crossing over the Cuyahoga River.	41.3192611	-81.5877108
21OHIO_WQX-200002	200002-CUYAHOGA R. AT CLEVELAND, 0.15 MI. DST. UNION TERMINAL	River/Stream		41.4978	-81.7033
21OHIO_WQX-200008	200008-CUYAHOGA R. AT CLEVELAND, NEAR WALWORTH RUN	River/Stream	Cuyahoga River lacustuary site	41.4825	-81.6764
21OHIO_WQX-200024	200024-CUYAHOGA R. AT CLEVELAND, ADJ. BRADLEY RD.	River/Stream		41.4444	-81.6792
21OHIO_WQX-200025	200025-CUYAHOGA R. 1.7 MILES DST. CLEVELAND SOUTHERLY WWTP	River/Stream		41.4344	-81.6639
21OHIO_WQX-300509	300509-CUYAHOGA R. NEAR BRECKSVILLE @ ST. RT. 82 (DST DAM)	River/Stream	Cuyahoga River under the State Route 82 Bridge, downstream of the Canal Diversion Dam	41.32158	-81.58731
21OHIO_WQX-502020	502020-CUYAHOGA R. AT INDEPENDENCE @ OLD ROCKSIDE RD.	River/Stream		41.3953	-81.63
21OHIO_WQX-502130	502130-CUYAHOGA R. AT CLEVELAND @ LOWER HARVARD AVE.	River/Stream		41.4478	-81.685
21OHIO_WQX-502140	502140-CUYAHOGA R. AT CLEVELAND @ W. THIRD ST.	River/Stream		41.4881	-81.6853
21OHIO_WQX-F01A20	F01A20-CUYAHOGA R. AT CLEVELAND @ UNION TERMINAL	River/Stream		41.4883	-81.6592
21OHIO_WQX-F01A21	F01A21-CUYAHOGA R. AT CLEVELAND @ RR	River/Stream		41.4647	-81.6769
21OHIO_WQX-F01A22	F01A22-CUYAHOGA R. AT CLEVELAND @ DENNISON AVE.	River/Stream		41.4492	-81.6817
21OHIO_WQX-F01A23	F01A23-CUYAHOGA R. AT CLEVELAND, UPST. BIG CREEK	River/Stream		41.445573	-81.684375
21OHIO_WQX-F01A25	F01A25-CUYAHOGA R. UPST. CLEVELAND SOUTHERLY WWTP	River/Stream		41.418175	-81.6476694
21OHIO_WQX-F01A40	F01A40-CUYAHOGA R. AT CLEVELAND @ RR DST. TURNING BASIN	River/Stream		41.4792	-81.6806
21OHIO_WQX-F01A56	F01A56-CUYAHOGA R. AT CLEVELAND, UPST. BRADLEY RD. SMELTERS	River/Stream		41.4394	-81.6708
21OHIO_WQX-F01A57	F01A57-CUYAHOGA R. DST. SOUTHERLY WWTP @ MIXING ZONE	River/Stream		41.4197	-81.655
21OHIO_WQX-F01A64	F01A64-CUYAHOGA R. AT CLEVELAND @ 1ST BRIDGE NEAR MOUTH	River/Stream	Cuyahoga River lacustuary site	41.5006	-81.7097
21OHIO_WQX-F01S07	F01S07-CUYAHOGA R. AT CLEVELAND @ ST. RT. 2	River/Stream		41.4983	-81.7053
21OHIO_WQX-F01S08	F01S08-CUYAHOGA R. AT CLEVELAND @ PERSHING AVE.	River/Stream		41.4706	-81.6692
21OHIO_WQX-F01S09	F01S09-CUYAHOGA R. DST. SOUTHERLY WWTP @ CONRAIL RR	River/Stream		41.4269	-81.6658
21OHIO_WQX-F01S10	F01S10-CUYAHOGA R. UPST CLEVELAND SOUTHERLY WWTP @ RR & S.R. 21	River/Stream		41.4178	-81.6417
21OHIO_WQX-F01S11	F01S11-CUYAHOGA R. @ HILLSIDE RD.	River/Stream		41.3789	-81.6147
21OHIO_WQX-F01S12	F01S12-CUYAHOGA R. @ FITZWATER RD.	River/Stream		41.3567	-81.5981
21OHIO_WQX-F01S71	F01S71-CUYAHOGA R. UPST ST. RT. 21 & RR BRIDGE	River/Stream		41.4172	-81.6408
21OHIO_WQX-F01W43	F01W43-CUYAHOGA R. @ LTV FOOTBRIDGE	River/Stream	Cuyahoga River lacustuary site	41.4633	-81.6806
21OHIO_WQX-F01W47	F01W47-CUYAHOGA R. AT CLEVELAND @ CENTER ST.	River/Stream		41.4944	-81.7033
21OHIO_WQX-F99Q01	F99Q01-CUYAHOGA R. AT CLEVELAND, UPST. NORFOLK & WESTERN RR	River/Stream		41.4644	-81.6786
21OHIO_WQX-F99Q02	F99Q02-CUYAHOGA R. DST. CLEVELAND SOUTHERLY WWTP	River/Stream		41.4211	-81.6592

21OHIO_WQX-F99Q03	F99Q03-CUYAHOGA R. AT VALLEY VIEW @ I-480 BRIDGE	River/Stream	41.4097	-81.6344
21OHIO-200002	CUYAHOGA R. AT CLEVELAND, 0.15 MI. DST. UNION TERMINAL	River/Stream	41.4978	-81.7033
21OHIO-200003	CUYAHOGA R. AT CLEVELAND, 0.4 MI. DST. LORAIN AVE. BRIDGE	River/Stream	41.495	-81.6917
21OHIO-200004	CUYAHOGA R. AT CLEVELAND, 0.25 MI. DST. UNION TERMINAL	River/Stream	41.4906	-81.7047
21OHIO-200005	CUYAHOGA R. AT CLEVELAND @ MOUTH OF WALWORTH RUN	River/Stream	41.4881	-81.6933
21OHIO-200006	CUYAHOGA R. AT CLEVELAND @ RR DST. I-71	River/Stream	41.4867	-81.6925
21OHIO-200007	CUYAHOGA R. AT CLEVELAND @ I-71 BRIDGE	River/Stream	41.4864	-81.6908
21OHIO-200008	CUYAHOGA R. AT CLEVELAND, NEAR WALWORTH RUN	River/Stream	41.4825	-81.6764
21OHIO-200009	CUYAHOGA R. AT CLEVELAND, NEAR ZAELON	River/Stream	41.4775	-81.6675
21OHIO-200010	CUYAHOGA R. AT CLEVELAND, DST. LTV STEEL	River/Stream	41.4769	-81.6697
21OHIO-200011	CUYAHOGA R. AT CLEVELAND @ LTV S05	River/Stream	41.4733	-81.67
21OHIO-200012	CUYAHOGA R. AT CLEVELAND, NEAR REPUBLIC STEEL	River/Stream	41.465	-81.6747
21OHIO-200013	CUYAHOGA R. AT CLEVELAND @ NAV. CHANNEL STATION 815.5	River/Stream	41.465	-81.6744
21OHIO-200014	CUYAHOGA R. AT CLEVELAND, UPST. LTV EAST 005	River/Stream	41.465	-81.6739
21OHIO-200015	CUYAHOGA R. AT CLEVELAND @ STATION C1	River/Stream	41.4647	-81.6761
21OHIO-200016	CUYAHOGA R. AT CLEVELAND, NEAR END OF FEDERAL SHIP CHANNEL	River/Stream	41.4647	-81.6758
21OHIO-200017	CUYAHOGA R. AT CLEVELAND, ADJ. REPUBLIC STEEL	River/Stream	41.4647	-81.6753
21OHIO-200018	CUYAHOGA R. AT CLEVELAND, UPST. BURK BROOK	River/Stream	41.4644	-81.6783
21OHIO-200019	CUYAHOGA R. AT CLEVELAND, UPST. LTV WEST 022	River/Stream	41.4633	-81.6811
21OHIO-200020	CUYAHOGA R. AT CLEVELAND, UPST. LTV FOOTBRIDGE	River/Stream	41.4611	-81.6825
21OHIO-200021	CUYAHOGA R. AT CLEVELAND, 0.25 MI. DST. 2ND RR DST BIG CREEK	River/Stream	41.4586	-81.6833
21OHIO-200022	CUYAHOGA R. AT CLEVELAND, UPST 2ND RR DST. BIG CREEK	River/Stream	41.4525	-81.6836
21OHIO-200023	CUYAHOGA R. AT CLEVELAND, DST. LTV 002	River/Stream	41.4514	-81.6828
21OHIO-200024	CUYAHOGA R. AT CLEVELAND, ADJ. BRADLEY RD.	River/Stream	41.4444	-81.6792
21OHIO-200025	CUYAHOGA R. 1.7 MILES DST. CLEVELAND SOUTHERLY WWTP	River/Stream	41.4344	-81.6639
21OHIO-200026	CUYAHOGA R. 1.6 MILES DST. CLEVELAND SOUTHERLY WWTP	River/Stream	41.4328	-81.6667
21OHIO-200027	CUYAHOGA R. AT INDEPENDENCE @ STONE RD.	River/Stream	41.3842	-81.625
21OHIO-200028	CUYAHOGA R. UPST. TINKERS CREEK	River/Stream	41.3631	-81.6072
21OHIO-200046	OLD CUYAHOGA R. CHANNEL AT CLEVELAND	River/Stream	41.4972222	-81.7125
21OHIO-200047	OLD CUYAHOGA R. CHANNEL AT CLEVELAND, NORTH SHORE, AT MOUTH	River/Stream	41.4975	-81.7097
21OHIO-200048	OLD CUYAHOGA R. CHANNEL AT CLEVELAND, SOUTH SHORE, AT MIRAGE	River/Stream	41.4972	-81.7119
21OHIO-200049	OLD CUYAHOGA R. CHANNEL AT CLEVELAND	River/Stream	41.4919444	-81.7211111
21OHIO-200050	OLD CUYAHOGA R. CHANNEL AT CLEVELAND @ END OF CHANNEL	River/Stream	41.4917	-81.7225
21OHIO-200051	OLD CUYAHOGA R. CHANNEL AT CLEVELAND, NEAR DRY DOCK/AKZO	River/Stream	41.4917	-81.7208
21OHIO-200052	OLD CUYAHOGA R. CHANNEL AT CLEVELAND, AT CARGILL, SLIP 2A	River/Stream	41.4917	-81.7175
21OHIO-502020	CUYAHOGA R @ OLD ROCKSIDE RD AT INDEPENDENCE	River/Stream	41.3953	-81.63
21OHIO-502130	CUYAHOGA R @ LOWER HARVARD AVE	River/Stream	41.4492	-81.6833
21OHIO-502140	CUYAHOGA R @ W THIRD ST	River/Stream	41.4881	-81.6853
21OHIO-502170	CUYAHOGA R @ STATION RD	River/Stream	41.3203	-81.5878
21OHIO-F01A20	CUYAHOGA R @ UNION TERMINAL	River/Stream	41.4883	-81.6592
21OHIO-F01A21	CUYAHOGA R @ RR	River/Stream	41.4647	-81.6764
21OHIO-F01A22	CUYAHOGA R @ DENNISON AVE	River/Stream	41.4492	-81.6817
21OHIO-F01A23	CUYAHOGA R UPST BIG CK	River/Stream	41.445	-81.6994
21OHIO-F01A24	CUYAHOGA R DST CLEVELAND SOUTHERLY WWTP	River/Stream	41.4289	-81.6692
21OHIO-F01A25	CUYAHOGA R UPST CLEVELAND SOUTHERLY WWTP	River/Stream	41.4169	-81.6458
21OHIO-F01A26	CUYAHOGA R UPST MILL CK @ GRANGER RD	River/Stream	41.4178	-81.6417

