APPENDIX C

OHIO EPA 2000 305(B) WATER QUALITY REPORT

CHAGRIN VALLEY ENGINEERING, LTD

Creative Engineers. Intelligent Solutions

WBID #:	River Code:	Upper River Mile:	Lower River Mile:	USEPA Reach:	Ecoregion:
OH92 13	03-110	17.50	0.00	04110004-014	Erie-Ontario Lake Plain

WB Name: ***PAINE CREEK*** County: LAKE CO

Aquatic Life Use(s): WWH,EWH Segment Length: 17.50

Assessment Cycle: 1998 Field Data Collected From: 199507 to 199510 Assessment Age: Current

Aquatic Life Use Attainment:	Full: 0.00	Full, But Threatened: 17.50	Partial: 0.00	None 0.00

Narrative Assessment:	Excellent	Very Good	Good	Marginally Good	Fair	Poor	Very Poor
	17.50						

Comments: This segment is currently designated Warmwater Habitat, but is recommended for upgrading to Exceptional Warmwater Habitat. Development in LeRoy Township threatens the high quality of this stream.

Causes of Impairment:
Siltation - T
Other habitat alterations - T

Sources of Impairment:
Land development/Suburbanization - T

WBID #:	River Code:	Upper River Mile:	Lower River Mile:	USEPA Reach:	Ecoregion:
OH92 14	03-111	10.00	0.00	04110004-	Erie-Ontario Lake Plain

WB Name: ***BATES CREEK*** County: LAKE CO

Aquatic Life Use(s): WWH Segment Length: 10.00

Assessment Cycle: 1998 Field Data Collected From: 199610 to 199610 Assessment Age: Current

Aquatic Life Use Attainment:	Full: 0.00	Full, But Threatened: 1.00	Partial: 0.00	None 0.00

Narrative Assessment:	Excellent	Very Good	Good	Marginally Good	Fair	Poor	Very Poor
	1.00						

Comments: This segment is threatened by the proposed construction of a power line. Macroinvertebrate results suggest it is a high quality stream. Wetlands are present in the area. Future sampling is recommended to verify Exceptional Warmwater Habitat conditions.

Causes of Impairment:
Siltation - T
Other habitat alterations - T

Sources of Impairment:
Highway/road/bridge/sewer line - T

WBID #:	River Code:	Upper River Mile:	Lower River Mile:	USEPA Reach:	Ecoregion:
OH92 16	03-001	23.58	14.31	04110004-001	Erie-Ontario Lake Plain

WB Name: ***GRAND RIVER (MILL CREEK TO PAINE CREEK)*** County: LAKE CO

Aquatic Life Use(s): EWH Segment Length: 9.27

Assessment Cycle: 1998 Field Data Collected From: 199507 to 199510 Assessment Age: Current

Aquatic Life Use Attainment:	Full: 9.27	Full, But Threatened: 0.00	Partial: 0.00	None 0.00

Narrative Assessment:	Excellent	Very Good	Good	Marginally Good	Fair	Poor	Very Poor
	9.27						

Comments: This segment of stream is fully supporting its Exceptional Warmwater Habitat use designation.

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OHIO EPA 1998 305(B) WATER QUALITY REPORT

CVE CHAGRIN VALLEY ENGINEERING, LTD

Creative Engineers. Intelligent Solutions

WBID #:	River Code:	Upper River Mile:	Lower River Mile:
OH92 1	03-001	14.31	0.00

Ecoregion: EOLP
County: LAKE CO
USEPA Reach Code: 04110004-001

WB Name: *GRAND RIVER (PAINE CREEK TO MOUTH)*

Aquatic Life Use(s): **EWH, WWH** Segment Length: **14.31**

Assessment Cycle: **98** Data Collection Period: **9507 to 9510** Assessment Age: **Current**

Aquatic Life Use Attainment:

Full:	Full, But Threatened:	Partial:	None:	Not Assessed:
1.50	5.00	1.60	0.60	5.61

Narrative Assessment:	Excellent:	Good:	Fair:	Poor:	Very Poor:
	6.5	0.0	1.6	0.6	0.0

Comments: The Diamond Shamrock waste lagoons continue to impact the biological communities in the lower Grand River. Upstream from Painesville the stream is exceptional in biological quality, recreational opportunities, and aesthetics.

Causes of Impairment:

Salinity/TDS/chlorides - H
Nutrients - T
Siltation - T
Flow alteration - T
Salinity/TDS/chlorides - M
Priority organics - M
Mercury - M

Sources of Impairment:

Waste storage/storage tank leaks - H
Minor Municipal Point Source - T
Land development/Suburbanization - T
Waste storage/storage tank leaks - M
Atmospheric deposition - M
Source Unknown - M

WBID #:	River Code:	Upper River Mile:	Lower River Mile:
OH92 7	03-100	17.20	0.00

Ecoregion: EOLP
County: LAKE CO
USEPA Reach Code: 04110004-008

WB Name: *BIG CREEK*

Aquatic Life Use(s): **WWH** Segment Length: **17.20**

Assessment Cycle: **98** Data Collection Period: **9507 to 9510** Assessment Age: **Current**

Aquatic Life Use Attainment:

Full:	Full, But Threatened:	Partial:	None:	Not Assessed:
9.60	0.00	7.50	0.10	0.00

Narrative Assessment:	Excellent:	Good:	Fair:	Poor:	Very Poor:
	0.0	14.9	2.2	0.1	0.0

Comments: Upgrades to the Chardon WWTP have resulted in improvements in the biological communities downstream from the plant. Impacts are still present though. On-site sewage disposal and urban runoff contribute to non-attainment upstream from the Chardon WWTP. Excessive flows through the Chardon WWTP, and chlorine cause impairment downstream from the plant.

