

# FINAL

GRAYS CREEK WATERSHED TMDL  
FOR BIOCHEMICAL OXYGEN-DEMANDING SUBSTANCES

SUBSEGMENT 040304

SURVEYED July 24 – 26, 2007

**TMDL REPORT**

By:  
Water Quality Modeling Section  
Water Quality Assessment Division  
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Louisiana Department of Environmental Quality

**NOVEMBER 23, 2010**

**TECHNICAL SUMMARY**

Grays Creek, Subsegment 040304, was on the 2006 and 2008 303(d) lists and the consent decree. Subsegment 040304 is found to be "not supporting" its designated uses of Primary Contact Recreation and Fish and Wildlife Propagation. It is found supporting its designated use of Secondary Contact Recreation. Grays Creek was subsequently scheduled for Total Maximum Daily Load (TMDL) development with other listed waters in the Lake Pontchartrain Basin. The suspected causes of impairment are low dissolved oxygen(DO), and elevated nitrate/nitrite, total phosphorous, chlorides, sulfates, total dissolved solids, and total fecal coliform. The suspected sources are On-site Treatment Systems (Septic Systems and Similar Decentralized Systems), Sanitary Sewer Overflows (Collection System Failures), and unknown sources. This TMDL report addresses the organic enrichment/low DO impairment.

Subsegment 040304 lies entirely within Livingston Parish.

LDEQ is utilizing a phased TMDL approach for Grays Creek as shown in Table 1. This approach provides LDEQ with the opportunity to revise the DO criteria and at the same time, allows LDEQ to develop meaningful and implementable DO TMDLs based upon the appropriate DO criteria and in accordance with the Consent Decree deadlines. At the same time, it will lead to improved water quality while providing local governments and businesses the opportunity to prepare and adjust to the new permit requirements that will be implemented as a result of the TMDLs developed in Phases I and II.

**Table 1. Grays Creek Phased TMDL Approach**

Stage / Phase	DO Criteria (mg/L)	Implementation Date
<b>Phase I</b>	<b>5.0</b>	<b>Phase I implementation required upon EPA approval of the TMDL and subsequent update of the Louisiana's Water Quality Management Plan</b>
<b>Primary Activities-Ecoregion-based UAA developed and DO criteria revised and promulgated; Secondary Activities - completion of expansion plans for the City of Denham Springs STP's sewer collection system (AI# 19808)</b>		
<b>Phase II</b>	<b>Appropriate DO criteria based on UAA</b>	<b>Phase II implementation required upon EPA approval of the Phase II TMDL and subsequent update of the Louisiana's Water Quality Management Plan</b>

Oxygen-demanding parameters modeled included UBOD and DO. Conservative parameters modeled include conductivity and chlorides.

Phase I will include the development of loading values for the existing DO criteria for Grays Creek. The resulting permit limits for a criterion of 5.0 mg/L are presented in Tables 4 and 5. However, full implementation of permit limits will occur in a phased manner. Phase I will serve as the first step towards meeting the DO criteria. This approach gives local governments and stakeholders time to make the necessary adjustments to meet these limits. During Phase I, implementation of permit limits will occur in a according to the following strategy:

### Phase I Permit Implementation

All TMDL, permitting, and enforcement activities will be conducted in accordance with the Clean Water Act, the Louisiana Environmental Regulatory Code, and applicable state laws.

#### 1. New discharges of oxygen-demanding loads:

In general, LDEQ does not intend to permit additional discharges of oxygen-demanding loads. However, in the event that a proposed or existing facility can meet one of the criteria listed below, LDEQ may permit the new discharge. The typical permit limits will be 5 mg/L BOD<sub>5</sub> / 2 mg/L NH<sub>3</sub> / 5 mg/L DO. Such new facilities may be required to submit an environmental impact assessment to LDEQ's permitting staff, which will conduct a thorough evaluation of the proposed facility based on environmental impacts, economic benefits, an analysis of alternatives, and other pertinent factors.

- a. The facility demonstrates that it will provide a significant load reduction of man-made oxygen-demanding constituents to the impaired watershed(s) serviced by the facility. The facility must also contribute to a reduction in the number of facilities discharging to the watershed(s). Facilities that may be considered for permits under this provision include, but are not limited to:
  - i. A facility that will provide improved sewage treatment to multiple subdivisions previously serviced by wastewater treatment plants that are incapable of treating to tertiary limits.
  - ii. A facility that will provide sewage treatment to previously unsewered areas in which many of the sanitary discharges from permitted facilities and individual home treatment units were entering an impaired watershed. As a result, the facility would be expected to provide more efficient treatment to the wastewater and improve and reduce the net loading of oxygen demanding substances in the watershed.

- b. The facility demonstrates that its wastewater will not leave the facility or its property. Significant stormwater events do not apply to this provision. For the purpose of this provision, a significant stormwater event is defined the 25 year, 24 hour rainfall event or its numerical equivalent, as defined by the Southern Regional Climate Center.
  - i. Facilities that may be considered under this provision include, but are not limited to:
    - a. Effluent reduction systems that have been approved by the Louisiana Department of Health and Hospitals.
    - b. Wastewater treatment plants equipped with overland flow systems in which the effluent will not leave the facility.
    - c. Wastewater treatment plants equipped with holding ponds that will retain the effluent such that the effluent will not leave the facility.
  - ii. LDEQ recognizes that some local governments are in the process of building or expanding regional sewage collection and treatment systems. In such areas, LDEQ may, on a limited basis, grant permits of limited durations to facilities that agree to tie into a regional collection and treatment system when it becomes available. LDEQ must have absolute assurance that the regional collection system will be available to the facility and the facility will connect to the regional collection system on or before the expiration date of the permit. Such assurance may include a formal agreement between the facility, the owner and operator of the regional wastewater treatment system, and LDEQ. The regional system must have the capacity to treat the additional wastewater. Such a permit may have a duration of less than five years or it may have a five year duration with interim permit limits. The permit will be written based on projected completion dates for the construction of the collection system. The facility will be required to cease all wastewater discharges to Grays Creek and transfer the discharge to the regional collection system once the permit or interim limits expire or the collection system is available to the facility, whichever comes first. If the permit or interim limits expire, but, due to unforeseen circumstances, the availability of the collection system has been temporarily delayed, the duration of the permit or interim limits may be extended. If the availability of the collection system has been indefinitely delayed,

the facility may be required to cease all discharges to Grays Creek. Such facilities may resort to options covered in item 1.b.i. above.

- c. LDEQ reassesses Subsegment 040304 (Grays Creek). LDEQ determines that Subsegment 040304 is meeting the appropriate DO criteria and designated uses.

2. Existing discharges of oxygen demanding loads:

Below are the reductions for existing dischargers in the Grays Creek TMDL. Existing facilities discovered to be discharging oxygen-demanding loads without LPDES permits as of the TMDL approval date are to be permitted in accordance with the limits established for existing facilities with permits. Unpermitted facilities that are newly activated or reactivated and discharging after the TMDL approval date may be subjected to enforcement actions and will be required to tie into regional collection and treatment systems, once those systems are available.

- a. Facilities (with effluent flow less than or equal to 25,000 gpd) with monthly average limitations of 30 mg/L BOD<sub>5</sub> or weekly average limitations of 45 mg/L BOD<sub>5</sub> will receive a compliance schedule of up to 3 years with final limitations of 10 mg/L BOD<sub>5</sub> / 2 mg/L NH<sub>3</sub> / 5 mg/L DO (with post aeration);
- b. Facilities (with effluent flow greater than 25,000 gpd) with limitations of 10 mg/L BOD<sub>5</sub> will receive a compliance schedule of up to 3 years with final limitations of 5 mg/L BOD<sub>5</sub> / 2 mg/L NH<sub>3</sub> / 5 mg/L DO (with post aeration);
- c. The following facilities will keep their current limits of 5 mg/L BOD<sub>5</sub> / 2 mg/L NH<sub>3</sub> / 5 mg/L DO:

Grays Creek Subdivision (AI # 145156)  
Gulfstream Estates and Gulfstream Townhomes  
(AI# 148345)  
Stone Hill Subdivision (AI# 150779) (current draft permit)

3. Nutrient monitoring (i.e., reporting for Total Nitrogen and Total Phosphorus) will be required for individual permits. Nutrient monitoring will be added to each general permit series (LAG530000, LAG540000, LAG560000, and LAG570000) upon the next scheduled renewal of each series.

Phase II will be developed based on the outcome of an ecoregion-based use attainability analysis (UAA) that is currently under development. This UAA is expected to propose new DO criteria for many of the Pontchartrain Basin TMDLs that are currently being developed. This new DO criteria is expected to be developed and promulgated within the next two to three years.

In the event the new criteria is not developed and promulgated within five years from the TMDL approval date, LDEQ intends to proceed in the following manner:

Case 1: The UAA study indicates that the current DO criterion is appropriate - the TMDL will be fully implemented based on the existing DO criteria.

Case 2: The UAA is not likely to be completed and/or approved - the TMDL will be fully implemented based on the existing DO criteria.

Case 3: The UAA is in process and is expected to be approved – Phase II of the TMDL will be postponed for a maximum period of 2 years. If the UAA has not been completed at the end of this period, the UAA status will be reviewed again according to Cases 1 - 3.

LDEQ recognizes that there are many unpermitted facilities within the Pontchartrain Basin. LDEQ is in the process of locating these facilities in an effort to get them permitted. LDEQ is also updating its location information on all permitted facilities within the basin.

LDEQ believes that the primary solution to the water quality problems in Grays Creek is the large-scale regionalization of sewage treatment and the rehabilitation and upgrade of existing problematic (leaks, overflows, improperly sized pipes, etc.) sewage collection and treatment systems. In addition, nonpoint loading may contribute to the water quality impairments in Grays Creek. This includes loading contributed by the MS4 permits for Denham Springs and Livingston Parish.

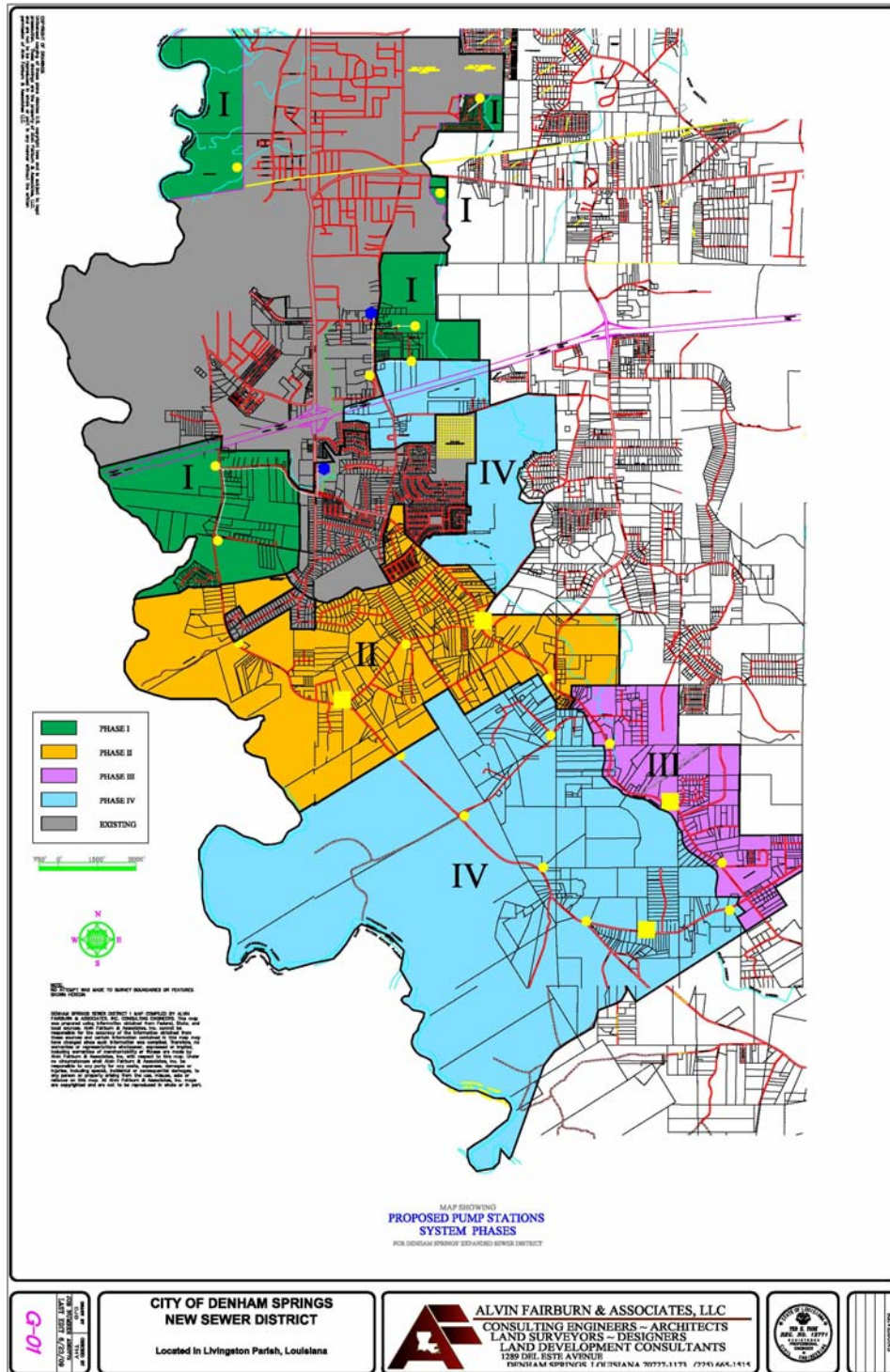
As of the time of development of the TMDL, the City of Denham Springs POTW is planning to expand its sewer collection area to include an additional 1800 residences, approximately. Many of these residences will be included with the approximately 14 facilities that will be assimilated by the new City of Denham Springs STP. However, the planned expansion will also include many individual homes. The new STP began operation in June of 2009, and by December of 2009, the facility had reduced its loading by approximately 70 percent below levels measured during the TMDL survey conducted in 2007. It is anticipated that once all homes and facilities in the expanded sewer collection area have been incorporated, there will be an additional reduction in the loading to Grays Creek. The map shown in Figure 1 depicts the areas to be included in the expanded sewer collection zone. The City of Denham Springs expects complete the all expansions to the sewer collection zone within the next 12 months.

Documentation for MS4 loading development is located in Appendix E3.

The final TMDL loading for Phase I is presented in Table 3. LDEQ estimates that the overall loading must be reduced by 85% to meet the current DO criteria of 5.0 mg/L. The MS4 loading was partitioned from the nonpoint loading, based on drainage areas. If the proposed DO criteria is changed to 4 mg/L for the upper reaches above Hwy 1032 and 2.3 mg/L for the subsegment below Hwy 1032, then 76% of the man-made load must be removed. This proposed DO criteria is based on existing UAA work for the Lower Mississippi Alluvial Plains Ecoregions and the Terrace Uplands.

Loading attributed to any MS4 will be included in the WLA. It is recognized that many permitted and unpermitted facilities discharge into the areas regulated by MS4 permits. The allocations are presented in Table 2.

**Figure 1. Denham Springs STP's Planned Phases of Collection System Expansions**



**Table 2. Summary of MS4 loading for Grays Creek based on a DO Criterion of 5.0 mg/L**

Urban Area	NPDES	MS4 area (Meters square)	Summer MS4 (lbs/day)	Winter MS4 (lbs/day)
Denham Springs	LAR041020	6680085.29	34	32
Livingston Parish	LAR040002	18301827.79	93	87

**Table 3. Total Maximum Daily Load (Sum of UBOD<sup>1</sup> and SOD) for a 5.0 mg/L dissolved oxygen standard**

ALLOCATION	SUMMER		WINTER	
	% Reduction Required	(MAY-OCT) (lbs/day)	% Reduction Required	(NOV-APR) (lbs/day)
Point Source WLA	85	1182	85	1182
Point Source Reserve MOS (20%)		295		295
Denham Springs MS4 WLA (Nonpoint Loads)	85	28	85	26
Denham Springs MS4 MOS (Nonpoint Source Reserve MOS) (20%)		6		6
Livingston Parish MS4 WLA (Nonpoint Loads)	85	76	85	72
Livingston Parish MS4 MOS (Nonpoint Source Reserve MOS) (20%)		17		15
Nonpoint Loads	85	251	85	237
Nonpoint Source Reserve MOS (20%)		54		50
TMDL		1909		1883

\*\*\*Note1: UCBOD as stated in this allocation is Ultimate CBOD.  
 UCBOD to CBOD<sub>5</sub> ratio = 2.3 for all treatment levels  
 Permit allocations are generally based on CBOD<sub>5</sub>\*\*\*



**Table 4. TMDL Summary 040304 – Point Sources included in the model vs. a DO Criterion of 5.0 mg/L**

FACILITY	AI NO.	PERMIT EXPIRATION	FACILITY TYPE	OUTFALL NO.	OUTFALL DESCRIPTION	RECEIVING WATER	CURRENT EXPECTED FLOW	CURRENT MONTHLY AVERAGE CONCENTRATION LIMITS		TMDL FLOW	FINAL TMDL MONTHLY AVERAGE CONCENTRATION LIMITS			MODELING COMMENTS
		Date					GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	DO, mg/L	
Denham Springs MS4	108502/ LAR041020	12/5/2012	Stormwater	N/A	Ditches to Grays Creek	Grays Creek	N/A	N/A		N/A	N/A	N/A	N/A	MS4 addressed in model and TMDL. Limits are not appropriate for dissolved oxygen.
Livingston Parish MS4	108276/ LAR040002	12/5/2012	Stormwater	N/A	Ditches to Grays Creek	Grays Creek	N/A	N/A		N/A	N/A	N/A	N/A	MS4 addressed in model and TMDL. Limits are not appropriate for dissolved oxygen.
City of Denham Springs	19808/ LA0045730	11/01/2014	STP	001	Unnamed ditch to Grays Creek	Grays Creek	6000000	10	2	6000000	5	2	5	Modeled
Blake LaFleur Mobile Home Park	40413/ LAG540074	7/01/2013	STP	001	Local drainage to Grays Creek	Grays Creek	12000	30		12000	5	2	5	Modeled
Hill Top Mobile Home Park	41786/ LAG540124	7/01/2013	STP	001	Local drainage to Grays Creek	Grays Creek	15000	30		15000	5	2	5	Modeled
Highland Ridge Subdivision	41841/ LAG540368	7/01/2013	STP	001	Unnamed ditch to Hwy 16 to Grays Creek	Grays Creek	18800	30		18800	5	2	5	Modeled
Oakview Mobile Home Park	42696/ LAG540893	7/01/2013	STP	001	Grays Creek	Grays Creek	20400	30		20400	5	2	5	Modeled
Pine Acres Mobile Home Park	42831/ LAG540739	7/01/2013	STP	001	Grays Creek	Grays Creek	7500	30		7500	5	2	5	Modeled
Summerfield Subdivision	43145/ LAG570175	3/15/2009	STP	001	Local drainage to Grays Creek	Grays Creek	40000	10		40000	5	2	5	Modeled
The Willows Subdivision Filing 8	94542/ LAR10B829	1/15/2009	STP	001	Grays Creek	Grays Creek	92000	10		92000	5	2	5	Modeled

FACILITY	AI NO.	PERMIT EXPIRATION	FACILITY TYPE	OUTFALL NO.	OUTFALL DESCRIPTION	RECEIVING WATER	CURRENT EXPECTED FLOW	CURRENT MONTHLY AVERAGE CONCENTRATION LIMITS		TMDL FLOW	FINAL TMDL MONTHLY AVERAGE CONCENTRATION LIMITS			MODELING COMMENTS
		Date					GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	DO, mg/L	
Carter Hill Subdivision	43151/ LAG570138	3/15/2009	STP	001	Grays Creek	Grays Creek	66400	10		66400	5	2	5	Modeled
Parker's Supermarket	72195/ LAU005608	12/1/2012	STP	001	Unnamed ditch to Willis Bayou to Grays Creek	Grays Creek	1690	30		1690	5	2	5	Modeled
Rolling Meadow Subdivision	89506/ LAG570211	3/15/2009	STP	001	Grays Creek	Grays Creek	44800	10		44800	5	2	5	Modeled
Southpoint Subdivision	99845/ LAG570265	3/15/2009	STP	001	Local drainage to Grays Creek	Grays Creek	30000	10		30000	5	2	5	Modeled
Southpoint III Subdivision	104721/ LAG570251	3/15/2009	STP	001	Public drainage to Grays Creek	Grays Creek	96800	10		96800	5	2	5	Modeled
Grays Creek Elementary School	114022/ LAG541138	7/1/2013	STP	001	Unnamed ditch to Grays Creek	Grays Creek	16000	30		16000	5	2	5	Modeled
Southpoint IV Subdivision	121675/ LA0120375	7/1/2012	STP	001	Unnamed ditch to Grays Creek	Grays Creek	140800	5	2	140800	5	2	5	Modeled
Olivia Rose Mobile Home Park	123154/ LAG541271	7/1/2013	STP	001	Unnamed ditch to Grays Creek	Grays Creek	7500	30		7500	5	2	5	Modeled
All God's Children Daycare	127502/ LAG531925	12/1/2012	STP	001	Unnamed ditch to Grays Creek	Grays Creek	1395	30		1395	5	2	5	Modeled
Greystone Golf & Country Club	130045/ LAG570346	5/1/2014	STP	001	Miller's Canal to Grays Creek	Grays Creek	80000	10		80000	5	2	5	Modeled

FACILITY	AI NO.	PERMIT EXPIRATION	FACILITY TYPE	OUTFALL NO.	OUTFALL DESCRIPTION	RECEIVING WATER	CURRENT EXPECTED FLOW	CURRENT MONTHLY AVERAGE CONCENTRATION LIMITS		TMDL FLOW	FINAL TMDL MONTHLY AVERAGE CONCENTRATION LIMITS			MODELING COMMENTS
		Date					GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	DO, mg/L	
Grays Creek Subdivision	145156/ LA0122337	7/1/2012	STP	001	Grays Creek	Grays Creek	24000	5	2	24000	5	2	5	Modeled
Gulfstream Estates & Gulfstream Town Homes	148345/ LA0123412	2/1/2013	STP	001	Grays Creek	Grays Creek	70000	5	2	70000	5	2	5	Modeled
Stone Hill Subdivision	150779/ LA0123293	Draft Permit 1/10/2008	STP	001	Willis Bayou to Grays Creek	Grays Creek	30000	5	2	30000	5	2	5	Modeled
Bayside Campground	139697/ LAU004699	12/1/2012	STP	001	Guidroz Canal to Grays Creek	Grays Creek	2375	30		2375	5	2	5	Modeled
(Cluster 1) Bercen Inc – Southern Division	3424/ LAG532279	Permit Terminated 9/22/2009	STP	001	Dixon Canal to Grays Creek	Grays Creek	15045	30		15045	5	2	5	Modeled
(Cluster 1) ITT Industries Goulds Pumps Inc	3569/ LAR05M747	12/1/2012	STP	001	Grays Creek	Grays Creek	5000	30		5000	5	2	5	Modeled
(Cluster 1) Deville's Mobile Home Park	39164/ LAG540271	7/1/2013	STP	001	Ditch to Grays Creek	Grays Creek	9000	30		9000	5	2	5	Modeled
(Cluster 1) Bradleys Dba Eden Place	40843/ LAG570128	5/1/2014	STP	001	Parish drainage to Grays Creek	Grays Creek	46200	10		46200	5	2	5	Modeled
(Cluster 1) Carlton Oaks Subdivision	86466/ LAG541002	7/1/2013	STP	001	Grays Creek	Grays Creek	50000	10		50000	5	2	5	Modeled

FACILITY	AI NO.	PERMIT EXPIRATION	FACILITY TYPE	OUTFALL NO.	OUTFALL DESCRIPTION	RECEIVING WATER	CURRENT EXPECTED FLOW	CURRENT MONTHLY AVERAGE CONCENTRATION LIMITS		TMDL FLOW	FINAL TMDL MONTHLY AVERAGE CONCENTRATION LIMITS			MODELING COMMENTS
		Date					GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	DO, mg/L	
(Cluster 2) Livingston Parish Mosquito Abatement District	19016/ LAG530733	11/1/2013	STP	001	Unnamed ditch to Grays Creek	Grays Creek	2660	30		2660	5	2	5	Modeled
(Cluster 2) Crescent Properties Facility	40667/ LAG540096	7/1/2013	STP	001	Local drainage to Grays Creek	Grays Creek	6000	30		6000	5	2	5	Modeled
(Cluster 2) Gulf States Long Term Acute Care of Denham Springs	41267/ LAG540065	7/1/2013	STP	001	Unnamed ditch to Grays Creek	Grays Creek	16700	30		16700	5	2	5	Modeled
(Cluster 2) A & W Mobile Home Park	97203/ LAG532185	Permit Terminated 6/16/2009	STP	001	Dixon Canal to Grays Creek	Grays Creek	3300	30		3300	5	2	5	Modeled
(Cluster 2) Denham Springs Walker Branch Library	139548/ LAG532054	12/1/2012	STP	001	Hwy 190 ditch to Grays Creek	Grays Creek	1500	30		1500	5	2	5	Modeled
(Cluster 2) Country Boy Cages/Stihl Equipment	156711/ LAU005679	11/08/2012	STP	001	Local drainage to Grays Creek	Grays Creek	500	5	2	500	5	2	5	Modeled
(Cluster 3) Lakeside Cove Subdivision	86480/ LAG541011	7/1/2013	STP	001	Unnamed ditch to Grays Creek	Grays Creek	10800	30		10800	5	2	5	Modeled
(Cluster 3) Clear Lake Subdivision	121715/LAG570321	3/15/2009	STP	001	Unnamed ditch to Grays Creek	Grays Creek	27200	10		27200	5	2	5	Modeled

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		Date					GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	DO, mg/L	
Seventh Ward Elementary	18185/ LAG540481	7/1/2013	STP	001	UT#4	UT#4	25000	30		25000	5	2	5	Modeled with UT#4
Penny's Park	85193/ LAG540988	7/1/2013	STP	001	UT#6	UT#6	12000	30		12000	5	2	5	Modeled with UT#6

<sup>a</sup> This TMDL was developed for critical low-flow conditions (7Q10), therefore the WLAs for all stormwater discharges will be 0.0 lb/d.

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**Table 5. TMDL Summary 040304 – Point Sources within the watershed but not included in the model vs. DO Criterion of 5.0 mg/L**

FACILITY	AI NO.	PERMIT EXPIRATION	FACILITY TYPE	OUT-FALL NO.	OUTFALL DESCRIPTION	RECEIVING WATER	CURRENT EXPECTED FLOW	CURRENT MONTHLY AVERAGE CONCENTRATION LIMITS		FINAL TMDL MONTHLY AVERAGE CONCENTRATION LIMITS			MODELING COMMENTS
		Date					GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	DO, mg/L	
Denham Springs Super Stop	22947/ LAG750370	3/15/2014	STP	001	Local drainage to Miller's Canal to Grays Creek	Grays Creek	200	30		5	2	5	Not Modeled
Plantation Oaks Mobile Home Park	31054/ LAG560068	2/19/2010	STP	001	Roadside ditch to unnamed canal to Grays Creek	Grays Creek	19500	30		5	2	5	Not Modeled
Stable Ridge Mobile Homes	43409/ LAG530532	12/1/2012	STP	001	Henderson Road ditch to unnamed creek to Grays Creek	Grays Creek	3600	30		5	2	5	Not Modeled
Cracker Barrel Stores #30	74908/ LAG531229	12/1/2012	STP	001	Parish ditch to Miller's Canal to Grays Creek	Grays Creek	2500	30		5	2	5	Not Modeled
Hidden Pines	157410/ LAU005945	7/1/2013	STP	001	Drainage ditch to Grays Creek	Grays Creek	40	30		5	2	5	Not Modeled
Grays Mobile Home Park	18683/ LAG540341	Permit Terminated	STP	001	Grays Creek	Grays Creek	11700	30		5	2	5	Not Modeled
Eastside Elementary School	42317/ LAG540834	12/1/2013	STP	001	Local drainage to Grays Creek	Grays Creek	25000	30		5	2	5	Not Modeled
Life Church	157121/ LAG532725	12/1/2012	STP	001	Parish drainage to Grays Creek	Grays Creek	750	30		5	2	5	Not Modeled
Quality Building Systems Inc	156699/ LAG532881	12/1/2012	STP	001	Local drainage to Grays Creek	Grays Creek	500	30		5	2	5	Not Modeled

FACILITY	AI NO.	PERMIT EXPIRATION	FACILITY TYPE	OUT-FALL NO.	OUTFALL DESCRIPTION	RECEIVING WATER	CURRENT EXPECTED FLOW	CURRENT MONTHLY AVERAGE CONCENTRATION LIMITS		FINAL TMDL MONTHLY AVERAGE CONCENTRATION LIMITS			MODELING COMMENTS
		Date					GPD	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	BOD5/ CBOD5, mg/L	NH <sub>3</sub> -N, mg/L	DO, mg/L	
Adell Compounding	13853	4/01/2015	STP	001	Local drainage to Dixon Canal to Grays Creek	Grays Creek	650	30		5	2	5	Not Modeled
Carlton Oaks – 3 <sup>rd</sup> Filing	101028	5/01/2014	STP	001	Grays Creek	Grays Creek	50000	10		5	2	5	Not Modeled

<sup>a</sup> This TMDL was developed for critical low-flow conditions (7Q10), therefore the WLAs for all stormwater discharges will be 0.0 lb/d.

## **EXECUTIVE SUMMARY**

This report presents the results of a watershed based, calibrated modeling analysis of Grays Creek. The modeling was conducted to establish a TMDL for biochemical oxygen-demanding pollutants for the Grays Creek watershed. The model extends from its headwaters to Amite River. Grays Creek is located in south Louisiana and this subsegment includes several unnamed tributaries and Miller's Canal. Grays Creek is in the Lake Pontchartrain Basin and this study includes Water Quality Subsegment 040304. The area is heavily populated and land use is primarily agriculture, vegetated urban, and forest.

The mainstem of Grays Creek was surveyed and modeled. There are 50 permitted dischargers (including two MS4 permittees) located within this subsegment. There were too many facilities to sample and model. Therefore, a representative group of facilities was sampled. The same reductions apply to all facilities, modeled or not. These dischargers are accounted for as nonpoint loading through the process of calibration. Current permit information and discharge monitoring reports were reviewed for all of these facilities. This stream will call for final permit limits of 5 BOD<sub>5</sub>/ 2 NH<sub>3</sub> / 5mg/L DO for all facilities. Post aeration will be required. However, interim limits will be implemented as described in the Technical Summary.

The watershed drains areas that are regulated by two MS4 permits. The areas covered by these MS4 permits include many permitted and unpermitted facilities. While LDEQ does assume responsibility for these facilities, partial responsibility belongs to the MS4 permittee to ensure that water draining from the area of coverage does not impact the named waterbody. Reductions in the nonpoint loading presented in this report should apply to MS4 regulated areas.

The impact of stormwater loading on the waterbody under critical conditions is difficult to determine. Monitoring is monetarily and logistically prohibitive. Therefore it is impractical to set MS4 permit limits. However, appropriate BMP measures shall be incorporated into the MS4 permits to minimize the impacts of stormwater loads on water quality. Such BMP measures may include the elimination of illicit wastewater discharges, the regionalization of wastewater treatment, rehabilitating and upgrading sewer collection system lines, and other appropriate activities.

Input data for the calibration model was developed from data collected during the July 2007 intensive survey; data collected by LDEQ monitoring station 0239 in the watershed; USGS drainage area and low flow publications. The nonpoint source loads included nonpoint loading not associated with flow. A satisfactory calibration was achieved for the main stem. For the projection models, data was taken from ambient temperature and dissolved oxygen records at LDEQ monitoring station WQN 0239. The Louisiana Total Maximum Daily Load Technical Procedures, Revision 12, have been followed in this study.

The various spreadsheets that were used in conjunction with the modeling program may be found in the appendices. Projections are adjusted to meet the dissolved oxygen criteria by reducing total nonpoint source loads. At the time of the survey Grays Creek did not meet a 5.0 mg/L standard in any of the reaches.

Modeling was limited to low flow scenarios for both the calibration and the projections since the constituent of concern was dissolved oxygen and the available data was limited to low flow conditions.



The model used was LAQUAL, a modified version of QUAL-TX, which has been adapted to address specific needs of Louisiana waters.

Grays Creek, Subsegment 040304, was on the 2006 303(d) list and on the consent decree. Subsegment 040304 is found to be "not supporting" any of its designated uses of Primary Contact Recreation and Fish and Wildlife Propagation. It is supporting its use of secondary contact recreation. Grays Creek was subsequently scheduled for TMDL development with other listed waters in the Lake Pontchartrain Basin. The suspected causes of impairment are low dissolved oxygen, and elevated nitrate/nitrite, total phosphorous, sulfates, total dissolved solids, and total fecal coliform. The suspected sources are On-site Treatment Systems (Septic Systems and Similar Decentralized Systems), Sanitary Sewer Overflows (Collection System Failures) and unknown sources.

This TMDL establishes load limitations for oxygen-demanding substances and goals for reduction of those pollutants. LDEQ's position is that when oxygen-demanding loads from point and nonpoint sources are reduced in order to ensure that the dissolved oxygen criterion is supported, nutrients are also reduced. The implementation of this TMDL through wastewater discharge permits and implementation of best management practices to control and reduce runoff of soil and oxygen-demanding pollutants from nonpoint sources in the watershed will also reduce the nutrient loading from those sources.

Louisiana does not have numeric nutrient criteria at the present time. The original nutrient impairments for waterbodies in the Pontchartrain Basin were not based on quantitative assessments of historical nutrient data. The impairments were based on evaluative assessments that may have included dissolved oxygen. LDEQ and EPA plan to reevaluate the previous nutrient impairments in the Pontchartrain Basin. As a result, both the EPA and LDEQ expect the nutrient impairments to change from category 5 (impairment exists; TMDL required) to category 3 (insufficient data) for Louisiana's 2010 Integrated Report. Therefore LDEQ believes that TMDLs for dissolved oxygen should adequately address any potential nutrient impairments, in the absence of numeric nutrient criteria and quantitative assessments.

LDEQ is developing numeric nutrient criteria for waterbody types based on ecoregions in accordance with LDEQ's plan "Developing Nutrient Criteria for Louisiana 2006" which can be found at:

<http://www.deq.louisiana.gov/portal/Portals/0/planning/LA%20Nutrient%20Strategy%20Plan%20Final%20FOR%20WEB.pdf>.

Water body types for nutrient criteria development in Louisiana are 1) inland rivers and streams; 2) freshwater wetlands; 3) freshwater lakes and reservoirs; 4) big rivers and floodplains/boundary rivers and associated water bodies; and 5) estuarine and coastal waters (including up to Louisiana's three mile boundary in the Gulf of Mexico). Proposed approaches for nutrient criteria development are currently under review by LDEQ and EPA. Nutrient criteria can be implemented upon state promulgation and EPA approval as per 40 CFR 131.21.

Upon development of nutrient criteria, a subsequent quantitative assessment of the waterbodies, and the development of full nutrient models, nutrient limits may be established for all facilities discharging to impaired waterbodies in the Pontchartrain Basin. LDEQ recommends that all facilities discharging to impaired waterbodies take a proactive approach and prepare to receive nutrient limitations in the

near future. Such a proactive approach should include nutrient monitoring and documentation through facility Discharge Monitoring Reports (DMRs) in order to assess their nutrient loads and the need to modify their treatment processes for nutrient removal.

A calibrated water quality model for the watershed was developed and projections were modeled to quantify the non-point source load reductions which would be necessary in order for Grays Creek, subsegment 040304 to comply with its established water quality standards and criteria. This report presents the results of that analysis.

This TMDL will implement a phased approach, as shown in Table 1. This report represents Phase I of the TMDL. For Phase I, 85% of the overall nonpoint loading must be removed to achieve the current DO criterion of 5.0 mg/L. Such loading requirements would require all dischargers to have permit limits of 5 CBOD/ 2 NH<sub>3</sub> / 5 mg/L DO in this watershed. However, the implementation will occur in a phased manner. Phase II will be completed after the Denham Springs facility has completed its plans to incorporate new facilities, and the DO criteria has been revised. The resulting allocations for Phase I are presented in Table 3.

LDEQ is in the process of reevaluating Louisiana's ecoregions and modifying the ecoregion boundaries where appropriate. Grays Creek appears to reside in two different ecoregions, the Lower Mississippi River Alluvial Plain (LMRAP) ecoregion and a transitional zone between the LMRAP and the Terrace Uplands (TU) ecoregions. Therefore, Grays Creek may have two different dissolved oxygen criteria. Data for the LMRAP and TU ecoregions indicate that the DO criteria for the lower reaches may be 2.3 mg/L, but the DO criteria for the upper reaches may be equal to or slightly less than the current DO criteria of 5.0 mg/L. LDEQ is evaluating the geographic location of the break between the two ecoregions. As a result, LDEQ has run a preliminary summer projection based on the DO criteria of 4.0 mg/L for the upper reaches and 2.3 mg/L for the lower reaches. This projection is an indication of what the required load reductions may be if the DO criteria is revised for appropriate waterbodies in the Pontchartrain Basin. The final required load reductions may be different based on the final DO criteria.

After all facilities are incorporated into the collection area of the Denham Springs STP, a new survey of the watershed should be conducted and a new TMDL calculated to account for the proposed water quality improvement to the watershed.

The table used to develop point source allocations and modeling reductions is shown below.

DEQ will work with other agencies such as local Soil Conservation Districts to implement best management practices in the watershed through the 319 programs. LDEQ will also continue to monitor the waters to determine whether standards are being attained.

In accordance with Section 106 of the Federal Clean Water Act and under the authority of the Louisiana Environmental Quality Act, the LDEQ has established a comprehensive program for monitoring the quality of the state's surface waters. The LDEQ collects surface water samples at various locations, utilizing appropriate sampling methods and procedures for ensuring the quality of the data collected. The objectives of the surface water monitoring program are to determine the quality of the state's surface waters, to develop a long-term data base for water quality trend analysis, and to monitor the effectiveness of pollution controls. The data obtained through the surface water

monitoring program is used to develop the state’s biennial Integrated Report. This information is also utilized in establishing priorities for the LDEQ nonpoint source program.

**Table 6. Point Source Allocations to Percent Reductions**

RELATION OF POINT SOURCE ALLOCATIONS TO PERCENT REDUCTIONS FROM SECONDARY TREATMENT			
Point Source Allocation			% reduction from secondary treatment
CBOD5	NH3-N	UBOD	
30	15	133.5	
20	10	89	33%
10	10	66	51%
10	5	44.5	67%
10	2	31.6	76%
5	2	20.1	85%
0	0	0	100%
--- Other allocations of choice ---			
Point Source Allocation			% reduction from secondary treatment
CBOD5	NH3-N	UBOD	
5	5	33	75%
2	1	8.9	93%

The LDEQ is continuing to implement a watershed approach to the surface water quality monitoring. In 2004 a four year sampling cycle replaced the previous five year cycle. Approximately one quarter of the states watersheds will be sampled in each year so that all of the states watersheds will be sampled within the four year cycle. This will allow the LDEQ to determine whether there has been any improvement in water quality following implementation of the TMDLs. As the monitoring results are evaluated at the end of each year, waterbodies may be added to or removed from the 303(d) list.

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## **1. Introduction**

Grays Creek, Subsegment 040304, was on the 2006 and draft 2008 Integrated Reports and the consent decree. Subsegment 040304 is found to be "not supporting" any of its designated uses of Primary Contact Recreation and Fish and Wildlife Propagation. It is supporting its designated use of Secondary Contact Recreation. The suspected causes of impairment are low dissolved oxygen, nitrate/nitrite, total phosphorus, sulfates, total dissolved solids, and total fecal coliform. All nutrient impairments were based on evaluative assessments. Nutrient data was not used in the nutrient assessments. LDEQ and EPA anticipate the removal of all nutrient impairments in the 2010 303(d). The suspected sources are On-site Treatment Systems (Septic Systems and Similar Decentralized Systems), Sanitary Sewer Overflows (Collection System Failures) and unknown sources. Because of the impairment, this subsegment requires the development of a total maximum daily load (TMDL) for oxygen demanding substances. A calibrated water quality model for the Grays Creek, subsegment 040304 watershed was developed and projections for current dissolved oxygen standards were run to quantify the wasteload required to meet established dissolved oxygen criteria. This TMDL report addresses the organic enrichment/low DO impairment.

## **2. Study Area Description**

### **2.1 General Information**

“The Lake Pontchartrain Basin, located in southeastern Louisiana, consists of the tributaries and distributaries of Lake Pontchartrain, a large estuarine lake. The basin is bounded on the north by the Mississippi state line, on the west and south by the east bank Mississippi River levee, on the east by the Pearl River Basin and on the southeast by Breton and Chandeleur Sounds. This basin includes Lake Borgne, Breton Sound, Chandeleur Sound and the Chandeleur Islands. The northern part of the basin consists of wooded uplands, both pine and hardwood forests. The southern portions of the basin consist of cypress-tupelo swamps and lowlands and brackish and saline marshes. The marshes of the southeastern part of the basin constitute the most rapidly eroding area along the Louisiana coast. Elevations in this basin range from minus five feet at New Orleans to over two hundred feet near the Mississippi border.” (LA DEQ, 2000)

This TMDL addresses Grays Creek located in the Lake Pontchartrain Basin from its headwaters to the Amite River. This area is typical of the basin and is primarily comprised of urban, forestry, and agriculture as documented in Table 7 (LADEQ, 1999).

A detailed land cover map of Subsegment 040304 is also included in Appendix H2. Average annual precipitation in the segment, based on the nearest Louisiana Climatic Station, is 60 -64 inches based on a 30-year period of record (LSU, 1999). There is a Louisiana average annual precipitation map located in Appendix H3.

**Table 7. Land Uses in Segment 040304**

<b>Land Type</b>	<b>Acres</b>	<b>Percent Land use</b>
Upland Forest Mixed	4834.41	22.99
Vegetated Urban	4535.07	21.57
Agriculture/Cropland/Grassland	3457.34	16.44
Upland Forest Evergreen	2287.33	10.88
Wetland Forest Deciduous	2150.33	10.23
Upland S/S Mixed	1198.04	5.70
Water	1190.03	5.66
Wetland Forest Mixed	503.06	2.39
Upland S/S Evergreen	460.36	2.19
Upland S/S Deciduous	203.27	0.97
Upland Forest Deciduous	91.85	0.44
Upland Barren	42.92	0.20
Wetland S/S Deciduous	37.81	0.18
Fresh Marsh	32.47	0.15
Non-Vegetated Urban	2.67	0.01

## 2.2 Water Quality Standards

The Water Quality criteria and designated uses for Grays Creek Watershed are shown in Table 8. As noted in the table, Grays Creek, Subsegment 040304 has a year round dissolved oxygen standard of 5.0 mg/L.

**Table 8. Water Quality Numerical Criteria and Designated Uses**

<b>Parameter</b>	<b>Value</b>
Designated Uses	A B C
DO, mg/L	5.0
Cl, mg/L	25
SO <sub>4</sub> , mg/L	10
pH	6.0 – 8.5
BAC	1*
Temperature, deg Celsius	32
TDS, mg/L	150

USES: A – primary contact recreation; B - secondary contact recreation; C – propagation of fish and wildlife; D – drinking water supply; E – oyster propagation; F – agriculture; G – outstanding natural resource water; L – limited aquatic life and wildlife use.

\*Note 1 – 200 colonies/100mL maximum log mean and no more than 25% of samples exceeding 400 colonies/100mL for the period May through October; 1,000 colonies/100mL maximum log mean and no more than 25% of samples exceeding 2,000 colonies/100mL for the period November through April.



### **2.3 Wastewater Discharges**

There are 50 permitted dischargers (including two MS4 permittees) and numerous unpermitted dischargers located in this subsegment. There were too many facilities to sample and model. Therefore, a representative group of facilities was sampled. The same reductions apply to all facilities, modeled or not. These dischargers are accounted for as nonpoint loading through the process of calibration. LDEQ recognizes that many of the dischargers may not individually impact the mainstem of Grays Creek during periods of low stream flow. However, the cumulative impact of many small dischargers can impact the water quality in Grays Creek during storm events. This is why we have associated discharger allocations with nonpoint reductions. Therefore, in the absence of regional plants, LDEQ believes that loading should be reduced equitably for all facilities. Current permit information and discharge monitoring reports were reviewed for these facilities. LDEQ is not able to quantify the number of individual home sewer systems in the watershed. LDEQ realizes that home treatment systems may contribute to the loading. LDEQ believes that these home systems should be linked regional collection and treatment systems.

LDEQ is updating current information on permitted facilities and actively locating unpermitted facilities in the Pontchartrain Basin to get them permitted. These facilities will be permitted according to the strategy presented in the Technical Summary.

Phase I and II stormwater systems are additional possible point source contributors in the Pontchartrain Basin. Stormwater discharges are generated by runoff from urban land and impervious areas such as paved streets, parking lots, and rooftops during precipitation events. These discharges often contain high concentrations of pollutants that can eventually enter nearby waterbodies. Most stormwater discharges are considered point sources and require coverage by a National Pollutant Discharge Elimination System (NPDES) permit.

Under the NPDES stormwater program, operators of large, medium, and regulated small municipal separate storm sewer systems (MS4s) must obtain authorization to discharge pollutants. The Stormwater Phase I Rule (55 Federal Register 47990, November 16, 1990) requires all operators of medium and large MS4s to obtain an NPDES permit and develop a stormwater management program. Medium and large MS4s are defined by the size of the population within the MS4 area, not including the population served by combined sewer systems. A medium MS4 has a population between 100,000 and 249,999; a large MS4 has a population of 250,000 or more.

Phase II requires a select subset of small MS4s to obtain an NPDES stormwater permit. A small MS4 is any MS4 not already covered by the Phase I program as a medium or large MS4. The Phase II rule automatically covers all small MS4s in urbanized areas (UAs), as defined by the Bureau of the Census, and also includes small MS4s outside a UA that are so designated by NPDES permitting authorities, case by case (USEPA 2000).

In Louisiana, there are two ways that an MS4 can be identified as a regulated, small MS4. This category includes all cities within UAs and any small MS4 area outside UAs with a population of at least 10,000 and a population density of at least 1,000 people per square mile (LDEQ 2002). In the Grays Creek watershed, the city of Denham Springs, Permit # LAR041020 and Livingston Parish, Permit # LAR040002.

The City of Denham Springs has a small MS4 permit for inside the city limits. Livingston Parish has a small MS4 permit for areas outside the limits.

EPA's stormwater permitting regulations require municipalities to obtain permit coverage for all stormwater discharges from MS4s. For each MS4 in the basin, a gross load was computed by dividing the acreage of the permitted area in the subsegment by the total area of the subsegment and multiplying the nonpoint source allocation by this percentage. Note that these values are estimates that can be refined in the future as more information about MS4s and land-use-specific loadings becomes available. Note that MS4s are permitted dischargers but function similarly to nonpoint sources (through storm-driven processes). EPA expects that the MS4 WLAs will be achieved through BMPs and adaptive management.

The National Pollutant Discharge Elimination System (NPDES) permitting program for stormwater discharges was established under the Clean Water Act as the result of a 1987 amendment. The Act specifies the level of control to be incorporated into the NPDES stormwater permitting program depending on the source (industrial versus municipal stormwater). These programs contain specific requirements for the regulated communities/facilities to establish a comprehensive stormwater management program (SWMP) or storm water pollution prevention plan (SWPPP) to implement any requirements of the total maximum daily load (TMDL) allocation. [See 40 CFR §130.]

Storm water discharges are highly variable both in terms of flow and pollutant concentration, and the relationships between discharges and water quality can be complex. For municipal stormwater discharges in particular, the current use of system-wide permits and a variety of jurisdiction-wide BMPs, including educational and programmatic BMPs, does not easily lend itself to the existing methodologies for deriving numeric water quality-based effluent limitations. These methodologies were designed primarily for process wastewater discharges which occur at predictable rates with predictable pollutant loadings under low flow conditions in receiving waters. EPA has recognized these problems and developed permitting guidance for stormwater permits. [See "Interim Permitting Approach for Water Quality-Based Effluent Limitations in Stormwater Permits" (EPA-833-D-96-00, Date published: 09/01/1996)]

Due to the nature of storm water discharges, and the typical lack of information on which to base numeric water quality-based effluent limitations (expressed as concentration and mass), LDEQ considers an interim permitting approach for NPDES storm water permits which is based on BMPs. (The interim permitting approach uses best management practices (BMPs) in first-round storm water permits, and expanded or better-tailored BMPs in subsequent permits, where necessary, to provide for the attainment of water quality standards.) These BMPs should include the location of all wastewater discharges, elimination of all illicit discharges, regionalization of sewage collection and treatment, and the rehabilitation of all problematic sewage collection lines and treatment systems within the MS4 regulated area.

A monitoring component is also included in the recommended BMP approach. "Each storm water permit should include a coordinated and cost-effective monitoring program to gather necessary

information to determine the extent to which the permit provides for attainment of applicable water quality standards and to determine the appropriate conditions or limitations for subsequent permits.” The details of this approach can be found in a guidance memo issued in 2002. [See Memorandum from Robert Wayland, Director of OWOW and James Hanlon, Director of OWM to Regional Water Division Directors: “Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit requirements Based on Those WLAs ” (Date published: 11/22/2002)] “The policy outlined in this memorandum affirms the appropriateness of an iterative, adaptive management BMP approach, whereby permits include effluent limits (e.g., a combination of structural and nonstructural BMPs) that address storm water discharges, implement mechanisms to evaluate the performance of such controls, and make adjustments (i.e., more stringent controls or specific BMPs) as necessary to protect water quality. . . . . If it is determined that a BMP approach (including an iterative BMP approach) is appropriate to meet the storm water component of the TMDL, LDEQ makes sure the TMDL reflect this.” This BMP-based approach to stormwater sources in TMDLs is also recognized and described in the most recent EPA guidance. [See “TMDLs To Stormwater Permits Handbook” (DRAFT), EPA, November 2008]

This TMDL adopts the EPA recommended approach and relies on appropriate BMPs for implementation. No numeric effluent limitations are required or anticipated for municipal stormwater discharge permits.

## **2.4 Water Quality Conditions/Assessment**

Grays Creek, subsegment 040304, of the Lake Pontchartrain Basin is listed on the 2006 and draft 2008 Integrated Reports and the consent decree. This subsegment is listed as not supporting Primary Contact Recreation and Fish and Wildlife Propagation. It is supporting its designated use of Secondary Contact Recreation. The suspected causes of impairment are low dissolved oxygen, nitrate/nitrite, total phosphorous, sulfates, total dissolved solids, and total fecal coliform. The suspected sources are On-site Treatment Systems (Septic Systems and Similar Decentralized Systems), Sanitary Sewer Overflows (Collection System Failures) and unknown sources. Because of the impairment, this subsegment requires the development of a total maximum daily load (TMDL) for oxygen demand substances and nutrients. Because of the impairment, this subsegment requires the development of a total maximum daily load (TMDL) for oxygen demanding substances.

## **2.5 Prior Studies**

There are no previous TMDL studies for Grays Creek

LDEQ has one monthly water quality sampling station on Grays Creek. LDEQ Water Quality Site 0239, Grays Creek north of Port Vincent, Louisiana, has a period of record from January 2001 to December 2001 and January 2006 to December 2006. Data collected during the Eularian survey conducted in July 2007, included discharge data, cross-section data, field in-situ data, continuous monitor data, two dye studies, and lab water quality data. This data was used to establish the input for the model calibration and is presented in Appendix F.

### **3. General TMDL Development Process**

The development of a TMDL for dissolved oxygen generally occurs in 3 stages. Stage 1 encompasses the data collection activities. These activities may include gathering such information as stream cross-sections, stream flow, stream water chemistry, stream temperature and dissolved oxygen at various locations on the stream, location of the stream centerline and the boundaries of the watershed which drains into the stream, and other physical and chemical factors which are associated with the stream. Additional data gathering activities include gathering all available information on each facility which discharges pollutants in to the stream, gathering all available stream water quality chemistry and flow data from other agencies and groups, gathering population statistics for the watershed to assist in developing projections of future loadings to the water body, land use and crop rotation data where available, and any other information which may have some bearing on the quality of the waters within the watershed. During Stage 1, any data available from reference or least impacted streams which can be used to gauge the relative health of the watershed is also collected.

Stage 2 involves organizing all of this data into one or more useable forms from which the input data required by the model can be obtained or derived. Water quality samples, field measurements, and historical data must be analyzed and statistically evaluated in order to determine a set of conditions which have actually been measured in the watershed. The findings are then input to the model. Best professional judgment is used to determine initial estimates for parameters which were not or could not be measured in the field. These estimated variables are adjusted in sequential runs of the model until the model reproduces the field conditions which were measured. In other words, the model produces a value of dissolved oxygen, temperature, or other parameter which matches the measured value within an acceptable margin of error at the locations along the stream where the measurements were actually made. When this happens, the model is said to be calibrated to the actual stream conditions. At this point, the model should confirm that there is an impairment and give some indications of the causes of the impairment. If a second set of measurements is available for slightly different conditions, the calibrated model is run with these conditions to see if the calibration holds for both sets of data. When this happens, the model is said to be verified.

Stage 3 covers the projection modeling which results in the TMDL. The critical conditions of flow and temperature are determined for the waterbody and the maximum pollutant discharge conditions from the point sources are determined. These conditions are then substituted into the model along with any related condition changes which are required to perform worst case scenario predictions. At this point, the loadings from the point and nonpoint sources (increased by an acceptable margin of safety) are run at various levels and distributions until the model output shows that dissolved oxygen criteria are achieved. It is critical that a balanced distribution of the point and nonpoint source loads be made in order to predict any success in future achievement of water quality standards. At the end of Stage 3, a TMDL is produced which shows the point source permit limits and the amount of reduction in man-made nonpoint source pollution which must be achieved to attain water quality standards. The man-made portion of the NPS pollution is estimated from the difference between the calibration loads and the loads observed on reference or least impacted streams.

## **4. Calibration Model Documentation**

### **4.1 Program Description**

The model used for this TMDL was LA-QUAL, a steady-state one-dimensional water quality model. LA-QUAL has the mechanisms for incorporating tidal fluctuations, dispersion, and algal impacts in the analysis and was particularly suitable for use in modeling Grays Creek. For a history of LA-QUAL, refer to the LA-QUAL for Windows User's Manual (LDEQ, 2009).

### **4.2 Input Data Documentation**

Data collected during an intensive survey conducted from July 24-26, 2007, was used to establish the input for the model calibration. The data is presented in Appendix F. The flows in each reach were based on the measured survey discharges. The headwater flow was calculated based upon the upper dye study.

Field and laboratory water quality data were entered in a spreadsheet for ease of analysis. The survey data was the primary source of the model input data for initial conditions, decay rates, mainstem water temperature, dissolved oxygen loading, headwater temperature, and DO data.

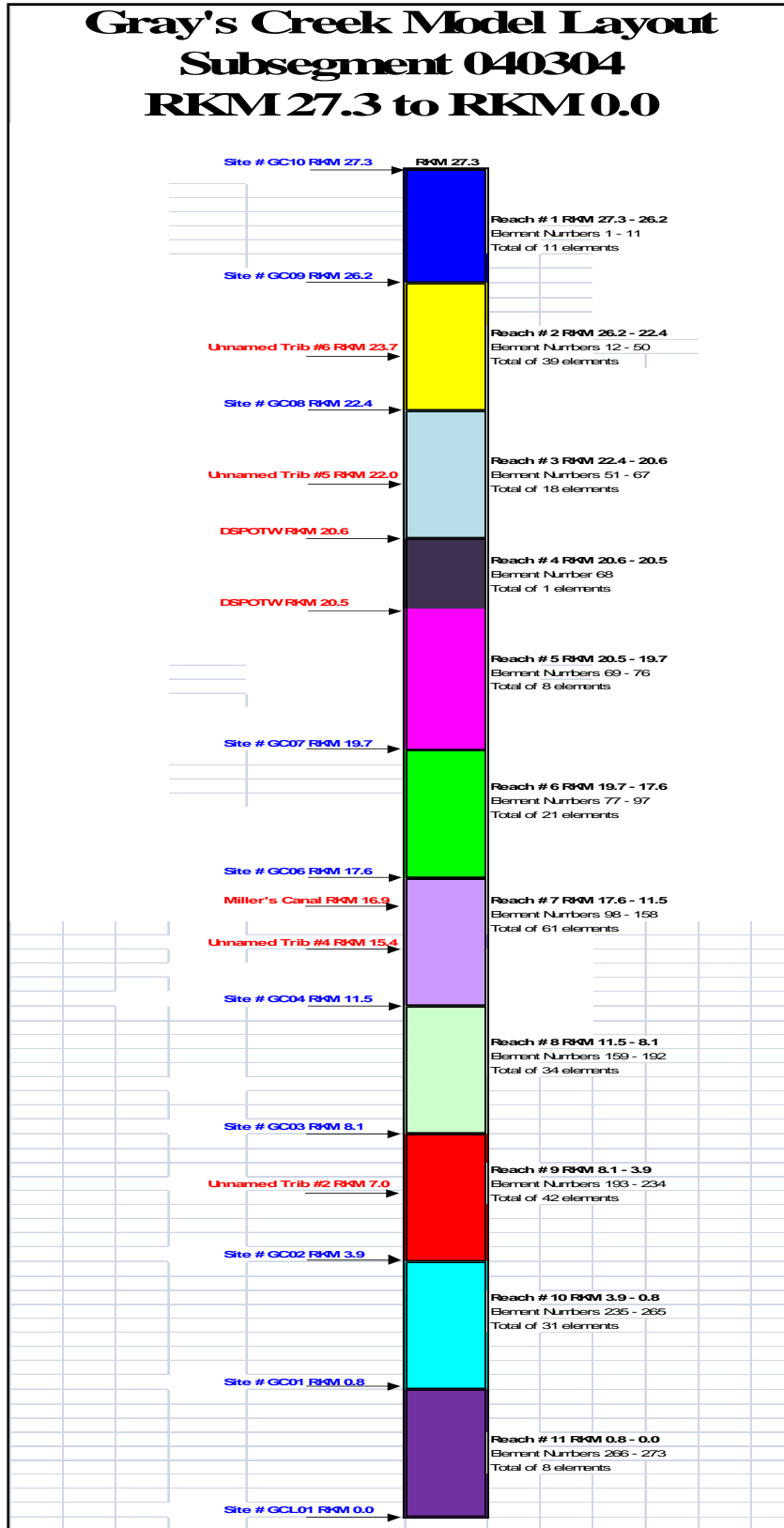
#### **4.2.1 Model Schematics and Maps**

A vector diagram of the modeled area is presented in Figure 1 and Appendix C1. The vector diagram shows the locations of survey stations, the reach/element design, and the locations of the tributaries. An ARCVIEW map of the stream and subsegment showing river kilometers, survey stations, subsegment boundary and other points of interest are also included in Figure 2 and Appendix H1.

#### **4.2.2 Model Options, Data Type 2**

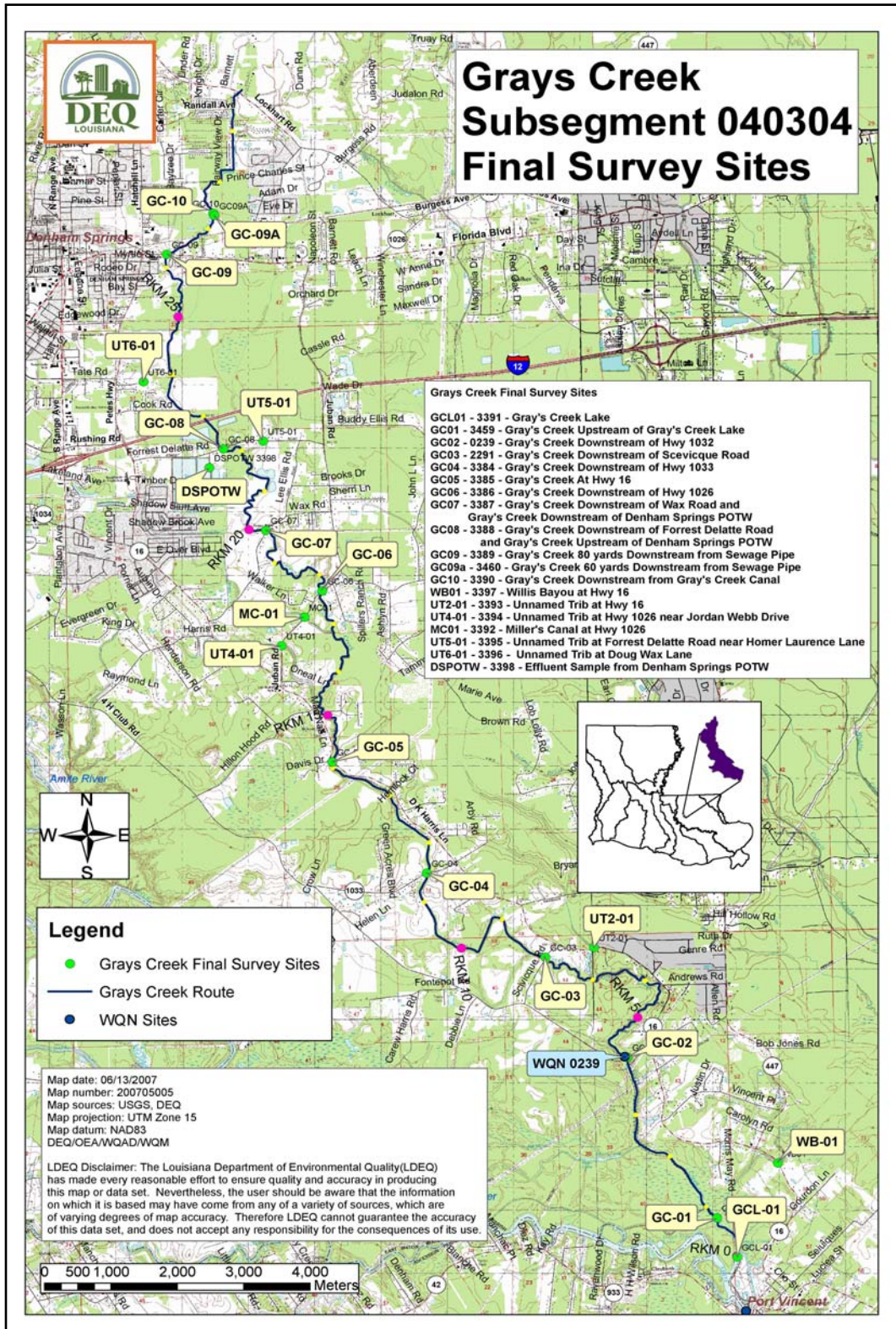
Four constituents were modeled during the calibration process. These were dissolved oxygen, biochemical oxygen demand, chloride, and conductivity. The continuous monitors did show small diurnal swings indicative of algal activity. The algae cycle was not modeled; however, the measured chlorophyll A values were included in the initial conditions. This allowed the model to simulate the oxygen production associated with algae without modeling the entire algal cycle.

Figure 2. Model Layout





**Figure 3. Map of Study Area**



### 4.2.3 Program Constants, Data Type 3

A minimum  $K_L$  value of 0.7 m/day was used. This value is a conversion from 2.3 ft/day which is a Louisiana standard minimum. The  $K_2$  maximum was set to 25 1/day at 20° C which is the EPA Policy in the absence of a measured value.

The inhibition control value was set to option 3 which is all rates but sediment oxygen demand. The water column dissolved oxygen demand is assumed to come primarily from facultative bacteria under anoxic conditions and SOD is not influenced by modeled dissolved oxygen levels in the upper water column.

The hydraulic calculation method was set to option 2 or “widths and depths.” This was done because the low slopes in these waterbodies cause a substantial amount of water to be present in some reaches during critical flow. Using a modified Leopold relationship allows the model to predict a more accurate depth and width during low flow.

The settling rate units were set to option 2 which is 1/day. By making the settling rate a velocity, the rate becomes dependent upon the depth.

The algae oxygen production was set to zero in order to model to a wide variation in dissolved oxygen.

Dispersion equation 3 was used to take into account all modes of transport.

### 4.2.4 Temperature Correction of Kinetics, Data Type 4

The temperature values computed are used to correct the rate coefficients in the source/sink terms for the other water quality variables. These coefficients are input at 20 °C and are then corrected to temperature using the following equation:

$$X_T = X_{20} * \text{Theta}^{(T-20)}$$

Where:

$X_T$  = the value of the coefficient at the local temperature T in degrees Celsius

$X_{20}$  = the value of the coefficient at the standard temperature at 20 degrees Celsius

Theta = an empirical constant for each reaction coefficient

In the absence of specified values for data type 4, the model uses default values. A complete listing of these values can be found in the LA-QUAL for Windows User’s Manual (LDEQ, 2004). For this model all values used were LAQUAL default values.

### 4.2.5 Reach Identification Data, Data Type 8

A diagram of the modeled area is presented in Appendix C1. The vector diagram shows the reach/element design and the location of several unnamed tributaries as well as Miller’s Canal. The modeled area is characterized by 10 sample sites. The model begins its headwaters and extends to the Amite River. This calibrated model includes 11 reaches, 273 elements, and one headwater. A



digitized map of the stream showing river kilometers and the July 2007 survey sampling sites are included in Figure 2 and Appendix H1.

#### 4.2.6 Advective Hydraulic Coefficients, Data Type 9

The Leopold equations are used to scale the velocity (U), width (W), and depth (H) of a free flowing stream from a lower value of flow to a higher value or from a higher value of flow to a lower value. Note that the exponents add to one and the coefficients multiply to 1. This is known as the rule of ones. This method is not appropriate for streams which are not dependent entirely on flow such as waterbodies where flow approaches zero, but contain some depth.

$$U = aQ^b \quad H = cQ^d \quad W = eQ^f$$

$$b + d + f = 1 \quad (a)(c)(e) = 1$$

The Leopold equations presume that the water surface width and average depth of a stream are zero at zero flow. Most Louisiana streams, such as Grays Creek, retain a significant width and depth at zero flow. The equations have therefore been modified to allow for a zero flow width and depth. The rule of ones does not apply to the modified equations. The modified Leopold equations are:

$$W = aQ^{b+c} \quad H = dQ^{e+f} \quad U = gQ^h$$

The width and depths were assumed to be independent of flow. Consequently, the modified Leopold coefficients and exponents were not calculated for this model.

#### 4.2.7 Dispersive Hydraulic Coefficients, Data Type 10

A dye study was performed between sites GC-01 and GC-02. Dye was dumped on Tuesday, July 24, 2007. Two (2) fixed dye monitors were set out at two locations between sites GC-01 and GC-02. The first monitor was set out to catch the dye cloud overnight after an initial boat run. The second fixed dye monitor was set out due to the tree canopy being too thick to allow a boat run.

The dispersion was estimated based on the dye studies at the fixed sites. The Kd value for the upper reach was determined to be 0.146. The Kd value for the lower reach was determined to be 0.561. All documentation can be found in Appendix F6.

To take into consideration all modes of transport, equation 3, ( $D_L = aH^bQ^cV_M^d$ ) in Laqual was used. Using  $b=5/6$ ,  $c=0$ , and  $d=1$  will take into account all modes of transport in the manner of the Tracor and QUAL2E equations. The value for coefficient "a" was calibrated to within the boundaries of the final dye run by setting all other parameters to the previously mentioned values. All documentation can be found in Appendix F6.

#### 4.2.8 Initial Conditions, Data Type 11

The initial conditions are used to reduce the number of iterations required by the model. The values required for this model were temperature and DO by reach. The input values came from the survey station(s) located closest to the reach.

When the continuous monitoring dissolved oxygen (DO) data for at least one diurnal cycle is available, it is standard practice to calibrate to the mean DO. In this case, a diurnal variation of greater than 2 mg/L was encountered. The standard DEQ practice for this is as follows:

1. Calibrate without simulating algal production as follows:

<u>Range of DO cycle</u>	<u>Calibrate</u>
0 – 2 mg/l	Mean DO for one or more full cycles
2 – 9 mg/l	One mg/l over minimum DO
>9 mg/l	0.11*DO cycle over minimum DO

These practices were followed for this model. The input data and sources are shown in Appendix B2.

Chlorophyll a values were also used since the mild effects of algae on the dissolved oxygen concentrations were also simulated with this model. The initial conditions are only a starting point for the model, therefore, all values were set to the measured values. The input data and sources are shown in Appendix B2.

#### 4.2.9 Reaeration Rates, Data Type 12

The applicability of the various reaeration equations was examined. The Texas Equation was considered to be the most appropriate equation for all reaches. The equation is stated below.

$$K_2 = \frac{1.923 V^{0.273}}{D^{0.894}}$$

where: V = stream velocity  
D = stream depth

#### 4.2.10 Sediment Oxygen Demand, Data Type 12

The SOD values were achieved through calibration. The SOD value for each reach is shown in Appendix B2. The values were considered to be reasonable for this type of stream. A large part of the stream is high canopy. The high canopy means large amounts of leaf fall to the stream, possibly resulting in an organic layer covering the bottom sediments. The conversion ratio of settled CBOD and settled NBOD to SOD was considered to be zero for all reaches due to the resuspension of bottom sediments.

Because of the high level of oxygen demanding loading in Grays Creek, it became necessary to simplify the model. The nitrogen series was not modeled, and UCBOD and UNBOD were combined into a single parameter, UBOD. These simplifications eliminated the possibility of allowing LAQUAL to internally generate SOD from settling of CBOD. In this case settled CBOD disappears from the model and the nonpoint “resuspended” loading is used to calibrate the model to measured values of UBOD.

All SOD was added as “background sediment oxygen demand” to calibrate to the measured dissolved oxygen values. This should not be taken to imply that this level of SOD represents natural background SOD. In this case, no natural background loading was specified, and loading needed to calibrate represents both anthropogenic and natural background loading. The term “Background SOD” in the LAQUAL input file is actually a baseline input value, void of any settled CBOD that has been converted to SOD. “Background SOD” does not refer to any type of natural background loading present in the stream.

#### **4.2.11 Carbonaceous BOD Decay and Settling Rates, Data Type 12**

The decay and settling rates were based on best professional judgement and calibration.

This stream is effluent dominated therefore 0.075 is a reasonable decay rate. Higher and lower decay rates were tried and the model would not calibrate reasonably.

Due to the uncertainty caused from having to combine CBOD and NBOD, and the dominant impact of the Denham Springs oxidation pond on Grays Creek from the point of discharge to Grays Creek Lake, we did not attempt to vary decay rates from reach to reach. The simplification of the model does produce some anomalies such as the zero nonpoint loading in Reach 6.

LDEQ used reasonable CBOD settling rates in accordance with the Louisiana Total maximum Daily Load Technical Procedures Manual.

#### **4.2.12 Nitrogenous BOD Decay and Settling Rates, Data Type 15**

The decay and settling rates were based on best professional judgement and calibration.

LDEQ used reasonable NBOD settling rates in accordance with the Louisiana Total maximum Daily Load Technical Procedures Manual.

#### **4.2.13 Incremental Conditions, Data Types 16, 17, and 18**

The incremental conditions were used in the calibration to represent nonpoint source loads associated with flows. It was determined from the flow measurements along the mainstem, the presence of bank flow, and an evaluation of the water chemistry confirmed this assumption. The temperature, salinity, dissolved oxygen and BOD were assumed to be the measurements obtained in the reaches. The data and its source for each reach are presented in Appendix B2.

#### **4.2.14 Nonpoint Sources, Data Type 19**

Nonpoint source loads which are not associated with a flow are input into this part of the model. These can be most easily understood as resuspended load from the bottom sediments and are modeled as SOD and BOD loads. These values are achieved through calibration. The loads determined through calibration were reasonable for this type of waterbody and geometry.

#### **4.2.15 Headwaters, Data Types 20, 21, and 22**

The a minimal headwater flow was added to the model for calibration. The data and sources are presented in Appendix B2.

#### **4.2.16 Wasteloads, Data Types 23, 24, and 25**

A facility review was performed on the subsegment and 50 permitted dischargers were found to be located in subsegment 040304. Most of these dischargers are included in the model. There were too many facilities to sample and model. Therefore, a representative group of facilities was sampled. The reductions apply to all facilities, modeled or not. LDEQ recognizes that many of the dischargers may not individually impact the mainstem of Grays Creek during periods of low stream flow. However, the cumulative impact of many small dischargers can impact the water quality in Grays Creek during storm events. This is why we have associated discharger allocations with nonpoint reductions. Therefore, in the absence of regional plants, LDEQ believes that loading should be reduced equitably for all facilities.

#### **4.2.17 Boundary Conditions, Data Type 27**

The lower boundary conditions were assumed to be equivalent to the measurements taken at survey station GCL01. All tributaries that were flowing under critical conditions (low flow, high temperature) were sampled and included in the model as boundaries loads. As a result, LDEQ captured all of the loading transported by the tributary to Grays Creek.

### **4.3 Model Discussion and Results**

As previously stated, the calibration model had to be simplified in order to achieve calibration, due to the high level of oxygen-demanding loading in Grays Creek. The oxidation pond for the city of Denham Springs was dominating the stream at the time of the survey. However, the many smaller facilities were also providing a significant loading that was contributing to the impairments of Grays Creek.

The calibration model input and output files and plots are presented in Appendix B. The overlay plotting option was used to determine if calibration had been achieved. A plot of the dissolved oxygen concentration versus river kilometer is presented in Figure 3. The calibration points for temperature were calculated based on the average continuous monitor readings. The dissolved oxygen readings at all sites had a diurnal swing of larger than 2 and less than 9. Therefore, the calibration points for dissolved oxygen were based on the minimum DO + 1. The calibration points for BOD were the measured values from the water quality samples. The calibration points for conductivity were the insitu readings. The calibration points for the chlorides and chlorophyll A were the measured values from the water quality samples.

An adequate calibration was achieved for DO and UBOD on the main stem. The calibration model shows that during July 2007 survey period, the DO standard of 5 mg/l was not being met in subsegment 040304 in any of the modeled reaches. The calibration model minimum DO on the main stem was 0.55 mg/l.

LDEQ intends to resurvey and remodel Grays Creek when the creek has sufficiently responded to improvements in the treatment of wastewater, especially to improvements in the Denham Springs facility, which, at the time of the survey, was an oxidation pond.

## **5. Water Quality Projections**

The traditional summer critical projection loading scenario was performed at the current annual DO standard. This scenario was based on reduced total nonpoint loads at summer season critical conditions (ie. 90<sup>th</sup> percentile seasonal temperatures and summer default flows) in accordance with the Louisiana Technical Procedures (LTP). A winter projection was run based on the percent reduction of total nonpoint loads used for summer critical projections. The summer and winter projection plots for DO are presented in Figures 5 and 6.

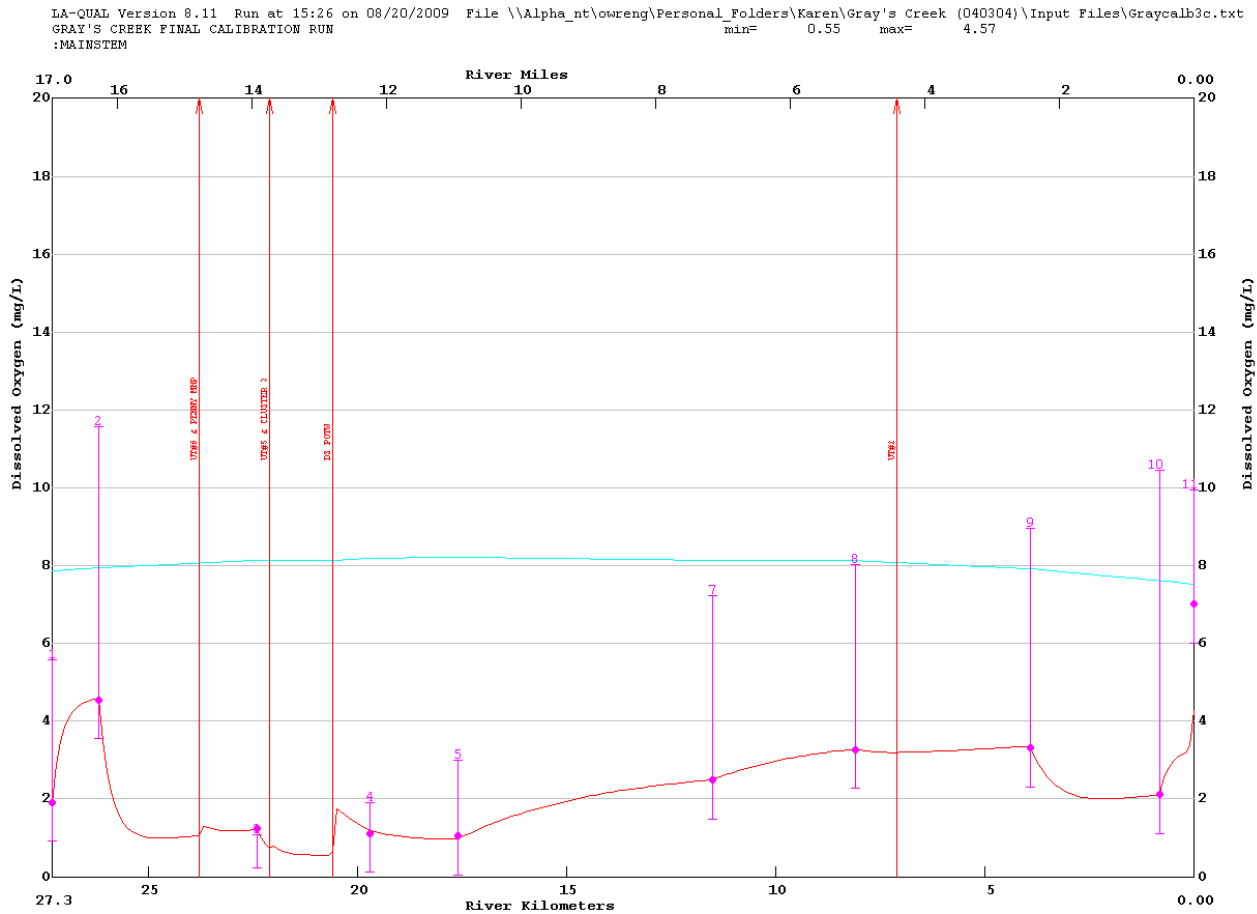
### **5.1 Critical Conditions, Seasonality and Margin of Safety**

The Clean Water Act requires the consideration of seasonal variation of conditions affecting the constituent of concern, and the inclusion of a margin of safety (MOS) in the development of a TMDL. For the Grays Creek, subsegment 040304 TMDL, an analysis of LDEQ ambient data has been employed to determine critical seasonal conditions and an appropriate margin of safety.

Critical conditions for dissolved oxygen were determined for Grays Creek using water quality data from Grays Creek water quality site number 0239 on the LDEQ Ambient Monitoring Network. The 90<sup>th</sup> percentile temperature for each season and the corresponding 90% of saturation DO was determined. Ambient temperature data, critical temperature and DO saturation determinations are shown in Appendix G1.

Graphical and regression analysis techniques have been used by LDEQ historically to evaluate the temperature and dissolved oxygen data from the Ambient Monitoring Network and run-off determinations from the Louisiana Office of Climatology water budget. Since nonpoint loading is conveyed by run-off, this was a reasonable correlation to use. Temperature is strongly inversely proportional to dissolved oxygen and moderately inversely proportional to run-off. Dissolved oxygen and run-off are also moderately directly proportional. The analysis concluded that the critical conditions for stream dissolved oxygen concentrations were those of negligible nonpoint run-off and low stream flow combined with high stream temperature.

**Figure 4. Calibration Model Dissolved Oxygen versus River Kilometer**



- numbered points indicate survey stations
- vertical lines indicate beginning of reach
- the horizontal line indicates the DO Criterion
- upper plotted line indicates DO saturation
- lower plotted line indicates calibration model output

When the rainfall run-off (and non-point loading) and stream flow are high, turbulence is higher due to the higher flow and the temperature is lowered by the run-off. In addition, run-off coefficients are higher in cooler weather due to reduced evaporation and evapotranspiration, so that the high flow periods of the year tend to be the cooler periods. Reaeration rates and DO saturation are, of course, much higher when water temperatures are cooler, but BOD decay rates are much lower. For these reasons, periods of high loading are periods of higher reaeration and dissolved oxygen but not necessarily periods of high BOD decay.

This phenomenon is interpreted in TMDL modeling by assuming that nonpoint loading associated with flows into the stream are responsible for the benthic blanket which accumulates on the stream bottom and that the accumulated benthic blanket of the stream, expressed as SOD and/or resuspended BOD in the calibration model, has reached steady state or normal conditions over the long term and that short term additions to the blanket are off set by short term losses. This accumulated loading has its greatest impact on the stream during periods of higher temperature and lower flow. The manmade portion of the NPS loading is the difference between the calibration load and the reference stream load where the calibration load is higher. The only mechanism for changing this normal benthic blanket condition is to implement best management practices and reduce the amount of nonpoint source loading entering the stream and feeding the benthic blanket.

Critical season conditions were simulated in the Grays Creek, subsegment 040304 dissolved oxygen TMDL projection modeling by using the LTP seasonal defaults for all flows, and the 90<sup>th</sup> percentile temperature. For the headwater DO, the 90% of DO Sat from the ambient monitoring site was used.

In reality, the highest temperatures occur in July-August, the lowest stream flows occur in October-November, and the maximum point source discharge occurs following a significant rainfall, i.e., high-flow conditions. The summer projection model is established as if all these conditions happened at the same time. The winter projection model accounts for the seasonal differences in flows and BMP efficiencies. Other conservative assumptions regarding rates and loadings are also made during the modeling process. In addition to the conservative measures, an explicit MOS of 20% was used for all loads to account for future growth, safety, model uncertainty and data inadequacies.

## **5.2 Input Data Documentation**

The LTP states that the flow for summer conditions should be 0.1 cfs or the 7Q10, whichever is greater. In the absence of historical data, a 7Q10 value could not be determined for Grays Creek. Therefore, the critical flow was set to 0.1 cfs.

Five tributaries have dischargers located along them. For this reason, the tributaries are assumed to contribute flow in the projections. For all five tributaries, Unnamed trib #2, Unnamed trib #4, Unnamed trib #5, Unnamed trib #6, and Miller's Canal, the flow from the dischargers was less than the LTP default of 0.1 cfs. Therefore, the flow was set to 0.1 cfs for all tributaries.

Critical conditions include dissolved oxygen, temperature and flow. Pollutant loading is adjusted in the projection models to meet the dissolved oxygen criteria.

The calibration values were retained for the remaining parameters and used as input values in the summer and winter projections. The model adjusts the input values for SOD and BODU decay based upon the input temperature. The model projects the width and depth values based upon the streamflow.

### **5.2.1 Model Options, Data Type 2**

Two constituents were modeled during the projection process. These were dissolved oxygen and biochemical oxygen demand.

### **5.2.2 Temperature Correction of Kinetics, Data Type 4**

The temperature correction factors specified in the LTP are entered in the model.

### **5.2.3 Reach Identification Data, Data Type 8**

The reach-element design from the calibration was used in the projection modeling.

### **5.2.4 Advective Hydraulic Coefficients, Data Type 9**

The hydraulic coefficients, exponents, and constants determined for the calibration were used in the projection model.

### **5.2.5 Initial Conditions, Data Type 11**

The initial conditions were set to the 90<sup>th</sup> percentile critical season temperature in accordance with the LTP. For summer, the temperature was set to 26.80°C. For winter, the temperature was set to 22.00°C. The dissolved oxygen values for the initial conditions were set at the stream criteria (5mg/L)

### **5.2.6 Reaeration Rates, Carbonaceous BOD Decay and Settling Rates, Nitrogenous BOD Decay and Settling Rates, Data Type 12 and 15**

The reaeration rate equations, UBOD decay and settling rates, and the fractions converting settled UBOD to SOD were not changed from the calibration.

### **5.2.7 Sediment Oxygen Demand, Nonpoint Sources, Headwaters, Wasteloads, Data Type 12, 19, 20, 21, 22, 24, 25, and 26**

The NPS values were calculated for each projection scenario using a load equivalent spreadsheet. An analysis was made of the calibration NPS and SOD loads in terms of loading in units of gm-O<sub>2</sub>/m<sup>2</sup>/day. The same spreadsheet also calculated load reductions for the headwaters and wasteloads. The values and sources of the input data and the load analyses are presented in Appendix D for each of the projection runs.

LDEQ has collected and measured the CBOD and NBOD oxygen demand loading components for a number of years. These loads have been found in all streams including the non-impacted reference streams. It is LDEQ's opinion that much of this loading is attributable to run-off loads which are flushed into the stream during run-off events, and subsequently settle to the bottom in our slow moving streams. These benthic loads decay and breakdown during the year, becoming easily resuspended into the water column during the low flow/high temperature season. This season has historically been identified as the critical dissolved oxygen season.

LDEQ simulates part of the non-point source oxygen demand loading as resuspended benthic load and SOD. The calibrated non-point loads, UBOD, UNBOD and SOD, are summed to produce the total calibrated benthic load. The total calibrated benthic load is then reduced by the total background benthic load (determined from LDEQ's reference stream research) to determine the total manmade benthic loading. The manmade portion is then reduced incrementally on a percentage basis to



determine the necessary percentage reduction of manmade loading required to meet the water body's dissolved oxygen criteria. These reductions are applied uniformly to all reaches sharing similar hydrology and land uses.

Following the same protocol as the point source discharges, the total reduced manmade benthic load is adjusted for the margin of safety by dividing the value by one minus the margin of safety. This adjusted load is added back to the total background benthic value to obtain the total projection model benthic load. This total projection benthic load is then broken out into its components of SOD, resuspended CBOD and resuspended NBOD by multiplying the total projection benthic load by the ratio of each calibrated component to the total calibrated benthic load.

LDEQ has found variations in the breakdown of the individual CBOD and NBOD components. While the total BOD is reliable, the carbonaceous and nitrogenous component allocation is subject to the type of test method. In the past, LDEQ used a method which suppressed the nitrogenous component to obtain the carbonaceous component value, which was then subtracted from the total measured BOD to determine the nitrogenous value. The suppressant in this method was only reliable for twenty days thus leading to the assumption that the majority of the carbonaceous loading was depleted within that period of time. The test results supported this assumption. A new method was found in Standard Methods for testing long term BODs and was implemented in 2000. This new method was necessary because the nitrogen suppressant started failing around day seven and the manufacturer of the suppressant will only guarantee its potency for a five day period. LDEQ felt a five day test would not adequately depict the water quality of streams.