21OHIO-F01A40	CUYAHOGA R @ RR DST TURNING BASIN	River/Stream	41.4792	-81.6806
21OHIO-F01A41	CUYAHOGA R UPST TURNING BASIN	River/Stream	41.4731	-81.6694
21OHIO-F01A42	CUYAHOGA R UPST BURKE BK	River/Stream	41.4653	-81.6731
21OHIO-F01A43	CUYAHOGA R @ 2ND RR DST BIG CK	River/Stream	41.4528	-81.6833
21OHIO-F01A56	CUYAHOGA R UPST BRADLEY RD SMELTERS	River/Stream	41.4389	-81.6686
21OHIO-F01A57	CUYAHOGA R DST SOUTHERLY WWTP @ MIXING ZONE	River/Stream	41.4194	-81.6561
21OHIO-F01A64	CUYAHOGA R @ 1ST BRIDGE NR MOUTH	River/Stream	41.5033	-81.7111
21OHIO-F01A65	CUYAHOGA R BEHIND MARSULEX CORP	River/Stream	41.4803	-81.6761
21OHIO-F01S06	CUYAHOGA R @ MOUTH	River/Stream	41.5025	-81.7114
21OHIO-F01S07	CUYAHOGA R @ SR 2	River/Stream	41.4981	-81.7058
21OHIO-F01S08	CUYAHOGA R @ CLARK AVE	River/Stream	41.4722	-81.6694
21OHIO-F01S09	CUYAHOGA R DST SOUTHERLY WWTP @ CONRAIL RR	River/Stream	41.4259	-81.6642
21OHIO-F01S10	CUYAHOGA R UPST CLEVELAND SOUTHERLY WWTP @ RR & SR 21	River/Stream	41.4178	-81.6417
21OHIO-F01S11	CUYAHOGA R @ HILLSIDE RD	River/Stream	41.3708	-81.6147
21OHIO-F01S12	CUYAHOGA R @ FITZWATER RD	River/Stream	41.3567	-81.5981
21OHIO-F01S71	CUYAHOGA R UPST SR 21 & RR BRIDGE	River/Stream	41.4172	-81.6408
21OHIO-F01W42	CUYAHOGA R ALONG BRADLEY RD	River/Stream	41.4422	-81.6783
21OHIO-F01W43	CUYAHOGA R @ LTV FOOTBRIDGE	River/Stream	41.4633	-81.6806
21OHIO-F01W45	CUYAHOGA R DST OF KINGSBURY RUN	River/Stream	41.4842	-81.6767
21OHIO-F01W46	CUYAHOGA R @ TWIN RR BRIDGES	River/Stream	41.4947	-81.6983
21OHIO-F01W47	CUYAHOGA R @ CENTER ST	River/Stream	41.4972	-81.7028
21OHIO-F01W50	CUYAHOGA R 0.10 MILE DST BURKE BK	River/Stream	41.4656	-81.6728
21OHIO-F99Q01	CUYAHOGA R. AT CLEVELAND, UPST. NORFOLK & WESTERN RR	River/Stream	41.4644	-81.6786
21OHIO-F99Q02	CUYAHOGA R. DST. CLEVELAND SOUTHERLY WWTP	River/Stream	41.4203	-81.6575
21OHIO-F99Q03	CUYAHOGA R. AT VALLEY VIEW @ I-480 BRIDGE	River/Stream	41.4147	-81.6383
USGS-04206500	Cuyahoga River at Brecksville OH	Stream	41.3219989	-81.5884549
USGS-04208000	Cuyahoga River at Independence OH	Stream	41.3953309	-81.6298478
USGS-04208001	Cuyahoga River at Independence OHIO-USGS 04208001	Stream	41.3953309	-81.6298478
USGS-04208002	Cuyahoga River at Independence OHIO-USGS 04208002	Stream	41.3953309	-81.6298478
USGS-04208500	Cuyahoga River at Cleveland OH	Stream	41.4164416	-81.639571
USGS-04208503	Cuyahoga R at Lower Harvard Brdg in Cleveland OH	Stream	41.4475518	-81.684574
USGS-04208504	Cuyahoga River near Newburgh Heights OH	Stream	41.4625516	-81.680963
USGS-04208505	Cuyahoga River at Dupont Intake in Cleveland OH	Stream	41.4775516	-81.6701294
USGS-04208506	Cuyahoga River at W 3rd St. Bridge in Cleveland OH	Stream	41.4881068	-81.6851303
USGS-04208507	Cuyahoga R. at W. 3rd St. Bridge Cleveland OH-07	Stream	41.4881068	-81.6851303
USGS-04208508	Cuyahoga R. at W. 3rd St. Bridge Cleveland OH-08	Stream	41.4881068	-81.6851303
USGS-04208510	Cuyahoga River at Center St Bridge in Cleveland OH	Stream	41.4942176	-81.702909
USGS-412124081355200	CUYAHOGA R NR INDEPENDENCE OH	Stream	41.3567206	-81.5976229

	n	min	max	avg	25%ile	50%ile	75%ile	std dev	CoV
Temperature, water	69	0.1	28.4	12.16086957	4.1	10.1	21.2	8.3737899	0.6885848
Stream flow, instantaneous	120	179	12300	2088.008333	346.75	1265	3300	2440.0979	1.1686246
pH	102	7.2	8.8	7.846078431	7.6	7.9	8	0.2882764	0.0367415
Ammonia and ammonium	99	0	0.355	0.082888889	0.034	0.064	0.1095	0.0767108	0.9254656