Causes of Impairment:

Organic enrichment/DO - H
Nutrients - M

Sources of Impairment:

Minor Municipal Point Source - M
Onsite wastewater systems (septic tanks) - M
Minor Municipal Point Source - H

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OHIO EPA 1996 305(B) WATER QUALITY REPORT

CHAGRIN VALLEY ENGINEERING, LTD

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Appendix A-1. Aquatic life attainment status of Ohio stream and river waterbodies. Impaired miles are shaded.

WB ID#	Waterbody Name	Assess. Cycle	Assess. Category	Use Attainment: Fully	Threat-ened	Partial	Not Support.	Not Assess.
OH90 7	[15-001 - URM: 27.10 - LRM: 5.00] - CHAGRIN RIVER (AURORA BRANCH TO EAST BRANCH)	90	MB		14.6	7.5		
OH90 7.1	[15-011 - URM: 2.88 - LRM: 0.00] - CAVES CREEK	88	MB	0.5				2.3
OH90 9	[15-004 - URM: 5.58 - LRM: 0.00] - WILLEY CREEK	88	EC		0.5		0.5	4.5
OH90 10	[15-005 - URM: 18.44 - LRM: 0.00] - AURORA BRANCH	94	MB		7.6	3.8	0.4	6.6
OH90 12	[15-001 - URM: 51.47 - LRM: 27.09] - CHAGRIN RIVER (HEADWATERS TO AURORA BRANCH)	94	MB		22.4	0.5		1.4
OH90 16	[19-041 - URM: 9.50 - LRM: 0.00] - EUCLID CREEK	90	MB				9.5	
OH90 16.1	[19-056 - URM: 9.02 - LRM: 0.00] - EAST BRANCH EUCLID CREEK	90	MB			5.0		4.0
		Subbasin Totals:		0.5	64.5	16.8	15.4	
UPPER GRAND RIVER								
OH91 1	[03-130 - URM: 9.64 - LRM: 0.00] - ROCK CREEK (LEBANON CREEK TO GRAND RIVER)	88	EB	0.9		0.2	1.5	7.0
OH91 5	[03-134 - URM: 6.20 - LRM: 0.00] - LEBANON CREEK	88	EC				0.5	5.7
OH91 14	[03-001 - URM: 75.89 - LRM: 60.23] - GRAND RIVER (COFFEE CREEK TO HOSKINS CREEK)	88	MB	0.5				15.1
OH91 24	[03-021 - URM: 6.40 - LRM: 0.00] - COFFEE CREEK	88	EC	6.4				
OH91 25	[03-001 - URM: 84.90 - LRM: 75.89] - GRAND RIVER (MUD CREEK TO COFFEE CREEK)	88	MB	9.0				
OH91 26	[03-022 - URM: 9.80 - LRM: 0.00] - BAUGHMAN CREEK	88	MB	9.8				
OH91 28	[03-001 - URM: 102.70 - LRM: 84.90] - GRAND RIVER (HEADWATERS TO MUD CREEK)	88	EB	1.9		10.7	1.0	4.2
		Subbasin Totals:		28.5		10.9	3.0	
LOWER GRAND RIVER								
OH92 1	[03-001 - URM: 14.31 - LRM: 0.00] - GRAND RIVER (PAINE CREEK TO LAKE ERIE)	96	MB	10.3		1.0		3.0
OH92 1	[03-001 - URM: 14.31 - LRM: 0.00] - GRAND RIVER (PAINE CREEK TO LAKE ERIE)	90	MB	6.3		2.8	0.2	5.0
OH92 1	[03-001 - URM: 14.31 - LRM: 0.00] - GRAND RIVER (PAINE CREEK TO LAKE ERIE)	90	MB	0.8		4.2		9.3
OH92 2	[- - URM: 0.00 - LRM: 0.00] -	88	EC	1.0				-1.0
OH92 7	[03-100 - URM: 17.20 - LRM: 0.00] - BIG CREEK	88	EB	9.5		0.3	6.5	0.9
OH92 16	[03-001 - URM: 23.58 - LRM: 14.31] - GRAND RIVER (MILL CREEK TO PAINE CREEK)	88	EB	1.0		8.2		
OH92 20	[03-001 - URM: 41.28 - LRM: 23.58] - GRAND RIVER (MILL CREEK TO MILL CREEK)	88	MB	17.7				
OH92 23	[03-120 - URM: 19.55 - LRM: 0.00] - MILL CREEK (ASKUE RUN TO GRAND RIVER)	88	EB			0.5	0.5	18.5
OH92 24	[03-124 - URM: 6.32 - LRM: 0.00] - CEMETERY CREEK	88	EB				2.5	3.8
		Subbasin Totals:		46.6		17.0	9.7	