This proposed method is a sixty day test which measures the incremental total BOD of the sample while at the same time measuring the increase in nitrite/nitrate in the sample. This increase in nitrite/nitrate allows LDEQ to calculate the incremental nitrogenous portion by multiplying the increase by 4.57 to determine the NBOD daily readings. These NBOD daily readings are then subtracted from the daily reading for total BOD to determine the CBOD daily values. A curve fit algorithm is then applied to the daily component readings to obtain the estimated ultimate values of each component as well as the decay rate and lag times of the first order equations.

The results obtained using the new method showed that a portion of the CBOD first order equation does begin to level off prior to the twentieth day, however a secondary CBOD component begins to use dissolved oxygen sometime between day ten and day twenty-five. This secondary CBOD component was not being assessed as CBOD using the previous method but was being included in the NBOD load. Thus the CBOD and NBOD component loading used in the reference stream studies is not consistent with the results using the new proposed 60 day method and the individual values should not be used to determine background values for samples processed using the new test methods. However, the sum of CBOD and NBOD should be about the same for both new and old test methods. For this reason LDEQ decided to use the sum of reference stream benthic loads as background values. Again, background values can not be quantified for Grays Creek.

The projections show that Grays Creek cannot meet the current 5.0 mg/L standard without significant load reductions. Since LDEQ assumes these benthic loads are long-term loads brought to the stream by various sources throughout the year, the same percentage reductions were made in the winter projection model as were in the summer critical projection model. These reductions met the summer dissolved oxygen criteria and well surpassed requirements in the non-critical winter projection.

The reductions were determined using the calibrated values for nonpoint CBOD1, CBOD2, and NBOD. These values were summed by reach, as justified above and adjusted for the margin of safety. Each reach's total benthic nonpoint load was then reduced to meet the dissolved oxygen criteria in each reach. Using the ratios determined in calibration, this reduced total nonpoint load was then broken into its components of CBOD1, CBOD2, NBOD, and SOD. The percentage reduction within the mainstem was calculated based on the comparison of the reduced total nonpoint benthic load to the calibration total nonpoint benthic load. These calculations are shown in Appendix E. The value and sources of CBOD1, CBOD2, and NBOD for each projection run are presented in Appendix F5.

### **5.2.8 Boundary Conditions, Data Types 20, 21, 22, and 27**

The lower boundary conditions were set at the 90<sup>th</sup> percentile critical season temperature, the dissolved oxygen criteria, and the measured stream UBOD loads for all projections and scenarios. With the exception of the headwater dissolved oxygen value, the headwater DO was set to 90% DO Sat for WQN 0239 at the 90<sup>th</sup> percentile temperature. The headwater DO for summer was set to 7.20 mg/L. The headwater DO for winter was set to 7.90 mg/L.

### **5.3 Model Discussion and Results**

The projection model input and output data sets are presented in Appendix D.

LDEQ used a watershed approach to modeling this subsegment. As such, it requires that all allocations be on a subsegment basis and not by individual reach. Additional model runs were made leaving out the City of Denham Springs, and all other modeled dischargers

The additional impact of unpermitted, and therefore unmodeled, dischargers is reflected in the nonpoint loading and SOD required to calibrate. The Denham Springs oxidation pond has an initial impact of about 0.7 mg/l upon dissolved oxygen at the point of discharge and exacerbates an additional DO sag just above confluence with the Amite River. The turbidity values indicate the extent to which the oxidation pond impacts all reaches of Grays Creek below its discharge. Although the Denham Springs oxidation pond had the greatest impact on Grays Creek, it is evident that the remaining dischargers were having a significant impact. This is evident when viewing the additional projections presented in Appendix D5. All facilities within the watershed were contributing to the load, therefore all facilities are subject to any required load reductions. Based on the TMDL survey data and the model runs, LDEQ does not believe that Grays Creek fully recovered from the impacts of the Denham Springs oxidation pond and the various smaller facilities that were discharging at the time of the survey, before reaching its confluence with the Amite River.

Natural background loading was not separated from anthropogenic loading. In the absence of an appropriate reference stream, LDEQ chose to do an overall load reduction. In other words, any reductions in loading required to meet the 5 mg/l DO criteria were applied the combined values of anthropogenic and natural background loading. As discharge limitations become more stringent and discharging facilities are able to meet these limits, the benthic load may reach values that are closer to reference stream levels.

In order to meet the existing criteria of 5 mg/l DO, the SOD for some reaches was reduced to less than reference stream average values, which indicates the possibility of an inappropriate standard.

### **5.3.1 No-Load Projection**

No suitable reference stream was available for this stream. Therefore, a no load projection was not run.

### **5.3.2 Summer Projection**

Summer critical season projections were run for the current 5.0 mg/L DO standard. For the 5.0 mg/L standard, an 85% reduction in overall nonpoint loading is required.

## **5.4 Calculated TMDL, WLAs and LAs**

### **5.4.1 Outline of TMDL Calculations**

An outline of the TMDL calculations is provided to assist in understanding the calculations in the Appendices. Slight variances may occur based on individual cases.

### **5.4.2 Grays Creek Subsegment 040304 TMDL**

EPA's stormwater permitting regulations require municipalities to obtain permit coverage for all stormwater discharges from MS4s. For each MS4 in the basin, a gross load was computed by dividing the acreage of the permitted area in the subsegment by the total area of the subsegment and multiplying the nonpoint source allocation by this percentage. Note that these values are estimates that can be refined in the future as more information about MS4s and land-use-specific loadings becomes available. Note that MS4s are permitted dischargers but function similarly to nonpoint sources (through storm-driven processes). EPA expects that the MS4 WLAs will be achieved through BMPs and adaptive management. The MS4 loads are presented in Table 2.

TMDLs for the biochemical oxygen demanding constituents (BOD and SOD), have been calculated for the summer and winter critical seasons based on current and proposed dissolved oxygen criteria. They are presented in Appendix A by reach. A summary of the loads is presented in Table 3.



## **6. Sensitivity Analysis**

All modeling studies necessarily involve uncertainty and some degree of approximation. It is therefore of value to consider the sensitivity of the model output to changes in model coefficients, and in the hypothesized relationships among the parameters of the model. The LAQUAL model allows multiple parameters to be varied with a single run. The model adjusts each parameter up or down by the percentage given in the input set. The rest of the parameters listed in the sensitivity section are held at their original projection value. Thus the sensitivity of each parameter is reviewed separately. A sensitivity analysis was performed on the calibration. The sensitivity of the model's minimum DO projections to these parameters is presented in Appendix I2. Parameters were varied by +/- 30%, except temperature, which was adjusted +/- 2 degrees Centigrade.

Values reported in Appendix I2 are percentage variation of minimum DO in the main stem Grays Creek. As shown in Table 13, initial temperature, stream reaeration, and benthic demand are the parameters to which DO is most sensitive. The model is slightly sensitive to insensitive to the remaining parameters.

**Table 9. Summary of Calibration Model Sensitivity Analysis**

SENSITIVITY ANALYSIS SUMMARY

:MAINSTEM

GRAYS CREEK FINAL CALIBRATION RUN

Plot 1 Base Model Minimum DO = 0.55

Parameter	%Param Chg	Min D.O.	%D.O. Chg	%Param Chg	Min D.O.	%D.O. Chg
Stream Baseflow	30.	0.56	1.1	-30.	0.55	-0.8
Initial Chlorophyll a	30.	0.55	0.0	-30.	0.55	0.0
Stream Velocity	30.	0.53	-3.9	-30.	0.59	5.8
Initial Temperature	2.	0.00	-100.0	-2.	1.34	142.1
UBOD Aerobic Decay Rate	30.	0.53	-5.1	-30.	0.59	6.3
Benthic Demand	30.	0.00	-100.0	-30.	1.91	244.9
Stream Dispersion	30.	0.55	0.0	-30.	0.55	0.0
Stream Reaeration	30.	1.90	242.4	-30.	0.00	-100.0
Headwater Flow	30.	0.55	0.1	-30.	0.55	-0.1
Headwater DO	30.	0.55	0.0	-30.	0.55	0.0
Headwater UBOD	30.	0.55	-0.2	-30.	0.55	0.1
Stream Depth	30.	0.53	-5.1	-30.	0.59	6.3
Wasteload Flow	30.	0.55	-0.1	-30.	0.55	0.2
Wasteload Temperature	2.	0.55	0.0	-2.	0.55	0.0
Wasteload DO	30.	0.55	0.2	-30.	0.55	-0.2
Wasteload UBOD	30.	0.55	-1.2	-30.	0.56	1.2
Lower Boundary Temperature	2.	0.55	0.0	-2.	0.55	0.0
Lower Boundary DO	30.	0.55	0.0	-30.	0.55	0.0
Lower Boundary UBOD	30.	0.55	0.0	-30.	0.55	0.0

## 7. Conclusions

This TMDL establishes load limitations for oxygen-demanding substances and goals for reduction of those pollutants. LDEQ's position is that when oxygen-demanding loads from point and nonpoint sources are reduced in order to ensure that the dissolved oxygen criterion is supported, nutrients are also reduced. The implementation of this TMDL through wastewater discharge permits and implementation of best management practices to control and reduce runoff of soil and oxygen-demanding pollutants from nonpoint sources in the watershed will also reduce the nutrient loading from those sources.

A calibrated water quality model and projections were developed for the watershed to quantify the non-point source load reductions which would be necessary in order for Grays Creek, subsegment 040304, to comply with its established water quality standards and criteria. This report presents the results of that analysis.

The modeling, which has been conducted for this TMDL, is conservative and based on limited information.

LDEQ is utilizing a phased TMDL approach for Grays Creek as shown in Table 1. This approach will allow LDEQ to meet its TMDL commitments, revise the dissolved oxygen criteria, develop nutrient criteria, and develop meaningful and implementable TMDL reports based on appropriate DO criteria. At the same time, it will lead to improved water quality while providing local governments and businesses the opportunity to prepare and adjust to more stringent permit requirements.

Phase I will include the development of loading values for the existing DO criteria for Grays Creek. However, full implementation of permit limits will occur in a phased manner. Phase I will serve as the first step towards meeting the DO criteria. This approach gives local governments and stakeholders time to make the necessary adjustments to meet these limits. During Phase I, implementation of permit limits will occur in a according to the following strategy:

### Phase I Permit Implementation

All TMDL, permitting, and enforcement activities will be conducted in accordance with the Clean Water Act, the Louisiana Environmental Regulatory Code, and applicable state laws.

#### 1. New discharges of oxygen-demanding loads:

In general, LDEQ does not intend to permit additional discharges of oxygen-demanding loads. However, in the event that a proposed or existing facility can meet one of the criteria listed below, LDEQ may permit the new discharge. The typical permit limits will be 5 mg/L BOD<sub>5</sub> / 2 mg/L NH<sub>3</sub> / 5 mg/L DO. Such new facilities may be required to submit an environmental impact assessment to LDEQ's permitting staff, which will conduct a thorough evaluation of the proposed facility based on environmental impacts, economic benefits, an analysis of alternatives, and other pertinent factors.

- a. The facility demonstrates that it will provide a significant load reduction of man-made oxygen-demanding constituents to the impaired watershed(s) serviced by the facility. The facility must also contribute to a reduction in the number of facilities discharging to the watershed(s). Facilities that may be considered for permits under this provision include, but are not limited to:
  - i. A facility that will provide improved sewage treatment to multiple subdivisions previously serviced by wastewater treatment plants that are incapable of treating to tertiary limits.
  - ii. A facility that will provide sewage treatment to previously unsewered areas in which many of the sanitary discharges from permitted facilities and individual home treatment units were entering an impaired watershed. As a result, the facility would be expected to provide more efficient treatment to the wastewater and improve and reduce the net loading of oxygen-demanding substances in the watershed.
- b. The facility demonstrates that its wastewater will not leave the facility or its property. Significant stormwater events do not apply to this provision. For the purpose of this provision, a significant stormwater event is defined the 25

year, 24 hour rainfall event or its numerical equivalent, as defined by the Southern Regional Climate Center.

- i. Facilities that may be considered under this provision include, but are not limited to:
  - a. Effluent reduction systems that have been approved by the Louisiana Department of Health and Hospitals.
  - b. Wastewater treatment plants equipped with overland flow systems in which the effluent will not leave the facility.
  - c. Wastewater treatment plants equipped with holding ponds that will retain the effluent such that the effluent will not leave the facility.
- i. LDEQ recognizes that some local governments are in the process of building or expanding regional sewage collection and treatment systems. In such areas, LDEQ may, on a limited basis, grant permits of limited durations to facilities that agree to tie into a regional collection and treatment system when it becomes available. LDEQ must have absolute assurance that the regional collection system will be available to the facility and the facility will connect to the regional collection system on or before the expiration date of the permit. Such assurance may include a formal agreement between the facility, the owner and operator of the regional wastewater treatment system, and LDEQ. The regional system must have the capacity to treat the additional wastewater. Such a permit may have a duration of less than five years or it may have a five year duration with interim permit limits. The permit will be written based on projected completion dates for the construction of the collection system. The facility will be required to cease all wastewater discharges to Grays Creek and transfer the discharge to the regional collection system once the permit or interim limits expire or the collection system is available to the facility, whichever comes first. If the permit or interim limits expire, but, due to unforeseen circumstances, the availability of the collection system has been temporarily delayed, the duration of the permit or interim limits may be extended. If the availability of the collection system has been indefinitely delayed, the facility may be required to cease all discharges to Grays Creek. Such facilities may resort to options covered in item 1.b.i. above.



- b. LDEQ reassesses Subsegment 040304 (Grays Creek). LDEQ determines that Subsegment 040304 is meeting the appropriate DO criteria and designated uses.

2. Existing discharges of oxygen demanding loads:

Below are the reductions for existing dischargers in the Grays Creek TMDL. Existing facilities discovered to be discharging oxygen-demanding loads without LPDES permits as of the TMDL approval date are to be permitted in accordance with the limits established for existing facilities with permits. Unpermitted facilities that are newly activated or reactivated after the TMDL approval date may be subjected to enforcement actions and will be required to tie into regional collection and treatment systems, once those systems are available.

- c. Facilities (with effluent flow less than or equal to 25,000 gpd) with monthly average limitations of 30 mg/L BOD<sub>5</sub> or weekly average limitations of 45 mg/L BOD<sub>5</sub> will receive a compliance schedule of up to 3 years with final limitations of 10 mg/L BOD<sub>5</sub> / 2 mg/L NH<sub>3</sub> / 5 mg/L DO (with post aeration);
- d. Facilities (with effluent flow greater than 25,000 gpd) with limitations of 10 mg/L BOD<sub>5</sub> will receive a compliance schedule of up to 3 years with final limitations of 5 mg/L BOD<sub>5</sub> / 2 mg/L NH<sub>3</sub> / 5 mg/L DO (with post aeration);
- e. The following facilities will keep their current limits of 5 mg/L BOD<sub>5</sub> / 2 mg/L NH<sub>3</sub> / 5 mg/L DO:

Grays Creek Subdivision (AI # 145156)  
Gulfstream Estates and Gulfstream Townhomes  
(AI# 148345)  
Stone Hill Subdivision (AI# 150779) (current draft permit)

3. Nutrient monitoring (i.e., reporting for Total Nitrogen and Total Phosphorus) will be required for individual permits. Nutrient monitoring will be added to each general permit series (LAG530000, LAG540000, LAG560000, and LAG570000) upon the next scheduled renewal of each series.

Phase II will be developed based on the outcome of an ecoregion-based use attainability analysis (UAA) that is currently under development. This UAA is expected to propose new DO criteria for many of the Pontchartrain Basin TMDLs that are currently being developed. This new DO criteria is expected to be developed and promulgated within the next two to three years.

In the event the new criteria is not developed and promulgated within five years from the TMDL approval date, LDEQ intends to proceed in the following manner:

Case 1: The UAA study indicates that the current DO criterion is appropriate - the TMDL will be fully implemented based on the existing DO criteria.

Case 2: The UAA is not likely to be completed and/or approved - the TMDL will be fully implemented based on the existing DO criteria.

Case 3: The UAA is in process and is expected to be approved – Phase II of the TMDL will be postponed for a maximum period of 2 years. If the UAA has not been completed at the end of this period, the UAA status will be reviewed again according to Cases 1 - 3.

Louisiana does not have numeric nutrient criteria at the present time. The original nutrient impairments for waterbodies in the Pontchartrain Basin were not based on quantitative assessments of historical nutrient data. The impairments were based on evaluative assessments that may have included dissolved oxygen. LDEQ and EPA plan to reevaluate the previous nutrient impairments in the Pontchartrain Basin. As a result, both the EPA and LDEQ expect the nutrient impairments to change from category 5 (impairment exists; TMDL required) to category 3 (insufficient data) for Louisiana's 2010 Integrated Report. Therefore LDEQ believes that TMDLs for dissolved oxygen should adequately address any potential nutrient impairments, in the absence of numeric nutrient criteria and quantitative assessments.

LDEQ is developing numeric nutrient criteria for waterbody types based on ecoregions in accordance with LDEQ's plan "Developing Nutrient Criteria for Louisiana 2006" which can be found at:

<http://www.deq.louisiana.gov/portal/Portals/0/planning/LA%20Nutrient%20Strategy%20Plan%20Final%20FOR%20WEB.pdf>.

Water body types for nutrient criteria development in Louisiana are 1) inland rivers and streams; 2) freshwater wetlands; 3) freshwater lakes and reservoirs; 4) big rivers and floodplains/boundary rivers and associated water bodies; and 5) estuarine and coastal waters (including up to Louisiana's three mile boundary in the Gulf of Mexico). Proposed approaches for nutrient criteria development are currently under review by LDEQ and EPA. Nutrient criteria can be implemented upon state promulgation and EPA approval as per 40 CFR 131.21.

Upon development of nutrient criteria, a subsequent quantitative assessment of the waterbodies, and the development of full nutrient models, nutrient limits may be established for all facilities discharging to impaired waterbodies in the Pontchartrain Basin. LDEQ recommends that all facilities discharging to impaired waterbodies take a proactive approach and prepare for the possibility of nutrient limitations in their wastewater discharge permits in the near future. Such a proactive approach should include nutrient monitoring and documentation through facility Discharge Monitoring Reports (DMRs) in order to assess their nutrient loads and the need to modify their treatment processes for nutrient removal.

LDEQ recognizes that there are many unpermitted facilities within the Pontchartrain Basin. LDEQ is in the process of locating these facilities in an effort to get them permitted. LDEQ is also updating its location information on all permitted facilities within the basin.

LDEQ believes that the primary solution to the water quality problems in Grays Creek is the large-scale regionalization of sewage treatment and the rehabilitation and upgrade of existing problematic (leaks, overflows, improperly sized pipes, etc.) sewage collection and treatment systems. In addition, nonpoint loading may contribute to the water quality impairments in Grays Creek. This includes loading contributed by the MS4 permits for Denham Springs and Livingston Parish.

The watershed drains areas that are regulated by two MS4 permits. The areas covered by these MS4 permits include many permitted and unpermitted facilities. While LDEQ does assume responsibility for these facilities, partial responsibility belongs to the MS4 permittee to ensure that water draining from the area of coverage does not impact the named waterbody. Reductions in the nonpoint loading presented in this report should apply to MS4 regulated areas.

The impact of stormwater loading on the waterbody under critical conditions is difficult to determine. Monitoring is monetarily and logistically prohibitive. Therefore it is impractical to set MS4 permit limits. However, appropriate BMP measures shall be incorporated into the MS4 permits to minimize the impacts loads emanating from the MS4 regulated areas on the water quality in Grays Creek. Such BMP measures may include the elimination of illicit wastewater discharges, the regionalization of wastewater treatment, rehabilitating and upgrading sewer collection system lines, and other appropriate activities. BMPs included in MS4 permits should also include measures to reduce the impact of stormwater loading on the water quality of Grays Creek.

LDEQ is aware of the Louisiana Revised Statute 49:965.5 which applies to proposed rules that may impact small businesses. LDEQ's legal section is currently reviewing this statute 49:965.5 to determine how it applies to TMDL development. As a part of LDEQ's phased approach to the Grays Creek TMDL, implementation will not be required until Phase II of the TMDL. If required, the referenced statute will be addressed at this time. However, as a part of LDEQ's standard practice of TMDL development, LDEQ has addressed the items referenced in the Louisiana Revised Statute 49:965.5 as follows: (1) LDEQ has identified and estimated the number of businesses subject to the proposed TMDL. (2) LDEQ is not currently estimating the costs impacts as a part of the TMDL development process. (3) The potential impacts on local businesses have been identified in the TMDL. One possible impact is increased costs associated with connecting to a regional collection and treatment system. A second possible impact is the costs associated with increased treatment levels required to achieve more stringent permit limits on individual treatment plants. A third possible impact is the "no discharge" scenario without a regional collection and treatment system. (4) Several alternatives are presented in the TMDL. They are connecting to the collection system for a regional plant, highly stringent permit limits, or no discharge. The least costly alternative would be to connect to a regional collection and treatment system, if available.

LDEQ has developed this TMDL to be consistent with the state antidegradation policy (LAC 33:IX.1109.A).

LDEQ will work with other agencies such as local Soil Conservation Districts to implement best management practices in the watershed through the 319 programs. LDEQ will also continue to monitor the waters to determine whether standards are being attained.

In accordance with Section 106 of the federal Clean Water Act and under the authority of the Louisiana Environmental Quality Act, the LDEQ has established a comprehensive program for monitoring the quality of the state's surface waters. The LDEQ Surveillance Section collects surface water samples at various locations, utilizing appropriate sampling methods and procedures for ensuring the quality of the data collected. The objectives of the surface water monitoring program are to

determine the quality of the state's surface waters, to develop a long-term database for water quality trend analysis, and to monitor the effectiveness of pollution controls. The data obtained through the surface water monitoring program is used to develop the state's biennial Integrated Report. This information is also utilized in establishing priorities for the LDEQ nonpoint source program.

The LDEQ is continuing to implement a watershed approach to surface water quality monitoring. In 2004 a four year sampling cycle replaces the previous five year cycle. Approximately one quarter of the states watersheds will be sampled each year so that all of the state's watersheds will be sampled within the four year cycle. This will allow LDEQ to determine whether there has been any improvement in water quality following implementation of the TMDLs. As the monitoring results are evaluated by LDEQ and approved by EPA, waterbodies may be added to or removed from the 303(d) list.

## 8. References

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## **9. Appendices**

**Appendix A – Detailed TMDL Analysis**

**Appendix A1 – 85% Overall Reduction Summer TMDL Summary**



**Summer TMDL Summary:**

**GRAY'S CREEK (SUBSEGMENT 040304)**

**Calculation of the TMDL - Kilograms per day**

Load description	WLA (kg O <sub>2</sub> /day)	BOD LA (kg O <sub>2</sub> /day)				SOD LA (kg O <sub>2</sub> /day)	LA (kg O <sub>2</sub> /day)	MOS Load (kg O <sub>2</sub> /day)
Point Source loads	536							134
Headwater / Tributary loads		3					3	1
Benthic loads		24				134	158	34
Incremental Loads		0					0	0
<b>SUB-TOTAL</b>	<b>536</b>	<b>27</b>				<b>134</b>	<b>161</b>	<b>169</b>
<b>TMDL = WLA + LA + MOS</b>								
							<b>866 kg/day</b>	

**Notes:**

(1) - Load(lbs/day) = Load(kg/day) x 2.205

**Calculation of the TMDL - Kilograms per day**

Load description	WLA (kg O <sub>2</sub> /day)	BOD LA (kg O <sub>2</sub> /day)				SOD LA (kg O <sub>2</sub> /day)	LA (kg O <sub>2</sub> /day)	MOS Load (kg O <sub>2</sub> /day)
Point Source loads	536							134
Natural Nonpoint Loads		0				0	0	
Manmade Nonpoint Loads		27				134	161	35
<b>SUB-TOTAL</b>	<b>536</b>	<b>27</b>				<b>134</b>	<b>161</b>	<b>169</b>
<b>TMDL = WLA + LA + MOS</b>								
							<b>866 kg/day</b>	

**Calculation of the TMDL - Pounds per day**

Load description	WLA (lbs O <sub>2</sub> /day)	BOD LA (lbs O <sub>2</sub> /day)				SOD LA (lbs O <sub>2</sub> /day)	LA (lbs O <sub>2</sub> /day)	MOS Load (lbs O <sub>2</sub> /day)
Point Source loads	1,182							295
Headwater / Tributary loads		7					7	2
Benthic loads		53				295	348	75
Incremental Loads		0					0	0
<b>SUB-TOTAL</b>	<b>1,182</b>	<b>60</b>				<b>295</b>	<b>355</b>	<b>372</b>
<b>TMDL = WLA + LA + MOS</b>								
							<b>1,909 lbs/day</b>	

**Notes:**

(1) - Load(lbs/day) = Load(kg/day) x 2.205

**Calculation of the TMDL - Pounds per day**

Load description	WLA (lbs O <sub>2</sub> /day)	BOD LA (lbs O <sub>2</sub> /day)				SOD LA (lbs O <sub>2</sub> /day)	LA (lbs O <sub>2</sub> /day)	MOS Load (lbs O <sub>2</sub> /day)
Point Source loads	1,182							295
Natural Nonpoint Loads		0				0	0	
Manmade Nonpoint Loads		60				295	355	77
<b>SUB-TOTAL</b>	<b>1,182</b>	<b>60</b>				<b>295</b>	<b>355</b>	<b>372</b>
<b>TMDL = WLA + LA + MOS</b>								
							<b>1,909 lbs/day</b>	

**Appendix A2 – 85% Overall Reduction Winter TMDL Summary**

**Winter TMDL Summary:**

**GRAYS CREEK (SUBSEGMENT 040304)**

**Calculation of the TMDL - Kilograms per day**

Load description	WLA (kg O <sub>2</sub> /day)	BOD LA (kg O <sub>2</sub> /day)				SOD LA (kg O <sub>2</sub> /day)	LA (kg O <sub>2</sub> /day)	MOS Load (kg O <sub>2</sub> /day)
Point Source loads	536							134
Headwater / Tributary loads		30					30	7
Benthic loads		24				99	123	25
Incremental Loads		0					0	0
<b>SUB-TOTAL</b>	<b>536</b>	<b>54</b>				<b>99</b>	<b>153</b>	<b>166</b>
<b>TMDL = WLA + LA + MOS</b>							<b>855 kg/day</b>	

**Notes:**

(1) - Load(lbs/day) = Load(kg/day) x 2.205

**Calculation of the TMDL - Kilograms per day**

Load description	WLA (kg O <sub>2</sub> /day)	BOD LA (kg O <sub>2</sub> /day)				SOD LA (kg O <sub>2</sub> /day)	LA (kg O <sub>2</sub> /day)	MOS Load (kg O <sub>2</sub> /day)
Point Source loads	536							134
Natural Nonpoint Loads		0				0	0	
Manmade Nonpoint Loads		53				99	152	32
<b>SUB-TOTAL</b>	<b>536</b>	<b>53</b>				<b>99</b>	<b>152</b>	<b>166</b>
<b>TMDL = WLA + LA + MOS</b>							<b>854 kg/day</b>	

**Calculation of the TMDL - Pounds per day**

Load description	WLA (lbs O <sub>2</sub> /day)	BOD LA (lbs O <sub>2</sub> /day)				SOD LA (lbs O <sub>2</sub> /day)	LA (lbs O <sub>2</sub> /day)	MOS Load (lbs O <sub>2</sub> /day)
Point Source loads	1,182							295
Headwater / Tributary loads		66					66	15
Benthic loads		53				218	271	55
Incremental Loads		0					0	0
<b>SUB-TOTAL</b>	<b>1,182</b>	<b>119</b>				<b>218</b>	<b>337</b>	<b>365</b>
<b>TMDL = WLA + LA + MOS</b>							<b>1,884 lbs/day</b>	

**Notes:**

(1) - Load(lbs/day) = Load(kg/day) x 2.205

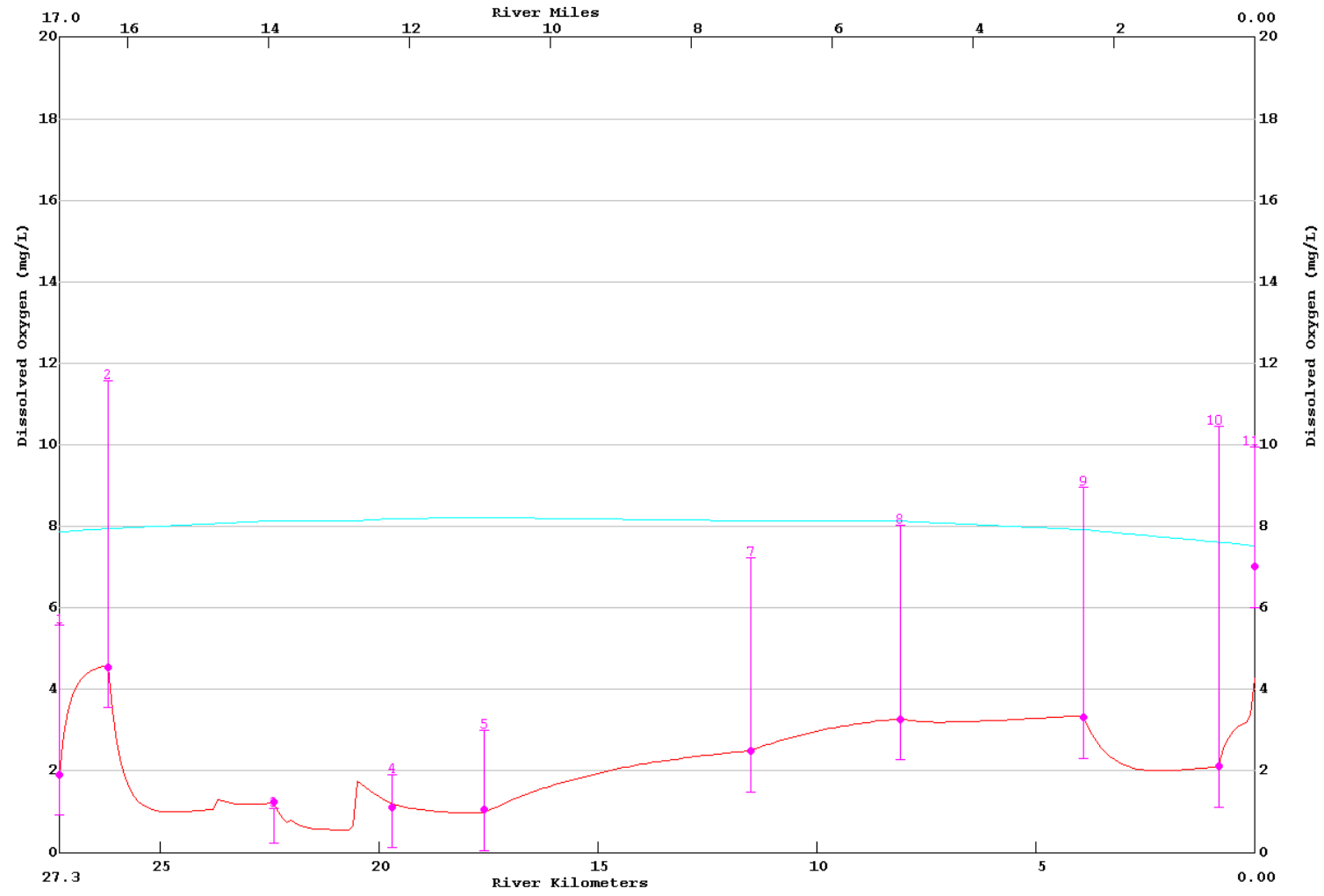
**Calculation of the TMDL - Pounds per day**

Load description	WLA (lbs O <sub>2</sub> /day)	BOD LA (lbs O <sub>2</sub> /day)				SOD LA (lbs O <sub>2</sub> /day)	LA (lbs O <sub>2</sub> /day)	MOS Load (lbs O <sub>2</sub> /day)
Point Source loads	1,182							295
Natural Nonpoint Loads		0				0	0	
Manmade Nonpoint Loads		117				218	335	71
<b>SUB-TOTAL</b>	<b>1,182</b>	<b>117</b>				<b>218</b>	<b>335</b>	<b>366</b>
<b>TMDL = WLA + LA + MOS</b>							<b>1,883 lbs/day</b>	

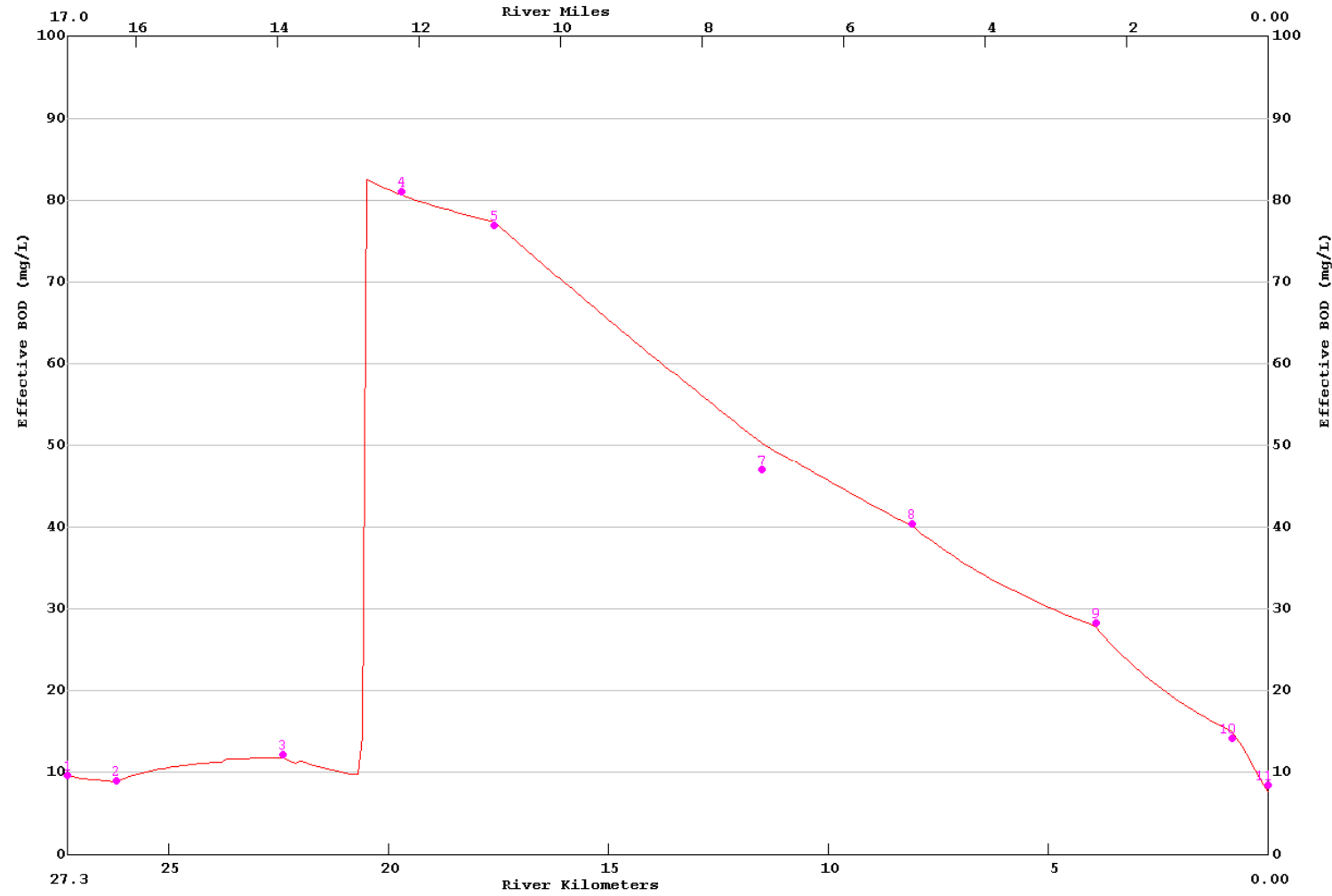
**Appendix B – Calibration Model Input and Output Data Sets**

**Appendix B1 – Calibration Output Graphs and Input, Overlay, and Output Files**

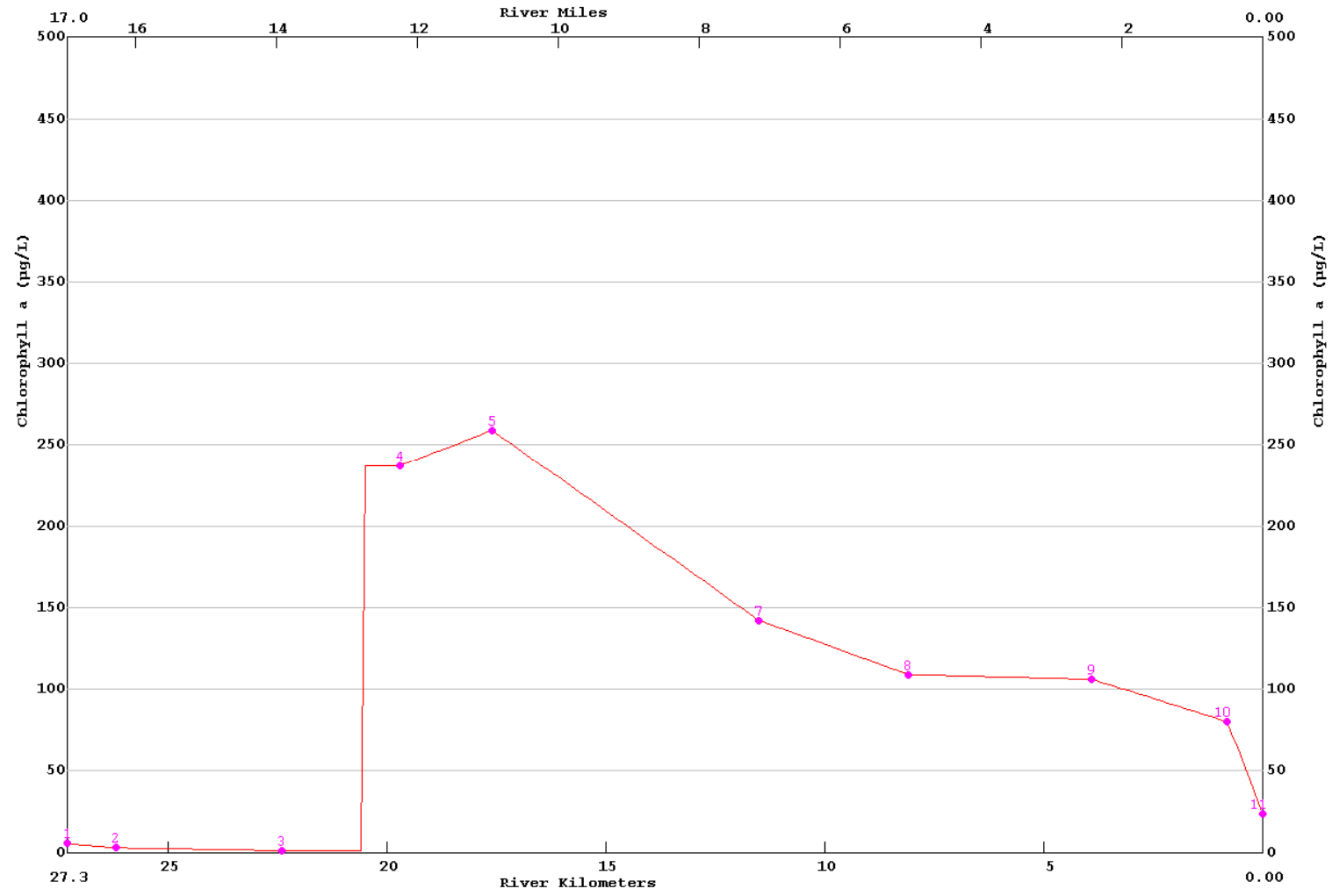
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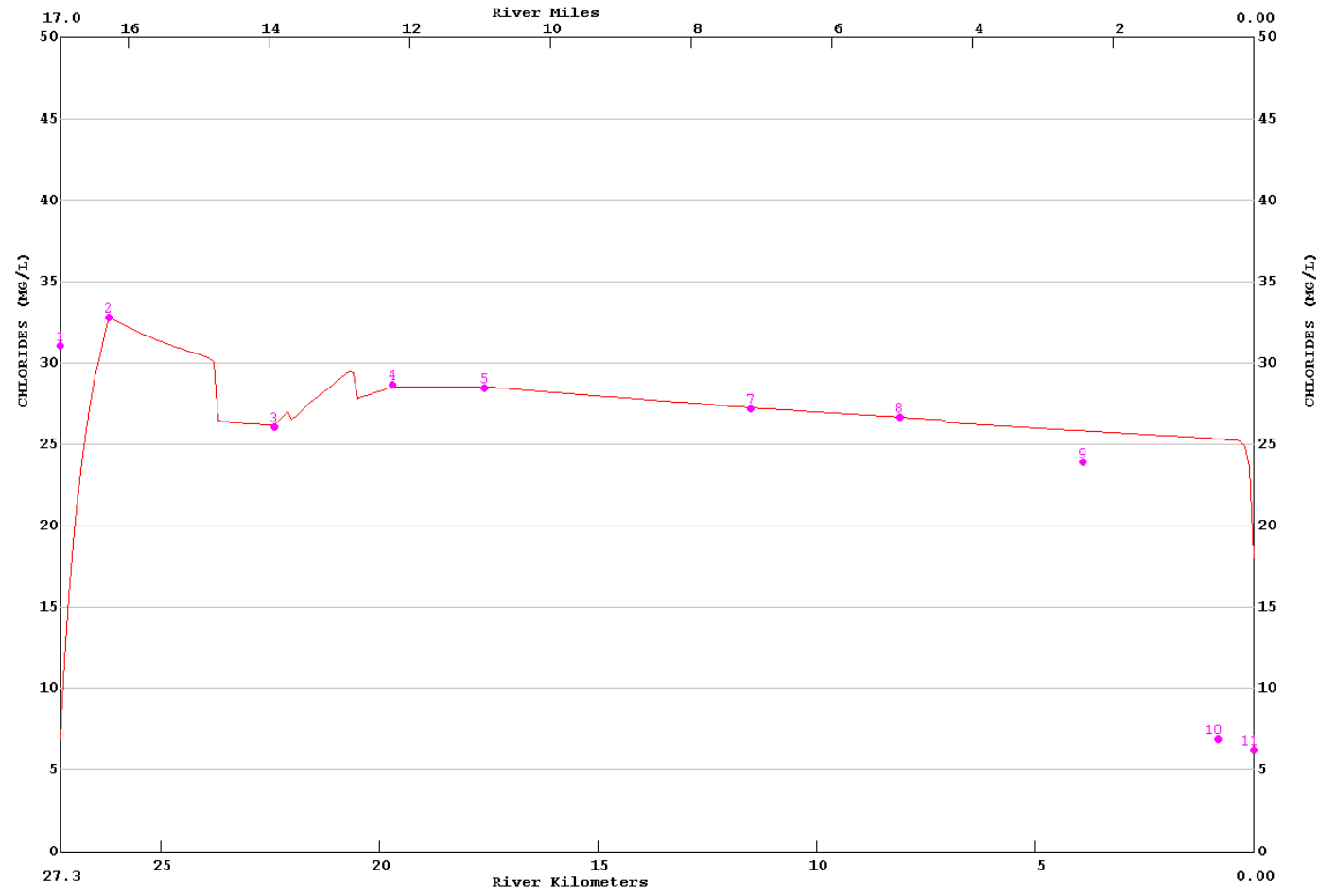
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:MAINSTEM





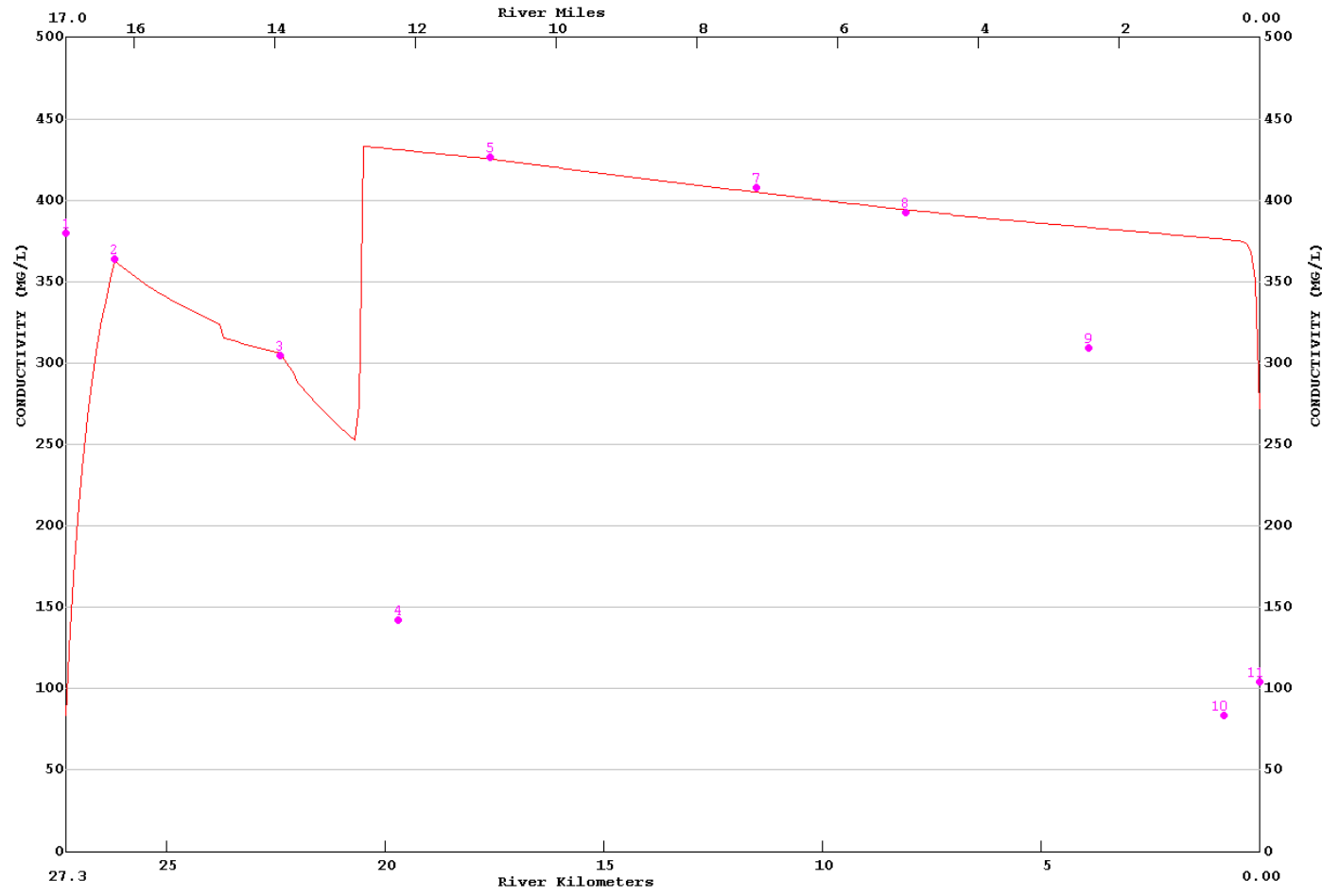
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

LA-QUAL Version 8.11 Run at 13:36 on 04/20/2010 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalb.txt  
 GRAY'S CREEK FINAL CALIBRATION RUN min= 6.90 max= 32.83  
 :MAINSTEM

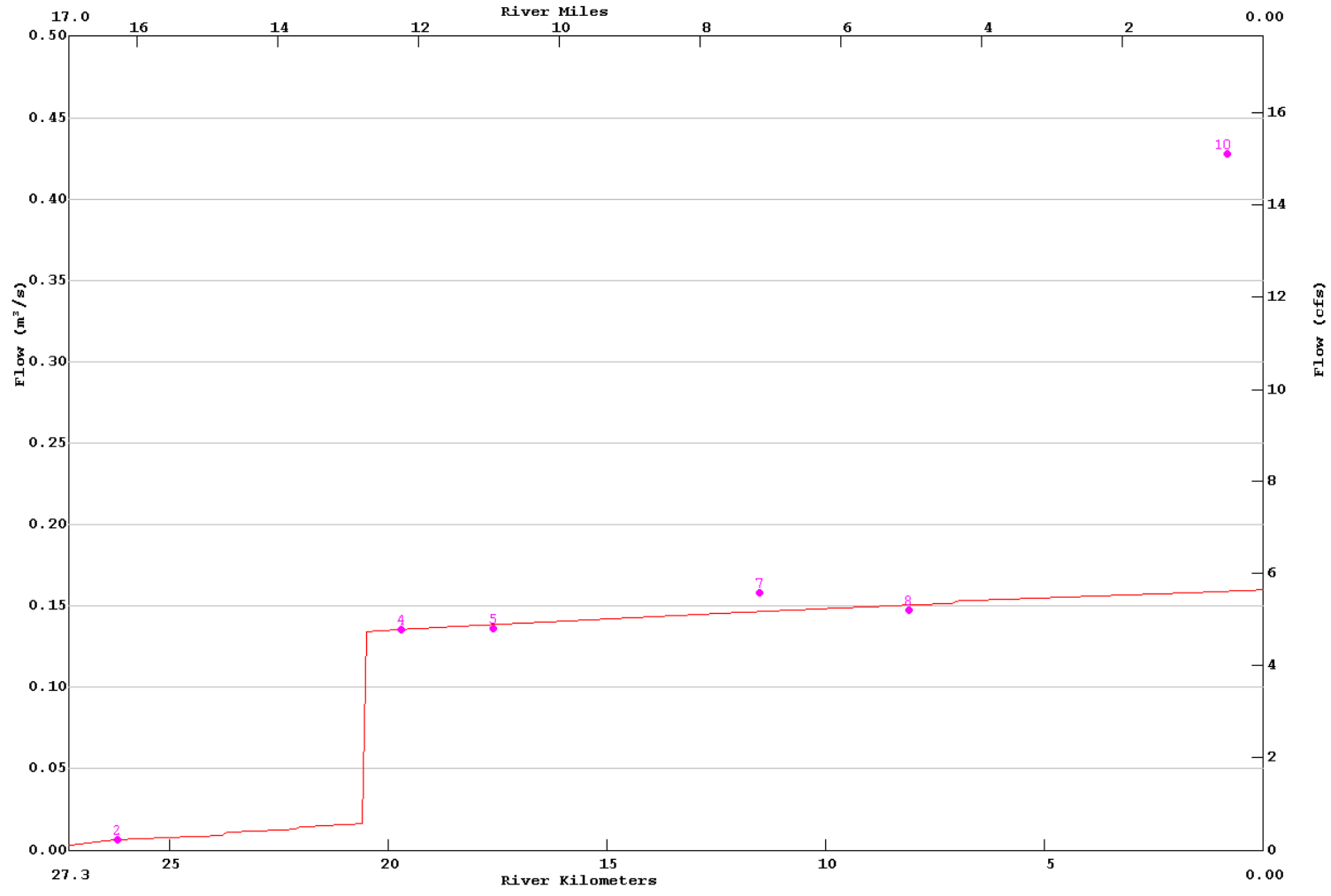


Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

LA-QUAL Version 8.11 Run at 13:36 on 04/20/2010 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalb.txt  
 GRAY'S CREEK FINAL CALIBRATION RUN min= 83.70 max= 433.33  
 :MAINSTEM

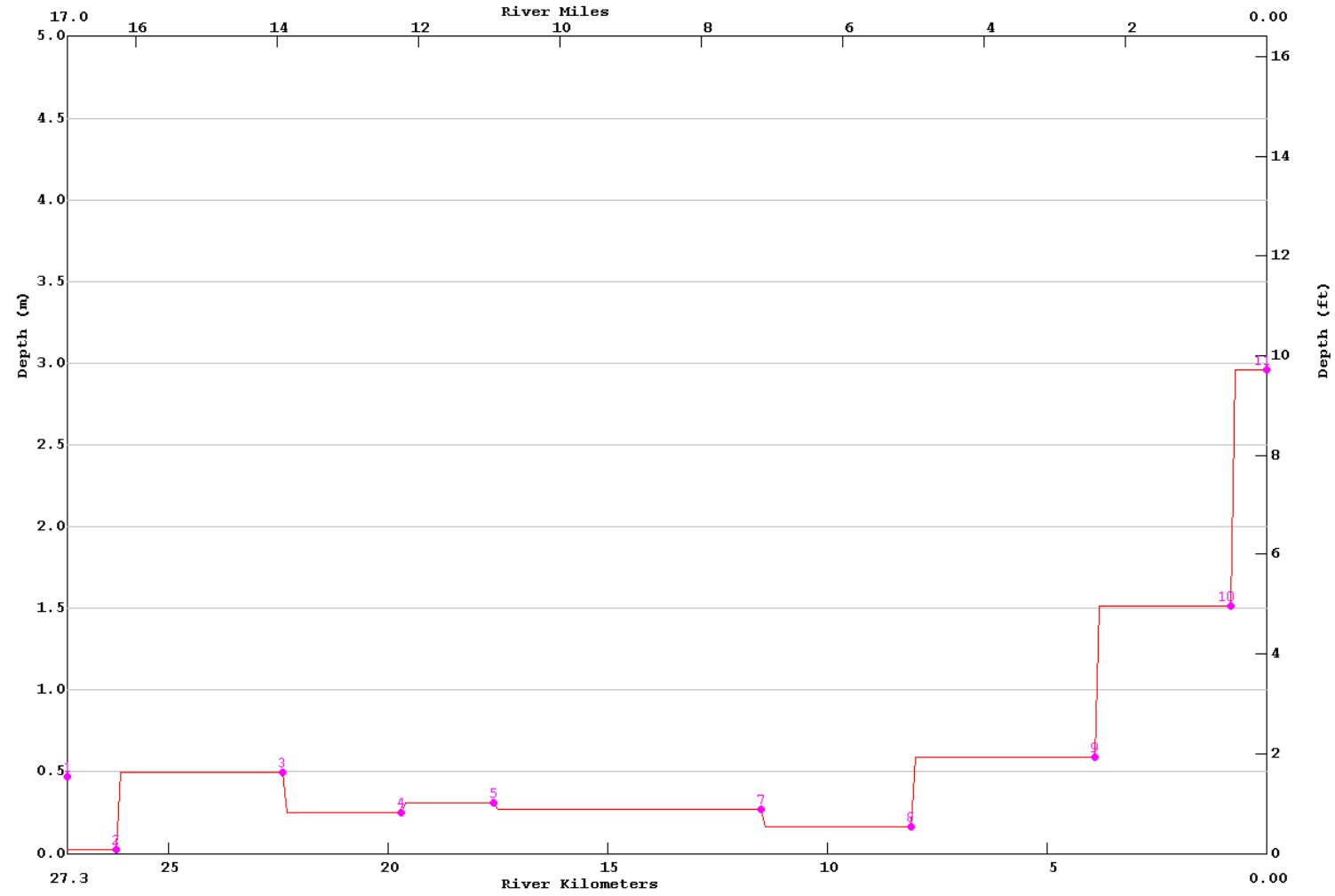


LA-QUAL Version 8.11 Run at 06:50 on 08/24/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalb3c.txt  
GRAY'S CREEK FINAL CALIBRATION RUN min= 0.00 max= 0.16  
:MAINSTEM



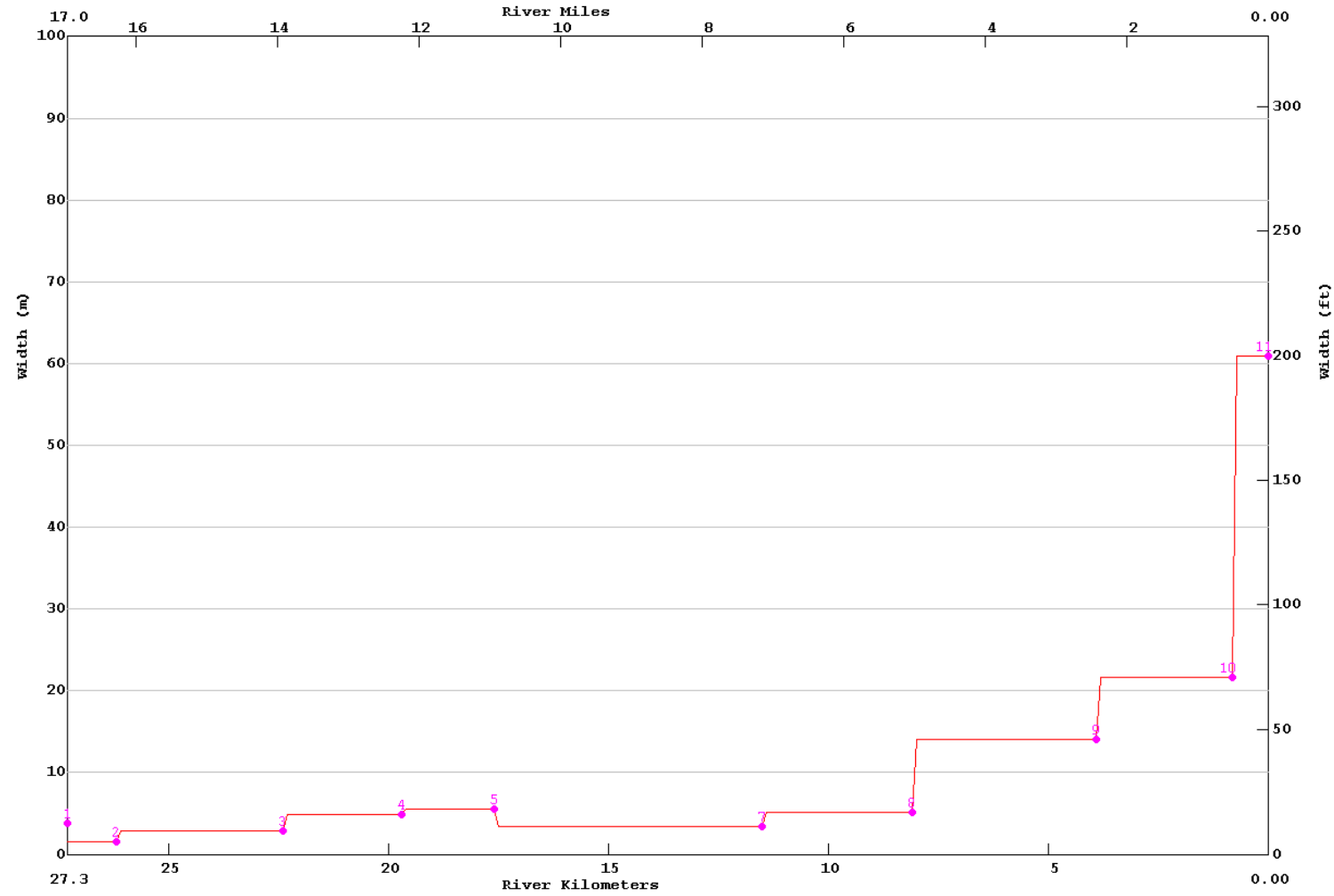
Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

LA-QUAL Version 8.11 Run at 06:50 on 08/24/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalb3c.txt  
GRAY'S CREEK FINAL CALIBRATION RUN min= 0.03 max= 2.96  
:MAINSTEM



Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

LA-QUAL Version 8.11 Run at 06:50 on 08/24/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalb3c.txt  
GRAY'S CREEK FINAL CALIBRATION RUN min= 1.52 max= 60.96  
:MAINSTEM



Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

### GRAYS CREEK Calibration Input File

```
CNTROL01      GRAY'S CREEK WATERSHED MODEL
CNTROL02      GRAY'S CREEK FINAL CALIBRATION RUN
CNTROL04 YES  METRIC UNITS
ENDATA01
MODOPT01  NO  TEMPERATURE
MODOPT02  NO  SALINITY
MODOPT03 YES  CONSERVATIVE MATERIAL  I = CHLORIDES           IN MG/L
MODOPT04 YES  CONSERVATIVE MATERIAL  II = CONDUCTIVITY      IN MG/L
MODOPT05 YES  DISSOLVED OXYGEN
MODOPT06 YES  BOD1 BIOCHEMICAL OXYGEN DEMAND
MODOPT06  NO  BOD2 BIOCHEMICAL OXYGEN DEMAND
MODOPT08  NO  NBOD OXYGEN DEMAND
MODOPT10  NO  PHOSPHORUS
MODOPT11  NO  CHLOROPHYLL A
MODOPT12  NO  MACROPHYTES
MODOPT13  NO  COLIFORM
ENDATA02
PROGRAM  KL MINIMUM                =      0.7
PROGRAM  INHIBITION CONTROL VALUE  =      3.
PROGRAM  K2 MAXIMUM                 =     25.0
PROGRAM  HYDRAULIC CALCULATION METHOD =      2.
PROGRAM  SETTLING RATE UNITS        =      1.
PROGRAM  DISPERSION EQUATION        =      3.
PROGRAM  ALGAE OXYGEN PROD          =      0.0
PROGRAM  EFFECTIVE BOD DUE TO ALGAE =      0.15
PROGRAM  B1 OXYGEN DEPENDENCE THRESHOLD =      1.0
PROGRAM  B2 OXYGEN DEPENDENCE THRESHOLD =      1.0
PROGRAM  MAXIMUM ITERATION LIMIT    =    1000.0
ENDATA03
!Temperature Correction Constants
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          *****
ENDATA04
ENDATA05
ENDATA06
ENDATA07
!Reach Identification Data
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
```

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

```

!
!      ***  --  *****-----*****-----
!      R#  ID  SITE NAME                RKM      RKM  LENGTH
REACH ID  1  GC GRAY'S CREEK CANAL TO HWY 190  27.3      26.2   0.1
REACH ID  2  GC HIGHWAY 190 TO FORREST DELATTE  26.2      22.4   0.1
REACH ID  3  GC FORREST DELATTE ROAD TO DSPOTW  22.4      20.6   0.1
REACH ID  4  GC DENHAM SPRINGS POTW              20.6      20.5   0.1
REACH ID  5  GC DENHAM SPRINGS POTW TO WAX ROAD  20.5      19.7   0.1
REACH ID  6  GC WAX ROAD TO HIGHWAY 1026           19.7      17.6   0.1
REACH ID  7  GC HIGHWAY 1026 TO HIGHWAY 1033        17.6      11.5   0.1
REACH ID  8  GC HIGHWAY 1033 TO SCIVICQUE ROAD      11.5       8.1   0.1
REACH ID  9  GC SCIVICQUE ROAD TO HIGHWAY 1032     8.1       3.9   0.1
REACH ID 10  GC HIGHWAY 1032 TO RKM 0.8             3.9       0.8   0.1
REACH ID 11  GC RKM 0.8 TO GRAY'S CREEK LAKE     0.8       0.0   0.1
ENDATA08
  
```

!Advective Hydraulic Coefficients

```

!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!      ***  -----*****-----*****-----*****
!
!      a      b      c      d      e      f
!      WIDTH WIDTH WIDTH DEPTH DEPTH DEPTH
!      R#  COEFF EXP  CONST COEFF EXP  CONST SLOPE MANNING
! Reach 1 - GC09
HYDR-1   1  0.00  0.20  1.524 0.00  0.30  0.025
! Reach 2 - GC08
HYDR-1   2  0.00  0.20  2.832 0.00  0.30  0.494
! Reach 3 - GC07 - Above Denham Springs POTW discharge
HYDR-1   3  0.00  0.20  4.877 0.00  0.30  0.247
! Reach 4 - Denham Springs POTW discharge
HYDR-1   4  0.00  0.20  4.877 0.00  0.30  0.247
! Reach 5 - GC07 - Below Denham Springs POTW discharge
HYDR-1   5  0.00  0.20  4.877 0.00  0.30  0.247
! Reach 6 - GC06
HYDR-1   6  0.00  0.20  5.486 0.00  0.30  0.312
! Reach 7 - GC04
HYDR-1   7  0.00  0.20  3.353 0.00  0.30  0.271
! Reach 8 - GC03
HYDR-1   8  0.00  0.20  5.182 0.00  0.30  0.161
! Reach 9 - GC02
HYDR-1   9  0.00  0.20 14.021 0.00  0.30  0.589
! Reach 10 - GC01
HYDR-1  10  0.00  0.20 21.641 0.00  0.30  1.514
! Reach 11 - GCL01
  
```

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

HYDR-1 11 0.00 0.20 60.960 0.00 0.30 2.965

ENDATA09

!Dispersive Hydraulic Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

!There were two dye studies done. One was toward the top of the survey and the other toward the bottom.

!The dispersion calculated from the dye study was entered into the overlay file under code 32.

!The range was set to the RKM of the most upstream dye sample site to the most downstream dye sample site

!for Run 3.

!For the purposes of this TMDL the Dispersion coefficient for Dye Run 3 will be used in both dye studies.

!This is because the data was gathered over the longest time period allowing for a better

!dispersion of the dye into the water body.

!To take into consideration all modes of transport, equation 3, (DL = aHbQcVmd ) in Laqual was used.

!Using b=5/6, c=0, and d=1 will take into account all modes of transport in the manner of the Tracor and QUAL2E equations.

!The value for coefficient "a" was calibrated to within the boundaries of the final dye run by setting all other parameters

!to the previously mentioned values.

!	R#	RANGE	a	b	c	d
!	***	-----	*****	-----	*****	-----
HYDR-2	1	1.00	10.600	0.833	0.0	1.0
HYDR-2	2	1.00	10.600	0.833	0.0	1.0
HYDR-2	3	1.00	10.600	0.833	0.0	1.0
HYDR-2	4	1.00	10.600	0.833	0.0	1.0
HYDR-2	5	1.00	10.600	0.833	0.0	1.0
HYDR-2	6	1.00	10.600	0.833	0.0	1.0
HYDR-2	7	1.00	10.600	0.833	0.0	1.0
HYDR-2	8	1.00	10.600	0.833	0.0	1.0
HYDR-2	9	1.00	12.200	0.833	0.0	1.0
HYDR-2	10	1.00	12.200	0.833	0.0	1.0
HYDR-2	11	1.00	12.200	0.833	0.0	1.0

ENDATA10

!Initial Conditions

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! R# TEMP SALINITY DO NH3 N NIT NIT PHOS CHL A MACROPHYTES

!Temp - Cont Mont Avg (GC09,GC10)

!Salinity - Cont Mont Avg (GC09,GC10)

!DO - Cont Mont Avg Min (GC09,GC10) + 1

!Chlorophyll A - GC10

INITIAL 1 27.73 0.19 3.23 5.4

!Temp - Cont Mont Avg (GC08,GC09)

!Salinity - Cont Mont Avg (GC08,GC09)



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Originated: November 23, 2010

!DO - Cont Mont Avg Min (GC08,GC09) + 1  
!Chlorophyll A - GC09  
INITIAL 2 27.19 0.16 2.89 2.8  
!Temp - Cont Mont Avg (GC07,GC08)  
!Salinity - Cont Mont Avg (GC07,GC08)  
!DO - Cont Mont Avg Min (GC07,GC08) + 1  
!Chlorophyll A - GC08  
INITIAL 3 25.85 0.18 1.18 1.1  
!Temp - Cont Mont Avg (GC07,GC08)  
!Salinity - Cont Mont Avg (GC07,GC08)  
!DO - Cont Mont Avg Min (GC07,GC08) + 1  
!Chlorophyll A - GC07  
INITIAL 4 25.85 0.18 1.18 1.1  
!Temp - Cont Mont Avg (GC07,GC08)  
!Salinity - Cont Mont Avg (GC07,GC08)  
!DO - Cont Mont Avg Min (GC07,GC08) + 1  
!Chlorophyll A - GC07  
INITIAL 5 25.85 0.18 1.18 237.0  
!Temp - Cont Mont Avg (GC06,GC07)  
!Salinity - Cont Mont Avg (GC06,GC07)  
!DO - Cont Mont Avg Min (GC06,GC07) + 1  
!Chlorophyll A - GC07  
INITIAL 6 25.48 0.21 1.08 237.0  
!Temp - Cont Mont Avg (GC04,GC06)  
!Salinity - Cont Mont Avg (GC04,GC06)  
!DO - Cont Mont Avg Min (GC04,GC06) + 1  
!Chlorophyll A - GC06  
INITIAL 7 25.31 0.21 1.77 259.0  
!Temp - Cont Mont Avg (GC03,GC04)  
!Salinity - Cont Mont Avg (GC03,GC04)  
!DO - Cont Mont Avg Min (GC03,GC04) + 1  
!Chlorophyll A - GC04  
INITIAL 8 25.86 0.18 2.88 142.0  
!Temp - Cont Mont Avg (GC02,GC03)  
!Salinity - Cont Mont Avg (GC02,GC03)  
!DO - Cont Mont Avg Min (GC02,GC03) + 1  
!Chlorophyll A - GC03  
INITIAL 9 25.91 0.16 3.29 109.0  
!Temp - Cont Mont Avg (GC01,GC02)  
!Salinity - Cont Mont Avg (GC01,GC02)  
!DO - Cont Mont Avg Min (GC01,GC02) + 1  
!Chlorophyll A - GC02

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

INITIAL 10 27.39 0.09 2.71 106.0

!Temp - Cont Mont Avg (GCL01,GC01)

!Salinity - Cont Mont Avg (GCL01,GC01)

!DO - Cont Mont Avg Min (GCL01,GC01) + 1

!Chlorophyll A - GC01

INITIAL 11 29.65 0.03 4.56 80.0

ENDATA11

!Reaeration, Sediment Oxygen Demand and BOD Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8-----9

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*----- \*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! REA KL UBOD UBOD

! R# EQ MIN SOD DECAY SETT

!Texas Equation used for all reaches.

!All settling and decay rates determined through calibration.

COEF-1 1 11.0 0.90 0.0750 0.05

COEF-1 2 11.0 3.30 0.0750 0.05

COEF-1 3 11.0 4.00 0.0750 0.05

COEF-1 4 11.0 4.80 0.0750 0.10

COEF-1 5 11.0 5.20 0.0750 0.10

COEF-1 6 11.0 4.10 0.0750 0.10

COEF-1 7 11.0 3.60 0.0750 0.10

COEF-1 8 11.0 3.20 0.0750 0.10

COEF-1 9 11.0 1.80 0.0750 0.10

COEF-1 10 11.0 2.20 0.0750 0.10

COEF-1 11 11.0 1.20 0.0750 0.10

ENDATA12

!Nitrogen and Phosphorus Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*----- \*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

ENDATA13

ENDATA14

!Coliform and Nonconservative Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*----- \*\*\*\*\*

ENDATA15

!Incremental Data for Flow, Temperature, Salinity, and Conservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*----- \*\*\*\*\*



Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010  
ENDATA16

```
!Incremental Data for DO, BOD, and Nitrogen
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          *** -----*****-----*****-----*****
!          R#      DO      UBOD
!DO - Best Professional Judgement
INCR-2      1      0.00    3.000
!DO - Best Professional Judgement
INCR-2      2      0.00    3.000
!DO - Best Professional Judgement
INCR-2      3      0.00    3.000
!DO - Best Professional Judgement
INCR-2      4      0.00    3.000
!DO - Best Professional Judgement
INCR-2      5      0.00    3.000
!DO - Best Professional Judgement
INCR-2      6      0.00    3.000
!DO - Best Professional Judgement
INCR-2      7      0.00    3.000
!DO - Best Professional Judgement
INCR-2      8      0.00    3.000
!DO - Best Professional Judgement
INCR-2      9      0.00    3.000
!DO - Best Professional Judgement
INCR-2     10      0.00    3.000
!DO - Best Professional Judgement
INCR-2     11      0.00    3.000
ENDATA17
```

```
!Incremental Data for Phosphorus, Chlorophyll, Coliform and Nonconservatives
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          *** -----*****-----*****-----*****
!          R#      PHOSPH      CHL A      COLIFORM NONCONSERVATIVE
INCR-3      1
INCR-3      2
INCR-3      3
INCR-3      4
INCR-3      5
INCR-3      6
INCR-3      7
INCR-3      8
```

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010  
 INCR-3 9  
 INCR-3 10  
 INCR-3 11  
 ENDDATA18

!Nonpoint Source Data  
 !-----1-----2-----3-----4-----5-----6-----7-----8  
 !234567890123456789012345678901234567890123456789012345678901234567890  
 ! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*  
 ! R# UBOD  
 NONPOINT 1 2.50  
 NONPOINT 2 17.00  
 NONPOINT 3 5.00  
 NONPOINT 4 3.00  
 NONPOINT 5 8.00  
 NONPOINT 6 1.00  
 NONPOINT 7 0.00  
 NONPOINT 8 1.00  
 NONPOINT 9 25.00  
 NONPOINT 10 1.00  
 NONPOINT 11 95.00  
 ENDDATA19

!Headwater Data for Flow, Temperature, Salinity, and Conservatives  
 !-----1-----2-----3-----4-----5-----6-----7-----8  
 !234567890123456789012345678901234567890123456789012345678901234567890  
 ! \*\*\*\* -----\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----  
 ! E# NAME FLOW TEMP SALIN CHLORIDE COND  
 !A minimal flow used as per LTP.  
 !Temp - Cont Mont Avg (GC01)  
 !Salinity - Cont Mont Avg (GC01)  
 !Chloride - Lab Data (GC01)  
 !Conductivity - Insitu (GC01)  
 HDWTR-1 1 HEADWATER 0.0028 26.69 0.20 6.9 83.7  
 ENDDATA20

!Headwater Data for DO, BOD, and Nitrogen  
 !-----1-----2-----3-----4-----5-----6-----7-----8  
 !234567890123456789012345678901234567890123456789012345678901234567890  
 ! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*  
 ! E# DO UBOD  
 !DO - Cont Mont Avg Min (GC01) + 1  
 !UBOD - (GC01)  
 HDWTR-2 1 1.91 9.5710  
 ENDDATA21

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

!Headwater Data for Phosphorus, Chlorophyll, Coliform, and Nonconservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! E# PHOSPHOR CHL A COLIFORM NONCONSERVATIVE

HDWTR-3 1

ENDATA22

ENDATA23

!Wasteload Data for Flow, Temperature, Salinity, and Conservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! E# NAME FLOW TEMP SALINITY CHLORIDE COND

!Average flow from DMR's were used.

!Penny's MHP AI#85193 Located on Unnamed Trib #6

WSTLD-1 36 UT#6 & PENNY MHP 0.0019 24.61 .0 8.5 278.5

!Average flow from DMR's were used.

!Lakeside Cove Subdivision AI#86480

!Clear Lake Subdivision AI#121715

WSTLD-1 53 UT#5 & CLUSTER 3 0.0011 25.09 .0 17.1 255.4

!Average flow from DMR's were used.