Date	Station	ActivityCommentText	ResultDetectionCondition Text	CharacteristicName	Fraction	Value Units	USGSPCode		
4/9/2014	USGS-04208000			Temperature, water		8.8 deg C	00010	9	77
3/17/2014	USGS-04208000			Temperature, water		0.5 deg C	00010	78	197
2/24/2014	USGS-04208000			Temperature, water		1.1 deg C	00010	198	299
2/24/2014	USGS-04208000			Temperature, water		1.3 deg C	00010	300	398
1/22/2014	USGS-04208000			Temperature, water		0.1 deg C	00010		
12/4/2013	USGS-04208000	L-3400073 FED EX LATE DELIVERY		Temperature, water		5.8 deg C	00010		
11/4/2013	USGS-04208000			Temperature, water		8.7 deg C	00010		
11/4/2013	USGS-04208000	L-3120090 X=improper sample container for WCA sample in 250mL bottle		Temperature, water		8.7 deg C	00010		
10/21/2013	USGS-04208000	L-3010094 Received October 25, 2013		Temperature, water		12.3 deg C	00010		
9/12/2013	USGS-04208000	""L-2590035 Received September 13, 2013""		Temperature, water		23.7 deg C	00010		
8/23/2013	USGS-04208000			Temperature, water		23.1 deg C	00010		
6/26/2013	USGS-04208000			Temperature, water		22.9 deg C	00010		
6/20/2013	USGS-04208000	""L-1750104 Received June 21, 2013""		Temperature, water		19.8 deg C	00010		
5/22/2013	USGS-04208000			Temperature, water		23.1 deg C	00010		
4/17/2013	USGS-04208000	""L-1120099 Received April 19, 2013""		Temperature, water		12.7 deg C	00010		
3/27/2013	USGS-04208000			Temperature, water		5.3 deg C	00010		
2/26/2013	USGS-04208000			Temperature, water		3 deg C	00010		
2/26/2013	USGS-04208000			Temperature, water		2.7 deg C	00010		
2/13/2013	USGS-04208000	""L-0500055 Received February 15, 2013""		Temperature, water		2.9 deg C	00010		
2/6/2013	USGS-04208000			Temperature, water		1.2 deg C	00010		
1/30/2013	USGS-04208000			Temperature, water		5.5 deg C	00010		
1/28/2013	USGS-04208000			Temperature, water		1.5 deg C	00010		
1/16/2013	USGS-04208000	""L-0180032 X = RU & FA not recvd.. verified FA not recvd, FA LCs deleted and WSC emailed, paa, 1/24/13""		Temperature, water		2.7 deg C	00010		
1/15/2013	USGS-04208000			Temperature, water		3.7 deg C	00010		
1/12/2013	USGS-04208000			Temperature, water		3.8 deg C	00010		
1/11/2013	USGS-04208000			Temperature, water		3.8 deg C	00010		
1/11/2013	USGS-04208000			Temperature, water		4.1 deg C	00010		
1/9/2013	USGS-04208000			Temperature, water		3.2 deg C	00010		
12/24/2012	USGS-04208000			Temperature, water		2.4 deg C	00010		
12/20/2012	USGS-04208000			Temperature, water		5.9 deg C	00010		
12/10/2012	USGS-04208000			Temperature, water		8.2 deg C	00010		
11/1/2012	USGS-04208000			Temperature, water		8.4 deg C	00010		

11/1/2012	USGS-04208000		Temperature, water	8.7 deg C	00010
11/1/2012	USGS-04208000	L-3190080 X = Date on sample 11/4/12	Temperature, water	8.7 deg C	00010
10/31/2012	USGS-04208000		Temperature, water	8.9 deg C	00010
10/28/2012	USGS-04208000		Temperature, water	11 deg C	00010
10/10/2012	USGS-04208000	<p>""A-2850036 Volume of filtered water for chlorophyll = 300mL L-2850036 X = CHY recvd warm GLRI Frozen containers received warm at 1.5 Degrees C.. ok log warm chlorophyll per sullivan and DW, paa""</p> <p>A-2510053 Chlorophyll volume = 300mL L-2510053 X = Recvd warm GLRI CHL Frozen containers received warm at 3.7 Degrees C.. ok log warm CHY per sullivan and DW, paa</p>	Temperature, water	11.7 deg C	00010
9/6/2012	USGS-04208000	A-2260040 Chlorophyll volume = 300mL L-2260040 X = Recvd warm GLRI CHY Received August 10, 2012 Frozen containers received warm at 2.9 Degrees C ok log warm chy per sullivan and wydoski, PG	Temperature, water	23.1 deg C	00010
8/9/2012	USGS-04208000	A-2000098 Chlorophyl volume = 250mL L-2000098 X = Recvd warm GLRI CHY OK log warm per Sullivan & Wydoski, paa, 7/18/12 Frozen containers received warm at 1.4 Degrees C.. FU recvd without ASR request, LC1571 added per btl label, WSC to verify, paa, 7/18/12	Temperature, water	24 deg C	00010
7/17/2012	USGS-04208000	A-1870056 Quantity of chlorophyll sample passed through filter: 300mL L-1870056 X = Recvd warm GLRI CHY Added date & time to ASR per samples, PG, 7/5/12 Received June 29, 2012 Frozen containers received warm at 3.2 Degrees C	Temperature, water	28.4 deg C	00010
6/28/2012	USGS-04208000	A-1380076 300mL filtered for chlorophyll L-1380076 Corrected invalid LC3155 to LC3152, paa Recvd warm 5/17/12 Ok log warm per Sullivan & Wydoski, paa, 5/22/12 Frozen containers received warm at 5.8 Degrees C	Temperature, water	22.4 deg C	00010
5/16/2012	USGS-04208000		Temperature, water	18.7 deg C	00010
4/24/2012	USGS-04208000	L-1210065 Received April 27, 2012	Temperature, water	10.9 deg C	00010
3/28/2012	USGS-04208000	L-0900048 X = Improper sample container for FA - black cap	Temperature, water	12.4 deg C	00010
2/16/2012	USGS-04208000	BOTTLE DATE SAYS 12/16/12	Temperature, water	4 deg C	00010
1/19/2012	USGS-04208000		Temperature, water	1.1 deg C	00010
12/15/2011	USGS-04208000		Temperature, water	6.8 deg C	00010
11/28/2011	USGS-04208000		Temperature, water	9.5 deg C	00010
10/26/2011	USGS-04208000		Temperature, water	11.4 deg C	00010
9/20/2011	USGS-04208000		Temperature, water	17.8 deg C	00010
8/31/2011	USGS-04208000		Temperature, water	21.2 deg C	00010
8/26/2011	USGS-04208000		Temperature, water	22.5 deg C	00010
8/25/2011	USGS-04208000		Temperature, water	23 deg C	00010
8/25/2011	USGS-04208000		Temperature, water	22.4 deg C	00010
8/17/2011	USGS-04208000		Temperature, water	21.6 deg C	00010

		L-2370055 X = Rcvd warm: ok to login per Kevin X = Improper Sample Container - FU - 125mL Received Aug 24, 2011 Chilled containers received warm at 8.1 Degrees C	Temperature, water	21 deg C	00010
8/17/2011	USGS-04208000		Temperature, water	26 deg C	00010
8/1/2011	USGS-04208000				
		L-2220009 Ok to login per Kevin PG 8/10/11 X = FA & FU bottles mislabeled by WSC, checked pH & corrected X = Cap on FCC rcvd loose w/ bottle empty Received Aug 02, 2011.. FCC LCs deleted, paa, 8/11/11	Temperature, water	25.6 deg C	00010
7/26/2011	USGS-04208000		Temperature, water	21.4 deg C	00010
6/30/2011	USGS-04208000		Temperature, water	21.2 deg C	00010
6/30/2011	USGS-04208000		Temperature, water	23.6 deg C	00010
6/1/2011	USGS-04208000				
		L-1180208 X = Time on RU 2011 Received May 04, 2011	Temperature, water	14.4 deg C	00010
4/27/2011	USGS-04208000		Temperature, water	10.5 deg C	00010
4/4/2011	USGS-04208000	L-1250096 Received May 04, 2011 L-1250099 Received May 04, 2011 WCA condition changed to improper preservation, JNV	Temperature, water	9.1 deg C	00010
4/4/2011	USGS-04208000		Temperature, water	10.1 deg C	00010
4/4/2011	USGS-04208000	L-1250101 Received May 04, 2011	Temperature, water	9.6 deg C	00010
4/4/2011	USGS-04208000	L-1250102 Received May 04, 2011	Temperature, water	12.1 deg C	00010
10/20/2010	USGS-04208000				
		L-2670126 User Code is missing in mandatory field,CH Medium Code corrected to WS, CH Updated agency from USGS/WRD per Shepard. KB 11/30/10 Updated UC from NON per Metzker. KB	Temperature, water	20.1 deg C	00010
9/21/2010	USGS-04208000		Temperature, water	23.3 deg C	00010
8/14/2007	USGS-04208000		Stream flow, instantane	290 ft3/s	00061
9/12/2013	USGS-04208000	""L-2590035 Received September 13, 2013""	Stream flow, instantane	394 ft3/s	00061
8/23/2013	USGS-04208000		Stream flow, instantane	8610 ft3/s	00061
7/11/2013	USGS-04208000	""L-1990009 Received July 16, 2013""	Stream flow, instantane	3530 ft3/s	00061
6/26/2013	USGS-04208000		Stream flow, instantane	615 ft3/s	00061
6/20/2013	USGS-04208000	""L-1750104 Received June 21, 2013""	Stream flow, instantane	317 ft3/s	00061
5/22/2013	USGS-04208000		Stream flow, instantane	1430 ft3/s	00061
4/17/2013	USGS-04208000	""L-1120099 Received April 19, 2013""	Stream flow, instantane	3580 ft3/s	00061
4/11/2013	USGS-04208000		Stream flow, instantane	1640 ft3/s	00061
4/10/2013	USGS-04208000		Stream flow, instantane	4170 ft3/s	00061
4/10/2013	USGS-04208000		Stream flow, instantane	1230 ft3/s	00061
3/27/2013	USGS-04208000		Stream flow, instantane	1300 ft3/s	00061
2/26/2013	USGS-04208000		Stream flow, instantane	3430 ft3/s	00061
2/26/2013	USGS-04208000		Stream flow, instantane	1160 ft3/s	00061
2/13/2013	USGS-04208000	""L-0500055 Received February 15, 2013""	Stream flow, instantane	1310 ft3/s	00061
2/6/2013	USGS-04208000		Stream flow, instantane	3280 ft3/s	00061
1/30/2013	USGS-04208000		Stream flow, instantane	1330 ft3/s	00061
1/28/2013	USGS-04208000				