APPENDIX C

OHIO EPA 2004 WATERSHED ASSESSMENT SUMMARY

CVE CHAGRIN VALLEY ENGINEERING, LTD

Creative Engineers Intelligent Solutions

HUC11	WAU Description	WAU Size (mi^2): 184.1
04110004 060	Grand River (downstream Mill Creek to mouth); excluding Grand R. mainstem	

Integrated Report Assessment Category: 5 **Priority Points:** 7
Next Scheduled Monitoring: 2004

Aquatic Life Use Assessment

Subcategories of ALU: CWH,EWH,WWH
Impairment: Yes
Sampling Year(s): 1995, 1996, 1999, 2000

Stream Size Category	Raw Data Data Available	Raw Data No. Attaining	% Attainment Full	% Attainment Partial	% Attainment Non	WAU Score Full	WAU Score Partial	WAU Score Non
Small (Spatial)								
< 5 mi^2	9 Sites	6 Sites						
5-20 mi^2	14 Sites	12 Sites	63.1	17.1	19.8			
20-50 mi^2	4 Sites	2 Sites						
Large (Linear)	Sites					63	17	20
50-500 mi^2	Miles	Miles						

High Magnitude Causes

Organic Enrichment/DO
Cause Unknown

High Magnitude Sources

Minor Municipal Point Source
Source Unknown

Recreation Use Assessment

Subcategory of Use: Primary Contact
Impairment: Yes

No. Ambient Sites: 18
No. of NPDES MOR Sites: 2
Other:

No. Ambient Sampling Records: 56
No. of NPDES MOR Records: 293

Geometric Mean: 602
75th %ile: 1600
90th %ile: 4660

Fish Consumption Advisory (FCA) Assessment

Waters Within the WAU Sampled and Assessed:
FCA Issued:
(See the 2004 Ohio FCA for more detailed information at "www.epa.state.oh.us/dsw/fishadvisory/index.html")
Impairment Due to FCA: Pollutant (Waterbody):

Comments

Extensive chemical, physical, and/or biological monitoring was conducted in this Grand River watershed assessment unit by the Ohio EPA and Ohio DNR between 1995 and 2000. Streams sampled included Big Creek, Kellogg Creek, Paine Creek, Coffee Creek, and nine other smaller named tributaries. The Grand River mainstem (Mill Creek confluence to Lake Erie) is not included but is assessed separately as a large river assessment unit. Additional chemical, physical, and biological sampling was conducted in the assessment unit in 2003 and 2004 as part of monitoring in the lower Grand River watershed to develop TMDLs for pollutants causing beneficial use impairments.

APPENDIX C

OHIO EPA TOTAL MAXIMUM DAILY LOAD (TMDL) SUMMARY REPORT

CVE CHAGRIN VALLEY ENGINEERING, LTD.

Creative Engineers. Intelligent Solutions

Ohio EPA
Ohio Environmental Protection Agency

Division of Surface Water Watershed Assessment Unit Summary

Overview Information

Assessment Unit Name Red Creek-Grand River
Hydrologic Unit Code 04110004 06 07
Assessment Unit Size 26 3 square miles
Priority Points 2
Monitoring Scheduled 2019
TMDL Scheduled 2022

Land Use Statistics

Developed	Forest	Grass/Pasture	Row Crops	Other
61 3%	24 4%	7 7%	4 4%	2 1%

Aquatic Life Use Assessment

Reporting Category 4A
Aquatic Life Uses WWH
Sampling Years 2004
Watershed Score 0

Assessment Details

Headwater Sites <20 sq mi	Wading Sites >20 & <50 sq mi	Principal Sites >50 & <500 sq mi
Sites Assessed 1	Sites Assessed 0	Sites Assessed 0
Sites Attaining 0	Sites Attaining 0	Sites Attaining 0

Most Recent Data

Year Assessed	Station Name	River Mile	Drainage Area	Aquatic Life Use	Attainment Status
2004	RED CREEK @ MOUTH	0 0	9 5	WWH	Non

Causes of Impairment

- other flow regime alterations
- unknown toxicity

Sources of Impairment

- urban runoff/storm sewers

Comments TMDLs for pollutants impairing designated or recommended aquatic life uses in the Grand River (lower) basin were approved by U S EPA on April 12, 2012 The TMDL report is available at http //www epa ohio gov/dsw/tmdl/GrandRiverLowerTMDL aspx Monitoring in support of the TMDL report was conducted in 2003 and 2004 The monitoring report is available at http //www epa ohio gov/dsw/document_index/psdindx aspx (see Index Number EAS/2006-11-6)

Recreation Use Assessment

Reporting Category 4A
Assessment Unit Score Not calculated

Public Drinking Water Supply Assessment

Reporting Category No active intakes
Cause of Impairment None
Nitrate Watch List No
Pesticide Watch List No

Fish Tissue Assessment

Reporting Category 5
Causes of Impairment PCBs
PCB Concentration 215 ppb