!Denham Springs POTW AI#19808

WSTLD-1 68 DS POTW 0.1178 30.00 .0 27.6 458.7

WSTLD-1 203 UT#2 0.0014 26.18 .0 10.7 324.6

ENDATA24

!Wasteload Data for DO, BOD, and Nitrogen

!-----1-----2-----3-----4-----5-----6-----7-----8

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! E# DO UBOD

!Penny's MHP AI#85193 Located on Unnamed Trib #6

WSTLD-2 36 2.84 12.8725

!Lakeside Cove Subdivision AI#86480

!Clear Lake Subdivision AI#121715

WSTLD-2 53 2.82 17.7005

!Denham Springs POTW AI#19808

WSTLD-2 68 2.00 52.1253

WSTLD-2 203 5.51 13.9210

ENDATA25

!Wasteload Data for Phosphorus, Chlorophyll, Coliform, and Nonconservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! E# PHOSPHOR CHL A COLIFORM NONCONSERVATIVE

!Penny's MHP AI#85193 Located on Unnamed Trib #6

WSTLD-3 36 5.4

!Lakeside Cove Subdivision AI#86480

!Clear Lake Subdivision AI#121715

WSTLD-3 53 6.3

!Denham Springs POTW AI#19808

WSTLD-3 68 0.0

WSTLD-3 203 2.6

ENDATA26

!Site GCL01 Cont Mont

LOWER BC TEMPERATURE = 30.38

!Site GCL01 Cont Mont

LOWER BC SALINITY = 0.02

!Site GCL01 Lab

LOWER BC CONSERVATIVE MATERIAL I = 6.20

!Site GCL01 Insitu

LOWER BC CONSERVATIVE MATERIAL II = 103.80

!Site GCL01 Cont Mont

LOWER BC DISSOLVED OXYGEN = 7.00

!Site GCL01 Lab

LOWER BC BOD1 BIOCHEMICAL OXYGEN DEMAND = 8.4326

!Site GCL01 Lab

LOWER BC BOD2 BIOCHEMICAL OXYGEN DEMAND = 0.0000

!Site GCL01 Lab

LOWER BC CHLOROPHYLL A = 23.4

!Site GCL01 Lab

LOWER BC NBOD = 0.0000

ENDATA27

!Dam Data

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* \*\*\*\*\* \*\* \*\*\*\*\* \*\*\*\*\*

ENDATA28

ENDATA29

NUMBER OF PLOTS = 8

NUMBER OF REACHES IN PLOT 1 = 11 INCREMENT = 0.10

PLOT RCH 1 2 3 4 5 6 7 8 9 10 11

NUMBER OF REACHES IN PLOT 2 = 2 INCREMENT = 0.01

PLOT RCH 1 2

NUMBER OF REACHES IN PLOT 3 = 2 INCREMENT = 0.01





Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

33		0.025		DEPTH
34		1.524		WIDTH
STATION	3	KILOMETER	22.4	
3		26.1		CHLORIDES
4		304.9		CONDUCTIVITY
5	0.24	1.24	1.08	DO
13		1.1		CHLOROPHYLL A
6		12.2		UBOD
33		0.494		DEPTH
34		2.832		WIDTH
STATION	4	KILOMETER	19.7	
3		28.7		CHLORIDES
4		141.9		CONDUCTIVITY
5	0.11	1.11	1.91	DO
13		237		CHLOROPHYLL A
6		81.0		UBOD
31		0.1354		FLOW
33		0.247		DEPTH
34		4.877		WIDTH
STATION	5	KILOMETER	17.6	
3		28.5		CHLORIDES
4		426.3		CONDUCTIVITY
5	0.05	1.05	2.99	DO
13		259		CHLOROPHYLL A
6		76.9		UBOD
31		0.1360		FLOW
33		0.312		DEPTH
34		5.486		WIDTH
STATION	7	KILOMETER	11.5	
3		27.2		CHLORIDES
4		407.7		CONDUCTIVITY
5	1.48	2.48	7.21	DO
13		142		CHLOROPHYLL A
6		47.0		UBOD
31		0.1577		FLOW
33		0.271		DEPTH
34		3.353		WIDTH
STATION	8	KILOMETER	8.1	
3		26.7		CHLORIDES
4		392.8		CONDUCTIVITY
5	2.27	3.27	8.02	DO
13		109		CHLOROPHYLL A

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

6		40.3		UBOD
31		0.1472		FLOW
33		0.161		DEPTH
34		5.182		WIDTH
STATION 9	KILOMETER	3.9		
3		23.9		CHLORIDES
4		309.3		CONDUCTIVITY
5	2.31	3.31	8.94	DO
13		106		CHLOROPHYLL A
6		28.2		UBOD
33		0.589		DEPTH
34		14.021		WIDTH
STATION 10	KILOMETER	0.8		
3		6.9		CHLORIDES
4		83.7		CONDUCTIVITY
5	1.11	2.11	10.46	DO
13		80.0		CHLOROPHYLL A
6		14.2		UBOD
31		0.4276		FLOW
33		1.514		DEPTH
34		21.641		WIDTH
STATION 11	KILOMETER	0.0		
3		6.2		CHLORIDES
4		103.8		CONDUCTIVITY
5	6.00	7.00	9.96	DO
13		23.4		CHLOROPHYLL A
6		8.4		UBOD
33		2.965		DEPTH
34		60.960		WIDTH
STATION GC2 (UP DYE)			14.10	
32		0.561		DISPERSION
STATION GC1 (LO DYE)			3.95	
32		0.146		DISPERSION
END				

**GRAYS CREEK 040304 CALIBRATION OUTPUT DATA SET**

LA-QUAL Version 8.11

Louisiana Department of Environmental Quality

Input file is \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalb.txt

Output produced at 08:17 on 04/27/2010

\$\$\$ DATA TYPE 1 (TITLES AND CONTROL CARDS) \$\$\$

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

CARD TYPE CONTROL TITLES  
 TITLE01 GRAY'S CREEK WATERSHED MODEL  
 TITLE02 GRAY'S CREEK FINAL CALIBRATION RUN  
 CNTROL04 YES METRIC UNITS  
 ENDATA01

\$\$\$ DATA TYPE 2 (MODEL OPTIONS) \$\$\$

CARD TYPE MODEL OPTION  
 MODOPT01 NO TEMPERATURE  
 MODOPT02 NO SALINITY  
 MODOPT03 YES CONSERVATIVE MATERIAL I = CHLORIDES IN MG/L  
 MODOPT04 YES CONSERVATIVE MATERIAL II = CONDUCTIVITY IN MG/L  
 MODOPT05 YES DISSOLVED OXYGEN  
 MODOPT06 YES BOD1 BIOCHEMICAL OXYGEN DEMAND  
 MODOPT06 NO BOD2 BIOCHEMICAL OXYGEN DEMAND  
 MODOPT08 NO NBOD OXYGEN DEMAND  
 MODOPT10 NO PHOSPHORUS  
 MODOPT11 NO CHLOROPHYLL A  
 MODOPT12 NO MACROPHYTES  
 MODOPT13 NO COLIFORM  
 ENDATA02

\$\$\$ DATA TYPE 3 (PROGRAM CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
PROGRAM	KL MINIMUM	= 0.70000 meters/day
PROGRAM	INHIBITION CONTROL VALUE	= 3.00000 (inhibit all rates but SOD)
PROGRAM	K2 MAXIMUM	= 25.00000 per day
PROGRAM	HYDRAULIC CALCULATION METHOD	= 2.00000 (widths and depths)
PROGRAM	SETTLING RATE UNITS	= 1.00000 (values entered as m/day)
PROGRAM	DISPERSION EQUATION	= 3.00000 (values entered as a function of D,Q,Vmean)
PROGRAM	ALGAE OXYGEN PROD	= 0.00000 mg O/ug chl a/day
PROGRAM	EFFECTIVE BOD DUE TO ALGAE	= 0.15000 mg/L BOD per ug/L chl a
PROGRAM	B1 OXYGEN DEPENDENCE THRESHOLD	= 1.00000 mg/L
PROGRAM	B2 OXYGEN DEPENDENCE THRESHOLD	= 1.00000 mg/L
PROGRAM	MAXIMUM ITERATION LIMIT	= 1000.00000

ENDATA03

\$\$\$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) \$\$\$

CARD TYPE	RATE CODE	THETA VALUE
ENDATA04		

\$\$\$ CONSTANTS TYPE 5 (TEMPERATURE DATA) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
ENDATA05		

\$\$\$ DATA TYPE 6 (ALGAE CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
ENDATA06		

Grays Creek Watershed TMDL  
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\$\$\$ DATA TYPE 7 (MACROPHYTE CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
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ENDATA07

\$\$\$ DATA TYPE 8 (REACH IDENTIFICATION DATA) \$\$\$

CARD TYPE	REACH	ID	NAME	BEGIN REACH km	END REACH km	ELEM LENGTH km	REACH LENGTH km	ELEMS PER RCH	BEGIN ELEM NUM	END ELEM NUM
REACH ID	1	GC	GRAY'S CREEK CANAL TO HWY 190	27.30	TO 26.20	0.1000	1.10	11	1	11
REACH ID	2	GC	HIGHWAY 190 TO FORREST DELATTE	26.20	TO 22.40	0.1000	3.80	38	12	49
REACH ID	3	GC	FORREST DELATTE ROAD TO DSPOTW	22.40	TO 20.60	0.1000	1.80	18	50	67
REACH ID	4	GC	DENHAM SPRINGS POTW	20.60	TO 20.50	0.1000	0.10	1	68	68
REACH ID	5	GC	DENHAM SPRINGS POTW TO WAX ROAD	20.50	TO 19.70	0.1000	0.80	8	69	76
REACH ID	6	GC	WAX ROAD TO HIGHWAY 1026	19.70	TO 17.60	0.1000	2.10	21	77	97
REACH ID	7	GC	HIGHWAY 1026 TO HIGHWAY 1033	17.60	TO 11.50	0.1000	6.10	61	98	158
REACH ID	8	GC	HIGHWAY 1033 TO SCIVICQUE ROAD	11.50	TO 8.10	0.1000	3.40	34	159	192
REACH ID	9	GC	SCIVICQUE ROAD TO HIGHWAY 1032	8.10	TO 3.90	0.1000	4.20	42	193	234
REACH ID	10	GC	HIGHWAY 1032 TO RKM 0.8	3.90	TO 0.80	0.1000	3.10	31	235	265
REACH ID	11	GC	RKM 0.8 TO GRAY'S CREEK LAKE	0.80	TO 0.00	0.1000	0.80	8	266	273

ENDATA08

\$\$\$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	WIDTH "A"	WIDTH "B"	WIDTH "C"	DEPTH "D"	DEPTH "E"	DEPTH "F"	SLOPE	MANNINGS "N"
HYDR-1	1	GC	0.000	0.200	1.524	0.000	0.300	0.025	0.00000	0.000
HYDR-1	2	GC	0.000	0.200	2.832	0.000	0.300	0.494	0.00000	0.000
HYDR-1	3	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	4	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	5	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	6	GC	0.000	0.200	5.486	0.000	0.300	0.312	0.00000	0.000
HYDR-1	7	GC	0.000	0.200	3.353	0.000	0.300	0.271	0.00000	0.000
HYDR-1	8	GC	0.000	0.200	5.182	0.000	0.300	0.161	0.00000	0.000
HYDR-1	9	GC	0.000	0.200	14.021	0.000	0.300	0.589	0.00000	0.000
HYDR-1	10	GC	0.000	0.200	21.641	0.000	0.300	1.514	0.00000	0.000
HYDR-1	11	GC	0.000	0.200	60.960	0.000	0.300	2.965	0.00000	0.000

ENDATA09

\$\$\$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
HYDR	1	GC	1.00	10.600	0.833	0.000	1.000
HYDR	2	GC	1.00	10.600	0.833	0.000	1.000
HYDR	3	GC	1.00	10.600	0.833	0.000	1.000
HYDR	4	GC	1.00	10.600	0.833	0.000	1.000
HYDR	5	GC	1.00	10.600	0.833	0.000	1.000
HYDR	6	GC	1.00	10.600	0.833	0.000	1.000
HYDR	7	GC	1.00	10.600	0.833	0.000	1.000
HYDR	8	GC	1.00	10.600	0.833	0.000	1.000
HYDR	9	GC	1.00	12.200	0.833	0.000	1.000
HYDR	10	GC	1.00	12.200	0.833	0.000	1.000
HYDR	11	GC	1.00	12.200	0.833	0.000	1.000

ENDATA10

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\$\$\$ DATA TYPE 11 (INITIAL CONDITIONS) \$\$\$

CARD TYPE	REACH	ID	TEMP	SALIN	DO	NH3	NO3+2	PHOS	CHL A	MACRO
INITIAL	1	GC	27.73	0.19	3.23	0.00	0.00	0.00	5.40	0.00
INITIAL	2	GC	27.19	0.16	2.89	0.00	0.00	0.00	2.80	0.00
INITIAL	3	GC	25.85	0.18	1.18	0.00	0.00	0.00	1.10	0.00
INITIAL	4	GC	25.85	0.18	1.18	0.00	0.00	0.00	1.10	0.00
INITIAL	5	GC	25.85	0.18	1.18	0.00	0.00	0.00	237.00	0.00
INITIAL	6	GC	25.48	0.21	1.08	0.00	0.00	0.00	237.00	0.00
INITIAL	7	GC	25.31	0.21	1.77	0.00	0.00	0.00	259.00	0.00
INITIAL	8	GC	25.86	0.18	2.88	0.00	0.00	0.00	142.00	0.00
INITIAL	9	GC	25.91	0.16	3.29	0.00	0.00	0.00	109.00	0.00
INITIAL	10	GC	27.39	0.09	2.71	0.00	0.00	0.00	106.00	0.00
INITIAL	11	GC	29.65	0.03	4.56	0.00	0.00	0.00	80.00	0.00

ENDATA11

\$\$\$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) \$\$\$

CARD TYPE	RCH NUM	RCH ID	K2 OPT	K2 "A"	K2 "B"	K2 "C"	BKGRND SOD g/m <sup>2</sup> /d	BOD DECA per day	BOD SETT m/d	BOD CONV TO SOD	ANAER BOD2 DECA per day	BOD2 DECA per day	BOD2 SETT m/d	BOD2 CONV TO SOD	ANAER BOD2 DECA per day
COEF-1	1	GC	11 TEXAS	0.000	0.000	0.000	0.900	0.075	0.050	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	2	GC	11 TEXAS	0.000	0.000	0.000	3.300	0.075	0.050	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	3	GC	11 TEXAS	0.000	0.000	0.000	4.000	0.075	0.050	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	4	GC	11 TEXAS	0.000	0.000	0.000	4.800	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	5	GC	11 TEXAS	0.000	0.000	0.000	5.200	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	6	GC	11 TEXAS	0.000	0.000	0.000	4.100	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	7	GC	11 TEXAS	0.000	0.000	0.000	3.600	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	8	GC	11 TEXAS	0.000	0.000	0.000	3.200	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	9	GC	11 TEXAS	0.000	0.000	0.000	1.800	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	10	GC	11 TEXAS	0.000	0.000	0.000	2.200	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	11	GC	11 TEXAS	0.000	0.000	0.000	1.200	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000

ENDATA12

\$\$\$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	NBOD DECA	NBOD SETT	ORGN CONV TO NH3 SRCE	NH3 DECA	NH3 SRCE	PHOS SRCE	DENIT RATE
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ENDATA13

\$\$\$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	SECCHI DEPTH	ALGAE: CHL A	ALGAE SETT	ALG CONV TO SOD	ALGAE GROW	ALGAE RESP	MACRO GROW	MACRO RESP	SHADING
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ENDATA14

\$\$\$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	COLIFORM DIE-OFF	NCM DECA	NCM SETT	NCM CONV TO SOD
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ENDATA15

\$\$\$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

Grays Creek Watershed TMDL

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Originated: November 23, 2010

CARD TYPE	REACH	ID	OUTFLOW	INFLOW	TEMP	SALIN	CM-I	CM-II	IN/DIST	OUT/DIST
INCR-1	1	GC	0.00000	0.00360	27.73	0.19	53.00	580.00	0.00327	0.00000
INCR-1	2	GC	0.00000	0.00410	27.19	0.16	24.00	230.00	0.00108	0.00000
INCR-1	3	GC	0.00000	0.00280	25.85	0.18	50.00	0.00	0.00156	0.00000
INCR-1	4	GC	0.00000	0.00000	25.48	0.21	100.00	0.00	0.00000	0.00000
INCR-1	5	GC	0.00000	0.00130	25.48	0.21	100.00	200.00	0.00163	0.00000
INCR-1	6	GC	0.00000	0.00300	25.48	0.21	30.00	170.00	0.00143	0.00000
INCR-1	7	GC	0.00000	0.00800	25.31	0.21	5.00	50.00	0.00131	0.00000
INCR-1	8	GC	0.00000	0.00400	25.86	0.18	5.00	0.00	0.00118	0.00000
INCR-1	9	GC	0.00000	0.00400	25.91	0.16	0.00	0.00	0.00095	0.00000
INCR-1	10	GC	0.00000	0.00300	27.39	0.09	0.00	0.00	0.00097	0.00000
INCR-1	11	GC	0.00000	0.00100	29.65	0.03	0.00	0.00	0.00125	0.00000

ENDATA16

\$\$\$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	REACH	ID	DO	BOD	NBOD	BOD#2
INCR-2	1	GC	0.00	3.00	0.00	0.00
INCR-2	2	GC	0.00	3.00	0.00	0.00
INCR-2	3	GC	0.00	3.00	0.00	0.00
INCR-2	4	GC	0.00	3.00	0.00	0.00
INCR-2	5	GC	0.00	3.00	0.00	0.00
INCR-2	6	GC	0.00	3.00	0.00	0.00
INCR-2	7	GC	0.00	3.00	0.00	0.00
INCR-2	8	GC	0.00	3.00	0.00	0.00
INCR-2	9	GC	0.00	3.00	0.00	0.00
INCR-2	10	GC	0.00	3.00	0.00	0.00
INCR-2	11	GC	0.00	3.00	0.00	0.00

ENDATA17

\$\$\$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	PHOS	CHL A	COLI	NCM
INCR-3	1	GC	0.00	0.00	0.00	0.00
INCR-3	2	GC	0.00	0.00	0.00	0.00
INCR-3	3	GC	0.00	0.00	0.00	0.00
INCR-3	4	GC	0.00	0.00	0.00	0.00
INCR-3	5	GC	0.00	0.00	0.00	0.00
INCR-3	6	GC	0.00	0.00	0.00	0.00
INCR-3	7	GC	0.00	0.00	0.00	0.00
INCR-3	8	GC	0.00	0.00	0.00	0.00
INCR-3	9	GC	0.00	0.00	0.00	0.00
INCR-3	10	GC	0.00	0.00	0.00	0.00
INCR-3	11	GC	0.00	0.00	0.00	0.00

ENDATA18

\$\$\$ DATA TYPE 19 (NONPOINT SOURCE DATA) \$\$\$

CARD TYPE	REACH	ID	BOD#1	NBOD	COLI	NCM	DO	BOD#2
NONPOINT	1	GC	2.50	0.00	0.00	0.00	0.00	0.00
NONPOINT	2	GC	17.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	3	GC	5.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	4	GC	3.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	5	GC	8.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	6	GC	1.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	7	GC	0.00	0.00	0.00	0.00	0.00	0.00

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NONPOINT									
NONPOINT	8	GC	1.00	0.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	9	GC	25.00	0.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	10	GC	1.00	0.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	11	GC	95.00	0.00	0.00	0.00	0.00	0.00	0.00

\$\$\$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	UNIT	FLOW m <sup>3</sup> /s	FLOW cfs	TEMP deg C	SALIN ppt	CM-I MG/L	CM-II MG/L
HDWTR-1	1	HEADWATER	0	0.00280	0.099	26.69	0.20	6.900	83.700

\$\$\$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD#1 mg/L	NBOD mg/L	mg/L	mg/L	BOD#2 mg/L
HDWTR-2	1	HEADWATER	1.91	9.57	0.00	0.00	0.00	0.00

\$\$\$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
HDWTR-3	1	HEADWATER	0.00	0.00	0.00	0.00

\$\$\$ DATA TYPE 23 (JUNCTION DATA) \$\$\$

CARD TYPE	JUNCTION ELEMENT	UPSTRM ELEMENT	RIVER KILOM	NAME
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ENDATA23

\$\$\$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	RKILO	NAME	FLOW m <sup>3</sup> /s	FLOW cfs	FLOW MGD	TEMP deg C	SALIN ppt	CM-I MG/L	CM-II MG/L
WSTLD-1	36	23.80	UT#6 & PENNY MHP	0.00190	0.06709	0.043	24.61	0.00	8.500	278.500
WSTLD-1	53	22.10	UT#5 & CLUSTER 3	0.00110	0.03884	0.025	25.09	0.00	17.100	255.400
WSTLD-1	68	20.60	DS POTW	0.11780	4.15960	2.689	30.00	0.00	27.600	458.700
WSTLD-1	203	7.10	UT#2	0.00140	0.04944	0.032	26.18	0.00	10.700	324.600

\$\$\$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD mg/L	% BOD RMVL	NBOD mg/L	mg/L	% NITRIF	mg/L	BOD#2 mg/L
WSTLD-2	36	UT#6 & PENNY MHP	2.84	12.87	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	53	UT#5 & CLUSTER 3	2.82	17.70	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	68	DS POTW	2.00	52.13	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	203	UT#2	5.51	13.92	0.00	0.00	0.00	0.00	0.00	0.00

\$\$\$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

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CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
WSTLD-3	36	UT#6 & PENNY MHP	0.00	5.40	0.00	0.00
WSTLD-3	53	UT#5 & CLUSTER 3	0.00	6.30	0.00	0.00
WSTLD-3	68	DS POTW	0.00	0.00	0.00	0.00
WSTLD-3	203	UT#2	0.00	2.60	0.00	0.00

\$\$\$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) \$\$\$

CARD TYPE	CONSTITUENT	CONCENTRATION
LOWER BC	TEMPERATURE	= 30.380 deg C
LOWER BC	SALINITY	= 0.020 ppt
LOWER BC	CONSERVATIVE MATERIAL I	= 6.200 MG/L
LOWER BC	CONSERVATIVE MATERIAL II	= 103.800 MG/L
LOWER BC	DISSOLVED OXYGEN	= 7.000 mg/L
LOWER BC	BOD1 BIOCHEMICAL OXYGEN DEMAND	= 8.433 mg/L
LOWER BC	BOD2 BIOCHEMICAL OXYGEN DEMAND	= 0.000 mg/L
LOWER BC	CHLOROPHYLL A	= 23.400 µg/L
LOWER BC	NBOD	= 0.000 mg/L

\$\$\$ DATA TYPE 28 (DAM DATA) \$\$\$

CARD TYPE	ELEMENT	NAME	EQN	"A"	"B"	"H"
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ENDATA28

\$\$\$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) \$\$\$

CARD TYPE	PARAMETER	COL 1	COL 2	COL 3	COL 4	COL 5	COL 6	COL 7	COL 8
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ENDATA29

\$\$\$ DATA TYPE 30 (PLOT CONTROL CARDS) \$\$\$

NUMBER OF PLOTS = 8  
 NUMBER OF REACHES IN PLOT 1 = 11  
 PLOT RCH 1 2 3 4 5 6 7 8 9 10 11  
 NUMBER OF REACHES IN PLOT 2 = 2  
 PLOT RCH 1 2  
 NUMBER OF REACHES IN PLOT 3 = 2  
 PLOT RCH 3 4  
 NUMBER OF REACHES IN PLOT 4 = 1  
 PLOT RCH 5  
 NUMBER OF REACHES IN PLOT 5 = 1  
 PLOT RCH 6  
 NUMBER OF REACHES IN PLOT 6 = 1  
 PLOT RCH 7  
 NUMBER OF REACHES IN PLOT 7 = 1  
 PLOT RCH 8  
 NUMBER OF REACHES IN PLOT 8 = 1  
 PLOT RCH 9  
 ENDATA30

\$\$\$ DATA TYPE 31 (OVERLAY PLOT DATA) \$\$\$



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OVERLAY 1 Grayovl.txt :MAINSTEM  
 OVERLAY 2 Grayovl.txt :MAINSTEM  
 OVERLAY 3 Grayovl.txt :MAINSTEM  
 OVERLAY 4 Grayovl.txt :MAINSTEM  
 OVERLAY 5 Grayovl.txt :MAINSTEM  
 OVERLAY 6 Grayovl.txt :MAINSTEM  
 OVERLAY 7 Grayovl.txt :MAINSTEM  
 OVERLAY 8 Grayovl.txt :MAINSTEM  
 ENDATA31

.....NO ERRORS DETECTED IN INPUT DATA  
 .....HYDRAULIC CALCULATIONS COMPLETED  
 .....TRIDIAGONAL MATRIX TERMS INITIALIZED  
 .....OXYGEN DEPENDENT RATES CONVERGENT IN 10 ITERATIONS  
 .....CONSTITUENT CALCULATIONS COMPLETED  
 .....GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11  
 .....GRAPHICS DATA FOR PLOT 2 WRITTEN TO UNIT 12  
 .....GRAPHICS DATA FOR PLOT 3 WRITTEN TO UNIT 13  
 .....GRAPHICS DATA FOR PLOT 4 WRITTEN TO UNIT 14  
 .....GRAPHICS DATA FOR PLOT 5 WRITTEN TO UNIT 15  
 .....GRAPHICS DATA FOR PLOT 6 WRITTEN TO UNIT 16  
 .....GRAPHICS DATA FOR PLOT 7 WRITTEN TO UNIT 17  
 .....GRAPHICS DATA FOR PLOT 8 WRITTEN TO UNIT 18

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
 REACH NO. 1 GRAY'S CREEK CANAL TO HWY 190 GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
1	HDWTR	0.00280	26.69	0.20	6.90	83.70	1.91	8.76	0.00	9.57	0.00	0.00	0.00	0.00	0.00	5.40	0.00	0.00
EACH	INCR	0.00033	27.73	0.19	53.00	580.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
1	27.30	27.20	0.00313	0.0	0.08208	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.040	0.082
2	27.20	27.10	0.00345	0.0	0.09067	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.044	0.091
3	27.10	27.00	0.00378	0.0	0.09926	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.049	0.099
4	27.00	26.90	0.00411	0.0	0.10785	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.053	0.108
5	26.90	26.80	0.00444	0.0	0.11644	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.057	0.116
6	26.80	26.70	0.00476	0.0	0.12503	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.061	0.125
7	26.70	26.60	0.00509	0.0	0.13362	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.066	0.134
8	26.60	26.50	0.00542	0.0	0.14221	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.070	0.142
9	26.50	26.40	0.00575	0.0	0.15080	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.074	0.151
10	26.40	26.30	0.00607	0.0	0.15939	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.078	0.159
11	26.30	26.20	0.00640	0.0	0.16798	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.082	0.168

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

TOT 0.11 41.91 1676.40  
 AVG 0.1189 0.03 1.52 0.04  
 CUM 0.11

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da
1	27.200	7.86	28.87	0.11	2.40	0.00	0.00	0.00	0.00	1.46	1.46	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	27.100	7.87	28.85	0.11	2.40	0.00	0.00	0.00	0.00	1.46	1.46	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	27.000	7.88	28.82	0.11	2.39	0.00	0.00	0.00	0.00	1.45	1.45	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	26.900	7.88	28.80	0.11	2.39	0.00	0.00	0.00	0.00	1.45	1.45	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	26.800	7.89	28.77	0.11	2.39	0.00	0.00	0.00	0.00	1.44	1.44	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	26.700	7.90	28.75	0.11	2.39	0.00	0.00	0.00	0.00	1.44	1.44	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	26.600	7.91	28.72	0.11	2.38	0.00	0.00	0.00	0.00	1.43	1.43	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	26.500	7.91	28.70	0.11	2.38	0.00	0.00	0.00	0.00	1.43	1.43	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	26.400	7.92	28.67	0.10	2.38	0.00	0.00	0.00	0.00	1.42	1.42	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	26.300	7.93	28.65	0.10	2.37	0.00	0.00	0.00	0.00	1.42	1.42	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	26.200	7.93	28.62	0.10	2.37	0.00	0.00	0.00	0.00	1.42	1.42	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20	DEG C	RATE	25.00	0.08	2.00	0.00	0.00	0.00	0.00	0.90			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00
*	g/m <sup>2</sup> /d		**	mg/L/day																			

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
1	27.200	27.68	0.19	11.74	135.86	2.90	8.69	0.00	9.47	0.00	0.00	0.00	0.00	0.00	0.00	5.16	0.00	0.	0.00
2	27.100	27.63	0.18	15.65	177.91	3.48	8.64	0.00	9.38	0.00	0.00	0.00	0.00	0.00	0.00	4.93	0.00	0.	0.00
3	27.000	27.58	0.18	18.88	212.70	3.85	8.60	0.00	9.30	0.00	0.00	0.00	0.00	0.00	0.00	4.69	0.00	0.	0.00
4	26.900	27.53	0.18	21.60	241.94	4.09	8.56	0.00	9.23	0.00	0.00	0.00	0.00	0.00	0.00	4.45	0.00	0.	0.00
5	26.800	27.48	0.18	23.91	266.87	4.24	8.53	0.00	9.16	0.00	0.00	0.00	0.00	0.00	0.00	4.22	0.00	0.	0.00
6	26.700	27.44	0.17	25.91	288.38	4.36	8.51	0.00	9.10	0.00	0.00	0.00	0.00	0.00	0.00	3.98	0.00	0.	0.00
7	26.600	27.39	0.17	27.65	307.12	4.43	8.49	0.00	9.05	0.00	0.00	0.00	0.00	0.00	0.00	3.75	0.00	0.	0.00
8	26.500	27.34	0.17	29.18	323.60	4.49	8.47	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	3.51	0.00	0.	0.00
9	26.400	27.29	0.17	30.54	338.20	4.54	8.46	0.00	8.95	0.00	0.00	0.00	0.00	0.00	0.00	3.27	0.00	0.	0.00
10	26.300	27.24	0.16	31.75	351.23	4.57	8.44	0.00	8.90	0.00	0.00	0.00	0.00	0.00	0.00	3.04	0.00	0.	0.00
11	26.200	27.19	0.16	32.83	362.80	4.57	8.44	0.00	8.86	0.00	0.00	0.00	0.00	0.00	0.00	2.80	0.00	0.	0.00

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
 REACH NO. 2 HIGHWAY 190 TO FORREST DELATTE GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
12	UPR RCH	0.00640	27.19	0.16	32.83	362.80	4.57	8.44	0.00	8.86	0.00	0.00	0.00	0.00	0.00	2.80	0.00	0.00
EACH	INCR	0.00011	27.19	0.16	24.00	230.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	WSTLD	0.00190	24.61	0.00	8.50	278.50	2.84	12.87	0.00	12.87	0.00	0.00	0.00	0.00	0.00	5.40	0.00	0.00

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
12	26.20	26.10	0.00651	0.0	0.00465	0.25	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.027	0.005
13	26.10	26.00	0.00662	0.0	0.00473	0.24	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.028	0.005
14	26.00	25.90	0.00672	0.0	0.00481	0.24	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.028	0.005
15	25.90	25.80	0.00683	0.0	0.00488	0.24	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.029	0.005
16	25.80	25.70	0.00694	0.0	0.00496	0.23	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.029	0.005
17	25.70	25.60	0.00705	0.0	0.00504	0.23	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.030	0.005
18	25.60	25.50	0.00716	0.0	0.00511	0.23	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.030	0.005
19	25.50	25.40	0.00726	0.0	0.00519	0.22	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.031	0.005
20	25.40	25.30	0.00737	0.0	0.00527	0.22	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.031	0.005
21	25.30	25.20	0.00748	0.0	0.00535	0.22	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.031	0.005
22	25.20	25.10	0.00759	0.0	0.00542	0.21	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.032	0.005
23	25.10	25.00	0.00769	0.0	0.00550	0.21	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.032	0.006
24	25.00	24.90	0.00780	0.0	0.00558	0.21	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.033	0.006
25	24.90	24.80	0.00791	0.0	0.00565	0.20	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.033	0.006
26	24.80	24.70	0.00802	0.0	0.00573	0.20	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.034	0.006
27	24.70	24.60	0.00813	0.0	0.00581	0.20	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.034	0.006
28	24.60	24.50	0.00823	0.0	0.00589	0.20	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.035	0.006
29	24.50	24.40	0.00834	0.0	0.00596	0.19	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.035	0.006
30	24.40	24.30	0.00845	0.0	0.00604	0.19	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.036	0.006
31	24.30	24.20	0.00856	0.0	0.00612	0.19	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.036	0.006
32	24.20	24.10	0.00867	0.0	0.00619	0.19	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.036	0.006
33	24.10	24.00	0.00877	0.0	0.00627	0.18	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.037	0.006
34	24.00	23.90	0.00888	0.0	0.00635	0.18	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.037	0.006
35	23.90	23.80	0.00899	0.0	0.00643	0.18	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.038	0.006
36	23.80	23.70	0.01100	17.3	0.00786	0.15	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.046	0.008
37	23.70	23.60	0.01111	17.1	0.00794	0.15	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.047	0.008
38	23.60	23.50	0.01121	16.9	0.00802	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.047	0.008
39	23.50	23.40	0.01132	16.8	0.00809	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.048	0.008
40	23.40	23.30	0.01143	16.6	0.00817	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.048	0.008
41	23.30	23.20	0.01154	16.5	0.00825	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.049	0.008
42	23.20	23.10	0.01164	16.3	0.00832	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.049	0.008
43	23.10	23.00	0.01175	16.2	0.00840	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.049	0.008
44	23.00	22.90	0.01186	16.0	0.00848	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.050	0.008
45	22.90	22.80	0.01197	15.9	0.00855	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.050	0.009
46	22.80	22.70	0.01208	15.7	0.00863	0.13	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.051	0.009
47	22.70	22.60	0.01218	15.6	0.00871	0.13	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.051	0.009
48	22.60	22.50	0.01229	15.5	0.00879	0.13	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.052	0.009
49	22.50	22.40	0.01240	15.3	0.00886	0.13	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.052	0.009
TOT						7.00			5316.23	10761.60					
AVG					0.0063		0.49	2.83			1.40				
CUM						7.11									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAY	BOD#1 SETT	ABOD#1 DECAY	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NCM DECAY	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
12	26.100	7.94	1.62	0.10	0.12	0.00	0.00	0.00	0.00	5.18	5.18	5.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	26.000	7.94	1.62	0.10	0.12	0.00	0.00	0.00	0.00	5.17	5.17	5.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	25.900	7.95	1.62	0.10	0.12	0.00	0.00	0.00	0.00	5.16	5.16	5.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	25.800	7.95	1.62	0.10	0.12	0.00	0.00	0.00	0.00	5.14	5.14	5.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

27	24.600	26.63	0.17	30.95	334.56	0.99	10.57	0.00	10.88	0.00	0.00	0.00	0.00	0.00	0.00	2.08	0.00	0.	0.00
28	24.500	26.59	0.17	30.86	333.19	0.99	10.64	0.00	10.94	0.00	0.00	0.00	0.00	0.00	0.00	2.04	0.00	0.	0.00
29	24.400	26.56	0.17	30.77	331.86	1.00	10.70	0.00	11.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99	0.00	0.	0.00
30	24.300	26.52	0.17	30.68	330.56	1.01	10.77	0.00	11.06	0.00	0.00	0.00	0.00	0.00	0.00	1.95	0.00	0.	0.00
31	24.200	26.48	0.17	30.60	329.29	1.01	10.82	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	1.91	0.00	0.	0.00
32	24.100	26.45	0.17	30.52	328.06	1.02	10.88	0.00	11.16	0.00	0.00	0.00	0.00	0.00	0.00	1.86	0.00	0.	0.00
33	24.000	26.41	0.17	30.44	326.85	1.03	10.93	0.00	11.20	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.	0.00
34	23.900	26.38	0.17	30.35	325.65	1.04	10.98	0.00	11.25	0.00	0.00	0.00	0.00	0.00	0.00	1.77	0.00	0.	0.00
35	23.800	26.34	0.17	30.05	324.05	1.06	11.05	0.00	11.30	0.00	0.00	0.00	0.00	0.00	0.00	1.73	0.00	0.	0.00
36	23.700	26.31	0.17	26.46	315.65	1.30	11.37	0.00	11.62	0.00	0.00	0.00	0.00	0.00	0.00	1.68	0.00	0.	0.00
37	23.600	26.27	0.17	26.44	314.82	1.26	11.40	0.00	11.64	0.00	0.00	0.00	0.00	0.00	0.00	1.64	0.00	0.	0.00
38	23.500	26.24	0.17	26.41	314.01	1.23	11.42	0.00	11.66	0.00	0.00	0.00	0.00	0.00	0.00	1.59	0.00	0.	0.00
39	23.400	26.20	0.17	26.39	313.21	1.21	11.44	0.00	11.67	0.00	0.00	0.00	0.00	0.00	0.00	1.55	0.00	0.	0.00
40	23.300	26.17	0.18	26.37	312.42	1.19	11.46	0.00	11.69	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.	0.00
41	23.200	26.13	0.18	26.35	311.65	1.19	11.48	0.00	11.70	0.00	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.	0.00
42	23.100	26.10	0.18	26.32	310.89	1.18	11.50	0.00	11.72	0.00	0.00	0.00	0.00	0.00	0.00	1.41	0.00	0.	0.00
43	23.000	26.06	0.18	26.30	310.15	1.18	11.52	0.00	11.73	0.00	0.00	0.00	0.00	0.00	0.00	1.37	0.00	0.	0.00
44	22.900	26.03	0.18	26.28	309.42	1.18	11.54	0.00	11.74	0.00	0.00	0.00	0.00	0.00	0.00	1.32	0.00	0.	0.00
45	22.800	25.99	0.18	26.26	308.71	1.18	11.56	0.00	11.75	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.	0.00
46	22.700	25.96	0.18	26.24	308.01	1.19	11.58	0.00	11.76	0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00	0.	0.00
47	22.600	25.92	0.18	26.22	307.31	1.20	11.60	0.00	11.78	0.00	0.00	0.00	0.00	0.00	0.00	1.19	0.00	0.	0.00
48	22.500	25.89	0.18	26.20	306.63	1.20	11.61	0.00	11.79	0.00	0.00	0.00	0.00	0.00	0.00	1.14	0.00	0.	0.00
49	22.400	25.85	0.18	26.20	305.84	1.21	11.62	0.00	11.78	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
 REACH NO. 3 FORREST DELATTE ROAD TO DSPOTW GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM	
50	UPR RCH	0.01240	25.85	0.18	26.20	305.84	1.21	11.62	0.00	11.78	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00	0.00
EACH	INCR	0.00016	25.85	0.18	50.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	WSTLD	0.00110	25.09	0.00	17.10	255.40	2.82	17.70	0.00	17.70	0.00	0.00	0.00	0.00	0.00	6.30	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
50	22.40	22.30	0.01256	15.1	0.01042	0.11	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.034	0.010
51	22.30	22.20	0.01271	14.9	0.01055	0.11	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.035	0.011
52	22.20	22.10	0.01287	14.8	0.01068	0.11	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.035	0.011
53	22.10	22.00	0.01412	21.2	0.01172	0.10	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.039	0.012
54	22.00	21.90	0.01428	21.0	0.01185	0.10	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.039	0.012
55	21.90	21.80	0.01443	20.8	0.01198	0.10	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.040	0.012
56	21.80	21.70	0.01459	20.6	0.01211	0.10	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.040	0.012
57	21.70	21.60	0.01474	20.3	0.01224	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.040	0.012
58	21.60	21.50	0.01490	20.1	0.01237	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.041	0.012
59	21.50	21.40	0.01506	19.9	0.01250	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.041	0.012
60	21.40	21.30	0.01521	19.7	0.01263	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.042	0.013
61	21.30	21.20	0.01537	19.5	0.01276	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.042	0.013
62	21.20	21.10	0.01552	19.3	0.01289	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.043	0.013
63	21.10	21.00	0.01568	19.1	0.01301	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.043	0.013
64	21.00	20.90	0.01583	18.9	0.01314	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.043	0.013

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

65	20.90	20.80	0.01599	18.8	0.01327	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.044	0.013
66	20.80	20.70	0.01614	18.6	0.01340	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.044	0.013
67	20.70	20.60	0.01630	18.4	0.01353	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.045	0.014

TOT						1.71			2168.31	8778.60					
AVG			0.0122				0.25	4.88			1.20				
CUM						8.82									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 1/da	BOD#1 SETT 1/da	ABOD#1 1/da	BOD#2 1/da	BOD#2 SETT 1/da	ABOD#2 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECA 1/da	ORGN SETT 1/da	NH3 DECA 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECA 1/da	NCM DECA 1/da	NCM SETT 1/da	
50	22.300	8.13	3.17	0.10	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	22.200	8.13	3.17	0.08	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	22.100	8.13	3.17	0.08	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	22.000	8.13	3.17	0.08	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	21.900	8.13	3.17	0.07	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	21.800	8.13	3.17	0.07	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	21.700	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	21.600	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	21.500	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	21.400	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	21.300	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61	21.200	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	21.100	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63	21.000	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	20.900	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	20.800	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66	20.700	8.13	3.17	0.06	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67	20.600	8.13	3.17	0.07	0.23	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	20 DEG C RATE		2.83	0.08	0.20	0.00	0.00	0.00	0.00	4.00			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00

\* g/m<sup>2</sup>/d      \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
50	22.300	25.85	0.18	26.49	302.09	0.99	11.36	0.00	11.52	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
51	22.200	25.85	0.18	26.77	298.40	0.84	11.12	0.00	11.29	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
52	22.100	25.85	0.18	27.03	294.69	0.74	10.92	0.00	11.09	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
53	22.000	25.85	0.18	26.53	288.48	0.79	11.23	0.00	11.40	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
54	21.900	25.85	0.18	26.79	285.34	0.71	11.04	0.00	11.20	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
55	21.800	25.85	0.18	27.04	282.26	0.65	10.86	0.00	11.02	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
56	21.700	25.85	0.18	27.28	279.26	0.62	10.69	0.00	10.86	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
57	21.600	25.85	0.18	27.52	276.31	0.59	10.53	0.00	10.70	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
58	21.500	25.85	0.18	27.76	273.43	0.57	10.39	0.00	10.55	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
59	21.400	25.85	0.18	27.99	270.60	0.56	10.25	0.00	10.41	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
60	21.300	25.85	0.18	28.21	267.84	0.56	10.11	0.00	10.28	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
61	21.200	25.85	0.18	28.43	265.13	0.55	9.99	0.00	10.15	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
62	21.100	25.85	0.18	28.65	262.47	0.55	9.87	0.00	10.03	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
63	21.000	25.85	0.18	28.86	259.87	0.54	9.75	0.00	9.92	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
64	20.900	25.85	0.18	29.07	257.31	0.54	9.64	0.00	9.81	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
65	20.800	25.85	0.18	29.27	254.84	0.54	9.54	0.00	9.71	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00

Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

66	20.700	25.85	0.18	29.46	253.14	0.55	9.59	0.00	9.75	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
67	20.600	25.85	0.18	29.42	274.29	0.65	14.20	0.00	14.36	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 4 DENHAM SPRINGS POTW

GRAY'S CREEK WATERSHED MODEL  
GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
68	UPR RCH	0.01630	25.85	0.18	29.42	274.29	0.65	14.20	0.00	14.36	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00
68	WSTLD	0.11780	30.00	0.00	27.60	458.70	2.00	52.13	0.00	52.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
68	20.60	20.50	0.13410	90.1	0.11132	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.368	0.111
TOT AVG CUM					0.1113	0.01	0.25	4.88	120.46	487.70	1.20				

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da	
68	20.500	8.13	4.12	0.10	0.47	0.00	0.00	0.00	0.00	6.94	6.94	6.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			3.69	0.08	0.40	0.00	0.00	0.00	0.00	4.80			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	

\* g/m²/d      \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
68	20.500	25.85	0.18	27.85	433.33	1.75	46.89	0.00	82.44	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 5 DENHAM SPRINGS POTW TO WAX ROAD

GRAY'S CREEK WATERSHED MODEL  
GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
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Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

69	UPR RCH	0.13410	25.85	0.18	27.85	433.33	1.75	46.89	0.00	82.44	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.00
EACH	INCR	0.00016	25.48	0.21	100.00	200.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
69	20.50	20.40	0.13426	90.0	0.11146	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.369	0.111
70	20.40	20.30	0.13442	89.9	0.11159	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.369	0.112
71	20.30	20.20	0.13459	89.8	0.11173	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.369	0.112
72	20.20	20.10	0.13475	89.6	0.11186	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.370	0.112
73	20.10	20.00	0.13491	89.5	0.11200	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.370	0.112
74	20.00	19.90	0.13507	89.4	0.11213	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.371	0.112
75	19.90	19.80	0.13524	89.3	0.11227	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.371	0.112
76	19.80	19.70	0.13540	89.2	0.11240	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.372	0.112
TOT						0.08			963.70	3901.60					
AVG					0.1119		0.25	4.88			1.20				
CUM						8.91									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da	
69	20.400	8.13	4.12	0.10	0.46	0.00	0.00	0.00	0.00	7.49	7.49	7.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	20.300	8.14	4.12	0.10	0.46	0.00	0.00	0.00	0.00	7.47	7.47	7.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71	20.200	8.15	4.11	0.10	0.46	0.00	0.00	0.00	0.00	7.45	7.45	7.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72	20.100	8.15	4.11	0.10	0.46	0.00	0.00	0.00	0.00	7.43	7.43	7.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	20.000	8.16	4.11	0.10	0.46	0.00	0.00	0.00	0.00	7.41	7.41	7.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
74	19.900	8.17	4.11	0.10	0.46	0.00	0.00	0.00	0.00	7.39	7.39	7.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	19.800	8.17	4.11	0.10	0.46	0.00	0.00	0.00	0.00	7.36	7.36	7.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76	19.700	8.18	4.10	0.10	0.46	0.00	0.00	0.00	0.00	7.34	7.34	7.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			3.69	0.08	0.40	0.00	0.00	0.00	0.00	5.20			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00

\* g/m<sup>2</sup>/d                      \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
69	20.400	25.80	0.18	27.94	433.04	1.66	46.65	0.00	82.20	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
70	20.300	25.76	0.19	28.03	432.76	1.58	46.41	0.00	81.96	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
71	20.200	25.71	0.19	28.11	432.48	1.50	46.17	0.00	81.72	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
72	20.100	25.67	0.19	28.20	432.20	1.43	45.94	0.00	81.49	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
73	20.000	25.62	0.20	28.29	431.92	1.36	45.71	0.00	81.26	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
74	19.900	25.57	0.20	28.37	431.64	1.29	45.48	0.00	81.03	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
75	19.800	25.53	0.21	28.46	431.36	1.23	45.26	0.00	80.81	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
76	19.700	25.48	0.21	28.54	431.09	1.18	45.03	0.00	80.58	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00



Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

REACH NO. 6 WAX ROAD TO HIGHWAY 1026

GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
77	UPR RCH	0.13540	25.48	0.21	28.54	431.09	1.18	45.03	0.00	80.58	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.00
EACH	INCR	0.00014	25.48	0.21	30.00	170.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
77	19.70	19.60	0.13554	89.1	0.07919	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.318	0.079
78	19.60	19.50	0.13569	89.0	0.07927	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.318	0.079
79	19.50	19.40	0.13583	88.9	0.07936	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.319	0.079
80	19.40	19.30	0.13597	88.8	0.07944	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.319	0.079
81	19.30	19.20	0.13611	88.7	0.07952	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.319	0.080
82	19.20	19.10	0.13626	88.7	0.07961	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.320	0.080
83	19.10	19.00	0.13640	88.6	0.07969	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.320	0.080
84	19.00	18.90	0.13654	88.5	0.07977	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.320	0.080
85	18.90	18.80	0.13669	88.4	0.07986	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.321	0.080
86	18.80	18.70	0.13683	88.3	0.07994	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.321	0.080
87	18.70	18.60	0.13697	88.2	0.08002	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.321	0.080
88	18.60	18.50	0.13711	88.1	0.08011	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.322	0.080
89	18.50	18.40	0.13726	88.0	0.08019	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.322	0.080
90	18.40	18.30	0.13740	87.9	0.08027	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.322	0.080
91	18.30	18.20	0.13754	87.8	0.08036	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.323	0.080
92	18.20	18.10	0.13769	87.7	0.08044	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.323	0.080
93	18.10	18.00	0.13783	87.6	0.08052	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.323	0.081
94	18.00	17.90	0.13797	87.6	0.08061	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.324	0.081
95	17.90	17.80	0.13811	87.5	0.08069	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.324	0.081
96	17.80	17.70	0.13826	87.4	0.08078	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.324	0.081
97	17.70	17.60	0.13840	87.3	0.08086	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.325	0.081
TOT						0.30			3594.43	11520.60					
AVG					0.0800		0.31	5.49			1.71				
CUM						9.21									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECATY 1/da	BOD#1 SETT 1/da	ABOD#1 DECATY 1/da	BOD#2 DECATY 1/da	BOD#2 SETT 1/da	ABOD#2 DECATY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECATY 1/da	ORGN SETT 1/da	NH3 DECATY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECATY 1/da	NCM DECATY 1/da	NCM SETT 1/da
77	19.600	8.18	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.79	5.79	5.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	19.500	8.18	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	19.400	8.18	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	19.300	8.19	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81	19.200	8.19	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	19.100	8.19	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.77	5.77	5.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83	19.000	8.19	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.77	5.77	5.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84	18.900	8.19	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.77	5.77	5.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	18.800	8.19	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.76	5.76	5.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

86	18.700	8.19	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.76	5.76	5.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87	18.600	8.19	3.03	0.10	0.36	0.00	0.00	0.00	0.00	5.76	5.76	5.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	18.500	8.20	3.03	0.09	0.36	0.00	0.00	0.00	0.00	5.75	5.75	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89	18.400	8.20	3.03	0.09	0.36	0.00	0.00	0.00	0.00	5.75	5.75	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	18.300	8.20	3.03	0.09	0.36	0.00	0.00	0.00	0.00	5.75	5.75	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91	18.200	8.20	3.03	0.09	0.36	0.00	0.00	0.00	0.00	5.75	5.75	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	18.100	8.20	3.03	0.09	0.36	0.00	0.00	0.00	0.00	5.74	5.74	5.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
93	18.000	8.20	3.03	0.09	0.36	0.00	0.00	0.00	0.00	5.74	5.74	5.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	17.900	8.20	3.03	0.09	0.36	0.00	0.00	0.00	0.00	5.74	5.74	5.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	17.800	8.20	3.03	0.09	0.36	0.00	0.00	0.00	0.00	5.73	5.73	5.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
96	17.700	8.21	3.03	0.09	0.36	0.00	0.00	0.00	0.00	5.73	5.73	5.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97	17.600	8.21	3.03	0.09	0.36	0.00	0.00	0.00	0.00	5.73	5.73	5.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AVG 20 DEG C RATE 2.73 0.08 0.32 0.00 0.00 0.00 0.00 4.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\* g/m²/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
77	19.600	25.47	0.21	28.54	430.81	1.15	44.69	0.00	80.39	0.00	0.00	0.00	0.00	0.00	0.00	238.05	0.00	0.	0.00
78	19.500	25.46	0.21	28.55	430.53	1.13	44.35	0.00	80.21	0.00	0.00	0.00	0.00	0.00	0.00	239.10	0.00	0.	0.00
79	19.400	25.46	0.21	28.55	430.26	1.11	44.01	0.00	80.03	0.00	0.00	0.00	0.00	0.00	0.00	240.14	0.00	0.	0.00
80	19.300	25.45	0.21	28.55	429.99	1.09	43.68	0.00	79.86	0.00	0.00	0.00	0.00	0.00	0.00	241.19	0.00	0.	0.00
81	19.200	25.44	0.21	28.55	429.71	1.07	43.35	0.00	79.69	0.00	0.00	0.00	0.00	0.00	0.00	242.24	0.00	0.	0.00
82	19.100	25.43	0.21	28.55	429.44	1.06	43.02	0.00	79.52	0.00	0.00	0.00	0.00	0.00	0.00	243.29	0.00	0.	0.00
83	19.000	25.42	0.21	28.55	429.17	1.04	42.70	0.00	79.35	0.00	0.00	0.00	0.00	0.00	0.00	244.33	0.00	0.	0.00
84	18.900	25.42	0.21	28.56	428.90	1.03	42.38	0.00	79.19	0.00	0.00	0.00	0.00	0.00	0.00	245.38	0.00	0.	0.00
85	18.800	25.41	0.21	28.56	428.63	1.01	42.06	0.00	79.03	0.00	0.00	0.00	0.00	0.00	0.00	246.43	0.00	0.	0.00
86	18.700	25.40	0.21	28.56	428.36	1.00	41.75	0.00	78.87	0.00	0.00	0.00	0.00	0.00	0.00	247.48	0.00	0.	0.00
87	18.600	25.39	0.21	28.56	428.09	0.99	41.44	0.00	78.71	0.00	0.00	0.00	0.00	0.00	0.00	248.52	0.00	0.	0.00
88	18.500	25.38	0.21	28.56	427.82	0.99	41.13	0.00	78.56	0.00	0.00	0.00	0.00	0.00	0.00	249.57	0.00	0.	0.00
89	18.400	25.37	0.21	28.56	427.55	0.98	40.82	0.00	78.41	0.00	0.00	0.00	0.00	0.00	0.00	250.62	0.00	0.	0.00
90	18.300	25.37	0.21	28.56	427.28	0.97	40.52	0.00	78.27	0.00	0.00	0.00	0.00	0.00	0.00	251.67	0.00	0.	0.00
91	18.200	25.36	0.21	28.57	427.02	0.97	40.22	0.00	78.13	0.00	0.00	0.00	0.00	0.00	0.00	252.71	0.00	0.	0.00
92	18.100	25.35	0.21	28.57	426.75	0.97	39.92	0.00	77.99	0.00	0.00	0.00	0.00	0.00	0.00	253.76	0.00	0.	0.00
93	18.000	25.34	0.21	28.57	426.48	0.96	39.63	0.00	77.85	0.00	0.00	0.00	0.00	0.00	0.00	254.81	0.00	0.	0.00
94	17.900	25.33	0.21	28.57	426.22	0.96	39.34	0.00	77.72	0.00	0.00	0.00	0.00	0.00	0.00	255.86	0.00	0.	0.00
95	17.800	25.33	0.21	28.57	425.95	0.96	39.05	0.00	77.58	0.00	0.00	0.00	0.00	0.00	0.00	256.90	0.00	0.	0.00
96	17.700	25.32	0.21	28.57	425.69	0.96	38.76	0.00	77.45	0.00	0.00	0.00	0.00	0.00	0.00	257.95	0.00	0.	0.00
97	17.600	25.31	0.21	28.57	425.42	0.96	38.48	0.00	77.33	0.00	0.00	0.00	0.00	0.00	0.00	259.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 7 HIGHWAY 1026 TO HIGHWAY 1033

GRAY'S CREEK WATERSHED MODEL  
GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
98	UPR RCH	0.13840	25.31	0.21	28.57	425.42	0.96	38.48	0.00	77.33	0.00	0.00	0.00	0.00	0.00	259.00	0.00	0.00	0.00
EACH	INCR	0.00013	25.31	0.21	5.00	50.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00		0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
98	17.60	17.50	0.13853	87.2	0.15246	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.545	0.152
99	17.50	17.40	0.13866	87.1	0.15260	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.545	0.153
100	17.40	17.30	0.13879	87.0	0.15274	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.546	0.153
101	17.30	17.20	0.13892	87.0	0.15289	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.546	0.153
102	17.20	17.10	0.13906	86.9	0.15303	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.547	0.153
103	17.10	17.00	0.13919	86.8	0.15318	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.547	0.153
104	17.00	16.90	0.13932	86.7	0.15332	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.548	0.153
105	16.90	16.80	0.13945	86.6	0.15347	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.548	0.153
106	16.80	16.70	0.13958	86.5	0.15361	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.549	0.154
107	16.70	16.60	0.13971	86.5	0.15375	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.549	0.154
108	16.60	16.50	0.13984	86.4	0.15390	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.550	0.154
109	16.50	16.40	0.13997	86.3	0.15404	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.550	0.154
110	16.40	16.30	0.14010	86.2	0.15419	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.551	0.154
111	16.30	16.20	0.14024	86.1	0.15433	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.551	0.154
112	16.20	16.10	0.14037	86.1	0.15448	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.552	0.154
113	16.10	16.00	0.14050	86.0	0.15462	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.552	0.155
114	16.00	15.90	0.14063	85.9	0.15477	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.553	0.155
115	15.90	15.80	0.14076	85.8	0.15491	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.553	0.155
116	15.80	15.70	0.14089	85.7	0.15505	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.554	0.155
117	15.70	15.60	0.14102	85.7	0.15520	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.554	0.155
118	15.60	15.50	0.14115	85.6	0.15534	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.555	0.155
119	15.50	15.40	0.14129	85.5	0.15549	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.555	0.155
120	15.40	15.30	0.14142	85.4	0.15563	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.556	0.156
121	15.30	15.20	0.14155	85.3	0.15578	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.557	0.156
122	15.20	15.10	0.14168	85.3	0.15592	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.557	0.156
123	15.10	15.00	0.14181	85.2	0.15606	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.558	0.156
124	15.00	14.90	0.14194	85.1	0.15621	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.558	0.156
125	14.90	14.80	0.14207	85.0	0.15635	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.559	0.156
126	14.80	14.70	0.14220	84.9	0.15650	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.559	0.156
127	14.70	14.60	0.14233	84.9	0.15664	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.560	0.157
128	14.60	14.50	0.14247	84.8	0.15679	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.560	0.157
129	14.50	14.40	0.14260	84.7	0.15693	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.561	0.157
130	14.40	14.30	0.14273	84.6	0.15707	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.561	0.157
131	14.30	14.20	0.14286	84.6	0.15722	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.562	0.157
132	14.20	14.10	0.14299	84.5	0.15736	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.562	0.157
133	14.10	14.00	0.14312	84.4	0.15751	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.563	0.158
134	14.00	13.90	0.14325	84.3	0.15765	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.563	0.158
135	13.90	13.80	0.14338	84.2	0.15780	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.564	0.158
136	13.80	13.70	0.14351	84.2	0.15794	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.564	0.158
137	13.70	13.60	0.14365	84.1	0.15808	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.565	0.158
138	13.60	13.50	0.14378	84.0	0.15823	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.565	0.158
139	13.50	13.40	0.14391	83.9	0.15837	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.566	0.158
140	13.40	13.30	0.14404	83.9	0.15852	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.566	0.159
141	13.30	13.20	0.14417	83.8	0.15866	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.567	0.159
142	13.20	13.10	0.14430	83.7	0.15881	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.567	0.159
143	13.10	13.00	0.14443	83.6	0.15895	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.568	0.159
144	13.00	12.90	0.14456	83.6	0.15910	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.568	0.159
145	12.90	12.80	0.14469	83.5	0.15924	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.569	0.159
146	12.80	12.70	0.14483	83.4	0.15938	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.569	0.159
147	12.70	12.60	0.14496	83.3	0.15953	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.570	0.160
148	12.60	12.50	0.14509	83.3	0.15967	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.570	0.160
149	12.50	12.40	0.14522	83.2	0.15982	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.571	0.160
150	12.40	12.30	0.14535	83.1	0.15996	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.571	0.160
151	12.30	12.20	0.14548	83.0	0.16011	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.572	0.160
152	12.20	12.10	0.14561	83.0	0.16025	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.572	0.160

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

153	12.10	12.00	0.14574	82.9	0.16039	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.573	0.160
154	12.00	11.90	0.14588	82.8	0.16054	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.574	0.161
155	11.90	11.80	0.14601	82.7	0.16068	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.574	0.161
156	11.80	11.70	0.14614	82.7	0.16083	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.575	0.161
157	11.70	11.60	0.14627	82.6	0.16097	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.575	0.161
158	11.60	11.50	0.14640	82.5	0.16112	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.576	0.161
TOT							0.45		5542.84	20453.30					
AVG							0.1567					0.27	3.35		0.91
CUM								9.66							

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAy 1/da	BOD#1 SETT 1/da	ABOD#1 DECAy 1/da	BOD#2 DECAy 1/da	BOD#2 SETT 1/da	ABOD#2 DECAy 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAy 1/da	ORGN SETT 1/da	NH3 DECAy 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAy 1/da	NCM DECAy 1/da	NCM SETT 1/da
98	17.500	8.21	4.09	0.10	0.42	0.00	0.00	0.00	0.00	5.03	5.03	5.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99	17.400	8.20	4.09	0.10	0.42	0.00	0.00	0.00	0.00	5.04	5.04	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	17.300	8.20	4.10	0.10	0.42	0.00	0.00	0.00	0.00	5.04	5.04	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
101	17.200	8.20	4.10	0.10	0.42	0.00	0.00	0.00	0.00	5.04	5.04	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102	17.100	8.20	4.10	0.10	0.42	0.00	0.00	0.00	0.00	5.04	5.04	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
103	17.000	8.20	4.10	0.10	0.42	0.00	0.00	0.00	0.00	5.05	5.05	5.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104	16.900	8.20	4.10	0.10	0.42	0.00	0.00	0.00	0.00	5.05	5.05	5.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	16.800	8.20	4.10	0.10	0.42	0.00	0.00	0.00	0.00	5.05	5.05	5.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
106	16.700	8.19	4.11	0.10	0.42	0.00	0.00	0.00	0.00	5.06	5.06	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107	16.600	8.19	4.11	0.10	0.42	0.00	0.00	0.00	0.00	5.06	5.06	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
108	16.500	8.19	4.11	0.10	0.42	0.00	0.00	0.00	0.00	5.06	5.06	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
109	16.400	8.19	4.11	0.10	0.42	0.00	0.00	0.00	0.00	5.06	5.06	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	16.300	8.19	4.11	0.10	0.42	0.00	0.00	0.00	0.00	5.07	5.07	5.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
111	16.200	8.19	4.11	0.10	0.42	0.00	0.00	0.00	0.00	5.07	5.07	5.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	16.100	8.19	4.12	0.10	0.42	0.00	0.00	0.00	0.00	5.07	5.07	5.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	16.000	8.18	4.12	0.10	0.42	0.00	0.00	0.00	0.00	5.08	5.08	5.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
114	15.900	8.18	4.12	0.10	0.42	0.00	0.00	0.00	0.00	5.08	5.08	5.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	15.800	8.18	4.12	0.10	0.42	0.00	0.00	0.00	0.00	5.08	5.08	5.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
116	15.700	8.18	4.12	0.10	0.42	0.00	0.00	0.00	0.00	5.08	5.08	5.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
117	15.600	8.18	4.12	0.10	0.42	0.00	0.00	0.00	0.00	5.09	5.09	5.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
118	15.500	8.18	4.13	0.10	0.42	0.00	0.00	0.00	0.00	5.09	5.09	5.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
119	15.400	8.18	4.13	0.10	0.42	0.00	0.00	0.00	0.00	5.09	5.09	5.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	15.300	8.18	4.13	0.10	0.42	0.00	0.00	0.00	0.00	5.10	5.10	5.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
121	15.200	8.17	4.13	0.10	0.42	0.00	0.00	0.00	0.00	5.10	5.10	5.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
122	15.100	8.17	4.13	0.10	0.42	0.00	0.00	0.00	0.00	5.10	5.10	5.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
123	15.000	8.17	4.14	0.10	0.42	0.00	0.00	0.00	0.00	5.10	5.10	5.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
124	14.900	8.17	4.14	0.10	0.42	0.00	0.00	0.00	0.00	5.11	5.11	5.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	14.800	8.17	4.14	0.10	0.42	0.00	0.00	0.00	0.00	5.11	5.11	5.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126	14.700	8.17	4.14	0.10	0.42	0.00	0.00	0.00	0.00	5.11	5.11	5.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
127	14.600	8.17	4.14	0.10	0.42	0.00	0.00	0.00	0.00	5.12	5.12	5.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
128	14.500	8.17	4.14	0.10	0.42	0.00	0.00	0.00	0.00	5.12	5.12	5.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
129	14.400	8.16	4.15	0.10	0.42	0.00	0.00	0.00	0.00	5.12	5.12	5.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	14.300	8.16	4.15	0.10	0.42	0.00	0.00	0.00	0.00	5.12	5.12	5.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
131	14.200	8.16	4.15	0.10	0.42	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
132	14.100	8.16	4.15	0.10	0.42	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
133	14.000	8.16	4.15	0.10	0.42	0.00	0.00	0.00	0.00	5.13	5.13	5.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
134	13.900	8.16	4.15	0.10	0.42	0.00	0.00	0.00	0.00	5.14	5.14	5.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	13.800	8.16	4.16	0.10	0.42	0.00	0.00	0.00	0.00	5.14	5.14	5.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
136	13.700	8.15	4.16	0.10	0.42	0.00	0.00	0.00	0.00	5.14	5.14	5.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
137	13.600	8.15	4.16	0.10	0.42	0.00	0.00	0.00	0.00	5.15	5.15	5.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
138	13.500	8.15	4.16	0.10	0.42	0.00	0.00	0.00	0.00	5.15	5.15	5.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
139	13.400	8.15	4.16	0.10	0.42	0.00	0.00	0.00	0.00	5.15	5.15	5.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

140	13.300	8.15	4.16	0.10	0.42	0.00	0.00	0.00	0.00	5.15	5.15	5.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
141	13.200	8.15	4.17	0.10	0.42	0.00	0.00	0.00	0.00	5.16	5.16	5.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
142	13.100	8.15	4.17	0.10	0.42	0.00	0.00	0.00	0.00	5.16	5.16	5.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
143	13.000	8.15	4.17	0.10	0.42	0.00	0.00	0.00	0.00	5.16	5.16	5.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
144	12.900	8.14	4.17	0.10	0.42	0.00	0.00	0.00	0.00	5.17	5.17	5.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	12.800	8.14	4.17	0.10	0.42	0.00	0.00	0.00	0.00	5.17	5.17	5.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
146	12.700	8.14	4.17	0.10	0.42	0.00	0.00	0.00	0.00	5.17	5.17	5.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147	12.600	8.14	4.18	0.10	0.42	0.00	0.00	0.00	0.00	5.17	5.17	5.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
148	12.500	8.14	4.18	0.10	0.42	0.00	0.00	0.00	0.00	5.18	5.18	5.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149	12.400	8.14	4.18	0.10	0.42	0.00	0.00	0.00	0.00	5.18	5.18	5.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	12.300	8.14	4.18	0.10	0.42	0.00	0.00	0.00	0.00	5.18	5.18	5.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
151	12.200	8.13	4.18	0.10	0.42	0.00	0.00	0.00	0.00	5.19	5.19	5.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
152	12.100	8.13	4.19	0.10	0.42	0.00	0.00	0.00	0.00	5.19	5.19	5.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153	12.000	8.13	4.19	0.10	0.42	0.00	0.00	0.00	0.00	5.19	5.19	5.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
154	11.900	8.13	4.19	0.10	0.42	0.00	0.00	0.00	0.00	5.19	5.19	5.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	11.800	8.13	4.19	0.10	0.42	0.00	0.00	0.00	0.00	5.20	5.20	5.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
156	11.700	8.13	4.19	0.10	0.42	0.00	0.00	0.00	0.00	5.20	5.20	5.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
157	11.600	8.13	4.19	0.10	0.42	0.00	0.00	0.00	0.00	5.20	5.20	5.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
158	11.500	8.13	4.20	0.10	0.42	0.00	0.00	0.00	0.00	5.21	5.21	5.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AVG 20 DEG C RATE 3.73 0.08 0.37 0.00 0.00 0.00 0.00 3.60 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\* g/m<sup>2</sup>/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
98	17.500	25.32	0.21	28.55	425.07	1.01	38.30	0.00	76.86	0.00	0.00	0.00	0.00	0.00	0.00	257.08	0.00	0.	0.00
99	17.400	25.33	0.21	28.53	424.71	1.07	38.12	0.00	76.39	0.00	0.00	0.00	0.00	0.00	0.00	255.16	0.00	0.	0.00
100	17.300	25.34	0.21	28.51	424.36	1.12	37.94	0.00	75.92	0.00	0.00	0.00	0.00	0.00	0.00	253.25	0.00	0.	0.00
101	17.200	25.35	0.21	28.49	424.01	1.17	37.76	0.00	75.46	0.00	0.00	0.00	0.00	0.00	0.00	251.33	0.00	0.	0.00
102	17.100	25.36	0.21	28.46	423.65	1.21	37.58	0.00	74.99	0.00	0.00	0.00	0.00	0.00	0.00	249.41	0.00	0.	0.00
103	17.000	25.36	0.21	28.44	423.30	1.26	37.40	0.00	74.52	0.00	0.00	0.00	0.00	0.00	0.00	247.49	0.00	0.	0.00
104	16.900	25.37	0.21	28.42	422.95	1.30	37.22	0.00	74.06	0.00	0.00	0.00	0.00	0.00	0.00	245.57	0.00	0.	0.00
105	16.800	25.38	0.21	28.40	422.60	1.35	37.05	0.00	73.59	0.00	0.00	0.00	0.00	0.00	0.00	243.66	0.00	0.	0.00
106	16.700	25.39	0.21	28.37	422.25	1.39	36.87	0.00	73.13	0.00	0.00	0.00	0.00	0.00	0.00	241.74	0.00	0.	0.00
107	16.600	25.40	0.21	28.35	421.90	1.43	36.70	0.00	72.67	0.00	0.00	0.00	0.00	0.00	0.00	239.82	0.00	0.	0.00
108	16.500	25.41	0.20	28.33	421.55	1.47	36.52	0.00	72.21	0.00	0.00	0.00	0.00	0.00	0.00	237.90	0.00	0.	0.00
109	16.400	25.42	0.20	28.31	421.20	1.51	36.35	0.00	71.75	0.00	0.00	0.00	0.00	0.00	0.00	235.98	0.00	0.	0.00
110	16.300	25.43	0.20	28.29	420.85	1.55	36.18	0.00	71.29	0.00	0.00	0.00	0.00	0.00	0.00	234.07	0.00	0.	0.00
111	16.200	25.44	0.20	28.27	420.51	1.58	36.01	0.00	70.83	0.00	0.00	0.00	0.00	0.00	0.00	232.15	0.00	0.	0.00
112	16.100	25.45	0.20	28.24	420.16	1.62	35.84	0.00	70.37	0.00	0.00	0.00	0.00	0.00	0.00	230.23	0.00	0.	0.00
113	16.000	25.45	0.20	28.22	419.82	1.65	35.67	0.00	69.92	0.00	0.00	0.00	0.00	0.00	0.00	228.31	0.00	0.	0.00
114	15.900	25.46	0.20	28.20	419.47	1.68	35.50	0.00	69.46	0.00	0.00	0.00	0.00	0.00	0.00	226.39	0.00	0.	0.00
115	15.800	25.47	0.20	28.18	419.13	1.72	35.34	0.00	69.01	0.00	0.00	0.00	0.00	0.00	0.00	224.48	0.00	0.	0.00
116	15.700	25.48	0.20	28.16	418.78	1.75	35.17	0.00	68.55	0.00	0.00	0.00	0.00	0.00	0.00	222.56	0.00	0.	0.00
117	15.600	25.49	0.20	28.14	418.44	1.78	35.01	0.00	68.10	0.00	0.00	0.00	0.00	0.00	0.00	220.64	0.00	0.	0.00
118	15.500	25.50	0.20	28.11	418.10	1.81	34.84	0.00	67.65	0.00	0.00	0.00	0.00	0.00	0.00	218.72	0.00	0.	0.00
119	15.400	25.51	0.20	28.09	417.76	1.83	34.68	0.00	67.20	0.00	0.00	0.00	0.00	0.00	0.00	216.80	0.00	0.	0.00
120	15.300	25.52	0.20	28.07	417.42	1.86	34.52	0.00	66.75	0.00	0.00	0.00	0.00	0.00	0.00	214.89	0.00	0.	0.00
121	15.200	25.53	0.20	28.05	417.08	1.89	34.36	0.00	66.30	0.00	0.00	0.00	0.00	0.00	0.00	212.97	0.00	0.	0.00
122	15.100	25.54	0.20	28.03	416.74	1.91	34.20	0.00	65.85	0.00	0.00	0.00	0.00	0.00	0.00	211.05	0.00	0.	0.00
123	15.000	25.54	0.20	28.01	416.40	1.94	34.04	0.00	65.41	0.00	0.00	0.00	0.00	0.00	0.00	209.13	0.00	0.	0.00
124	14.900	25.55	0.20	27.99	416.06	1.96	33.88	0.00	64.96	0.00	0.00	0.00	0.00	0.00	0.00	207.21	0.00	0.	0.00
125	14.800	25.56	0.20	27.96	415.72	1.99	33.72	0.00	64.51	0.00	0.00	0.00	0.00	0.00	0.00	205.30	0.00	0.	0.00
126	14.700	25.57	0.20	27.94	415.38	2.01	33.56	0.00	64.07	0.00	0.00	0.00	0.00	0.00	0.00	203.38	0.00	0.	0.00
127	14.600	25.58	0.20	27.92	415.05	2.03	33.41	0.00	63.63	0.00	0.00	0.00	0.00	0.00	0.00	201.46	0.00	0.	0.00

Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

128	14.500	25.59	0.19	27.90	414.71	2.06	33.25	0.00	63.18	0.00	0.00	0.00	0.00	0.00	0.00	199.54	0.00	0.	0.00
129	14.400	25.60	0.19	27.88	414.37	2.08	33.10	0.00	62.74	0.00	0.00	0.00	0.00	0.00	0.00	197.62	0.00	0.	0.00
130	14.300	25.61	0.19	27.86	414.04	2.10	32.94	0.00	62.30	0.00	0.00	0.00	0.00	0.00	0.00	195.70	0.00	0.	0.00
131	14.200	25.62	0.19	27.84	413.71	2.12	32.79	0.00	61.86	0.00	0.00	0.00	0.00	0.00	0.00	193.79	0.00	0.	0.00
132	14.100	25.63	0.19	27.82	413.37	2.14	32.64	0.00	61.42	0.00	0.00	0.00	0.00	0.00	0.00	191.87	0.00	0.	0.00
133	14.000	25.63	0.19	27.80	413.04	2.16	32.49	0.00	60.98	0.00	0.00	0.00	0.00	0.00	0.00	189.95	0.00	0.	0.00
134	13.900	25.64	0.19	27.78	412.71	2.17	32.34	0.00	60.54	0.00	0.00	0.00	0.00	0.00	0.00	188.03	0.00	0.	0.00
135	13.800	25.65	0.19	27.75	412.37	2.19	32.19	0.00	60.11	0.00	0.00	0.00	0.00	0.00	0.00	186.11	0.00	0.	0.00
136	13.700	25.66	0.19	27.73	412.04	2.21	32.04	0.00	59.67	0.00	0.00	0.00	0.00	0.00	0.00	184.20	0.00	0.	0.00
137	13.600	25.67	0.19	27.71	411.71	2.23	31.89	0.00	59.23	0.00	0.00	0.00	0.00	0.00	0.00	182.28	0.00	0.	0.00
138	13.500	25.68	0.19	27.69	411.38	2.24	31.75	0.00	58.80	0.00	0.00	0.00	0.00	0.00	0.00	180.36	0.00	0.	0.00
139	13.400	25.69	0.19	27.67	411.05	2.26	31.60	0.00	58.37	0.00	0.00	0.00	0.00	0.00	0.00	178.44	0.00	0.	0.00
140	13.300	25.70	0.19	27.65	410.73	2.27	31.45	0.00	57.93	0.00	0.00	0.00	0.00	0.00	0.00	176.52	0.00	0.	0.00
141	13.200	25.71	0.19	27.63	410.40	2.29	31.31	0.00	57.50	0.00	0.00	0.00	0.00	0.00	0.00	174.61	0.00	0.	0.00
142	13.100	25.72	0.19	27.61	410.07	2.30	31.17	0.00	57.07	0.00	0.00	0.00	0.00	0.00	0.00	172.69	0.00	0.	0.00
143	13.000	25.72	0.19	27.59	409.74	2.32	31.02	0.00	56.64	0.00	0.00	0.00	0.00	0.00	0.00	170.77	0.00	0.	0.00
144	12.900	25.73	0.19	27.57	409.42	2.33	30.88	0.00	56.21	0.00	0.00	0.00	0.00	0.00	0.00	168.85	0.00	0.	0.00
145	12.800	25.74	0.19	27.55	409.09	2.34	30.74	0.00	55.78	0.00	0.00	0.00	0.00	0.00	0.00	166.93	0.00	0.	0.00
146	12.700	25.75	0.19	27.53	408.77	2.36	30.60	0.00	55.35	0.00	0.00	0.00	0.00	0.00	0.00	165.02	0.00	0.	0.00
147	12.600	25.76	0.19	27.51	408.44	2.37	30.46	0.00	54.92	0.00	0.00	0.00	0.00	0.00	0.00	163.10	0.00	0.	0.00
148	12.500	25.77	0.18	27.49	408.12	2.38	30.32	0.00	54.50	0.00	0.00	0.00	0.00	0.00	0.00	161.18	0.00	0.	0.00
149	12.400	25.78	0.18	27.47	407.79	2.39	30.18	0.00	54.07	0.00	0.00	0.00	0.00	0.00	0.00	159.26	0.00	0.	0.00
150	12.300	25.79	0.18	27.45	407.47	2.40	30.04	0.00	53.64	0.00	0.00	0.00	0.00	0.00	0.00	157.34	0.00	0.	0.00
151	12.200	25.80	0.18	27.43	407.15	2.42	29.91	0.00	53.22	0.00	0.00	0.00	0.00	0.00	0.00	155.43	0.00	0.	0.00
152	12.100	25.81	0.18	27.41	406.83	2.43	29.77	0.00	52.80	0.00	0.00	0.00	0.00	0.00	0.00	153.51	0.00	0.	0.00
153	12.000	25.81	0.18	27.39	406.51	2.44	29.63	0.00	52.37	0.00	0.00	0.00	0.00	0.00	0.00	151.59	0.00	0.	0.00
154	11.900	25.82	0.18	27.37	406.19	2.45	29.50	0.00	51.95	0.00	0.00	0.00	0.00	0.00	0.00	149.67	0.00	0.	0.00
155	11.800	25.83	0.18	27.35	405.87	2.46	29.36	0.00	51.53	0.00	0.00	0.00	0.00	0.00	0.00	147.75	0.00	0.	0.00
156	11.700	25.84	0.18	27.33	405.55	2.47	29.23	0.00	51.11	0.00	0.00	0.00	0.00	0.00	0.00	145.84	0.00	0.	0.00
157	11.600	25.85	0.18	27.31	405.23	2.48	29.10	0.00	50.69	0.00	0.00	0.00	0.00	0.00	0.00	143.92	0.00	0.	0.00
158	11.500	25.86	0.18	27.29	404.91	2.49	28.97	0.00	50.27	0.00	0.00	0.00	0.00	0.00	0.00	142.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
REACH NO. 8 HIGHWAY 1033 TO SCVICQUE ROAD GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
159	UPR RCH	0.14640	25.86	0.18	27.29	404.91	2.49	28.97	0.00	50.27	0.00	0.00	0.00	0.00	0.00	142.00	0.00	0.00
EACH	INCR	0.00012	25.86	0.18	5.00	0.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
159	11.50	11.40	0.14652	82.4	0.17562	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.407	0.176
160	11.40	11.30	0.14664	82.4	0.17576	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.407	0.176
161	11.30	11.20	0.14675	82.3	0.17590	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.407	0.176
162	11.20	11.10	0.14687	82.2	0.17604	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.408	0.176
163	11.10	11.00	0.14699	82.2	0.17618	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.408	0.176
164	11.00	10.90	0.14711	82.1	0.17632	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.408	0.176
165	10.90	10.80	0.14722	82.1	0.17646	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.409	0.176
166	10.80	10.70	0.14734	82.0	0.17660	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.409	0.177

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167	10.70	10.60	0.14746	81.9	0.17674	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.409	0.177
168	10.60	10.50	0.14758	81.9	0.17689	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.410	0.177
169	10.50	10.40	0.14769	81.8	0.17703	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.410	0.177
170	10.40	10.30	0.14781	81.7	0.17717	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.410	0.177
171	10.30	10.20	0.14793	81.7	0.17731	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.411	0.177
172	10.20	10.10	0.14805	81.6	0.17745	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.411	0.177
173	10.10	10.00	0.14816	81.5	0.17759	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.411	0.178
174	10.00	9.90	0.14828	81.5	0.17773	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.411	0.178
175	9.90	9.80	0.14840	81.4	0.17787	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.412	0.178
176	9.80	9.70	0.14852	81.3	0.17801	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.412	0.178
177	9.70	9.60	0.14864	81.3	0.17816	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.412	0.178
178	9.60	9.50	0.14875	81.2	0.17830	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.413	0.178
179	9.50	9.40	0.14887	81.1	0.17844	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.413	0.178
180	9.40	9.30	0.14899	81.1	0.17858	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.413	0.179
181	9.30	9.20	0.14911	81.0	0.17872	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.414	0.179
182	9.20	9.10	0.14922	81.0	0.17886	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.414	0.179
183	9.10	9.00	0.14934	80.9	0.17900	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.414	0.179
184	9.00	8.90	0.14946	80.8	0.17914	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.415	0.179
185	8.90	8.80	0.14958	80.8	0.17928	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.415	0.179
186	8.80	8.70	0.14969	80.7	0.17942	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.415	0.179
187	8.70	8.60	0.14981	80.6	0.17957	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.416	0.180
188	8.60	8.50	0.14993	80.6	0.17971	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.416	0.180
189	8.50	8.40	0.15005	80.5	0.17985	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.416	0.180
190	8.40	8.30	0.15016	80.4	0.17999	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.417	0.180
191	8.30	8.20	0.15028	80.4	0.18013	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.417	0.180
192	8.20	8.10	0.15040	80.3	0.18027	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.417	0.180

TOT						0.22			2836.63	17618.80					
AVG						0.1779		0.16	5.18			0.83			
CUM						9.89									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECATY 1/da	BOD#1 SETT 1/da	ABOD#1 DECATY 1/da	BOD#2 DECATY 1/da	BOD#2 SETT 1/da	ABOD#2 DECATY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECATY 1/da	ORGN SETT 1/da	NH3 DECATY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECATY 1/da	NCM DECATY 1/da	NCM SETT 1/da
159	11.400	8.13	6.84	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	11.300	8.13	6.84	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
161	11.200	8.13	6.85	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
162	11.100	8.12	6.85	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
163	11.000	8.12	6.85	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
164	10.900	8.12	6.85	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	10.800	8.12	6.85	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166	10.700	8.12	6.85	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
167	10.600	8.12	6.86	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
168	10.500	8.12	6.86	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
169	10.400	8.12	6.86	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	10.300	8.12	6.86	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
171	10.200	8.12	6.86	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
172	10.100	8.12	6.86	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
173	10.000	8.12	6.87	0.10	0.71	0.00	0.00	0.00	0.00	4.63	4.63	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
174	9.900	8.12	6.87	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	9.800	8.12	6.87	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
176	9.700	8.12	6.87	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177	9.600	8.12	6.87	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
178	9.500	8.12	6.87	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
179	9.400	8.12	6.88	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	9.300	8.12	6.88	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

181	9.200	8.12	6.88	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
182	9.100	8.12	6.88	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
183	9.000	8.12	6.88	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
184	8.900	8.12	6.88	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
185	8.800	8.12	6.89	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
186	8.700	8.12	6.89	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
187	8.600	8.12	6.89	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
188	8.500	8.12	6.89	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
189	8.400	8.12	6.89	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
190	8.300	8.12	6.89	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
191	8.200	8.12	6.90	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
192	8.100	8.12	6.90	0.10	0.71	0.00	0.00	0.00	0.00	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AVG 20 DEG C RATE 6.14 0.08 0.62 0.00 0.00 0.00 0.00 3.20 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\* g/m²/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
159	11.400	25.86	0.18	27.27	404.59	2.53	28.79	0.00	49.95	0.00	0.00	0.00	0.00	0.00	0.00	141.03	0.00	0.	0.00
160	11.300	25.86	0.18	27.25	404.26	2.57	28.62	0.00	49.63	0.00	0.00	0.00	0.00	0.00	0.00	140.06	0.00	0.	0.00
161	11.200	25.86	0.18	27.23	403.94	2.61	28.45	0.00	49.32	0.00	0.00	0.00	0.00	0.00	0.00	139.09	0.00	0.	0.00
162	11.100	25.87	0.18	27.21	403.62	2.65	28.28	0.00	49.00	0.00	0.00	0.00	0.00	0.00	0.00	138.12	0.00	0.	0.00
163	11.000	25.87	0.18	27.20	403.29	2.68	28.12	0.00	48.69	0.00	0.00	0.00	0.00	0.00	0.00	137.15	0.00	0.	0.00
164	10.900	25.87	0.18	27.18	402.97	2.72	27.95	0.00	48.38	0.00	0.00	0.00	0.00	0.00	0.00	136.18	0.00	0.	0.00
165	10.800	25.87	0.18	27.16	402.65	2.75	27.78	0.00	48.06	0.00	0.00	0.00	0.00	0.00	0.00	135.21	0.00	0.	0.00
166	10.700	25.87	0.18	27.14	402.33	2.78	27.62	0.00	47.75	0.00	0.00	0.00	0.00	0.00	0.00	134.24	0.00	0.	0.00
167	10.600	25.87	0.17	27.13	402.01	2.81	27.46	0.00	47.45	0.00	0.00	0.00	0.00	0.00	0.00	133.26	0.00	0.	0.00
168	10.500	25.87	0.17	27.11	401.69	2.84	27.29	0.00	47.14	0.00	0.00	0.00	0.00	0.00	0.00	132.29	0.00	0.	0.00
169	10.400	25.88	0.17	27.09	401.37	2.87	27.13	0.00	46.83	0.00	0.00	0.00	0.00	0.00	0.00	131.32	0.00	0.	0.00
170	10.300	25.88	0.17	27.07	401.05	2.89	26.97	0.00	46.53	0.00	0.00	0.00	0.00	0.00	0.00	130.35	0.00	0.	0.00
171	10.200	25.88	0.17	27.06	400.73	2.92	26.81	0.00	46.22	0.00	0.00	0.00	0.00	0.00	0.00	129.38	0.00	0.	0.00
172	10.100	25.88	0.17	27.04	400.41	2.94	26.66	0.00	45.92	0.00	0.00	0.00	0.00	0.00	0.00	128.41	0.00	0.	0.00
173	10.000	25.88	0.17	27.02	400.09	2.97	26.50	0.00	45.61	0.00	0.00	0.00	0.00	0.00	0.00	127.44	0.00	0.	0.00
174	9.900	25.88	0.17	27.00	399.77	2.99	26.34	0.00	45.31	0.00	0.00	0.00	0.00	0.00	0.00	126.47	0.00	0.	0.00
175	9.800	25.89	0.17	26.99	399.46	3.01	26.19	0.00	45.01	0.00	0.00	0.00	0.00	0.00	0.00	125.50	0.00	0.	0.00
176	9.700	25.89	0.17	26.97	399.14	3.03	26.03	0.00	44.71	0.00	0.00	0.00	0.00	0.00	0.00	124.53	0.00	0.	0.00
177	9.600	25.89	0.17	26.95	398.82	3.05	25.88	0.00	44.42	0.00	0.00	0.00	0.00	0.00	0.00	123.56	0.00	0.	0.00
178	9.500	25.89	0.17	26.93	398.51	3.07	25.73	0.00	44.12	0.00	0.00	0.00	0.00	0.00	0.00	122.59	0.00	0.	0.00
179	9.400	25.89	0.17	26.92	398.19	3.09	25.58	0.00	43.82	0.00	0.00	0.00	0.00	0.00	0.00	121.62	0.00	0.	0.00
180	9.300	25.89	0.17	26.90	397.88	3.11	25.43	0.00	43.53	0.00	0.00	0.00	0.00	0.00	0.00	120.65	0.00	0.	0.00
181	9.200	25.89	0.17	26.88	397.57	3.13	25.28	0.00	43.23	0.00	0.00	0.00	0.00	0.00	0.00	119.68	0.00	0.	0.00
182	9.100	25.90	0.17	26.86	397.25	3.14	25.13	0.00	42.94	0.00	0.00	0.00	0.00	0.00	0.00	118.71	0.00	0.	0.00
183	9.000	25.90	0.17	26.85	396.94	3.16	24.99	0.00	42.65	0.00	0.00	0.00	0.00	0.00	0.00	117.74	0.00	0.	0.00
184	8.900	25.90	0.16	26.83	396.63	3.18	24.84	0.00	42.36	0.00	0.00	0.00	0.00	0.00	0.00	116.76	0.00	0.	0.00
185	8.800	25.90	0.16	26.81	396.31	3.19	24.70	0.00	42.07	0.00	0.00	0.00	0.00	0.00	0.00	115.79	0.00	0.	0.00
186	8.700	25.90	0.16	26.80	396.00	3.21	24.56	0.00	41.78	0.00	0.00	0.00	0.00	0.00	0.00	114.82	0.00	0.	0.00
187	8.600	25.90	0.16	26.78	395.69	3.22	24.41	0.00	41.49	0.00	0.00	0.00	0.00	0.00	0.00	113.85	0.00	0.	0.00
188	8.500	25.90	0.16	26.76	395.38	3.23	24.27	0.00	41.20	0.00	0.00	0.00	0.00	0.00	0.00	112.88	0.00	0.	0.00
189	8.400	25.91	0.16	26.74	395.07	3.25	24.13	0.00	40.92	0.00	0.00	0.00	0.00	0.00	0.00	111.91	0.00	0.	0.00
190	8.300	25.91	0.16	26.73	394.76	3.26	23.99	0.00	40.63	0.00	0.00	0.00	0.00	0.00	0.00	110.94	0.00	0.	0.00
191	8.200	25.91	0.16	26.71	394.45	3.27	23.85	0.00	40.35	0.00	0.00	0.00	0.00	0.00	0.00	109.97	0.00	0.	0.00
192	8.100	25.91	0.16	26.69	394.14	3.28	23.70	0.00	40.05	0.00	0.00	0.00	0.00	0.00	0.00	109.00	0.00	0.	0.00



Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

REACH NO. 9 SCIVICQUE ROAD TO HIGHWAY 1032

GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
193	UPR RCH	0.15040	25.91	0.16	26.69	394.14	3.28	23.70	0.00	40.05	0.00	0.00	0.00	0.00	0.00	109.00	0.00	0.00
EACH	INCR	0.00010	25.91	0.16	0.00	0.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00
203	WSTLD	0.00140	26.18	0.00	10.70	324.60	5.51	13.92	0.00	13.92	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
193	8.10	8.00	0.15049	80.3	0.01822	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.143	0.018
194	8.00	7.90	0.15059	80.2	0.01823	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.143	0.018
195	7.90	7.80	0.15069	80.2	0.01825	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.143	0.018
196	7.80	7.70	0.15078	80.1	0.01826	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.143	0.018
197	7.70	7.60	0.15088	80.1	0.01827	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.143	0.018
198	7.60	7.50	0.15097	80.0	0.01828	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.144	0.018
199	7.50	7.40	0.15107	80.0	0.01829	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.144	0.018
200	7.40	7.30	0.15116	79.9	0.01830	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.144	0.018
201	7.30	7.20	0.15126	79.9	0.01832	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.144	0.018
202	7.20	7.10	0.15135	79.8	0.01833	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.144	0.018
203	7.10	7.00	0.15285	79.9	0.01851	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.145	0.019
204	7.00	6.90	0.15294	79.9	0.01852	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.145	0.019
205	6.90	6.80	0.15304	79.8	0.01853	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.145	0.019
206	6.80	6.70	0.15313	79.8	0.01854	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
207	6.70	6.60	0.15323	79.8	0.01855	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
208	6.60	6.50	0.15332	79.7	0.01857	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
209	6.50	6.40	0.15342	79.7	0.01858	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
210	6.40	6.30	0.15351	79.6	0.01859	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
211	6.30	6.20	0.15361	79.6	0.01860	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
212	6.20	6.10	0.15370	79.5	0.01861	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
213	6.10	6.00	0.15380	79.5	0.01862	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
214	6.00	5.90	0.15389	79.4	0.01864	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
215	5.90	5.80	0.15399	79.4	0.01865	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
216	5.80	5.70	0.15409	79.3	0.01866	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
217	5.70	5.60	0.15418	79.3	0.01867	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
218	5.60	5.50	0.15428	79.2	0.01868	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
219	5.50	5.40	0.15437	79.2	0.01869	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
220	5.40	5.30	0.15447	79.1	0.01870	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
221	5.30	5.20	0.15456	79.1	0.01872	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
222	5.20	5.10	0.15466	79.0	0.01873	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
223	5.10	5.00	0.15475	79.0	0.01874	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
224	5.00	4.90	0.15485	78.9	0.01875	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
225	4.90	4.80	0.15494	78.9	0.01876	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
226	4.80	4.70	0.15504	78.8	0.01877	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
227	4.70	4.60	0.15513	78.8	0.01878	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
228	4.60	4.50	0.15523	78.7	0.01880	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
229	4.50	4.40	0.15532	78.7	0.01881	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
230	4.40	4.30	0.15542	78.6	0.01882	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
231	4.30	4.20	0.15551	78.6	0.01883	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
232	4.20	4.10	0.15561	78.5	0.01884	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
233	4.10	4.00	0.15570	78.5	0.01885	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
193	8.000	25.95	0.16	26.68	393.88	3.26	23.28	0.00	39.62	0.00	0.00	0.00	0.00	0.00	0.00	108.93	0.00	0.	0.00
194	7.900	25.98	0.16	26.66	393.63	3.24	22.89	0.00	39.22	0.00	0.00	0.00	0.00	0.00	0.00	108.86	0.00	0.	0.00
195	7.800	26.02	0.16	26.64	393.38	3.23	22.50	0.00	38.82	0.00	0.00	0.00	0.00	0.00	0.00	108.79	0.00	0.	0.00
196	7.700	26.05	0.15	26.63	393.14	3.22	22.12	0.00	38.43	0.00	0.00	0.00	0.00	0.00	0.00	108.71	0.00	0.	0.00
197	7.600	26.09	0.15	26.61	392.89	3.21	21.75	0.00	38.05	0.00	0.00	0.00	0.00	0.00	0.00	108.64	0.00	0.	0.00
198	7.500	26.12	0.15	26.59	392.64	3.20	21.38	0.00	37.67	0.00	0.00	0.00	0.00	0.00	0.00	108.57	0.00	0.	0.00
199	7.400	26.16	0.15	26.57	392.39	3.19	21.03	0.00	37.30	0.00	0.00	0.00	0.00	0.00	0.00	108.50	0.00	0.	0.00
200	7.300	26.19	0.15	26.56	392.15	3.19	20.67	0.00	36.94	0.00	0.00	0.00	0.00	0.00	0.00	108.43	0.00	0.	0.00
201	7.200	26.23	0.14	26.54	391.90	3.19	20.33	0.00	36.58	0.00	0.00	0.00	0.00	0.00	0.00	108.36	0.00	0.	0.00
202	7.100	26.26	0.14	26.51	391.61	3.19	19.98	0.00	36.23	0.00	0.00	0.00	0.00	0.00	0.00	108.29	0.00	0.	0.00
203	7.000	26.30	0.14	26.36	390.79	3.20	19.60	0.00	35.83	0.00	0.00	0.00	0.00	0.00	0.00	108.21	0.00	0.	0.00
204	6.900	26.33	0.14	26.35	390.55	3.20	19.28	0.00	35.50	0.00	0.00	0.00	0.00	0.00	0.00	108.14	0.00	0.	0.00
205	6.800	26.37	0.14	26.33	390.31	3.20	18.96	0.00	35.17	0.00	0.00	0.00	0.00	0.00	0.00	108.07	0.00	0.	0.00
206	6.700	26.40	0.14	26.31	390.07	3.20	18.65	0.00	34.85	0.00	0.00	0.00	0.00	0.00	0.00	108.00	0.00	0.	0.00
207	6.600	26.44	0.14	26.30	389.82	3.21	18.34	0.00	34.53	0.00	0.00	0.00	0.00	0.00	0.00	107.93	0.00	0.	0.00
208	6.500	26.47	0.13	26.28	389.58	3.21	18.04	0.00	34.22	0.00	0.00	0.00	0.00	0.00	0.00	107.86	0.00	0.	0.00
209	6.400	26.51	0.13	26.27	389.34	3.21	17.75	0.00	33.92	0.00	0.00	0.00	0.00	0.00	0.00	107.79	0.00	0.	0.00
210	6.300	26.54	0.13	26.25	389.10	3.22	17.46	0.00	33.62	0.00	0.00	0.00	0.00	0.00	0.00	107.71	0.00	0.	0.00
211	6.200	26.58	0.13	26.23	388.86	3.22	17.17	0.00	33.32	0.00	0.00	0.00	0.00	0.00	0.00	107.64	0.00	0.	0.00
212	6.100	26.61	0.13	26.22	388.62	3.22	16.90	0.00	33.03	0.00	0.00	0.00	0.00	0.00	0.00	107.57	0.00	0.	0.00
213	6.000	26.65	0.12	26.20	388.37	3.23	16.62	0.00	32.75	0.00	0.00	0.00	0.00	0.00	0.00	107.50	0.00	0.	0.00
214	5.900	26.69	0.12	26.18	388.13	3.23	16.35	0.00	32.47	0.00	0.00	0.00	0.00	0.00	0.00	107.43	0.00	0.	0.00
215	5.800	26.72	0.12	26.17	387.89	3.24	16.09	0.00	32.19	0.00	0.00	0.00	0.00	0.00	0.00	107.36	0.00	0.	0.00
216	5.700	26.76	0.12	26.15	387.65	3.24	15.83	0.00	31.92	0.00	0.00	0.00	0.00	0.00	0.00	107.29	0.00	0.	0.00
217	5.600	26.79	0.12	26.14	387.41	3.25	15.57	0.00	31.66	0.00	0.00	0.00	0.00	0.00	0.00	107.21	0.00	0.	0.00
218	5.500	26.83	0.12	26.12	387.18	3.26	15.33	0.00	31.40	0.00	0.00	0.00	0.00	0.00	0.00	107.14	0.00	0.	0.00
219	5.400	26.86	0.12	26.10	386.94	3.26	15.08	0.00	31.14	0.00	0.00	0.00	0.00	0.00	0.00	107.07	0.00	0.	0.00
220	5.300	26.90	0.11	26.09	386.70	3.27	14.84	0.00	30.89	0.00	0.00	0.00	0.00	0.00	0.00	107.00	0.00	0.	0.00
221	5.200	26.93	0.11	26.07	386.46	3.27	14.60	0.00	30.64	0.00	0.00	0.00	0.00	0.00	0.00	106.93	0.00	0.	0.00
222	5.100	26.97	0.11	26.05	386.22	3.28	14.37	0.00	30.40	0.00	0.00	0.00	0.00	0.00	0.00	106.86	0.00	0.	0.00
223	5.000	27.00	0.11	26.04	385.98	3.29	14.14	0.00	30.16	0.00	0.00	0.00	0.00	0.00	0.00	106.79	0.00	0.	0.00
224	4.900	27.04	0.11	26.02	385.75	3.29	13.92	0.00	29.93	0.00	0.00	0.00	0.00	0.00	0.00	106.71	0.00	0.	0.00
225	4.800	27.07	0.11	26.01	385.51	3.30	13.70	0.00	29.70	0.00	0.00	0.00	0.00	0.00	0.00	106.64	0.00	0.	0.00
226	4.700	27.11	0.10	25.99	385.27	3.30	13.49	0.00	29.47	0.00	0.00	0.00	0.00	0.00	0.00	106.57	0.00	0.	0.00
227	4.600	27.14	0.10	25.97	385.04	3.31	13.27	0.00	29.25	0.00	0.00	0.00	0.00	0.00	0.00	106.50	0.00	0.	0.00
228	4.500	27.18	0.10	25.96	384.80	3.31	13.07	0.00	29.03	0.00	0.00	0.00	0.00	0.00	0.00	106.43	0.00	0.	0.00
229	4.400	27.21	0.10	25.94	384.56	3.32	12.86	0.00	28.82	0.00	0.00	0.00	0.00	0.00	0.00	106.36	0.00	0.	0.00
230	4.300	27.25	0.10	25.93	384.33	3.33	12.66	0.00	28.61	0.00	0.00	0.00	0.00	0.00	0.00	106.29	0.00	0.	0.00
231	4.200	27.28	0.10	25.91	384.09	3.33	12.47	0.00	28.40	0.00	0.00	0.00	0.00	0.00	0.00	106.21	0.00	0.	0.00
232	4.100	27.32	0.09	25.90	383.86	3.34	12.27	0.00	28.20	0.00	0.00	0.00	0.00	0.00	0.00	106.14	0.00	0.	0.00
233	4.000	27.35	0.09	25.88	383.62	3.34	12.08	0.00	27.99	0.00	0.00	0.00	0.00	0.00	0.00	106.07	0.00	0.	0.00
234	3.900	27.39	0.09	25.86	383.38	3.32	11.85	0.00	27.75	0.00	0.00	0.00	0.00	0.00	0.00	106.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
 REACH NO. 10 HIGHWAY 1032 TO RKM 0.8