		""L-0180032 X = RU & FA not recvd.. verified FA not recvd, FA LCs deleted and WSC emailed, paa, 1/24/13""			
1/16/2013	USGS-04208000		Stream flow, instantane	1990 ft3/s	00061
1/15/2013	USGS-04208000		Stream flow, instantane	2150 ft3/s	00061
1/12/2013	USGS-04208000		Stream flow, instantane	3070 ft3/s	00061
1/11/2013	USGS-04208000		Stream flow, instantane	1320 ft3/s	00061
1/11/2013	USGS-04208000		Stream flow, instantane	3650 ft3/s	00061
1/9/2013	USGS-04208000		Stream flow, instantane	1300 ft3/s	00061
12/24/2012	USGS-04208000		Stream flow, instantane	1300 ft3/s	00061
12/20/2012	USGS-04208000		Stream flow, instantane	1420 ft3/s	00061
12/10/2012	USGS-04208000		Stream flow, instantane	3790 ft3/s	00061
11/1/2012	USGS-04208000		Stream flow, instantane	5490 ft3/s	00061
11/1/2012	USGS-04208000		Stream flow, instantane	5420 ft3/s	00061
11/1/2012	USGS-04208000	L-3190080 X = Date on sample 11/4/12	Stream flow, instantane	5360 ft3/s	00061
10/31/2012	USGS-04208000		Stream flow, instantane	8240 ft3/s	00061
10/30/2012	USGS-04208000	Station # on Bottle: 04208000	Stream flow, instantane	12300 ft3/s	00061
10/29/2012	USGS-04208000		Stream flow, instantane	6290 ft3/s	00061
10/29/2012	USGS-04208000		Stream flow, instantane	9190 ft3/s	00061
10/28/2012	USGS-04208000		Stream flow, instantane	1490 ft3/s	00061
		""A-2850036 Volume of filtered water for chlorophyll = 300mL L-2850036 X = CHY recvd warm GLRI Frozen containers received warm at 1.5 Degrees C.. ok log warm chlorophyll per sullivan and DW, paa""			
10/10/2012	USGS-04208000	A-2510053 Chlorophyll volume = 300mL L-2510053 X = Recvd warm GLRI CHL Frozen containers received warm at 3.7 Degrees C.. ok log warm CHY per sullivan and DW, paa	Stream flow, instantane	412 ft3/s	00061
9/6/2012	USGS-04208000	A-2260040 Chlorophyll volume = 300mL L-2260040 X = Recvd warm GLRI CHY Received August 10, 2012 Frozen containers received warm at 2.9 Degrees C ok log warm chy per sullivan and wydoski, PG	Stream flow, instantane	579 ft3/s	00061
8/9/2012	USGS-04208000	A-2000098 Chlorophyl volume = 250mL L-2000098 X = Recvd warm GLRI CHY OK log warm per Sullivan & Wydoski, paa, 7/18/12 Frozen containers received warm at 1.4 Degrees C.. FU recvd without ASR request, LC1571 added per btl label, WSC to verify, paa, 7/18/12	Stream flow, instantane	208 ft3/s	00061
7/17/2012	USGS-04208000	A-1870056 Quantity of chlorophyll sample passed through filter: 300mL L-1870056 X = Recvd warm GLRI CHY Added date & time to ASR per samples, PG, 7/5/12 Received June 29, 2012 Frozen containers received warm at 3.2 Degrees C	Stream flow, instantane	208 ft3/s	00061
6/28/2012	USGS-04208000	A-1380076 300mL filtered for chlorophyll L-1380076 Corrected invalid LC3155 to LC3152, paa Recvd warm 5/17/12 Ok log warm per Sullivan & Wydoski, paa, 5/22/12 Frozen containers received warm at 5.8 Degrees C	Stream flow, instantane	179 ft3/s	00061
5/16/2012	USGS-04208000		Stream flow, instantane	439 ft3/s	00061

5/9/2012	USGS-04208000	L-1390191 Time on LC1571 btl is 0900, no btl type on FU, paa, 5/18/12	Stream flow, instantane	3440 ft3/s	00061
5/8/2012	USGS-04208000		Stream flow, instantane	4110 ft3/s	00061
5/8/2012	USGS-04208000		Stream flow, instantane	6460 ft3/s	00061
5/7/2012	USGS-04208000		Stream flow, instantane	1560 ft3/s	00061
5/1/2012	USGS-04208000		Stream flow, instantane	1360 ft3/s	00061
4/24/2012	USGS-04208000	L-1210065 Received April 27, 2012 L-0900048 X = Improper sample container for FA - black cap	Stream flow, instantane	467 ft3/s	00061
3/28/2012	USGS-04208000		Stream flow, instantane	830 ft3/s	00061
2/16/2012	USGS-04208000	BOTTLE DATE SAYS 12/16/12	Stream flow, instantane	927 ft3/s	00061
1/19/2012	USGS-04208000	BOTTLE STATION #04208000	Stream flow, instantane	2030 ft3/s	00061
1/18/2012	USGS-04208000		Stream flow, instantane	3360 ft3/s	00061
1/17/2012	USGS-04208000		Stream flow, instantane	1230 ft3/s	00061
1/17/2012	USGS-04208000		Stream flow, instantane	2520 ft3/s	00061
1/17/2012	USGS-04208000		Stream flow, instantane	5590 ft3/s	00061
12/15/2011	USGS-04208000		Stream flow, instantane	2170 ft3/s	00061
12/10/2011	USGS-04208000		Stream flow, instantane	2450 ft3/s	00061
12/6/2011	USGS-04208000		Stream flow, instantane	7440 ft3/s	00061
12/5/2011	USGS-04208000		Stream flow, instantane	3860 ft3/s	00061
12/5/2011	USGS-04208000		Stream flow, instantane	6970 ft3/s	00061
12/5/2011	USGS-04208000	L-3620025 X = Time not on FCC	Stream flow, instantane	9070 ft3/s	00061
11/28/2011	USGS-04208000		Stream flow, instantane	3560 ft3/s	00061
10/26/2011	USGS-04208000		Stream flow, instantane	1800 ft3/s	00061
10/22/2011	USGS-04208000		Stream flow, instantane	2120 ft3/s	00061
10/19/2011	USGS-04208000		Stream flow, instantane	1190 ft3/s	00061
10/19/2011	USGS-04208000		Stream flow, instantane	3380 ft3/s	00061
10/19/2011	USGS-04208000		Stream flow, instantane	8390 ft3/s	00061
9/20/2011	USGS-04208000		Stream flow, instantane	1630 ft3/s	00061
8/31/2011	USGS-04208000		Stream flow, instantane	317 ft3/s	00061
8/26/2011	USGS-04208000		Stream flow, instantane	738 ft3/s	00061
8/25/2011	USGS-04208000	L-2370055 X = Rcvd warm: ok to login per Kevin X = Improper Sample Container - FU - 125mL Received Aug 24, 2011 Chilled containers received warm at 8.1 Degrees C	Stream flow, instantane	855 ft3/s	00061
8/25/2011	USGS-04208000		Stream flow, instantane	1420 ft3/s	00061
8/17/2011	USGS-04208000	L-2220009 Ok to login per Kevin PG 8/10/11 X = FA & FU bottles mislabeled by WSC, checked pH & corrected X = Cap on FCC rcvd loose w/ bottle empty Received Aug 02, 2011.. FCC LCs deleted, paa, 8/11/11	Stream flow, instantane	615 ft3/s	00061
8/17/2011	USGS-04208000		Stream flow, instantane	594 ft3/s	00061
7/26/2011	USGS-04208000		Stream flow, instantane	579 ft3/s	00061
6/30/2011	USGS-04208000		Stream flow, instantane	524 ft3/s	00061
6/30/2011	USGS-04208000		Stream flow, instantane	519 ft3/s	00061
6/1/2011	USGS-04208000		Stream flow, instantane	1750 ft3/s	00061