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
235	UPR RCH	0.15580	27.39	0.09	25.86	383.38	3.32	11.85	0.00	27.75	0.00	0.00	0.00	0.00	0.00	106.00	0.00	0.00

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

EACH INCR 0.00010 27.39 0.09 0.00 0.00 0.00 3.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
235	3.90	3.80	0.15590	78.4	0.00476	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
236	3.80	3.70	0.15599	78.3	0.00476	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
237	3.70	3.60	0.15609	78.3	0.00476	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
238	3.60	3.50	0.15619	78.2	0.00477	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
239	3.50	3.40	0.15628	78.2	0.00477	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
240	3.40	3.30	0.15638	78.1	0.00477	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
241	3.30	3.20	0.15648	78.1	0.00478	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
242	3.20	3.10	0.15657	78.0	0.00478	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
243	3.10	3.00	0.15667	78.0	0.00478	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
244	3.00	2.90	0.15677	77.9	0.00478	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
245	2.90	2.80	0.15686	77.9	0.00479	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
246	2.80	2.70	0.15696	77.9	0.00479	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
247	2.70	2.60	0.15706	77.8	0.00479	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
248	2.60	2.50	0.15715	77.8	0.00480	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
249	2.50	2.40	0.15725	77.7	0.00480	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
250	2.40	2.30	0.15735	77.7	0.00480	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
251	2.30	2.20	0.15744	77.6	0.00481	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
252	2.20	2.10	0.15754	77.6	0.00481	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
253	2.10	2.00	0.15764	77.5	0.00481	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
254	2.00	1.90	0.15773	77.5	0.00481	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
255	1.90	1.80	0.15783	77.4	0.00482	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
256	1.80	1.70	0.15793	77.4	0.00482	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
257	1.70	1.60	0.15803	77.3	0.00482	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
258	1.60	1.50	0.15812	77.3	0.00483	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
259	1.50	1.40	0.15822	77.2	0.00483	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
260	1.40	1.30	0.15832	77.2	0.00483	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
261	1.30	1.20	0.15841	77.1	0.00483	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
262	1.20	1.10	0.15851	77.1	0.00484	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
263	1.10	1.00	0.15861	77.0	0.00484	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
264	1.00	0.90	0.15870	77.0	0.00484	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
265	0.90	0.80	0.15880	77.0	0.00485	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.084	0.005
TOT						7.47			101569.87	67087.12					
AVG					0.0048		1.51	21.64			32.76				
CUM						19.97									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAT	BOD#1 SETT	ABOD#1 DECAT	BOD#2 DECAT	BOD#2 SETT	ABOD#2 DECAT	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAT	ORGN SETT	NH3 DECAT	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAT	NCM DECAT	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
235	3.800	7.90	0.53	0.11	0.08	0.00	0.00	0.00	0.00	3.52	3.52	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
236	3.700	7.89	0.53	0.11	0.08	0.00	0.00	0.00	0.00	3.54	3.54	3.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
237	3.600	7.88	0.53	0.11	0.08	0.00	0.00	0.00	0.00	3.55	3.55	3.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
238	3.500	7.87	0.53	0.11	0.08	0.00	0.00	0.00	0.00	3.57	3.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
239	3.400	7.86	0.53	0.11	0.08	0.00	0.00	0.00	0.00	3.59	3.59	3.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	3.300	7.85	0.54	0.11	0.08	0.00	0.00	0.00	0.00	3.60	3.60	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
241	3.200	7.84	0.54	0.11	0.08	0.00	0.00	0.00	0.00	3.62	3.62	3.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
242	3.100	7.83	0.54	0.11	0.08	0.00	0.00	0.00	0.00	3.63	3.63	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

261	1.200	29.36	0.04	25.44	377.04	2.06	3.54	0.00	16.04	0.00	0.00	0.00	0.00	0.00	83.35	0.00	0.	0.00
262	1.100	29.43	0.04	25.42	376.81	2.07	3.38	0.00	15.76	0.00	0.00	0.00	0.00	0.00	82.52	0.00	0.	0.00
263	1.000	29.50	0.03	25.40	376.58	2.08	3.23	0.00	15.48	0.00	0.00	0.00	0.00	0.00	81.68	0.00	0.	0.00
264	0.900	29.58	0.03	25.39	376.35	2.10	3.10	0.00	15.22	0.00	0.00	0.00	0.00	0.00	80.84	0.00	0.	0.00
265	0.800	29.65	0.03	25.37	376.09	2.17	3.01	0.00	15.01	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
REACH NO. 11 RKM 0.8 TO GRAY'S CREEK LAKE GRAY'S CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
266	UPR RCH	0.15880	29.65	0.03	25.37	376.09	2.17	3.01	0.00	15.01	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00
EACH	INCR	0.00013	29.65	0.03	0.00	0.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
266	0.80	0.70	0.15892	76.9	0.00088	1.32	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
267	0.70	0.60	0.15905	76.8	0.00088	1.32	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
268	0.60	0.50	0.15917	76.8	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
269	0.50	0.40	0.15930	76.7	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
270	0.40	0.30	0.15942	76.7	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
271	0.30	0.20	0.15955	76.6	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
272	0.20	0.10	0.15967	76.5	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
273	0.10	0.00	0.15980	76.5	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
TOT						10.50			144597.12	48768.00					
AVG					0.0009		2.96	60.96			180.75				
CUM						30.47									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da
266	0.700	7.59	0.28	0.12	0.04	0.00	0.00	0.00	0.00	2.22	2.22	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
267	0.600	7.58	0.28	0.12	0.04	0.00	0.00	0.00	0.00	2.23	2.23	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
268	0.500	7.57	0.28	0.12	0.04	0.00	0.00	0.00	0.00	2.24	2.24	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
269	0.400	7.56	0.28	0.12	0.04	0.00	0.00	0.00	0.00	2.25	2.25	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	0.300	7.54	0.28	0.12	0.04	0.00	0.00	0.00	0.00	2.27	2.27	2.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
271	0.200	7.53	0.28	0.12	0.04	0.00	0.00	0.00	0.00	2.28	2.28	2.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
272	0.100	7.52	0.29	0.12	0.04	0.00	0.00	0.00	0.00	2.29	2.29	2.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
273	0.000	7.51	0.29	0.12	0.04	0.00	0.00	0.00	0.00	2.31	2.31	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	20 DEG C RATE		0.24	0.08	0.03	0.00	0.00	0.00	0.00	1.20			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00

\* g/m²/d      \*\* mg/L/day

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
266	0.700	29.74	0.03	25.35	375.78	2.55	3.20	0.00	14.14	0.00	0.00	0.00	0.00	0.00	0.00	72.93	0.00	0.	0.00
267	0.600	29.83	0.03	25.33	375.47	2.79	3.35	0.00	13.23	0.00	0.00	0.00	0.00	0.00	0.00	65.85	0.00	0.	0.00
268	0.500	29.92	0.03	25.31	375.12	2.96	3.47	0.00	12.29	0.00	0.00	0.00	0.00	0.00	0.00	58.78	0.00	0.	0.00
269	0.400	30.01	0.02	25.27	374.60	3.06	3.57	0.00	11.33	0.00	0.00	0.00	0.00	0.00	0.00	51.70	0.00	0.	0.00
270	0.300	30.11	0.02	25.18	373.34	3.13	3.66	0.00	10.35	0.00	0.00	0.00	0.00	0.00	0.00	44.62	0.00	0.	0.00
271	0.200	30.20	0.02	24.87	368.85	3.19	3.73	0.00	9.36	0.00	0.00	0.00	0.00	0.00	0.00	37.55	0.00	0.	0.00
272	0.100	30.29	0.02	23.57	350.48	3.35	3.84	0.00	8.41	0.00	0.00	0.00	0.00	0.00	0.00	30.48	0.00	0.	0.00
273	0.000	30.38	0.02	18.06	272.20	4.26	4.16	0.00	7.67	0.00	0.00	0.00	0.00	0.00	0.00	23.40	0.00	0.	0.00

STREAM SUMMARY  
 HEADWATER

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK FINAL CALIBRATION RUN

TRAVEL TIME	=	30.47	DAYS
MAXIMUM EFFLUENT	=	90.08	PERCENT
FLOW	=	0.00313	TO 0.15980 m³/s
DISPERSION	=	0.0265	TO 0.5756 m²/s
VELOCITY	=	0.00088	TO 0.18027 m/s
DEPTH	=	0.03	TO 2.96 m
WIDTH	=	1.52	TO 60.96 m
BOD DECAY	=	0.06	TO 0.12 per day
NH3 DECAY	=	0.00	TO 0.00 per day
SOD	=	1.42	TO 7.49 g/m²/d
NH3 SOURCE	=	0.00	TO 0.00 g/m²/d
REAERATION	=	0.28	TO 28.87 per day
BOD SETTLING	=	0.04	TO 2.40 per day
NBOD DECAY	=	0.00	TO 0.00 per day
NBOD SETTLING	=	0.00	TO 0.00 per day
TEMPERATURE	=	25.31	TO 30.38 deg C
DISSOLVED OXYGEN	=	0.54	TO 4.57 mg/L

.....EXECUTION COMPLETED

## **Appendix B2 – Calibration Justification**



<b>Gray's Creek 040304 Calibration Justification</b>			
<b>DATA TYPE 3 - PROGRAM CONSTANTS</b>			
<b>CONSTANT NAME</b>	<b>VALUE</b>	<b>UNITS</b>	<b>DATA SOURCE</b>
KL MINIMUM	0.7	m/day	The minimum KL of 2.3 ft/day converted to 0.70 m/day.
INHIBITION CONTROL VALUE	3		The water column dissolved oxygen demand is assumed to come primarily from facultative bacteria under anoxic conditions and SOD is not influenced by modeled dissolved oxygen levels in the upper water column.
K2 MAXIMUM	25	1/day at 20 deg C	EPA Policy in the absence of a measured value.
HYDRAULIC CALCULATION METHOD	2		The low slopes in this waterbody cause a substantial amount of water to be present during critical flow conditions. This method allows the model to predict a more accurate depth and width during low flow conditions.
SETTLING RATE UNITS	1		By making the settling rate a velocity the rate becomes dependent upon the depth.
DISPERSION EQUATION	3		Equation used to account for all modes of transport.
ALGAE OXYGEN PROD	0		Standard practice for steady state calibration to a wide variation in DO.
EFFECTIVE BOD DUE TO ALGAE	0.15		Standard practice for steady state calibration to a wide variation in DO.
B1 OXYGEN DEPENDENCE THRESHOLD	1		Adjustment for effluent dominated stream.
B2 OXYGEN DEPENDENCE THRESHOLD	1		Adjustment for effluent dominated stream.

<b>Gray's Creek 040304 Calibration Justification</b>						
<b>DATA TYPE 8 - REACH IDENTIFICATION DATA</b>						
<b>Reach</b>	<b>ID</b>	<b>Name</b>	<b>Upstream River Kilometer</b>	<b>Downstream River Kilometer</b>	<b>Element Length, meters</b>	<b>Data Source</b>
1	GC	GRAY'S CREEK CANAL TO HWY 190	27.3	26.2	100.0000	ARC MAP Calc.
2	GC	HWY 190 TO FORREST DELATTE ROAD	26.2	22.4	100.0000	ARC MAP Calc.
3	GC	FORREST DELATTE ROAD TO WAX ROAD	22.4	20.6	100.0000	ARC MAP Calc.
4	GC	DENHAM SPRINGS POTW	20.6	20.5	100.0000	ARC MAP Calc.
5	GC	DENHAM SPRINGS POTW TO WAX ROAD	20.5	19.7	100.0000	ARC MAP Calc.
6	GC	WAX ROAD TO HWY 1026	19.7	17.6	100.0000	ARC MAP Calc.
7	GC	HWY 1026 TO HWY 1033	17.6	11.5	100.0000	ARC MAP Calc.
8	GC	HWY 1033 TO SCIVICQUE ROAD	11.5	8.1	100.0000	ARC MAP Calc.
9	GC	SCIVICQUE ROAD TO HWY 1032	8.1	3.9	100.0000	ARC MAP Calc.
10	GC	HWY 1032 TO RKM 0.8	3.9	0.8	100.0000	ARC MAP Calc.
11	GC	RKM 0.8 TO GRAYS CREEK LAKE	0.8	0.0	100.0000	ARC MAP Calc.

Gray's Creek 040304 Calibration Justification									
Data Type 9 - Advective Hydraulic Coefficients									
Reach	Name	Width Coeff. "a"	Width Exp. "b"	Width Const. "c"	Data Source	Depth Coeff. "d"	Depth Exp. "e"	Depth Const. "f"	Data Source
1	GRAY'S CREEK CANAL TO HWY 190	0	0.2	1.524	GC09	0	0.3	0.025	GC09
2	HWY 190 TO FORREST DELATTE ROAD	0	0.2	2.832	GC08	0	0.3	0.494	GC08
3	FORREST DELATTE ROAD TO WAX ROAD	0	0.2	4.877	GC07	0	0.3	0.247	GC07
4	DENHAM SPRINGS POTW	0	0.2	4.877	GC07	0	0.3	0.247	GC07
5	DENHAM SPRINGS POTW TO WAX ROAD	0	0.2	4.877	GC07	0	0.3	0.247	GC07
6	WAX ROAD TO HWY 1026	0	0.2	5.486	GC06	0	0.3	0.312	GC06
7	HWY 1026 TO HWY 1033	0	0.2	3.353	GC04	0	0.3	0.271	GC04
8	HWY 1033 TO SCVICQUE ROAD	0	0.2	5.182	GC03	0	0.3	0.161	GC03
9	SCVICQUE ROAD TO HWY 1032	0	0.2	14.021	GC02	0	0.3	0.589	GC02
10	HWY 1032 TO RKM 0.8	0	0.2	21.641	GC01	0	0.3	1.514	GC01
11	RKM 0.8 TO GRAYS CREEK LAKE	0	0.2	60.960	GCL01	0	0.3	2.965	GCL01

Gray's Creek 040304 Calibration Justification							
DATA TYPE 10 - DISPERSIVE HYDRAULIC COEFFICIENTS							
Reach	Tidal Range	Data Source	a	b	c	d	Data Source
1	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
2	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
3	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
4	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
5	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
6	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
7	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
8	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
9	1.0	Calibration	12.20	0.8333	0.0	1.0	Constant values used for advective dispersion
10	1.0	Calibration	12.20	0.8333	0.0	1.0	Constant values used for advective dispersion
11	1.0	Calibration	12.20	0.8333	0.0	1.0	Constant values used for advective dispersion

Gray's Creek 040304 Calibration Justification								
DATA TYPE 11-INITIAL CONDITIONS								
Reach	Name	Temp, deg C	Sal, ppt	Data Source	DO, mg/l	Data Source	Chlorophyll a	Data Source
1	GRAY'S CREEK CANAL TO HWY 190	27.73	0.19	Cont Mont Avg (GC09, GC10)	3.23	Cont Mont (Min + 1) Avg (GC09, GC10)	5.4	GC10
2	HWY 190 TO FORREST DELATTE ROAD	27.19	0.16	Cont Mont Avg (GC08, GC09)	2.89	Cont Mont (Min + 1) Avg (GC08, GC09)	2.8	GC09
3	FORREST DELATTE ROAD TO WAX ROAD	25.85	0.18	Cont Mont Avg (GC07, GC08)	1.18	Cont Mont (Min + 1) Avg (GC07, GC08)	1.1	GC08
4	DENHAM SPRINGS POTW	25.85	0.18	Cont Mont Avg (GC07, GC08)	1.18	Cont Mont (Min + 1) Avg (GC07, GC08)	1.1	GC08
5	DENHAM SPRINGS POTW TO WAX ROAD	25.85	0.18	Cont Mont Avg (GC07, GC08)	1.18	Cont Mont (Min + 1) Avg (GC07, GC08)	237.0	GC07
6	WAX ROAD TO HWY 1026	25.48	0.21	Cont Mont Avg (GC06, GC07)	1.08	Cont Mont (Min + 1) Avg (GC06, GC07)	237	GC07
7	HWY 1026 TO HWY 1033	25.31	0.21	Cont Mont Avg (GC04, GC06)	1.77	Cont Mont (Min + 1) Avg (GC04, GC06)	259	GC06
8	HWY 1033 TO SCIVICQUE ROAD	25.86	0.18	Cont Mont Avg (GC03, GC04)	2.88	Cont Mont (Min + 1) Avg (GC03, GC04)	142	GC04
9	SCIVICQUE ROAD TO HWY 1032	25.91	0.16	Cont Mont Avg (GC02, GC03)	3.29	Cont Mont (Min + 1) Avg (GC02, GC03)	109	GC03
10	HWY 1032 TO RKM 0.8	27.39	0.09	Cont Mont Avg (GC01, GC02)	2.71	Cont Mont (Min + 1) Avg (GC01, GC02)	106	GC02
11	RKM 0.8 TO GRAYS CREEK LAKE	29.65	0.03	Cont Mont Avg (GCL01, GC01)	4.56	Cont Mont (Min + 1) Avg (GCL01, GC01)	80.0	GC01

<b>Gray's Creek 040304 Calibration Justification</b>					
		<b>DATA TYPE 12 - REAERATION, SEDIMENT OXYGEN DEMAND AND BOD COEFFICIENTS</b>			
<b>REACH</b>	<b>NAME</b>	<b>K2 OPT</b>	<b>Data Source</b>	<b>BKGRND SOD, gmO2/m2/day at 20 deg C</b>	<b>Data Source</b>
1	GRAY'S CREEK CANAL TO HWY 190	11	Texas Equation	0.90	Calibration
2	HWY 190 TO FORREST DELATTE ROAD	11	Texas Equation	3.30	Calibration
3	FORREST DELATTE ROAD TO WAX ROAD	11	Texas Equation	4.00	Calibration
4	DENHAM SPRINGS POTW	11	Texas Equation	4.80	Calibration
5	DENHAM SPRINGS POTW TO WAX ROAD	11	Texas Equation	5.20	Calibration
6	WAX ROAD TO HWY 1026	11	Texas Equation	4.10	Calibration
7	HWY 1026 TO HWY 1033	11	Texas Equation	3.60	Calibration
8	HWY 1033 TO SCIVICQUE ROAD	11	Texas Equation	3.20	Calibration
9	SCIVICQUE ROAD TO HWY 1032	11	Texas Equation	1.80	Calibration
10	HWY 1032 TO RKM 0.8	11	Texas Equation	2.20	Calibration
11	RKM 0.8 TO GRAYS CREEK LAKE	11	Texas Equation	1.20	Calibration

<b>Gray's Creek 040304 Calibration Justification</b>		<b>Gray's Creek 040304 Calibration Justification</b>			
		<b>DATA TYPE 12 - REAERATION, SEDIMENT OXYGEN DEMAND AND BOD COEFFICIENTS</b>			
<b>REACH</b>	<b>NAME</b>	<b>Aerobic UBOD Dec Rate (1/day)</b>	<b>Data Source</b>	<b>UBOD SETT RATE (1/day)</b>	<b>Data Source</b>
1	GRAY'S CREEK CANAL TO HWY 190	0.0750	Calibration	0.05	Calibration
2	HWY 190 TO FORREST DELATTE ROAD	0.0750	Calibration	0.05	Calibration
3	FORREST DELATTE ROAD TO WAX ROAD	0.0750	Calibration	0.05	Calibration
4	DENHAM SPRINGS POTW	0.0750	Calibration	0.10	Calibration
5	DENHAM SPRINGS POTW TO WAX ROAD	0.0750	Calibration	0.10	Calibration
6	WAX ROAD TO HWY 1026	0.0750	Calibration	0.10	Calibration
7	HWY 1026 TO HWY 1033	0.0750	Calibration	0.10	Calibration
8	HWY 1033 TO SCIVICQUE ROAD	0.0750	Calibration	0.10	Calibration
9	SCIVICQUE ROAD TO HWY 1032	0.0750	Calibration	0.10	Calibration
10	HWY 1032 TO RKM 0.8	0.0750	Calibration	0.10	Calibration
11	RKM 0.8 TO GRAYS CREEK LAKE	0.0750	Calibration	0.10	Calibration

Gray's Creek 040304 Calibration Justification										
DATA TYPES 16 - INCREMENTAL DATA FOR TEMP AND CONS										
Reach	Reach Name	Incr. Outflow, m3	Incr. Inflow, m3	Data Source	Temp	Salinity ppt	Data Source	Chl	Cond	Data Source
1	GRAY'S CREEK CANAL TO HWY 190		0.0036	Calibration	27.73	0.19	Cont Mont Avg (GC09, GC10)	53	580	Calibration
2	HWY 190 TO FORREST DELATTE ROAD		0.0041	Calibration	27.19	0.16	Cont Mont Avg (GC08, GC09)	24	230	Calibration
3	FORREST DELATTE ROAD TO WAX ROAD		0.0028	Calibration	25.85	0.18	Cont Mont Avg (GC07, GC08)	50	0	Calibration
4	DENHAM SPRINGS POTW		0.0000	Calibration	25.48	0.21	Cont Mont Avg (GC06, GC07)	100	0	Calibration
5	DENHAM SPRINGS POTW TO WAX ROAD		0.0013	Calibration	25.48	0.21	Cont Mont Avg (GC06, GC07)	100	200	Calibration
6	WAX ROAD TO HWY 1026		0.0030	Calibration	25.48	0.21	Cont Mont Avg (GC06, GC07)	30	170	Calibration
7	HWY 1026 TO HWY 1033		0.0080	Calibration	25.31	0.21	Cont Mont Avg (GC04, GC06)	5	50	Calibration
8	HWY 1033 TO SCIVICQUE ROAD		0.0040	Calibration	25.86	0.18	Cont Mont Avg (GC03, GC04)	5	0	Calibration
9	SCIVICQUE ROAD TO HWY 1032		0.0040	Calibration	25.91	0.16	Cont Mont Avg (GC02, GC03)	0	0	Calibration
10	HWY 1032 TO RKM 0.8		0.0030	Calibration	27.39	0.09	Cont Mont Avg (GC01, GC02)	0	0	Calibration
11	RKM 0.8 TO GRAYS CREEK LAKE		0.0010	Calibration	29.65	0.03	Cont Mont Avg (GCL01, GC01)	0	0	Calibration

<b>Gray's Creek 040304 Calibration Justification</b>					
<b>DATA TYPES 17 - INCREMENTAL DATA FOR DO, BOD, AND NITROGEN</b>					
<b>Reach</b>	<b>Reach Name</b>	<b>DO, mg/l</b>	<b>Data Source</b>	<b>BOD, mg/l</b>	<b>Data Source</b>
1	GRAY'S CREEK CANAL TO HWY 190			3.000	Best Professional Judgement
2	HWY 190 TO FORREST DELATTE ROAD			3.000	Best Professional Judgement
3	FORREST DELATTE ROAD TO WAX ROAD			3.000	Best Professional Judgement
4	DENHAM SPRINGS POTW			3.000	Best Professional Judgement
5	DENHAM SPRINGS POTW TO WAX ROAD			3.000	Best Professional Judgement
6	WAX ROAD TO HWY 1026			3.000	Best Professional Judgement
7	HWY 1026 TO HWY 1033			3.000	Best Professional Judgement
8	HWY 1033 TO SCIVICQUE ROAD			3.000	Best Professional Judgement
9	SCIVICQUE ROAD TO HWY 1032			3.000	Best Professional Judgement
10	HWY 1032 TO RKM 0.8			3.000	Best Professional Judgement
11	RKM 0.8 TO GRAYS CREEK LAKE			3.000	Best Professional Judgement



<b>Gray's Creek 040304 Calibration Justification</b>				
<b>DATA TYPE 19 - NONPOINT SOURCES</b>				
<b>Reach</b>	<b>Reach Name</b>	<b>Length of Reach, km</b>	<b>UBOD, kg/day</b>	<b>Data Source</b>
1	GRAY'S CREEK CANAL TO HWY 190	1.10	2.50	Calibration
2	HWY 190 TO FORREST DELATTE ROAD	3.80	17.00	Calibration
3	FORREST DELATTE ROAD TO WAX ROAD	1.80	5.00	Calibration
4	DENHAM SPRINGS POTW	0.10	3.00	Calibration
5	DENHAM SPRINGS POTW TO WAX ROAD	0.80	8.00	Calibration
6	WAX ROAD TO HWY 1026	2.10	1.00	Calibration
7	HWY 1026 TO HWY 1033	6.10	0.00	Calibration
8	HWY 1033 TO SCIVICQUE ROAD	3.40	1.00	Calibration
9	SCIVICQUE ROAD TO HWY 1032	4.20	25.00	Calibration
10	HWY 1032 TO RKM 0.8	3.10	1.00	Calibration
11	RKM 0.8 TO GRAYS CREEK LAKE	0.80	95.00	Calibration

Gray's Creek 040304 Calibration Justification									
DATA TYPES 20 - HEADWATER DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES									
Headwater Name	Element No.	Logical Unit Number	Headwater Flow, cms	Data Source	Temp, deg C	Salinity	Chlorides	Conductivity	Data Source
Headwater 1	1	1	0.0028	Minimal headwater flow	26.69	0.2	6.90	83.7	TEMP - CONT MONT AVG (GC01) SALINITY - CONT MONT AVG (GC01) CHLORIDE - LAB DATA (GC01) CONDUCTIVITY - INSITU (GC01)

Gray's Creek 040304 Calibration Justification			
DATA TYPES 21 - HEADWATER DATA FOR DO, BOD, AND NITROGEN			
Headwater Name	Dissolved Oxygen, mg/L	UBOD, mg/l	Data Source
Headwater 1	1.91	9.571	DO - CONT MONT AVG MIN (GC01) +1 BOD - (GC01)

<b>Gray's Creek 040304 Calibration Justification</b>								
<b>DATA TYPES 24 - WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES</b>								
<b>Wasteload / Withdrawal Name</b>	<b>EL #</b>	<b>Flow, cms</b>	<b>Data Source</b>	<b>Temperature, deg C</b>	<b>Salinity</b>	<b>Chlorides</b>	<b>Conductivity</b>	<b>Data Source</b>
UT#6 & Penny MHP	36	0.0019	Average flow from DMR's used.	24.61	0	8.5	278.5	UT#6
UT#5 & Cluster 3	53	0.0011	Average flow from DMR's used.	25.09	0	17.1	255.4	UT#5
Denham Springs POTW	68	0.1178	Average flow from DMR's used.	30	0	27.6	458.7	LTP
UT# 2	203	0.0014	Average flow from DMR's used.	26.18	0	10.7	324.6	UT#2

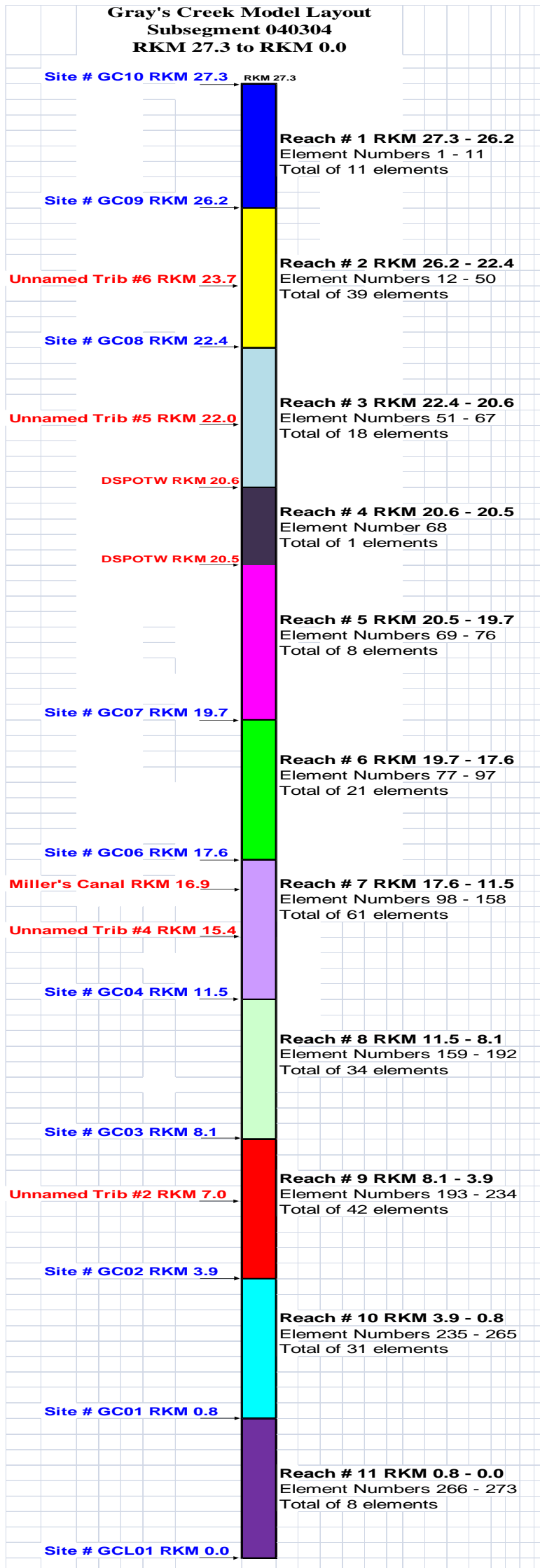
<b>Gray's Creek 040304 Calibration Justification</b>					
<b>DATA TYPES 25 - WASTELOAD DATA FOR DO, BOD, AND NITROGEN</b>					
<b>Wasteload / Withdrawal Name</b>	<b>EL #</b>	<b>DO, mg/l</b>	<b>Data Source</b>	<b>UBOD, mg/l</b>	<b>Data Source</b>
UT#6 & Penny MHP	36	2.84	UT#6	12.8725	UT#6
UT#5 & Cluster 3	53	2.82	UT#5	17.7005	UT#5
Denham Springs POTW	68	2.00	LTP	52.1253	DMR Averages
UT# 2	203	5.51	UT#2	13.9210	UT#2

<b>Gray's Creek 040304 Calibration Justification</b>							
<b>DATA TYPES 26 - WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES</b>							
<b>Wasteload / Withdrawal Name</b>	<b>EL #</b>	<b>Chl a, ug/L</b>	<b>Data Source</b>	<b>Phosphorus</b>	<b>Coliform</b>	<b>Nonconservatives</b>	<b>Data Source</b>
UT#6 & Penny MHP	36	5.4	UT#6				
UT#5 & Cluster 3	53	6.3	UT#5				
Denham Springs POTW	68	0					
UT# 2	203	2.6	UT#2				

<b>Gray's Creek 040304 Calibration Justification</b>			
<b>DATA TYPES 27 - LOWER BOUNDARY CONDITIONS</b>			
<b>Parameter</b>	<b>Value</b>	<b>Units</b>	<b>Data Source</b>
TEMPERATURE	30.3800	°C	GCL01 Cont Mont
SALINITY	0.0200	ppt	GCL01 Cont Mont
CHLORIDES	6.2000	ppm	GCL01 Lab Data
CONDUCTIVITY	103.8000	umhos/cm	GCL01 Insitu
DISSOLVED OXYGEN	7.0000	mg/L	GCL01 Cont Mont Min + 1
CBOD1	8.4326	mg/L	GCL01 Lab Data
CBOD2	0.0000	mg/L	GCL01 Lab Data
CHLOROPHYLL A	23.4000	ug/L	GCL01 Lab Data
NBOD	0.0000	mg/L	GCL01 Lab Data

## **Appendix C - Calibration Model Development**

**Appendix C1 – Vector Diagram**





**Appendix C2 – Reach Setup**

Gray's Creek 040304					Modeled Length	Element Length				
Reach #	Description	Headwater Yes/No	Starting modeled Kilometer	Ending modeled Kilometer	kilometers	kilometers	Element Count	Cumulative Elements	Begin Element #	End Element #
1	Gray's Creek Canal to Hwy 190	Yes	27.3	26.2	1.1	0.100	11	11	1	11
2	Hwy 190 to Forrest Delatte Road	No	26.2	22.4	3.9	0.100	39	50	12	50
3	Forrest Delatte Road to DSPOTW	No	22.4	20.6	1.8	0.100	18	67	51	67
4	DSPOTW	No	20.6	20.5	0.1	0.100	1	68	68	68
5	DSPOTW to Wax Road	No	20.5	19.7	0.8	0.100	8	76	69	76
6	Wax Road to Hwy 1026	No	19.7	17.6	2.1	0.100	21	97	77	97
7	Hwy 1026 to Hwy 1033	No	17.6	11.5	6.1	0.100	61	158	98	158
8	Hwy 1033 to Scivicque Road	No	11.5	8.1	3.4	0.100	34	192	159	192
9	Scivicque Road to Hwy 1032	No	8.1	3.9	4.2	0.100	42	234	193	234
10	Hwy 1032 to RKM 0.8	No	3.9	0.8	3.1	0.100	31	265	235	265
11	RKM 0.8 to Gray's Creek Lake	No	0.8	0.0	0.8	0.100	8	273	266	273

**Appendix C3 –**

**Calibration Loading**

### Calibration Model Non-Point Load Equivalent Calculations:

Modeled stream or water body: **GRAY'S CREEK (SUBSEGMENT 040304)**

Shaded cells are input values for calculations. If modeling the nitrogen series, be sure that column "T" is clear of all values.

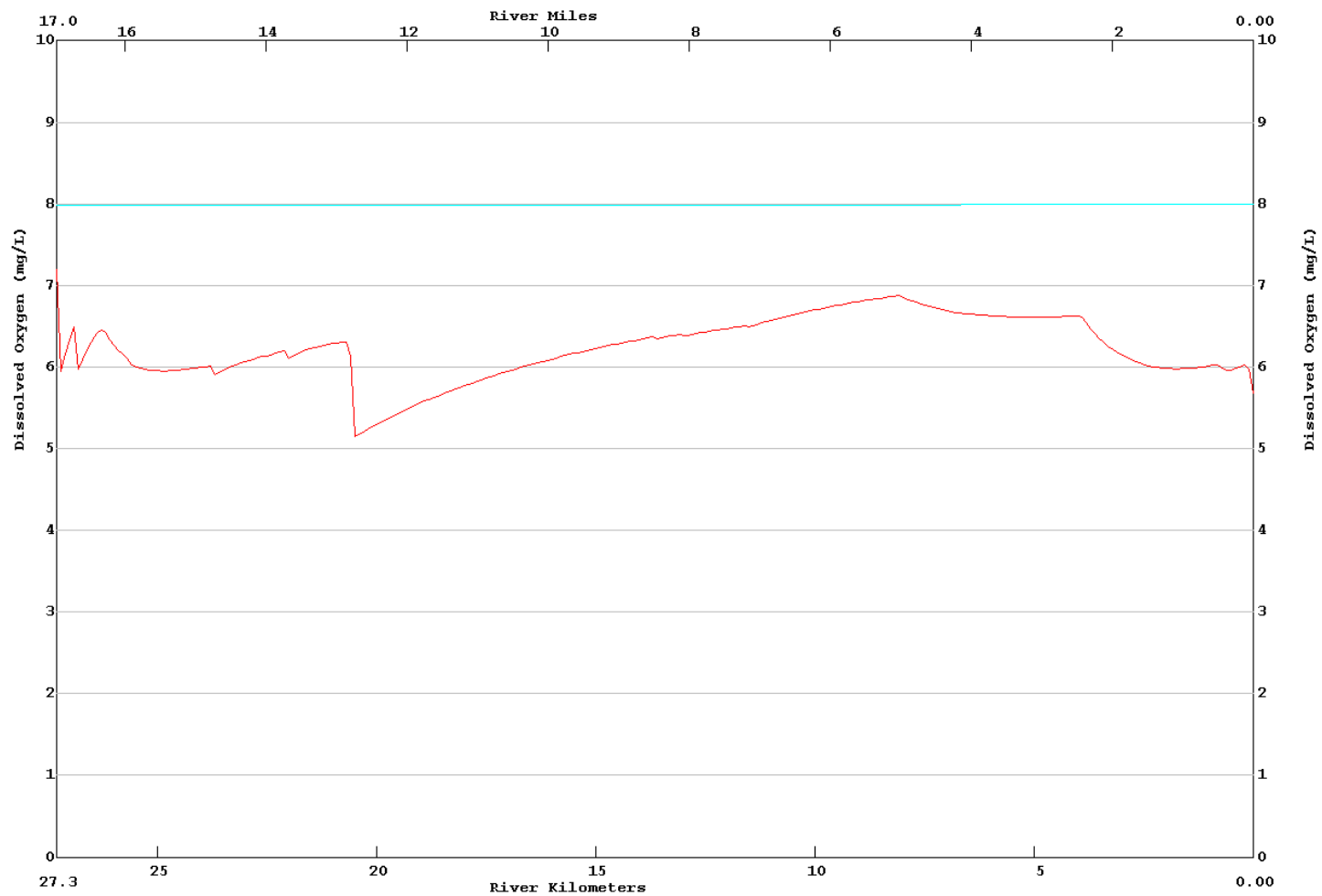
REACH NUMBER & DESCRIPTION	Calibration Model Reach Length	Calibration Model Average Reach Width	Calibration Model UBOD Nonpoint loading	Calibration Model UBOD Nonpoint loading	Calibration Model SOD	Calibration Model TOTAL Benthic Load
	km	meters	kg O <sub>2</sub> /day	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]
REACH 1 - GRAY'S CREEK CANAL TO HWY 190	1.10	1.524	2.50	1.491	0.90	<b>0.90</b>
REACH 2 - HWY 190 TO FORREST DELATTE ROAD	3.86	2.832	17.00	1.554	3.30	<b>3.30</b>
REACH 3 - FORREST DELATTE ROAD JUST ABOVE DENHAM SPRINGS POTW	1.76	4.877	5.00	0.583	4.00	<b>4.00</b>
REACH 4 - DENHAM SPRINGS POTW	0.10	4.877	3.00	6.151	4.80	<b>4.80</b>
REACH 5 - JUST BELOW DENHAM SPRINGS POTW TO WAX ROAD	0.80	4.877	8.00	2.050	5.20	<b>5.20</b>
REACH 6 - WAX ROAD TO HWY 1026	2.10	5.486	1.00	0.087	4.10	<b>4.10</b>
REACH 7 - HWY 1026 TO HWY 1033	6.10	3.353	0.00	0.000	3.60	<b>3.60</b>
REACH 8 - HWY 1033 TO SCVICQUE ROAD	3.40	5.182	1.00	0.057	3.20	<b>3.20</b>
REACH 9 - SCVICQUE ROAD TO HWY 1032	4.20	14.021	25.00	0.425	1.80	<b>1.80</b>
REACH 10 - HWY 1032 TO RKM 0.8	3.10	21.641	1.00	0.015	2.20	<b>2.20</b>
REACH 11 - RKM 0.8 TO GRAYS CREEK LAKE	0.80	60.960	95.00	1.948	1.20	<b>1.20</b>

**Appendix D – Projection Model Input and Output Data Sets**

**Appendix D1 –Summer 85% Reduction Output Graphs and Input, Overlay, and Output Files**

Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

LA-QUAL Version 8.11 Run at 07:13 on 08/24/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graysum85.txt  
GRAY'S CREEK SUMMER RUN min= 5.15 max= 7.20  
GRAY'S CREEK WATERSHED MODEL



Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

### GRAYS CREEK 040304 85% REDUCTION SUMMER PROJECTION INPUT DATA SET

```
CNTROL01      GRAY'S CREEK WATERSHED MODEL
CNTROL02      GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint
CNTROL04 YES  METRIC UNITS
ENDATA01
MODOPT01 NO  TEMPERATURE
MODOPT02 NO  SALINITY
MODOPT03 YES  CONSERVATIVE MATERIAL I = CHLORIDES           IN MG/L
MODOPT04 YES  CONSERVATIVE MATERIAL II = CONDUCTIVITY      IN MG/L
MODOPT05 YES  DISSOLVED OXYGEN
MODOPT06 YES  BOD1 BIOCHEMICAL OXYGEN DEMAND
MODOPT06 NO  BOD2 BIOCHEMICAL OXYGEN DEMAND
MODOPT08 NO  NBOD OXYGEN DEMAND
MODOPT10 NO  PHOSPHORUS
MODOPT11 NO  CHLOROPHYLL A
MODOPT12 NO  MACROPHYTES
MODOPT13 NO  COLIFORM
ENDATA02
PROGRAM  KL MINIMUM           =      0.7
PROGRAM  INHIBITION CONTROL VALUE =      3.
PROGRAM  K2 MAXIMUM           =     25.0
PROGRAM  HYDRAULIC CALCULATION METHOD =      2.
PROGRAM  SETTLING RATE UNITS   =      1.
PROGRAM  DISPERSION EQUATION   =      3.
PROGRAM  ALGAE OXYGEN PROD     =      0.0
PROGRAM  EFFECTIVE BOD DUE TO ALGAE =     0.15
PROGRAM  B1 OXYGEN DEPENDENCE THRESHOLD =     1.0
PROGRAM  B2 OXYGEN DEPENDENCE THRESHOLD =     1.0
PROGRAM  MAXIMUM ITERATION LIMIT =    1000.0
ENDATA03
!Temperature Correction Constants
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          *****
ENDATA04
ENDATA05
ENDATA06
ENDATA07
!Reach Identification Data
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
```



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

```

!
!      ***  --  *****-----*****-----
!      R#  ID  SITE NAME                RKM      RKM      LENGTH
REACH ID  1  GC GRAY'S CREEK CANAL TO HWY 190    27.3     26.2     0.1
REACH ID  2  GC HIGHWAY 190 TO FORREST DELATTE    26.2     22.4     0.1
REACH ID  3  GC FORREST DELATTE ROAD TO DSPOTW     22.4     20.6     0.1
REACH ID  4  GC DENHAM SPRINGS POTW                 20.6     20.5     0.1
REACH ID  5  GC DENHAM SPRINGS POTW TO WAX ROAD        20.5     19.7     0.1
REACH ID  6  GC WAX ROAD TO HIGHWAY 1026               19.7     17.6     0.1
REACH ID  7  GC HIGHWAY 1026 TO HIGHWAY 1033           17.6     11.5     0.1
REACH ID  8  GC HIGHWAY 1033 TO SCIVICQUE ROAD         11.5      8.1     0.1
REACH ID  9  GC SCIVICQUE ROAD TO HIGHWAY 1032        8.1      3.9     0.1
REACH ID 10  GC HIGHWAY 1032 TO RKM 0.8                3.9      0.8     0.1
REACH ID 11  GC RKM 0.8 TO GRAY'S CREEK LAKE         0.8      0.0     0.1
ENDATA08
  
```

!Advective Hydraulic Coefficients

```

!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!      ***  -----*****-----*****-----*****
!
!      a      b      c      d      e      f
!      WIDTH  WIDTH  WIDTH DEPTH  DEPTH  DEPTH
!      R#  COEFF  EXP   CONST COEFF  EXP   CONST SLOPE MANNING
! Reach 1 - GC09
HYDR-1   1  0.00  0.20   1.524 0.00   0.30   0.025
! Reach 2 - GC08
HYDR-1   2  0.00  0.20   2.832 0.00   0.30   0.494
! Reach 3 - GC07 - Above Denham Springs POTW discharge
HYDR-1   3  0.00  0.20   4.877 0.00   0.30   0.247
! Reach 4 - Denham Springs POTW discharge
HYDR-1   4  0.00  0.20   4.877 0.00   0.30   0.247
! Reach 5 - GC07 - Below Denham Springs POTW discharge
HYDR-1   5  0.00  0.20   4.877 0.00   0.30   0.247
! Reach 6 - GC06
HYDR-1   6  0.00  0.20   5.486 0.00   0.30   0.312
! Reach 7 - GC04
HYDR-1   7  0.00  0.20   3.353 0.00   0.30   0.271
! Reach 8 - GC03
HYDR-1   8  0.00  0.20   5.182 0.00   0.30   0.161
! Reach 9 - GC02
HYDR-1   9  0.00  0.20  14.021 0.00   0.30   0.589
! Reach 10 - GC01
HYDR-1  10  0.00  0.20  21.641 0.00   0.30   1.514
! Reach 11 - GCL01
  
```

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

HYDR-1 11 0.00 0.20 60.960 0.00 0.30 2.965

ENDATA09

!Dispersive Hydraulic Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

!There were two dye studies done. One was toward the top of the survey and the other toward the bottom.

!The dispersion calculated from the dye study was entered into the overlay file under code 32.

!The range was set to the RKM of the most upstream dye sample site to the most downstream dye sample site  
!for Run 3.

!For the purposes of this TMDL the Dispersion coefficient for Dye Run 3 will be used in both dye studies.

!This is because the data was gathered over the longest time period allowing for a better

!dispersion of the dye into the water body.

!To take into consideration all modes of transport, equation 3, (DL = aHbQcVmd ) in Laqual was used.

!Using b=5/6, c=0, and d=1 will take into account all modes of transport in the manner of the Tracor and  
QUAL2E equations.

!The value for coefficient "a" was calibrated to within the boundaries of the final dye run by setting all  
other parameters

!to the previously mentioned values.

!	R#	RANGE	a	b	c	d
!	***	-----	*****	-----	*****	-----
HYDR-2	1	1.00	10.600	0.833	0.0	1.0
HYDR-2	2	1.00	10.600	0.833	0.0	1.0
HYDR-2	3	1.00	10.600	0.833	0.0	1.0
HYDR-2	4	1.00	10.600	0.833	0.0	1.0
HYDR-2	5	1.00	10.600	0.833	0.0	1.0
HYDR-2	6	1.00	10.600	0.833	0.0	1.0
HYDR-2	7	1.00	10.600	0.833	0.0	1.0
HYDR-2	8	1.00	10.600	0.833	0.0	1.0
HYDR-2	9	1.00	12.200	0.833	0.0	1.0
HYDR-2	10	1.00	12.200	0.833	0.0	1.0
HYDR-2	11	1.00	12.200	0.833	0.0	1.0

ENDATA10

!Initial Conditions

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! R# TEMP SALINITY DO NH3 N NIT NIT PHOS CHL A MACROPHYTES

!Temp - 90th Percentile Temp for WQN 0239

!Salinity - Cont Mont Avg (GC09,GC10)

!DO - DO Standard for Subsegment 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 1 26.80 0.19 5.00 5.0

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

!Temp - 90th Percentile Temp for WQN 0239  
!Salinity - Cont Mont Avg (GC08,GC09)  
!DO - DO Standard for Subsegment 040304  
!Chlorophyll A - Best Professional Judgement  
INITIAL 2 26.80 0.16 5.00 5.0  
!Temp - 90th Percentile Temp for WQN 0239  
!Salinity - Cont Mont Avg (GC07,GC08)  
!DO - DO Standard for Subsegment 040304  
!Chlorophyll A - Best Professional Judgement  
INITIAL 3 26.80 0.18 5.00 5.0  
!Temp - 90th Percentile Temp for WQN 0239  
!Salinity - Cont Mont Avg (GC07,GC08)  
!DO - DO Standard for Subsegment 040304  
!Chlorophyll A - Best Professional Judgement  
INITIAL 4 26.80 0.18 5.00 5.0  
!Temp - 90th Percentile Temp for WQN 0239  
!Salinity - Cont Mont Avg (GC07,GC08)  
!DO - DO Standard for Subsegment 040304  
!Chlorophyll A - Best Professional Judgement  
INITIAL 5 26.80 0.18 5.00 10.0  
!Temp - 90th Percentile Temp for WQN 0239  
!Salinity - Cont Mont Avg (GC06,GC07)  
!DO - DO Standard for Subsegment 040304  
!Chlorophyll A - Best Professional Judgement  
INITIAL 6 26.80 0.21 5.00 10.0  
!Temp - 90th Percentile Temp for WQN 0239  
!Salinity - Cont Mont Avg (GC04,GC06)  
!DO - DO Standard for Subsegment 040304  
!Chlorophyll A - Best Professional Judgement  
INITIAL 7 26.80 0.21 5.00 10.0  
!Temp - 90th Percentile Temp for WQN 0239  
!Salinity - Cont Mont Avg (GC03,GC04)  
!DO - DO Standard for Subsegment 040304  
!Chlorophyll A - Best Professional Judgement  
INITIAL 8 26.80 0.18 5.00 10.0  
!Temp - 90th Percentile Temp for WQN 0239  
!Salinity - Cont Mont Avg (GC02,GC03)  
!DO - DO Standard for Subsegment 040304  
!Chlorophyll A - Best Professional Judgement  
INITIAL 9 26.80 0.16 5.00 10.0  
!Temp - 90th Percentile Temp for WQN 0239  
!Salinity - Cont Mont Avg (GC01,GC02)

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

!DO - DO Standard for Subsegment 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 10 26.80 0.09 5.00 10.0

!Temp - 90th Percentile Temp for WQN 0239

!Salinity - Cont Mont Avg (GCL01,GC01)

!DO - DO Standard for Subsegment 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 11 26.80 0.03 5.00 10.0

ENDATA11

!Reaeration, Sediment Oxygen Demand and BOD Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8-----9

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! REA KL UBOD UBOD  
! R# EQ MIN SOD DECATY SETT

!Texas Equation used for all reaches.

!All settling and decay rates determined through calibration.

COEF-1	1	11.0		0.169	0.0750	0.05
COEF-1	2	11.0		0.619	0.0750	0.05
COEF-1	3	11.0		0.750	0.0750	0.05
COEF-1	4	11.0		0.900	0.0750	0.10
COEF-1	5	11.0		0.975	0.0750	0.10
COEF-1	6	11.0		0.769	0.0750	0.10
COEF-1	7	11.0		0.675	0.0750	0.10
COEF-1	8	11.0		0.600	0.0750	0.10
COEF-1	9	11.0		0.338	0.0750	0.10
COEF-1	10	11.0		0.413	0.0750	0.10
COEF-1	11	11.0		0.225	0.0750	0.10

ENDATA12

ENDATA13

ENDATA14

!Coliform and Nonconservative Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

ENDATA15

!Incremental Data for Flow, Temperature, Salinity, and Conservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! R# OUTFLOW INFLOW TEMP SALINITY CHLORIDE COND

!

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010  
 ENDDATA16

!Incremental Data for DO, BOD, and Nitrogen  
 !-----1-----2-----3-----4-----5-----6-----7-----8  
 !234567890123456789012345678901234567890123456789012345678901234567890  
 ! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*  
 ! R# DO BOD 1 NBOD NH3 N NIT NIT BOD 2  
 ENDDATA17

!Incremental Data for Phosphorus, Chlorophyll, Coliform and Nonconservatives  
 !-----1-----2-----3-----4-----5-----6-----7-----8  
 !234567890123456789012345678901234567890123456789012345678901234567890  
 ! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*  
 ! R# PHOSPH CHL A COLIFORM NONCONSERVATIVE  
 ENDDATA18

!Nonpoint Source Data  
 !-----1-----2-----3-----4-----5-----6-----7-----8  
 !234567890123456789012345678901234567890123456789012345678901234567890  
 ! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*  
 ! R# UBOD  
 NONPOINT 1 0.469  
 NONPOINT 2 3.188  
 NONPOINT 3 0.938  
 NONPOINT 4 0.563  
 NONPOINT 5 1.500  
 NONPOINT 6 0.188  
 NONPOINT 7 0.000  
 NONPOINT 8 0.188  
 NONPOINT 9 4.688  
 NONPOINT 10 0.188  
 NONPOINT 11 17.813  
 ENDDATA19

!Headwater Data for Flow, Temperature, Salinity, and Conservatives  
 !-----1-----2-----3-----4-----5-----6-----7-----8  
 !234567890123456789012345678901234567890123456789012345678901234567890  
 ! \*\*\*\* -----\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----  
 ! E# NAME FLOW TEMP SALIN CHLORIDE COND  
 !Flow LTP Default  
 !Temp - 90th Percentile Temp for WQN 0239  
 !Salinity - Cont Mont Avg (GC01)  
 !Chloride - Lab Data (GC01)  
 !Conductivity - Insitu (GC01)  
 HDWTR-1 1 HEADWATER 0.0028 26.80 0.20 6.9 83.7  
 ENDDATA20

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

!Headwater Data for DO, BOD, and Nitrogen

!-----1-----2-----3-----4-----5-----6-----7-----8

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! E# DO UBOD

!DO - 90% DO Sat for WQN 0239

!UBOD - 85% Reduction in overall nonpoint loading

HDWTR-2 1 7.20 1.7900

ENDATA21

!Headwater Data for Phosphorus, Chlorophyll, Coliform, and Nonconservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! E# PHOSPHOR CHL A COLIFORM NONCONSERVATIVE

HDWTR-3 1

ENDATA22

ENDATA23

!Wasteload Data for Flow, Temperature, Salinity, and Conservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! E# NAME FLOW TEMP SALINITY CHLORIDE COND

!Expected flow was used except on tribs where LTP default was higher.

!Chlorides and Conductivity average values used from UT2, UT5, and UT6

!except where surveyed.

!Summerfield Subdivision and Willows Subdivision Filing 8

WSTLD-1 1 SUMMERFIELD & WILLOW 0.0058 30.00 .0 12.1 285.0

!Cluster 1

WSTLD-1 5 CLUSTER 1 0.0066 30.00 .0 12.1 285.0

!Blake LaFleur Mobile Home Park

WSTLD-1 10 BLAKE LAFLEUR MHP 0.0005 30.00 .0 12.1 285.0

!Cluster 2

WSTLD-1 11 CLUSTER 2 0.0013 30.00 .0 12.1 285.0

!Gray's Creek Subdivision

WSTLD-1 17 GRAY'S CREEK SUBD 0.0011 30.00 .0 12.1 285.0

!Unnamed Trib #6 and Penny's Mobile Home Park

WSTLD-1 36 UT6 & PENNY MHP 0.0028 30.00 .0 8.5 278.5

!Unnamed Trib#5 and Cluster 3

WSTLD-1 53 UT5 & CLUSTER 3 0.0028 30.00 .0 17.1 255.4

!City of Denham Springs POTW

WSTLD-1 68 DENHAM SPRINGS 0.2628 30.00 .0 37.0 458.7

!Greystone Golf & Country Club

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

WSTLD-1	73	GREYSTONE	0.0035	30.00	.0	12.1	285.0
!Oakview Mobile Home Park							
WSTLD-1	76	OAKVIEW MHP	0.0009	30.00	.0	12.1	285.0
!Carter Hill Subdivision							
WSTLD-1	85	CARTER HILL SUB	0.0029	30.00	.0	12.1	285.0
!Miller's Canal							
WSTLD-1	104	MILLER'S CANAL	0.0028	30.00	.0	12.1	285.0
!Rolling Meadow Subdivision							
WSTLD-1	110	ROLLING MEADOW	0.0020	30.00	.0	12.1	285.0
!Unnamed Trib #4 and Seventh Ward Elementary							
WSTLD-1	119	UT4 AND 7TH WARD	0.0028	30.00	.0	12.1	285.0
!Southpoint Subdivision							
WSTLD-1	130	SOUTHPOINT SUBD	0.0013	30.00	.0	12.1	285.0
!Southpoint Subdivision IV Subdivision							
WSTLD-1	137	SOUTHPOINT IV SUBD	0.0062	30.00	.0	12.1	285.0
!Southpoint III Subdivision							
WSTLD-1	143	SOUTHPOINT III SUBD	0.0062	30.00	.0	12.1	285.0
!All God's Children							
WSTLD-1	149	ALL GOD'S CHILDREN	0.0001	30.00	.0	12.1	285.0
!Hill Top Mobile Home Park							
WSTLD-1	152	HILLTOP MHP	0.0007	30.00	.0	12.1	285.0
!Gray's Creek Elementary & Gulf Stream Estates and Townhouses							
WSTLD-1	158	GCE AND GSET	0.0038	30.00	.0	12.1	285.0
!Highland Ridge Subdivision							
WSTLD-1	193	HIGHLAND RIDGE SUBD	0.0008	30.00	.0	12.1	285.0
!Unnamed Trib \$2							
WSTLD-1	203	UT#2	0.0028	30.00	.0	10.7	324.6
!Olivia Rose Mobile Home Park							
WSTLD-1	219	OLIVIA ROSE MHP	0.0003	30.00	.0	12.1	285.0
!Pine Acres Mobile Home Park							
WSTLD-1	234	PINE ACRES MHP	0.0003	30.00	.0	12.1	285.0
!Parker's Supermarket							
WSTLD-1	266	PARKER'S SUPER	0.0001	30.00	.0	12.1	285.0
!Stone Hill Subdivision							
WSTLD-1	267	STONE HILL SUBD	0.0013	30.00	.0	12.1	285.0
!Bayside Campground							
WSTLD-1	272	BAYSIDE CAMPGROUND	0.0001	30.00	.0	12.1	285.0

ENDATA24

!Wasteload Data for DO, BOD, and Nitrogen

!-----1-----2-----3-----4-----5-----6-----7-----8  
!234567890123456789012345678901234567890123456789012345678901234567890  
! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

!	E#	DO	UBOD
! All facilities set to 5 CBOD/ 2 NH3			
!Summerfield Subdivision and Willows Subdivision Filing 8			
WSTLD-2	1	5.00	20.1000
!Cluster 1			
WSTLD-2	5	5.00	20.1000
!Blake LaFleur Mobile Home Park			
WSTLD-2	10	5.00	20.1000
!Cluster 2			
WSTLD-2	11	5.00	20.1000
!Gray's Creek Subdivision			
WSTLD-2	17	5.00	20.1000
!Unnamed Trib #6 and Penny's Mobile Home Park			
WSTLD-2	36	5.00	2.4100
!Unnamed Trib#5 and Cluster 3			
WSTLD-2	53	5.00	3.3200
!City of Denham Springs POTW			
WSTLD-2	68	5.00	20.1000
!Greystone Golf & Country Club			
WSTLD-2	73	5.00	20.1000
!Oakview Mobile Home Park			
WSTLD-2	76	5.00	20.1000
!Carter Hill Subdivision			
WSTLD-2	85	5.00	20.1000
!Miller's Canal			
WSTLD-2	104	5.00	2.6100
!Rolling Meadow Subdivision			
WSTLD-2	110	5.00	20.1000
!Unnamed Trib #4 and Seventh Ward Elementary			
WSTLD-2	119	5.00	2.6100
!Southpoint Subdivision			
WSTLD-2	130	5.00	20.1000
!Southpoint Subdivision IV Subdivision			
WSTLD-2	137	5.00	20.1000
!Southpoint III Subdivision			
WSTLD-2	143	5.00	20.1000
!All God's Children			
WSTLD-2	149	5.00	20.1000
!Hill Top Mobile Home Park			
WSTLD-2	152	5.00	20.1000
!Gray's Creek Elementary & Gulf Stream Estates and Townhouses			
WSTLD-2	158	5.00	20.1000



Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

!Highland Ridge Subdivision

WSTLD-2 193 5.00 20.1000

!Unnamed Trib \$2

WSTLD-2 203 5.00 2.6100

!Olivia Rose Mobile Home Park

WSTLD-2 219 5.00 20.1000

!Pine Acres Mobile Home Park

WSTLD-2 234 5.00 20.1000

!Parker's Supermarket

WSTLD-2 266 5.00 20.1000

!Stone Hill Subdivision

WSTLD-2 267 5.00 20.1000

!Bayside Campground

WSTLD-2 272 5.00 20.1000

ENDATA25

!Wasteload Data for Phosphorus, Chlorophyll, Coliform, and Nonconservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! E# PHOSPHOR CHL A COLIFORM NONCONSERVATIVE

!Summerfield Subdivision and Willows Subdivision Filing 8

WSTLD-3 1

!Cluster 1

WSTLD-3 5

!Blake LaFleur Mobile Home Park

WSTLD-3 10

!Cluster 2

WSTLD-3 11

!Gray's Creek Subdivision

WSTLD-3 17

!Unnamed Trib #6 and Penny's Mobile Home Park

WSTLD-3 36

!Unnamed Trib#5 and Cluster 3

WSTLD-3 53

!City of Denham Springs POTW

WSTLD-3 68

!Greystone Golf & Country Club

WSTLD-3 73

!Oakview Mobile Home Park

WSTLD-3 76

!Carter Hill Subdivision

WSTLD-3 85

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010  
 !Miller's Canal  
 WSTLD-3 104  
 !Rolling Meadow Subdivision  
 WSTLD-3 110  
 !Unnamed Trib #4 and Seventh Ward Elementary  
 WSTLD-3 119  
 !Southpoint Subdivision  
 WSTLD-3 130  
 !Southpoint Subdivision IV Subdivision  
 WSTLD-3 137  
 !Southpoint III Subdivision  
 WSTLD-3 143  
 !All God's Children  
 WSTLD-3 149  
 !Hill Top Mobile Home Park  
 WSTLD-3 152  
 !Gray's Creek Elementary & Gulf Stream Estates and Townhouses  
 WSTLD-3 158  
 !Highland Ridge Subdivision  
 WSTLD-3 193  
 !Unnamed Trib \$2  
 WSTLD-3 203  
 !Olivia Rose Mobile Home Park  
 WSTLD-3 219  
 !Pine Acres Mobile Home Park  
 WSTLD-3 234  
 !Parker's Supermarket  
 WSTLD-3 266  
 !Stone Hill Subdivision  
 WSTLD-3 267  
 !Bayside Campground  
 WSTLD-3 272  
 ENDATA26  
 !Temp - 90th Percentile Temp for WQN 0239  
 LOWER BC TEMPERATURE = 26.80  
 !Site GCL01 Cont Mont  
 LOWER BC SALINITY = 0.02  
 !Site GCL01 Lab  
 LOWER BC CONSERVATIVE MATERIAL I = 6.20  
 !Site GCL01 Insitu  
 LOWER BC CONSERVATIVE MATERIAL II = 103.80  
 !DO - DO Standard for Subsegment 040304

```

Grays Creek Watershed TMDL
Subsegment 040304
Originated: November 23, 2010
LOWER BC DISSOLVED OXYGEN          =    5.00
!Site GCL01 Lab
LOWER BC BOD1 BIOCHEMICAL OXYGEN DEMAND =    8.4326
!Site GCL01 Lab
LOWER BC BOD2 BIOCHEMICAL OXYGEN DEMAND =    0.0000
!Best Professional Judgement
LOWER BC CHLOROPHYLL A            =    5.0
!Site GCL01 Lab
LOWER BC NBOD                      =    0.0000
ENDATA27
!Dam Data
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          ****  *****  *****  *****  *****  *****  *****
ENDATA28
ENDATA29
NUMBER OF PLOTS = 1
NUMBER OF REACHES IN PLOT 1 = 11                      INCREMENT = 0.1
PLOT RCH  1  2  3  4  5  6  7  8  9 10 11
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
ENDATA30
ENDATA31

```

## GRAYS CREEK 040304 SUMMER PROJECTION OUTPUT DATA SET

```

LA-QUAL Version 8.11
Louisiana Department of Environmental Quality

Input file is \\Alpha_nt\owreng\Personal_Folders\Karen\Gray's Creek (040304)\Input Files\Graysum85.txt
Output produced at 08:17 on 04/27/2010

```

```

$$$ DATA TYPE 1 (TITLES AND CONTROL CARDS) $$$

CARD TYPE      CONTROL TITLES

TITLE01        GRAY'S CREEK WATERSHED MODEL
TITLE02        GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint
CNTROL04 YES   METRIC UNITS
ENDATA01

$$$ DATA TYPE 2 (MODEL OPTIONS) $$$

CARD TYPE      MODEL OPTION

MODEPT01 NO    TEMPERATURE
MODEPT02 NO    SALINITY

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MODOPT03 YES CONSERVATIVE MATERIAL I = CHLORIDES IN MG/L  
 MODOPT04 YES CONSERVATIVE MATERIAL II = CONDUCTIVITY IN MG/L  
 MODOPT05 YES DISSOLVED OXYGEN  
 MODOPT06 YES BOD1 BIOCHEMICAL OXYGEN DEMAND  
 MODOPT06 NO BOD2 BIOCHEMICAL OXYGEN DEMAND  
 MODOPT08 NO NBOD OXYGEN DEMAND  
 MODOPT10 NO PHOSPHORUS  
 MODOPT11 NO CHLOROPHYLL A  
 MODOPT12 NO MACROPHYTES  
 MODOPT13 NO COLIFORM  
 ENDATA02

\$\$\$ DATA TYPE 3 (PROGRAM CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
PROGRAM	KL MINIMUM	= 0.70000 meters/day
PROGRAM	INHIBITION CONTROL VALUE	= 3.00000 (inhibit all rates but SOD)
PROGRAM	K2 MAXIMUM	= 25.00000 per day
PROGRAM	HYDRAULIC CALCULATION METHOD	= 2.00000 (widths and depths)
PROGRAM	SETTLING RATE UNITS	= 1.00000 (values entered as m/day)
PROGRAM	DISPERSION EQUATION	= 3.00000 (values entered as a function of D,Q,Vmean)
PROGRAM	ALGAE OXYGEN PROD	= 0.00000 mg O/ug chl a/day
PROGRAM	EFFECTIVE BOD DUE TO ALGAE	= 0.15000 mg/L BOD per ug/L chl a
PROGRAM	B1 OXYGEN DEPENDENCE THRESHOLD	= 1.00000 mg/L
PROGRAM	B2 OXYGEN DEPENDENCE THRESHOLD	= 1.00000 mg/L
PROGRAM	MAXIMUM ITERATION LIMIT	= 1000.00000

ENDATA03

\$\$\$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) \$\$\$

CARD TYPE	RATE CODE	THETA VALUE
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ENDATA04

\$\$\$ CONSTANTS TYPE 5 (TEMPERATURE DATA) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
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ENDATA05

\$\$\$ DATA TYPE 6 (ALGAE CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
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ENDATA06

\$\$\$ DATA TYPE 7 (MACROPHYTE CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
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ENDATA07

\$\$\$ DATA TYPE 8 (REACH IDENTIFICATION DATA) \$\$\$

CARD TYPE	REACH	ID	NAME	BEGIN REACH km	END REACH km	ELEM LENGTH km	REACH LENGTH km	ELEMS PER RCH	BEGIN ELEM NUM	END ELEM NUM
REACH ID	1	GC	GRAY'S CREEK CANAL TO HWY 190	27.30	26.20	0.1000	1.10	11	1	11
REACH ID	2	GC	HIGHWAY 190 TO FORREST DELATTE	26.20	22.40	0.1000	3.80	38	12	49

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REACH ID											
REACH ID	3	GC	FORREST DELATTE ROAD TO DSPOTW	22.40	TO	20.60	0.1000	1.80	18	50	67
REACH ID	4	GC	DENHAM SPRINGS POTW	20.60	TO	20.50	0.1000	0.10	1	68	68
REACH ID	5	GC	DENHAM SPRINGS POTW TO WAX ROAD	20.50	TO	19.70	0.1000	0.80	8	69	76
REACH ID	6	GC	WAX ROAD TO HIGHWAY 1026	19.70	TO	17.60	0.1000	2.10	21	77	97
REACH ID	7	GC	HIGHWAY 1026 TO HIGHWAY 1033	17.60	TO	11.50	0.1000	6.10	61	98	158
REACH ID	8	GC	HIGHWAY 1033 TO SCIVICQUE ROAD	11.50	TO	8.10	0.1000	3.40	34	159	192
REACH ID	9	GC	SCIVICQUE ROAD TO HIGHWAY 1032	8.10	TO	3.90	0.1000	4.20	42	193	234
REACH ID	10	GC	HIGHWAY 1032 TO RKM 0.8	3.90	TO	0.80	0.1000	3.10	31	235	265
REACH ID	11	GC	RKM 0.8 TO GRAY'S CREEK LAKE	0.80	TO	0.00	0.1000	0.80	8	266	273

ENDATA08

\$\$\$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	WIDTH "A"	WIDTH "B"	WIDTH "C"	DEPTH "D"	DEPTH "E"	DEPTH "F"	SLOPE	MANNINGS "N"
HYDR-1	1	GC	0.000	0.200	1.524	0.000	0.300	0.025	0.00000	0.000
HYDR-1	2	GC	0.000	0.200	2.832	0.000	0.300	0.494	0.00000	0.000
HYDR-1	3	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	4	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	5	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	6	GC	0.000	0.200	5.486	0.000	0.300	0.312	0.00000	0.000
HYDR-1	7	GC	0.000	0.200	3.353	0.000	0.300	0.271	0.00000	0.000
HYDR-1	8	GC	0.000	0.200	5.182	0.000	0.300	0.161	0.00000	0.000
HYDR-1	9	GC	0.000	0.200	14.021	0.000	0.300	0.589	0.00000	0.000
HYDR-1	10	GC	0.000	0.200	21.641	0.000	0.300	1.514	0.00000	0.000
HYDR-1	11	GC	0.000	0.200	60.960	0.000	0.300	2.965	0.00000	0.000

ENDATA09

\$\$\$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
HYDR	1	GC	1.00	10.600	0.833	0.000	1.000
HYDR	2	GC	1.00	10.600	0.833	0.000	1.000
HYDR	3	GC	1.00	10.600	0.833	0.000	1.000
HYDR	4	GC	1.00	10.600	0.833	0.000	1.000
HYDR	5	GC	1.00	10.600	0.833	0.000	1.000
HYDR	6	GC	1.00	10.600	0.833	0.000	1.000
HYDR	7	GC	1.00	10.600	0.833	0.000	1.000
HYDR	8	GC	1.00	10.600	0.833	0.000	1.000
HYDR	9	GC	1.00	12.200	0.833	0.000	1.000
HYDR	10	GC	1.00	12.200	0.833	0.000	1.000
HYDR	11	GC	1.00	12.200	0.833	0.000	1.000

ENDATA10

\$\$\$ DATA TYPE 11 (INITIAL CONDITIONS) \$\$\$

CARD TYPE	REACH	ID	TEMP	SALIN	DO	NH3	NO3+2	PHOS	CHL A	MACRO
INITIAL	1	GC	26.80	0.19	5.00	0.00	0.00	0.00	5.00	0.00
INITIAL	2	GC	26.80	0.16	5.00	0.00	0.00	0.00	5.00	0.00
INITIAL	3	GC	26.80	0.18	5.00	0.00	0.00	0.00	5.00	0.00
INITIAL	4	GC	26.80	0.18	5.00	0.00	0.00	0.00	5.00	0.00
INITIAL	5	GC	26.80	0.18	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	6	GC	26.80	0.21	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	7	GC	26.80	0.21	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	8	GC	26.80	0.18	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	9	GC	26.80	0.16	5.00	0.00	0.00	0.00	10.00	0.00

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INITIAL	10	GC	26.80	0.09	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	11	GC	26.80	0.03	5.00	0.00	0.00	0.00	10.00	0.00

ENDATA11

\$\$\$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) \$\$\$

CARD TYPE	RCH NUM	RCH ID	K2 OPT	K2 "A"	K2 "B"	K2 "C"	BKGRND SOD g/m <sup>2</sup> /d	BOD DECATY per day	BOD SETT m/d	BOD CONV TO SOD	ANAER BOD2 DECATY per day	BOD2 DECATY per day	BOD2 SETT m/d	BOD2 CONV TO SOD	ANAER BOD2 DECATY per day
COEF-1	1	GC	11 TEXAS	0.000	0.000	0.000	0.169	0.075	0.050	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	2	GC	11 TEXAS	0.000	0.000	0.000	0.619	0.075	0.050	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	3	GC	11 TEXAS	0.000	0.000	0.000	0.750	0.075	0.050	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	4	GC	11 TEXAS	0.000	0.000	0.000	0.900	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	5	GC	11 TEXAS	0.000	0.000	0.000	0.975	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	6	GC	11 TEXAS	0.000	0.000	0.000	0.769	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	7	GC	11 TEXAS	0.000	0.000	0.000	0.675	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	8	GC	11 TEXAS	0.000	0.000	0.000	0.600	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	9	GC	11 TEXAS	0.000	0.000	0.000	0.338	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	10	GC	11 TEXAS	0.000	0.000	0.000	0.413	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	11	GC	11 TEXAS	0.000	0.000	0.000	0.225	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000

ENDATA12

\$\$\$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	NBOD DECA	NBOD SETT	ORGN TO NH3	CONV SRCE	NH3 DECA	NH3 SRCE	PHOS SRCE	DENIT RATE
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ENDATA13

\$\$\$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	SECCHI DEPTH	ALGAE: CHL A	ALGAE SETT	ALG CONV TO SOD	ALGAE GROW	ALGAE RESP	MACRO GROW	MACRO RESP	SHADING
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ENDATA14

\$\$\$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	COLIFORM DIE-OFF	NCM DECATY	NCM SETT	NCM CONV TO SOD
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ENDATA15

\$\$\$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	OUTFLOW	INFLOW	TEMP	SALIN	CM-I	CM-II	IN/DIST	OUT/DIST
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ENDATA16

\$\$\$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	REACH	ID	DO	BOD	NBOD	BOD#2
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ENDATA17

\$\$\$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	PHOS	CHL A	COLI	NCM
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 ENDDATA18

\$\$\$ DATA TYPE 19 (NONPOINT SOURCE DATA) \$\$\$

CARD TYPE	REACH	ID	BOD#1	NBOD	COLI	NCM	DO	BOD#2
NONPOINT	1	GC	0.47	0.00	0.00	0.00	0.00	0.00
NONPOINT	2	GC	3.19	0.00	0.00	0.00	0.00	0.00
NONPOINT	3	GC	0.94	0.00	0.00	0.00	0.00	0.00
NONPOINT	4	GC	0.56	0.00	0.00	0.00	0.00	0.00
NONPOINT	5	GC	1.50	0.00	0.00	0.00	0.00	0.00
NONPOINT	6	GC	0.19	0.00	0.00	0.00	0.00	0.00
NONPOINT	7	GC	0.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	8	GC	0.19	0.00	0.00	0.00	0.00	0.00
NONPOINT	9	GC	4.69	0.00	0.00	0.00	0.00	0.00
NONPOINT	10	GC	0.19	0.00	0.00	0.00	0.00	0.00
NONPOINT	11	GC	17.81	0.00	0.00	0.00	0.00	0.00

ENDDATA19

\$\$\$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	UNIT	FLOW m <sup>3</sup> /s	FLOW cfs	TEMP deg C	SALIN ppt	CM-I MG/L	CM-II MG/L	
HDWTR-1	1	HEADWATER	0	0.00280	0.099	26.80	0.20	6.900	83.700	0.00

ENDDATA20

\$\$\$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD#1 mg/L	NBOD mg/L	mg/L	mg/L	BOD#2 mg/L
HDWTR-2	1	HEADWATER	7.20	1.79	0.00	0.00	0.00	0.00

ENDDATA21

\$\$\$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
HDWTR-3	1	HEADWATER	0.00	0.00	0.00	0.00

ENDDATA22

\$\$\$ DATA TYPE 23 (JUNCTION DATA) \$\$\$

CARD TYPE	JUNCTION ELEMENT	UPSTRM ELEMENT	RIVER KILOM	NAME
ENDDATA23				

\$\$\$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	RKILO	NAME	FLOW m <sup>3</sup> /s	FLOW cfs	FLOW MGD	TEMP deg C	SALIN ppt	CM-I MG/L	CM-II MG/L
WSTLD-1	1	27.30	SUMMERFIELD & WILLOW	0.00580	0.20480	0.132	30.00	0.00	12.100	285.000
WSTLD-1	5	26.90	CLUSTER 1	0.00660	0.23305	0.151	30.00	0.00	12.100	285.000
WSTLD-1	10	26.40	BLAKE LAFLEUR MHP	0.00050	0.01766	0.011	30.00	0.00	12.100	285.000
WSTLD-1	11	26.30	CLUSTER 2	0.00130	0.04590	0.030	30.00	0.00	12.100	285.000
WSTLD-1	17	25.70	GRAY'S CREEK SUBD	0.00110	0.03884	0.025	30.00	0.00	12.100	285.000

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WSTLD-1	36	23.80	UT6 & PENNY MHP	0.00280	0.09887	0.064	30.00	0.00	8.500	278.500
WSTLD-1	53	22.10	UT5 & CLUSTER 3	0.00280	0.09887	0.064	30.00	0.00	17.100	255.400
WSTLD-1	68	20.60	DENHAM SPRINGS	0.26280	9.27966	5.998	30.00	0.00	37.000	458.700
WSTLD-1	73	20.10	GREYSTONE	0.00350	0.12359	0.080	30.00	0.00	12.100	285.000
WSTLD-1	76	19.80	OAKVIEW MHP	0.00090	0.03178	0.021	30.00	0.00	12.100	285.000
WSTLD-1	85	18.90	CARTER HILL SUB	0.00290	0.10240	0.066	30.00	0.00	12.100	285.000
WSTLD-1	104	17.00	MILLER'S CANAL	0.00280	0.09887	0.064	30.00	0.00	12.100	285.000
WSTLD-1	110	16.40	ROLLING MEADOW	0.00200	0.07062	0.046	30.00	0.00	12.100	285.000
WSTLD-1	119	15.50	UT4 AND 7TH WARD	0.00280	0.09887	0.064	30.00	0.00	12.100	285.000
WSTLD-1	130	14.40	SOUTHPOINT SUBD	0.00130	0.04590	0.030	30.00	0.00	12.100	285.000
WSTLD-1	137	13.70	SOUTHPOINT IV SUBD	0.00620	0.21893	0.142	30.00	0.00	12.100	285.000
WSTLD-1	143	13.10	SOUTHPOINT III SUBD	0.00620	0.21893	0.142	30.00	0.00	12.100	285.000
WSTLD-1	149	12.50	ALL GOD'S CHILDREN	0.00010	0.00353	0.002	30.00	0.00	12.100	285.000
WSTLD-1	152	12.20	HILLTOP MHP	0.00070	0.02472	0.016	30.00	0.00	12.100	285.000
WSTLD-1	158	11.60	GCE AND GSET	0.00380	0.13418	0.087	30.00	0.00	12.100	285.000
WSTLD-1	193	8.10	HIGHLAND RIDGE SUBD	0.00080	0.02825	0.018	30.00	0.00	12.100	285.000
WSTLD-1	203	7.10	UT#2	0.00280	0.09887	0.064	30.00	0.00	10.700	324.600
WSTLD-1	219	5.50	OLIVIA ROSE MHP	0.00030	0.01059	0.007	30.00	0.00	12.100	285.000
WSTLD-1	234	4.00	PINE ACRES MHP	0.00030	0.01059	0.007	30.00	0.00	12.100	285.000
WSTLD-1	266	0.80	PARKER'S SUPER	0.00010	0.00353	0.002	30.00	0.00	12.100	285.000
WSTLD-1	267	0.70	STONE HILL SUBD	0.00130	0.04590	0.030	30.00	0.00	12.100	285.000
WSTLD-1	272	0.20	BAYSIDE CAMPGROUND	0.00010	0.00353	0.002	30.00	0.00	12.100	285.000

ENDATA24

\$\$\$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	% BOD				% NITRIF		BOD#2 mg/L	
			DO mg/L	BOD mg/L	RMVL	NBOD mg/L	mg/L	mg/L		
WSTLD-2	1	SUMMERFIELD & WILLOW	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	5	CLUSTER 1	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	10	BLAKE LAFLEUR MHP	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	11	CLUSTER 2	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	17	GRAY'S CREEK SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	36	UT6 & PENNY MHP	5.00	2.41	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	53	UT5 & CLUSTER 3	5.00	3.32	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	68	DENHAM SPRINGS	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	73	GREYSTONE	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	76	OAKVIEW MHP	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	85	CARTER HILL SUB	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	104	MILLER'S CANAL	5.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	110	ROLLING MEADOW	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	119	UT4 AND 7TH WARD	5.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	130	SOUTHPOINT SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	137	SOUTHPOINT IV SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	143	SOUTHPOINT III SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	149	ALL GOD'S CHILDREN	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	152	HILLTOP MHP	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	158	GCE AND GSET	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	193	HIGHLAND RIDGE SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	203	UT#2	5.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	219	OLIVIA ROSE MHP	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	234	PINE ACRES MHP	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	266	PARKER'S SUPER	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	267	STONE HILL SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	272	BAYSIDE CAMPGROUND	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00

ENDATA25

\$\$\$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$



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CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
WSTLD-3	1	SUMMERFIELD & WILLOW	0.00	0.00	0.00	0.00
WSTLD-3	5	CLUSTER 1	0.00	0.00	0.00	0.00
WSTLD-3	10	BLAKE LAFLEUR MHP	0.00	0.00	0.00	0.00
WSTLD-3	11	CLUSTER 2	0.00	0.00	0.00	0.00
WSTLD-3	17	GRAY'S CREEK SUBD	0.00	0.00	0.00	0.00
WSTLD-3	36	UT6 & PENNY MHP	0.00	0.00	0.00	0.00
WSTLD-3	53	UT5 & CLUSTER 3	0.00	0.00	0.00	0.00
WSTLD-3	68	DENHAM SPRINGS	0.00	0.00	0.00	0.00
WSTLD-3	73	GREYSTONE	0.00	0.00	0.00	0.00
WSTLD-3	76	OAKVIEW MHP	0.00	0.00	0.00	0.00
WSTLD-3	85	CARTER HILL SUB	0.00	0.00	0.00	0.00
WSTLD-3	104	MILLER'S CANAL	0.00	0.00	0.00	0.00
WSTLD-3	110	ROLLING MEADOW	0.00	0.00	0.00	0.00
WSTLD-3	119	UT4 AND 7TH WARD	0.00	0.00	0.00	0.00
WSTLD-3	130	SOUTHPOINT SUBD	0.00	0.00	0.00	0.00
WSTLD-3	137	SOUTHPOINT IV SUBD	0.00	0.00	0.00	0.00
WSTLD-3	143	SOUTHPOINT III SUBD	0.00	0.00	0.00	0.00
WSTLD-3	149	ALL GOD'S CHILDREN	0.00	0.00	0.00	0.00
WSTLD-3	152	HILLTOP MHP	0.00	0.00	0.00	0.00
WSTLD-3	158	GCE AND GSET	0.00	0.00	0.00	0.00
WSTLD-3	193	HIGHLAND RIDGE SUBD	0.00	0.00	0.00	0.00
WSTLD-3	203	UT#2	0.00	0.00	0.00	0.00
WSTLD-3	219	OLIVIA ROSE MHP	0.00	0.00	0.00	0.00
WSTLD-3	234	PINE ACRES MHP	0.00	0.00	0.00	0.00
WSTLD-3	266	PARKER'S SUPER	0.00	0.00	0.00	0.00
WSTLD-3	267	STONE HILL SUBD	0.00	0.00	0.00	0.00
WSTLD-3	272	BAYSIDE CAMPGROUND	0.00	0.00	0.00	0.00

ENDATA26

\$\$\$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) \$\$\$

CARD TYPE	CONSTITUENT	CONCENTRATION
LOWER BC	TEMPERATURE	= 26.800 deg C
LOWER BC	SALINITY	= 0.020 ppt
LOWER BC	CONSERVATIVE MATERIAL I	= 6.200 MG/L
LOWER BC	CONSERVATIVE MATERIAL II	= 103.800 MG/L
LOWER BC	DISSOLVED OXYGEN	= 5.000 mg/L
LOWER BC	BOD1 BIOCHEMICAL OXYGEN DEMAND	= 8.433 mg/L
LOWER BC	BOD2 BIOCHEMICAL OXYGEN DEMAND	= 0.000 mg/L
LOWER BC	CHLOROPHYLL A	= 5.000 µg/L
LOWER BC	NBOD	= 0.000 mg/L

ENDATA27

\$\$\$ DATA TYPE 28 (DAM DATA) \$\$\$

CARD TYPE	ELEMENT	NAME	EQN	"A"	"B"	"H"
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ENDATA28

\$\$\$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) \$\$\$

CARD TYPE	PARAMETER	COL 1	COL 2	COL 3	COL 4	COL 5	COL 6	COL 7	COL 8
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ENDATA29

\$\$\$ DATA TYPE 30 (PLOT CONTROL CARDS) \$\$\$

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

NUMBER OF PLOTS = 1  
 NUMBER OF REACHES IN PLOT 1 = 11  
 PLOT RCH 1 2 3 4 5 6 7 8 9 10 11  
 ENDATA30

\$\$\$ DATA TYPE 31 (OVERLAY PLOT DATA) \$\$\$

ENDATA31

.....NO ERRORS DETECTED IN INPUT DATA  
 .....HYDRAULIC CALCULATIONS COMPLETED  
 .....TRIDIAGONAL MATRIX TERMS INITIALIZED  
 .....OXYGEN DEPENDENT RATES CONVERGENT IN 1 ITERATIONS  
 .....CONSTITUENT CALCULATIONS COMPLETED  
 .....GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
 REACH NO. 1 GRAY'S CREEK CANAL TO HWY 190 GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
1	HDWTR	0.00280	26.80	0.20	6.90	83.70	7.20	1.04	0.00	1.79	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
1	WSTLD	0.00580	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	WSTLD	0.00660	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	WSTLD	0.00050	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	WSTLD	0.00130	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
1	27.30	27.20	0.00860	67.4	0.22572	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.111	0.226
2	27.20	27.10	0.00860	67.4	0.22572	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.111	0.226
3	27.10	27.00	0.00860	67.4	0.22572	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.111	0.226
4	27.00	26.90	0.00860	67.4	0.22572	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.111	0.226
5	26.90	26.80	0.01520	81.6	0.39895	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.196	0.399
6	26.80	26.70	0.01520	81.6	0.39895	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.196	0.399
7	26.70	26.60	0.01520	81.6	0.39895	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.196	0.399
8	26.60	26.50	0.01520	81.6	0.39895	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.196	0.399
9	26.50	26.40	0.01520	81.6	0.39895	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.196	0.399
10	26.40	26.30	0.01570	82.2	0.41207	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.202	0.412
11	26.30	26.20	0.01700	83.5	0.44619	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.219	0.446
TOT						0.04			41.91	1676.40					
AVG					0.3150		0.03	1.52			0.04				
CUM						0.04									

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECATY 1/da	BOD#1 SETT 1/da	ABOD#1 DECATY 1/da	BOD#2 DECATY 1/da	BOD#2 SETT 1/da	ABOD#2 DECATY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECATY 1/da	ORGN SETT 1/da	NH3 DECATY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECATY 1/da	NCM DECATY 1/da	NCM SETT 1/da
1	27.200	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	27.100	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	27.000	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	26.900	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	26.800	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	26.700	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	26.600	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	26.500	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	26.400	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	26.300	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	26.200	7.99	28.42	0.10	2.35	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	20 DEG C RATE		25.00	0.08	2.00	0.00	0.00	0.00	0.00	0.17			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00
*	g/m <sup>2</sup> /d																						
**	mg/L/day																						

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
1	27.200	26.80	0.19	10.41	219.46	5.95	13.78	0.00	14.53	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
2	27.100	26.80	0.18	10.41	219.46	6.16	13.66	0.00	14.41	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
3	27.000	26.80	0.18	10.41	219.46	6.34	13.55	0.00	14.30	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
4	26.900	26.80	0.18	10.41	219.65	6.49	13.46	0.00	14.21	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
5	26.800	26.80	0.18	11.14	247.92	5.98	16.25	0.00	17.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
6	26.700	26.80	0.17	11.14	247.92	6.10	16.17	0.00	16.92	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
7	26.600	26.80	0.17	11.14	247.92	6.21	16.08	0.00	16.83	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
8	26.500	26.80	0.17	11.14	247.92	6.31	16.00	0.00	16.75	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
9	26.400	26.80	0.17	11.14	247.92	6.41	15.92	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
10	26.300	26.80	0.16	11.17	249.11	6.45	15.98	0.00	16.73	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
11	26.200	26.80	0.16	11.24	251.84	6.42	16.21	0.00	16.96	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
 REACH NO. 2 HIGHWAY 190 TO FORREST DELATTE

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
12	UPR RCH	0.01700	26.80	0.16	11.24	251.84	6.42	16.21	0.00	16.96	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
17	WSTLD	0.00110	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	WSTLD	0.00280	30.00	0.00	8.50	278.50	5.00	2.41	0.00	2.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST	ENDING DIST	FLOW	PCT EFF	ADVCTV VELO	TRAVEL TIME	DEPTH	WIDTH	VOLUME	SURFACE AREA	X-SECT AREA	TIDAL PRISM	TIDAL VELO	DISPRSN	MEAN VELO
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Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

	km	km	m <sup>3</sup> /s	m/s	days	m	m	m <sup>3</sup>	m <sup>2</sup>	m <sup>2</sup>	m <sup>3</sup>	m/s	m <sup>2</sup> /s	m/s	
12	26.20	26.10	0.01700	83.5	0.01215	0.10	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.072	0.012
13	26.10	26.00	0.01700	83.5	0.01215	0.10	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.072	0.012
14	26.00	25.90	0.01700	83.5	0.01215	0.10	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.072	0.012
15	25.90	25.80	0.01700	83.5	0.01215	0.10	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.072	0.012
16	25.80	25.70	0.01700	83.5	0.01215	0.10	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.072	0.012
17	25.70	25.60	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
18	25.60	25.50	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
19	25.50	25.40	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
20	25.40	25.30	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
21	25.30	25.20	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
22	25.20	25.10	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
23	25.10	25.00	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
24	25.00	24.90	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
25	24.90	24.80	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
26	24.80	24.70	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
27	24.70	24.60	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
28	24.60	24.50	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
29	24.50	24.40	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
30	24.40	24.30	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
31	24.30	24.20	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
32	24.20	24.10	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
33	24.10	24.00	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
34	24.00	23.90	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
35	23.90	23.80	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
36	23.80	23.70	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
37	23.70	23.60	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
38	23.60	23.50	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
39	23.50	23.40	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
40	23.40	23.30	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
41	23.30	23.20	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
42	23.20	23.10	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
43	23.10	23.00	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
44	23.00	22.90	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
45	22.90	22.80	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
46	22.80	22.70	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
47	22.70	22.60	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
48	22.60	22.50	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
49	22.50	22.40	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
TOT						3.26			5316.23	10761.60					
AVG					0.0135		0.49	2.83			1.40				
CUM					3.30										

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECA	BOD#1 SETT	ABOD#1 DECA	BOD#2 DECA	BOD#2 SETT	ABOD#2 DECA	BKGD SOD	FULL SOD	CORR SOD	ORGN DECA	ORGN SETT	NH3 DECA	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECA	NCM DECA	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
12	26.100	7.99	1.61	0.10	0.12	0.00	0.00	0.00	0.00	0.95	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	26.000	7.99	1.61	0.10	0.12	0.00	0.00	0.00	0.00	0.95	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	25.900	7.99	1.61	0.10	0.12	0.00	0.00	0.00	0.00	0.95	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	25.800	7.99	1.61	0.10	0.12	0.00	0.00	0.00	0.00	0.95	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	25.700	7.99	1.61	0.10	0.12	0.00	0.00	0.00	0.00	0.95	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	25.600	7.99	1.61	0.10	0.12	0.00	0.00	0.00	0.00	0.95	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	25.500	7.99	1.61	0.10	0.12	0.00	0.00	0.00	0.00	0.95	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	25.400	7.99	1.61	0.10	0.12	0.00	0.00	0.00	0.00	0.95	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

31	24.200	26.80	0.17	11.30	253.86	5.98	12.01	0.00	12.76	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
32	24.100	26.80	0.17	11.30	253.86	5.99	11.83	0.00	12.58	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
33	24.000	26.80	0.17	11.30	253.86	6.00	11.65	0.00	12.40	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
34	23.900	26.80	0.17	11.29	253.87	6.01	11.47	0.00	12.22	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
35	23.800	26.80	0.17	11.27	254.06	6.01	11.24	0.00	11.99	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
36	23.700	26.80	0.17	10.92	257.16	5.91	9.99	0.00	10.74	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
37	23.600	26.80	0.17	10.92	257.16	5.94	9.87	0.00	10.62	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
38	23.500	26.80	0.17	10.92	257.16	5.97	9.75	0.00	10.50	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
39	23.400	26.80	0.17	10.92	257.16	5.99	9.63	0.00	10.38	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
40	23.300	26.80	0.18	10.92	257.16	6.01	9.51	0.00	10.26	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
41	23.200	26.80	0.18	10.92	257.16	6.03	9.40	0.00	10.15	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
42	23.100	26.80	0.18	10.92	257.16	6.05	9.29	0.00	10.04	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
43	23.000	26.80	0.18	10.92	257.16	6.07	9.17	0.00	9.92	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
44	22.900	26.80	0.18	10.92	257.16	6.09	9.07	0.00	9.82	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
45	22.800	26.80	0.18	10.92	257.16	6.10	8.96	0.00	9.71	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
46	22.700	26.80	0.18	10.92	257.16	6.12	8.85	0.00	9.60	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
47	22.600	26.80	0.18	10.92	257.16	6.13	8.75	0.00	9.50	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
48	22.500	26.80	0.18	10.92	257.16	6.14	8.65	0.00	9.40	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
49	22.400	26.80	0.18	10.92	257.16	6.15	8.55	0.00	9.30	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 3 FORREST DELATTE ROAD TO DSPOTW

GRAY'S CREEK WATERSHED MODEL  
GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
50	UPR RCH	0.02090	26.80	0.18	10.92	257.16	6.15	8.55	0.00	9.30	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
53	WSTLD	0.00280	30.00	0.00	17.10	255.40	5.00	3.32	0.00	3.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
50	22.40	22.30	0.02090	86.6	0.01735	0.07	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.057	0.017
51	22.30	22.20	0.02090	86.6	0.01735	0.07	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.057	0.017
52	22.20	22.10	0.02090	86.6	0.01735	0.07	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.057	0.017
53	22.10	22.00	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
54	22.00	21.90	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
55	21.90	21.80	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
56	21.80	21.70	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
57	21.70	21.60	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
58	21.60	21.50	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
59	21.50	21.40	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
60	21.40	21.30	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
61	21.30	21.20	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
62	21.20	21.10	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
63	21.10	21.00	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
64	21.00	20.90	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
65	20.90	20.80	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
66	20.80	20.70	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
67	20.70	20.60	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020

TOT 1.08 2168.31 8778.60

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

AVG 0.0192 0.25 4.88 1.20  
 CUM 4.38

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECATY 1/da	BOD#1 SETT 1/da	ABOD#1 DECATY 1/da	BOD#2 DECATY 1/da	BOD#2 SETT 1/da	ABOD#2 DECATY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECATY 1/da	ORGN SETT 1/da	NH3 DECATY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECATY 1/da	NCM DECATY 1/da	NCM SETT 1/da
50	22.300	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	22.200	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	22.100	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	22.000	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	21.900	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	21.800	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	21.700	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	21.600	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	21.500	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	21.400	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	21.300	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61	21.200	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	21.100	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63	21.000	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	20.900	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	20.800	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66	20.700	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67	20.600	7.99	3.22	0.10	0.24	0.00	0.00	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			2.83	0.08	0.20	0.00	0.00	0.00	0.00	0.75			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00
* g/m <sup>2</sup> /d			** mg/L/day																				

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
50	22.300	26.80	0.18	10.92	257.16	6.18	8.39	0.00	9.14	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
51	22.200	26.80	0.18	10.92	257.16	6.19	8.23	0.00	8.98	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
52	22.100	26.80	0.18	10.95	257.15	6.21	8.06	0.00	8.81	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
53	22.000	26.80	0.18	11.65	256.95	6.11	7.39	0.00	8.14	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
54	21.900	26.80	0.18	11.65	256.95	6.14	7.27	0.00	8.02	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
55	21.800	26.80	0.18	11.65	256.95	6.17	7.15	0.00	7.90	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
56	21.700	26.80	0.18	11.65	256.95	6.19	7.04	0.00	7.79	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
57	21.600	26.80	0.18	11.65	256.95	6.21	6.92	0.00	7.67	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
58	21.500	26.80	0.18	11.65	256.95	6.23	6.81	0.00	7.56	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
59	21.400	26.80	0.18	11.65	256.95	6.25	6.71	0.00	7.46	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
60	21.300	26.80	0.18	11.65	256.95	6.26	6.60	0.00	7.35	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
61	21.200	26.80	0.18	11.65	256.95	6.27	6.49	0.00	7.24	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
62	21.100	26.80	0.18	11.65	256.95	6.28	6.39	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
63	21.000	26.80	0.18	11.65	256.95	6.29	6.29	0.00	7.04	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
64	20.900	26.80	0.18	11.65	256.95	6.30	6.19	0.00	6.94	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
65	20.800	26.80	0.18	11.66	256.99	6.31	6.10	0.00	6.85	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
66	20.700	26.80	0.18	11.78	258.01	6.31	6.07	0.00	6.82	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
67	20.600	26.80	0.18	15.79	289.88	6.13	8.18	0.00	8.93	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

REACH NO. 4 DENHAM SPRINGS POTW

GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
68	UPR RCH	0.02370	26.80	0.18	15.79	289.88	6.13	8.18	0.00	8.93	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
68	WSTLD	0.26280	30.00	0.00	37.00	458.70	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
68	20.60	20.50	0.28650	99.0	0.23783	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.786	0.238
TOT						0.00			120.46	487.70					
AVG					0.2378		0.25	4.88			1.20				
CUM						4.39									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAY 1/da	BOD#1 SETT 1/da	ABOD#1 DECAY 1/da	BOD#2 DECAY 1/da	BOD#2 SETT 1/da	ABOD#2 DECAY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAY 1/da	ORGN SETT 1/da	NH3 DECAY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/da	NCM DECAY 1/da	NCM SETT 1/da	
68	20.500	7.99	5.16	0.10	0.48	0.00	0.00	0.00	0.00	1.38	1.38	1.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			4.54	0.08	0.40	0.00	0.00	0.00	0.00	0.90			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	

\* g/m²/d                      \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
68	20.500	26.80	0.18	34.90	442.01	5.15	18.89	0.00	20.39	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
 REACH NO. 5 DENHAM SPRINGS POTW TO WAX ROAD

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
69	UPR RCH	0.28650	26.80	0.18	34.90	442.01	5.15	18.89	0.00	20.39	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
73	WSTLD	0.00350	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76	WSTLD	0.00090	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
69	20.50	20.40	0.28650	99.0	0.23783	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.786	0.238
70	20.40	20.30	0.28650	99.0	0.23783	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.786	0.238
71	20.30	20.20	0.28650	99.0	0.23783	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.786	0.238
72	20.20	20.10	0.28650	99.0	0.23783	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.786	0.238
73	20.10	20.00	0.29000	99.0	0.24074	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.796	0.241
74	20.00	19.90	0.29000	99.0	0.24074	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.796	0.241
75	19.90	19.80	0.29000	99.0	0.24074	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.796	0.241
76	19.80	19.70	0.29090	99.0	0.24149	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.799	0.241
TOT						0.04			963.70	3901.60					
AVG					0.2394		0.25	4.88			1.20				
CUM						4.43									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAY	BOD#1 SETT	ABOD#1 DECAY	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NCM DECAY	NCM SETT		
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da		
69	20.400	7.99	5.16	0.10	0.48	0.00	0.00	0.00	0.00	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
70	20.300	7.99	5.16	0.10	0.48	0.00	0.00	0.00	0.00	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
71	20.200	7.99	5.16	0.10	0.48	0.00	0.00	0.00	0.00	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
72	20.100	7.99	5.16	0.10	0.48	0.00	0.00	0.00	0.00	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
73	20.000	7.99	5.17	0.10	0.48	0.00	0.00	0.00	0.00	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
74	19.900	7.99	5.17	0.10	0.48	0.00	0.00	0.00	0.00	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
75	19.800	7.99	5.17	0.10	0.48	0.00	0.00	0.00	0.00	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
76	19.700	7.99	5.18	0.10	0.48	0.00	0.00	0.00	0.00	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
AVG	20 DEG C RATE		4.54	0.08	0.40	0.00	0.00	0.00	0.00	0.98			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00	
*	g/m <sup>2</sup> /d																								
**	mg/L/day																								

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
69	20.400	26.80	0.18	34.90	442.01	5.18	18.85	0.00	20.35	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
70	20.300	26.80	0.19	34.90	442.01	5.21	18.80	0.00	20.30	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
71	20.200	26.80	0.19	34.90	442.01	5.24	18.75	0.00	20.25	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
72	20.100	26.80	0.19	34.89	441.95	5.27	18.71	0.00	20.21	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
73	20.000	26.80	0.20	34.63	440.12	5.29	18.68	0.00	20.18	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
74	19.900	26.80	0.20	34.63	440.12	5.32	18.64	0.00	20.14	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
75	19.800	26.80	0.21	34.63	440.10	5.35	18.59	0.00	20.09	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
76	19.700	26.80	0.21	34.56	439.64	5.38	18.55	0.00	20.05	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
 REACH NO. 6 WAX ROAD TO HIGHWAY 1026 GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
77	UPR RCH	0.29090	26.80	0.21	34.56	439.64	5.38	18.55	0.00	20.05	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
85	WSTLD	0.00290	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
77	19.70	19.60	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
78	19.60	19.50	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
79	19.50	19.40	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
80	19.40	19.30	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
81	19.30	19.20	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
82	19.20	19.10	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
83	19.10	19.00	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
84	19.00	18.90	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
85	18.90	18.80	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
86	18.80	18.70	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
87	18.70	18.60	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
88	18.60	18.50	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
89	18.50	18.40	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
90	18.40	18.30	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
91	18.30	18.20	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
92	18.20	18.10	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
93	18.10	18.00	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
94	18.00	17.90	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
95	17.90	17.80	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
96	17.80	17.70	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
97	17.70	17.60	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
TOT						0.14			3594.43	11520.60					
AVG					0.1710		0.31	5.49			1.71				
CUM						4.57									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da
77	19.600	7.99	3.82	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	19.500	7.99	3.82	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	19.400	7.99	3.82	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	19.300	7.99	3.82	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81	19.200	7.99	3.82	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	19.100	7.99	3.82	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83	19.000	7.99	3.82	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84	18.900	7.99	3.82	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	18.800	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	18.700	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87	18.600	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	18.500	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89	18.400	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

90	18.300	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91	18.200	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	18.100	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
93	18.000	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	17.900	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	17.800	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
96	17.700	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97	17.600	7.99	3.83	0.10	0.38	0.00	0.00	0.00	0.00	1.18	1.18	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AVG 20 DEG C RATE 3.36 0.08 0.32 0.00 0.00 0.00 0.00 0.77 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\* g/m<sup>2</sup>/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
77	19.600	26.80	0.21	34.56	439.64	5.40	18.49	0.00	19.99	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
78	19.500	26.80	0.21	34.56	439.64	5.43	18.43	0.00	19.93	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
79	19.400	26.80	0.21	34.56	439.64	5.46	18.37	0.00	19.87	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
80	19.300	26.80	0.21	34.56	439.64	5.49	18.31	0.00	19.81	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
81	19.200	26.80	0.21	34.56	439.64	5.51	18.26	0.00	19.76	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
82	19.100	26.80	0.21	34.56	439.64	5.54	18.20	0.00	19.70	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
83	19.000	26.80	0.21	34.56	439.63	5.56	18.14	0.00	19.64	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
84	18.900	26.80	0.21	34.55	439.58	5.58	18.08	0.00	19.58	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
85	18.800	26.80	0.21	34.34	438.11	5.60	18.04	0.00	19.54	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
86	18.700	26.80	0.21	34.34	438.11	5.63	17.98	0.00	19.48	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
87	18.600	26.80	0.21	34.34	438.11	5.65	17.93	0.00	19.43	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
88	18.500	26.80	0.21	34.34	438.11	5.67	17.87	0.00	19.37	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
89	18.400	26.80	0.21	34.34	438.11	5.69	17.81	0.00	19.31	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
90	18.300	26.80	0.21	34.34	438.11	5.71	17.75	0.00	19.25	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
91	18.200	26.80	0.21	34.34	438.11	5.73	17.70	0.00	19.20	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
92	18.100	26.80	0.21	34.34	438.11	5.75	17.64	0.00	19.14	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
93	18.000	26.80	0.21	34.34	438.11	5.77	17.58	0.00	19.08	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
94	17.900	26.80	0.21	34.34	438.11	5.79	17.53	0.00	19.03	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
95	17.800	26.80	0.21	34.34	438.11	5.81	17.47	0.00	18.97	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
96	17.700	26.80	0.21	34.34	438.11	5.83	17.42	0.00	18.92	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
97	17.600	26.80	0.21	34.34	438.11	5.85	17.36	0.00	18.86	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 7 HIGHWAY 1026 TO HIGHWAY 1033

GRAY'S CREEK WATERSHED MODEL  
GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
98	UPR RCH	0.29380	26.80	0.21	34.34	438.11	5.85	17.36	0.00	18.86	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
104	WSTLD	0.00280	30.00	0.00	12.10	285.00	5.00	2.61	0.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	WSTLD	0.00200	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
119	WSTLD	0.00280	30.00	0.00	12.10	285.00	5.00	2.61	0.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	WSTLD	0.00130	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
137	WSTLD	0.00620	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
143	WSTLD	0.00620	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149	WSTLD	0.00010	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
152	WSTLD	0.00070	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

158 WSTLD 0.00380 30.00 0.00 12.10 285.00 5.00 20.10 0.00 20.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
98	17.60	17.50	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
99	17.50	17.40	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
100	17.40	17.30	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
101	17.30	17.20	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
102	17.20	17.10	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
103	17.10	17.00	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
104	17.00	16.90	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
105	16.90	16.80	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
106	16.80	16.70	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
107	16.70	16.60	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
108	16.60	16.50	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
109	16.50	16.40	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
110	16.40	16.30	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
111	16.30	16.20	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
112	16.20	16.10	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
113	16.10	16.00	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
114	16.00	15.90	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
115	15.90	15.80	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
116	15.80	15.70	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
117	15.70	15.60	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
118	15.60	15.50	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
119	15.50	15.40	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
120	15.40	15.30	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
121	15.30	15.20	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
122	15.20	15.10	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
123	15.10	15.00	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
124	15.00	14.90	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
125	14.90	14.80	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
126	14.80	14.70	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
127	14.70	14.60	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
128	14.60	14.50	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
129	14.50	14.40	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
130	14.40	14.30	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
131	14.30	14.20	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
132	14.20	14.10	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
133	14.10	14.00	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
134	14.00	13.90	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
135	13.90	13.80	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
136	13.80	13.70	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
137	13.70	13.60	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
138	13.60	13.50	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
139	13.50	13.40	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
140	13.40	13.30	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
141	13.30	13.20	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
142	13.20	13.10	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
143	13.10	13.00	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
144	13.00	12.90	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
145	12.90	12.80	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
146	12.80	12.70	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
147	12.70	12.60	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
148	12.60	12.50	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347





Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

124	14.900	26.80	0.20	33.78	434.25	6.24	16.26	0.00	17.76	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
125	14.800	26.80	0.20	33.78	434.25	6.25	16.23	0.00	17.73	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
126	14.700	26.80	0.20	33.78	434.25	6.26	16.20	0.00	17.70	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
127	14.600	26.80	0.20	33.78	434.25	6.28	16.17	0.00	17.67	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
128	14.500	26.80	0.19	33.78	434.25	6.29	16.14	0.00	17.64	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
129	14.400	26.80	0.19	33.77	434.23	6.30	16.11	0.00	17.61	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
130	14.300	26.80	0.19	33.68	433.61	6.31	16.09	0.00	17.59	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
131	14.200	26.80	0.19	33.68	433.61	6.32	16.06	0.00	17.56	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
132	14.100	26.80	0.19	33.68	433.61	6.33	16.03	0.00	17.53	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
133	14.000	26.80	0.19	33.68	433.61	6.34	16.00	0.00	17.50	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
134	13.900	26.80	0.19	33.68	433.61	6.35	15.97	0.00	17.47	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
135	13.800	26.80	0.19	33.68	433.60	6.36	15.94	0.00	17.44	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
136	13.700	26.80	0.19	33.67	433.50	6.37	15.92	0.00	17.42	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
137	13.600	26.80	0.19	33.25	430.62	6.35	15.97	0.00	17.47	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
138	13.500	26.80	0.19	33.25	430.62	6.36	15.94	0.00	17.44	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
139	13.400	26.80	0.19	33.25	430.62	6.37	15.91	0.00	17.41	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
140	13.300	26.80	0.19	33.25	430.62	6.38	15.88	0.00	17.38	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
141	13.200	26.80	0.19	33.25	430.62	6.39	15.85	0.00	17.35	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
142	13.100	26.80	0.19	33.24	430.53	6.40	15.83	0.00	17.33	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
143	13.000	26.80	0.19	32.83	427.76	6.39	15.88	0.00	17.38	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
144	12.900	26.80	0.19	32.83	427.76	6.40	15.85	0.00	17.35	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
145	12.800	26.80	0.19	32.83	427.76	6.40	15.82	0.00	17.32	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
146	12.700	26.80	0.19	32.83	427.76	6.41	15.80	0.00	17.30	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
147	12.600	26.80	0.19	32.83	427.76	6.42	15.77	0.00	17.27	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
148	12.500	26.80	0.18	32.83	427.76	6.43	15.74	0.00	17.24	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
149	12.400	26.80	0.18	32.83	427.71	6.44	15.71	0.00	17.21	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
150	12.300	26.80	0.18	32.83	427.71	6.45	15.68	0.00	17.18	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
151	12.200	26.80	0.18	32.83	427.70	6.46	15.66	0.00	17.16	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
152	12.100	26.80	0.18	32.78	427.40	6.46	15.64	0.00	17.14	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
153	12.000	26.80	0.18	32.78	427.40	6.47	15.61	0.00	17.11	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
154	11.900	26.80	0.18	32.78	427.40	6.48	15.58	0.00	17.08	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
155	11.800	26.80	0.18	32.78	427.40	6.49	15.55	0.00	17.05	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
156	11.700	26.80	0.18	32.78	427.40	6.50	15.53	0.00	17.03	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
157	11.600	26.80	0.18	32.77	427.34	6.51	15.50	0.00	17.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
158	11.500	26.80	0.18	32.54	425.71	6.50	15.53	0.00	17.03	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 8 HIGHWAY 1033 TO SCVICQUE ROAD

GRAY'S CREEK WATERSHED MODEL  
GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
159	UPR RCH	0.31970	26.80	0.18	32.54	425.71	6.50	15.53	0.00	17.03	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
159	11.50	11.40	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
160	11.40	11.30	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
161	11.30	11.20	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
162	11.20	11.10	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
163	11.10	11.00	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

164	11.00	10.90	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
165	10.90	10.80	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
166	10.80	10.70	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
167	10.70	10.60	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
168	10.60	10.50	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
169	10.50	10.40	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
170	10.40	10.30	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
171	10.30	10.20	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
172	10.20	10.10	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
173	10.10	10.00	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
174	10.00	9.90	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
175	9.90	9.80	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
176	9.80	9.70	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
177	9.70	9.60	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
178	9.60	9.50	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
179	9.50	9.40	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
180	9.40	9.30	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
181	9.30	9.20	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
182	9.20	9.10	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
183	9.10	9.00	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
184	9.00	8.90	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
185	8.90	8.80	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
186	8.80	8.70	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
187	8.70	8.60	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
188	8.60	8.50	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
189	8.50	8.40	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
190	8.40	8.30	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
191	8.30	8.20	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
192	8.20	8.10	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383

TOT						0.10			2836.63	17618.80					
AVG			0.3832				0.16	5.18			0.83				
CUM						4.88									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAR RATE	BOD#1 DECAT	BOD#1 SETT	ABOD#1 DECAT	BOD#2 DECAT	BOD#2 SETT	ABOD#2 DECAT	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAT	ORGN SETT	NH3 DECAT	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAT	NCM DECAT	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
159	11.400	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	11.300	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
161	11.200	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
162	11.100	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
163	11.000	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
164	10.900	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	10.800	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166	10.700	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
167	10.600	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
168	10.500	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
169	10.400	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	10.300	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
171	10.200	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
172	10.100	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
173	10.000	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
174	9.900	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	9.800	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
176	9.700	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177	9.600	7.99	8.61	0.10	0.73	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00





Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

FINAL REPORT HEADWATER  
 REACH NO. 9 SCIVICQUE ROAD TO HIGHWAY 1032

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
193	UPR RCH	0.31970	26.80	0.16	32.53	425.69	6.87	14.26	0.00	15.76	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
193	WSTLD	0.00080	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
203	WSTLD	0.00280	30.00	0.00	10.70	324.60	5.00	2.61	0.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
219	WSTLD	0.00030	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
234	WSTLD	0.00030	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
193	8.10	8.00	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
194	8.00	7.90	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
195	7.90	7.80	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
196	7.80	7.70	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
197	7.70	7.60	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
198	7.60	7.50	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
199	7.50	7.40	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
200	7.40	7.30	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
201	7.30	7.20	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
202	7.20	7.10	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
203	7.10	7.00	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
204	7.00	6.90	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
205	6.90	6.80	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
206	6.80	6.70	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
207	6.70	6.60	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
208	6.60	6.50	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
209	6.50	6.40	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
210	6.40	6.30	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
211	6.30	6.20	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
212	6.20	6.10	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
213	6.10	6.00	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
214	6.00	5.90	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
215	5.90	5.80	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
216	5.80	5.70	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
217	5.70	5.60	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
218	5.60	5.50	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
219	5.50	5.40	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
220	5.40	5.30	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
221	5.30	5.20	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
222	5.20	5.10	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
223	5.10	5.00	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
224	5.00	4.90	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
225	4.90	4.80	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
226	4.80	4.70	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
227	4.70	4.60	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
228	4.60	4.50	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

AVG 20 DEG C RATE 1.27 0.08 0.17 0.00 0.00 0.00 0.00 0.34 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\* g/m<sup>2</sup>/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
193	8.000	26.80	0.16	32.48	425.36	6.85	14.15	0.00	15.65	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
194	7.900	26.80	0.16	32.48	425.36	6.83	14.02	0.00	15.52	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
195	7.800	26.80	0.16	32.48	425.36	6.81	13.90	0.00	15.40	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
196	7.700	26.80	0.15	32.48	425.36	6.80	13.78	0.00	15.28	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
197	7.600	26.80	0.15	32.48	425.36	6.78	13.66	0.00	15.16	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
198	7.500	26.80	0.15	32.48	425.36	6.77	13.55	0.00	15.05	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
199	7.400	26.80	0.15	32.48	425.36	6.75	13.43	0.00	14.93	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
200	7.300	26.80	0.15	32.48	425.36	6.74	13.31	0.00	14.81	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
201	7.200	26.80	0.14	32.48	425.35	6.73	13.20	0.00	14.70	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
202	7.100	26.80	0.14	32.47	425.29	6.71	13.08	0.00	14.58	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
203	7.000	26.80	0.14	32.30	424.48	6.69	12.88	0.00	14.38	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
204	6.900	26.80	0.14	32.30	424.48	6.68	12.77	0.00	14.27	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
205	6.800	26.80	0.14	32.30	424.48	6.67	12.66	0.00	14.16	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
206	6.700	26.80	0.14	32.30	424.48	6.67	12.56	0.00	14.06	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
207	6.600	26.80	0.14	32.30	424.48	6.66	12.45	0.00	13.95	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
208	6.500	26.80	0.13	32.30	424.48	6.65	12.34	0.00	13.84	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
209	6.400	26.80	0.13	32.30	424.48	6.65	12.24	0.00	13.74	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
210	6.300	26.80	0.13	32.30	424.48	6.64	12.13	0.00	13.63	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
211	6.200	26.80	0.13	32.30	424.48	6.64	12.03	0.00	13.53	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
212	6.100	26.80	0.13	32.30	424.48	6.63	11.93	0.00	13.43	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
213	6.000	26.80	0.12	32.30	424.48	6.63	11.83	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
214	5.900	26.80	0.12	32.30	424.48	6.63	11.73	0.00	13.23	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
215	5.800	26.80	0.12	32.30	424.48	6.63	11.63	0.00	13.13	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
216	5.700	26.80	0.12	32.30	424.48	6.62	11.53	0.00	13.03	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
217	5.600	26.80	0.12	32.30	424.48	6.62	11.43	0.00	12.93	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
218	5.500	26.80	0.12	32.29	424.47	6.62	11.33	0.00	12.83	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
219	5.400	26.80	0.12	32.28	424.35	6.62	11.24	0.00	12.74	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
220	5.300	26.80	0.11	32.28	424.35	6.62	11.15	0.00	12.65	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
221	5.200	26.80	0.11	32.28	424.35	6.62	11.05	0.00	12.55	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
222	5.100	26.80	0.11	32.28	424.35	6.62	10.96	0.00	12.46	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
223	5.000	26.80	0.11	32.28	424.35	6.62	10.87	0.00	12.37	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
224	4.900	26.80	0.11	32.28	424.35	6.62	10.77	0.00	12.27	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
225	4.800	26.80	0.11	32.28	424.35	6.62	10.68	0.00	12.18	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
226	4.700	26.80	0.10	32.28	424.35	6.62	10.59	0.00	12.09	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
227	4.600	26.80	0.10	32.28	424.35	6.62	10.50	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
228	4.500	26.80	0.10	32.28	424.35	6.62	10.41	0.00	11.91	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
229	4.400	26.80	0.10	32.28	424.35	6.62	10.33	0.00	11.83	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
230	4.300	26.80	0.10	32.28	424.35	6.62	10.24	0.00	11.74	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
231	4.200	26.80	0.10	32.28	424.35	6.62	10.15	0.00	11.65	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
232	4.100	26.80	0.09	32.28	424.35	6.63	10.07	0.00	11.57	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
233	4.000	26.80	0.09	32.28	424.34	6.63	9.98	0.00	11.48	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
234	3.900	26.80	0.09	32.26	424.22	6.62	9.89	0.00	11.39	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
 REACH NO. 10 HIGHWAY 1032 TO RKM 0.8

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
235	UPR RCH	0.32390	26.80	0.09	32.26	424.22	6.62	9.89	0.00	11.39	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
235	3.90	3.80	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
236	3.80	3.70	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
237	3.70	3.60	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
238	3.60	3.50	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
239	3.50	3.40	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
240	3.40	3.30	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
241	3.30	3.20	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
242	3.20	3.10	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
243	3.10	3.00	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
244	3.00	2.90	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
245	2.90	2.80	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
246	2.80	2.70	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
247	2.70	2.60	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
248	2.60	2.50	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
249	2.50	2.40	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
250	2.40	2.30	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
251	2.30	2.20	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
252	2.20	2.10	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
253	2.10	2.00	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
254	2.00	1.90	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
255	1.90	1.80	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
256	1.80	1.70	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
257	1.70	1.60	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
258	1.60	1.50	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
259	1.50	1.40	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
260	1.40	1.30	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
261	1.30	1.20	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
262	1.20	1.10	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
263	1.10	1.00	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
264	1.00	0.90	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
265	0.90	0.80	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
TOT						3.63			101569.87	67087.12					
AVG					0.0099		1.51	21.64			32.76				
CUM						9.76									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAY	BOD#1 SETT	ABOD#1 DECAY	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NCM DECAY	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
235	3.800	7.99	0.53	0.10	0.08	0.00	0.00	0.00	0.00	0.63	0.63	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
236	3.700	7.99	0.53	0.10	0.08	0.00	0.00	0.00	0.00	0.63	0.63	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
237	3.600	7.99	0.53	0.10	0.08	0.00	0.00	0.00	0.00	0.63	0.63	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
238	3.500	7.99	0.53	0.10	0.08	0.00	0.00	0.00	0.00	0.63	0.63	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

257	1.600	26.80	0.05	32.26	424.22	5.98	6.13	0.00	7.63	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
258	1.500	26.80	0.04	32.26	424.22	5.99	6.00	0.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
259	1.400	26.80	0.04	32.26	424.22	5.99	5.88	0.00	7.38	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
260	1.300	26.80	0.04	32.26	424.22	6.00	5.76	0.00	7.26	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
261	1.200	26.80	0.04	32.26	424.22	6.00	5.64	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
262	1.100	26.80	0.04	32.26	424.22	6.01	5.52	0.00	7.02	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
263	1.000	26.80	0.03	32.26	424.22	6.02	5.41	0.00	6.91	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
264	0.900	26.80	0.03	32.26	424.22	6.02	5.29	0.00	6.79	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
265	0.800	26.80	0.03	32.25	424.19	6.03	5.13	0.00	6.63	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
 REACH NO. 11 RKM 0.8 TO GRAY'S CREEK LAKE GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
266	UPR RCH	0.32390	26.80	0.03	32.25	424.19	6.03	5.13	0.00	6.63	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
266	WSTLD	0.00010	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
267	WSTLD	0.00130	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
272	WSTLD	0.00010	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
266	0.80	0.70	0.32400	99.1	0.00179	0.65	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
267	0.70	0.60	0.32530	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
268	0.60	0.50	0.32530	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
269	0.50	0.40	0.32530	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
270	0.40	0.30	0.32530	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
271	0.30	0.20	0.32530	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
272	0.20	0.10	0.32540	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
273	0.10	0.00	0.32540	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
TOT						5.15			144597.12	48768.00					
AVG					0.0018		2.96	60.96			180.75				
CUM						14.90									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAY	BOD#1 SETT	ABOD#1 DECAY	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NCM DECAY	NCM SETT
266	0.700	8.00	0.27	0.10	0.04	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
267	0.600	8.00	0.27	0.10	0.04	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
268	0.500	8.00	0.27	0.10	0.04	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
269	0.400	8.00	0.27	0.10	0.04	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	0.300	8.00	0.27	0.10	0.04	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
271	0.200	8.00	0.27	0.10	0.04	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
272	0.100	8.00	0.27	0.10	0.04	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
273	0.000	8.00	0.27	0.10	0.04	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

AVG 20 DEG C RATE 0.24 0.08 0.03 0.00 0.00 0.00 0.00 0.22 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\* g/m<sup>2</sup>/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
266	0.700	26.80	0.03	32.23	424.05	5.99	4.77	0.00	6.18	0.00	0.00	0.00	0.00	0.00	0.00	9.38	0.00	0.	0.00
267	0.600	26.80	0.03	32.17	423.61	5.97	4.50	0.00	5.81	0.00	0.00	0.00	0.00	0.00	0.00	8.75	0.00	0.	0.00
268	0.500	26.80	0.03	32.16	423.54	5.97	4.20	0.00	5.42	0.00	0.00	0.00	0.00	0.00	0.00	8.12	0.00	0.	0.00
269	0.400	26.80	0.02	32.14	423.28	5.98	3.93	0.00	5.05	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	0.	0.00
270	0.300	26.80	0.02	32.05	422.12	6.01	3.69	0.00	4.72	0.00	0.00	0.00	0.00	0.00	0.00	6.88	0.00	0.	0.00
271	0.200	26.80	0.02	31.64	417.15	6.02	3.52	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.	0.00
272	0.100	26.80	0.02	29.90	395.69	5.98	3.59	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	5.62	0.00	0.	0.00
273	0.000	26.80	0.02	22.39	303.24	5.68	4.70	0.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00

STREAM SUMMARY  
 HEADWATER

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK SUMMER RUN 85% Reduction in Overall Nonpoint

TRAVEL TIME = 14.90 DAYS

MAXIMUM EFFLUENT = 99.14 PERCENT

FLOW = 0.00860 TO 0.32540 m<sup>3</sup>/s  
 DISPERSION = 0.0541 TO 1.2569 m<sup>2</sup>/s  
 VELOCITY = 0.00179 TO 0.44619 m/s  
 DEPTH = 0.03 TO 2.96 m  
 WIDTH = 1.52 TO 60.96 m

BOD DECAY = 0.10 TO 0.10 per day  
 NH3 DECAY = 0.00 TO 0.00 per day  
 SOD = 0.26 TO 1.50 g/m<sup>2</sup>/d  
 NH3 SOURCE = 0.00 TO 0.00 g/m<sup>2</sup>/d  
 REAERATION = 0.27 TO 28.42 per day  
 BOD SETTLING = 0.04 TO 2.35 per day  
 NBOD DECAY = 0.00 TO 0.00 per day  
 NBOD SETTLING = 0.00 TO 0.00 per day

TEMPERATURE = 26.80 TO 26.80 deg C  
 DISSOLVED OXYGEN = 5.15 TO 6.87 mg/L

.....EXECUTION COMPLETED



**Appendix D2 – 85% Reduction Summer Justifications**

<b>Gray's Creek 040304 Summer Justification</b>			
<b>DATA TYPE 3 - PROGRAM CONSTANTS</b>			
<b>CONSTANT NAME</b>	<b>VALUE</b>	<b>UNITS</b>	<b>DATA SOURCE</b>
KL MINIMUM	0.7	m/day	The minimum KL of 2.3 ft/day converted to 0.70 m/day.
INHIBITION CONTROL VALUE	3		The water column dissolved oxygen demand is assumed to come primarily from facultative bacteria under anoxic conditions and SOD is not influenced by modeled dissolved oxygen levels in the upper water column.
K2 MAXIMUM	25	1/day at 20 deg C	EPA Policy in the absence of a measured value.
HYDRAULIC CALCULATION METHOD	2		The low slopes in this waterbody cause a substantial amount of water to be present during critical flow conditions. This method allows the model to predict a more accurate depth and width during low flow conditions.
SETTLING RATE UNITS	1		By making the settling rate a velocity the rate becomes dependent upon the depth.
DISPERSION EQUATION	3		Equation used to account for all modes of transport.
ALGAE OXYGEN PROD	0		Standard practice for steady state calibration to a wide variation in DO.
EFFECTIVE BOD DUE TO ALGAE	0.15		Standard practice for steady state calibration to a wide variation in DO.
B1 OXYGEN DEPENDENCE THRESHOLD	1		Adjustment for effluent dominated stream.
B2 OXYGEN DEPENDENCE THRESHOLD	1		Adjustment for effluent dominated stream.

<b>Gray's Creek 040304 Summer Justification</b>						
<b>DATA TYPE 8 - REACH IDENTIFICATION DATA</b>						
<b>Reach</b>	<b>ID</b>	<b>Name</b>	<b>Upstream River Kilometer</b>	<b>Downstream River Kilometer</b>	<b>Element Length, meters</b>	<b>Data Source</b>
1	GC	GRAY'S CREEK CANAL TO HWY 190	27.3	26.2	100.0000	ARC MAP Calc.
2	GC	HWY 190 TO FORREST DELATTE ROAD	26.2	22.4	100.0000	ARC MAP Calc.
3	GC	FORREST DELATTE ROAD TO WAX ROAD	22.4	20.6	100.0000	ARC MAP Calc.
4	GC	DENHAM SPRINGS POTW	20.6	20.5	100.0000	ARC MAP Calc.
5	GC	DENHAM SPRINGS POTW TO WAX ROAD	20.5	19.7	100.0000	ARC MAP Calc.
6	GC	WAX ROAD TO HWY 1026	19.7	17.6	100.0000	ARC MAP Calc.
7	GC	HWY 1026 TO HWY 1033	17.6	11.5	100.0000	ARC MAP Calc.
8	GC	HWY 1033 TO SCIVICQUE ROAD	11.5	8.1	100.0000	ARC MAP Calc.
9	GC	SCIVICQUE ROAD TO HWY 1032	8.1	3.9	100.0000	ARC MAP Calc.
10	GC	HWY 1032 TO RKM 0.8	3.9	0.8	100.0000	ARC MAP Calc.
11	GC	RKM 0.8 TO GRAYS CREEK LAKE	0.8	0.0	100.0000	ARC MAP Calc.

Gray's Creek 040304 Summer Justification										
Reach	Name	Data Type 9 - Advective Hydraulic Coefficients				Data Source	Depth Coeff. "d"	Depth Exp. "e"	Depth Const. "f"	Data Source
		Width Coeff. "a"	Width Exp. "b"	Width Const. "c"						
1	GRAY'S CREEK CANAL TO HWY 190	0	0.2	1.524	GC09	0	0.3	0.025	GC09	
2	HWY 190 TO FORREST DELATTE ROAD	0	0.2	2.832	GC08	0	0.3	0.494	GC08	
3	FORREST DELATTE ROAD TO WAX ROAD	0	0.2	4.877	GC07	0	0.3	0.247	GC07	
4	DENHAM SPRINGS POTW	0	0.2	4.877	GC07	0	0.3	0.247	GC07	
5	DENHAM SPRINGS POTW TO WAX ROAD	0	0.2	4.877	GC07	0	0.3	0.247	GC07	
6	WAX ROAD TO HWY 1026	0	0.2	5.486	GC06	0	0.3	0.312	GC06	
7	HWY 1026 TO HWY 1033	0	0.2	3.353	GC04	0	0.3	0.271	GC04	
8	HWY 1033 TO SCIVICQUE ROAD	0	0.2	5.182	GC03	0	0.3	0.161	GC03	
9	SCIVICQUE ROAD TO HWY 1032	0	0.2	14.021	GC02	0	0.3	0.589	GC02	
10	HWY 1032 TO RKM 0.8	0	0.2	21.641	GC01	0	0.3	1.514	GC01	
11	RKM 0.8 TO GRAYS CREEK LAKE	0	0.2	60.960	GCL01	0	0.3	2.965	GCL01	

Gray's Creek 040304 Summer Justification							
DATA TYPE 10 - DISPERSIVE HYDRAULIC COEFFICIENTS							
Reach	Tidal Range	Data Source	a	b	c	d	Data Source
1	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
2	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
3	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
4	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
5	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
6	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
7	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
8	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
9	1.0	Calibration	12.20	0.8333	0.0	1.0	Constant values used for advective dispersion
10	1.0	Calibration	12.20	0.8333	0.0	1.0	Constant values used for advective dispersion
11	1.0	Calibration	12.20	0.8333	0.0	1.0	Constant values used for advective dispersion

Gray's Creek 040304 Summer Justification								
DATA TYPE 11-INITIAL CONDITIONS								
Reach	Name	Temp, deg C	Sal, ppt	Data Source	DO, mg/l	Data Source	Chlorophyll a	Data Source
1	GRAY'S CREEK CANAL TO HWY 190	26.80	0.19	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC09, GC10)	5.00	DO Standard for Subsegment 040304	5.0	Best Professional Judgement
2	HWY 190 TO FORREST DELATTE ROAD	26.80	0.16	Temp - 90th Percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC08, GC09)	5.00	DO Standard for Subsegment 040304	5.0	Best Professional Judgement
3	FORREST DELATTE ROAD TO WAX ROAD	26.80	0.18	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC07, GC08)	5.00	DO Standard for Subsegment 040304	5.0	Best Professional Judgement
4	DENHAM SPRINGS POTW	26.80	0.18	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC07, GC08)	5.00	DO Standard for Subsegment 040304	5.0	Best Professional Judgement
5	DENHAM SPRINGS POTW TO WAX ROAD	26.80	0.18	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC07, GC08)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
6	WAX ROAD TO HWY 1026	26.80	0.21	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC06, GC07)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
7	HWY 1026 TO HWY 1033	26.80	0.21	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC04, GC06)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
8	HWY 1033 TO SCVICQUE ROAD	26.80	0.18	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC03, GC04)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
9	SCVICQUE ROAD TO HWY 1032	26.80	0.16	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC02, GC03)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
10	HWY 1032 TO RKM 0.8	26.80	0.09	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC01, GC02)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
11	RKM 0.8 TO GRAYS CREEK LAKE	26.80	0.03	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GCL01, GC01)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement

<b>Gray's Creek 040304 Summer Justification</b>									
		<b>DATA TYPE 12 - REAERATION, SEDIMENT OXYGEN DEMAND AND BOD COEFFICIENTS</b>							
<b>REACH</b>	<b>NAME</b>	<b>K2 OPT</b>	<b>Data Source</b>	<b>BKGRND SOD, gmO2/m2/day at 20 deg C</b>	<b>Data Source</b>	<b>Aerobic UBOD Dec Rate (1/day)</b>	<b>Data Source</b>	<b>UBOD SETT RATE (1/day)</b>	<b>Data Source</b>
1	GRAY'S CREEK CANAL TO HWY 190	11	Texas Equation	0.169	Calibration	0.0750	Calibration	0.05	Calibration
2	HWY 190 TO FORREST DELATTE ROAD	11	Texas Equation	0.619	Calibration	0.0750	Calibration	0.05	Calibration
3	FORREST DELATTE ROAD TO WAX ROAD	11	Texas Equation	0.750	Calibration	0.0750	Calibration	0.05	Calibration
4	DENHAM SPRINGS POTW	11	Texas Equation	0.900	Calibration	0.0750	Calibration	0.10	Calibration
5	DENHAM SPRINGS POTW TO WAX ROAD	11	Texas Equation	0.975	Calibration	0.0750	Calibration	0.10	Calibration
6	WAX ROAD TO HWY 1026	11	Texas Equation	0.769	Calibration	0.0750	Calibration	0.10	Calibration
7	HWY 1026 TO HWY 1033	11	Texas Equation	0.675	Calibration	0.0750	Calibration	0.10	Calibration
8	HWY 1033 TO SCIVICQUE ROAD	11	Texas Equation	0.600	Calibration	0.0750	Calibration	0.10	Calibration
9	SCIVICQUE ROAD TO HWY 1032	11	Texas Equation	0.338	Calibration	0.0750	Calibration	0.10	Calibration
10	HWY 1032 TO RKM 0.8	11	Texas Equation	0.413	Calibration	0.0750	Calibration	0.10	Calibration
11	RKM 0.8 TO GRAYS CREEK LAKE	11	Texas Equation	0.225	Calibration	0.0750	Calibration	0.10	Calibration

<b>Gray's Creek 040304 Summer Justification</b>				
<b>DATA TYPE 19 - NONPOINT SOURCES</b>				
<b>Reach</b>	<b>Reach Name</b>	<b>Length of Reach, km</b>	<b>UBOD, kg/day</b>	<b>Data Source</b>
1	GRAY'S CREEK CANAL TO HWY 190	1.10	0.469	85% Reduction in Overall Nonpoint
2	HWY 190 TO FORREST DELATTE ROAD	3.80	3.188	85% Reduction in Overall Nonpoint
3	FORREST DELATTE ROAD TO WAX ROAD	1.80	0.938	85% Reduction in Overall Nonpoint
4	DENHAM SPRINGS POTW TO WAX ROAD	0.10	0.563	85% Reduction in Overall Nonpoint
5	DENHAM SPRINGS POTW TO WAX ROAD	0.80	1.500	85% Reduction in Overall Nonpoint
6	WAX ROAD TO HWY 1026	2.10	0.188	85% Reduction in Overall Nonpoint
7	HWY 1026 TO HWY 1033	6.10	0.000	85% Reduction in Overall Nonpoint
8	HWY 1033 TO SCIVICQUE ROAD	3.40	0.188	85% Reduction in Overall Nonpoint
9	SCIVICQUE ROAD TO HWY 1032	4.20	4.688	85% Reduction in Overall Nonpoint
10	HWY 1032 TO RKM 0.8	3.10	0.188	85% Reduction in Overall Nonpoint
11	RKM 0.8 TO GRAYS CREEK LAKE	0.80	17.813	85% Reduction in Overall Nonpoint

Gray's Creek 040304 Summer Justification									
DATA TYPES 20 - HEADWATER DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES									
Headwater Name	Element No.	Logical Unit Number	Headwater Flow, cms	Data Source	Temp, deg C	Salinity	Chlorides	Conductivity	Data Source
Headwater 1	1	1	0.0028	LTP Default	26.8	0.2	6.90	83.7	TEMP - 90th Percentile Temp for WQN 0238 SALINITY - CONT MONT AVG (GC01) CHLORIDE - LAB DATA (GC01) CONDUCTIVITY - INSITU (GC01)

Gray's Creek 040304 Summer Justification			
DATA TYPES 21 - HEADWATER DATA FOR DO, BOD, AND NITROGEN			
Headwater Name	Dissolved Oxygen, mg/L	UBOD, mg/l	Data Source
Headwater 1	7.2	1.79	DO - 90% DO Sat for WQN 0239 BOD - 85% Reduction in overall nonpoint



<b>Gray's Creek 040304 Summer Justification</b>									
<b>DATA TYPES 24 - WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES</b>									
<b>Wasteload / Withdrawal Name</b>	<b>EL #</b>	<b>Flow, cms</b>	<b>Data Source</b>	<b>Temperature, deg C</b>	<b>Data Source</b>	<b>Salinity</b>	<b>Conductivity</b>	<b>Chlorides</b>	<b>Data Source</b>
Summerfield Subdivision & Willows Subdivision Filing 8	1	0.0058	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Bercen Inc, ITT Industries, Deville's Mobile Home Park, Bradley's Dba Eden Place, Carlton Oaks Subdivision, Carlton Oaks 3rd Filing	5	0.0066	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Blake LaFleur Mobile Home Park	10	0.0005	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Livingston Parish Mosquito Abatement, Crescent Properties Facility, Gulf States Long Term Acute Care, A&W Mobil Home Park, DS Walker Branch Library, and Country Boy Cages	11	0.0013	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Gray's Creek Subdivision	17	0.0011	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.

Grays Creek Watershed TMDL  
 Subsegment 040304  
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Unnamed Trib #6 & Penny's Mobile Home Park	36	0.0028	LTP Default	30.0	LTP	0	278.5	8.5	UT6
Unnamed Trib #5 & Lakeside Cove Subdivision, and Clear Lake Subdivision	53	0.0028	LTP Default	30.0	LTP	0	255.4	17.1	UT5
Denham Springs POTW	68	0.2628	LTP Default	30.0	LTP	0	458.7	37.0	DS POTW
Greystone Sulf and Country Club	73	0.0035	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Oakview Mobile Home Park	76	0.0009	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Carter Hill Subdivision	85	0.0029	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Miller's Canal	104	0.0028	LTP Default	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

Rolling Meadow Subdivision	110	0.002	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Unnamed Trib #4 & Seventh Ward Elementary	119	0.0028	LTP Default	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Southpoint Subdivision	130	0.0013	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Southpoint IV Subdivision	137	0.0062	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Southpoint III Subdivision	143	0.0062	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
All God's Children Daycare	149	0.0001	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Hilltop Mobile Home Park	152	0.0007	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

Gray's Creek Elementary and Gulf Stream Estates and Townhouses	158	0.0038	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Highland Ridge Subdivision	193	0.0008	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Unnamed Trib #2	203	0.0028	LTP Default	30.0	LTP	0	324.6	10.7	UT2
Olivia Rose Mobile Home Park	219	0.0003	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Pine Acres Mobile Home Park	234	0.0003	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Parker's Supermarket	266	0.0001	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Stone Hill Subdivision	267	0.0013	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Bayside Campground	272	0.0001	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.

<b>Gray's Creek 040304 Summer Justification</b>					
<b>DATA TYPES 25 - WASTELOAD DATA FOR DO, BOD, AND NITROGEN</b>					
<b>Wasteload / Withdrawal Name</b>	<b>EL #</b>	<b>DO, mg/l</b>	<b>Data Source</b>	<b>UBOD, mg/l</b>	<b>Data Source</b>
Summerfield Subdivision & Willows Subdivision Filing 8	1	5.00	DO Standard for Subsegment 040304	20.1000	All Facilities required to reduce to 5 CBOD / 2 NH3 for an equivalent 85% reduction in overall nonpoint
Bercen Inc, ITT Industries, Deville's Mobile Home Park, Bradley's Dba Eden Place, Carlton Oaks Subdivision, Carlton Oaks 3rd Filing	5	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Blake LaFleur Mobile Home Park	10	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Livingston Parish Mosquito Abatement, Crescent Properties Facility, Gulf States Long Term Acute Care, A&W Mobil Home Park, DS Walker Branch Library, and Country Boy Cages	11	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Gray's Creek Subdivision	17	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction

Unnamed Trib #6 & Penny's Mobile Home Park	36	5.00	DO Standard for Subsegment 040304	2.4100	85% Reduction in overall nonpoint reduction
Unnamed Trib #5 & Lakeside Cove Subdivision, and Clear Lake Subdivision	53	5.00	DO Standard for Subsegment 040304	3.3200	85% Reduction in overall nonpoint reduction
Denham Springs POTW	68	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Greystone Sulf and Country Club	73	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Oakview Mobile Home Park	76	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Carter Hill Subdivision	85	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Miller's Canal	104	5.00	DO Standard for Subsegment 040304	2.6100	85% Reduction in overall nonpoint reduction

Rolling Meadow Subdivision	110	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Unnamed Trib #4 & Seventh Ward Elementary	119	5.00	DO Standard for Subsegment 040304	2.6100	85% Reduction in overall nonpoint reduction
Southpoint Subdivision	130	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Southpoint IV Subdivision	137	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Southpoint III Subdivision	143	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
All God's Children Daycare	149	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Hilltop Mobile Home Park	152	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

Gray's Creek Elementary and Gulf Stream Estates and Townhouses	158	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Highland Ridge Subdivision	193	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Unnamed Trib #2	203	5.00	DO Standard for Subsegment 040304	2.6100	85% Reduction in overall nonpoint reduction
Olivia Rose Mobile Home Park	219	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Pine Acres Mobile Home Park	234	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Parker's Supermarket	266	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Stone Hill Subdivision	267	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Bayside Campground	272	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction

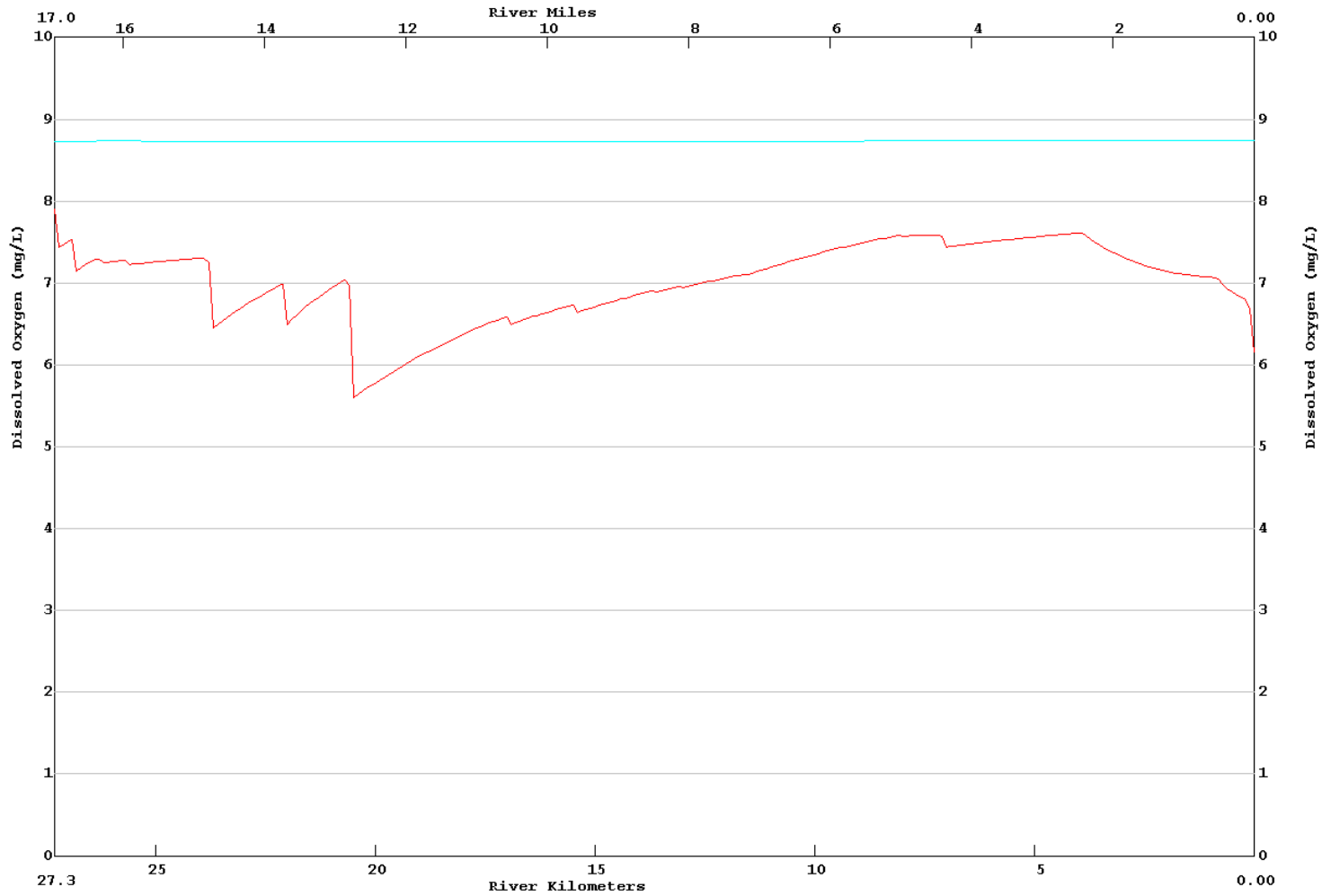


<b>Gray's Creek 040304 Summer Justification</b>			
<b>DATA TYPES 27 - LOWER BOUNDARY CONDITIONS</b>			
<b>Parameter</b>	<b>Value</b>	<b>Units</b>	<b>Data Source</b>
TEMPERATURE	26.8000	°C	90th Percentile Temp for WQN 0238
SALINITY	0.0200	ppt	GCL01 Cont Mont
CHLORIDES	6.2000	ppm	GCL01 Lab Data
CONDUCTIVITY	103.8000	umhos/cm	GCL01 Insitu
DISSOLVED OXYGEN	5.0000	mg/L	DO Standard for Subsegment 040304
CBOD1	8.4326	mg/L	GCL01 Lab Data
CBOD2	0.0000	mg/L	GCL01 Lab Data
CHLOROPHYLL A	5.0000	ug/L	Best Professional Judgement
NBOD	0.0000	mg/L	GCL01 Lab Data

## **Appendix D3 – 85% Reduction Winter Output Graphs and Input, Overlay, and Output Files**

Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

LA-QUAL Version 8.11 Run at 12:52 on 08/24/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graywin85.txt  
GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint min= 5.61 max= 7.90  
GRAY'S CREEK WATERSHED MODEL



Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

### GRAYS CREEK 040304 85% REDUCTION WINTER PROJECTION INPUT DATA SET

```
CNTROL01      GRAY'S CREEK WATERSHED MODEL
CNTROL02      GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint
CNTROL04 YES  METRIC UNITS
ENDATA01
MODOPT01     NO  TEMPERATURE
MODOPT02     NO  SALINITY
MODOPT03 YES  CONSERVATIVE MATERIAL  I = CHLORIDES                IN MG/L
MODOPT04 YES  CONSERVATIVE MATERIAL  II = CONDUCTIVITY           IN MG/L
MODOPT05 YES  DISSOLVED OXYGEN
MODOPT06 YES  BOD1 BIOCHEMICAL OXYGEN DEMAND
MODOPT06     NO  BOD2 BIOCHEMICAL OXYGEN DEMAND
MODOPT08     NO  NBOD OXYGEN DEMAND
MODOPT10     NO  PHOSPHORUS
MODOPT11     NO  CHLOROPHYLL A
MODOPT12     NO  MACROPHYTES
MODOPT13     NO  COLIFORM
ENDATA02
PROGRAM      KL MINIMUM                =      0.7
PROGRAM      INHIBITION CONTROL VALUE  =      3.
PROGRAM      K2 MAXIMUM                 =     25.0
PROGRAM      HYDRAULIC CALCULATION METHOD =      2.
PROGRAM      SETTLING RATE UNITS        =      1.
PROGRAM      DISPERSION EQUATION        =      3.
PROGRAM      ALGAE OXYGEN PROD          =      0.0
PROGRAM      EFFECTIVE BOD DUE TO ALGAE =      0.15
PROGRAM      B1 OXYGEN DEPENDENCE THRESHOLD =      1.0
PROGRAM      B2 OXYGEN DEPENDENCE THRESHOLD =      1.0
PROGRAM      MAXIMUM ITERATION LIMIT    =    1000.0
ENDATA03
!Temperature Correction Constants
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          *****
ENDATA04
ENDATA05
ENDATA06
ENDATA07
!Reach Identification Data
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          ***  --  *****
```

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

!	R#	ID	SITE NAME	RKM	RKM	LENGTH
REACH ID	1	GC	GRAY'S CREEK CANAL TO HWY 190	27.3	26.2	0.1
REACH ID	2	GC	HIGHWAY 190 TO FORREST DELATTE	26.2	22.4	0.1
REACH ID	3	GC	FORREST DELATTE ROAD TO DSPOTW	22.4	20.6	0.1
REACH ID	4	GC	DENHAM SPRINGS POTW	20.6	20.5	0.1
REACH ID	5	GC	DENHAM SPRINGS POTW TO WAX ROAD	20.5	19.7	0.1
REACH ID	6	GC	WAX ROAD TO HIGHWAY 1026	19.7	17.6	0.1
REACH ID	7	GC	HIGHWAY 1026 TO HIGHWAY 1033	17.6	11.5	0.1
REACH ID	8	GC	HIGHWAY 1033 TO SCIVICQUE ROAD	11.5	8.1	0.1
REACH ID	9	GC	SCIVICQUE ROAD TO HIGHWAY 1032	8.1	3.9	0.1
REACH ID	10	GC	HIGHWAY 1032 TO RKM 0.8	3.9	0.8	0.1
REACH ID	11	GC	RKM 0.8 TO GRAY'S CREEK LAKE	0.8	0.0	0.1

ENDATA08

!Advective Hydraulic Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8  
 !234567890123456789012345678901234567890123456789012345678901234567890

!	R#	a	b	c	d	e	f	!
		WIDTH	WIDTH	WIDTH	DEPTH	DEPTH	DEPTH	
		COEFF	EXP	CONST	COEFF	EXP	CONST	SLOPE MANNING
! Reach 1 - GC09								
HYDR-1	1	0.00	0.20	1.524	0.00	0.30	0.025	
! Reach 2 - GC08								
HYDR-1	2	0.00	0.20	2.832	0.00	0.30	0.494	
! Reach 3 - GC07 - Above Denham Springs POTW discharge								
HYDR-1	3	0.00	0.20	4.877	0.00	0.30	0.247	
! Reach 4 - Denham Springs POTW discharge								
HYDR-1	4	0.00	0.20	4.877	0.00	0.30	0.247	
! Reach 5 - GC07 - Below Denham Springs POTW discharge								
HYDR-1	5	0.00	0.20	4.877	0.00	0.30	0.247	
! Reach 6 - GC06								
HYDR-1	6	0.00	0.20	5.486	0.00	0.30	0.312	
! Reach 7 - GC04								
HYDR-1	7	0.00	0.20	3.353	0.00	0.30	0.271	
! Reach 8 - GC03								
HYDR-1	8	0.00	0.20	5.182	0.00	0.30	0.161	
! Reach 9 - GC02								
HYDR-1	9	0.00	0.20	14.021	0.00	0.30	0.589	
! Reach 10 - GC01								
HYDR-1	10	0.00	0.20	21.641	0.00	0.30	1.514	
! Reach 11 - GCL01								
HYDR-1	11	0.00	0.20	60.960	0.00	0.30	2.965	

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010  
 ENDDATA09

!Dispersive Hydraulic Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

!There were two dye studies done. One was toward the top of the survey and the other toward the bottom.

!The dispersion calculated from the dye study was entered into the overlay file under code 32.

!The range was set to the RKM of the most upstream dye sample site to the most downstream dye sample site  
 !for Run 3.

!For the purposes of this TMDL the Dispersion coefficient for Dye Run 3 will be used in both dye studies.

!This is because the data was gathered over the longest time period allowing for a better

!dispersion of the dye into the water body.

!To take into consideration all modes of transport, equation 3, (DL = aHbQcVMd ) in Laqual was used.

!Using b=5/6, c=0, and d=1 will take into account all modes of transport in the manner of the Tracor and  
 QUAL2E equations.

!The value for coefficient "a" was calibrated to within the boundaries of the final dye run by setting all  
 other parameters

!to the previously mentioned values.

!	R#	RANGE	a	b	c	d
!	***	-----	*****	-----	*****	-----
HYDR-2	1	1.00	10.600	0.833	0.0	1.0
HYDR-2	2	1.00	10.600	0.833	0.0	1.0
HYDR-2	3	1.00	10.600	0.833	0.0	1.0
HYDR-2	4	1.00	10.600	0.833	0.0	1.0
HYDR-2	5	1.00	10.600	0.833	0.0	1.0
HYDR-2	6	1.00	10.600	0.833	0.0	1.0
HYDR-2	7	1.00	10.600	0.833	0.0	1.0
HYDR-2	8	1.00	10.600	0.833	0.0	1.0
HYDR-2	9	1.00	12.200	0.833	0.0	1.0
HYDR-2	10	1.00	12.200	0.833	0.0	1.0
HYDR-2	11	1.00	12.200	0.833	0.0	1.0

ENDDATA10

!Initial Conditions

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! R# TEMP SALINITY DO NH3 N NIT NIT PHOS CHL A MACROPHYTES

!Temp - 90th percentile Temp for WQN 0238

!Salinity - Cont Mont Avg (GC09,GC10)

!DO - DO Standard for WQN 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 1 22.00 0.19 5.00 5.0

!Temp - 90th percentile Temp for WQN 0238

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

!Salinity - Cont Mont Avg (GC08,GC09)

!DO - DO Standard for WQN 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 2 22.00 0.16 5.00 5.0

!Temp - 90th percentile Temp for WQN 0238

!Salinity - Cont Mont Avg (GC07,GC08)

!DO - DO Standard for WQN 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 3 22.00 0.18 5.00 5.0

!Temp - 90th percentile Temp for WQN 0238

!Salinity - Cont Mont Avg (GC07,GC08)

!DO - DO Standard for WQN 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 4 22.00 0.18 5.00 5.0

!Temp - 90th percentile Temp for WQN 0238

!Salinity - Cont Mont Avg (GC07,GC08)

!DO - DO Standard for WQN 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 5 22.00 0.18 5.00 10.0

!Temp - 90th percentile Temp for WQN 0238

!Salinity - Cont Mont Avg (GC06,GC07)

!DO - DO Standard for WQN 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 6 22.00 0.21 5.00 10.0

!Temp - 90th percentile Temp for WQN 0238

!Salinity - Cont Mont Avg (GC04,GC06)

!DO - DO Standard for WQN 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 7 22.00 0.21 5.00 10.0

!Temp - 90th percentile Temp for WQN 0238

!Salinity - Cont Mont Avg (GC03,GC04)

!DO - DO Standard for WQN 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 8 22.00 0.18 5.00 10.0

!Temp - 90th percentile Temp for WQN 0238

!Salinity - Cont Mont Avg (GC02,GC03)

!DO - DO Standard for WQN 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 9 22.00 0.16 5.00 10.0

!Temp - 90th percentile Temp for WQN 0238

!Salinity - Cont Mont Avg (GC01,GC02)

!DO - DO Standard for WQN 040304

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

!Chlorophyll A - Best Professional Judgement

INITIAL 10 22.00 0.09 5.00 10.0

!Temp - 90th percentile Temp for WQN 0238

!Salinity - Cont Mont Avg (GCL01,GC01)

!DO - DO Standard for WQN 040304

!Chlorophyll A - Best Professional Judgement

INITIAL 11 22.00 0.03 5.00 10.0

ENDATA11

!Reaeration, Sediment Oxygen Demand and BOD Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8-----9

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*----- \*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! REA KL UBOD UBOD

! R# EQ MIN SOD DECAY SETT

!Texas Equation used for all reaches.

!All settling and decay rates determined through calibration.

COEF-1 1 11.0 0.169 0.0750 0.05

COEF-1 2 11.0 0.619 0.0750 0.05

COEF-1 3 11.0 0.750 0.0750 0.05

COEF-1 4 11.0 0.900 0.0750 0.10

COEF-1 5 11.0 0.975 0.0750 0.10

COEF-1 6 11.0 0.769 0.0750 0.10

COEF-1 7 11.0 0.675 0.0750 0.10

COEF-1 8 11.0 0.600 0.0750 0.10

COEF-1 9 11.0 0.338 0.0750 0.10

COEF-1 10 11.0 0.413 0.0750 0.10

COEF-1 11 11.0 0.225 0.0750 0.10

ENDATA12

!Nitrogen and Phosphorus Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

ENDATA13

ENDATA14

!Coliform and Nonconservative Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

ENDATA15

!Incremental Data for Flow, Temperature, Salinity, and Conservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

```
!          *** -----*****-----*****-----*****
!          R#    OUTFLOW    INFLOW    TEMP        SALINITY CHLORIDE  COND
!
```

ENDATA16

```
!Incremental Data for DO, BOD, and Nitrogen
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          *** -----*****-----*****-----*****
!          R#      DO      BOD 1      NBOD      NH3 N      NIT NIT      BOD 2
```

ENDATA17

```
!Incremental Data for Phosphorus, Chlorophyll, Coliform and Nonconservatives
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          *** -----*****-----*****
!          R#    PHOSPH    CHL A    COLIFORM NONCONSERVATIVE
```

ENDATA18

```
!Nonpoint Source Data
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          *** -----*****-----*****-----*****
```

	R#	UBOD
NONPOINT	1	0.469
NONPOINT	2	3.188
NONPOINT	3	0.938
NONPOINT	4	0.563
NONPOINT	5	1.500
NONPOINT	6	0.188
NONPOINT	7	0.000
NONPOINT	8	0.188
NONPOINT	9	4.688
NONPOINT	10	0.188
NONPOINT	11	17.813

ENDATA19

```
!Headwater Data for Flow, Temperature, Salinity, and Conservatives
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          **** -----***** **
!          E#    NAME          FLOW    TEMP    SALIN    CHLORIDE    COND
```

!Flow calculated from the upper dye study.  
 !Temp - 90th percentile Temp for WQN 0238  
 !Salinity - Cont Mont Avg (GC01)  
 !Chloride - Lab Data (GC01)

Grays Creek Watershed TMDL

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Originated: November 23, 2010

!Conductivity - Insitu (GC01)

HDWTR-1	1	HEADWATER	0.0028	26.80	0.20	6.9	83.7
---------	---	-----------	--------	-------	------	-----	------

ENDATA20

!Headwater Data for DO, BOD, and Nitrogen

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! E# DO UBOD

!DO - 90% DO Sat for WQN 0239

!BOD1, BOD2, and NBOD - (GC01)

HDWTR-2	1	7.90	1.7900
---------	---	------	--------

ENDATA21

!Headwater Data for Phosphorus, Chlorophyll, Coliform, and Nonconservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! E# PHOSPHOR CHL A COLIFORM NONCONSERVATIVE

HDWTR-3	1
---------	---

ENDATA22

ENDATA23

!Wasteload Data for Flow, Temperature, Salinity, and Conservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! E# NAME FLOW TEMP SALINITY CHLORIDE COND

!Expected flow was used except on tribs where LTP default was higher.

!Chlorides and Conductivity average values used from UT2, UT5, and UT6

!except where surveyed.

!Summerfield Subdivision and Willows Subdivision Filing 8

WSTLD-1	1	SUMMERFIELD & WILLOW	0.0058	30.00	.0	12.1	285.0
---------	---	----------------------	--------	-------	----	------	-------

!Cluster 1

WSTLD-1	5	CLUSTER 1	0.0066	30.00	.0	12.1	285.0
---------	---	-----------	--------	-------	----	------	-------

!Blake LaFleur Mobile Home Park

WSTLD-1	10	BLAKE LAFLEUR MHP	0.0005	30.00	.0	12.1	285.0
---------	----	-------------------	--------	-------	----	------	-------

!Cluster 2

WSTLD-1	11	CLUSTER 2	0.0013	30.00	.0	12.1	285.0
---------	----	-----------	--------	-------	----	------	-------

!Gray's Creek Subdivision

WSTLD-1	17	GRAY'S CREEK SUBD	0.0011	30.00	.0	12.1	285.0
---------	----	-------------------	--------	-------	----	------	-------

!Unnamed Trib #6 and Penny's Mobile Home Park

WSTLD-1	36	UT6 & PENNY MHP	0.0028	30.00	.0	8.5	278.5
---------	----	-----------------	--------	-------	----	-----	-------

!Unnamed Trib#5 and Cluster 3

WSTLD-1	53	UT5 & CLUSTER 3	0.0028	30.00	.0	17.1	255.4
---------	----	-----------------	--------	-------	----	------	-------

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Subsegment 040304

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!City of Denham Springs POTW

WSTLD-1 68 DENHAM SPRINGS 0.2628 30.00 .0 37.0 458.7

!Greystone Golf & Country Club

WSTLD-1 73 GREYSTONE 0.0035 30.00 .0 12.1 285.0

!Oakview Mobile Home Park

WSTLD-1 76 OAKVIEW MHP 0.0009 30.00 .0 12.1 285.0

!Carter Hill Subdivision

WSTLD-1 85 CARTER HILL SUB 0.0029 30.00 .0 12.1 285.0

!Miller's Canal

WSTLD-1 104 MILLER'S CANAL 0.0028 30.00 .0 12.1 285.0

!Rolling Meadow Subdivision

WSTLD-1 110 ROLLING MEADOW 0.0020 30.00 .0 12.1 285.0

!Unnamed Trib #4 and Seventh Ward Elementary

WSTLD-1 119 UT4 AND 7TH WARD 0.0028 30.00 .0 12.1 285.0

!Southpoint Subdivision

WSTLD-1 130 SOUTHPOINT SUBD 0.0013 30.00 .0 12.1 285.0

!Southpoint Subdivision IV Subdivision

WSTLD-1 137 SOUTHPOINT IV SUBD 0.0062 30.00 .0 12.1 285.0

!Southpoint III Subdivision

WSTLD-1 143 SOUTHPOINT III SUBD 0.0062 30.00 .0 12.1 285.0

!All God's Children

WSTLD-1 149 ALL GOD'S CHILDREN 0.0001 30.00 .0 12.1 285.0

!Hill Top Mobile Home Park

WSTLD-1 152 HILLTOP MHP 0.0007 30.00 .0 12.1 285.0

!Gray's Creek Elementary & Gulf Stream Estates and Townhouses

WSTLD-1 158 GCE AND GSET 0.0038 30.00 .0 12.1 285.0

!Highland Ridge Subdivision

WSTLD-1 193 HIGHLAND RIDGE SUBD 0.0008 30.00 .0 12.1 285.0

!Unnamed Trib \$2

WSTLD-1 203 UT#2 0.0028 30.00 .0 10.7 324.6

!Olivia Rose Mobile Home Park

WSTLD-1 219 OLIVIA ROSE MHP 0.0003 30.00 .0 12.1 285.0

!Pine Acres Mobile Home Park

WSTLD-1 234 PINE ACRES MHP 0.0003 30.00 .0 12.1 285.0

!Parker's Supermarket

WSTLD-1 266 PARKER'S SUPER 0.0001 30.00 .0 12.1 285.0

!Stone Hill Subdivision

WSTLD-1 267 STONE HILL SUBD 0.0013 30.00 .0 12.1 285.0

!Bayside Campground

WSTLD-1 272 BAYSIDE CAMPGROUND 0.0001 30.00 .0 12.1 285.0

ENDATA24

!Wasteload Data for DO, BOD, and Nitrogen

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

!-----1-----2-----3-----4-----5-----6-----7-----8

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! E# DO UBOD  
!Summerfield Subdivision and Willows Subdivision Filing 8

WSTLD-2 1 5.00 20.1000

!Cluster 1  
WSTLD-2 5 5.00 20.1000

!Blake LaFleur Mobile Home Park  
WSTLD-2 10 5.00 20.1000

!Cluster 2  
WSTLD-2 11 5.00 20.1000

!Gray's Creek Subdivision  
WSTLD-2 17 5.00 20.1000

!Unnamed Trib #6 and Penny's Mobile Home Park  
WSTLD-2 36 5.00 2.4100

!Unnamed Trib#5 and Cluster 3  
WSTLD-2 53 5.00 3.3200

!City of Denham Springs POTW  
WSTLD-2 68 5.00 20.1000

!Greystone Golf & Country Club  
WSTLD-2 73 5.00 20.1000

!Oakview Mobile Home Park  
WSTLD-2 76 5.00 20.1000

!Carter Hill Subdivision  
WSTLD-2 85 5.00 20.1000

!Miller's Canal  
WSTLD-2 104 5.00 2.6100

!Rolling Meadow Subdivision  
WSTLD-2 110 5.00 20.1000

!Unnamed Trib #4 and Seventh Ward Elementary  
WSTLD-2 119 5.00 2.6100

!Southpoint Subdivision  
WSTLD-2 130 5.00 20.1000

!Southpoint Subdivision IV Subdivision  
WSTLD-2 137 5.00 20.1000

!Southpoint III Subdivision  
WSTLD-2 143 5.00 20.1000

!All God's Children  
WSTLD-2 149 5.00 20.1000

!Hill Top Mobile Home Park  
WSTLD-2 152 5.00 20.1000

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

!Gray's Creek Elementary & Gulf Stream Estates and Townhouses

WSTLD-2 158 5.00 20.1000

!Highland Ridge Subdivision

WSTLD-2 193 5.00 20.1000

!Unnamed Trib \$2

WSTLD-2 203 5.00 2.6100

!Olivia Rose Mobile Home Park

WSTLD-2 219 5.00 20.1000

!Pine Acres Mobile Home Park

WSTLD-2 234 5.00 20.1000

!Parker's Supermarket

WSTLD-2 266 5.00 20.1000

!Stone Hill Subdivision

WSTLD-2 267 5.00 20.1000

!Bayside Campground

WSTLD-2 272 2.00 20.1000

ENDATA25

!Wasteload Data for Phosphorus, Chlorophyll, Coliform, and Nonconservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! E# PHOSPHOR CHL A COLIFORM NONCONSERVATIVE

!Summerfield Subdivision and Willows Subdivision Filing 8

WSTLD-3 1

!Cluster 1

WSTLD-3 5

!Blake LaFleur Mobile Home Park

WSTLD-3 10

!Cluster 2

WSTLD-3 11

!Gray's Creek Subdivision

WSTLD-3 17

!Unnamed Trib #6 and Penny's Mobile Home Park

WSTLD-3 36

!Unnamed Trib#5 and Cluster 3

WSTLD-3 53

!City of Denham Springs POTW

WSTLD-3 68

!Greystone Golf & Country Club

WSTLD-3 73

!Oakview Mobile Home Park

WSTLD-3 76

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010  
 !Carter Hill Subdivision  
 WSTLD-3 85  
 !Miller's Canal  
 WSTLD-3 104  
 !Rolling Meadow Subdivision  
 WSTLD-3 110  
 !Unnamed Trib #4 and Seventh Ward Elementary  
 WSTLD-3 119  
 !Southpoint Subdivision  
 WSTLD-3 130  
 !Southpoint Subdivision IV Subdivision  
 WSTLD-3 137  
 !Southpoint III Subdivision  
 WSTLD-3 143  
 !All God's Children  
 WSTLD-3 149  
 !Hill Top Mobile Home Park  
 WSTLD-3 152  
 !Gray's Creek Elementary & Gulf Stream Estates and Townhouses  
 WSTLD-3 158  
 !Highland Ridge Subdivision  
 WSTLD-3 193  
 !Unnamed Trib \$2  
 WSTLD-3 203  
 !Olivia Rose Mobile Home Park  
 WSTLD-3 219  
 !Pine Acres Mobile Home Park  
 WSTLD-3 234  
 !Parker's Supermarket  
 WSTLD-3 266  
 !Stone Hill Subdivision  
 WSTLD-3 267  
 !Bayside Campground  
 WSTLD-3 272  
 ENDDATA26  
 !Temp - 90th percentile Temp for WQN 0238  
 LOWER BC TEMPERATURE = 22.00  
 !Site GCL01 Cont Mont  
 LOWER BC SALINITY = 0.02  
 !Site GCL01 Lab  
 LOWER BC CONSERVATIVE MATERIAL I = 6.20  
 !Site GCL01 Insitu

Grays Creek Watershed TMDL

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Originated: November 23, 2010

```
LOWER BC CONSERVATIVE MATERIAL II           = 103.80
!DO - DO Standard for WQN 040304
LOWER BC DISSOLVED OXYGEN                   =   5.00
!Site GCL01 Lab
LOWER BC BOD1 BIOCHEMICAL OXYGEN DEMAND     =  8.4326
!Site GCL01 Lab
LOWER BC BOD2 BIOCHEMICAL OXYGEN DEMAND     =  0.0000
!Chlorophyll A - Best Professional Judgement
LOWER BC CHLOROPHYLL A                      =   5.0
!Site GCL01 Lab
LOWER BC NBOD                               =  0.0000
ENDATA27
```

!Dam Data

```
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!      ****      *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
```

ENDATA28

ENDATA29

```
NUMBER OF PLOTS = 8
NUMBER OF REACHES IN PLOT 1 = 11          INCREMENT =  0.1
PLOT RCH 1 2 3 4 5 6 7 8 9 10 11
NUMBER OF REACHES IN PLOT 2 = 2          INCREMENT =  0.01
PLOT RCH 1 2
NUMBER OF REACHES IN PLOT 3 = 2          INCREMENT =  0.01
PLOT RCH 3 4
NUMBER OF REACHES IN PLOT 4 = 1          INCREMENT =  0.01
PLOT RCH 5
NUMBER OF REACHES IN PLOT 5 = 1          INCREMENT =  0.01
PLOT RCH 6
NUMBER OF REACHES IN PLOT 6 = 1          INCREMENT =  0.01
PLOT RCH 7
NUMBER OF REACHES IN PLOT 7 = 1          INCREMENT =  0.01
PLOT RCH 8
NUMBER OF REACHES IN PLOT 8 = 1          INCREMENT =  0.01
PLOT RCH 9
```