4/27/2011	USGS-04208000	L-1180208 X = Time on RU 2011 Received May 04, 2011	Stream flow, instantane	3750 ft3/s	00061
4/4/2011	USGS-04208000	L-1250099 Received May 04, 2011 WCA condition changed to improper preservation, JNV	Stream flow, instantane	1390 ft3/s	00061
4/4/2011	USGS-04208000	L-1250102 Received May 04, 2011	Stream flow, instantane	2390 ft3/s	00061
4/4/2011	USGS-04208000	L-1250101 Received May 04, 2011	Stream flow, instantane	5060 ft3/s	00061
4/4/2011	USGS-04208000	L-1250096 Received May 04, 2011	Stream flow, instantane	7250 ft3/s	00061
8/11/2005	USGS-04208000		Stream flow, instantane	310 ft3/s	00061
8/10/2005	USGS-04208000		Stream flow, instantane	306 ft3/s	00061
8/9/2005	USGS-04208000		Stream flow, instantane	377 ft3/s	00061
8/8/2005	USGS-04208000		Stream flow, instantane	470 ft3/s	00061
8/5/2005	USGS-04208000		Stream flow, instantane	322 ft3/s	00061
8/4/2005	USGS-04208000		Stream flow, instantane	271 ft3/s	00061
8/3/2005	USGS-04208000		Stream flow, instantane	274 ft3/s	00061
8/2/2005	USGS-04208000		Stream flow, instantane	306 ft3/s	00061
8/1/2005	USGS-04208000		Stream flow, instantane	334 ft3/s	00061
7/28/2005	USGS-04208000		Stream flow, instantane	1310 ft3/s	00061
7/27/2005	USGS-04208000		Stream flow, instantane	4460 ft3/s	00061
7/26/2005	USGS-04208000		Stream flow, instantane	290 ft3/s	00061
7/25/2005	USGS-04208000		Stream flow, instantane	351 ft3/s	00061
7/22/2005	USGS-04208000		Stream flow, instantane	505 ft3/s	00061
7/21/2005	USGS-04208000		Stream flow, instantane	2480 ft3/s	00061
7/20/2005	USGS-04208000		Stream flow, instantane	470 ft3/s	00061
7/19/2005	USGS-04208000		Stream flow, instantane	1510 ft3/s	00061
7/18/2005	USGS-04208000		Stream flow, instantane	431 ft3/s	00061
7/15/2005	USGS-04208000		Stream flow, instantane	280 ft3/s	00061
7/14/2005	USGS-04208000		Stream flow, instantane	229 ft3/s	00061
7/12/2005	USGS-04208000		Stream flow, instantane	217 ft3/s	00061
7/11/2005	USGS-04208000		Stream flow, instantane	217 ft3/s	00061
7/8/2005	USGS-04208000		Stream flow, instantane	252 ft3/s	00061
7/7/2005	USGS-04208000		Stream flow, instantane	246 ft3/s	00061
7/6/2005	USGS-04208000		Stream flow, instantane	255 ft3/s	00061
7/5/2005	USGS-04208000		Stream flow, instantane	249 ft3/s	00061
7/1/2005	USGS-04208000		Stream flow, instantane	510 ft3/s	00061
6/30/2005	USGS-04208000		Stream flow, instantane	368 ft3/s	00061
6/29/2005	USGS-04208000		Stream flow, instantane	854 ft3/s	00061
6/28/2005	USGS-04208000		Stream flow, instantane	240 ft3/s	00061
6/27/2005	USGS-04208000		Stream flow, instantane	243 ft3/s	00061
6/23/2005	USGS-04208000		Stream flow, instantane	255 ft3/s	00061
6/22/2005	USGS-04208000		Stream flow, instantane	284 ft3/s	00061
6/21/2005	USGS-04208000		Stream flow, instantane	268 ft3/s	00061
6/20/2005	USGS-04208000		Stream flow, instantane	262 ft3/s	00061
6/15/2005	USGS-04208000		Stream flow, instantane	505 ft3/s	00061

6/14/2005	USGS-04208000		Stream flow, instantane	408 ft3/s	00061
6/13/2005	USGS-04208000		Stream flow, instantane	268 ft3/s	00061
6/9/2005	USGS-04208000		Stream flow, instantane	298 ft3/s	00061
4/9/2014	USGS-04208000		pH	7.2 std units	00400
3/17/2014	USGS-04208000		pH	7.6 std units	00400
2/24/2014	USGS-04208000		pH	7.7 std units	00400
2/24/2014	USGS-04208000		pH	7.5 std units	00400
1/22/2014	USGS-04208000		pH	7.9 std units	00400
12/4/2013	USGS-04208000	L-3400073 FED EX LATE DELIVERY	pH	7.8 std units	00400
11/4/2013	USGS-04208000		pH	7.9 std units	00400
11/4/2013	USGS-04208000	L-3120090 X=improper sample container for WCA sample in 250mL bottle	pH	7.9 std units	00400
10/21/2013	USGS-04208000	L-3010094 Received October 25, 2013	pH	7.8 std units	00400
9/12/2013	USGS-04208000	""L-2590035 Received September 13, 2013""	pH	8 std units	00400
8/23/2013	USGS-04208000		pH	8.2 std units	00400
7/11/2013	USGS-04208000	""L-1990009 Received July 16, 2013""	pH	7.5 std units	00400
6/26/2013	USGS-04208000		pH	7.5 std units	00400
6/20/2013	USGS-04208000	""L-1750104 Received June 21, 2013""	pH	8 std units	00400
5/22/2013	USGS-04208000		pH	8 std units	00400
4/17/2013	USGS-04208000	""L-1120099 Received April 19, 2013""	pH	8 std units	00400
4/11/2013	USGS-04208000		pH	7.4 std units	00400
4/10/2013	USGS-04208000		pH	7.4 std units	00400
4/10/2013	USGS-04208000		pH	7.3 std units	00400
3/27/2013	USGS-04208000		pH	8.1 std units	00400
2/26/2013	USGS-04208000		pH	8 std units	00400
2/26/2013	USGS-04208000		pH	7.8 std units	00400
2/13/2013	USGS-04208000	""L-0500055 Received February 15, 2013""	pH	8.1 std units	00400
2/6/2013	USGS-04208000		pH	8.1 std units	00400
1/30/2013	USGS-04208000		pH	8 std units	00400
1/28/2013	USGS-04208000		pH	8.1 std units	00400
1/16/2013	USGS-04208000	""L-0180032 X = RU & FA not recvd.. verified FA not recvd, FA LCs deleted and WSC emailed, paa, 1/24/13""	pH	8 std units	00400
1/15/2013	USGS-04208000		pH	8 std units	00400
1/12/2013	USGS-04208000		pH	7.9 std units	00400
1/11/2013	USGS-04208000		pH	8.1 std units	00400
1/11/2013	USGS-04208000		pH	7.9 std units	00400
1/9/2013	USGS-04208000		pH	8.1 std units	00400
12/24/2012	USGS-04208000		pH	7.4 std units	00400
12/20/2012	USGS-04208000		pH	7.3 std units	00400
12/10/2012	USGS-04208000		pH	7.5 std units	00400
11/1/2012	USGS-04208000		pH	7.7 std units	00400
11/1/2012	USGS-04208000		pH	7.5 std units	00400