```
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!      *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
```

ENDATA30

ENDATA31

**GRAYS CREEK 040304 85% REDUCTION WINTER PROJECTION OUTPUT DATA SET**

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

LA-QUAL Version 8.11

Louisiana Department of Environmental Quality

Input file is \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graywin85.txt

Output produced at 12:54 on 04/27/2010

\$\$\$ DATA TYPE 1 (TITLES AND CONTROL CARDS) \$\$\$

CARD TYPE	CONTROL TITLES
TITLE01	GRAY'S CREEK WATERSHED MODEL
TITLE02	GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint
CNTR0L04 YES	METRIC UNITS
ENDATA01	

\$\$\$ DATA TYPE 2 (MODEL OPTIONS) \$\$\$

CARD TYPE	MODEL OPTION
MODOPT01	NO TEMPERATURE
MODOPT02	NO SALINITY
MODOPT03	YES CONSERVATIVE MATERIAL I = CHLORIDES IN MG/L
MODOPT04	YES CONSERVATIVE MATERIAL II = CONDUCTIVITY IN MG/L
MODOPT05	YES DISSOLVED OXYGEN
MODOPT06	YES BOD1 BIOCHEMICAL OXYGEN DEMAND
MODOPT06	NO BOD2 BIOCHEMICAL OXYGEN DEMAND
MODOPT08	NO NBOD OXYGEN DEMAND
MODOPT10	NO PHOSPHORUS
MODOPT11	NO CHLOROPHYLL A
MODOPT12	NO MACROPHYTES
MODOPT13	NO COLIFORM
ENDATA02	

\$\$\$ DATA TYPE 3 (PROGRAM CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
PROGRAM	KL MINIMUM	= 0.70000 meters/day
PROGRAM	INHIBITION CONTROL VALUE	= 3.00000 (inhibit all rates but SOD)
PROGRAM	K2 MAXIMUM	= 25.00000 per day
PROGRAM	HYDRAULIC CALCULATION METHOD	= 2.00000 (widths and depths)
PROGRAM	SETTLING RATE UNITS	= 1.00000 (values entered as m/day)
PROGRAM	DISPERSION EQUATION	= 3.00000 (values entered as a function of D,Q,Vmean)
PROGRAM	ALGAE OXYGEN PROD	= 0.00000 mg O/ug chl a/day
PROGRAM	EFFECTIVE BOD DUE TO ALGAE	= 0.15000 mg/L BOD per ug/L chl a
PROGRAM	B1 OXYGEN DEPENDENCE THRESHOLD	= 1.00000 mg/L
PROGRAM	B2 OXYGEN DEPENDENCE THRESHOLD	= 1.00000 mg/L
PROGRAM	MAXIMUM ITERATION LIMIT	= 1000.00000
ENDATA03		

\$\$\$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) \$\$\$

CARD TYPE	RATE CODE	THETA VALUE
ENDATA04		

\$\$\$ CONSTANTS TYPE 5 (TEMPERATURE DATA) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
-----------	-------------------------	-------



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010  
 ENDDATA05

\$\$\$ DATA TYPE 6 (ALGAE CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
-----------	-------------------------	-------

ENDDATA06

\$\$\$ DATA TYPE 7 (MACROPHYTE CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
-----------	-------------------------	-------

ENDDATA07

\$\$\$ DATA TYPE 8 (REACH IDENTIFICATION DATA) \$\$\$

CARD TYPE	REACH	ID	NAME	BEGIN REACH km	END REACH km	ELEM LENGTH km	REACH LENGTH km	ELEMS PER RCH	BEGIN ELEM NUM	END ELEM NUM
REACH ID	1	GC	GRAY'S CREEK CANAL TO HWY 190	27.30	TO 26.20	0.1000	1.10	11	1	11
REACH ID	2	GC	HIGHWAY 190 TO FORREST DELATTE	26.20	TO 22.40	0.1000	3.80	38	12	49
REACH ID	3	GC	FORREST DELATTE ROAD TO DSPOTW	22.40	TO 20.60	0.1000	1.80	18	50	67
REACH ID	4	GC	DENHAM SPRINGS POTW	20.60	TO 20.50	0.1000	0.10	1	68	68
REACH ID	5	GC	DENHAM SPRINGS POTW TO WAX ROAD	20.50	TO 19.70	0.1000	0.80	8	69	76
REACH ID	6	GC	WAX ROAD TO HIGHWAY 1026	19.70	TO 17.60	0.1000	2.10	21	77	97
REACH ID	7	GC	HIGHWAY 1026 TO HIGHWAY 1033	17.60	TO 11.50	0.1000	6.10	61	98	158
REACH ID	8	GC	HIGHWAY 1033 TO SCIVICQUE ROAD	11.50	TO 8.10	0.1000	3.40	34	159	192
REACH ID	9	GC	SCIVICQUE ROAD TO HIGHWAY 1032	8.10	TO 3.90	0.1000	4.20	42	193	234
REACH ID	10	GC	HIGHWAY 1032 TO RKM 0.8	3.90	TO 0.80	0.1000	3.10	31	235	265
REACH ID	11	GC	RKM 0.8 TO GRAY'S CREEK LAKE	0.80	TO 0.00	0.1000	0.80	8	266	273

ENDDATA08

\$\$\$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	WIDTH "A"	WIDTH "B"	WIDTH "C"	DEPTH "D"	DEPTH "E"	DEPTH "F"	SLOPE	MANNINGS "N"
HYDR-1	1	GC	0.000	0.200	1.524	0.000	0.300	0.025	0.00000	0.000
HYDR-1	2	GC	0.000	0.200	2.832	0.000	0.300	0.494	0.00000	0.000
HYDR-1	3	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	4	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	5	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	6	GC	0.000	0.200	5.486	0.000	0.300	0.312	0.00000	0.000
HYDR-1	7	GC	0.000	0.200	3.353	0.000	0.300	0.271	0.00000	0.000
HYDR-1	8	GC	0.000	0.200	5.182	0.000	0.300	0.161	0.00000	0.000
HYDR-1	9	GC	0.000	0.200	14.021	0.000	0.300	0.589	0.00000	0.000
HYDR-1	10	GC	0.000	0.200	21.641	0.000	0.300	1.514	0.00000	0.000
HYDR-1	11	GC	0.000	0.200	60.960	0.000	0.300	2.965	0.00000	0.000

ENDDATA09

\$\$\$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
HYDR	1	GC	1.00	10.600	0.833	0.000	1.000
HYDR	2	GC	1.00	10.600	0.833	0.000	1.000
HYDR	3	GC	1.00	10.600	0.833	0.000	1.000
HYDR	4	GC	1.00	10.600	0.833	0.000	1.000
HYDR	5	GC	1.00	10.600	0.833	0.000	1.000

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Originated: November 23, 2010

HYDR	6	GC	1.00	10.600	0.833	0.000	1.000
HYDR	7	GC	1.00	10.600	0.833	0.000	1.000
HYDR	8	GC	1.00	10.600	0.833	0.000	1.000
HYDR	9	GC	1.00	12.200	0.833	0.000	1.000
HYDR	10	GC	1.00	12.200	0.833	0.000	1.000
HYDR	11	GC	1.00	12.200	0.833	0.000	1.000

ENDATA10

\$\$\$ DATA TYPE 11 (INITIAL CONDITIONS) \$\$\$

CARD TYPE	REACH	ID	TEMP	SALIN	DO	NH3	NO3+2	PHOS	CHL A	MACRO
INITIAL	1	GC	22.00	0.19	5.00	0.00	0.00	0.00	5.00	0.00
INITIAL	2	GC	22.00	0.16	5.00	0.00	0.00	0.00	5.00	0.00
INITIAL	3	GC	22.00	0.18	5.00	0.00	0.00	0.00	5.00	0.00
INITIAL	4	GC	22.00	0.18	5.00	0.00	0.00	0.00	5.00	0.00
INITIAL	5	GC	22.00	0.18	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	6	GC	22.00	0.21	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	7	GC	22.00	0.21	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	8	GC	22.00	0.18	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	9	GC	22.00	0.16	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	10	GC	22.00	0.09	5.00	0.00	0.00	0.00	10.00	0.00
INITIAL	11	GC	22.00	0.03	5.00	0.00	0.00	0.00	10.00	0.00

ENDATA11

\$\$\$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) \$\$\$

CARD TYPE	RCH NUM	RCH ID	K2 OPT	K2 "A"	K2 "B"	K2 "C"	BKGRND SOD g/m <sup>2</sup> /d	BOD DECA per day	BOD SETT m/d	BOD CONV TO SOD	ANAER BOD2 DECA per day	BOD2 DECA per day	BOD2 SETT m/d	BOD2 CONV TO SOD	ANAER BOD2 DECA per day
COEF-1	1	GC	11 TEXAS	0.000	0.000	0.000	0.169	0.075	0.050	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	2	GC	11 TEXAS	0.000	0.000	0.000	0.619	0.075	0.050	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	3	GC	11 TEXAS	0.000	0.000	0.000	0.750	0.075	0.050	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	4	GC	11 TEXAS	0.000	0.000	0.000	0.900	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	5	GC	11 TEXAS	0.000	0.000	0.000	0.975	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	6	GC	11 TEXAS	0.000	0.000	0.000	0.769	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	7	GC	11 TEXAS	0.000	0.000	0.000	0.675	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	8	GC	11 TEXAS	0.000	0.000	0.000	0.600	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	9	GC	11 TEXAS	0.000	0.000	0.000	0.338	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	10	GC	11 TEXAS	0.000	0.000	0.000	0.413	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000
COEF-1	11	GC	11 TEXAS	0.000	0.000	0.000	0.225	0.075	0.100	0.000	0.000	0.000	0.000	0.000	0.000

ENDATA12

\$\$\$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	NBOD DECA	NBOD SETT	ORGN TO NH3	CONV SRCE	NH3 DECA	NH3 SRCE	PHOS SRCE	DENIT RATE
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ENDATA13

\$\$\$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	SECCHI DEPTH	ALGAE: CHL A	ALGAE SETT	ALG CONV TO SOD	ALGAE GROW	ALGAE RESP	MACRO GROW	MACRO RESP	SHADING
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ENDATA14

\$\$\$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) \$\$\$

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CARD TYPE	REACH	ID	COLIFORM DIE-OFF	NCM DECAY	NCM SETT	NCM CONV TO SOD
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ENDATA15

\$\$\$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	OUTFLOW	INFLOW	TEMP	SALIN	CM-I	CM-II	IN/DIST	OUT/DIST
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ENDATA16

\$\$\$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	REACH	ID	DO	BOD	NBOD	BOD#2
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ENDATA17

\$\$\$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	PHOS	CHL A	COLI	NCM
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ENDATA18

\$\$\$ DATA TYPE 19 (NONPOINT SOURCE DATA) \$\$\$

CARD TYPE	REACH	ID	BOD#1	NBOD	COLI	NCM	DO	BOD#2
NONPOINT	1	GC	0.47	0.00	0.00	0.00	0.00	0.00
NONPOINT	2	GC	3.19	0.00	0.00	0.00	0.00	0.00
NONPOINT	3	GC	0.94	0.00	0.00	0.00	0.00	0.00
NONPOINT	4	GC	0.56	0.00	0.00	0.00	0.00	0.00
NONPOINT	5	GC	1.50	0.00	0.00	0.00	0.00	0.00
NONPOINT	6	GC	0.19	0.00	0.00	0.00	0.00	0.00
NONPOINT	7	GC	0.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	8	GC	0.19	0.00	0.00	0.00	0.00	0.00
NONPOINT	9	GC	4.69	0.00	0.00	0.00	0.00	0.00
NONPOINT	10	GC	0.19	0.00	0.00	0.00	0.00	0.00
NONPOINT	11	GC	17.81	0.00	0.00	0.00	0.00	0.00

ENDATA19

\$\$\$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	UNIT	FLOW m <sup>3</sup> /s	FLOW cfs	TEMP deg C	SALIN ppt	CM-I MG/L	CM-II MG/L	
HDWTR-1	1	HEADWATER	0	0.00280	0.099	26.80	0.20	6.900	83.700	0.00

ENDATA20

\$\$\$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD#1 mg/L	NBOD mg/L	mg/L	mg/L	BOD#2 mg/L
HDWTR-2	1	HEADWATER	7.90	1.79	0.00	0.00	0.00	0.00

ENDATA21

\$\$\$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
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HDWTR-3 1 HEADWATER 0.00 0.00 0.00 0.00  
 ENDDATA22

\$\$\$ DATA TYPE 23 (JUNCTION DATA) \$\$\$

CARD TYPE	JUNCTION ELEMENT	UPSTRM ELEMENT	RIVER KILOM	NAME
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ENDDATA23

\$\$\$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	RKILO	NAME	FLOW m <sup>3</sup> /s	FLOW cfs	FLOW MGD	TEMP deg C	SALIN ppt	CM-I MG/L	CM-II MG/L
WSTLD-1	1	27.30	SUMMERFIELD & WILLOW	0.00580	0.20480	0.132	30.00	0.00	12.100	285.000
WSTLD-1	5	26.90	CLUSTER 1	0.00660	0.23305	0.151	30.00	0.00	12.100	285.000
WSTLD-1	10	26.40	BLAKE LAFLEUR MHP	0.00050	0.01766	0.011	30.00	0.00	12.100	285.000
WSTLD-1	11	26.30	CLUSTER 2	0.00130	0.04590	0.030	30.00	0.00	12.100	285.000
WSTLD-1	17	25.70	GRAY'S CREEK SUBD	0.00110	0.03884	0.025	30.00	0.00	12.100	285.000
WSTLD-1	36	23.80	UT6 & PENNY MHP	0.00280	0.09887	0.064	30.00	0.00	8.500	278.500
WSTLD-1	53	22.10	UT5 & CLUSTER 3	0.00280	0.09887	0.064	30.00	0.00	17.100	255.400
WSTLD-1	68	20.60	DENHAM SPRINGS	0.26280	9.27966	5.998	30.00	0.00	37.000	458.700
WSTLD-1	73	20.10	GREYSTONE	0.00350	0.12359	0.080	30.00	0.00	12.100	285.000
WSTLD-1	76	19.80	OAKVIEW MHP	0.00090	0.03178	0.021	30.00	0.00	12.100	285.000
WSTLD-1	85	18.90	CARTER HILL SUB	0.00290	0.10240	0.066	30.00	0.00	12.100	285.000
WSTLD-1	104	17.00	MILLER'S CANAL	0.00280	0.09887	0.064	30.00	0.00	12.100	285.000
WSTLD-1	110	16.40	ROLLING MEADOW	0.00200	0.07062	0.046	30.00	0.00	12.100	285.000
WSTLD-1	119	15.50	UT4 AND 7TH WARD	0.00280	0.09887	0.064	30.00	0.00	12.100	285.000
WSTLD-1	130	14.40	SOUTHPOINT SUBD	0.00130	0.04590	0.030	30.00	0.00	12.100	285.000
WSTLD-1	137	13.70	SOUTHPOINT IV SUBD	0.00620	0.21893	0.142	30.00	0.00	12.100	285.000
WSTLD-1	143	13.10	SOUTHPOINT III SUBD	0.00620	0.21893	0.142	30.00	0.00	12.100	285.000
WSTLD-1	149	12.50	ALL GOD'S CHILDREN	0.00010	0.00353	0.002	30.00	0.00	12.100	285.000
WSTLD-1	152	12.20	HILLTOP MHP	0.00070	0.02472	0.016	30.00	0.00	12.100	285.000
WSTLD-1	158	11.60	GCE AND GSET	0.00380	0.13418	0.087	30.00	0.00	12.100	285.000
WSTLD-1	193	8.10	HIGHLAND RIDGE SUBD	0.00080	0.02825	0.018	30.00	0.00	12.100	285.000
WSTLD-1	203	7.10	UT#2	0.00280	0.09887	0.064	30.00	0.00	10.700	324.600
WSTLD-1	219	5.50	OLIVIA ROSE MHP	0.00030	0.01059	0.007	30.00	0.00	12.100	285.000
WSTLD-1	234	4.00	PINE ACRES MHP	0.00030	0.01059	0.007	30.00	0.00	12.100	285.000
WSTLD-1	266	0.80	PARKER'S SUPER	0.00010	0.00353	0.002	30.00	0.00	12.100	285.000
WSTLD-1	267	0.70	STONE HILL SUBD	0.00130	0.04590	0.030	30.00	0.00	12.100	285.000
WSTLD-1	272	0.20	BAYSIDE CAMPGROUND	0.00010	0.00353	0.002	30.00	0.00	12.100	285.000

ENDDATA24

\$\$\$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD mg/L	% BOD RMVL	NBOD mg/L	mg/L	% NITRIF	mg/L	BOD#2 mg/L
WSTLD-2	1	SUMMERFIELD & WILLOW	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	5	CLUSTER 1	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	10	BLAKE LAFLEUR MHP	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	11	CLUSTER 2	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	17	GRAY'S CREEK SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	36	UT6 & PENNY MHP	5.00	2.41	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	53	UT5 & CLUSTER 3	5.00	3.32	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	68	DENHAM SPRINGS	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	73	GREYSTONE	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	76	OAKVIEW MHP	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00

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WSTLD-2	85	CARTER HILL SUB	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	104	MILLER'S CANAL	5.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	110	ROLLING MEADOW	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	119	UT4 AND 7TH WARD	5.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	130	SOUTHPOINT SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	137	SOUTHPOINT IV SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	143	SOUTHPOINT III SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	149	ALL GOD'S CHILDREN	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	152	HILLTOP MHP	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	158	GCE AND GSET	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	193	HIGHLAND RIDGE SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	203	UT#2	5.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	219	OLIVIA ROSE MHP	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	234	PINE ACRES MHP	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	266	PARKER'S SUPER	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	267	STONE HILL SUBD	5.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	272	BAYSIDE CAMPGROUND	2.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00

ENDATA25

\$\$\$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
WSTLD-3	1	SUMMERFIELD & WILLOW	0.00	0.00	0.00	0.00
WSTLD-3	5	CLUSTER 1	0.00	0.00	0.00	0.00
WSTLD-3	10	BLAKE LAFLEUR MHP	0.00	0.00	0.00	0.00
WSTLD-3	11	CLUSTER 2	0.00	0.00	0.00	0.00
WSTLD-3	17	GRAY'S CREEK SUBD	0.00	0.00	0.00	0.00
WSTLD-3	36	UT6 & PENNY MHP	0.00	0.00	0.00	0.00
WSTLD-3	53	UT5 & CLUSTER 3	0.00	0.00	0.00	0.00
WSTLD-3	68	DENHAM SPRINGS	0.00	0.00	0.00	0.00
WSTLD-3	73	GREYSTONE	0.00	0.00	0.00	0.00
WSTLD-3	76	OAKVIEW MHP	0.00	0.00	0.00	0.00
WSTLD-3	85	CARTER HILL SUB	0.00	0.00	0.00	0.00
WSTLD-3	104	MILLER'S CANAL	0.00	0.00	0.00	0.00
WSTLD-3	110	ROLLING MEADOW	0.00	0.00	0.00	0.00
WSTLD-3	119	UT4 AND 7TH WARD	0.00	0.00	0.00	0.00
WSTLD-3	130	SOUTHPOINT SUBD	0.00	0.00	0.00	0.00
WSTLD-3	137	SOUTHPOINT IV SUBD	0.00	0.00	0.00	0.00
WSTLD-3	143	SOUTHPOINT III SUBD	0.00	0.00	0.00	0.00
WSTLD-3	149	ALL GOD'S CHILDREN	0.00	0.00	0.00	0.00
WSTLD-3	152	HILLTOP MHP	0.00	0.00	0.00	0.00
WSTLD-3	158	GCE AND GSET	0.00	0.00	0.00	0.00
WSTLD-3	193	HIGHLAND RIDGE SUBD	0.00	0.00	0.00	0.00
WSTLD-3	203	UT#2	0.00	0.00	0.00	0.00
WSTLD-3	219	OLIVIA ROSE MHP	0.00	0.00	0.00	0.00
WSTLD-3	234	PINE ACRES MHP	0.00	0.00	0.00	0.00
WSTLD-3	266	PARKER'S SUPER	0.00	0.00	0.00	0.00
WSTLD-3	267	STONE HILL SUBD	0.00	0.00	0.00	0.00
WSTLD-3	272	BAYSIDE CAMPGROUND	0.00	0.00	0.00	0.00

ENDATA26

\$\$\$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) \$\$\$

CARD TYPE	CONSTITUENT	CONCENTRATION
LOWER BC	TEMPERATURE	= 22.000 deg C
LOWER BC	SALINITY	= 0.020 ppt
LOWER BC	CONSERVATIVE MATERIAL I	= 6.200 MG/L

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LOWER BC	CONSERVATIVE MATERIAL II	=	103.800	MG/L
LOWER BC	DISSOLVED OXYGEN	=	5.000	mg/L
LOWER BC	BOD1 BIOCHEMICAL OXYGEN DEMAND	=	8.433	mg/L
LOWER BC	BOD2 BIOCHEMICAL OXYGEN DEMAND	=	0.000	mg/L
LOWER BC	CHLOROPHYLL A	=	5.000	µg/L
LOWER BC	NBOD	=	0.000	mg/L

ENDATA27

\$\$\$ DATA TYPE 28 (DAM DATA) \$\$\$

CARD TYPE	ELEMENT	NAME	EQN	"A"	"B"	"H"
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ENDATA28

\$\$\$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) \$\$\$

CARD TYPE	PARAMETER	COL 1	COL 2	COL 3	COL 4	COL 5	COL 6	COL 7	COL 8
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ENDATA29

\$\$\$ DATA TYPE 30 (PLOT CONTROL CARDS) \$\$\$

NUMBER OF PLOTS = 8  
NUMBER OF REACHES IN PLOT 1 = 11  
PLOT RCH 1 2 3 4 5 6 7 8 9 10 11  
NUMBER OF REACHES IN PLOT 2 = 2  
PLOT RCH 1 2  
NUMBER OF REACHES IN PLOT 3 = 2  
PLOT RCH 3 4  
NUMBER OF REACHES IN PLOT 4 = 1  
PLOT RCH 5  
NUMBER OF REACHES IN PLOT 5 = 1  
PLOT RCH 6  
NUMBER OF REACHES IN PLOT 6 = 1  
PLOT RCH 7  
NUMBER OF REACHES IN PLOT 7 = 1  
PLOT RCH 8  
NUMBER OF REACHES IN PLOT 8 = 1  
PLOT RCH 9  
ENDATA30

\$\$\$ DATA TYPE 31 (OVERLAY PLOT DATA) \$\$\$

ENDATA31

.....NO ERRORS DETECTED IN INPUT DATA  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 1 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED  
.....GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 11  
.....GRAPHICS DATA FOR PLOT 2 WRITTEN TO UNIT 12  
.....GRAPHICS DATA FOR PLOT 3 WRITTEN TO UNIT 13  
.....GRAPHICS DATA FOR PLOT 4 WRITTEN TO UNIT 14  
.....GRAPHICS DATA FOR PLOT 5 WRITTEN TO UNIT 15  
.....GRAPHICS DATA FOR PLOT 6 WRITTEN TO UNIT 16

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.....GRAPHICS DATA FOR PLOT 7 WRITTEN TO UNIT 17

.....GRAPHICS DATA FOR PLOT 8 WRITTEN TO UNIT 18

FINAL REPORT HEADWATER  
 REACH NO. 1 GRAY'S CREEK CANAL TO HWY 190

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
1	HDWTR	0.00280	26.80	0.20	6.90	83.70	7.90	1.04	0.00	1.79	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
1	WSTLD	0.00580	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	WSTLD	0.00660	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	WSTLD	0.00050	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	WSTLD	0.00130	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
1	27.30	27.20	0.00860	67.4	0.22572	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.111	0.226
2	27.20	27.10	0.00860	67.4	0.22572	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.111	0.226
3	27.10	27.00	0.00860	67.4	0.22572	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.111	0.226
4	27.00	26.90	0.00860	67.4	0.22572	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.111	0.226
5	26.90	26.80	0.01520	81.6	0.39895	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.196	0.399
6	26.80	26.70	0.01520	81.6	0.39895	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.196	0.399
7	26.70	26.60	0.01520	81.6	0.39895	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.196	0.399
8	26.60	26.50	0.01520	81.6	0.39895	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.196	0.399
9	26.50	26.40	0.01520	81.6	0.39895	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.196	0.399
10	26.40	26.30	0.01570	82.2	0.41207	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.202	0.412
11	26.30	26.20	0.01700	83.5	0.44619	0.00	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.219	0.446
TOT						0.04			41.91	1676.40					
AVG					0.3150		0.03	1.52			0.04				
CUM						0.04									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da	
1	27.200	8.73	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	27.100	8.73	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	27.000	8.73	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	26.900	8.73	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	26.800	8.73	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	26.700	8.73	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	26.600	8.73	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	26.500	8.73	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	26.400	8.74	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	26.300	8.74	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	26.200	8.74	26.00	0.08	2.10	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

AVG 20 DEG C RATE 25.00 0.08 2.00 0.00 0.00 0.00 0.00 0.17 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\* g/m²/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
1	27.200	22.00	0.19	10.41	219.46	6.23	13.80	0.00	14.55	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
2	27.100	22.00	0.18	10.41	219.46	6.49	13.70	0.00	14.45	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
3	27.000	22.00	0.18	10.41	219.46	6.71	13.61	0.00	14.36	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
4	26.900	22.00	0.18	10.41	219.65	6.91	13.53	0.00	14.28	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
5	26.800	22.00	0.18	11.14	247.92	6.24	16.30	0.00	17.05	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
6	26.700	22.00	0.17	11.14	247.92	6.39	16.23	0.00	16.98	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
7	26.600	22.00	0.17	11.14	247.92	6.53	16.16	0.00	16.91	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
8	26.500	22.00	0.17	11.14	247.92	6.66	16.09	0.00	16.84	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
9	26.400	22.00	0.17	11.14	247.92	6.78	16.03	0.00	16.78	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
10	26.300	22.00	0.16	11.17	249.11	6.84	16.09	0.00	16.84	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
11	26.200	22.00	0.16	11.24	251.84	6.81	16.32	0.00	17.07	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
 REACH NO. 2 HIGHWAY 190 TO FORREST DELATTE

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
12	UPR RCH	0.01700	22.00	0.16	11.24	251.84	6.81	16.32	0.00	17.07	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
17	WSTLD	0.00110	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	WSTLD	0.00280	30.00	0.00	8.50	278.50	5.00	2.41	0.00	2.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
12	26.20	26.10	0.01700	83.5	0.01215	0.10	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.072	0.012
13	26.10	26.00	0.01700	83.5	0.01215	0.10	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.072	0.012
14	26.00	25.90	0.01700	83.5	0.01215	0.10	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.072	0.012
15	25.90	25.80	0.01700	83.5	0.01215	0.10	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.072	0.012
16	25.80	25.70	0.01700	83.5	0.01215	0.10	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.072	0.012
17	25.70	25.60	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
18	25.60	25.50	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
19	25.50	25.40	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
20	25.40	25.30	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
21	25.30	25.20	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
22	25.20	25.10	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
23	25.10	25.00	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
24	25.00	24.90	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
25	24.90	24.80	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
26	24.80	24.70	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
27	24.70	24.60	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

28	24.60	24.50	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
29	24.50	24.40	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
30	24.40	24.30	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
31	24.30	24.20	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
32	24.20	24.10	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
33	24.10	24.00	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
34	24.00	23.90	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
35	23.90	23.80	0.01810	84.5	0.01294	0.09	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.076	0.013
36	23.80	23.70	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
37	23.70	23.60	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
38	23.60	23.50	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
39	23.50	23.40	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
40	23.40	23.30	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
41	23.30	23.20	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
42	23.20	23.10	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
43	23.10	23.00	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
44	23.00	22.90	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
45	22.90	22.80	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
46	22.80	22.70	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
47	22.70	22.60	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
48	22.60	22.50	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015
49	22.50	22.40	0.02090	86.6	0.01494	0.08	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.088	0.015

TOT							3.26		5316.23	10761.60					
AVG						0.0135		0.49	2.83		1.40				
CUM							3.30								

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECATY 1/da	BOD#1 SETT 1/da	ABOD#1 DECATY 1/da	BOD#2 DECATY 1/da	BOD#2 SETT 1/da	ABOD#2 DECATY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECATY 1/da	ORGN SETT 1/da	NH3 DECATY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECATY 1/da	NCM DECATY 1/da	NCM SETT 1/da
12	26.100	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	26.000	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	25.900	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	25.800	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	25.700	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	25.600	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	25.500	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	25.400	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	25.300	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	25.200	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	25.100	8.74	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	25.000	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	24.900	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	24.800	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	24.700	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	24.600	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	24.500	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	24.400	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	24.300	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	24.200	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	24.100	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	24.000	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	23.900	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	23.800	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	23.700	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	23.600	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

38	23.500	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	23.400	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	23.300	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	23.200	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	23.100	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	23.000	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	22.900	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	22.800	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	22.700	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	22.600	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	22.500	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	22.400	8.73	1.47	0.08	0.11	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AVG 20 DEG C RATE 1.42 0.08 0.10 0.00 0.00 0.00 0.00 0.00 0.62 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\* g/m<sup>2</sup>/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
12	26.100	22.00	0.16	11.24	251.84	6.81	16.09	0.00	16.84	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
13	26.000	22.00	0.16	11.24	251.84	6.82	15.86	0.00	16.61	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
14	25.900	22.00	0.16	11.24	251.85	6.83	15.64	0.00	16.39	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
15	25.800	22.00	0.16	11.24	251.85	6.84	15.42	0.00	16.17	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
16	25.700	22.00	0.16	11.25	251.96	6.85	15.22	0.00	15.97	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
17	25.600	22.00	0.16	11.30	253.86	6.76	15.29	0.00	16.04	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
18	25.500	22.00	0.16	11.30	253.86	6.78	15.09	0.00	15.84	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
19	25.400	22.00	0.16	11.30	253.86	6.80	14.90	0.00	15.65	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
20	25.300	22.00	0.16	11.30	253.86	6.82	14.70	0.00	15.45	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
21	25.200	22.00	0.17	11.30	253.86	6.83	14.51	0.00	15.26	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
22	25.100	22.00	0.17	11.30	253.86	6.85	14.32	0.00	15.07	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
23	25.000	22.00	0.17	11.30	253.86	6.86	14.14	0.00	14.89	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
24	24.900	22.00	0.17	11.30	253.86	6.88	13.96	0.00	14.71	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
25	24.800	22.00	0.17	11.30	253.86	6.89	13.78	0.00	14.53	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
26	24.700	22.00	0.17	11.30	253.86	6.91	13.61	0.00	14.36	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
27	24.600	22.00	0.17	11.30	253.86	6.92	13.43	0.00	14.18	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
28	24.500	22.00	0.17	11.30	253.86	6.93	13.26	0.00	14.01	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
29	24.400	22.00	0.17	11.30	253.86	6.95	13.10	0.00	13.85	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
30	24.300	22.00	0.17	11.30	253.86	6.96	12.93	0.00	13.68	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
31	24.200	22.00	0.17	11.30	253.86	6.97	12.77	0.00	13.52	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
32	24.100	22.00	0.17	11.30	253.86	6.98	12.61	0.00	13.36	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
33	24.000	22.00	0.17	11.30	253.86	6.99	12.46	0.00	13.21	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
34	23.900	22.00	0.17	11.29	253.87	7.00	12.30	0.00	13.05	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
35	23.800	22.00	0.17	11.27	254.06	7.00	12.08	0.00	12.83	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
36	23.700	22.00	0.17	10.92	257.16	6.79	10.74	0.00	11.49	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
37	23.600	22.00	0.17	10.92	257.16	6.83	10.63	0.00	11.38	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
38	23.500	22.00	0.17	10.92	257.16	6.87	10.52	0.00	11.27	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
39	23.400	22.00	0.17	10.92	257.16	6.90	10.42	0.00	11.17	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
40	23.300	22.00	0.18	10.92	257.16	6.93	10.31	0.00	11.06	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
41	23.200	22.00	0.18	10.92	257.16	6.96	10.21	0.00	10.96	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
42	23.100	22.00	0.18	10.92	257.16	6.98	10.11	0.00	10.86	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
43	23.000	22.00	0.18	10.92	257.16	7.01	10.01	0.00	10.76	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
44	22.900	22.00	0.18	10.92	257.16	7.03	9.91	0.00	10.66	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
45	22.800	22.00	0.18	10.92	257.16	7.05	9.82	0.00	10.57	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
46	22.700	22.00	0.18	10.92	257.16	7.07	9.72	0.00	10.47	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
47	22.600	22.00	0.18	10.92	257.16	7.08	9.63	0.00	10.38	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
48	22.500	22.00	0.18	10.92	257.16	7.10	9.53	0.00	10.28	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

49 22.400 22.00 0.18 10.92 257.16 7.11 9.44 0.00 10.19 0.00 0.00 0.00 0.00 0.00 0.00 5.00 0.00 0. 0.00

FINAL REPORT HEADWATER  
 REACH NO. 3 FORREST DELATTE ROAD TO DSPOTW

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
50	UPR RCH	0.02090	22.00	0.18	10.92	257.16	7.11	9.44	0.00	10.19	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
53	WSTLD	0.00280	30.00	0.00	17.10	255.40	5.00	3.32	0.00	3.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
50	22.40	22.30	0.02090	86.6	0.01735	0.07	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.057	0.017
51	22.30	22.20	0.02090	86.6	0.01735	0.07	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.057	0.017
52	22.20	22.10	0.02090	86.6	0.01735	0.07	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.057	0.017
53	22.10	22.00	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
54	22.00	21.90	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
55	21.90	21.80	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
56	21.80	21.70	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
57	21.70	21.60	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
58	21.60	21.50	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
59	21.50	21.40	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
60	21.40	21.30	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
61	21.30	21.20	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
62	21.20	21.10	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
63	21.10	21.00	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
64	21.00	20.90	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
65	20.90	20.80	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
66	20.80	20.70	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
67	20.70	20.60	0.02370	88.2	0.01967	0.06	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.065	0.020
TOT AVG CUM						1.08			2168.31	8778.60					
					0.0192		0.25	4.88			1.20				
						4.38									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da
50	22.300	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	22.200	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	22.100	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	22.000	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	21.900	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	21.800	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	21.700	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	21.600	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL  
 Subsegment 040304

Originated: November 23, 2010

58	21.500	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	21.400	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	21.300	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61	21.200	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	21.100	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63	21.000	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	20.900	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	20.800	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66	20.700	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67	20.600	8.73	2.95	0.08	0.21	0.00	0.00	0.00	0.00	0.85	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			2.83	0.08	0.20	0.00	0.00	0.00	0.00	0.75			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00

\* g/m<sup>2</sup>/d                      \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
50	22.300	22.00	0.18	10.92	257.16	7.14	9.29	0.00	10.04	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
51	22.200	22.00	0.18	10.92	257.16	7.17	9.14	0.00	9.89	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
52	22.100	22.00	0.18	10.95	257.15	7.19	8.97	0.00	9.72	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
53	22.000	22.00	0.18	11.65	256.95	7.00	8.21	0.00	8.96	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
54	21.900	22.00	0.18	11.65	256.95	7.05	8.09	0.00	8.84	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
55	21.800	22.00	0.18	11.65	256.95	7.09	7.98	0.00	8.73	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
56	21.700	22.00	0.18	11.65	256.95	7.13	7.87	0.00	8.62	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
57	21.600	22.00	0.18	11.65	256.95	7.16	7.76	0.00	8.51	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
58	21.500	22.00	0.18	11.65	256.95	7.19	7.65	0.00	8.40	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
59	21.400	22.00	0.18	11.65	256.95	7.21	7.55	0.00	8.30	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
60	21.300	22.00	0.18	11.65	256.95	7.23	7.44	0.00	8.19	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
61	21.200	22.00	0.18	11.65	256.95	7.25	7.34	0.00	8.09	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
62	21.100	22.00	0.18	11.65	256.95	7.27	7.24	0.00	7.99	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
63	21.000	22.00	0.18	11.65	256.95	7.28	7.14	0.00	7.89	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
64	20.900	22.00	0.18	11.65	256.95	7.30	7.05	0.00	7.80	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
65	20.800	22.00	0.18	11.66	256.99	7.31	6.95	0.00	7.70	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
66	20.700	22.00	0.18	11.78	258.01	7.31	6.93	0.00	7.68	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00
67	20.600	22.00	0.18	15.79	289.88	7.00	8.91	0.00	9.66	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.	0.00

FINAL REPORT                      HEADWATER  
 REACH NO. 4                      DENHAM SPRINGS POTW

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
68	UPR RCH	0.02370	22.00	0.18	15.79	289.88	7.00	8.91	0.00	9.66	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
68	WSTLD	0.26280	30.00	0.00	37.00	458.70	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
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Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

68	20.60	20.50	0.28650	99.0	0.23783	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.786	0.238
TOT						0.00			120.46	487.70					
AVG					0.2378		0.25	4.88			1.20				
CUM						4.39									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAT	BOD#1 SETT	ABOD#1 DECAT	BOD#2 DECAT	BOD#2 SETT	ABOD#2 DECAT	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAT	ORGN SETT	NH3 DECAT	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAT	NCM DECAT	NCM SETT	
68	20.500	8.73	4.72	0.08	0.42	0.00	0.00	0.00	0.00	1.02	1.02	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	20 DEG C	RATE	4.54	0.08	0.40	0.00	0.00	0.00	0.00	0.90			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	
*	g/m <sup>2</sup> /d				**	mg/L/day																		

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
68	20.500	22.00	0.18	34.90	442.01	5.25	18.97	0.00	20.47	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
 REACH NO. 5 DENHAM SPRINGS POTW TO WAX ROAD GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
69	UPR RCH	0.28650	22.00	0.18	34.90	442.01	5.25	18.97	0.00	20.47	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
73	WSTLD	0.00350	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76	WSTLD	0.00090	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
69	20.50	20.40	0.28650	99.0	0.23783	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.786	0.238
70	20.40	20.30	0.28650	99.0	0.23783	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.786	0.238
71	20.30	20.20	0.28650	99.0	0.23783	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.786	0.238
72	20.20	20.10	0.28650	99.0	0.23783	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.786	0.238
73	20.10	20.00	0.29000	99.0	0.24074	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.796	0.241
74	20.00	19.90	0.29000	99.0	0.24074	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.796	0.241
75	19.90	19.80	0.29000	99.0	0.24074	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.796	0.241
76	19.80	19.70	0.29090	99.0	0.24149	0.00	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.799	0.241
TOT						0.04			963.70	3901.60					
AVG					0.2394		0.25	4.88			1.20				
CUM						4.43									

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da
69	20.400	8.73	4.72	0.08	0.42	0.00	0.00	0.00	0.00	1.11	1.11	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	20.300	8.73	4.72	0.08	0.42	0.00	0.00	0.00	0.00	1.11	1.11	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71	20.200	8.73	4.72	0.08	0.42	0.00	0.00	0.00	0.00	1.11	1.11	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72	20.100	8.73	4.72	0.08	0.42	0.00	0.00	0.00	0.00	1.11	1.11	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	20.000	8.73	4.73	0.08	0.42	0.00	0.00	0.00	0.00	1.11	1.11	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
74	19.900	8.73	4.73	0.08	0.42	0.00	0.00	0.00	0.00	1.11	1.11	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	19.800	8.73	4.73	0.08	0.42	0.00	0.00	0.00	0.00	1.11	1.11	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76	19.700	8.73	4.74	0.08	0.42	0.00	0.00	0.00	0.00	1.11	1.11	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20	DEG C RATE		4.54	0.08	0.40	0.00	0.00	0.00	0.00	0.98			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00
*	g/m <sup>2</sup> /d		**	mg/L/day																			

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
69	20.400	22.00	0.18	34.90	442.01	5.30	18.93	0.00	20.43	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
70	20.300	22.00	0.19	34.90	442.01	5.35	18.89	0.00	20.39	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
71	20.200	22.00	0.19	34.90	442.01	5.40	18.85	0.00	20.35	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
72	20.100	22.00	0.19	34.89	441.95	5.44	18.81	0.00	20.31	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
73	20.000	22.00	0.20	34.63	440.12	5.48	18.79	0.00	20.29	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
74	19.900	22.00	0.20	34.63	440.12	5.53	18.75	0.00	20.25	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
75	19.800	22.00	0.21	34.63	440.10	5.57	18.71	0.00	20.21	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
76	19.700	22.00	0.21	34.56	439.64	5.61	18.68	0.00	20.18	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
 REACH NO. 6 WAX ROAD TO HIGHWAY 1026 GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
77	UPR RCH	0.29090	22.00	0.21	34.56	439.64	5.61	18.68	0.00	20.18	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
85	WSTLD	0.00290	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
77	19.70	19.60	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
78	19.60	19.50	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
79	19.50	19.40	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
80	19.40	19.30	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

81	19.30	19.20	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
82	19.20	19.10	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
83	19.10	19.00	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
84	19.00	18.90	0.29090	99.0	0.16995	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.683	0.170
85	18.90	18.80	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
86	18.80	18.70	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
87	18.70	18.60	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
88	18.60	18.50	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
89	18.50	18.40	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
90	18.40	18.30	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
91	18.30	18.20	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
92	18.20	18.10	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
93	18.10	18.00	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
94	18.00	17.90	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
95	17.90	17.80	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
96	17.80	17.70	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
97	17.70	17.60	0.29380	99.0	0.17165	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.690	0.172
TOT						0.14			3594.43	11520.60					
AVG					0.1710		0.31	5.49			1.71				
CUM						4.57									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECA	BOD#1 SETT	ABOD#1 DECA	BOD#2 DECA	BOD#2 SETT	ABOD#2 DECA	BKGD SOD	FULL SOD	CORR SOD	ORGN DECA	ORGN SETT	NH3 DECA	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECA	NCM DECA	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
77	19.600	8.73	3.49	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	19.500	8.73	3.49	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	19.400	8.73	3.49	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	19.300	8.73	3.49	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81	19.200	8.73	3.49	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	19.100	8.73	3.49	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83	19.000	8.73	3.49	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84	18.900	8.73	3.49	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	18.800	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	18.700	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87	18.600	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	18.500	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89	18.400	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	18.300	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91	18.200	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	18.100	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
93	18.000	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	17.900	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	17.800	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
96	17.700	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97	17.600	8.73	3.50	0.08	0.34	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			3.36	0.08	0.32	0.00	0.00	0.00	0.00	0.77			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00

\* g/m<sup>2</sup>/d      \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
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Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

77	19.600	22.00	0.21	34.56	439.64	5.65	18.63	0.00	20.13	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
78	19.500	22.00	0.21	34.56	439.64	5.70	18.57	0.00	20.07	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
79	19.400	22.00	0.21	34.56	439.64	5.74	18.52	0.00	20.02	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
80	19.300	22.00	0.21	34.56	439.64	5.78	18.47	0.00	19.97	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
81	19.200	22.00	0.21	34.56	439.64	5.82	18.42	0.00	19.92	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
82	19.100	22.00	0.21	34.56	439.64	5.86	18.37	0.00	19.87	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
83	19.000	22.00	0.21	34.56	439.63	5.90	18.31	0.00	19.81	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
84	18.900	22.00	0.21	34.55	439.58	5.93	18.26	0.00	19.76	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
85	18.800	22.00	0.21	34.34	438.11	5.96	18.23	0.00	19.73	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
86	18.700	22.00	0.21	34.34	438.11	6.00	18.18	0.00	19.68	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
87	18.600	22.00	0.21	34.34	438.11	6.03	18.13	0.00	19.63	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
88	18.500	22.00	0.21	34.34	438.11	6.06	18.08	0.00	19.58	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
89	18.400	22.00	0.21	34.34	438.11	6.10	18.03	0.00	19.53	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
90	18.300	22.00	0.21	34.34	438.11	6.13	17.98	0.00	19.48	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
91	18.200	22.00	0.21	34.34	438.11	6.16	17.93	0.00	19.43	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
92	18.100	22.00	0.21	34.34	438.11	6.19	17.88	0.00	19.38	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
93	18.000	22.00	0.21	34.34	438.11	6.22	17.83	0.00	19.33	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
94	17.900	22.00	0.21	34.34	438.11	6.25	17.78	0.00	19.28	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
95	17.800	22.00	0.21	34.34	438.11	6.28	17.73	0.00	19.23	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
96	17.700	22.00	0.21	34.34	438.11	6.31	17.68	0.00	19.18	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
97	17.600	22.00	0.21	34.34	438.11	6.34	17.63	0.00	19.13	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
 REACH NO. 7 HIGHWAY 1026 TO HIGHWAY 1033

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
98	UPR RCH	0.29380	22.00	0.21	34.34	438.11	6.34	17.63	0.00	19.13	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
104	WSTLD	0.00280	30.00	0.00	12.10	285.00	5.00	2.61	0.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	WSTLD	0.00200	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
119	WSTLD	0.00280	30.00	0.00	12.10	285.00	5.00	2.61	0.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	WSTLD	0.00130	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
137	WSTLD	0.00620	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
143	WSTLD	0.00620	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149	WSTLD	0.00010	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
152	WSTLD	0.00070	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
158	WSTLD	0.00380	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
98	17.60	17.50	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
99	17.50	17.40	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
100	17.40	17.30	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
101	17.30	17.20	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
102	17.20	17.10	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
103	17.10	17.00	0.29380	99.0	0.32333	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.155	0.323
104	17.00	16.90	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
105	16.90	16.80	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
106	16.80	16.70	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326



Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

107	16.70	16.60	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
108	16.60	16.50	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
109	16.50	16.40	0.29660	99.1	0.32641	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.166	0.326
110	16.40	16.30	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
111	16.30	16.20	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
112	16.20	16.10	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
113	16.10	16.00	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
114	16.00	15.90	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
115	15.90	15.80	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
116	15.80	15.70	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
117	15.70	15.60	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
118	15.60	15.50	0.29860	99.1	0.32861	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.174	0.329
119	15.50	15.40	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
120	15.40	15.30	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
121	15.30	15.20	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
122	15.20	15.10	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
123	15.10	15.00	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
124	15.00	14.90	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
125	14.90	14.80	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
126	14.80	14.70	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
127	14.70	14.60	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
128	14.60	14.50	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
129	14.50	14.40	0.30140	99.1	0.33170	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.185	0.332
130	14.40	14.30	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
131	14.30	14.20	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
132	14.20	14.10	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
133	14.10	14.00	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
134	14.00	13.90	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
135	13.90	13.80	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
136	13.80	13.70	0.30270	99.1	0.33313	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.190	0.333
137	13.70	13.60	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
138	13.60	13.50	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
139	13.50	13.40	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
140	13.40	13.30	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
141	13.30	13.20	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
142	13.20	13.10	0.30890	99.1	0.33995	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.214	0.340
143	13.10	13.00	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
144	13.00	12.90	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
145	12.90	12.80	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
146	12.80	12.70	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
147	12.70	12.60	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
148	12.60	12.50	0.31510	99.1	0.34677	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
149	12.50	12.40	0.31520	99.1	0.34688	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
150	12.40	12.30	0.31520	99.1	0.34688	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
151	12.30	12.20	0.31520	99.1	0.34688	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.239	0.347
152	12.20	12.10	0.31590	99.1	0.34765	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.242	0.348
153	12.10	12.00	0.31590	99.1	0.34765	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.242	0.348
154	12.00	11.90	0.31590	99.1	0.34765	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.242	0.348
155	11.90	11.80	0.31590	99.1	0.34765	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.242	0.348
156	11.80	11.70	0.31590	99.1	0.34765	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.242	0.348
157	11.70	11.60	0.31590	99.1	0.34765	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.242	0.348
158	11.60	11.50	0.31970	99.1	0.35184	0.00	0.27	3.35	90.87	335.30	0.91	0.00	0.000	1.257	0.352
TOT						0.21			5542.84	20453.30					
AVG					0.3348		0.27	3.35			0.91				
CUM						4.78									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*



Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

154	11.900	8.73	4.82	0.08	0.39	0.00	0.00	0.00	0.00	0.77	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	11.800	8.73	4.82	0.08	0.39	0.00	0.00	0.00	0.00	0.77	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
156	11.700	8.73	4.82	0.08	0.39	0.00	0.00	0.00	0.00	0.77	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
157	11.600	8.73	4.82	0.08	0.39	0.00	0.00	0.00	0.00	0.77	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
158	11.500	8.73	4.83	0.08	0.39	0.00	0.00	0.00	0.00	0.77	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	20	DEG C	RATE	4.58	0.08	0.37	0.00	0.00	0.00	0.00	0.68		0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00	0.00

\* g/m²/d                      \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
98	17.500	22.00	0.21	34.34	438.11	6.36	17.60	0.00	19.10	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
99	17.400	22.00	0.21	34.34	438.11	6.39	17.57	0.00	19.07	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
100	17.300	22.00	0.21	34.34	438.11	6.41	17.54	0.00	19.04	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
101	17.200	22.00	0.21	34.34	438.11	6.44	17.51	0.00	19.01	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
102	17.100	22.00	0.21	34.34	438.11	6.46	17.48	0.00	18.98	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
103	17.000	22.00	0.21	34.33	438.06	6.48	17.45	0.00	18.95	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
104	16.900	22.00	0.21	34.13	436.66	6.49	17.28	0.00	18.78	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
105	16.800	22.00	0.21	34.13	436.66	6.51	17.25	0.00	18.75	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
106	16.700	22.00	0.21	34.13	436.66	6.53	17.23	0.00	18.73	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
107	16.600	22.00	0.21	34.13	436.66	6.56	17.20	0.00	18.70	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
108	16.500	22.00	0.20	34.13	436.66	6.58	17.17	0.00	18.67	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
109	16.400	22.00	0.20	34.12	436.63	6.60	17.14	0.00	18.64	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
110	16.300	22.00	0.20	33.98	435.65	6.61	17.13	0.00	18.63	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
111	16.200	22.00	0.20	33.98	435.65	6.63	17.10	0.00	18.60	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
112	16.100	22.00	0.20	33.98	435.65	6.65	17.07	0.00	18.57	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
113	16.000	22.00	0.20	33.98	435.65	6.67	17.05	0.00	18.55	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
114	15.900	22.00	0.20	33.98	435.65	6.69	17.02	0.00	18.52	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
115	15.800	22.00	0.20	33.98	435.65	6.71	16.99	0.00	18.49	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
116	15.700	22.00	0.20	33.98	435.65	6.72	16.96	0.00	18.46	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
117	15.600	22.00	0.20	33.98	435.65	6.74	16.93	0.00	18.43	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
118	15.500	22.00	0.20	33.97	435.60	6.76	16.90	0.00	18.40	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
119	15.400	22.00	0.20	33.78	434.25	6.76	16.75	0.00	18.25	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
120	15.300	22.00	0.20	33.78	434.25	6.78	16.72	0.00	18.22	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
121	15.200	22.00	0.20	33.78	434.25	6.80	16.69	0.00	18.19	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
122	15.100	22.00	0.20	33.78	434.25	6.81	16.66	0.00	18.16	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
123	15.000	22.00	0.20	33.78	434.25	6.83	16.64	0.00	18.14	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
124	14.900	22.00	0.20	33.78	434.25	6.85	16.61	0.00	18.11	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
125	14.800	22.00	0.20	33.78	434.25	6.86	16.58	0.00	18.08	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
126	14.700	22.00	0.20	33.78	434.25	6.88	16.56	0.00	18.06	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
127	14.600	22.00	0.20	33.78	434.25	6.90	16.53	0.00	18.03	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
128	14.500	22.00	0.19	33.78	434.25	6.91	16.50	0.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
129	14.400	22.00	0.19	33.77	434.23	6.93	16.48	0.00	17.98	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
130	14.300	22.00	0.19	33.68	433.61	6.93	16.46	0.00	17.96	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
131	14.200	22.00	0.19	33.68	433.61	6.95	16.44	0.00	17.94	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
132	14.100	22.00	0.19	33.68	433.61	6.96	16.41	0.00	17.91	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
133	14.000	22.00	0.19	33.68	433.61	6.98	16.38	0.00	17.88	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
134	13.900	22.00	0.19	33.68	433.61	6.99	16.36	0.00	17.86	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
135	13.800	22.00	0.19	33.68	433.60	7.01	16.33	0.00	17.83	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
136	13.700	22.00	0.19	33.67	433.50	7.02	16.31	0.00	17.81	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
137	13.600	22.00	0.19	33.25	430.62	6.99	16.35	0.00	17.85	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
138	13.500	22.00	0.19	33.25	430.62	7.01	16.33	0.00	17.83	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
139	13.400	22.00	0.19	33.25	430.62	7.02	16.30	0.00	17.80	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
140	13.300	22.00	0.19	33.25	430.62	7.04	16.28	0.00	17.78	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
141	13.200	22.00	0.19	33.25	430.62	7.05	16.25	0.00	17.75	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

142	13.100	22.00	0.19	33.24	430.53	7.06	16.23	0.00	17.73	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
143	13.000	22.00	0.19	32.83	427.76	7.03	16.27	0.00	17.77	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
144	12.900	22.00	0.19	32.83	427.76	7.05	16.25	0.00	17.75	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
145	12.800	22.00	0.19	32.83	427.76	7.06	16.22	0.00	17.72	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
146	12.700	22.00	0.19	32.83	427.76	7.07	16.20	0.00	17.70	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
147	12.600	22.00	0.19	32.83	427.76	7.09	16.17	0.00	17.67	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
148	12.500	22.00	0.18	32.83	427.76	7.10	16.15	0.00	17.65	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
149	12.400	22.00	0.18	32.83	427.71	7.11	16.12	0.00	17.62	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
150	12.300	22.00	0.18	32.83	427.71	7.12	16.10	0.00	17.60	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
151	12.200	22.00	0.18	32.83	427.70	7.13	16.07	0.00	17.57	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
152	12.100	22.00	0.18	32.78	427.40	7.14	16.06	0.00	17.56	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
153	12.000	22.00	0.18	32.78	427.40	7.15	16.03	0.00	17.53	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
154	11.900	22.00	0.18	32.78	427.40	7.16	16.01	0.00	17.51	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
155	11.800	22.00	0.18	32.78	427.40	7.18	15.98	0.00	17.48	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
156	11.700	22.00	0.18	32.78	427.40	7.19	15.96	0.00	17.46	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
157	11.600	22.00	0.18	32.77	427.34	7.20	15.93	0.00	17.43	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
158	11.500	22.00	0.18	32.54	425.71	7.18	15.96	0.00	17.46	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAY'S CREEK WATERSHED MODEL  
REACH NO. 8 HIGHWAY 1033 TO SCIVICQUE ROAD GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
159	UPR RCH	0.31970	22.00	0.18	32.54	425.71	7.18	15.96	0.00	17.46	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
159	11.50	11.40	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
160	11.40	11.30	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
161	11.30	11.20	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
162	11.20	11.10	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
163	11.10	11.00	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
164	11.00	10.90	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
165	10.90	10.80	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
166	10.80	10.70	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
167	10.70	10.60	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
168	10.60	10.50	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
169	10.50	10.40	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
170	10.40	10.30	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
171	10.30	10.20	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
172	10.20	10.10	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
173	10.10	10.00	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
174	10.00	9.90	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
175	9.90	9.80	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
176	9.80	9.70	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
177	9.70	9.60	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
178	9.60	9.50	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
179	9.50	9.40	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
180	9.40	9.30	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383
181	9.30	9.20	0.31970	99.1	0.38319	0.00	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.887	0.383

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

Table with 15 columns: 1-3 (Flow), 4-6 (BOD#1), 7-9 (BOD#2), 10-12 (NH3), 13-15 (DENIT). Rows 182-192.

TOT 0.10, 2836.63, 17618.80
AVG 0.3832, 0.16, 5.18, 0.83
CUM 4.88

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

Table with 22 columns: ELEM NO., ENDING DIST, SAT D.O., REAER RATE, BOD#1 DECAY, BOD#1 SETT, ABOD#1 DECAY, BOD#2 DECAY, BOD#2 SETT, ABOD#2 DECAY, BKGD SOD, FULL SOD, CORR SOD, ORGN DECAY, ORGN SETT, NH3 DECAY, NH3 SRCE, DENIT RATE, PO4 SRCE, ALG PROD, MAC PROD, COLI DECAY, NCM DECAY, NCM SETT. Rows 159-192 and AVG 20 DEG C RATE.

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

\* g/m<sup>2</sup>/d      \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
159	11.400	22.00	0.18	32.54	425.71	7.20	15.92	0.00	17.42	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
160	11.300	22.00	0.18	32.54	425.71	7.22	15.89	0.00	17.39	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
161	11.200	22.00	0.18	32.54	425.71	7.24	15.85	0.00	17.35	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
162	11.100	22.00	0.18	32.54	425.71	7.26	15.82	0.00	17.32	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
163	11.000	22.00	0.18	32.54	425.71	7.28	15.78	0.00	17.28	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
164	10.900	22.00	0.18	32.54	425.71	7.29	15.75	0.00	17.25	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
165	10.800	22.00	0.18	32.54	425.71	7.31	15.71	0.00	17.21	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
166	10.700	22.00	0.18	32.54	425.71	7.33	15.68	0.00	17.18	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
167	10.600	22.00	0.17	32.54	425.71	7.34	15.64	0.00	17.14	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
168	10.500	22.00	0.17	32.54	425.71	7.36	15.61	0.00	17.11	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
169	10.400	22.00	0.17	32.54	425.71	7.38	15.58	0.00	17.08	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
170	10.300	22.00	0.17	32.54	425.71	7.39	15.54	0.00	17.04	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
171	10.200	22.00	0.17	32.54	425.71	7.41	15.51	0.00	17.01	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
172	10.100	22.00	0.17	32.54	425.71	7.42	15.47	0.00	16.97	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
173	10.000	22.00	0.17	32.54	425.71	7.44	15.44	0.00	16.94	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
174	9.900	22.00	0.17	32.54	425.71	7.45	15.41	0.00	16.91	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
175	9.800	22.00	0.17	32.54	425.71	7.46	15.37	0.00	16.87	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
176	9.700	22.00	0.17	32.54	425.71	7.48	15.34	0.00	16.84	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
177	9.600	22.00	0.17	32.54	425.71	7.49	15.30	0.00	16.80	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
178	9.500	22.00	0.17	32.54	425.71	7.50	15.27	0.00	16.77	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
179	9.400	22.00	0.17	32.54	425.71	7.51	15.24	0.00	16.74	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
180	9.300	22.00	0.17	32.54	425.71	7.53	15.20	0.00	16.70	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
181	9.200	22.00	0.17	32.54	425.71	7.54	15.17	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
182	9.100	22.00	0.17	32.54	425.71	7.55	15.14	0.00	16.64	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
183	9.000	22.00	0.17	32.54	425.71	7.56	15.10	0.00	16.60	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
184	8.900	22.00	0.16	32.54	425.71	7.57	15.07	0.00	16.57	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
185	8.800	22.00	0.16	32.54	425.71	7.58	15.04	0.00	16.54	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
186	8.700	22.00	0.16	32.54	425.71	7.59	15.00	0.00	16.50	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
187	8.600	22.00	0.16	32.54	425.71	7.60	14.97	0.00	16.47	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
188	8.500	22.00	0.16	32.54	425.71	7.62	14.94	0.00	16.44	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
189	8.400	22.00	0.16	32.54	425.71	7.62	14.91	0.00	16.41	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
190	8.300	22.00	0.16	32.54	425.71	7.63	14.87	0.00	16.37	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
191	8.200	22.00	0.16	32.54	425.71	7.64	14.84	0.00	16.34	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
192	8.100	22.00	0.16	32.53	425.69	7.65	14.80	0.00	16.30	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 9 SCIVICQUE ROAD TO HIGHWAY 1032

GRAY'S CREEK WATERSHED MODEL  
GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
193	UPR RCH	0.31970	22.00	0.16	32.53	425.69	7.65	14.80	0.00	16.30	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
193	WSTLD	0.00080	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
203	WSTLD	0.00280	30.00	0.00	10.70	324.60	5.00	2.61	0.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
219	WSTLD	0.00030	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
234	WSTLD	0.00030	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
193	8.10	8.00	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
194	8.00	7.90	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
195	7.90	7.80	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
196	7.80	7.70	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
197	7.70	7.60	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
198	7.60	7.50	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
199	7.50	7.40	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
200	7.40	7.30	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
201	7.30	7.20	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
202	7.20	7.10	0.32050	99.1	0.03881	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.305	0.039
203	7.10	7.00	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
204	7.00	6.90	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
205	6.90	6.80	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
206	6.80	6.70	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
207	6.70	6.60	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
208	6.60	6.50	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
209	6.50	6.40	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
210	6.40	6.30	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
211	6.30	6.20	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
212	6.20	6.10	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
213	6.10	6.00	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
214	6.00	5.90	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
215	5.90	5.80	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
216	5.80	5.70	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
217	5.70	5.60	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
218	5.60	5.50	0.32330	99.1	0.03915	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.307	0.039
219	5.50	5.40	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
220	5.40	5.30	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
221	5.30	5.20	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
222	5.20	5.10	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
223	5.10	5.00	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
224	5.00	4.90	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
225	4.90	4.80	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
226	4.80	4.70	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
227	4.70	4.60	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
228	4.60	4.50	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
229	4.50	4.40	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
230	4.40	4.30	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
231	4.30	4.20	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
232	4.20	4.10	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
233	4.10	4.00	0.32360	99.1	0.03918	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
234	4.00	3.90	0.32390	99.1	0.03922	0.03	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.308	0.039
TOT						1.24			34685.13	58888.22					
AVG					0.0391		0.59	14.02			8.26				
CUM						6.13									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAT	BOD#1 SETT	ABOD#1 DECAT	BOD#2 DECAT	BOD#2 SETT	ABOD#2 DECAT	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAT	ORGN SETT	NH3 DECAT	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAT	NCM DECAT	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da





Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

200	7.300	22.00	0.15	32.48	425.36	7.57	13.96	0.00	15.46	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
201	7.200	22.00	0.14	32.48	425.35	7.56	13.85	0.00	15.35	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
202	7.100	22.00	0.14	32.47	425.29	7.55	13.74	0.00	15.24	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
203	7.000	22.00	0.14	32.30	424.48	7.53	13.55	0.00	15.05	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
204	6.900	22.00	0.14	32.30	424.48	7.52	13.45	0.00	14.95	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
205	6.800	22.00	0.14	32.30	424.48	7.52	13.35	0.00	14.85	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
206	6.700	22.00	0.14	32.30	424.48	7.52	13.26	0.00	14.76	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
207	6.600	22.00	0.14	32.30	424.48	7.51	13.16	0.00	14.66	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
208	6.500	22.00	0.13	32.30	424.48	7.51	13.06	0.00	14.56	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
209	6.400	22.00	0.13	32.30	424.48	7.51	12.97	0.00	14.47	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
210	6.300	22.00	0.13	32.30	424.48	7.51	12.87	0.00	14.37	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
211	6.200	22.00	0.13	32.30	424.48	7.50	12.78	0.00	14.28	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
212	6.100	22.00	0.13	32.30	424.48	7.50	12.68	0.00	14.18	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
213	6.000	22.00	0.12	32.30	424.48	7.50	12.59	0.00	14.09	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
214	5.900	22.00	0.12	32.30	424.48	7.50	12.50	0.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
215	5.800	22.00	0.12	32.30	424.48	7.50	12.41	0.00	13.91	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
216	5.700	22.00	0.12	32.30	424.48	7.50	12.32	0.00	13.82	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
217	5.600	22.00	0.12	32.30	424.48	7.50	12.23	0.00	13.73	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
218	5.500	22.00	0.12	32.29	424.47	7.50	12.14	0.00	13.64	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
219	5.400	22.00	0.12	32.28	424.35	7.49	12.06	0.00	13.56	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
220	5.300	22.00	0.11	32.28	424.35	7.50	11.97	0.00	13.47	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
221	5.200	22.00	0.11	32.28	424.35	7.50	11.88	0.00	13.38	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
222	5.100	22.00	0.11	32.28	424.35	7.50	11.80	0.00	13.30	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
223	5.000	22.00	0.11	32.28	424.35	7.50	11.71	0.00	13.21	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
224	4.900	22.00	0.11	32.28	424.35	7.50	11.62	0.00	13.12	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
225	4.800	22.00	0.11	32.28	424.35	7.50	11.54	0.00	13.04	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
226	4.700	22.00	0.10	32.28	424.35	7.50	11.46	0.00	12.96	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
227	4.600	22.00	0.10	32.28	424.35	7.50	11.37	0.00	12.87	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
228	4.500	22.00	0.10	32.28	424.35	7.50	11.29	0.00	12.79	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
229	4.400	22.00	0.10	32.28	424.35	7.51	11.21	0.00	12.71	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
230	4.300	22.00	0.10	32.28	424.35	7.51	11.13	0.00	12.63	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
231	4.200	22.00	0.10	32.28	424.35	7.51	11.04	0.00	12.54	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
232	4.100	22.00	0.09	32.28	424.35	7.51	10.96	0.00	12.46	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
233	4.000	22.00	0.09	32.28	424.34	7.51	10.88	0.00	12.38	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
234	3.900	22.00	0.09	32.26	424.22	7.51	10.80	0.00	12.30	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 10 HIGHWAY 1032 TO RKM 0.8

GRAY'S CREEK WATERSHED MODEL  
GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
235	UPR RCH	0.32390	22.00	0.09	32.26	424.22	7.51	10.80	0.00	12.30	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
235	3.90	3.80	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
236	3.80	3.70	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
237	3.70	3.60	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
238	3.60	3.50	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
239	3.50	3.40	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

240	3.40	3.30	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
241	3.30	3.20	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
242	3.20	3.10	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
243	3.10	3.00	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
244	3.00	2.90	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
245	2.90	2.80	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
246	2.80	2.70	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
247	2.70	2.60	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
248	2.60	2.50	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
249	2.50	2.40	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
250	2.40	2.30	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
251	2.30	2.20	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
252	2.20	2.10	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
253	2.10	2.00	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
254	2.00	1.90	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
255	1.90	1.80	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
256	1.80	1.70	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
257	1.70	1.60	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
258	1.60	1.50	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
259	1.50	1.40	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
260	1.40	1.30	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
261	1.30	1.20	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
262	1.20	1.10	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
263	1.10	1.00	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
264	1.00	0.90	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010
265	0.90	0.80	0.32390	99.1	0.00989	0.12	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.170	0.010

TOT						3.63			101569.87	67087.12					
AVG				0.0099			1.51	21.64							32.76
CUM						9.76									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da
235	3.800	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
236	3.700	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
237	3.600	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
238	3.500	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
239	3.400	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	3.300	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
241	3.200	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
242	3.100	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
243	3.000	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
244	2.900	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
245	2.800	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
246	2.700	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
247	2.600	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
248	2.500	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
249	2.400	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	2.300	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
251	2.200	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
252	2.100	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
253	2.000	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
254	1.900	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
255	1.800	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
256	1.700	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

257	1.600	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
258	1.500	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
259	1.400	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	1.300	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
261	1.200	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
262	1.100	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
263	1.000	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
264	0.900	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
265	0.800	8.74	0.48	0.08	0.07	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AVG 20 DEG C RATE 0.46 0.08 0.07 0.00 0.00 0.00 0.00 0.41 0.00 0.00 0.00 0.00 0.00 0.00

\* g/m²/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
235	3.800	22.00	0.09	32.26	424.22	7.44	10.60	0.00	12.10	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
236	3.700	22.00	0.09	32.26	424.22	7.38	10.42	0.00	11.92	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
237	3.600	22.00	0.08	32.26	424.22	7.33	10.24	0.00	11.74	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
238	3.500	22.00	0.08	32.26	424.22	7.28	10.06	0.00	11.56	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
239	3.400	22.00	0.08	32.26	424.22	7.23	9.88	0.00	11.38	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
240	3.300	22.00	0.08	32.26	424.22	7.19	9.71	0.00	11.21	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
241	3.200	22.00	0.08	32.26	424.22	7.15	9.54	0.00	11.04	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
242	3.100	22.00	0.07	32.26	424.22	7.12	9.38	0.00	10.88	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
243	3.000	22.00	0.07	32.26	424.22	7.08	9.22	0.00	10.72	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
244	2.900	22.00	0.07	32.26	424.22	7.06	9.06	0.00	10.56	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
245	2.800	22.00	0.07	32.26	424.22	7.03	8.90	0.00	10.40	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
246	2.700	22.00	0.07	32.26	424.22	7.01	8.74	0.00	10.24	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
247	2.600	22.00	0.06	32.26	424.22	6.99	8.59	0.00	10.09	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
248	2.500	22.00	0.06	32.26	424.22	6.97	8.44	0.00	9.94	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
249	2.400	22.00	0.06	32.26	424.22	6.96	8.30	0.00	9.80	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
250	2.300	22.00	0.06	32.26	424.22	6.94	8.15	0.00	9.65	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
251	2.200	22.00	0.06	32.26	424.22	6.93	8.01	0.00	9.51	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
252	2.100	22.00	0.06	32.26	424.22	6.92	7.87	0.00	9.37	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
253	2.000	22.00	0.05	32.26	424.22	6.91	7.74	0.00	9.24	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
254	1.900	22.00	0.05	32.26	424.22	6.91	7.60	0.00	9.10	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
255	1.800	22.00	0.05	32.26	424.22	6.90	7.47	0.00	8.97	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
256	1.700	22.00	0.05	32.26	424.22	6.90	7.34	0.00	8.84	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
257	1.600	22.00	0.05	32.26	424.22	6.90	7.21	0.00	8.71	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
258	1.500	22.00	0.04	32.26	424.22	6.90	7.09	0.00	8.59	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
259	1.400	22.00	0.04	32.26	424.22	6.90	6.97	0.00	8.47	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
260	1.300	22.00	0.04	32.26	424.22	6.90	6.84	0.00	8.34	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
261	1.200	22.00	0.04	32.26	424.22	6.90	6.73	0.00	8.23	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
262	1.100	22.00	0.04	32.26	424.22	6.91	6.61	0.00	8.11	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
263	1.000	22.00	0.03	32.26	424.22	6.91	6.49	0.00	7.99	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
264	0.900	22.00	0.03	32.26	424.22	6.91	6.37	0.00	7.87	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00
265	0.800	22.00	0.03	32.25	424.19	6.91	6.21	0.00	7.71	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 11 RKM 0.8 TO GRAY'S CREEK LAKE

GRAY'S CREEK WATERSHED MODEL  
GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM	TYPE	FLOW	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	PHOS	CHL A	COLI	NCM
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Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

NO.			deg C	ppt	MG/L	MG/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	#/100mL		
266	UPR	RCH	0.32390	22.00	0.03	32.25	424.19	6.91	6.21	0.00	7.71	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
266	WSTLD		0.00010	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
267	WSTLD		0.00130	30.00	0.00	12.10	285.00	5.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
272	WSTLD		0.00010	30.00	0.00	12.10	285.00	2.00	20.10	0.00	20.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
266	0.80	0.70	0.32400	99.1	0.00179	0.65	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
267	0.70	0.60	0.32530	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
268	0.60	0.50	0.32530	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
269	0.50	0.40	0.32530	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
270	0.40	0.30	0.32530	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
271	0.30	0.20	0.32530	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
272	0.20	0.10	0.32540	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
273	0.10	0.00	0.32540	99.1	0.00180	0.64	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.054	0.002
TOT						5.15			144597.12	48768.00					
AVG					0.0018		2.96	60.96			180.75				
CUM						14.90									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAT	BOD#1 SETT	ABOD#1 DECAT	BOD#2 DECAT	BOD#2 SETT	ABOD#2 DECAT	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAT	ORGN SETT	NH3 DECAT	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAT	NCM DECAT	NCM SETT	
266	0.700	8.74	0.25	0.08	0.04	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
267	0.600	8.74	0.25	0.08	0.04	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
268	0.500	8.74	0.25	0.08	0.04	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
269	0.400	8.74	0.25	0.08	0.04	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	0.300	8.74	0.25	0.08	0.04	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
271	0.200	8.74	0.25	0.08	0.04	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
272	0.100	8.74	0.25	0.08	0.04	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
273	0.000	8.74	0.25	0.08	0.04	0.00	0.00	0.00	0.00	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	20 DEG C RATE		0.24	0.08	0.03	0.00	0.00	0.00	0.00	0.22			0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	
*	g/m²/d		**	mg/L/day																				

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
266	0.700	22.00	0.03	32.23	424.05	6.84	5.84	0.00	7.25	0.00	0.00	0.00	0.00	0.00	0.00	9.38	0.00	0.	0.00
267	0.600	22.00	0.03	32.17	423.61	6.80	5.55	0.00	6.87	0.00	0.00	0.00	0.00	0.00	0.00	8.75	0.00	0.	0.00
268	0.500	22.00	0.03	32.16	423.54	6.78	5.24	0.00	6.46	0.00	0.00	0.00	0.00	0.00	0.00	8.12	0.00	0.	0.00
269	0.400	22.00	0.02	32.14	423.28	6.78	4.96	0.00	6.08	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	0.	0.00
270	0.300	22.00	0.02	32.05	422.12	6.78	4.70	0.00	5.73	0.00	0.00	0.00	0.00	0.00	0.00	6.88	0.00	0.	0.00
271	0.200	22.00	0.02	31.64	417.15	6.77	4.50	0.00	5.43	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.	0.00
272	0.100	22.00	0.02	29.90	395.69	6.68	4.50	0.00	5.34	0.00	0.00	0.00	0.00	0.00	0.00	5.62	0.00	0.	0.00

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

273 0.000 22.00 0.02 22.39 303.24 6.18 5.33 0.00 6.08 0.00 0.00 0.00 0.00 0.00 0.00 5.00 0.00 0. 0.00

STREAM SUMMARY  
 HEADWATER

GRAY'S CREEK WATERSHED MODEL  
 GRAY'S CREEK WINTER RUN for 85% Reduction in Overall Nonpoint

TRAVEL TIME = 14.90 DAYS  
 MAXIMUM EFFLUENT = 99.14 PERCENT  
 FLOW = 0.00860 TO 0.32540 m<sup>3</sup>/s  
 DISPERSION = 0.0541 TO 1.2569 m<sup>2</sup>/s  
 VELOCITY = 0.00179 TO 0.44619 m/s  
 DEPTH = 0.03 TO 2.96 m  
 WIDTH = 1.52 TO 60.96 m  
 BOD DECAY = 0.08 TO 0.08 per day  
 NH3 DECAY = 0.00 TO 0.00 per day  
 SOD = 0.19 TO 1.11 g/m<sup>2</sup>/d  
 NH3 SOURCE = 0.00 TO 0.00 g/m<sup>2</sup>/d  
 REAERATION = 0.25 TO 26.00 per day  
 BOD SETTLING = 0.04 TO 2.10 per day  
 NBOD DECAY = 0.00 TO 0.00 per day  
 NBOD SETTLING = 0.00 TO 0.00 per day  
 TEMPERATURE = 22.00 TO 22.00 deg C  
 DISSOLVED OXYGEN = 5.25 TO 7.65 mg/L

.....EXECUTION COMPLETED

**Appendix D4 – 85% Reduction Winter Justifications**

<b>Gray's Creek 040304 Winter Justification</b>			
<b>DATA TYPE 3 - PROGRAM CONSTANTS</b>			
<b>CONSTANT NAME</b>	<b>VALUE</b>	<b>UNITS</b>	<b>DATA SOURCE</b>
KL MINIMUM	0.7	m/day	The minimum KL of 2.3 ft/day converted to 0.70 m/day.
INHIBITION CONTROL VALUE	3		The water column dissolved oxygen demand is assumed to come primarily from facultative bacteria under anoxic conditions and SOD is not influenced by modeled dissolved oxygen levels in the upper water column.
K2 MAXIMUM	25	1/day at 20 deg C	EPA Policy in the absence of a measured value.
HYDRAULIC CALCULATION METHOD	2		The low slopes in this waterbody cause a substantial amount of water to be present during critical flow conditions. This method allows the model to predict a more accurate depth and width during low flow conditions.
SETTLING RATE UNITS	1		By making the settling rate a velocity the rate becomes dependent upon the depth.
DISPERSION EQUATION	3		Equation used to account for all modes of transport.
ALGAE OXYGEN PROD	0		Standard practice for steady state calibration to a wide variation in DO.
EFFECTIVE BOD DUE TO ALGAE	0.15		Standard practice for steady state calibration to a wide variation in DO.
B1 OXYGEN DEPENDENCE THRESHOLD	1		Adjustment for effluent dominated stream.
B2 OXYGEN DEPENDENCE THRESHOLD	1		Adjustment for effluent dominated stream.

<b>Gray's Creek 040304 Winter Justification</b>						
<b>DATA TYPE 8 - REACH IDENTIFICATION DATA</b>						
<b>Reach</b>	<b>ID</b>	<b>Name</b>	<b>Upstream River Kilometer</b>	<b>Downstream River Kilometer</b>	<b>Element Length, meters</b>	<b>Data Source</b>
1	GC	GRAY'S CREEK CANAL TO HWY 190	27.3	26.2	100.0000	ARC MAP Calc.
2	GC	HWY 190 TO FORREST DELATTE ROAD	26.2	22.4	100.0000	ARC MAP Calc.
3	GC	FORREST DELATTE ROAD TO WAX ROAD	22.4	20.6	100.0000	ARC MAP Calc.
4	GC	DENHAM SPRINGS POTW	20.6	20.5	100.0000	ARC MAP Calc.
5	GC	DENHAM SPRINGS POTW TO WAX ROAD	20.5	19.7	100.0000	ARC MAP Calc.
6	GC	WAX ROAD TO HWY 1026	19.7	17.6	100.0000	ARC MAP Calc.
7	GC	HWY 1026 TO HWY 1033	17.6	11.5	100.0000	ARC MAP Calc.
8	GC	HWY 1033 TO SCIVICQUE ROAD	11.5	8.1	100.0000	ARC MAP Calc.
9	GC	SCIVICQUE ROAD TO HWY 1032	8.1	3.9	100.0000	ARC MAP Calc.
10	GC	HWY 1032 TO RKM 0.8	3.9	0.8	100.0000	ARC MAP Calc.
11	GC	RKM 0.8 TO GRAYS CREEK LAKE	0.8	0.0	100.0000	ARC MAP Calc.



<b>Gray's Creek 040304 Winter Justification</b>									
<b>Data Type 9 - Advective Hydraulic Coefficients</b>									
Reach	Name	Width Coeff. "a"	Width Exp. "b"	Width Const. "c"	Data Source	Depth Coeff. "d"	Depth Exp. "e"	Depth Const. "f"	Data Source
1	GRAY'S CREEK CANAL TO HWY 190	0	0.2	1.524	GC09	0	0.3	0.025	GC09
2	HWY 190 TO FORREST DELATTE ROAD	0	0.2	2.832	GC08	0	0.3	0.494	GC08
3	FORREST DELATTE ROAD TO WAX ROAD	0	0.2	4.877	GC07	0	0.3	0.247	GC07
4	DENHAM SPRINGS POTW	0	0.2	4.877	GC07	0	0.3	0.247	GC07
5	DENHAM SPRINGS POTW TO WAX ROAD	0	0.2	4.877	GC07	0	0.3	0.247	GC07
6	WAX ROAD TO HWY 1026	0	0.2	5.486	GC06	0	0.3	0.312	GC06
7	HWY 1026 TO HWY 1033	0	0.2	3.353	GC04	0	0.3	0.271	GC04
8	HWY 1033 TO SCIVICQUE ROAD	0	0.2	5.182	GC03	0	0.3	0.161	GC03
9	SCIVICQUE ROAD TO HWY 1032	0	0.2	14.021	GC02	0	0.3	0.589	GC02
10	HWY 1032 TO RKM 0.8	0	0.2	21.641	GC01	0	0.3	1.514	GC01
11	RKM 0.8 TO GRAYS CREEK LAKE	0	0.2	60.960	GCL01	0	0.3	2.965	GCL01

<b>Gray's Creek 040304 Winter Justification</b>							
<b>DATA TYPE 10 - DISPERSIVE HYDRAULIC COEFFICIENTS</b>							
Reach	Tidal Range	Data Source	a	b	c	d	Data Source
1	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
2	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
3	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
4	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
5	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
6	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
7	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
8	1.0	Calibration	10.60	0.8333	0.0	1.0	Constant values used for advective dispersion
9	1.0	Calibration	12.20	0.8333	0.0	1.0	Constant values used for advective dispersion
10	1.0	Calibration	12.20	0.8333	0.0	1.0	Constant values used for advective dispersion
11	1.0	Calibration	12.20	0.8333	0.0	1.0	Constant values used for advective dispersion

Gray's Creek 040304 Winter Justification								
DATA TYPE II-INITIAL CONDITIONS								
Reach	Name	Temp deg C	Sal, ppt	Data Source	DO, mg/l	Data Source	Chlorophyll a	Data Source
1	GRAY'S CREEK CANAL TO HWY 190	22.00	0.19	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC09, GC10)	5.00	DO Standard for Subsegment 040304	5.0	Best Professional Judgement
2	HWY 190 TO FORREST DELATTE ROAD	22.00	0.16	Temp - 90th Percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC08, GC09)	5.00	DO Standard for Subsegment 040304	5.0	Best Professional Judgement
3	FORREST DELATTE ROAD TO WAX ROAD	22.00	0.18	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC07, GC08)	5.00	DO Standard for Subsegment 040304	5.0	Best Professional Judgement
4	DENHAM SPRINGS POTW	22.00	0.18	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC07, GC08)	5.00	DO Standard for Subsegment 040304	5.0	Best Professional Judgement
5	DENHAM SPRINGS POTW TO WAX ROAD	22.00	0.18	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC07, GC08)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
6	WAX ROAD TO HWY 1026	22.00	0.21	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC06, GC07)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
7	HWY 1026 TO HWY 1033	22.00	0.21	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC04, GC06)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
8	HWY 1033 TO SCVICQUE ROAD	22.00	0.18	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC03, GC04)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
9	SCVICQUE ROAD TO HWY 1032	22.00	0.16	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC02, GC03)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
10	HWY 1032 TO RKM0.8	22.00	0.09	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GC01, GC02)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement
11	RKM0.8 TO GRAYS CREEK LAKE	22.00	0.03	Temp - 90th percentile Temp for WQN 0239 Salinity - Cont Mont Avg (GCL01, GC01)	5.00	DO Standard for Subsegment 040304	10.0	Best Professional Judgement

<b>Gray's Creek 040304 Winter Justification</b>									
		<b>DATA TYPE 12 - REAERATION, SEDIMENT OXYGEN DEMAND AND BOD COEFFICIENTS</b>							
<b>REACH</b>	<b>NAME</b>	<b>K2 OPT</b>	<b>Data Source</b>	<b>BKGRND SOD, gmO2/m2/day at 20 deg C</b>	<b>Data Source</b>	<b>Aerobic UBOD Dec Rate (1/day)</b>	<b>Data Source</b>	<b>UBOD SETT RATE (1/day)</b>	<b>Data Source</b>
1	GRAY'S CREEK CANAL TO HWY 190	11	Texas Equation	0.169	Calibration	0.0750	Calibration	0.05	Calibration
2	HWY 190 TO FORREST DELATTE ROAD	11	Texas Equation	0.619	Calibration	0.0750	Calibration	0.05	Calibration
3	FORREST DELATTE ROAD TO WAX ROAD	11	Texas Equation	0.750	Calibration	0.0750	Calibration	0.05	Calibration
4	DENHAM SPRINGS POTW	11	Texas Equation	0.900	Calibration	0.0750	Calibration	0.10	Calibration
5	DENHAM SPRINGS POTW TO WAX ROAD	11	Texas Equation	0.975	Calibration	0.0750	Calibration	0.10	Calibration
6	WAX ROAD TO HWY 1026	11	Texas Equation	0.769	Calibration	0.0750	Calibration	0.10	Calibration
7	HWY 1026 TO HWY 1033	11	Texas Equation	0.675	Calibration	0.0750	Calibration	0.10	Calibration
8	HWY 1033 TO SCIVICQUE ROAD	11	Texas Equation	0.600	Calibration	0.0750	Calibration	0.10	Calibration
9	SCIVICQUE ROAD TO HWY 1032	11	Texas Equation	0.338	Calibration	0.0750	Calibration	0.10	Calibration
10	HWY 1032 TO RKM 0.8	11	Texas Equation	0.413	Calibration	0.0750	Calibration	0.10	Calibration
11	RKM 0.8 TO GRAYS CREEK LAKE	11	Texas Equation	0.225	Calibration	0.0750	Calibration	0.10	Calibration

<b>Gray's Creek 040304 Winter Justification</b>				
<b>DATA TYPE 19 - NONPOINT SOURCES</b>				
<b>Reach</b>	<b>Reach Name</b>	<b>Length of Reach, km</b>	<b>UBOD, kg/day</b>	<b>Data Source</b>
1	GRAY'S CREEK CANAL TO HWY 190	1.10	0.469	85% Reduction in Overall Nonpoint
2	HWY 190 TO FORREST DELATTE ROAD	3.80	3.188	85% Reduction in Overall Nonpoint
3	FORREST DELATTE ROAD TO WAX ROAD	1.80	0.938	85% Reduction in Overall Nonpoint
4	DENHAM SPRINGS POTW TO WAX ROAD	0.10	0.563	85% Reduction in Overall Nonpoint
5	DENHAM SPRINGS POTW TO WAX ROAD	0.80	1.500	85% Reduction in Overall Nonpoint
6	WAX ROAD TO HWY 1026	2.10	0.188	85% Reduction in Overall Nonpoint
7	HWY 1026 TO HWY 1033	6.10	0.000	85% Reduction in Overall Nonpoint
8	HWY 1033 TO SCIVICQUE ROAD	3.40	0.188	85% Reduction in Overall Nonpoint
9	SCIVICQUE ROAD TO HWY 1032	4.20	4.688	85% Reduction in Overall Nonpoint
10	HWY 1032 TO RKM 0.8	3.10	0.188	85% Reduction in Overall Nonpoint
11	RKM 0.8 TO GRAYS CREEK LAKE	0.80	17.813	85% Reduction in Overall Nonpoint

Gray's Creek 040304 Winter Justification									
DATA TYPES 20 - HEADWATER DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES									
Headwater Name	Element No.	Logical Unit Number	Headwater Flow, cms	Data Source	Temp, deg C	Salinity	Chlorides	Conductivity	Data Source
Headwater 1	1	1	0.0280	LTP Default	22.0	0.2	6.90	83.7	TEMP - 90th Percentile Temp for WQN 0238 SALINITY - CONT MONT AVG (GC01) CHLORIDE - LAB DATA (GC01) CONDUCTIVITY - INSITU (GC01)

Gray's Creek 040304 Winter Justification			
DATA TYPES 21 - HEADWATER DATA FOR DO, BOD, AND NITROGEN			
Headwater Name	Dissolved Oxygen, mg/L	UBOD, mg/l	Data Source
Headwater 1	7.9	1.79	DO - 90% DO Sat for WQN 0239 BOD - 85% Reduction in overall nonpoint

Gray's Creek 040304 Winter Justification									
DATA TYPES 24 - WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES									
Wasteload / Withdrawal Name	EL #	Flow, cms	Data Source	Temperature, deg C	Data Source	Salinity	Conductivity	Chlorides	Data Source
Summerfield Subdivision & Willows Subdivision Filing 8	1	0.0058	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Bercen Inc, ITT Industries, Deville's Mobile Home Park, Bradley's Dba Eden Place, Carlton Oaks Subdivision, Carlton Oaks 3rd Filing	5	0.0066	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Blake LaFleur Mobile Home Park	10	0.0005	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Livingston Parish Mosquito Abatement, Crescent Properties Facility, Gulf States Long Term Acute Care, A&W Mobil Home Park, DS Walker Branch Library, and Country Boy Cages	11	0.0013	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Gray's Creek Subdivision	17	0.0011	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Unnamed Trib #6 & Penny's Mobile Home Park	36	0.028	LTP Default	30.0	LTP	0	278.5	8.5	UT6

Grays Creek Watershed TMDL  
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Unnamed Trib #5 & Lakeside Cove Subdivision, and Clear Lake Subdivision	53	0.028	LTP Default	30.0	LTP	0	255.4	17.1
Denham Springs POTW	68	0.2628	LTP Default	30.0	LTP	0	458.7	37.0
Greystone Sulf and Country Club	73	0.0035	Expected Flow	30.0	LTP	0	285.0	12.1
Oakview Moible Home Park	76	0.0009	Expected Flow	30.0	LTP	0	285.0	12.1
Carter Hill Subdivision	85	0.0029	Expected Flow	30.0	LTP	0	285.0	12.1
Miller's Canal	104	0.028	LTP Default	30.0	LTP	0	285.0	12.1
Rolling Meadow Subdivision	110	0.002	Expected Flow	30.0	LTP	0	285.0	12.1
Unnamed Trib #4 & Seventh Ward Elementary	119	0.028	LTP Default	30.0	LTP	0	285.0	12.1

Grays Creek Watershed TMDL  
 Subsegment 040304  
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Southpoint Subdivision	130	0.0013	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Southpoint IV Subdivision	137	0.0062	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Southpoint III Subdivision	143	0.0062	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
All God's Children Daycare	149	0.0001	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Hilltop Mobile Home Park	152	0.0007	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.



Grays Creek Watershed TMDL  
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Gray's Creek Elementary and Gulf Stream Estates and Townhouses	158	0.0038	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Highland Ridge Subdivision	193	0.0008	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Unnamed Trib #2	203	0.028	LTP Default	30.0	LTP	0	324.6	10.7	UT2
Olivia Rose Mobile Home Park	219	0.0003	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Pine Acres Mobile Home Park	234	0.0003	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Parker's Supermarket	266	0.0001	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Stone Hill Subdivision	267	0.0013	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.
Bayside Campground	272	0.0001	Expected Flow	30.0	LTP	0	285.0	12.1	Average values from unnamed tribs containing facilities on Gray's Creek.

<b>Gray's Creek 040304 Winter Justification</b>					
<b>DATA TYPES 25 - WASTELOAD DATA FOR DO, BOD, AND NITROGEN</b>					
<b>Wasteload / Withdrawal Name</b>	<b>EL #</b>	<b>DO, mg/l</b>	<b>Data Source</b>	<b>UBOD, mg/l</b>	<b>Data Source</b>
Summerfield Subdivision & Willows Subdivision Filing 8	1	5.00	DO Standard for Subsegment 040304	20.1000	All Facilities required to reduce to 5 CBOD / 2 NH3 for an equivalent 85% reduction in overall nonpoint
Bercen Inc, ITT Industries, Deville's Mobile Home Park, Bradley's Dba Eden Place, Carlton Oaks Subdivision, Carlton Oaks 3rd Filing	5	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Blake LaFleur Mobile Home Park	10	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Livingston Parish Mosquito Abatement, Crescent Properties Facility, Gulf States Long Term Acute Care, A&W Mobil Home Park, DS Walker Branch Library, and Country Boy Cages	11	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Gray's Creek Subdivision	17	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction

Unnamed Trib #6 & Penny's Mobile Home Park	36	5.00	DO Standard for Subsegment 040304	2.4100	85% Reduction in overall nonpoint reduction
Unnamed Trib #5 & Lakeside Cove Subdivision, and Clear Lake Subdivision	53	5.00	DO Standard for Subsegment 040304	3.3200	85% Reduction in overall nonpoint reduction
Denham Springs POTW	68	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Greystone Sulf and Country Club	73	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Oakview Moible Home Park	76	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Carter Hill Subdivision	85	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Miller's Canal	104	5.00	DO Standard for Subsegment 040304	2.6100	85% Reduction in overall nonpoint reduction

Rolling Meadow Subdivision	110	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Unnamed Trib #4 & Seventh Ward Elementary	119	5.00	DO Standard for Subsegment 040304	2.6100	85% Reduction in overall nonpoint reduction
Southpoint Subdivision	130	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Southpoint IV Subdivision	137	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Southpoint III Subdivision	143	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
All God's Children Daycare	149	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Hilltop Mobile Home Park	152	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction

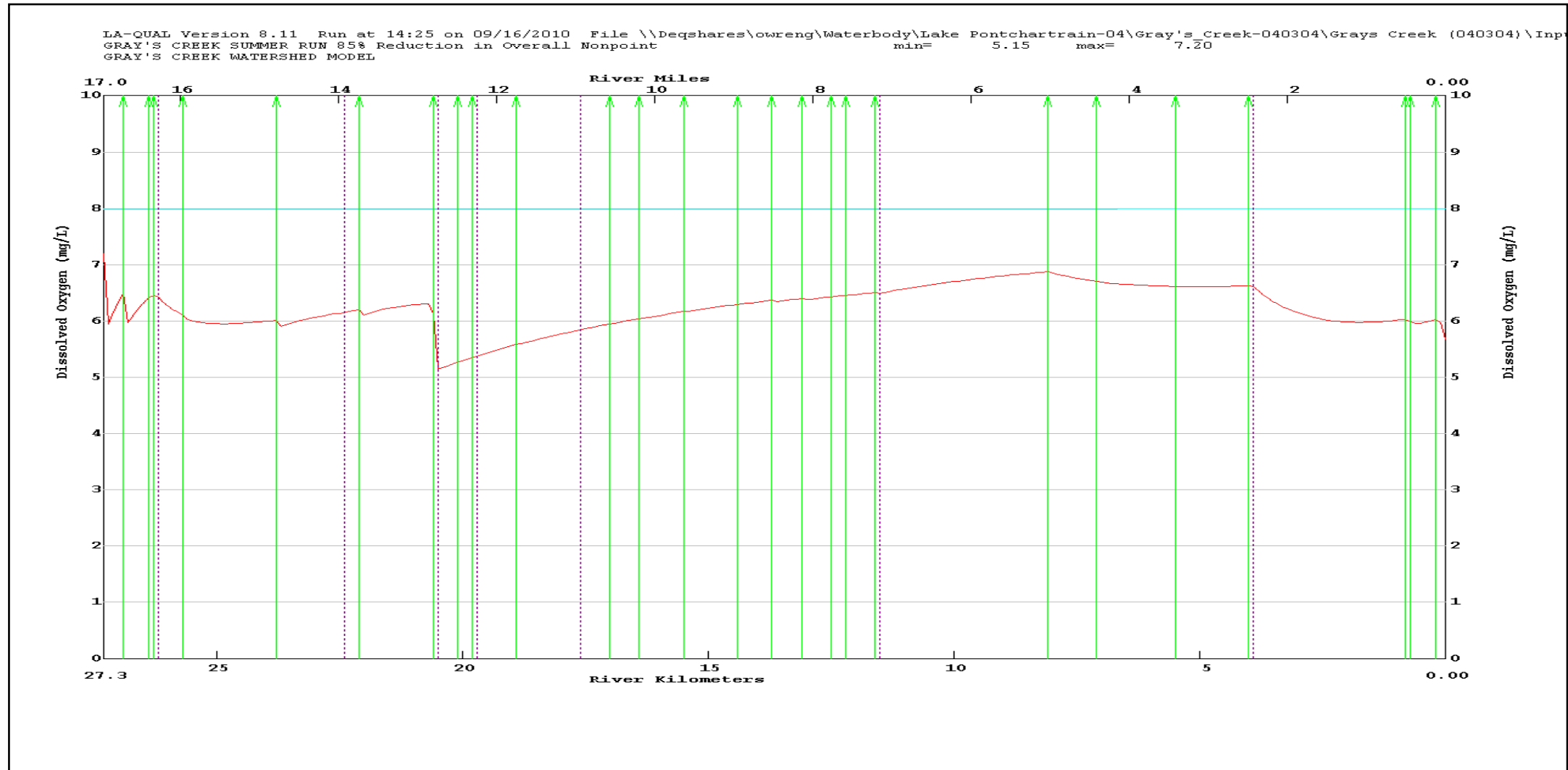
Grays Creek Watershed TMDL  
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Gray's Creek Elementary and Gulf Stream Estates and Townhouses	158	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Highland Ridge Subdivision	193	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Unnamed Trib #2	203	5.00	DO Standard for Subsegment 040304	2.6100	85% Reduction in overall nonpoint reduction
Olivia Rose Mobile Home Park	219	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Pine Acres Mobile Home Park	234	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Parker's Supermarket	266	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Stone Hill Subdivision	267	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction
Bayside Campground	272	5.00	DO Standard for Subsegment 040304	20.1000	85% Reduction in overall nonpoint reduction

<b>Gray's Creek 040304 Winter Justification</b>			
<b>DATA TYPES 27 - LOWER BOUNDARY CONDITIONS</b>			
<b>Parameter</b>	<b>Value</b>	<b>Units</b>	<b>Data Source</b>
TEMPERATURE	22.0000	°C	90th Percentile Temp for WQN 0238
SALINITY	0.0200	ppt	GCL01 Cont Mont
CHLORIDES	6.2000	ppm	GCL01 Lab Data
CONDUCTIVITY	103.8000	umhos/cm	GCL01 Insitu
DISSOLVED OXYGEN	5.0000	mg/L	DO Standard for Subsegment 040304
CBOD1	8.4326	mg/L	GCL01 Lab Data
CBOD2	0.0000	mg/L	GCL01 Lab Data
CHLOROPHYLL A	5.0000	ug/L	Best Professional Judgement
NBOD	0.0000	mg/L	GCL01 Lab Data

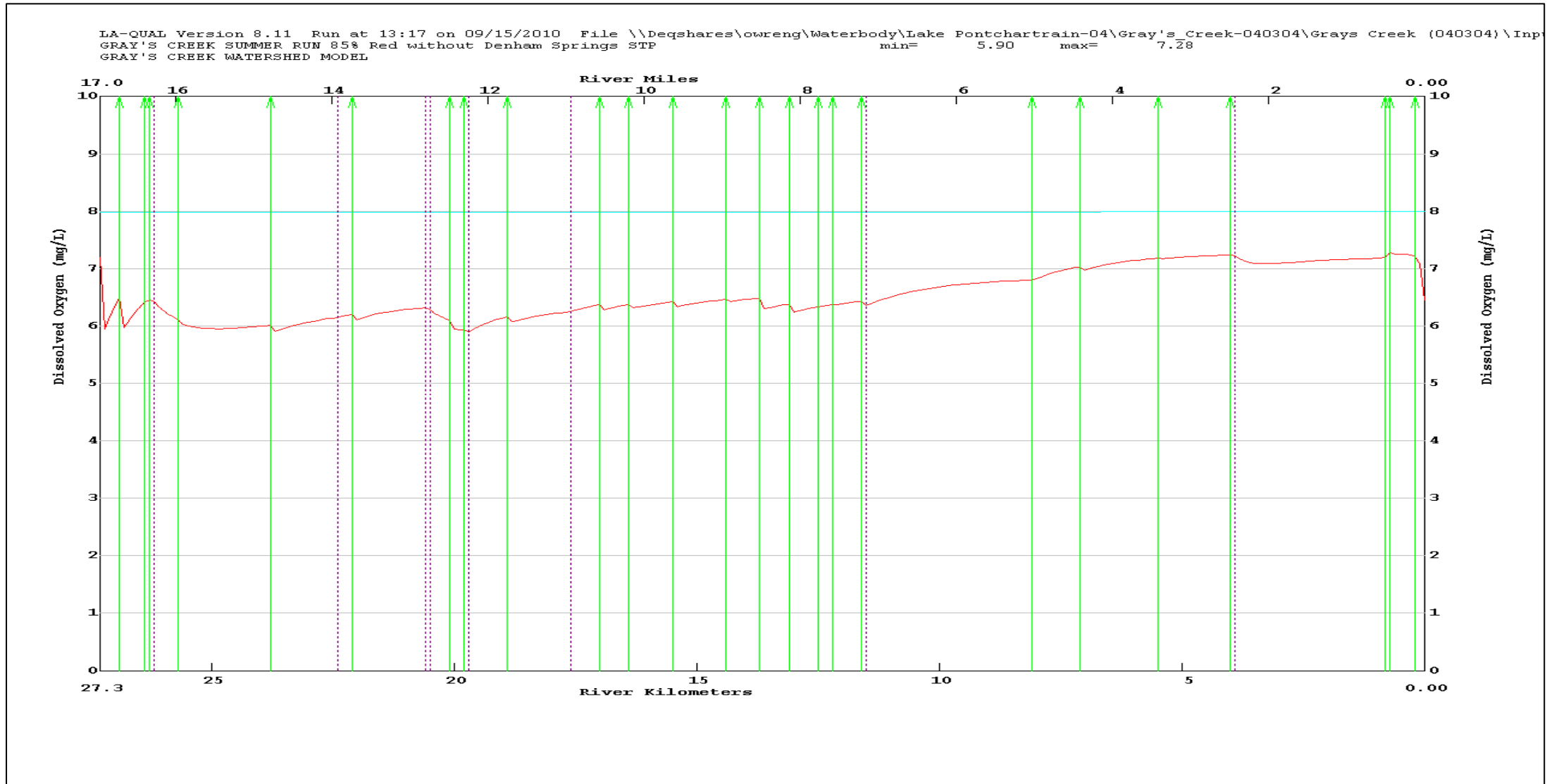
## **Appendix D5 –Plots For Additional Projections**

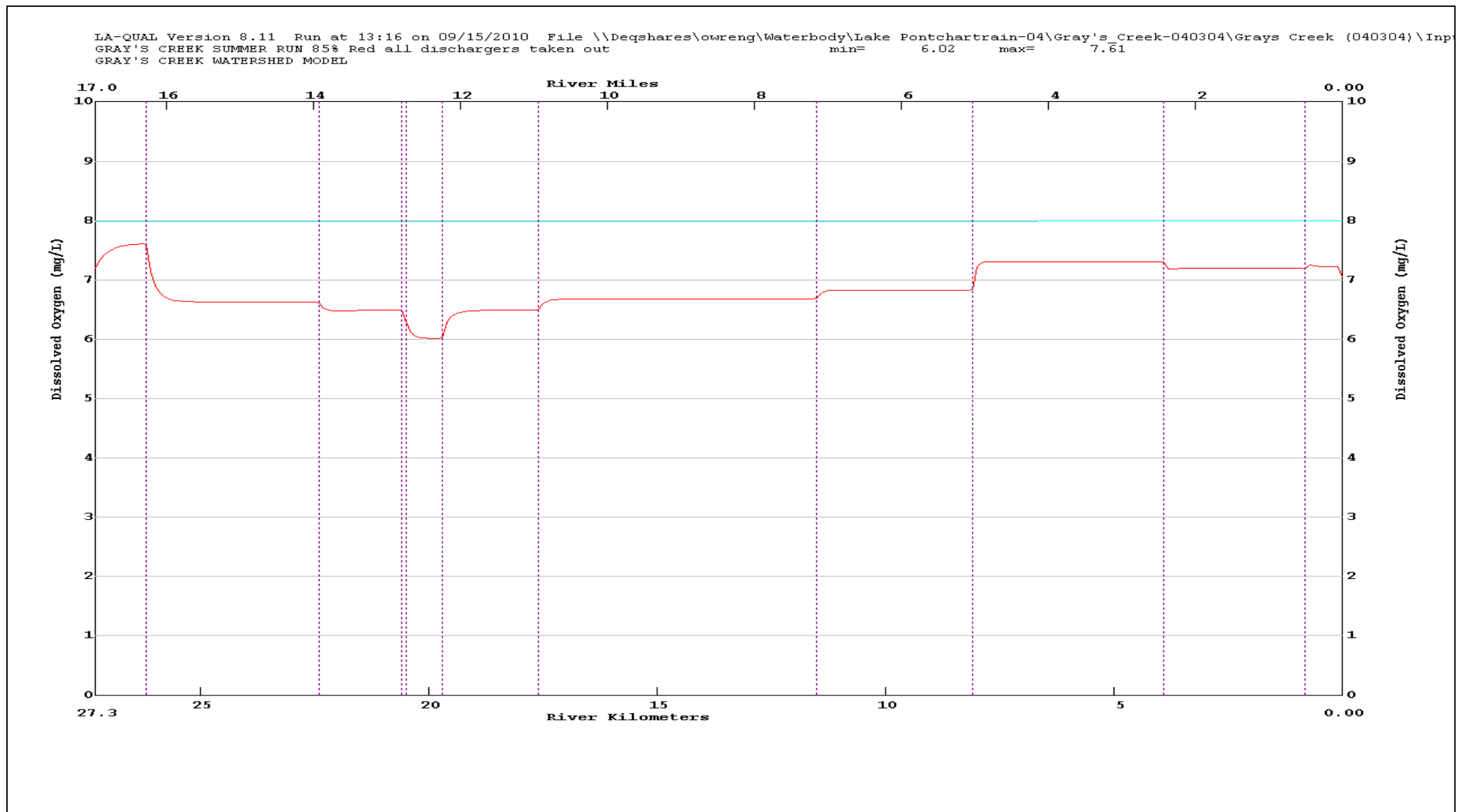
Grays Creek With All Dischargers; 85% reduction in nonpoint loading





Grays Creek Without the Denham Springs Oxidation Pond ; Other Modeled Dischargers Remain; 85% reduction in nonpoint loading





**Appendix E - Projection Model Development**

**Appendix E1 – 85% Reduction Summer Loading**

**Summer Projection, Non-Point Benthic Load Input and TMDL Calculations:**

Modeled stream or water body: **GRAY'S CREEK (SUBSEGMENT 040304)**

Shaded cells are input values for calc SAFETY (MOS) (%) = [MOG + MOU] = **20%**

Values to be used in the projection models.

Reach Number and Description	Calibration Model Values				Proj. Model Avg. Reach Width	Proj. Temp.	Background Benthic Load	Effective Background Benthic Load	Man-Made Benthic Load	Background percentage reduction	Percentage Reduction of man-made sources	Reduced Background Benthic Load	Reduced Man-Made Benthic Load	Reduced TCBL adjusted for MOS	Reduced Man-Made Loads		Projected Model Loads				
	Non-Point UBOD	SOD @ 20°C	Total Calb. Benthic Load (TCBL)	Reach Length											Reduced UBOD Load	Reduced SOD Load at Projection Temp.	SOD @ 20°C	Non-Point UBOD INPUTS	Total MOS at Projection Temp.	Non-Point UBOD LA	SOD LA at Projection Temp.
	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	Kilo-meters	Meters	(deg Celcius)	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	%	%	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	kg O <sub>2</sub> /day	kg O <sub>2</sub> /day	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	kg O <sub>2</sub> /day	kg O <sub>2</sub> /day	kg O <sub>2</sub> /day	kg O <sub>2</sub> /day
REACH 1 - GRAY'S CREEK CANAL TO HWY 190	1.491	0.90	0.900	1.10	1.52	26.80	0.00	0.00	0.90	0%	85%	0.00	0.14	0.17	0.38	0.35	0.169	0.469	0.09	0.38	0.35
REACH 2 - HWY 190 TO FORREST DELATTE ROAD	1.554	3.30	3.300	3.86	2.83	26.80	0.00	0.00	3.30	0%	85%	0.00	0.50	0.62	2.55	8.31	0.619	3.188	2.08	2.55	8.31
REACH 3 - FORREST DELATTE ROAD JUST ABOVE DENHAM SPRINGS POTW	0.583	4.00	4.000	1.76	4.88	26.80	0.00	0.00	4.00	0%	85%	0.00	0.60	0.75	0.75	7.90	0.750	0.938	1.97	0.75	7.90
REACH 4 - DENHAM SPRINGS POTW	6.151	4.80	4.800	0.10	4.88	26.80	0.00	0.00	4.80	0%	85%	0.00	0.72	0.90	0.45	0.54	0.900	0.563	0.13	0.45	0.54
REACH 5 - JUST BELOW DENHAM SPRINGS POTW TO WAX ROAD	2.050	5.20	5.200	0.80	4.88	26.80	0.00	0.00	5.20	0%	85%	0.00	0.78	0.98	1.20	4.67	0.975	1.500	1.17	1.20	4.67
REACH 6 - WAX ROAD TO HWY 1026	0.087	4.10	4.100	2.10	5.49	26.80	0.00	0.00	4.10	0%	85%	0.00	0.62	0.77	0.15	10.87	0.769	0.188	2.72	0.15	10.87
REACH 7 - HWY 1026 TO HWY 1033	0.000	3.60	3.600	6.10	3.35	26.80	0.00	0.00	3.60	0%	85%	0.00	0.54	0.68	0.00	16.95	0.675	0.000	4.24	0.00	16.95
REACH 8 - HWY 1033 TO SCVICQUE ROAD	0.057	3.20	3.200	3.40	5.18	26.80	0.00	0.00	3.20	0%	85%	0.00	0.48	0.60	0.15	12.98	0.600	0.188	3.24	0.15	12.98
REACH 9 - SCVICQUE ROAD TO HWY 1032	0.425	1.80	1.800	4.20	14.02	26.80	0.00	0.00	1.80	0%	85%	0.00	0.27	0.34	3.75	24.40	0.338	4.688	6.10	3.75	24.40
REACH 10 - HWY 1032 TO RKM 0.8	0.015	2.20	2.200	3.10	21.64	26.80	0.00	0.00	2.20	0%	85%	0.00	0.33	0.41	0.15	33.97	0.413	0.188	8.49	0.15	33.97
REACH 11 - RKM 0.8 TO GRAYS CREEK LAKE	1.948	1.20	1.200	0.80	60.96	26.80	0.00	0.00	1.20	0%	85%	0.00	0.18	0.23	14.25	13.47	0.225	17.813	3.37	14.25	13.47
<b>Sub-Total</b>								0.00	34.30			0.00	5.15	6.43	23.78	134.41		29.72	33.60	<b>23.78</b>	<b>134.41</b>

Point Source Loading Calculations																					
Pt. Source / Facility Description and Reach #	Receiving Stream	Included in the Projection Model (Yes/No)	Anticipated/ design flow (cms)	Flow with MOS (cms)	Proposed Permit Limits			UCBOD				UNBOD				Sub-Total of Point Source Phosphorus Loads			Sub-Total of Point Source BOD Loads		
					CBOD <sub>5</sub> (mg/l)	NH <sub>3</sub> N (mg/l)	MOS (%)	Ultimate Conc. (mg/l) (2)	Loads (kg/day) (1)	WLA (kg/day)	Reserve/ MOS Load (kg/day)	Ultimate Conc. (mg/l) (2)	Loads (kg/day) (1)	WLA (kg/day)	Reserve/ MOS Load (kg/day)	Loads (kg/day)	WLA (kg/day)	Reserve/ MOS Load (kg/day)	Loads (kg/day)	WLA (kg/day)	Reserve/ MOS (kg/day)
			A	A1 = A/(1-E)	B	C	E	F = 2.3 x B	G = (86.4)(A1)(F)	H = (1-E) x G	I = (E)(G)	J = 4.3 x C	K = (86.4)(A1)(J)	L = (1-E) x K	M = (D)(K)	N = 86.4(A1)(D)	O = (1-E) x N	P = E x N	G + K + N	H + L + O	I + M + P
Summerfield and Willow	Gray's Creek	Yes	0.00580	0.00725	5.0	2.0	20%	11.5	7	6	1	8.6	5	4	1	0	0	0	13	10	3
Cluster 1	Gray's Creek	Yes	0.00660	0.00825	5.0	2.0	20%	11.5	8	7	2	8.6	6	5	1	0	0	0	14	11	3
Blake LaFleur MHP	Gray's Creek	Yes	0.00050	0.00063	5.0	2.0	20%	11.5	1	0	0	8.6	0	0	0	0	0	0	1	1	0
Cluster 2	Gray's Creek	Yes	0.00130	0.00163	5.0	2.0	20%	11.5	2	1	0	8.6	1	1	0	0	0	0	3	2	1
Gray's Creek Subdivision	Gray's Creek	Yes	0.00110	0.00138	5.0	2.0	20%	11.5	1	1	0	8.6	1	1	0	0	0	0	2	2	0
Denham Springs POTW	Gray's Creek	Yes	0.26280	0.32850	5.0	2.0	20%	11.5	326	261	65	8.6	244	195	49	0	0	0	570	456	114
Greystone Subdivision	Gray's Creek	Yes	0.00350	0.00438	5.0	2.0	20%	11.5	4	3	1	8.6	3	3	1	0	0	0	8	6	2
Oakview MHP	Gray's Creek	Yes	0.00090	0.00113	5.0	2.0	20%	11.5	1	1	0	8.6	1	1	0	0	0	0	2	2	0
Carter Hill Subdivision	Gray's Creek	Yes	0.00290	0.00363	5.0	2.0	20%	11.5	4	3	1	8.6	3	2	1	0	0	0	6	5	1
Rolling Meadow Subdivision	Gray's Creek	Yes	0.00200	0.00250	5.0	2.0	20%	11.5	2	2	0	8.6	2	1	0	0	0	0	4	3	1
Southpoint Subdivision	Gray's Creek	Yes	0.00130	0.00163	5.0	2.0	20%	11.5	2	1	0	8.6	1	1	0	0	0	0	3	2	1
Southpoint IV Subdivision	Gray's Creek	Yes	0.00620	0.00775	5.0	2.0	20%	11.5	8	6	2	8.6	6	5	1	0	0	0	13	11	3
Southpoint III Subdivision	Gray's Creek	Yes	0.00620	0.00775	5.0	2.0	20%	11.5	8	6	2	8.6	6	5	1	0	0	0	13	11	3
All God's Children Daycare	Gray's Creek	Yes	0.00010	0.00013	5.0	2.0	20%	11.5	0	0	0	8.6	0	0	0	0	0	0	0	0	0
Hill Top MHP	Gray's Creek	Yes	0.00070	0.00088	5.0	2.0	20%	11.5	1	1	0	8.6	1	1	0	0	0	0	2	1	0
Gray's Creek Elementary and Gulf Stream Estates	Gray's Creek	Yes	0.00380	0.00475	5.0	2.0	20%	11.5	5	4	1	8.6	4	3	1	0	0	0	8	7	2
Highland Ridge Subdivision	Gray's Creek	Yes	0.00080	0.00100	5.0	2.0	20%	11.5	1	1	0	8.6	1	1	0	0	0	0	2	1	0
Olivia Rose Mobile Home Park	Gray's Creek	Yes	0.00030	0.00038	5.0	2.0	20%	11.5	0	0	0	8.6	0	0	0	0	0	0	1	1	0
Pine Acres Mobile Home Park	Gray's Creek	Yes	0.00030	0.00038	5.0	2.0	20%	11.5	0	0	0	8.6	0	0	0	0	0	0	1	1	0
Parker's Supermarket	Gray's Creek	Yes	0.00010	0.00013	5.0	2.0	20%	11.5	0	0	0	8.6	0	0	0	0	0	0	0	0	0
Stone Hill Subdivision	Gray's Creek	Yes	0.00130	0.00163	5.0	2.0	20%	11.5	2	1	0	8.6	1	1	0	0	0	0	3	2	1
Bayside Campground	Gray's Creek	Yes	0.00010	0.00013	5.0	2.0	20%	11.5	0	0	0	8.6	0	0	0	0	0	0	0	0	0
<b>SUB-TOTAL Loads</b>									<b>383.28</b>	<b>306.62</b>	<b>76.66</b>		<b>286.63</b>	<b>229.30</b>	<b>57.33</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>669.91</b>	<b>535.93</b>	<b>133.98</b>

**Summer TMDL calculations and Projection model calculations for Headwater / Tributary loads:**

**GRAY'S CREEK (SUBSEGMENT 040304)**

Shaded cells are input values for calculations. FETY (MOS) (%) = **20%**  
 Values to be used in the projection models. If modeling the nitrogen series, be

**Headwater / Tributary Load Determinations**

Headwater / Tributary Description and Reach #	FROM CALIBRATION			BACKGROUND VALUES			Percent reduction of Man-Made loads	Reduced Background	Reduced Man-Made Load		JECTION VAL	Total MOS (kg O <sub>2</sub> /day)	Total UBOD LA (kg O <sub>2</sub> /day)
	Seasonal Critical flow (cms)	UBOD (mg O <sub>2</sub> /L)	Total UBOD (mg O <sub>2</sub> /L)	Background UBOD conc. (mg O <sub>2</sub> /L)	Background UBOD conc. (mg O <sub>2</sub> /L)	Background % Reduction		UBOD load (kg O <sub>2</sub> /day)	UBOD load (kg O <sub>2</sub> /day)	UBOD load (kg O <sub>2</sub> /day)	Projection UBOD input conc. (mg O <sub>2</sub> /L)		
Headwater	0.00280	9.57	9.57	0.00	0.00	0%	85%	0.00	0.35	0.35	1.79	0.09	0.35
Unnamed Trib #6	0.00280	12.87	12.87	0.00	0.00	0%	85%	0.00	0.47	0.47	2.41	0.12	0.47
Unnamed Trib #5	0.00280	17.70	17.70	0.00	0.00	0%	85%	0.00	0.64	0.64	3.32	0.16	0.64
Miller's Canal	0.00280	13.92	13.92	0.00	0.00	0%	85%	0.00	0.51	0.51	2.61	0.13	0.51
Unnamed Trib #4	0.00280	13.92	13.92	0.00	0.00	0%	85%	0.00	0.51	0.51	2.61	0.13	0.51
Unnamed Trib #2	0.00280	13.92	13.92	0.00	0.00	0%	85%	0.00	0.51	0.51	2.61	0.13	0.51
<b>SUB-TOTAL TMDL LOADING</b>								<b>0.00</b>	<b>3</b>	<b>2.97</b>		<b>0.74</b>	<b>2.97</b>

**Appendix E2 – 85% Reduction Winter Loading**



**Winter Projection, Non-Point Benthic Load Input and TMDL Calculations:**

Modeled stream or water body: **GRAY'S CREEK (SUBSEGMENT 040304)**

Shaded cells are input values for calibration. SAFETY (MOS) (%) = [MOG + MOU] = **20%**

Values to be used in the projection models.

Reach Number and Description	Calibration Model Values				Reduced Man-Made Loads										Calibrated Model L						
	Non-Point UBOD	SOD @ 20°C	Total Calb. Benthic Load (TCBL)	Reach Length	Proj. Model Avg. Reach Width	Proj. Temp.	Background Benthic Load	Effective Background Benthic Load	Man-Made Benthic Load	Background percentage reduction	Percentage Reduction of man-made sources	Reduced Background Benthic Load	Reduced Man-Made Benthic Load	Reduced TCBL adjusted for MOS	Reduced UBOD Load	Reduced SOD Load at Projection Temp.	SOD @ 20°C	Non-Point UBOD INPUTS	Total MOS at Projection Temp.	Non-Point UBOD LA	SOD LA at Projection Temp.
	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	Kilo-meters	Meters	(deg Celcius)	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	%	%	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	kg O <sub>2</sub> /day	kg O <sub>2</sub> /day	g O <sub>2</sub> / [(m <sup>2</sup> )(day)]	kg O <sub>2</sub> /day	kg O <sub>2</sub> /day	kg O <sub>2</sub> /day	kg O <sub>2</sub> /day
REACH 1 - GRAYS CREEK CANAL TO HWY 190	1.491	0.90	0.900	1.10	1.52	22.00	0.00	0.00	0.90	0%	85%	0.00	0.14	0.17	0.38	0.26	0.169	0.469	0.06	0.38	0.26
REACH 2 - HWY 190 TO FORREST DELATTE ROAD	1.554	3.30	3.300	3.86	2.83	22.00	0.00	0.00	3.30	0%	85%	0.00	0.50	0.62	2.55	6.14	0.619	3.188	1.54	2.55	6.14
REACH 3 - FORREST DELATTE ROAD JUST ABOVE DENHAM SPRINGS POTW	0.583	4.00	4.000	1.76	4.88	22.00	0.00	0.00	4.00	0%	85%	0.00	0.60	0.75	0.75	5.84	0.750	0.938	1.46	0.75	5.84
REACH 4 - DENHAM SPRINGS POTW	6.151	4.80	4.800	0.10	4.88	22.00	0.00	0.00	4.80	0%	85%	0.00	0.72	0.90	0.45	0.40	0.900	0.563	0.10	0.45	0.40
REACH 5 - JUST BELOW DENHAM SPRINGS POTW TO WAX ROAD	2.050	5.20	5.200	0.80	4.88	22.00	0.00	0.00	5.20	0%	85%	0.00	0.78	0.98	1.20	3.45	0.975	1.500	0.86	1.20	3.45
REACH 6 - WAX ROAD TO HWY 1026	0.087	4.10	4.100	2.10	5.49	22.00	0.00	0.00	4.10	0%	85%	0.00	0.62	0.77	0.15	8.04	0.769	0.188	2.01	0.15	8.04
REACH 7 - HWY 1026 TO HWY 1033	0.000	3.60	3.600	6.10	3.35	22.00	0.00	0.00	3.60	0%	85%	0.00	0.54	0.68	0.00	12.53	0.675	0.000	3.13	0.00	12.53
REACH 8 - HWY 1033 TO SCVICQUE ROAD	0.057	3.20	3.200	3.40	5.18	22.00	0.00	0.00	3.20	0%	85%	0.00	0.48	0.60	0.15	9.59	0.600	0.188	2.40	0.15	9.59
REACH 9 - SCVICQUE ROAD TO HWY 1032	0.425	1.80	1.800	4.20	14.02	22.00	0.00	0.00	1.80	0%	85%	0.00	0.27	0.34	3.75	18.03	0.338	4.688	4.51	3.75	18.03
REACH 10 - HWY 1032 TO RKM 0.8	0.015	2.20	2.200	3.10	21.64	22.00	0.00	0.00	2.20	0%	85%	0.00	0.33	0.41	0.15	25.11	0.413	0.188	6.28	0.15	25.11
REACH 11 - RKM 0.8 TO GRAYS CREEK LAKE	1.948	1.20	1.200	0.80	60.96	22.00	0.00	0.00	1.20	0%	85%	0.00	0.18	0.23	14.25	9.96	0.225	17.813	2.49	14.25	9.96
<b>Sub-Total</b>								0.00	34.30			0.00	5.15	6.43	23.78	99.34		29.72	24.84	<b>23.78</b>	<b>99.34</b>

Winter TMDL Calculations for Point Source loads:

**GRAY'S CREEK (SUBSEGMENT 040304)**

Input data into the shaded cells.

**Point Source Loading Calculations**

Pt. Source / Facility Description and Reach #	Receiving Stream	Included in the Projection Model (Yes/No)	Anticipated/design flow (cms)	Flow with MOS (cms)	Proposed Permit Limits			UCBOD				UNBOD				Sub-Total of Point Source Phosphorus Loads			Sub-Total of Point Source BOD Loads		
					CBOD <sub>5</sub> (mg/l)	NH <sub>3</sub> N (mg/l)	MOS (%)	Ultimate Conc. (mg/l) (2)	Loads (kg/day) (1)	WLA (kg/day)	Reserve/MOS Load (kg/day)	Ultimate Conc. (mg/l) (2)	Loads (kg/day) (1)	WLA (kg/day)	Reserve/MOS Load (kg/day)	Loads (kg/day)	WLA (kg/day)	Reserve/MOS Load (kg/day)	Loads (kg/day)	WLA (kg/day)	Reserve/MOS (kg/day)
			A	A1 = A/(1-E)	B	C	E	F = 2.3 x B	G = (86.4)(A1)(F)	H = (1-E) x G	I = (E)(G)	J = 4.3 x C	K = (86.4)(A1)(J)	L = (1-E) x K	M = (D)(K)	N = 86.4(A1)(D)	O = (1-E) x N	P = E x N	G + K + N	H + L + O	I + M + P
Summerfield and Willow	Gray's Creek	Yes	0.00580	0.00725	5.0	2.0	20%	11.5	7	6	1	8.6	5	4	1	0	0	0	13	10	3
Cluster 1	Gray's Creek	Yes	0.00660	0.00825	5.0	2.0	20%	11.5	8	7	2	8.6	6	5	1	0	0	0	14	11	3
Blake LaFleur MHP	Gray's Creek	Yes	0.00050	0.00063	5.0	2.0	20%	11.5	1	0	0	8.6	0	0	0	0	0	0	1	1	0
Cluster 2	Gray's Creek	Yes	0.00130	0.00163	5.0	2.0	20%	11.5	2	1	0	8.6	1	1	0	0	0	0	3	2	1
Gray's Creek Subdivision	Gray's Creek	Yes	0.00110	0.00138	5.0	2.0	20%	11.5	1	1	0	8.6	1	1	0	0	0	0	2	2	0
Denham Springs POTW	Gray's Creek	Yes	0.26280	0.32850	5.0	2.0	20%	11.5	326	261	65	8.6	244	195	49	0	0	0	570	456	114
Greystone Subdivision	Gray's Creek	Yes	0.00350	0.00438	5.0	2.0	20%	11.5	4	3	1	8.6	3	3	1	0	0	0	8	6	2
Oakview MHP	Gray's Creek	Yes	0.00090	0.00113	5.0	2.0	20%	11.5	1	1	0	8.6	1	1	0	0	0	0	2	2	0
Carter Hill Subdivision	Gray's Creek	Yes	0.00290	0.00363	5.0	2.0	20%	11.5	4	3	1	8.6	3	2	1	0	0	0	6	5	1
Rolling Meadow Subdivision	Gray's Creek	Yes	0.00200	0.00250	5.0	2.0	20%	11.5	2	2	0	8.6	2	1	0	0	0	0	4	3	1
Southpoint Subdivision	Gray's Creek	Yes	0.00130	0.00163	5.0	2.0	20%	11.5	2	1	0	8.6	1	1	0	0	0	0	3	2	1
Southpoint IV Subdivision	Gray's Creek	Yes	0.00620	0.00775	5.0	2.0	20%	11.5	8	6	2	8.6	6	5	1	0	0	0	13	11	3
Southpoint III Subdivision	Gray's Creek	Yes	0.00620	0.00775	5.0	2.0	20%	11.5	8	6	2	8.6	6	5	1	0	0	0	13	11	3
All God's Children Daycare	Gray's Creek	Yes	0.00010	0.00013	5.0	2.0	20%	11.5	0	0	0	8.6	0	0	0	0	0	0	0	0	0
Hill Top MHP	Gray's Creek	Yes	0.00070	0.00088	5.0	2.0	20%	11.5	1	1	0	8.6	1	1	0	0	0	0	2	1	0
Gray's Creek Elementary and Gulf Stream Estates	Gray's Creek	Yes	0.00380	0.00475	5.0	2.0	20%	11.5	5	4	1	8.6	4	3	1	0	0	0	8	7	2
Highland Ridge Subdivision	Gray's Creek	Yes	0.00080	0.00100	5.0	2.0	20%	11.5	1	1	0	8.6	1	1	0	0	0	0	2	1	0
Olivia Rose Mobile Home Park	Gray's Creek	Yes	0.00030	0.00038	5.0	2.0	20%	11.5	0	0	0	8.6	0	0	0	0	0	0	1	1	0
Pine Acres Mobile Home Park	Gray's Creek	Yes	0.00030	0.00038	5.0	2.0	20%	11.5	0	0	0	8.6	0	0	0	0	0	0	1	1	0
Parker's Supermarket	Gray's Creek	Yes	0.00010	0.00013	5.0	2.0	20%	11.5	0	0	0	8.6	0	0	0	0	0	0	0	0	0
Stone Hill Subdivision	Gray's Creek	Yes	0.00130	0.00163	5.0	2.0	20%	11.5	2	1	0	8.6	1	1	0	0	0	0	3	2	1
Bayside Campground	Gray's Creek	Yes	0.00010	0.00013	5.0	2.0	20%	11.5	0	0	0	8.6	0	0	0	0	0	0	0	0	0
<b>SUB-TOTAL Loads</b>									<b>383.28</b>	<b>306.62</b>	<b>76.66</b>		<b>286.63</b>	<b>229.30</b>	<b>57.33</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>669.91</b>	<b>535.93</b>	<b>133.98</b>

**Winter TMDL calculations and Projection model calculations for Headwater / Tributary loads:**

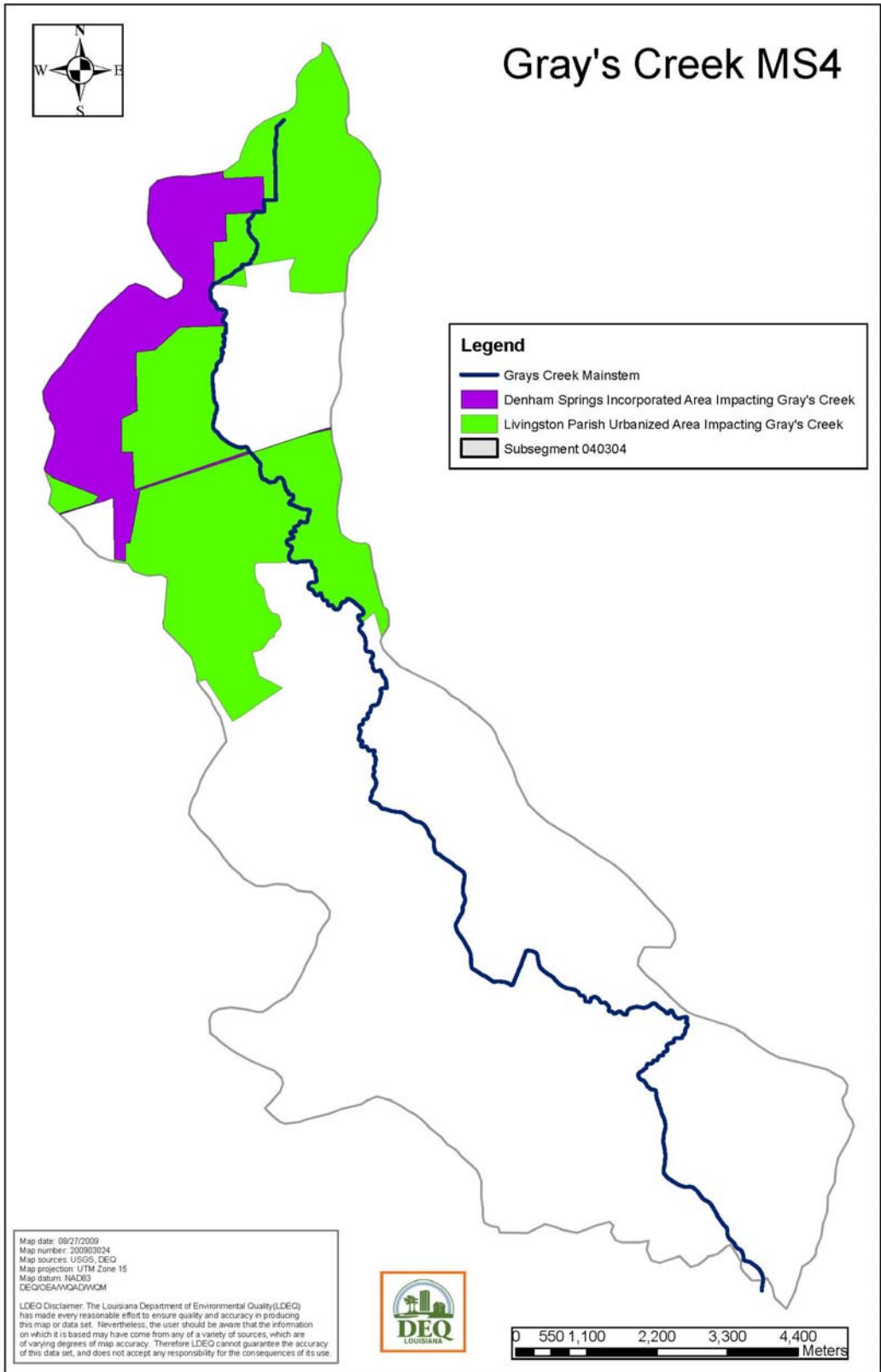
**GRAYS CREEK (SUBSEGMENT 040304)**

Shaded cells are input values for calculations. FETY (MOS) (%) = 20%  
 Values to be used in the projection models. If modeling the nitrogen series, be

**Headwater / Tributary Load Determinations**

Headwater / Tributary Description and Reach #	FROM CALIBRATION			BACKGROUND VALUES			Percent reduction of Man-Made loads	Reduced Background UBOD load (kg O <sub>2</sub> /day)	Reduced Man-Made UBOD load (kg O <sub>2</sub> /day)	Projection UBOD input conc. (mg O <sub>2</sub> /L)	Total MOS (kg O <sub>2</sub> /day)	Total UBOD LA (kg O <sub>2</sub> /day)
	Seasonal Critical flow (cms)	UBOD (mg O <sub>2</sub> /L)	Total UBOD (mg O <sub>2</sub> /L)	Background UBOD conc. (mg O <sub>2</sub> /L)	Background UCBOD conc. (mg O <sub>2</sub> /L)	Background % Reduction						
Headwater	0.02800	9.57	9.57	0.00	0.00	0%	85%	0.00	3.47	1.79	0.87	3.47
Unnamed Trib #6	0.02800	12.87	12.87	0.00	0.00	0%	85%	0.00	4.67	2.41	1.17	4.67
Unnamed Trib #5	0.02800	17.70	17.70	0.00	0.00	0%	85%	0.00	6.42	3.32	1.61	6.42
Miller's Canal	0.02800	13.92	13.92	0.00	0.00	0%	85%	0.00	5.05	2.61	1.26	5.05
Unnamed Trib #4	0.02800	13.92	13.92	0.00	0.00	0%	85%	0.00	5.05	2.61	1.26	5.05
Unnamed Trib #2	0.02800	13.92	13.92	0.00	0.00	0%	85%	0.00	5.05	2.61	1.26	5.05
<b>SUB-TOTAL TMDL LOADING</b>								<b>0.00</b>	<b>30</b>		<b>7.43</b>	<b>29.72</b>

**Appendix E3 – MS4 Calculations**



<b>MS4 Calcs for Gray's Creek Watershed</b>			
DSA	Area for Denham Springs Incorporated within subsegment 040304		6680085.2949 Meters <sup>2</sup>
LPA	Urbanized Area for Livingston Parish incorporated within subsegment 040304		24981913.0854 Meters <sup>2</sup>
RLPA	MS4 responsibility for Livingston Parish =	Urbanized area not covered by incorporated areas	
RLPA	MS4 responsibility for Livingston Parish =	LPA - DSA	
RLPA	MS4 responsibility for Livingston Parish =	18301827.7905 Meters <sup>2</sup>	
SA	Total Area of Subsegment 040304 =		85094389.0488 Meters <sup>2</sup>
% of subsegment 040304 covered by DSA =		(DSA/SA) * 100	
% of subsegment 040304 covered by DSA =		7.85	
% of subsegment 040304 covered by RLPA =		(RLPA/SA) * 100	
% of subsegment 040304 covered by RLPA =		21.51	
<b>Summer TMDL:</b>			
	LA	MOS	
Nonpoint Loads =	355	77	
DSA =	LA * .0785	MOS * .0785	
DSA =	28	6	
RLPA =	LA * .2151	MOS * .2151	
RLPA =	76	17	
Remaining Nonpoint LA = LA - DSA LA - RLPA LA			
Remaining Nonpoint LA = 251			
Remaining Nonpoint MOS = MOS - DSA MOS - RLPA MOS			
Remaining Nonpoint MOS = 54			
<b>Winter TMDL:</b>			
	LA	MOS	
Nonpoint Loads =	335	71	
DSA =	LA * .0785	MOS * .0785	
DSA =	26	6	
RLPA =	LA * .2151	MOS * .2151	
RLPA =	72	15	
Remaining Nonpoint LA = LA - DSA LA - RLPA LA			
Remaining Nonpoint LA = 237			
Remaining Nonpoint MOS = MOS - DSA MOS - RLPA MOS			
Remaining Nonpoint MOS = 50			

**Appendix F – Survey Data Measurements and Analysis Results**

**Appendix F1 – Water Quality Data**



Gray's Creek 040304 Water Quality Data																		
SITE		Chlorides	Sulfate	Hardness	Alkalinity	pH	Conductivity	Sodium	TOC	TP	TDS	Nit Nit	TKN	Ammonia	Color	Turbidity	TSS	Chl A
239	GC02	23.9	8.5	53.1	115	8.20	324	51.0	11.4	1.49	216	1.17	2.91	0.65	55	38.9	29.0	106
2291	GC03	26.7	2.3	58.8	145	7.61	381	59.0	11.6	1.97	248	0.69	4.71	2.41	50	37.1	31.0	109
3384	GC04	27.2	2.5	57.6	150	7.61	387	61.4	18.7	2.25	252	0.20	6.19	3.07	55	51.7	46.0	142
3386	GC06	28.5	3.7	56.7	167	7.63	429	64.9	13.3	3.34	264	ND	8.10	4.12	100	63.3	64.0	259
3387	GC07	28.70	4.1	62.6	170	7.59	443	64.4	25.9	3.75	282	ND	8.00	4.48	100	61.3	37.0	237
3388	GC08	26.1	9.0	77.3	104	8.13	294	35.2	9.8	0.35	188	ND	1.01	0.45	50	14.3	15.0	1.1
3389	GC09	32.8	15.2	73.7	111	8.10	341	47.3	8.1	0.30	215	0.33	0.76	0.18	30	7.6	7.0	2.8
3390	GC10	31.1	19.0	45.6	86.1	7.95	355	60.1	8.6	2.71	252	5.97	1.53	0.16	50	7.7	7.0	5.4
3391	GCL01	6.2	2.7	23.4	20.9	7.39	70.6	5.9	6.3	0.13	62.0	0.09	0.53	ND	50	16.3	10.5	23.4
3393	UT201	10.7	7.7	31.2	144	8.27	314	65.2	9.7	0.96	272	0.35	1.57	0.63	100	62.3	27.0	2.6
3395	UT501	17.1	9.7	55.4	85.7	7.89	243	38.0	7.7	1.98	670	1.43	3.21	0.38	220	425	42.0	6.3
3396	UT601	8.5	7.5	24.5	120	8.11	264	52.3	4.9	0.63	203	0.23	1.51	0.92	40	32.1	36.5	5.4
3398	DSPOTW	27.6	4.6	60.1	180	7.71	457	68.9	16.3	3.83	290	ND	8.70	4.96	65	43.0	27.0	
3459	GC01	6.9	3.5	26.5	28.4	7.59	88.7	8.5	11.3	0.25	85.3	ND	1.05	ND	55	36.2	26.0	80.0
3460	GC09A	29.5	22.5	40.2	93.4	8.10	380	65.3	8.1	3.30	278	7.64	1.25	0.14	30	6.8	4.0	2.2

Site_Number	Lab_Sample_Type	Analysis_Name	Result	Units	Analysis_Set_Up	Analysis_Read	Date_Nitrates_Sampled
0239	TRG	TSS	29.0	ppm	7/27/2007	7/27/2007	
0239	TRG	TDS	216	ppm	7/26/2007	7/27/2007	
0239	TRG	Alkalinity	115	ppm	7/27/2007	7/27/2007	
0239	TRG	Turbidity	38.9	NTU	7/26/2007	7/26/2007	
0239	TRG	Specific Conductance	324	umhos/cm	7/27/2007	7/27/2007	
0239	TRG	True Color	55	PCU	7/26/2007	7/26/2007	
0239	TRG	Chloride by IC	23.9	ppm	8/6/2007	8/6/2007	
0239	TRG	Sulfate	8.5	ppm	8/6/2007	8/6/2007	
0239	TRG	Sodium	51.0	ppm	8/8/2007	8/8/2007	
0239	TRG	Hardness	53.1	ppm	8/1/2007	8/1/2007	
0239	TRG	Nitrate+Nitrite Nitrogen	1.17	ppm	8/1/2007	8/1/2007	
0239	TRG	TP	1.49	ppm	7/30/2007	7/30/2007	
0239	TRG	TKN	2.91	ppm	7/30/2007	7/30/2007	
0239	TRG	Ammonia-Nitrogen	0.65	ppm	8/7/2007	8/7/2007	
0239	TRG	TOC	11.4	ppm	8/15/2007	8/15/2007	
0239	TRG	pH, Ultimate BOD survey	8.20	pH units	9/25/2007	9/25/2007	
0239	TRG	TOC (60 Day BOD)	10.3	ppm	9/26/2007	9/26/2007	
0239	TRG	TKN (60 Day BOD)	1.38	ppm	10/1/2007	10/1/2007	
0239	TRG	NO2NO3 - Initial Reading	1.18	ppm	8/7/2007	8/7/2007	7/26/2007
0239	TRG	NO2NO3 - Reading 1	1.20	ppm	8/7/2007	8/7/2007	7/27/2007
0239	TRG	NO2NO3 - Reading 2	1.67	ppm	8/8/2007	8/8/2007	7/30/2007
0239	TRG	NO2NO3 - Reading 3	2.31	ppm	8/8/2007	8/8/2007	8/2/2007
0239	TRG	NO2NO3 - Reading 4	2.45	ppm	8/24/2007	8/24/2007	8/6/2007
0239	TRG	NO2NO3 - Reading 5	2.79	ppm	8/24/2007	8/24/2007	8/10/2007
0239	TRG	NO2NO3 - Reading 6	2.93	ppm	8/24/2007	8/24/2007	8/15/2007
0239	TRG	NO2NO3 - Reading 7	3.06	ppm	9/6/2007	9/6/2007	8/24/2007
0239	TRG	NO2NO3 - Reading 8	3.25	ppm	9/18/2007	9/18/2007	9/4/2007
0239	TRG	NO2NO3 - Reading 9	3.35	ppm	10/5/2007	10/5/2007	9/14/2007
0239	TRG	NO2NO3 - Final	3.21	ppm	10/5/2007	10/5/2007	9/24/2007
0239	TRG	Non-Filtered BOD 60 - Reading 1	1.2	ppm	7/26/2007	7/27/2007	
0239	TRG	Non-Filtered BOD 60 - Reading 2	3.3	ppm	7/26/2007	7/30/2007	
0239	TRG	Non-Filtered BOD 60 - Reading 3	7.3	ppm	7/26/2007	8/2/2007	
0239	TRG	Non-Filtered BOD 60 - Reading 4	11.7	ppm	7/26/2007	8/6/2007	
0239	TRG	Non-Filtered BOD 60 - Reading 5	15.8	ppm	7/26/2007	8/10/2007	
0239	TRG	Non-Filtered BOD 60 - Reading 6	19.3	ppm	7/26/2007	8/15/2007	

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0239	TRG	Non-Filtered BOD 60 - Reading 7	22.9	ppm	7/26/2007	8/24/2007	
0239	TRG	Non-Filtered BOD 60 - Reading 8	25.1	ppm	7/26/2007	9/4/2007	
0239	TRG	Non-Filtered BOD 60 - Reading 9	26.0	ppm	7/26/2007	9/14/2007	
0239	TRG	Non-Filtered BOD 60 - Final	27.3	ppm	7/26/2007	9/24/2007	
0239	TRG	Chlorophyll A (calculated)	106	ug/L	8/14/2007	8/15/2007	
0239	TRG	Chlorophyll A (raw)	2640	ug/L	8/14/2007	8/15/2007	
0239	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
2291	TRG	TSS	31.0	ppm	7/27/2007	7/27/2007	
2291	TRG	TDS	248	ppm	7/26/2007	7/27/2007	
2291	TRG	Alkalinity	145	ppm	7/27/2007	7/27/2007	
2291	TRG	Turbidity	37.1	NTU	7/26/2007	7/26/2007	
2291	TRG	Specific Conductance	381	umhos/cm	7/27/2007	7/27/2007	
2291	TRG	True Color	50	PCU	7/26/2007	7/26/2007	
2291	TRG	Chloride by IC	26.7	ppm	8/6/2007	8/6/2007	
2291	TRG	Sulfate	2.3	ppm	8/6/2007	8/6/2007	
2291	TRG	Sodium	59.0	ppm	8/8/2007	8/8/2007	
2291	TRG	Hardness	58.8	ppm	8/1/2007	8/1/2007	
2291	TRG	Nitrate+Nitrite Nitrogen	0.69	ppm	8/1/2007	8/1/2007	
2291	TRG	TP	1.97	ppm	7/30/2007	7/30/2007	
2291	TRG	TKN	4.71	ppm	7/30/2007	7/30/2007	
2291	TRG	Ammonia-Nitrogen	2.41	ppm	8/8/2007	8/8/2007	
2291	TRG	TOC	11.6	ppm	8/15/2007	8/15/2007	
2291	TRG	pH, Ultimate BOD survey	7.61	pH units	9/25/2007	9/25/2007	
2291	TRG	TOC (60 Day BOD)	12.1	ppm	9/26/2007	9/26/2007	
2291	TRG	TKN (60 Day BOD)	ND	ppm	10/1/2007	10/1/2007	
2291	TRG	NO2NO3 - Initial Reading	0.72	ppm	8/7/2007	8/7/2007	7/26/2007
2291	TRG	NO2NO3 - Reading 1	0.75	ppm	8/7/2007	8/7/2007	7/27/2007
2291	TRG	NO2NO3 - Reading 2	1.28	ppm	8/8/2007	8/8/2007	7/30/2007
2291	TRG	NO2NO3 - Reading 3	3.48	ppm	8/8/2007	8/8/2007	8/2/2007
2291	TRG	NO2NO3 - Reading 4	4.16	ppm	8/24/2007	8/24/2007	8/6/2007
2291	TRG	NO2NO3 - Reading 5	4.44	ppm	8/24/2007	8/24/2007	8/10/2007
2291	TRG	NO2NO3 - Reading 6	4.75	ppm	8/24/2007	8/24/2007	8/15/2007
2291	TRG	NO2NO3 - Reading 7	5.20	ppm	9/5/2007	9/5/2007	8/24/2007
2291	TRG	NO2NO3 - Reading 8	5.05	ppm	9/18/2007	9/18/2007	9/4/2007