11/1/2012	USGS-04208000	L-3190080 X = Date on sample 11/4/12	pH	7.5 std units	00400
10/31/2012	USGS-04208000		pH	7.5 std units	00400
10/30/2012	USGS-04208000	Station # on Bottle: 04208000	pH	7.7 std units	00400
10/29/2012	USGS-04208000		pH	7.7 std units	00400
10/29/2012	USGS-04208000		pH	7.6 std units	00400
10/28/2012	USGS-04208000		pH	7.9 std units	00400
		""A-2850036 Volume of filtered water for chlorophyll = 300mL L-2850036 X = CHY recvd warm GLRI Frozen containers received warm at 1.5 Degrees C.. ok log warm chlorophyll per sullivan and DW, paa""			
10/10/2012	USGS-04208000	A-2510053 Chlorophyll volume = 300mL L-2510053 X = Recvd warm GLRI CHL Frozen containers received warm at 3.7 Degrees C.. ok log warm CHY per sullivan and DW, paa	pH	8 std units	00400
9/6/2012	USGS-04208000	A-2260040 Chlorophyll volume = 300mL L-2260040 X = Recvd warm GLRI CHY Received August 10, 2012 Frozen containers received warm at 2.9 Degrees C ok log warm chy per sullivan and wydoski, PG	pH	8.1 std units	00400
8/9/2012	USGS-04208000	A-2000098 Chlorophyl volume = 250mL L-2000098 X = Recvd warm GLRI CHY OK log warm per Sullivan & Wydoski, paa, 7/18/12 Frozen containers received warm at 1.4 Degrees C.. FU recvd without ASR request, LC1571 added per btl label, WSC to verify, paa, 7/18/12	pH	8.4 std units	00400
7/17/2012	USGS-04208000	A-1870056 Quantity of chlorophyll sample passed through filter: 300mL L-1870056 X = Recvd warm GLRI CHY Added date & time to ASR per samples, PG, 7/5/12 Received June 29, 2012 Frozen containers received warm at 3.2 Degrees C	pH	8.8 std units	00400
6/28/2012	USGS-04208000	A-1380076 300mL filtered for chlorophyll L-1380076 Corrected invalid LC3155 to LC3152, paa Recvd warm 5/17/12 Ok log warm per Sullivan & Wydoski, paa, 5/22/12 Frozen containers received warm at 5.8 Degrees C	pH	8.5 std units	00400
5/16/2012	USGS-04208000	L-1390191 Time on LC1571 btls is 0900, no btl type on FU, paa, 5/18/12	pH	8 std units	00400
5/9/2012	USGS-04208000		pH	7.5 std units	00400
5/8/2012	USGS-04208000		pH	7.7 std units	00400
5/8/2012	USGS-04208000		pH	7.5 std units	00400
5/7/2012	USGS-04208000		pH	7.8 std units	00400
5/1/2012	USGS-04208000		pH	7.7 std units	00400
4/24/2012	USGS-04208000	L-1210065 Received April 27, 2012 L-0900048 X = Improper sample container for FA - black cap	pH	8.2 std units	00400
3/28/2012	USGS-04208000		pH	8 std units	00400
2/16/2012	USGS-04208000	BOTTLE DATE SAYS 12/16/12	pH	8 std units	00400
1/19/2012	USGS-04208000		pH	8 std units	00400
1/18/2012	USGS-04208000	BOTTLE STATION #04208000	pH	7.8 std units	00400
1/17/2012	USGS-04208000		pH	8.1 std units	00400

1/17/2012	USGS-04208000		pH	7.9 std units	00400
1/17/2012	USGS-04208000		pH	7.8 std units	00400
12/15/2011	USGS-04208000		pH	8.1 std units	00400
12/10/2011	USGS-04208000		pH	7.5 std units	00400
12/6/2011	USGS-04208000		pH	7.6 std units	00400
12/5/2011	USGS-04208000		pH	7.6 std units	00400
12/5/2011	USGS-04208000		pH	7.6 std units	00400
12/5/2011	USGS-04208000	L-3620025 X = Time not on FCC	pH	7.7 std units	00400
11/28/2011	USGS-04208000		pH	7.9 std units	00400
10/26/2011	USGS-04208000		pH	7.9 std units	00400
10/22/2011	USGS-04208000		pH	7.9 std units	00400
10/19/2011	USGS-04208000		pH	7.9 std units	00400
10/19/2011	USGS-04208000		pH	7.7 std units	00400
10/19/2011	USGS-04208000		pH	7.7 std units	00400
9/20/2011	USGS-04208000		pH	7.8 std units	00400
9/13/2011	USGS-04208000	L-2860017 X = Improper sample container for FU - Clear cap	pH	7.5 std units	00400
9/10/2011	USGS-04208000		pH	7.8 std units	00400
9/10/2011	USGS-04208000		pH	7.8 std units	00400
9/10/2011	USGS-04208000		pH	7.6 std units	00400
9/10/2011	USGS-04208000	L-2860009 X = No RU or FA recvd.. FA LCs deleted, WSC emailed, paa, 10/13/11	pH	7.6 std units	00400
9/9/2011	USGS-04208000		pH	7.7 std units	00400
9/8/2011	USGS-04208000		pH	7.9 std units	00400
9/8/2011	USGS-04208000		pH	7.8 std units	00400
9/8/2011	USGS-04208000		pH	7.7 std units	00400
9/5/2011	USGS-04208000		pH	8 std units	00400
9/4/2011	USGS-04208000		pH	8.4 std units	00400
8/31/2011	USGS-04208000		pH	8.3 std units	00400
8/26/2011	USGS-04208000		pH	7.9 std units	00400
8/25/2011	USGS-04208000		pH	8.1 std units	00400
8/25/2011	USGS-04208000		pH	7.9 std units	00400
8/17/2011	USGS-04208000		pH	8 std units	00400
8/17/2011	USGS-04208000	L-2370055 X = Rcvd warm: ok to login per Kevin X = Improper Sample Container - FU - 125mL Received Aug 24, 2011 Chilled containers received warm at 8.1 Degrees C	pH	8 std units	00400
8/1/2011	USGS-04208000		pH	8.2 std units	00400
7/26/2011	USGS-04208000	L-2220009 Ok to login per Kevin PG 8/10/11 X = FA & FU bottles mislabeled by WSC, checked pH & corrected X = Cap on FCC rcvd loose w/ bottle empty Received Aug 02, 2011.. FCC LCs deleted, paa, 8/11/11	pH	7.9 std units	00400
6/30/2011	USGS-04208000		pH	8.2 std units	00400
6/30/2011	USGS-04208000		pH	7.5 std units	00400

6/1/2011	USGS-04208000			pH	7.8 std units	00400
4/27/2011	USGS-04208000	L-1180208 X = Time on RU 2011 Received May 04, 2011		pH	7.4 std units	00400
4/4/2011	USGS-04208000	L-1250096 Received May 04, 2011		pH	7.6 std units	00400
10/20/2010	USGS-04208000			pH	8.5 std units	00400
		L-2670126 User Code is missing in mandatory field,CH Medium Code corrected to WS, CH Updated agency from USGS/WRD per Shepard. KB				
9/21/2010	USGS-04208000	11/30/10 Updated UC from NON per Metzker. KB		pH	8.2 std units	00400
8/14/2007	USGS-04208000			pH	8.2 std units	00400
3/17/2014	USGS-04208000			Ammonia and ammoni Dissolved	0.088 mg/l as N	00608
2/24/2014	USGS-04208000			Ammonia and ammoni Dissolved	0.198 mg/l as N	00608
2/24/2014	USGS-04208000			Ammonia and ammoni Dissolved	0.243 mg/l as N	00608
1/22/2014	USGS-04208000			Ammonia and ammoni Dissolved	0.097 mg/l as N	00608
12/4/2013	USGS-04208000	L-3400073 FED EX LATE DELIVERY		Ammonia and ammoni Dissolved	0.02 mg/l as N	00608
11/4/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.017 mg/l as N	00608
		L-3120090 X=improper sample container for WCA sample in 250mL bottle	Not Detected	Ammonia and ammoni Dissolved	0 mg/l as N	00608
11/4/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.037 mg/l as N	00608
10/21/2013	USGS-04208000	L-3010094 Received October 25, 2013		Ammonia and ammoni Dissolved	0.021 mg/l as N	00608
9/12/2013	USGS-04208000	""L-2590035 Received September 13, 2013""		Ammonia and ammoni Dissolved	0.018 mg/l as N	00608
8/23/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.018 mg/l as N	00608
7/11/2013	USGS-04208000	""L-1990009 Received July 16, 2013""		Ammonia and ammoni Dissolved	0.084 mg/l as N	00608
6/26/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.034 mg/l as N	00608
6/20/2013	USGS-04208000	""L-1750104 Received June 21, 2013""		Ammonia and ammoni Dissolved	0.053 mg/l as N	00608
5/22/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.084 mg/l as N	00608
4/17/2013	USGS-04208000	""L-1120099 Received April 19, 2013""		Ammonia and ammoni Dissolved	0.025 mg/l as N	00608
4/11/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.173 mg/l as N	00608
4/10/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.121 mg/l as N	00608
4/10/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.166 mg/l as N	00608
3/27/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.04 mg/l as N	00608
2/26/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.055 mg/l as N	00608
2/26/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.068 mg/l as N	00608
2/13/2013	USGS-04208000	""L-0500055 Received February 15, 2013""		Ammonia and ammoni Dissolved	0.066 mg/l as N	00608
2/6/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.114 mg/l as N	00608
1/30/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.126 mg/l as N	00608
1/28/2013	USGS-04208000	""L-0180032 X = RU & FA not recvd.. verified FA not recvd, FA LCs deleted and WSC emailed, paa, 1/24/13""		Ammonia and ammoni Dissolved	0.265 mg/l as N	00608
1/16/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.05 mg/l as N	00608
1/15/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.064 mg/l as N	00608
1/12/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.092 mg/l as N	00608
1/11/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.085 mg/l as N	00608
1/11/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.076 mg/l as N	00608
1/9/2013	USGS-04208000			Ammonia and ammoni Dissolved	0.119 mg/l as N	00608

12/24/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.042 mg/l as N	00608
12/20/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.037 mg/l as N	00608
12/10/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.247 mg/l as N	00608
11/1/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.038 mg/l as N	00608
11/1/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.032 mg/l as N	00608
11/1/2012	USGS-04208000	L-3190080 X = Date on sample 11/4/12		Ammonia and ammoni Dissolved	0.038 mg/l as N	00608
10/31/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.038 mg/l as N	00608
10/30/2012	USGS-04208000	Station # on Bottle: 04208000	Not Detected	Ammonia and ammoni Dissolved	0 mg/l as N	00608
10/29/2012	USGS-04208000		Not Detected	Ammonia and ammoni Dissolved	0 mg/l as N	00608
10/29/2012	USGS-04208000		Not Detected	Ammonia and ammoni Dissolved	0 mg/l as N	00608
10/28/2012	USGS-04208000		Not Detected	Ammonia and ammoni Dissolved	0 mg/l as N	00608
10/10/2012	USGS-04208000	""A-2850036 Volume of filtered water for chlorophyll = 300mL L-2850036 X = CHY recvd warm GLRI Frozen containers received warm at 1.5 Degrees C.. ok log warm chlorophyll per sullivan and DW, paa"" A-2510053 Chlorophyll volume = 300mL L-2510053 X = Recvd warm GLRI CHL Frozen containers received warm at 3.7 Degrees C.. ok log warm CHY per sullivan and DW, paa	Not Detected	Ammonia and ammoni Dissolved	0 mg/l as N	00608
9/6/2012	USGS-04208000	A-2260040 Chlorophyll volume = 300mL L-2260040 X = Recvd warm GLRI CHY Received August 10, 2012 Frozen containers received warm at 2.9 Degrees C ok log warm chy per sullivan and wydoski, PG A-2000098 Chlorophyl volume = 250mL L-2000098 X = Recvd warm GLRI CHY OK log warm per Sullivan & Wydoski, paa, 7/18/12 Frozen containers received warm at 1.4 Degrees C.. FU recvd without ASR request, LC1571 added per btl label, WSC to verify, paa, 7/18/12		Ammonia and ammoni Dissolved	0.039 mg/l as N	00608
8/9/2012	USGS-04208000	A-1870056 Quantity of chlorophyll sample passed through filter: 300mL L-1870056 X = Recvd warm GLRI CHY Added date & time to ASR per samples, PG, 7/5/12 Received June 29, 2012 Frozen containers received warm at 3.2 Degrees C A-1380076 300mL filtered for chlorophyll L-1380076 Corrected invalid LC3155 to LC3152, paa Recvd warm 5/17/12 Ok log warm per Sullivan & Wydoski, paa, 5/22/12 Frozen containers received warm at 5.8 Degrees C	Not Detected	Ammonia and ammoni Dissolved	0 mg/l as N	00608
7/17/2012	USGS-04208000	L-1390191 Time on LC1571 btls is 0900, no btl type on FU, paa, 5/18/12		Ammonia and ammoni Dissolved	0.011 mg/l as N	00608
6/28/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.051 mg/l as N	00608
5/16/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.037 mg/l as N	00608
5/9/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.056 mg/l as N	00608
5/8/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.123 mg/l as N	00608
5/8/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.156 mg/l as N	00608
5/7/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.083 mg/l as N	00608
5/1/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.202 mg/l as N	00608
4/24/2012	USGS-04208000	L-1210065 Received April 27, 2012		Ammonia and ammoni Dissolved	0.015 mg/l as N	00608

3/28/2012	USGS-04208000	L-0900048 X = Improper sample container for FA - black cap	Not Detected	Ammonia and ammoni Dissolved	0 mg/l as N	00608
2/16/2012	USGS-04208000	BOTTLE DATE SAYS 12/16/12		Ammonia and ammoni Dissolved	0.027 mg/l as N	00608
1/19/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.051 mg/l as N	00608
1/18/2012	USGS-04208000	BOTTLE STATION #04208000		Ammonia and ammoni Dissolved	0.131 mg/l as N	00608
1/17/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.079 mg/l as N	00608
1/17/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.103 mg/l as N	00608
1/17/2012	USGS-04208000			Ammonia and ammoni Dissolved	0.169 mg/l as N	00608
12/15/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.013 mg/l as N	00608
12/10/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.066 mg/l as N	00608
12/6/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.054 mg/l as N	00608
12/5/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.062 mg/l as N	00608
12/5/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.081 mg/l as N	00608
12/5/2011	USGS-04208000	L-3620025 X = Time not on FCC		Ammonia and ammoni Dissolved	0.076 mg/l as N	00608
11/28/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.093 mg/l as N	00608
10/26/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.027 mg/l as N	00608
10/22/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.111 mg/l as N	00608
10/19/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.098 mg/l as N	00608
10/19/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.048 mg/l as N	00608
10/19/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.043 mg/l as N	00608
9/20/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.026 mg/l as N	00608
9/13/2011	USGS-04208000	L-2860017 X = Improper sample container for FU - Clear cap		Ammonia and ammoni Dissolved	0.103 mg/l as N	00608
9/10/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.083 mg/l as N	00608
9/10/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.034 mg/l as N	00608
9/10/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.069 mg/l as N	00608
9/10/2011	USGS-04208000	L-2860009 X = No RU or FA recvd.. FA LCs deleted, WSC emailed, paa, 10/13/11		Ammonia and ammoni Dissolved	0.052 mg/l as N	00608
9/9/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.121 mg/l as N	00608
9/8/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.094 mg/l as N	00608
9/8/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.109 mg/l as N	00608
9/8/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.077 mg/l as N	00608
9/5/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.113 mg/l as N	00608
9/4/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.11 mg/l as N	00608
8/31/2011	USGS-04208000		Not Detected	Ammonia and ammoni Dissolved	0 mg/l as N	00608
8/26/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.073 mg/l as N	00608
8/25/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.044 mg/l as N	00608
8/25/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.026 mg/l as N	00608
8/17/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.064 mg/l as N	00608
8/17/2011	USGS-04208000	L-2370055 X = Rcvd warm: ok to login per Kevin X = Improper Sample Container - FU - 125mL Received Aug 24, 2011 Chilled containers received warm at 8.1 Degrees C		Ammonia and ammoni Dissolved	0.017 mg/l as N	00608
6/30/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.064 mg/l as N	00608

6/30/2011	USGS-04208000		Not Detected	Ammonia and ammoni Dissolved	0 mg/l as N	00608
6/1/2011	USGS-04208000			Ammonia and ammoni Dissolved	0.231 mg/l as N	00608
4/27/2011	USGS-04208000		L-1180208 X = Time on RU 2011 Received May 04, 2011	Ammonia and ammoni Dissolved	0.123 mg/l as N	00608
4/4/2011	USGS-04208000		L-1250096 Received May 04, 2011	Ammonia and ammoni Dissolved	0.355 mg/l as N	00608
4/4/2011	USGS-04208000		L-1250099 Received May 04, 2011 WCA condition changed to improper preservation, JNV	Ammonia and ammoni Dissolved	0.273 mg/l as N	00608
4/4/2011	USGS-04208000		L-1250101 Received May 04, 2011	Ammonia and ammoni Dissolved	0.341 mg/l as N	00608
4/4/2011	USGS-04208000		L-1250102 Received May 04, 2011	Ammonia and ammoni Dissolved	0.328 mg/l as N	00608

n	10	4	2	6	6	17	21	15	3	7	2	7
min	1300	927	830	467	317	179	208	208	290	412	3560	1300
max	3360	2365	1230	4022.5	5285	3530	8610	1137.5	1630	8240	5423.3333	7440
avg	2410.8333	1440.5	1030	2692.4167	2066.8333	638.14706	1126.619	424.6	833	3731.7143	4491.6667	3600.4762
25%ile	2000	1101.75	930	1798.75	669.25	262	249	306	434.5	1645	4025.8333	1795
50%ile	2317.5	1235	1030	3242.5	1460	298	351	322	579	2120	4491.6667	2450
75%ile	3102.5	1573.75	1130	3707.5	2970	521.5	579	432	1104.5	6030	4957.5	5211.6667
std dev	773.31867	636.15852	282.84271	1432.9533	1934.4475	834.12922	1993.7311	240.36284	705.18579	3138.7897	1317.5756	2496.4178
CoV	0.3207682	0.4416234	0.2746046	0.5322182	0.9359475	1.3071113	1.7696586	0.5660924	0.8465616	0.841112	0.2933378	0.6933577

Date	Detect?	Units	Value	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6/9/2005		ft3/s	298						298						
6/13/2005		ft3/s	268						268						
6/14/2005		ft3/s	408						408						
6/15/2005		ft3/s	505						505						
6/20/2005		ft3/s	262						262						
6/21/2005		ft3/s	268						268						
6/22/2005		ft3/s	284						284						
6/23/2005		ft3/s	255						255						
6/27/2005		ft3/s	243						243						
6/28/2005		ft3/s	240						240						
6/29/2005		ft3/s	854						854						
6/30/2005		ft3/s	368						368						
7/1/2005		ft3/s	510							510					
7/5/2005		ft3/s	249							249					
7/6/2005		ft3/s	255							255					
7/7/2005		ft3/s	246							246					
7/8/2005		ft3/s	252							252					
7/11/2005		ft3/s	217							217					
7/12/2005		ft3/s	217							217					
7/14/2005		ft3/s	229							229					
7/15/2005		ft3/s	280							280					
7/18/2005		ft3/s	431							431					
7/19/2005		ft3/s	1510							1510					
7/20/2005		ft3/s	470							470					
7/21/2005		ft3/s	2480							2480					
7/22/2005		ft3/s	505							505					
7/25/2005		ft3/s	351							351					
7/26/2005		ft3/s	290							290					
7/27/2005		ft3/s	4460							4460					

7/28/2005	ft3/s	1310				1310			
8/1/2005	ft3/s	334						334	
8/2/2005	ft3/s	306						306	
8/3/2005	ft3/s	274						274	
8/4/2005	ft3/s	271						271	
8/5/2005	ft3/s	322						322	
8/8/2005	ft3/s	470						470	
8/9/2005	ft3/s	377						377	
8/10/2005	ft3/s	306						306	
8/11/2005	ft3/s	310						310	
4/4/2011	ft3/s	4022.5		4022.5					
4/27/2011	ft3/s	3750		3750					
6/1/2011	ft3/s	1750				1750			
6/30/2011	ft3/s	521.5				521.5			
7/26/2011	ft3/s	579					579		
8/17/2011	ft3/s	604.5						604.5	
8/25/2011	ft3/s	1137.5						1137.5	
8/26/2011	ft3/s	738						738	
8/31/2011	ft3/s	317						317	
9/20/2011	ft3/s	1630						1630	
10/19/2011	ft3/s	4320						4320	
10/22/2011	ft3/s	2120						2120	
10/26/2011	ft3/s	1800						1800	
11/28/2011	ft3/s	3560							3560
12/5/2011	ft3/s	6633.33							6633.3333
12/6/2011	ft3/s	7440							7440
12/10/2011	ft3/s	2450							2450
12/15/2011	ft3/s	2170							2170
1/17/2012	ft3/s	3113.33		3113.3333					
1/18/2012	ft3/s	3360		3360					
1/19/2012	ft3/s	2030		2030					
2/16/2012	ft3/s	927				927			
3/28/2012	ft3/s	830				830			
4/24/2012	ft3/s	467				467			
5/1/2012	ft3/s	1360				1360			
5/7/2012	ft3/s	1560				1560			
5/8/2012	ft3/s	5285				5285			
5/9/2012	ft3/s	3440				3440			
5/16/2012	ft3/s	439				439			
6/28/2012	ft3/s	179					179		

7/17/2012	ft3/s	208					208		
8/9/2012	ft3/s	208						208	
9/6/2012	ft3/s	579							579
10/10/2012	ft3/s	412							
10/28/2012	ft3/s	1490							412
10/29/2012	ft3/s	7740							1490
10/31/2012	ft3/s	8240							7740
11/1/2012	ft3/s	5423.33							8240
12/10/2012	ft3/s	3790							5423.3333
12/20/2012	ft3/s	1420							
12/24/2012	ft3/s	1300							
1/9/2013	ft3/s	1300	1300						
1/11/2013	ft3/s	2485	2485						
1/12/2013	ft3/s	3070	3070						
1/15/2013	ft3/s	2150	2150						
1/16/2013	ft3/s	1990	1990						
1/28/2013	ft3/s	1330	1330						
1/30/2013	ft3/s	3280	3280						
2/6/2013	ft3/s	1310		1310					
2/13/2013	ft3/s	1160		1160					
2/26/2013	ft3/s	2365		2365					
3/27/2013	ft3/s	1230			1230				
4/10/2013	ft3/s	2905				2905			
4/11/2013	ft3/s	3580				3580			
4/17/2013	ft3/s	1430				1430			
5/22/2013	ft3/s	317					317		
6/20/2013	ft3/s	615						615	
6/26/2013	ft3/s	3530						3530	
7/11/2013	ft3/s	8610					8610		
8/23/2013	ft3/s	394						394	
9/12/2013	ft3/s	290							290

12/4/2013	mg/l as N	0.02						0.02
1/22/2014	mg/l as N	0.097	0.097					
2/24/2014	mg/l as N	0.2205		0.2205				
3/17/2014	mg/l as N	0.088			0.088			

5/16/2012	std units	8			8						8			
6/28/2012	std units	8.5				8.5							8.5	
7/17/2012	std units	8.8							8.8					8.8
8/9/2012	std units	8.4								8.4				8.4
9/6/2012	std units	8.1									8.1			8.1
10/10/2012	std units	8										8		8
10/28/2012	std units	7.9										7.9		7.9
10/29/2012	std units	7.65										7.65		7.65
10/30/2012	std units	7.7										7.7		7.7
10/31/2012	std units	7.5										7.5		7.5
11/1/2012	std units	7.566667										7.566667		7.566667
12/10/2012	std units	7.5											7.5	7.5
12/20/2012	std units	7.3											7.3	7.3
12/24/2012	std units	7.4											7.4	7.4
1/9/2013	std units	8.1		8.1										8.1
1/11/2013	std units	8		8										8
1/12/2013	std units	7.9		7.9										7.9
1/15/2013	std units	8		8										8
1/16/2013	std units	8		8										8
1/28/2013	std units	8.1		8.1										8.1
1/30/2013	std units	8		8										8
2/6/2013	std units	8.1			8.1									8.1
2/13/2013	std units	8.1			8.1									8.1
2/26/2013	std units	7.9			7.9									7.9
3/27/2013	std units	8.1				8.1								8.1
4/10/2013	std units	7.35					7.35							7.35
4/11/2013	std units	7.4					7.4							7.4
4/17/2013	std units	8					8							8
5/22/2013	std units	8				8								8
6/20/2013	std units	8						8						8
6/26/2013	std units	7.5						7.5						7.5
7/11/2013	std units	7.5							7.5					7.5
8/23/2013	std units	8.2								8.2				8.2
9/12/2013	std units	8									8			8
10/21/2013	std units	7.8										7.8		7.8
11/4/2013	std units	7.9											7.9	7.9
12/4/2013	std units	7.8												7.8
1/22/2014	std units	7.9		7.9										7.9
2/24/2014	std units	7.6			7.6									7.6
3/17/2014	std units	7.6				7.6								7.6
4/9/2014	std units	7.2					7.2							7.2

**Limited Resource OMZM/Warm Water OMZM
(Table 7-2)**

	WQC	Temp	pH
Feb-May	9.3	13	8.0
Jun-Sep (Summer)	5.9	24	8.2
Dec-Feb (Winter)	9.8	6	8.0
Oct-Nov	11.1	12	7.9

Warm Water OMZA/Fish Passage

	WQC	Temp	pH
Feb-May	2.7	13	8.0

CF

2.443

	Input Load			Instream		
	Flow	Conc	Load	Flow	Conc	Load
Upstream				745.6	0.15	273.225
NEORDS	270.8	8.00	5292.52	1016.4	2.24	5565.74
Big Creek	26.7	0.49	31.9618	1043.1	2.20	5597.7
AM Intake 801	-67.8	2.20	-363.843	975.3	2.20	5233.86
AM 005	67.8	1.35	223.608	1043.1	2.14	5457.47

note: a negative input load indicates a withdrawal

1.35

1.77

Season	Water Quality Criterion		Projected Instream Concentration	
	Limited Resource			
	Warm 'Water OMZM	Warm 'Water OMZA	PMEL Avg	PMEL Max
Feb-May (Fish Passage)	9.3	2.7	2.14	2.17
Jun-Sep (Summer)	5.9	--	2.14	2.17
Dec-Feb (Winter)	9.8	--	2.14	2.17
Oct-Nov	11.1	--	2.14	2.17

all values in mg/L