2291	TRG	NO2NO3 - Reading 9	5.03	ppm	10/5/2007	10/5/2007	9/14/2007
2291	TRG	NO2NO3 - Final	5.14	ppm	10/5/2007	10/5/2007	9/24/2007
2291	TRG	Non-Filtered BOD 60 - Reading 1	1.6	ppm	7/26/2007	7/27/2007	

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2291	TRG	Non-Filtered BOD 60 - Reading 2	7.3	ppm	7/26/2007	7/30/2007	
2291	TRG	Non-Filtered BOD 60 - Reading 3	18.2	ppm	7/26/2007	8/2/2007	
2291	TRG	Non-Filtered BOD 60 - Reading 4	23.2	ppm	7/26/2007	8/6/2007	
2291	TRG	Non-Filtered BOD 60 - Reading 5	26.5	ppm	7/26/2007	8/10/2007	
2291	TRG	Non-Filtered BOD 60 - Reading 6	30.7	ppm	7/26/2007	8/15/2007	
2291	TRG	Non-Filtered BOD 60 - Reading 7	35.4	ppm	7/26/2007	8/24/2007	
2291	TRG	Non-Filtered BOD 60 - Reading 8	37.8	ppm	7/26/2007	9/4/2007	
2291	TRG	Non-Filtered BOD 60 - Reading 9	37.3	ppm	7/26/2007	9/14/2007	
2291	TRG	Non-Filtered BOD 60 - Final	40.6	ppm	7/26/2007	9/24/2007	
2291	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
2291	TRG	Chlorophyll A (raw)	2736	ug/L	8/14/2007	8/15/2007	
2291	TRG	Chlorophyll A (calculated)	109	ug/L	8/14/2007	8/15/2007	
3384	FB	TSS	ND	ppm	7/27/2007	7/27/2007	
3384	FB	TDS	ND	ppm	7/26/2007	7/27/2007	
3384	FB	Alkalinity	ND	ppm	7/27/2007	7/27/2007	
3384	FB	Turbidity	ND	NTU	7/26/2007	7/26/2007	
3384	FB	Specific Conductance	ND	umhos/cm	7/27/2007	7/27/2007	
3384	FB	True Color	ND	PCU	7/26/2007	7/26/2007	
3384	FB	Chloride by IC	ND	ppm	8/6/2007	8/6/2007	
3384	FB	Sulfate	ND	ppm	8/6/2007	8/6/2007	
3384	FB	Sodium	ND	ppm	8/8/2007	8/8/2007	
3384	FB	Hardness	ND	ppm	8/1/2007	8/1/2007	
3384	FB	Nitrate+Nitrite Nitrogen	ND	ppm	8/1/2007	8/1/2007	
3384	FB	TP	ND	ppm	8/2/2007	8/2/2007	
3384	FB	TKN	ND	ppm	8/2/2007	8/2/2007	
3384	FB	Ammonia-Nitrogen	ND	ppm	8/8/2007	8/8/2007	
3384	FB	TOC	ND	ppm	8/15/2007	8/15/2007	
3384	FB	pH, Ultimate BOD survey	6.37	pH units	9/25/2007	9/25/2007	
3384	FB	TOC (60 Day BOD)	ND	ppm	9/26/2007	9/26/2007	
3384	FB	TKN (60 Day BOD)	ND	ppm	10/1/2007	10/1/2007	
3384	FB	NO2NO3 - Initial Reading	ND	ppm	8/7/2007	8/7/2007	7/26/2007
3384	FB	NO2NO3 - Reading 1	ND	ppm	8/7/2007	8/7/2007	7/27/2007
3384	FB	NO2NO3 - Reading 2	ND	ppm	8/8/2007	8/8/2007	7/30/2007
3384	FB	NO2NO3 - Reading 3	ND	ppm	8/8/2007	8/8/2007	8/2/2007
3384	FB	NO2NO3 - Reading 4	ND	ppm	8/24/2007	8/24/2007	8/6/2007
3384	FB	NO2NO3 - Reading 5	ND	ppm	8/24/2007	8/24/2007	8/10/2007
3384	FB	NO2NO3 - Reading 6	ND	ppm	8/24/2007	8/24/2007	8/15/2007

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3384	FB	NO2NO3 - Reading 7	ND	ppm	9/5/2007	9/5/2007	8/24/2007
3384	FB	NO2NO3 - Reading 8	ND	ppm	9/18/2007	9/18/2007	9/4/2007
3384	FB	NO2NO3 - Reading 9	ND	ppm	10/5/2007	10/5/2007	9/14/2007
3384	FB	NO2NO3 - Final	ND	ppm	10/5/2007	10/5/2007	9/24/2007
3384	FB	Non-Filtered BOD 60 - Reading 1	0.1	ppm	7/26/2007	7/27/2007	
3384	FB	Non-Filtered BOD 60 - Reading 2	0.3	ppm	7/26/2007	7/30/2007	
3384	FB	Non-Filtered BOD 60 - Reading 3	0.4	ppm	7/26/2007	8/2/2007	
3384	FB	Non-Filtered BOD 60 - Reading 4	0.5	ppm	7/26/2007	8/6/2007	
3384	FB	Non-Filtered BOD 60 - Reading 5	0.5	ppm	7/26/2007	8/10/2007	
3384	FB	Non-Filtered BOD 60 - Reading 6	0.6	ppm	7/26/2007	8/15/2007	
3384	FB	Non-Filtered BOD 60 - Reading 7	0.8	ppm	7/26/2007	8/24/2007	
3384	FB	Non-Filtered BOD 60 - Reading 8	0.8	ppm	7/26/2007	9/4/2007	
3384	FB	Non-Filtered BOD 60 - Reading 9	0.4	ppm	7/26/2007	9/14/2007	
3384	FB	Non-Filtered BOD 60 - Final	0.7	ppm	7/26/2007	9/24/2007	
3384	TRG	TSS	46.0	ppm	7/31/2007	8/1/2007	
3384	TRG	TDS	252	ppm	7/26/2007	7/27/2007	
3384	TRG	Alkalinity	150	ppm	7/27/2007	7/27/2007	
3384	TRG	Turbidity	51.7	NTU	7/26/2007	7/26/2007	
3384	TRG	Specific Conductance	387	umhos/cm	7/27/2007	7/27/2007	
3384	TRG	True Color	55	PCU	7/26/2007	7/26/2007	
3384	TRG	Chloride by IC	27.2	ppm	8/6/2007	8/6/2007	
3384	TRG	Sulfate	2.5	ppm	8/6/2007	8/6/2007	
3384	TRG	Sodium	61.4	ppm	8/8/2007	8/8/2007	
3384	TRG	Hardness	57.6	ppm	8/1/2007	8/1/2007	
3384	TRG	Nitrate+Nitrite Nitrogen	0.20	ppm	8/1/2007	8/1/2007	
3384	TRG	TP	2.25	ppm	8/2/2007	8/2/2007	
3384	TRG	TKN	6.19	ppm	8/2/2007	8/2/2007	
3384	TRG	Ammonia-Nitrogen	3.07	ppm	8/8/2007	8/8/2007	
3384	TRG	TOC	18.7	ppm	8/15/2007	8/15/2007	
3384	TRG	pH, Ultimate BOD survey	7.61	pH units	9/25/2007	9/25/2007	
3384	TRG	TOC (60 Day BOD)	10.1	ppm	9/26/2007	9/26/2007	
3384	TRG	TKN (60 Day BOD)	0.86	ppm	10/1/2007	10/1/2007	
3384	TRG	NO2NO3 - Initial Reading	0.23	ppm	8/7/2007	8/7/2007	7/26/2007
3384	TRG	NO2NO3 - Reading 1	0.26	ppm	8/7/2007	8/7/2007	7/27/2007
3384	TRG	NO2NO3 - Reading 2	0.65	ppm	8/8/2007	8/8/2007	7/30/2007
3384	TRG	NO2NO3 - Reading 3	3.38	ppm	8/8/2007	8/8/2007	8/2/2007
3384	TRG	NO2NO3 - Reading 4	4.78	ppm	8/24/2007	8/24/2007	8/6/2007

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3384	TRG	NO2NO3 - Reading 5	5.08	ppm	8/24/2007	8/24/2007	8/10/2007
3384	TRG	NO2NO3 - Reading 6	5.34	ppm	8/24/2007	8/24/2007	8/15/2007
3384	TRG	NO2NO3 - Reading 7	5.81	ppm	9/5/2007	9/5/2007	8/24/2007
3384	TRG	NO2NO3 - Reading 8	5.71	ppm	9/18/2007	9/18/2007	9/4/2007
3384	TRG	NO2NO3 - Reading 9	5.76	ppm	10/5/2007	10/5/2007	9/14/2007
3384	TRG	NO2NO3 - Final	5.92	ppm	10/5/2007	10/5/2007	9/24/2007
3384	TRG	Non-Filtered BOD 60 - Reading 1	1.5	ppm	7/26/2007	7/27/2007	
3384	TRG	Non-Filtered BOD 60 - Reading 2	7.0	ppm	7/26/2007	7/30/2007	
3384	TRG	Non-Filtered BOD 60 - Reading 3	19.8	ppm	7/26/2007	8/2/2007	
3384	TRG	Non-Filtered BOD 60 - Reading 4	27.4	ppm	7/26/2007	8/6/2007	
3384	TRG	Non-Filtered BOD 60 - Reading 5	30.8	ppm	7/26/2007	8/10/2007	
3384	TRG	Non-Filtered BOD 60 - Reading 6	34.9	ppm	7/26/2007	8/15/2007	
3384	TRG	Non-Filtered BOD 60 - Reading 7	40.5	ppm	7/26/2007	8/24/2007	
3384	TRG	Non-Filtered BOD 60 - Reading 8	43.9	ppm	7/26/2007	9/4/2007	
3384	TRG	Non-Filtered BOD 60 - Reading 9	43.8	ppm	7/26/2007	9/14/2007	
3384	TRG	Non-Filtered BOD 60 - Final	46.7	ppm	7/26/2007	9/24/2007	
3384	TRG	Chlorophyll A (calculated)	142	ug/L	8/14/2007	8/15/2007	
3384	TRG	Volume of sample, Chlorophyll A (raw)	200	ml	8/14/2007	8/15/2007	
3384	TRG	Chlorophyll A (raw)	2848	ug/L	8/14/2007	8/15/2007	
3384	FD	TSS	45.0	ppm	7/31/2007	8/1/2007	
3384	FD	TDS	250	ppm	7/26/2007	7/27/2007	
3384	FD	Alkalinity	149	ppm	7/27/2007	7/27/2007	
3384	FD	Turbidity	50.8	NTU	7/26/2007	7/26/2007	
3384	FD	Specific Conductance	386	umhos/cm	7/27/2007	7/27/2007	
3384	FD	True Color	55	PCU	7/26/2007	7/26/2007	
3384	FD	Chloride by IC	27.2	ppm	8/6/2007	8/6/2007	
3384	FD	Sulfate	2.6	ppm	8/6/2007	8/6/2007	
3384	FD	Sodium	60.2	ppm	8/8/2007	8/8/2007	
3384	FD	Hardness	57.7	ppm	8/1/2007	8/1/2007	
3384	FD	Nitrate+Nitrite Nitrogen	0.20	ppm	8/1/2007	8/1/2007	
3384	FD	TP	2.26	ppm	8/2/2007	8/2/2007	
3384	FD	TKN	5.93	ppm	8/2/2007	8/2/2007	
3384	FD	Ammonia-Nitrogen	3.21	ppm	8/8/2007	8/8/2007	
3384	FD	TOC	19.9	ppm	8/15/2007	8/15/2007	
3384	FD	pH, Ultimate BOD survey	7.73	pH units	9/25/2007	9/25/2007	
3384	FD	TOC (60 Day BOD)	10.3	ppm	9/26/2007	9/26/2007	
3384	FD	TKN (60 Day BOD)	ND	ppm	10/1/2007	10/1/2007	

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3384	FD	NO2NO3 - Initial Reading	0.24	ppm	8/7/2007	8/7/2007	7/26/2007
3384	FD	NO2NO3 - Reading 1	0.26	ppm	8/7/2007	8/7/2007	7/27/2007
3384	FD	NO2NO3 - Reading 2	0.71	ppm	8/8/2007	8/8/2007	7/30/2007
3384	FD	NO2NO3 - Reading 3	3.39	ppm	8/8/2007	8/8/2007	8/2/2007
3384	FD	NO2NO3 - Reading 4	4.88	ppm	8/24/2007	8/24/2007	8/6/2007
3384	FD	NO2NO3 - Reading 5	5.10	ppm	8/24/2007	8/24/2007	8/10/2007
3384	FD	NO2NO3 - Reading 6	5.35	ppm	8/24/2007	8/24/2007	8/15/2007
3384	FD	NO2NO3 - Reading 7	5.77	ppm	9/5/2007	9/5/2007	8/24/2007
3384	FD	NO2NO3 - Reading 8	5.65	ppm	9/18/2007	9/18/2007	9/4/2007
3384	FD	NO2NO3 - Reading 9	5.79	ppm	10/5/2007	10/5/2007	9/14/2007
3384	FD	NO2NO3 - Final	5.90	ppm	10/5/2007	10/5/2007	9/24/2007
3384	FD	Non-Filtered BOD 60 - Reading 1	1.5	ppm	7/26/2007	7/27/2007	
3384	FD	Non-Filtered BOD 60 - Reading 2	7.4	ppm	7/26/2007	7/30/2007	
3384	FD	Non-Filtered BOD 60 - Reading 3	20.1	ppm	7/26/2007	8/2/2007	
3384	FD	Non-Filtered BOD 60 - Reading 4	27.9	ppm	7/26/2007	8/6/2007	
3384	FD	Non-Filtered BOD 60 - Reading 5	30.8	ppm	7/26/2007	8/10/2007	
3384	FD	Non-Filtered BOD 60 - Reading 6	33.9	ppm	7/26/2007	8/15/2007	
3384	FD	Non-Filtered BOD 60 - Reading 7	39.1	ppm	7/26/2007	8/24/2007	
3384	FD	Non-Filtered BOD 60 - Reading 8	42.4	ppm	7/26/2007	9/4/2007	
3384	FD	Non-Filtered BOD 60 - Reading 9	43.0	ppm	7/26/2007	9/14/2007	
3384	FD	Non-Filtered BOD 60 - Final	45.6	ppm	7/26/2007	9/24/2007	
3386	TRG	TSS	64.0	ppm	7/27/2007	7/27/2007	
3386	TRG	TDS	264	ppm	7/26/2007	7/27/2007	
3386	TRG	Alkalinity	167	ppm	7/27/2007	7/27/2007	
3386	TRG	Turbidity	63.3	NTU	7/26/2007	7/26/2007	
3386	TRG	Specific Conductance	429	umhos/cm	7/27/2007	7/27/2007	
3386	TRG	True Color	100	PCU	7/26/2007	7/26/2007	
3386	TRG	Chloride by IC	28.5	ppm	8/6/2007	8/6/2007	
3386	TRG	Sulfate	3.7	ppm	8/6/2007	8/6/2007	
3386	TRG	Sodium	64.9	ppm	8/8/2007	8/8/2007	
3386	TRG	Hardness	56.7	ppm	8/1/2007	8/1/2007	
3386	TRG	Nitrate+Nitrite Nitrogen	ND	ppm	8/1/2007	8/1/2007	
3386	TRG	TP	3.34	ppm	8/2/2007	8/2/2007	
3386	TRG	TKN	8.10	ppm	8/2/2007	8/2/2007	
3386	TRG	Ammonia-Nitrogen	4.12	ppm	8/8/2007	8/8/2007	
3386	TRG	TOC	13.3	ppm	8/15/2007	8/15/2007	
3386	TRG	pH, Ultimate BOD survey	7.63	pH units	9/25/2007	9/25/2007	

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3386	TRG	TOC (60 Day BOD)	11.6	ppm	9/26/2007	9/26/2007	
3386	TRG	TKN (60 Day BOD)	0.78	ppm	10/1/2007	10/1/2007	
3386	TRG	NO2NO3 - Initial Reading	ND	ppm	8/7/2007	8/7/2007	7/26/2007
3386	TRG	NO2NO3 - Reading 1	ND	ppm	8/7/2007	8/7/2007	7/27/2007
3386	TRG	NO2NO3 - Reading 2	ND	ppm	8/8/2007	8/8/2007	7/30/2007
3386	TRG	NO2NO3 - Reading 3	0.30	ppm	8/8/2007	8/8/2007	8/2/2007
3386	TRG	NO2NO3 - Reading 4	1.67	ppm	8/24/2007	8/24/2007	8/6/2007
3386	TRG	NO2NO3 - Reading 5	6.69	ppm	8/24/2007	8/24/2007	8/10/2007
3386	TRG	NO2NO3 - Reading 6	7.01	ppm	8/24/2007	8/24/2007	8/15/2007
3386	TRG	NO2NO3 - Reading 7	7.69	ppm	9/5/2007	9/5/2007	8/24/2007
3386	TRG	NO2NO3 - Reading 8	7.66	ppm	9/18/2007	9/18/2007	9/4/2007
3386	TRG	NO2NO3 - Reading 9	7.73	ppm	10/5/2007	10/5/2007	9/14/2007
3386	TRG	NO2NO3 - Final	7.88	ppm	10/5/2007	10/5/2007	9/24/2007
3386	TRG	Non-Filtered BOD 60 - Reading 1	3.1	ppm	7/26/2007	7/27/2007	
3386	TRG	Non-Filtered BOD 60 - Reading 2	8.4	ppm	7/26/2007	7/30/2007	
3386	TRG	Non-Filtered BOD 60 - Reading 3	15.5	ppm	7/26/2007	8/2/2007	
3386	TRG	Non-Filtered BOD 60 - Reading 4	26.4	ppm	7/26/2007	8/6/2007	
3386	TRG	Non-Filtered BOD 60 - Reading 5	49.5	ppm	7/26/2007	8/10/2007	
3386	TRG	Non-Filtered BOD 60 - Reading 6	54.1	ppm	7/26/2007	8/15/2007	
3386	TRG	Non-Filtered BOD 60 - Reading 7	61.0	ppm	7/26/2007	8/24/2007	
3386	TRG	Non-Filtered BOD 60 - Reading 8	66.5	ppm	7/26/2007	9/4/2007	
3386	TRG	Non-Filtered BOD 60 - Reading 9	67.4	ppm	7/26/2007	9/14/2007	
3386	TRG	Non-Filtered BOD 60 - Final	71.8	ppm	7/26/2007	9/24/2007	
3386	TRG	Chlorophyll A (raw)	6464	ug/L	8/14/2007	8/15/2007	
3386	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
3386	TRG	Chlorophyll A (calculated)	259	ug/L	8/14/2007	8/15/2007	
3387	TRG	TSS	37.0	ppm	7/27/2007	7/27/2007	
3387	TRG	TDS	282	ppm	7/26/2007	7/27/2007	
3387	TRG	Alkalinity	170	ppm	7/27/2007	7/27/2007	
3387	TRG	Turbidity	61.3	NTU	7/26/2007	7/26/2007	
3387	TRG	Specific Conductance	443	umhos/cm	7/27/2007	7/27/2007	
3387	TRG	True Color	100	PCU	7/26/2007	7/26/2007	
3387	TRG	Chloride by IC	28.70	ppm	8/6/2007	8/6/2007	
3387	TRG	Sulfate	4.1	ppm	8/6/2007	8/6/2007	
3387	TRG	Sodium	64.4	ppm	8/8/2007	8/8/2007	
3387	TRG	Hardness	62.6	ppm	8/1/2007	8/1/2007	
3387	TRG	Nitrate+Nitrite Nitrogen	ND	ppm	8/1/2007	8/1/2007	



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3387	TRG	TP	3.75	ppm	8/2/2007	8/2/2007	
3387	TRG	TKN	8.00	ppm	8/2/2007	8/2/2007	
3387	TRG	Ammonia-Nitrogen	4.48	ppm	8/8/2007	8/8/2007	
3387	TRG	TOC	25.9	ppm	8/15/2007	8/15/2007	
3387	TRG	pH, Ultimate BOD survey	7.59	pH units	9/25/2007	9/25/2007	
3387	TRG	TOC (60 Day BOD)	11.6	ppm	9/26/2007	9/26/2007	
3387	TRG	TKN (60 Day BOD)	ND	ppm	10/1/2007	10/1/2007	
3387	TRG	NO2NO3 - Initial Reading	ND	ppm	8/7/2007	8/7/2007	7/26/2007
3387	TRG	NO2NO3 - Reading 1	ND	ppm	8/7/2007	8/7/2007	7/27/2007
3387	TRG	NO2NO3 - Reading 2	ND	ppm	8/8/2007	8/8/2007	7/30/2007
3387	TRG	NO2NO3 - Reading 3	0.30	ppm	8/8/2007	8/8/2007	8/2/2007
3387	TRG	NO2NO3 - Reading 4	1.74	ppm	8/24/2007	8/24/2007	8/6/2007
3387	TRG	NO2NO3 - Reading 5	7.67	ppm	8/24/2007	8/24/2007	8/10/2007
3387	TRG	NO2NO3 - Reading 6	7.99	ppm	8/24/2007	8/24/2007	8/15/2007
3387	TRG	NO2NO3 - Reading 7	8.51	ppm	9/5/2007	9/5/2007	8/24/2007
3387	TRG	NO2NO3 - Reading 8	8.36	ppm	9/18/2007	9/18/2007	9/4/2007
3387	TRG	NO2NO3 - Reading 9	8.35	ppm	10/5/2007	10/5/2007	9/14/2007
3387	TRG	NO2NO3 - Final	8.56	ppm	10/5/2007	10/5/2007	9/24/2007
3387	TRG	Non-Filtered BOD 60 - Reading 1	2.8	ppm	7/26/2007	7/27/2007	
3387	TRG	Non-Filtered BOD 60 - Reading 2	9.4	ppm	7/26/2007	7/30/2007	
3387	TRG	Non-Filtered BOD 60 - Reading 3	18.7	ppm	7/26/2007	8/2/2007	
3387	TRG	Non-Filtered BOD 60 - Reading 4	31.7	ppm	7/26/2007	8/6/2007	
3387	TRG	Non-Filtered BOD 60 - Reading 5	58.2	ppm	7/26/2007	8/10/2007	
3387	TRG	Non-Filtered BOD 60 - Reading 6	63.1	ppm	7/26/2007	8/15/2007	
3387	TRG	Non-Filtered BOD 60 - Reading 7	68.5	ppm	7/26/2007	8/24/2007	
3387	TRG	Non-Filtered BOD 60 - Reading 8	72.2	ppm	7/26/2007	9/4/2007	
3387	TRG	Non-Filtered BOD 60 - Reading 9	72.7	ppm	7/26/2007	9/14/2007	
3387	TRG	Non-Filtered BOD 60 - Final	77.0	ppm	7/26/2007	9/24/2007	
3387	TRG	Chlorophyll A (calculated)	237	ug/L	8/14/2007	8/15/2007	
3387	TRG	Chlorophyll A (raw)	5920	ug/L	8/14/2007	8/15/2007	
3387	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
3388	TRG	TSS	15.0	ppm	7/27/2007	7/27/2007	
3388	TRG	TDS	188	ppm	7/26/2007	7/27/2007	
3388	TRG	Alkalinity	104	ppm	7/27/2007	7/27/2007	
3388	TRG	Turbidity	14.3	NTU	7/26/2007	7/26/2007	
3388	TRG	Specific Conductance	294	umhos/cm	7/27/2007	7/27/2007	
3388	TRG	True Color	50	PCU	7/26/2007	7/26/2007	

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3388	TRG	Chloride by IC	26.1	ppm	8/6/2007	8/6/2007	
3388	TRG	Sulfate	9.0	ppm	8/6/2007	8/6/2007	
3388	TRG	Sodium	35.2	ppm	8/8/2007	8/8/2007	
3388	TRG	Hardness	77.3	ppm	8/1/2007	8/1/2007	
3388	TRG	Nitrate+Nitrite Nitrogen	ND	ppm	8/1/2007	8/1/2007	
3388	TRG	TP	0.35	ppm	8/2/2007	8/2/2007	
3388	TRG	TKN	1.01	ppm	8/2/2007	8/2/2007	
3388	TRG	Ammonia-Nitrogen	0.45	ppm	8/8/2007	8/8/2007	
3388	TRG	TOC	9.8	ppm	8/15/2007	8/15/2007	
3388	TRG	pH, Ultimate BOD survey	8.13	pH units	9/25/2007	9/25/2007	
3388	TRG	TOC (60 Day BOD)	7.4	ppm	9/26/2007	9/26/2007	
3388	TRG	TKN (60 Day BOD)	0.88	ppm	10/1/2007	10/1/2007	
3388	TRG	NO2NO3 - Initial Reading	ND	ppm	8/7/2007	8/7/2007	7/26/2007
3388	TRG	NO2NO3 - Reading 1	ND	ppm	8/7/2007	8/7/2007	7/27/2007
3388	TRG	NO2NO3 - Reading 2	ND	ppm	8/8/2007	8/8/2007	7/30/2007
3388	TRG	NO2NO3 - Reading 3	0.24	ppm	8/8/2007	8/8/2007	8/2/2007
3388	TRG	NO2NO3 - Reading 4	0.58	ppm	8/24/2007	8/24/2007	8/6/2007
3388	TRG	NO2NO3 - Reading 5	0.62	ppm	8/24/2007	8/24/2007	8/10/2007
3388	TRG	NO2NO3 - Reading 6	0.66	ppm	8/24/2007	8/24/2007	8/15/2007
3388	TRG	NO2NO3 - Reading 7	0.73	ppm	9/5/2007	9/5/2007	8/24/2007
3388	TRG	NO2NO3 - Reading 8	0.70	ppm	9/18/2007	9/18/2007	9/4/2007
3388	TRG	NO2NO3 - Reading 9	0.69	ppm	10/5/2007	10/5/2007	9/14/2007
3388	TRG	NO2NO3 - Final	0.76	ppm	10/5/2007	10/5/2007	9/24/2007
3388	TRG	Non-Filtered BOD 60 - Reading 1	0.6	ppm	7/26/2007	7/27/2007	
3388	TRG	Non-Filtered BOD 60 - Reading 2	2.0	ppm	7/26/2007	7/30/2007	
3388	TRG	Non-Filtered BOD 60 - Reading 3	3.7	ppm	7/26/2007	8/2/2007	
3388	TRG	Non-Filtered BOD 60 - Reading 4	5.9	ppm	7/26/2007	8/6/2007	
3388	TRG	Non-Filtered BOD 60 - Reading 5	6.7	ppm	7/26/2007	8/10/2007	
3388	TRG	Non-Filtered BOD 60 - Reading 6	7.5	ppm	7/26/2007	8/15/2007	
3388	TRG	Non-Filtered BOD 60 - Reading 7	8.8	ppm	7/26/2007	8/24/2007	
3388	TRG	Non-Filtered BOD 60 - Reading 8	9.8	ppm	7/26/2007	9/4/2007	
3388	TRG	Non-Filtered BOD 60 - Reading 9	10.2	ppm	7/26/2007	9/14/2007	
3388	TRG	Non-Filtered BOD 60 - Final	11.1	ppm	7/26/2007	9/24/2007	
3388	TRG	Chlorophyll A (calculated)	1.1	ug/L	8/14/2007	8/15/2007	
3388	TRG	Chlorophyll A (raw)	26.8	ug/L	8/14/2007	8/15/2007	
3388	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
3389	TRG	TSS	7.0	ppm	7/27/2007	7/27/2007	

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3389	TRG	TDS	215	ppm	7/26/2007	7/27/2007	
3389	TRG	Alkalinity	111	ppm	7/27/2007	7/27/2007	
3389	TRG	Turbidity	7.6	NTU	7/26/2007	7/26/2007	
3389	TRG	Specific Conductance	341	umhos/cm	7/27/2007	7/27/2007	
3389	TRG	True Color	30	PCU	7/26/2007	7/26/2007	
3389	TRG	Chloride by IC	32.8	ppm	8/6/2007	8/6/2007	
3389	TRG	Sulfate	15.2	ppm	8/6/2007	8/6/2007	
3389	TRG	Sodium	47.3	ppm	8/8/2007	8/8/2007	
3389	TRG	Hardness	73.7	ppm	8/1/2007	8/1/2007	
3389	TRG	Nitrate+Nitrite Nitrogen	0.33	ppm	8/1/2007	8/1/2007	
3389	TRG	TP	0.30	ppm	8/2/2007	8/2/2007	
3389	TRG	TKN	0.76	ppm	8/2/2007	8/2/2007	
3389	TRG	Ammonia-Nitrogen	0.18	ppm	8/8/2007	8/8/2007	
3389	TRG	TOC	8.1	ppm	8/15/2007	8/15/2007	
3389	TRG	pH, Ultimate BOD survey	8.10	pH units	9/25/2007	9/25/2007	
3389	TRG	TOC (60 Day BOD)	6.2	ppm	9/26/2007	9/26/2007	
3389	TRG	TKN (60 Day BOD)	0.34	ppm	10/1/2007	10/1/2007	
3389	TRG	NO2NO3 - Initial Reading	0.29	ppm	8/7/2007	8/7/2007	7/26/2007
3389	TRG	NO2NO3 - Reading 1	0.30	ppm	8/7/2007	8/7/2007	7/27/2007
3389	TRG	NO2NO3 - Reading 2	0.32	ppm	8/8/2007	8/8/2007	7/30/2007
3389	TRG	NO2NO3 - Reading 3	0.48	ppm	8/8/2007	8/8/2007	8/2/2007
3389	TRG	NO2NO3 - Reading 4	0.59	ppm	8/24/2007	8/24/2007	8/6/2007
3389	TRG	NO2NO3 - Reading 5	0.62	ppm	8/24/2007	8/24/2007	8/10/2007
3389	TRG	NO2NO3 - Reading 6	0.66	ppm	8/24/2007	8/24/2007	8/15/2007
3389	TRG	NO2NO3 - Reading 7	0.72	ppm	9/5/2007	9/5/2007	8/24/2007
3389	TRG	NO2NO3 - Reading 8	0.71	ppm	9/18/2007	9/18/2007	9/4/2007
3389	TRG	NO2NO3 - Reading 9	0.72	ppm	10/5/2007	10/5/2007	9/14/2007
3389	TRG	NO2NO3 - Final	0.73	ppm	10/5/2007	10/5/2007	9/24/2007
3389	TRG	Non-Filtered BOD 60 - Reading 1	0.3	ppm	7/26/2007	7/27/2007	
3389	TRG	Non-Filtered BOD 60 - Reading 2	1.3	ppm	7/26/2007	7/30/2007	
3389	TRG	Non-Filtered BOD 60 - Reading 3	2.8	ppm	7/26/2007	8/2/2007	
3389	TRG	Non-Filtered BOD 60 - Reading 4	3.9	ppm	7/26/2007	8/6/2007	
3389	TRG	Non-Filtered BOD 60 - Reading 5	4.7	ppm	7/26/2007	8/10/2007	
3389	TRG	Non-Filtered BOD 60 - Reading 6	5.3	ppm	7/26/2007	8/15/2007	
3389	TRG	Non-Filtered BOD 60 - Reading 7	6.4	ppm	7/26/2007	8/24/2007	
3389	TRG	Non-Filtered BOD 60 - Reading 8	7.4	ppm	7/26/2007	9/4/2007	
3389	TRG	Non-Filtered BOD 60 - Reading 9	7.5	ppm	7/26/2007	9/14/2007	

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3389	TRG	Non-Filtered BOD 60 - Final	8.3	ppm	7/26/2007	9/24/2007	
3389	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
3389	TRG	Chlorophyll A (calculated)	2.8	ug/L	8/14/2007	8/15/2007	
3389	TRG	Chlorophyll A (raw)	71.2	ug/L	8/14/2007	8/15/2007	
3390	TRG	TSS	7.0	ppm	7/27/2007	7/27/2007	
3390	TRG	TDS	252	ppm	7/26/2007	7/27/2007	
3390	TRG	Alkalinity	86.1	ppm	7/27/2007	7/27/2007	
3390	TRG	Turbidity	7.7	NTU	7/26/2007	7/26/2007	
3390	TRG	Specific Conductance	355	umhos/cm	7/27/2007	7/27/2007	
3390	TRG	True Color	50	PCU	7/26/2007	7/26/2007	
3390	TRG	Chloride by IC	31.1	ppm	8/6/2007	8/6/2007	
3390	TRG	Sulfate	19.0	ppm	8/6/2007	8/6/2007	
3390	TRG	Sodium	60.1	ppm	8/8/2007	8/8/2007	
3390	TRG	Hardness	45.6	ppm	8/1/2007	8/1/2007	
3390	TRG	Nitrate+Nitrite Nitrogen	5.97	ppm	8/1/2007	8/1/2007	
3390	TRG	TP	2.71	ppm	8/2/2007	8/2/2007	
3390	TRG	TKN	1.53	ppm	8/2/2007	8/2/2007	
3390	TRG	Ammonia-Nitrogen	0.16	ppm	8/8/2007	8/8/2007	
3390	TRG	TOC	8.6	ppm	8/15/2007	8/15/2007	
3390	TRG	pH, Ultimate BOD survey	7.95	pH units	9/25/2007	9/25/2007	
3390	TRG	TOC (60 Day BOD)	7.3	ppm	9/26/2007	9/26/2007	
3390	TRG	TKN (60 Day BOD)	1.06	ppm	10/1/2007	10/1/2007	
3390	TRG	NO2NO3 - Initial Reading	6.26	ppm	8/8/2007	8/8/2007	7/26/2007
3390	TRG	NO2NO3 - Reading 1	6.35	ppm	8/8/2007	8/8/2007	7/27/2007
3390	TRG	NO2NO3 - Reading 2	6.27	ppm	8/8/2007	8/8/2007	7/30/2007
3390	TRG	NO2NO3 - Reading 3	6.38	ppm	8/8/2007	8/8/2007	8/2/2007
3390	TRG	NO2NO3 - Reading 4	6.90	ppm	8/24/2007	8/24/2007	8/6/2007
3390	TRG	NO2NO3 - Reading 5	6.76	ppm	8/27/2007	8/27/2007	8/10/2007
3390	TRG	NO2NO3 - Reading 6	6.94	ppm	8/27/2007	8/27/2007	8/15/2007
3390	TRG	NO2NO3 - Reading 7	6.82	ppm	9/6/2007	9/6/2007	8/24/2007
3390	TRG	NO2NO3 - Reading 8	6.88	ppm	9/18/2007	9/18/2007	9/4/2007
3390	TRG	NO2NO3 - Reading 9	7.23	ppm	10/5/2007	10/5/2007	9/14/2007
3390	TRG	NO2NO3 - Final	6.99	ppm	10/5/2007	10/5/2007	9/24/2007
3390	TRG	Non-Filtered BOD 60 - Reading 1	0.4	ppm	7/26/2007	7/27/2007	
3390	TRG	Non-Filtered BOD 60 - Reading 2	1.4	ppm	7/26/2007	7/30/2007	
3390	TRG	Non-Filtered BOD 60 - Reading 3	2.4	ppm	7/26/2007	8/2/2007	
3390	TRG	Non-Filtered BOD 60 - Reading 4	3.7	ppm	7/26/2007	8/6/2007	

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3390	TRG	Non-Filtered BOD 60 - Reading 5	4.6	ppm	7/26/2007	8/10/2007	
3390	TRG	Non-Filtered BOD 60 - Reading 6	5.5	ppm	7/26/2007	8/15/2007	
3390	TRG	Non-Filtered BOD 60 - Reading 7	6.4	ppm	7/26/2007	8/24/2007	
3390	TRG	Non-Filtered BOD 60 - Reading 8	7.4	ppm	7/26/2007	9/4/2007	
3390	TRG	Non-Filtered BOD 60 - Reading 9	7.6	ppm	7/26/2007	9/14/2007	
3390	TRG	Non-Filtered BOD 60 - Final	8.6	ppm	7/26/2007	9/24/2007	
3390	TRG	Chlorophyll A (calculated)	5.4	ug/L	8/14/2007	8/15/2007	
3390	TRG	Chlorophyll A (raw)	135	ug/L	8/14/2007	8/15/2007	
3390	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
3391	TRG	TSS	10.5	ppm	7/27/2007	7/27/2007	
3391	TRG	TDS	62.0	ppm	7/27/2007	7/30/2007	
3391	TRG	Alkalinity	20.9	ppm	7/27/2007	7/27/2007	
3391	TRG	Turbidity	16.3	NTU	7/26/2007	7/26/2007	
3391	TRG	Specific Conductance	70.6	umhos/cm	7/27/2007	7/27/2007	
3391	TRG	True Color	50	PCU	7/26/2007	7/26/2007	
3391	TRG	Chloride by IC	6.2	ppm	8/6/2007	8/6/2007	
3391	TRG	Sulfate	2.7	ppm	8/6/2007	8/6/2007	
3391	TRG	Sodium	5.9	ppm	8/8/2007	8/8/2007	
3391	TRG	Hardness	23.4	ppm	8/1/2007	8/1/2007	
3391	TRG	Nitrate+Nitrite Nitrogen	0.09	ppm	8/1/2007	8/1/2007	
3391	TRG	TP	0.13	ppm	8/2/2007	8/2/2007	
3391	TRG	TKN	0.53	ppm	8/2/2007	8/2/2007	
3391	TRG	Ammonia-Nitrogen	ND	ppm	8/8/2007	8/8/2007	
3391	TRG	TOC	6.3	ppm	8/15/2007	8/15/2007	
3391	TRG	pH, Ultimate BOD survey	7.39	pH units	9/25/2007	9/25/2007	
3391	TRG	TOC (60 Day BOD)	5.3	ppm	9/26/2007	9/26/2007	
3391	TRG	TKN (60 Day BOD)	0.22	ppm	10/1/2007	10/1/2007	
3391	TRG	NO2NO3 - Initial Reading	0.07	ppm	8/7/2007	8/7/2007	7/26/2007
3391	TRG	NO2NO3 - Reading 1	0.08	ppm	8/7/2007	8/7/2007	7/27/2007
3391	TRG	NO2NO3 - Reading 2	0.08	ppm	8/8/2007	8/8/2007	7/30/2007
3391	TRG	NO2NO3 - Reading 3	0.07	ppm	8/8/2007	8/8/2007	8/2/2007
3391	TRG	NO2NO3 - Reading 4	0.09	ppm	8/24/2007	8/24/2007	8/6/2007
3391	TRG	NO2NO3 - Reading 5	0.18	ppm	8/24/2007	8/24/2007	8/10/2007
3391	TRG	NO2NO3 - Reading 6	0.37	ppm	8/24/2007	8/24/2007	8/15/2007
3391	TRG	NO2NO3 - Reading 7	0.40	ppm	9/6/2007	9/6/2007	8/24/2007
3391	TRG	NO2NO3 - Reading 8	0.44	ppm	9/18/2007	9/18/2007	9/4/2007
3391	TRG	NO2NO3 - Reading 9	0.43	ppm	10/5/2007	10/5/2007	9/14/2007

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3391	TRG	NO2NO3 - Final	0.45	ppm	10/5/2007	10/5/2007	9/24/2007
3391	TRG	Non-Filtered BOD 60 - Reading 1	0.6	ppm	7/26/2007	7/27/2007	
3391	TRG	Non-Filtered BOD 60 - Reading 2	2.3	ppm	7/26/2007	7/30/2007	
3391	TRG	Non-Filtered BOD 60 - Reading 3	3.3	ppm	7/26/2007	8/2/2007	
3391	TRG	Non-Filtered BOD 60 - Reading 4	4.0	ppm	7/26/2007	8/6/2007	
3391	TRG	Non-Filtered BOD 60 - Reading 5	4.9	ppm	7/26/2007	8/10/2007	
3391	TRG	Non-Filtered BOD 60 - Reading 6	5.9	ppm	7/26/2007	8/15/2007	
3391	TRG	Non-Filtered BOD 60 - Reading 7	6.9	ppm	7/26/2007	8/24/2007	
3391	TRG	Non-Filtered BOD 60 - Reading 8	7.5	ppm	7/26/2007	9/4/2007	
3391	TRG	Non-Filtered BOD 60 - Reading 9	7.4	ppm	7/26/2007	9/14/2007	
3391	TRG	Non-Filtered BOD 60 - Final	8.2	ppm	7/26/2007	9/24/2007	
3391	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
3391	TRG	Chlorophyll A (calculated)	23.4	ug/L	8/14/2007	8/15/2007	
3391	TRG	Chlorophyll A (raw)	584	ug/L	8/14/2007	8/15/2007	
3393	TRG	TSS	27.0	ppm	7/27/2007	7/27/2007	
3393	TRG	TDS	272	ppm	7/27/2007	7/30/2007	
3393	TRG	Alkalinity	144	ppm	7/27/2007	7/27/2007	
3393	TRG	Turbidity	62.3	NTU	7/26/2007	7/26/2007	
3393	TRG	Specific Conductance	314	umhos/cm	7/27/2007	7/27/2007	
3393	TRG	True Color	100	PCU	7/26/2007	7/26/2007	
3393	TRG	Chloride by IC	10.7	ppm	8/6/2007	8/6/2007	
3393	TRG	Sulfate	7.7	ppm	8/6/2007	8/6/2007	
3393	TRG	Sodium	65.2	ppm	8/8/2007	8/8/2007	
3393	TRG	Hardness	31.2	ppm	8/1/2007	8/1/2007	
3393	TRG	Nitrate+Nitrite Nitrogen	0.35	ppm	8/1/2007	8/1/2007	
3393	TRG	TP	0.96	ppm	8/2/2007	8/2/2007	
3393	TRG	TKN	1.57	ppm	8/2/2007	8/2/2007	
3393	TRG	Ammonia-Nitrogen	0.63	ppm	8/8/2007	8/8/2007	
3393	TRG	TOC	7.5	ppm	8/15/2007	8/15/2007	
3393	TRG	pH, Ultimate BOD survey	8.27	pH units	9/25/2007	9/25/2007	
3393	TRG	TOC (60 Day BOD)	9.7	ppm	9/26/2007	9/26/2007	
3393	TRG	TKN (60 Day BOD)	0.58	ppm	10/1/2007	10/1/2007	
3393	TRG	NO2NO3 - Initial Reading	0.41	ppm	8/7/2007	8/7/2007	7/26/2007
3393	TRG	NO2NO3 - Reading 1	0.42	ppm	8/7/2007	8/7/2007	7/27/2007
3393	TRG	NO2NO3 - Reading 2	0.59	ppm	8/8/2007	8/8/2007	7/30/2007
3393	TRG	NO2NO3 - Reading 3	1.04	ppm	8/8/2007	8/8/2007	8/2/2007
3393	TRG	NO2NO3 - Reading 4	1.28	ppm	8/24/2007	8/24/2007	8/6/2007

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3393	TRG	NO2NO3 - Reading 5	1.34	ppm	8/24/2007	8/24/2007	8/10/2007
3393	TRG	NO2NO3 - Reading 6	1.37	ppm	8/24/2007	8/24/2007	8/15/2007
3393	TRG	NO2NO3 - Reading 7	1.35	ppm	9/6/2007	9/6/2007	8/24/2007
3393	TRG	NO2NO3 - Reading 8	1.39	ppm	9/18/2007	9/18/2007	9/4/2007
3393	TRG	NO2NO3 - Reading 9	1.39	ppm	10/5/2007	10/5/2007	9/14/2007
3393	TRG	NO2NO3 - Final	1.42	ppm	10/5/2007	10/5/2007	9/24/2007
3393	TRG	Non-Filtered BOD 60 - Reading 1	0.6	ppm	7/26/2007	7/27/2007	
3393	TRG	Non-Filtered BOD 60 - Reading 2	3.0	ppm	7/26/2007	7/30/2007	
3393	TRG	Non-Filtered BOD 60 - Reading 3	5.8	ppm	7/26/2007	8/2/2007	
3393	TRG	Non-Filtered BOD 60 - Reading 4	7.4	ppm	7/26/2007	8/6/2007	
3393	TRG	Non-Filtered BOD 60 - Reading 5	8.2	ppm	7/26/2007	8/10/2007	
3393	TRG	Non-Filtered BOD 60 - Reading 6	9.1	ppm	7/26/2007	8/15/2007	
3393	TRG	Non-Filtered BOD 60 - Reading 7	10.3	ppm	7/26/2007	8/24/2007	
3393	TRG	Non-Filtered BOD 60 - Reading 8	11.4	ppm	7/26/2007	9/4/2007	
3393	TRG	Non-Filtered BOD 60 - Reading 9	11.8	ppm	7/26/2007	9/14/2007	
3393	TRG	Non-Filtered BOD 60 - Final	12.7	ppm	7/26/2007	9/24/2007	
3393	TRG	Chlorophyll A (calculated)	2.6	ug/L	8/14/2007	8/15/2007	
3393	TRG	Chlorophyll A (raw)	64.1	ug/L	8/14/2007	8/15/2007	
3393	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
3395	TRG	TSS	42.0	ppm	7/27/2007	7/27/2007	
3395	TRG	TDS	670	ppm	7/27/2007	7/30/2007	
3395	TRG	Alkalinity	85.7	ppm	7/27/2007	7/27/2007	
3395	TRG	Turbidity	425	NTU	7/26/2007	7/26/2007	
3395	TRG	Specific Conductance	243	umhos/cm	7/27/2007	7/27/2007	
3395	TRG	True Color	220	PCU	7/26/2007	7/26/2007	
3395	TRG	Chloride by IC	17.1	ppm	8/6/2007	8/6/2007	
3395	TRG	Sulfate	9.7	ppm	8/6/2007	8/6/2007	
3395	TRG	Sodium	38.0	ppm	8/8/2007	8/8/2007	
3395	TRG	Hardness	55.4	ppm	8/1/2007	8/1/2007	
3395	TRG	Nitrate+Nitrite Nitrogen	1.43	ppm	8/1/2007	8/1/2007	
3395	TRG	TP	1.98	ppm	8/2/2007	8/2/2007	
3395	TRG	TKN	3.21	ppm	8/2/2007	8/2/2007	
3395	TRG	Ammonia-Nitrogen	0.38	ppm	8/8/2007	8/8/2007	
3395	TRG	TOC	7.7	ppm	8/15/2007	8/15/2007	
3395	TRG	pH, Ultimate BOD survey	7.89	pH units	9/25/2007	9/25/2007	
3395	TRG	TOC (60 Day BOD)	11.7	ppm	9/26/2007	9/26/2007	
3395	TRG	TKN (60 Day BOD)	1.19	ppm	10/1/2007	10/1/2007	

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3395	TRG	NO2NO3 - Initial Reading	1.53	ppm	8/7/2007	8/7/2007	7/26/2007
3395	TRG	NO2NO3 - Reading 1	1.54	ppm	8/7/2007	8/7/2007	7/27/2007
3395	TRG	NO2NO3 - Reading 2	1.73	ppm	8/8/2007	8/8/2007	7/30/2007
3395	TRG	NO2NO3 - Reading 3	1.97	ppm	8/8/2007	8/8/2007	8/2/2007
3395	TRG	NO2NO3 - Reading 4	2.27	ppm	8/24/2007	8/24/2007	8/6/2007
3395	TRG	NO2NO3 - Reading 5	2.38	ppm	8/24/2007	8/24/2007	8/10/2007
3395	TRG	NO2NO3 - Reading 6	2.43	ppm	8/24/2007	8/24/2007	8/15/2007
3395	TRG	NO2NO3 - Reading 7	2.45	ppm	9/6/2007	9/6/2007	8/24/2007
3395	TRG	NO2NO3 - Reading 8	2.53	ppm	9/18/2007	9/18/2007	9/4/2007
3395	TRG	NO2NO3 - Reading 9	2.53	ppm	10/5/2007	10/5/2007	9/14/2007
3395	TRG	NO2NO3 - Final	2.63	ppm	10/5/2007	10/5/2007	9/24/2007
3395	TRG	Non-Filtered BOD 60 - Reading 1	0.7	ppm	7/26/2007	7/27/2007	
3395	TRG	Non-Filtered BOD 60 - Reading 2	3.2	ppm	7/26/2007	7/30/2007	
3395	TRG	Non-Filtered BOD 60 - Reading 3	5.5	ppm	7/26/2007	8/2/2007	
3395	TRG	Non-Filtered BOD 60 - Reading 4	7.4	ppm	7/26/2007	8/6/2007	
3395	TRG	Non-Filtered BOD 60 - Reading 5	8.9	ppm	7/26/2007	8/10/2007	
3395	TRG	Non-Filtered BOD 60 - Reading 6	10.3	ppm	7/26/2007	8/15/2007	
3395	TRG	Non-Filtered BOD 60 - Reading 7	12.2	ppm	7/26/2007	8/24/2007	
3395	TRG	Non-Filtered BOD 60 - Reading 8	13.8	ppm	7/26/2007	9/4/2007	
3395	TRG	Non-Filtered BOD 60 - Reading 9	14.3	ppm	7/26/2007	9/14/2007	
3395	TRG	Non-Filtered BOD 60 - Final	15.7	ppm	7/26/2007	9/24/2007	
3395	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
3395	TRG	Chlorophyll A (calculated)	6.3	ug/L	8/14/2007	8/15/2007	
3395	TRG	Chlorophyll A (raw)	157	ug/L	8/14/2007	8/15/2007	
3396	TRG	TSS	36.5	ppm	7/27/2007	7/27/2007	
3396	TRG	TDS	203	ppm	7/27/2007	7/30/2007	
3396	TRG	Alkalinity	120	ppm	7/27/2007	7/27/2007	
3396	TRG	Turbidity	32.1	NTU	7/26/2007	7/26/2007	
3396	TRG	Specific Conductance	264	umhos/cm	7/27/2007	7/27/2007	
3396	TRG	True Color	40	PCU	7/26/2007	7/26/2007	
3396	TRG	Chloride by IC	8.5	ppm	8/6/2007	8/6/2007	
3396	TRG	Sulfate	7.5	ppm	8/6/2007	8/6/2007	
3396	TRG	Sodium	52.3	ppm	8/8/2007	8/8/2007	
3396	TRG	Hardness	24.5	ppm	8/1/2007	8/1/2007	
3396	TRG	Nitrate+Nitrite Nitrogen	0.23	ppm	8/1/2007	8/1/2007	
3396	TRG	TP	0.63	ppm	8/2/2007	8/2/2007	
3396	TRG	TKN	1.51	ppm	8/2/2007	8/2/2007	



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3396	TRG	Ammonia-Nitrogen	0.92	ppm	8/8/2007	8/8/2007	
3396	TRG	TOC	4.9	ppm	8/15/2007	8/15/2007	
3396	TRG	pH, Ultimate BOD survey	8.11	pH units	9/25/2007	9/25/2007	
3396	TRG	TOC (60 Day BOD)	5.3	ppm	9/26/2007	9/26/2007	
3396	TRG	TKN (60 Day BOD)	0.43	ppm	10/1/2007	10/1/2007	
3396	TRG	NO2NO3 - Initial Reading	0.25	ppm	8/7/2007	8/7/2007	7/26/2007
3396	TRG	NO2NO3 - Reading 1	0.26	ppm	8/7/2007	8/7/2007	7/27/2007
3396	TRG	NO2NO3 - Reading 2	0.48	ppm	8/8/2007	8/8/2007	7/30/2007
3396	TRG	NO2NO3 - Reading 3	1.08	ppm	8/8/2007	8/8/2007	8/2/2007
3396	TRG	NO2NO3 - Reading 4	1.55	ppm	8/24/2007	8/24/2007	8/6/2007
3396	TRG	NO2NO3 - Reading 5	1.58	ppm	8/24/2007	8/24/2007	8/10/2007
3396	TRG	NO2NO3 - Reading 6	1.59	ppm	8/24/2007	8/24/2007	8/15/2007
3396	TRG	NO2NO3 - Reading 7	1.56	ppm	9/6/2007	9/6/2007	8/24/2007
3396	TRG	NO2NO3 - Reading 8	1.62	ppm	9/18/2007	9/18/2007	9/4/2007
3396	TRG	NO2NO3 - Reading 9	1.63	ppm	10/5/2007	10/5/2007	9/14/2007
3396	TRG	NO2NO3 - Final	1.62	ppm	10/5/2007	10/5/2007	9/24/2007
3396	TRG	Non-Filtered BOD 60 - Reading 1	0.4	ppm	7/26/2007	7/27/2007	
3396	TRG	Non-Filtered BOD 60 - Reading 2	2.4	ppm	7/26/2007	7/30/2007	
3396	TRG	Non-Filtered BOD 60 - Reading 3	6.5	ppm	7/26/2007	8/2/2007	
3396	TRG	Non-Filtered BOD 60 - Reading 4	8.0	ppm	7/26/2007	8/6/2007	
3396	TRG	Non-Filtered BOD 60 - Reading 5	8.6	ppm	7/26/2007	8/10/2007	
3396	TRG	Non-Filtered BOD 60 - Reading 6	9.2	ppm	7/26/2007	8/15/2007	
3396	TRG	Non-Filtered BOD 60 - Reading 7	10.1	ppm	7/26/2007	8/24/2007	
3396	TRG	Non-Filtered BOD 60 - Reading 8	11.0	ppm	7/26/2007	9/4/2007	
3396	TRG	Non-Filtered BOD 60 - Reading 9	11.0	ppm	7/26/2007	9/14/2007	
3396	TRG	Non-Filtered BOD 60 - Final	12.0	ppm	7/26/2007	9/24/2007	
3396	TRG	Chlorophyll A (calculated)	5.4	ug/L	8/14/2007	8/15/2007	
3396	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007	
3396	TRG	Chlorophyll A (raw)	134	ug/L	8/14/2007	8/15/2007	
3398	TRG	TSS	27.0	ppm	7/27/2007	7/27/2007	
3398	TRG	TDS	290	ppm	7/27/2007	7/30/2007	
3398	TRG	Alkalinity	180	ppm	7/27/2007	7/27/2007	
3398	TRG	Turbidity	43.0	NTU	7/26/2007	7/26/2007	
3398	TRG	Specific Conductance	457	umhos/cm	7/27/2007	7/27/2007	
3398	TRG	True Color	65	PCU	7/26/2007	7/26/2007	
3398	TRG	Chloride by IC	27.6	ppm	8/6/2007	8/6/2007	
3398	TRG	Sulfate	4.6	ppm	8/6/2007	8/6/2007	

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3398	TRG	Sodium	68.9	ppm	8/8/2007	8/8/2007	
3398	TRG	Hardness	60.1	ppm	8/1/2007	8/1/2007	
3398	TRG	Nitrate+Nitrite Nitrogen	ND	ppm	8/1/2007	8/1/2007	
3398	TRG	TP	3.83	ppm	8/2/2007	8/2/2007	
3398	TRG	TKN	8.70	ppm	8/2/2007	8/2/2007	
3398	TRG	Ammonia-Nitrogen	4.96	ppm	8/8/2007	8/8/2007	
3398	TRG	TOC	16.3	ppm	8/15/2007	8/15/2007	
3398	TRG	pH, Ultimate BOD survey	7.71	pH units	9/25/2007	9/25/2007	
3398	TRG	TOC (60 Day BOD)	10.4	ppm	9/26/2007	9/26/2007	
3398	TRG	TKN (60 Day BOD)	0.72	ppm	10/1/2007	10/1/2007	
3398	TRG	NO2NO3 - Initial Reading	ND	ppm	8/7/2007	8/7/2007	7/26/2007
3398	TRG	NO2NO3 - Reading 1	ND	ppm	8/7/2007	8/7/2007	7/27/2007
3398	TRG	NO2NO3 - Reading 2	ND	ppm	8/8/2007	8/8/2007	7/30/2007
3398	TRG	NO2NO3 - Reading 3	0.62	ppm	8/8/2007	8/8/2007	8/2/2007
3398	TRG	NO2NO3 - Reading 4	3.15	ppm	8/24/2007	8/24/2007	8/6/2007
3398	TRG	NO2NO3 - Reading 5	6.65	ppm	8/24/2007	8/24/2007	8/10/2007
3398	TRG	NO2NO3 - Reading 6	8.69	ppm	8/24/2007	8/24/2007	8/15/2007
3398	TRG	NO2NO3 - Reading 7	8.68	ppm	9/6/2007	9/6/2007	8/24/2007
3398	TRG	NO2NO3 - Reading 8	9.20	ppm	9/18/2007	9/18/2007	9/4/2007
3398	TRG	NO2NO3 - Reading 9	9.31	ppm	10/5/2007	10/5/2007	9/14/2007
3398	TRG	NO2NO3 - Final	9.58	ppm	10/5/2007	10/5/2007	9/24/2007
3398	TRG	Non-Filtered BOD 60 - Reading 1	3.9	ppm	7/26/2007	7/27/2007	
3398	TRG	Non-Filtered BOD 60 - Reading 2	12.4	ppm	7/26/2007	7/30/2007	
3398	TRG	Non-Filtered BOD 60 - Reading 3	23.7	ppm	7/26/2007	8/2/2007	
3398	TRG	Non-Filtered BOD 60 - Reading 4	41.5	ppm	7/26/2007	8/6/2007	
3398	TRG	Non-Filtered BOD 60 - Reading 5	60.7	ppm	7/26/2007	8/10/2007	
3398	TRG	Non-Filtered BOD 60 - Reading 6	71.9	ppm	7/26/2007	8/15/2007	
3398	TRG	Non-Filtered BOD 60 - Reading 7	78.9	ppm	7/26/2007	8/24/2007	
3398	TRG	Non-Filtered BOD 60 - Reading 8	84.6	ppm	7/26/2007	9/4/2007	
3398	TRG	Non-Filtered BOD 60 - Reading 9	85.8	ppm	7/26/2007	9/14/2007	
3398	TRG	Non-Filtered BOD 60 - Final	89.2	ppm	7/26/2007	9/24/2007	
3459	FB	TSS	ND	ppm	7/27/2007	7/27/2007	
3459	FB	TDS	ND	ppm	7/27/2007	7/30/2007	
3459	FB	Alkalinity	ND	ppm	7/27/2007	7/27/2007	
3459	FB	Turbidity	ND	NTU	7/26/2007	7/26/2007	
3459	FB	Specific Conductance	ND	umhos/cm	7/27/2007	7/27/2007	
3459	FB	True Color	ND	PCU	7/26/2007	7/26/2007	

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3459	FB	Chloride by IC	ND	ppm	8/6/2007	8/6/2007	
3459	FB	Sulfate	ND	ppm	8/6/2007	8/6/2007	
3459	FB	Sodium	ND	ppm	8/8/2007	8/8/2007	
3459	FB	Hardness	ND	ppm	8/1/2007	8/1/2007	
3459	FB	Nitrate+Nitrite Nitrogen	0.09	ppm	8/1/2007	8/1/2007	
3459	FB	TP	ND	ppm	8/2/2007	8/2/2007	
3459	FB	TKN	0.21	ppm	8/7/2007	8/7/2007	
3459	FB	Ammonia-Nitrogen	ND	ppm	8/8/2007	8/8/2007	
3459	FB	TOC	ND	ppm	8/16/2007	8/16/2007	
3459	FB	pH, Ultimate BOD survey	5.94	pH units	9/25/2007	9/25/2007	
3459	FB	TOC (60 Day BOD)	ND	ppm	9/26/2007	9/26/2007	
3459	FB	TKN (60 Day BOD)	ND	ppm	10/1/2007	10/1/2007	
3459	FB	NO2NO3 - Initial Reading	ND	ppm	8/7/2007	8/7/2007	7/26/2007
3459	FB	NO2NO3 - Reading 1	ND	ppm	8/7/2007	8/7/2007	7/27/2007
3459	FB	NO2NO3 - Reading 2	ND	ppm	8/8/2007	8/8/2007	7/30/2007
3459	FB	NO2NO3 - Reading 3	ND	ppm	8/8/2007	8/8/2007	8/2/2007
3459	FB	NO2NO3 - Reading 4	ND	ppm	8/24/2007	8/24/2007	8/6/2007
3459	FB	NO2NO3 - Reading 5	ND	ppm	8/24/2007	8/24/2007	8/10/2007
3459	FB	NO2NO3 - Reading 6	ND	ppm	8/24/2007	8/24/2007	8/15/2007
3459	FB	NO2NO3 - Reading 7	ND	ppm	9/6/2007	9/6/2007	8/24/2007
3459	FB	NO2NO3 - Reading 8	ND	ppm	9/18/2007	9/18/2007	9/4/2007
3459	FB	NO2NO3 - Reading 9	ND	ppm	10/5/2007	10/5/2007	9/14/2007
3459	FB	NO2NO3 - Final	ND	ppm	10/5/2007	10/5/2007	9/24/2007
3459	FB	Non-Filtered BOD 60 - Reading 1	0.0	ppm	7/26/2007	7/27/2007	
3459	FB	Non-Filtered BOD 60 - Reading 2	0.1	ppm	7/26/2007	7/30/2007	
3459	FB	Non-Filtered BOD 60 - Reading 3	0.2	ppm	7/26/2007	8/2/2007	
3459	FB	Non-Filtered BOD 60 - Reading 4	0.2	ppm	7/26/2007	8/6/2007	
3459	FB	Non-Filtered BOD 60 - Reading 5	0.2	ppm	7/26/2007	8/10/2007	
3459	FB	Non-Filtered BOD 60 - Reading 6	0.3	ppm	7/26/2007	8/15/2007	
3459	FB	Non-Filtered BOD 60 - Reading 7	0.3	ppm	7/26/2007	8/24/2007	
3459	FB	Non-Filtered BOD 60 - Reading 8	0.2	ppm	7/26/2007	9/4/2007	
3459	FB	Non-Filtered BOD 60 - Reading 9	0.0	ppm	7/26/2007	9/14/2007	
3459	FB	Non-Filtered BOD 60 - Final	0.2	ppm	7/26/2007	9/24/2007	
3459	TRG	TSS	26.0	ppm	7/27/2007	7/27/2007	
3459	TRG	TDS	85.3	ppm	7/27/2007	7/30/2007	
3459	TRG	Alkalinity	28.4	ppm	7/27/2007	7/27/2007	
3459	TRG	Turbidity	36.2	NTU	7/26/2007	7/26/2007	

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3459	TRG	Specific Conductance	88.7	umhos/cm	7/27/2007	7/27/2007	
3459	TRG	True Color	55	PCU	7/26/2007	7/26/2007	
3459	TRG	Chloride by IC	6.9	ppm	8/6/2007	8/6/2007	
3459	TRG	Sulfate	3.5	ppm	8/6/2007	8/6/2007	
3459	TRG	Sodium	8.5	ppm	8/8/2007	8/8/2007	
3459	TRG	Hardness	26.5	ppm	8/1/2007	8/1/2007	
3459	TRG	Nitrate+Nitrite Nitrogen	ND	ppm	8/1/2007	8/1/2007	
3459	TRG	TP	0.25	ppm	8/2/2007	8/2/2007	
3459	TRG	TKN	1.05	ppm	8/2/2007	8/2/2007	
3459	TRG	Ammonia-Nitrogen	ND	ppm	8/8/2007	8/8/2007	
3459	TRG	TOC	11.3	ppm	8/16/2007	8/16/2007	
3459	TRG	pH, Ultimate BOD survey	7.59	pH units	9/25/2007	9/25/2007	
3459	TRG	TOC (60 Day BOD)	6.8	ppm	9/26/2007	9/26/2007	
3459	TRG	TKN (60 Day BOD)	0.52	ppm	10/1/2007	10/1/2007	
3459	TRG	NO2NO3 - Initial Reading	ND	ppm	8/7/2007	8/7/2007	7/26/2007
3459	TRG	NO2NO3 - Reading 1	ND	ppm	8/7/2007	8/7/2007	7/27/2007
3459	TRG	NO2NO3 - Reading 2	ND	ppm	8/8/2007	8/8/2007	7/30/2007
3459	TRG	NO2NO3 - Reading 3	ND	ppm	8/8/2007	8/8/2007	8/2/2007
3459	TRG	NO2NO3 - Reading 4	0.34	ppm	8/24/2007	8/24/2007	8/6/2007
3459	TRG	NO2NO3 - Reading 5	0.51	ppm	8/24/2007	8/24/2007	8/10/2007
3459	TRG	NO2NO3 - Reading 6	0.56	ppm	8/24/2007	8/24/2007	8/15/2007
3459	TRG	NO2NO3 - Reading 7	0.59	ppm	9/6/2007	9/6/2007	8/24/2007
3459	TRG	NO2NO3 - Reading 8	0.63	ppm	9/18/2007	9/18/2007	9/4/2007
3459	TRG	NO2NO3 - Reading 9	0.62	ppm	10/5/2007	10/5/2007	9/14/2007
3459	TRG	NO2NO3 - Final	0.66	ppm	10/5/2007	10/5/2007	9/24/2007
3459	TRG	Non-Filtered BOD 60 - Reading 1	1.1	ppm	7/26/2007	7/27/2007	
3459	TRG	Non-Filtered BOD 60 - Reading 2	4.3	ppm	7/26/2007	7/30/2007	
3459	TRG	Non-Filtered BOD 60 - Reading 3	5.9	ppm	7/26/2007	8/2/2007	
3459	TRG	Non-Filtered BOD 60 - Reading 4	8.0	ppm	7/26/2007	8/6/2007	
3459	TRG	Non-Filtered BOD 60 - Reading 5	9.3	ppm	7/26/2007	8/10/2007	
3459	TRG	Non-Filtered BOD 60 - Reading 6	10.0	ppm	7/26/2007	8/15/2007	
3459	TRG	Non-Filtered BOD 60 - Reading 7	11.3	ppm	7/26/2007	8/24/2007	
3459	TRG	Non-Filtered BOD 60 - Reading 8	12.3	ppm	7/26/2007	9/4/2007	
3459	TRG	Non-Filtered BOD 60 - Reading 9	12.3	ppm	7/26/2007	9/14/2007	
3459	TRG	Non-Filtered BOD 60 - Final	13.3	ppm	7/26/2007	9/24/2007	
3459	TRG	Volume of sample, Chlorophyll A (raw)	170	ml	8/14/2007	8/15/2007	
3459	TRG	Chlorophyll A (calculated)	80.0	ug/L	8/14/2007	8/15/2007	

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3459	TRG	Chlorophyll A (raw)	1360	ug/L	8/14/2007	8/15/2007	
3459	FD	TSS	24.5	ppm	7/27/2007	7/27/2007	
3459	FD	TDS	80.0	ppm	7/27/2007	7/30/2007	
3459	FD	Alkalinity	28.7	ppm	7/27/2007	7/27/2007	
3459	FD	Turbidity	36.5	NTU	7/26/2007	7/26/2007	
3459	FD	Specific Conductance	88.1	umhos/cm	7/27/2007	7/27/2007	
3459	FD	True Color	55	PCU	7/26/2007	7/26/2007	
3459	FD	Chloride by IC	7.0	ppm	8/6/2007	8/6/2007	
3459	FD	Sulfate	3.5	ppm	8/6/2007	8/6/2007	
3459	FD	Sodium	8.4	ppm	8/8/2007	8/8/2007	
3459	FD	Hardness	26.6	ppm	8/1/2007	8/1/2007	
3459	FD	Nitrate+Nitrite Nitrogen	ND	ppm	8/1/2007	8/1/2007	
3459	FD	TP	0.26	ppm	8/2/2007	8/2/2007	
3459	FD	TKN	1.01	ppm	8/2/2007	8/2/2007	
3459	FD	Ammonia-Nitrogen	ND	ppm	8/8/2007	8/8/2007	
3459	FD	TOC	11.2	ppm	8/16/2007	8/16/2007	
3459	FD	pH, Ultimate BOD survey	7.54	pH units	9/25/2007	9/25/2007	
3459	FD	TOC (60 Day BOD)	6.7	ppm	9/26/2007	9/26/2007	
3459	FD	TKN (60 Day BOD)	0.55	ppm	10/1/2007	10/1/2007	
3459	FD	NO2NO3 - Initial Reading	ND	ppm	8/7/2007	8/7/2007	7/26/2007
3459	FD	NO2NO3 - Reading 1	ND	ppm	8/7/2007	8/7/2007	7/27/2007
3459	FD	NO2NO3 - Reading 2	ND	ppm	8/8/2007	8/8/2007	7/30/2007
3459	FD	NO2NO3 - Reading 3	ND	ppm	8/8/2007	8/8/2007	8/2/2007
3459	FD	NO2NO3 - Reading 4	0.38	ppm	8/24/2007	8/24/2007	8/6/2007
3459	FD	NO2NO3 - Reading 5	0.54	ppm	8/24/2007	8/24/2007	8/10/2007
3459	FD	NO2NO3 - Reading 6	0.58	ppm	8/24/2007	8/24/2007	8/15/2007
3459	FD	NO2NO3 - Reading 7	0.63	ppm	9/6/2007	9/6/2007	8/24/2007
3459	FD	NO2NO3 - Reading 8	0.68	ppm	9/18/2007	9/18/2007	9/4/2007
3459	FD	NO2NO3 - Reading 9	0.70	ppm	10/5/2007	10/5/2007	9/14/2007
3459	FD	NO2NO3 - Final	0.70	ppm	10/5/2007	10/5/2007	9/24/2007
3459	FD	Non-Filtered BOD 60 - Reading 1	1.2	ppm	7/26/2007	7/27/2007	
3459	FD	Non-Filtered BOD 60 - Reading 2	4.5	ppm	7/26/2007	7/30/2007	
3459	FD	Non-Filtered BOD 60 - Reading 3	6.3	ppm	7/26/2007	8/2/2007	
3459	FD	Non-Filtered BOD 60 - Reading 4	8.6	ppm	7/26/2007	8/6/2007	
3459	FD	Non-Filtered BOD 60 - Reading 5	9.8	ppm	7/26/2007	8/10/2007	
3459	FD	Non-Filtered BOD 60 - Reading 6	10.6	ppm	7/26/2007	8/15/2007	
3459	FD	Non-Filtered BOD 60 - Reading 7	11.9	ppm	7/26/2007	8/24/2007	

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3459	FD	Non-Filtered BOD 60 - Reading 8	12.9	ppm	7/26/2007	9/4/2007	
3459	FD	Non-Filtered BOD 60 - Reading 9	13.0	ppm	7/26/2007	9/14/2007	
3459	FD	Non-Filtered BOD 60 - Final	14.0	ppm	7/26/2007	9/24/2007	
3460	TRG	TSS	4.0	ppm	7/27/2007	7/27/2007	
3460	TRG	TDS	278	ppm	7/27/2007	7/30/2007	
3460	TRG	Alkalinity	93.4	ppm	7/27/2007	7/27/2007	
3460	TRG	Turbidity	6.8	NTU	7/26/2007	7/26/2007	
3460	TRG	Specific Conductance	380	umhos/cm	7/27/2007	7/27/2007	
3460	TRG	True Color	30	PCU	7/26/2007	7/26/2007	
3460	TRG	Chloride by IC	29.5	ppm	8/6/2007	8/6/2007	
3460	TRG	Sulfate	22.5	ppm	8/6/2007	8/6/2007	
3460	TRG	Sodium	65.3	ppm	8/8/2007	8/8/2007	
3460	TRG	Hardness	40.2	ppm	8/1/2007	8/1/2007	
3460	TRG	Nitrate+Nitrite Nitrogen	7.64	ppm	8/1/2007	8/1/2007	
3460	TRG	TP	3.30	ppm	8/2/2007	8/2/2007	
3460	TRG	TKN	1.25	ppm	8/2/2007	8/2/2007	
3460	TRG	Ammonia-Nitrogen	0.14	ppm	8/8/2007	8/8/2007	
3460	TRG	TOC	8.1	ppm	8/16/2007	8/16/2007	
3460	TRG	pH, Ultimate BOD survey	8.10	pH units	9/25/2007	9/25/2007	
3460	TRG	TOC (60 Day BOD)	6.6	ppm	9/26/2007	9/26/2007	
3460	TRG	TKN (60 Day BOD)	0.75	ppm	10/1/2007	10/1/2007	
3460	TRG	NO2NO3 - Initial Reading	8.10	ppm	8/8/2007	8/8/2007	7/26/2007
3460	TRG	NO2NO3 - Reading 1	8.10	ppm	8/8/2007	8/8/2007	7/27/2007
3460	TRG	NO2NO3 - Reading 2	8.08	ppm	8/8/2007	8/8/2007	7/30/2007
3460	TRG	NO2NO3 - Reading 3	8.11	ppm	8/8/2007	8/8/2007	8/2/2007
3460	TRG	NO2NO3 - Reading 4	8.93	ppm	8/24/2007	8/24/2007	8/6/2007
3460	TRG	NO2NO3 - Reading 5	8.67	ppm	8/27/2007	8/27/2007	8/10/2007
3460	TRG	NO2NO3 - Reading 6	8.87	ppm	8/27/2007	8/27/2007	8/15/2007
3460	TRG	NO2NO3 - Reading 7	8.73	ppm	9/6/2007	9/6/2007	8/24/2007
3460	TRG	NO2NO3 - Reading 8	7.63	ppm	9/18/2007	9/18/2007	9/4/2007
3460	TRG	NO2NO3 - Reading 9	8.92	ppm	10/5/2007	10/5/2007	9/14/2007
3460	TRG	NO2NO3 - Final	9.09	ppm	10/5/2007	10/5/2007	9/24/2007
3460	TRG	Non-Filtered BOD 60 - Reading 1	0.3	ppm	7/26/2007	7/27/2007	
3460	TRG	Non-Filtered BOD 60 - Reading 2	1.2	ppm	7/26/2007	7/30/2007	
3460	TRG	Non-Filtered BOD 60 - Reading 3	2.1	ppm	7/26/2007	8/2/2007	
3460	TRG	Non-Filtered BOD 60 - Reading 4	3.5	ppm	7/26/2007	8/6/2007	
3460	TRG	Non-Filtered BOD 60 - Reading 5	4.6	ppm	7/26/2007	8/10/2007	

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

3460	TRG	Non-Filtered BOD 60 - Reading 6	5.5	ppm	7/26/2007	8/15/2007
3460	TRG	Non-Filtered BOD 60 - Reading 7	6.5	ppm	7/26/2007	8/24/2007
3460	TRG	Non-Filtered BOD 60 - Reading 8	7.4	ppm	7/26/2007	9/4/2007
3460	TRG	Non-Filtered BOD 60 - Reading 9	7.5	ppm	7/26/2007	9/14/2007
3460	TRG	Non-Filtered BOD 60 - Final	8.4	ppm	7/26/2007	9/24/2007
3460	TRG	Volume of sample, Chlorophyll A (raw)	250	ml	8/14/2007	8/15/2007
3460	TRG	Chlorophyll A (calculated)	2.2	ug/L	8/14/2007	8/15/2007
3460	TRG	Chlorophyll A (raw)	56.2	ug/L	8/14/2007	8/15/2007

**Appendix F2 – Cross Sections and Discharge Measurements**



<b>Gray's Creek 040304</b>							
<b>Field Data Summary -- Discharges and Cross Sections</b>							
<b>Survey Site #</b>	<b>Leau Site #</b>	<b>Width (ft)</b>	<b>Width (m)</b>	<b>Depth (ft)</b>	<b>Depth (m)</b>	<b>Flow (cfs)</b>	<b>Flow (cms)</b>
GC10	3390	12.50	3.810	1.53	0.466	not flowing	not flowing
GC09	3389	5.00	1.524	0.08	0.025	0.226	0.0064
GC08	3388	9.29	2.832	1.62	0.494		
GC07	3387	16.00	4.877	0.81	0.247	4.782	0.1354
GC06	3386	18.00	5.486	1.03	0.312	4.803	0.1360
GC04	3384	11.00	3.353	0.89	0.271	5.570	0.1577
GC03	2291	17.00	5.182	0.53	0.161	5.197	0.1472
GC02	239	46.00	14.021	1.93	0.589		
GC01	3459	71.00	21.641	4.97	1.514	15.100	0.4276
GCL01	3391	200.00	60.960	9.73	2.965		
UT6	3396					0.066	0.0019
UT5	3395					0.040	0.0011
UT2	3393					0.050	0.0014

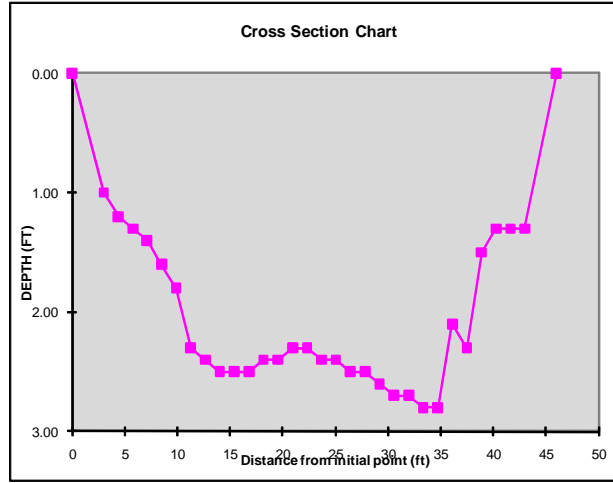


**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 0239 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: at bridge on Hwy 1032  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	46.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	88.90
AVG. DEPTH <sup>3</sup> (ft):	1.93

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6 &amp; 7</sup>
1	0.00	1.50	0.00	0.00	
2	3.00	2.19	1.00	2.19	2.46%
3	4.38	1.38	1.20	1.66	1.86%
4	5.76	1.38	1.30	1.79	2.02%
5	7.14	1.38	1.40	1.93	2.17%
6	8.52	1.38	1.60	2.21	2.48%
7	9.90	1.38	1.80	2.48	2.79%
8	11.28	1.38	2.30	3.17	3.57%
9	12.66	1.38	2.40	3.31	3.72%
10	14.03	1.38	2.50	3.45	3.88%
11	15.41	1.38	2.50	3.45	3.88%
12	16.79	1.38	2.50	3.45	3.88%
13	18.17	1.38	2.40	3.31	3.72%
14	19.55	1.38	2.40	3.31	3.72%
15	20.93	1.38	2.30	3.17	3.57%
16	22.31	1.38	2.30	3.17	3.57%
17	23.69	1.38	2.40	3.31	3.72%
18	25.07	1.38	2.40	3.31	3.72%
19	26.45	1.38	2.50	3.45	3.88%
20	27.83	1.38	2.50	3.45	3.88%
21	29.21	1.38	2.60	3.59	4.03%
22	30.59	1.38	2.70	3.72	4.19%
23	31.97	1.38	2.70	3.72	4.19%
24	33.34	1.38	2.80	3.86	4.34%
25	34.72	1.38	2.80	3.86	4.34%
26	36.10	1.38	2.10	2.90	3.26%
27	37.48	1.38	2.30	3.17	3.57%
28	38.86	1.38	1.50	2.07	2.33%
29	40.24	1.38	1.30	1.79	2.02%
30	41.62	1.38	1.30	1.79	2.02%
31	43.00	2.19	1.30	2.85	3.20%
32	46.00	1.50	0.00	0.00	0.00%
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>46.00</b>		<b>88.90</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Garner, Lafleur	Data Input by / Date:	Garner 08/01/2007
Notetaker/Recorder:	Garner	Data Input Checked by / Date:	Earles
Other:			

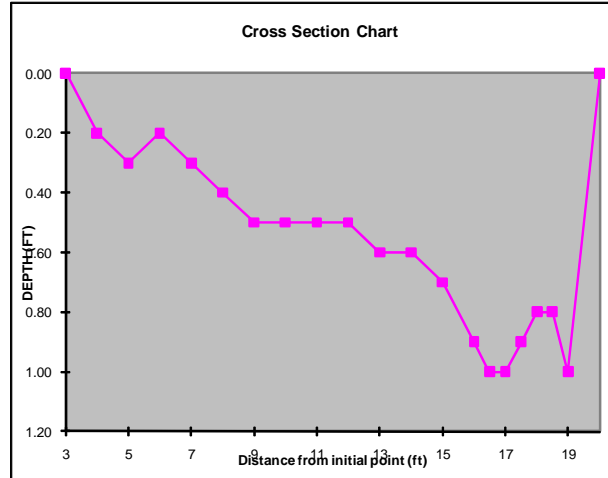
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 2291 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: at Scivique Rd  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/25/2007

WIDTH <sup>1</sup> (ft):	17.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	8.98
AVG. DEPTH <sup>3</sup> (ft):	0.53

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6 &amp; 7</sup>
1	3.0	0.50	0.00	0.00	0.00%
2	4.0	1.00	0.20	0.20	2.23%
3	5.0	1.00	0.30	0.30	3.34%
4	6.0	1.00	0.20	0.20	2.23%
5	7.0	1.00	0.30	0.30	3.34%
6	8.0	1.00	0.40	0.40	4.46%
7	9.0	1.00	0.50	0.50	5.57%
8	10.0	1.00	0.50	0.50	5.57%
9	11.0	1.00	0.50	0.50	5.57%
10	12.0	1.00	0.50	0.50	5.57%
11	13.0	1.00	0.60	0.60	6.69%
12	14.0	1.00	0.60	0.60	6.69%
13	15.0	1.00	0.70	0.70	7.80%
14	16.0	0.75	0.90	0.68	7.52%
15	16.5	0.50	1.00	0.50	5.57%
16	17.0	0.50	1.00	0.50	5.57%
17	17.5	0.50	0.90	0.45	5.01%
18	18.0	0.50	0.80	0.40	4.46%
19	18.5	0.50	0.80	0.40	4.46%
20	19.0	0.75	1.00	0.75	8.36%
21	20.0	0.50	0.00	0.00	0.00%
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>17.00</b>		<b>8.98</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	C. Fontenot/ T. Hicks	Data Input by / Date:	C. Fontenot 9/11/07
Notetaker/Recorder:	C. Fontenot/ T. Hicks	Data Input Checked by / Date:	N. Smith 9/11/07
Other:			

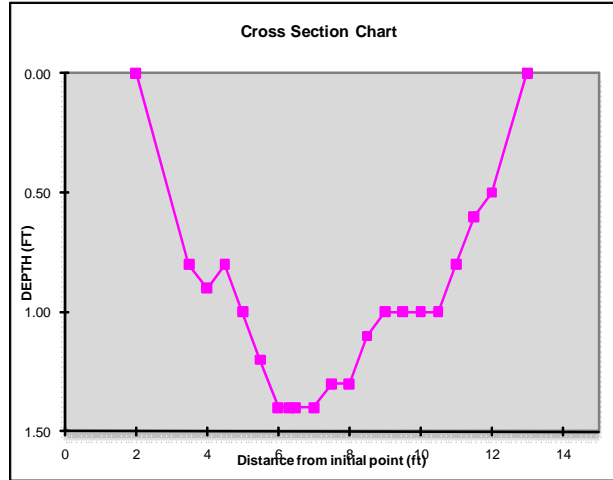
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 3384 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: at bridge on Hwy 1033  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/25/2007

WIDTH <sup>1</sup> (ft):	11.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	9.78
AVG. DEPTH <sup>3</sup> (ft):	0.89

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6 &amp; 7</sup>
1	2.0	0.75	0.00	0.00	0.00%
2	3.5	1.00	0.80	0.80	8.18%
3	4.0	0.50	0.90	0.45	4.60%
4	4.5	0.50	0.80	0.40	4.09%
5	5.0	0.50	1.00	0.50	5.12%
6	5.5	0.50	1.20	0.60	6.14%
7	6.0	0.40	1.40	0.56	5.73%
8	6.3	0.25	1.40	0.35	3.58%
9	6.5	0.35	1.40	0.49	5.01%
10	7.0	0.50	1.40	0.70	7.16%
11	7.5	0.50	1.30	0.65	6.65%
12	8.0	0.50	1.30	0.65	6.65%
13	8.5	0.50	1.10	0.55	5.63%
14	9.0	0.50	1.00	0.50	5.12%
15	9.5	0.50	1.00	0.50	5.12%
16	10.0	0.50	1.00	0.50	5.12%
17	10.5	0.50	1.00	0.50	5.12%
18	11.0	0.50	0.80	0.40	4.09%
19	11.5	0.50	0.60	0.30	3.07%
20	12.0	0.75	0.50	0.38	3.84%
21	13.0	0.50	0.00	0.00	0.00%
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>11.00</b>		<b>9.78</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	C.Fontenot/ T. Hicks	Data Inputted by / Date:	C. Fontenot 9/11/07
Notetaker/Recorder:	C.Fontenot/ T. Hicks	Data Input Checked by / Date:	N. Smith 9/11/07
Other:			

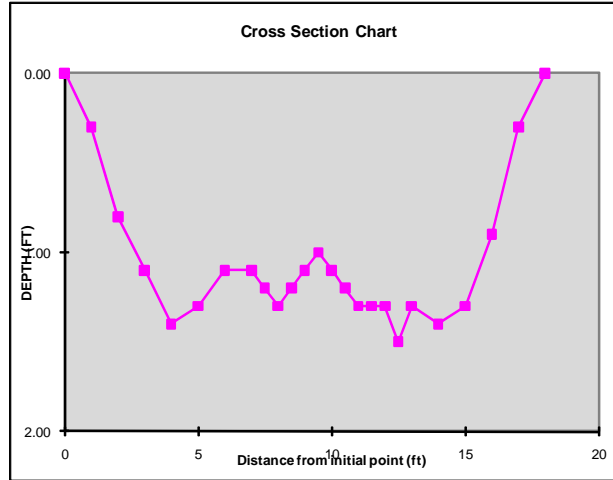
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 3386 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Hwy. 1026  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/25/2007

WIDTH <sup>1</sup> (ft):	18.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	18.45
AVG. DEPTH <sup>3</sup> (ft):	1.03

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6,7</sup>
1	0.0	0.50	0.00	0.00	
2	1.0	1.00	0.30	0.30	1.63%
3	2.0	1.00	0.80	0.80	4.34%
4	3.0	1.00	1.10	1.10	5.96%
5	4.0	1.00	1.40	1.40	7.59%
6	5.0	1.00	1.30	1.30	7.05%
7	6.0	1.00	1.10	1.10	5.96%
8	7.0	0.75	1.10	0.83	4.47%
9	7.5	0.50	1.20	0.60	3.25%
10	8.0	0.50	1.30	0.65	3.52%
11	8.5	0.50	1.20	0.60	3.25%
12	9.0	0.50	1.10	0.55	2.98%
13	9.5	0.50	1.00	0.50	2.71%
14	10.0	0.50	1.10	0.55	2.98%
15	10.5	0.50	1.20	0.60	3.25%
16	11.0	0.50	1.30	0.65	3.52%
17	11.5	0.50	1.30	0.65	3.52%
18	12.0	0.50	1.30	0.65	3.52%
19	12.5	0.50	1.50	0.75	4.07%
20	13.0	0.75	1.30	0.98	5.28%
21	14.0	1.00	1.40	1.40	7.59%
22	15.0	1.00	1.30	1.30	7.05%
23	16.0	1.00	0.90	0.90	4.88%
24	17.0	1.00	0.30	0.30	1.63%
25	18.0	0.50	0.00	0.00	0.00%
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>18.00</b>		<b>18.45</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Jones	Data Input by / Date:	Jones 7/30/07
Notetaker/Recorder:	Beard	Data Input Checked by / Date:	Smith 7/30/07
Other:			

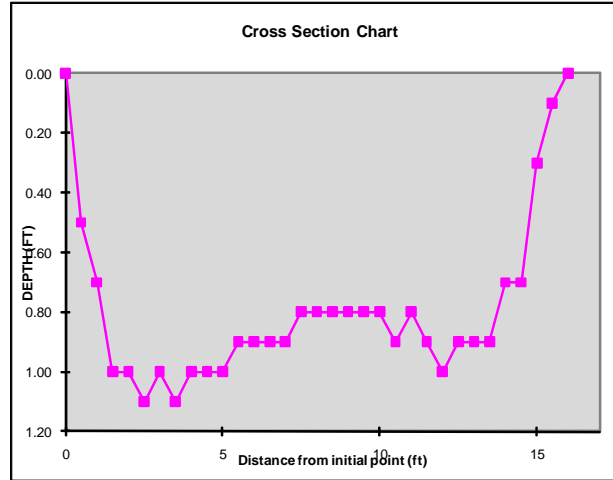
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 3387 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Wax Rd  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/25/2007

WIDTH <sup>1</sup> (ft):	16.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	12.95
AVG. DEPTH <sup>3</sup> (ft):	0.81

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6 &amp; 7</sup>
1	0.0	0.25	0.00	0.00	
2	0.5	0.50	0.50	0.25	1.93%
3	1.0	0.50	0.70	0.35	2.70%
4	1.5	0.50	1.00	0.50	3.86%
5	2.0	0.50	1.00	0.50	3.86%
6	2.5	0.50	1.10	0.55	4.25%
7	3.0	0.50	1.00	0.50	3.86%
8	3.5	0.50	1.10	0.55	4.25%
9	4.0	0.50	1.00	0.50	3.86%
10	4.5	0.50	1.00	0.50	3.86%
11	5.0	0.50	1.00	0.50	3.86%
12	5.5	0.50	0.90	0.45	3.47%
13	6.0	0.50	0.90	0.45	3.47%
14	6.5	0.50	0.90	0.45	3.47%
15	7.0	0.50	0.90	0.45	3.47%
16	7.5	0.50	0.80	0.40	3.09%
17	8.0	0.50	0.80	0.40	3.09%
18	8.5	0.50	0.80	0.40	3.09%
19	9.0	0.50	0.80	0.40	3.09%
20	9.5	0.50	0.80	0.40	3.09%
21	10.0	0.50	0.80	0.40	3.09%
22	10.5	0.50	0.90	0.45	3.47%
23	11.0	0.50	0.80	0.40	3.09%
24	11.5	0.50	0.90	0.45	3.47%
25	12.0	0.50	1.00	0.50	3.86%
26	12.5	0.50	0.90	0.45	3.47%
27	13.0	0.50	0.90	0.45	3.47%
28	13.5	0.50	0.90	0.45	3.47%
29	14.0	0.50	0.70	0.35	2.70%
30	14.5	0.50	0.70	0.35	2.70%
31	15.0	0.50	0.30	0.15	1.16%
32	15.5	0.50	0.10	0.05	0.39%
33	16.0	0.25	0.00	0.00	0.00%
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>16.00</b>		<b>12.95</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Jones	Data Inputted by / Date:	Jones 7/30/07
Notetaker/Recorder:	Beard	Data Input Checked by / Date:	Smith 7/30/07
Other:			

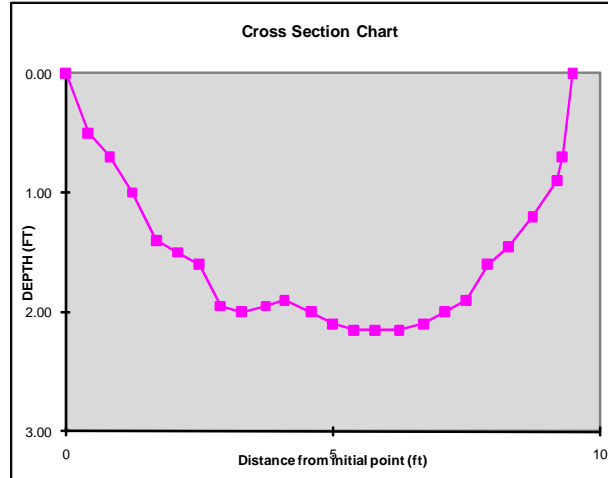
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 3388 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Forrest Delatte Rd.  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: 15.74'  
 Gauge Height: \_\_\_\_\_  
 Date: 7/24/2007

WIDTH <sup>1</sup> (ft):	9.29
AREA <sup>2</sup> (ft <sup>2</sup> ):	15.07
AVG. DEPTH <sup>3</sup> (ft):	1.62

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6 &amp; 7</sup>
1	0.0	0.00	0.00	0.00	
2	0.4	0.42	0.50	0.21	1.38%
3	0.8	0.42	0.70	0.29	1.93%
4	1.3	0.44	1.00	0.44	2.89%
5	1.7	0.43	1.40	0.60	3.95%
6	2.1	0.40	1.50	0.60	3.98%
7	2.5	0.40	1.60	0.64	4.25%
8	2.9	0.40	1.95	0.78	5.18%
9	3.3	0.43	2.00	0.85	5.64%
10	3.8	0.40	1.95	0.78	5.18%
11	4.1	0.43	1.90	0.81	5.36%
12	4.6	0.45	2.00	0.90	5.97%
13	5.0	0.40	2.10	0.84	5.57%
14	5.4	0.40	2.15	0.86	5.71%
15	5.8	0.43	2.15	0.91	6.06%
16	6.3	0.45	2.15	0.97	6.42%
17	6.7	0.43	2.10	0.89	5.92%
18	7.1	0.40	2.00	0.80	5.31%
19	7.5	0.40	1.90	0.76	5.04%
20	7.9	0.40	1.60	0.64	4.25%
21	8.3	0.43	1.45	0.62	4.09%
22	8.8	0.45	1.20	0.54	3.58%
23	9.2	0.28	0.90	0.25	1.64%
24	9.3	0.15	0.70	0.11	0.70%
25	9.5	0.10	0.00	0.00	0.00%
26					
27					
28					
29					
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31					
32					
33					
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35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>9.29</b>		<b>15.07</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Jones	Data Input by / Date:	Jones 7/30/07
Notetaker/Recorder:	Beard	Data Input Checked by / Date:	Smith 7/30/07
Other:			

- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

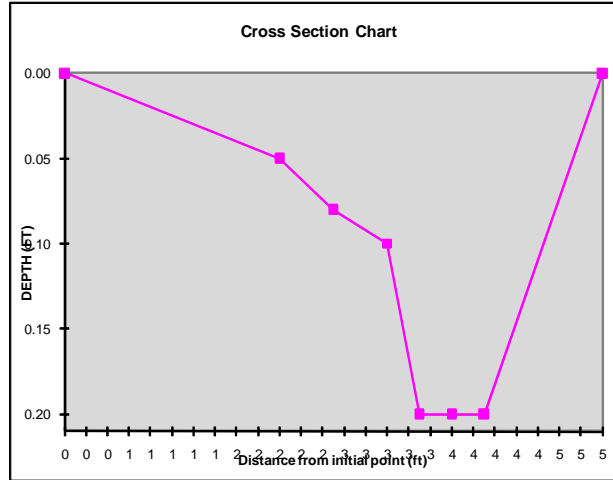


**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 3389 Subsegment: 040304 Waterbody: Gray's Creek  
 Site Description: 80 yds Downstream from sewage Pipe  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: N/A  
 Gauge Height: N/A  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	5.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	0.40
AVG. DEPTH <sup>3</sup> (ft):	0.08

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6 &amp; 7</sup>
1	0.0	1.00	0.00	0.00	
2	2.0	1.25	0.05	0.06	15.53%
3	2.5	0.50	0.08	0.04	9.94%
4	3.0	0.40	0.10	0.04	9.94%
5	3.3	0.30	0.20	0.06	14.91%
6	3.6	0.30	0.20	0.06	14.91%
7	3.9	0.70	0.20	0.14	34.78%
8	5.0	0.55	0.00	0.00	0.00%
9					
10					
11					
12					
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18					
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37					
38					
39					
40					
<b>Total</b>		<b>5.00</b>		<b>0.40</b>	<b>100.00%</b>



Data Collection Crew	Ty Yoes, Chuck Fontenot	Office Data Work	7/27/2007
Measurement made by:	Chuck Fontenot	Data Input by / Date:	7/27/2007
Notetaker/Recorder:	Ty Yoes	Data Input Checked by / Date:	7/27/2007
Other:			

- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

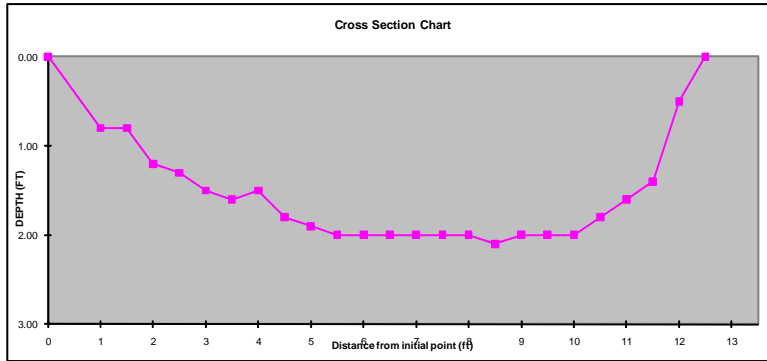
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

STREAM CROSS-SECTION SPREADSHEET

Site Number: 3390 Subsegment: 040304 Waterbody: Gray's Creek  
 Site Description: Downstream from Gray's Creek Canal  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: N/A  
 Gauge Height: N/A  
 Date: 7/25/2007

WIDTH <sup>1</sup> (ft):	12.50
AREA <sup>2</sup> (ft <sup>2</sup> ):	19.10
AVG. DEPTH <sup>3</sup> (ft):	1.53

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6,7</sup>
1	0.0	0.50	0.00	0.00	
2	1.0	0.75	0.80	0.60	3.14%
3	1.5	0.50	0.80	0.40	2.09%
4	2.0	0.50	1.20	0.60	3.14%
5	2.5	0.50	1.30	0.65	3.40%
6	3.0	0.50	1.50	0.75	3.93%
7	3.5	0.50	1.60	0.80	4.19%
8	4.0	0.50	1.50	0.75	3.93%
9	4.5	0.50	1.80	0.90	4.71%
10	5.0	0.50	1.90	0.95	4.97%
11	5.5	0.50	2.00	1.00	5.24%
12	6.0	0.50	2.00	1.00	5.24%
13	6.5	0.50	2.00	1.00	5.24%
14	7.0	0.50	2.00	1.00	5.24%
15	7.5	0.50	2.00	1.00	5.24%
16	8.0	0.50	2.00	1.00	5.24%
17	8.5	0.50	2.10	1.05	5.50%
18	9.0	0.50	2.00	1.00	5.24%
19	9.5	0.50	2.00	1.00	5.24%
20	10.0	0.50	2.00	1.00	5.24%
21	10.5	0.50	1.80	0.90	4.71%
22	11.0	0.50	1.60	0.80	4.19%
23	11.5	0.50	1.40	0.70	3.66%
24	12.0	0.50	0.50	0.25	1.31%
25	12.5	0.25	0.00	0.00	0.00%
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>12.50</b>		<b>19.10</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Chuck Fontenot	Data Inputted by / Date:	Fontenot 7/30/07
Notetaker/Recorder:	Ty Yoes	Data Input Checked by / Date:	Yoes 7/30/07
Other:			

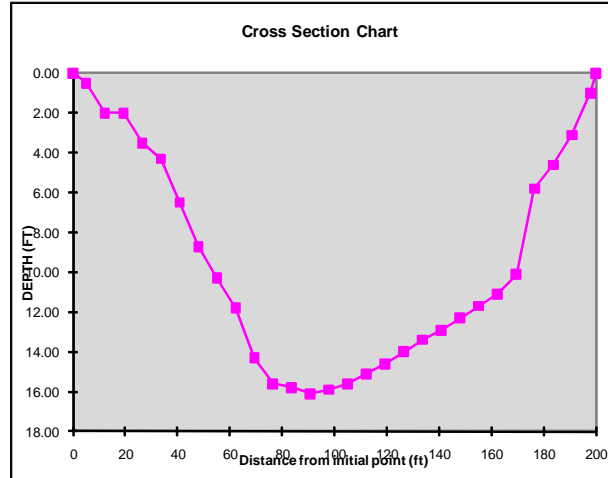
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 3391 Subsegment: 040304 Waterbody: Grays Creek Lake  
 Site Description: 0.5km upstream of confluence with Amite River  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/25/2007

WIDTH <sup>1</sup> (ft):	200.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	1945.47
AVG. DEPTH <sup>3</sup> (ft):	9.73

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6 &amp; 7</sup>
1	0.0	2.50	0.00	0.00	
2	5.0	6.07	0.50	3.04	0.16%
3	12.1	7.15	2.00	14.30	0.73%
4	19.3	7.15	2.00	14.30	0.73%
5	26.4	7.15	3.50	25.02	1.29%
6	33.6	7.15	4.30	30.74	1.58%
7	40.7	7.15	6.50	46.46	2.39%
8	47.9	7.15	8.70	62.19	3.20%
9	55.0	7.15	10.30	73.63	3.78%
10	62.2	7.15	11.80	84.35	4.34%
11	69.3	7.15	14.30	102.22	5.25%
12	76.5	7.15	15.60	111.51	5.73%
13	83.6	7.15	15.80	112.94	5.81%
14	90.8	7.15	16.10	115.09	5.92%
15	97.9	7.15	15.90	113.66	5.84%
16	105.1	7.15	15.60	111.51	5.73%
17	112.2	7.15	15.10	107.94	5.55%
18	119.4	7.15	14.60	104.36	5.36%
19	126.5	7.15	14.00	100.07	5.14%
20	133.7	7.15	13.40	95.79	4.92%
21	140.8	7.15	12.90	92.21	4.74%
22	148.0	7.15	12.30	87.92	4.52%
23	155.1	7.15	11.70	83.63	4.30%
24	162.3	7.15	11.10	79.34	4.08%
25	169.4	7.15	10.10	72.20	3.71%
26	176.6	7.15	5.80	41.46	2.13%
27	183.7	7.15	4.60	32.88	1.69%
28	190.9	7.15	3.10	22.16	1.14%
29	198.0	4.57	1.00	4.57	0.24%
30	200.0	1.00	0.00	0.00	0.00%
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>200.00</b>		<b>1945.47</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	J. Earles	Data Input by / Date:	Smith 07/27/07
Notetaker/Recorder:	N. Smith	Data Input Checked by / Date:	Earles 07/27/07
Other:			

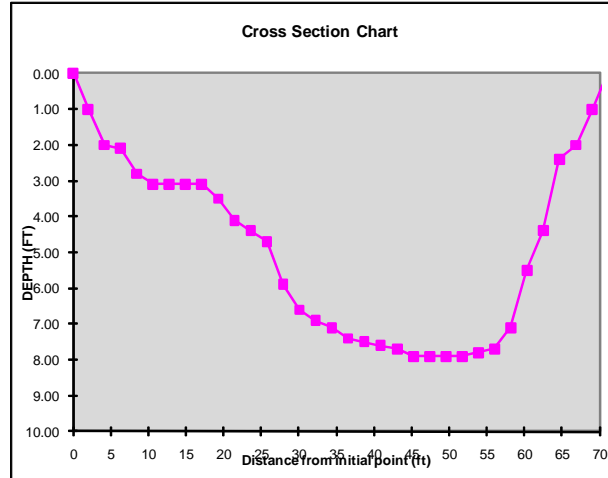
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 3459 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Upstream of Grays Creek Lake  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/25/2007

WIDTH <sup>1</sup> (ft):	71.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	352.56
AVG. DEPTH <sup>3</sup> (ft):	4.97

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6 &amp; 7</sup>
1	0.0	1.00	0.00	0.00	
2	2.0	2.08	1.00	2.08	0.59%
3	4.2	2.16	2.00	4.32	1.23%
4	6.3	2.16	2.10	4.54	1.29%
5	8.5	2.16	2.80	6.05	1.72%
6	10.6	2.16	3.10	6.70	1.90%
7	12.8	2.16	3.10	6.70	1.90%
8	15.0	2.16	3.10	6.70	1.90%
9	17.1	2.16	3.10	6.70	1.90%
10	19.3	2.16	3.50	7.56	2.15%
11	21.5	2.16	4.10	8.86	2.51%
12	23.6	2.16	4.40	9.51	2.70%
13	25.8	2.16	4.70	10.16	2.88%
14	27.9	2.16	5.90	12.75	3.62%
15	30.1	2.16	6.60	14.26	4.05%
16	32.3	2.16	6.90	14.91	4.23%
17	34.4	2.16	7.10	15.35	4.35%
18	36.6	2.16	7.40	15.99	4.54%
19	38.7	2.16	7.50	16.21	4.60%
20	40.9	2.16	7.60	16.43	4.66%
21	43.1	2.16	7.70	16.64	4.72%
22	45.2	2.16	7.90	17.07	4.84%
23	47.4	2.16	7.90	17.07	4.84%
24	49.5	2.16	7.90	17.07	4.84%
25	51.7	2.16	7.90	17.07	4.84%
26	53.9	2.16	7.80	16.86	4.78%
27	56.0	2.16	7.70	16.64	4.72%
28	58.2	2.16	7.10	15.35	4.35%
29	60.4	2.16	5.50	11.89	3.37%
30	62.5	2.16	4.40	9.51	2.70%
31	64.7	2.16	2.40	5.19	1.47%
32	66.8	2.16	2.00	4.32	1.23%
33	69.0	2.08	1.00	2.08	0.59%
34	71.0	1.00	0.00	0.00	0.00%
35					
36					
37					
38					
39					
40					
<b>Total</b>	<b>71.00</b>			<b>352.56</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	J. Earles	Data Input by / Date:	N. Smith 7/27/07
Notetaker/Recorder:	N. Smith	Data Input Checked by / Date:	J. Earles 7/27/07
Other:			

- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

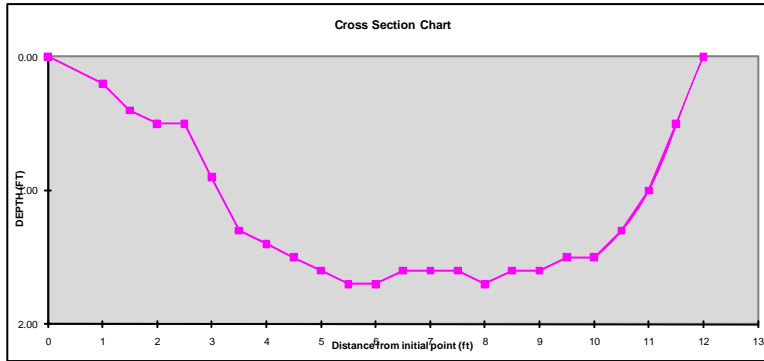
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 3460 Subsegment: 040304 Waterbody: Gray's Creek  
 Site Description: 60 yards downstream from sewage pipe  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: N/A  
 Gauge Height: N/A  
 Date: 7/25/2007

WIDTH <sup>1</sup> (ft):	12.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	13.65
AVG. DEPTH <sup>3</sup> (ft):	1.14

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6,7</sup>
1	0.0	0.50	0.00	0.00	
2	1.0	0.75	0.20	0.15	1.10%
3	1.5	0.50	0.40	0.20	1.47%
4	2.0	0.50	0.50	0.25	1.83%
5	2.5	0.50	0.50	0.25	1.83%
6	3.0	0.50	0.90	0.45	3.30%
7	3.5	0.50	1.30	0.65	4.76%
8	4.0	0.50	1.40	0.70	5.13%
9	4.5	0.50	1.50	0.75	5.49%
10	5.0	0.50	1.60	0.80	5.86%
11	5.5	0.50	1.70	0.85	6.23%
12	6.0	0.50	1.70	0.85	6.23%
13	6.5	0.50	1.60	0.80	5.86%
14	7.0	0.50	1.60	0.80	5.86%
15	7.5	0.50	1.60	0.80	5.86%
16	8.0	0.50	1.70	0.85	6.23%
17	8.5	0.50	1.60	0.80	5.86%
18	9.0	0.50	1.60	0.80	5.86%
19	9.5	0.50	1.50	0.75	5.49%
20	10.0	0.50	1.50	0.75	5.49%
21	10.5	0.50	1.30	0.65	4.76%
22	11.0	0.50	1.00	0.50	3.66%
23	11.5	0.50	0.50	0.25	1.83%
24	12.0	0.25	0.00	0.00	0.00%
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>12.00</b>		<b>13.65</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Chuck Fontenot	Data Inputted by / Date:	Fontenot 7/30/07
Notetaker/Recorder:	Ty Yoes	Data Input Checked by / Date:	Yoes 7/30/07
Other:			

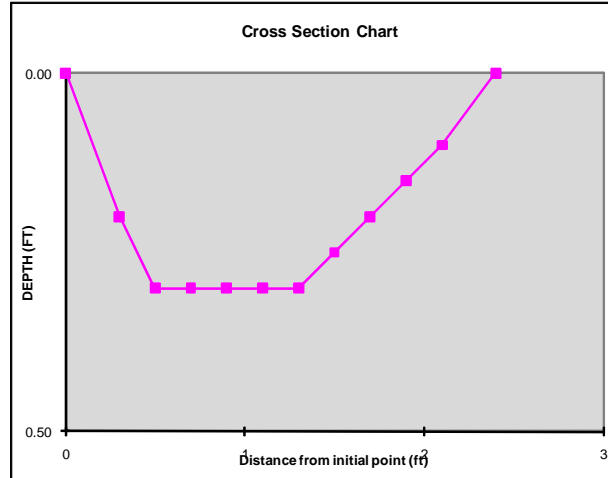
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: 3393 Subsegment: 040304 Waterbody: unnamed trib  
 Site Description: at LA Hwy 16 bridge  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/25/2007

WIDTH <sup>1</sup> (ft):	2.40
AREA <sup>2</sup> (ft <sup>2</sup> ):	0.50
AVG. DEPTH <sup>3</sup> (ft):	0.21

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6 &amp; 7</sup>
1	0.0	0.15	0.00	0.00	
2	0.3	0.25	0.20	0.05	10.10%
3	0.5	0.20	0.30	0.06	12.12%
4	0.7	0.20	0.30	0.06	12.12%
5	0.9	0.20	0.30	0.06	12.12%
6	1.1	0.20	0.30	0.06	12.12%
7	1.3	0.20	0.30	0.06	12.12%
8	1.5	0.20	0.25	0.05	10.10%
9	1.7	0.20	0.20	0.04	8.08%
10	1.9	0.20	0.15	0.03	6.06%
11	2.1	0.25	0.10	0.03	5.05%
12	2.4	0.15	0.00	0.00	0.00%
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>2.40</b>		<b>0.50</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Cal Fontenot	Data Input by / Date:	07/27/2007
Notetaker/Recorder:	Terry Hicks	Data Input Checked by / Date:	07/27/2007
Other:			

- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

FLOWTRACKER WADING DISCHARGE

Site: 3386  
 Initial Bank: LEW  
 Serial Number: P863  
 Date: 2007/07/25 11:52:29

Width:	18
Area:	18.45
Discharge:	4.803
Average Velocity:	0.26

Section	Distance	Depth	Area	Velocity				Section Discharge	% Discharge
				.2D	.6D	.8D	Average		
1	0	0	0		0		0	0	0
2	1	0.3	0.3		0.109		0.109	0.033	0.70%
3	2	0.8	0.8		0.201		0.201	0.161	3.40%
4	3	1.1	1.1		0.172		0.172	0.189	3.90%
5	4	1.4	1.4		0.183		0.183	0.257	5.40%
6	5	1.3	1.3		0.249		0.249	0.323	6.70%
7	6	1.1	1.1		0.277		0.277	0.305	6.40%
8	7	1.1	0.825		0.292		0.292	0.241	5.00%
9	7.5	1.2	0.6		0.312		0.312	0.187	3.90%
10	8	1.3	0.65		0.298		0.298	0.193	4.00%
11	8.5	1.2	0.6		0.353		0.353	0.212	4.40%
12	9	1.1	0.55		0.344		0.344	0.189	3.90%
13	9.5	1	0.5		0.39		0.39	0.195	4.10%
14	10	1.1	0.55		0.388		0.388	0.214	4.50%
15	10.5	1.2	0.6		0.382		0.382	0.229	4.80%
16	11	1.3	0.65		0.338		0.338	0.219	4.60%
17	11.5	1.3	0.65		0.388		0.388	0.252	5.20%
18	12	1.3	0.65		0.336		0.336	0.218	4.50%
19	12.5	1.5	0.75		0.338		0.338	0.254	5.30%
20	13	1.3	0.975		0.31		0.31	0.303	6.30%
21	14	1.4	1.4		0.227		0.227	0.318	6.60%
22	15	1.3	1.3		0.184		0.184	0.239	5.00%
23	16	0.9	0.9		0.075		0.075	0.068	1.40%
24	17	0.3	0.3		0.017		0.017	0.005	0.10%
25	18	0	0		0		0	0	0

FLOWTRACKER WADING DISCHARGE

Site: 3387  
 Initial Bank: LEW  
 Serial Number: P863  
 Date: 2007/07/25 10:27:35

Width:	16
Area:	12.95
Discharge:	4.782
Average Velocity:	0.369

Section	Distance	Depth	Area	Velocity				Section Discharge	% Discharge
				.2D	.6D	.8D	Average		
1	0	0	0		0		0	0	0
2	0.5	0.5	0.25		0.198		0.198	0.049	1.00%
3	1	0.7	0.35		0.046		0.046	0.016	0.30%
4	1.5	1	0.5		0.122		0.122	0.061	1.30%
5	2	1	0.5		0.141		0.141	0.071	1.50%
6	2.5	1.1	0.55		0.452		0.452	0.248	5.20%
7	3	1	0.5		0.172		0.172	0.086	1.80%
8	3.5	1.1	0.55		0.302		0.302	0.166	3.50%
9	4	1	0.5		0.324		0.324	0.162	3.40%
10	4.5	1	0.5		0.299		0.299	0.149	3.10%
11	5	1	0.5		0.239		0.239	0.12	2.50%
12	5.5	0.9	0.45		0.326		0.326	0.147	3.10%
13	6	0.9	0.45		0.303		0.303	0.136	2.80%
14	6.5	0.9	0.45		0.324		0.324	0.146	3.10%
15	7	0.9	0.45		0.376		0.376	0.169	3.50%
16	7.5	0.8	0.4		0.415		0.415	0.166	3.50%
17	8	0.8	0.4		0.464		0.464	0.185	3.90%
18	8.5	0.8	0.4		0.471		0.471	0.188	3.90%
19	9	0.8	0.4		0.464		0.464	0.186	3.90%
20	9.5	0.8	0.4		0.48		0.48	0.192	4.00%
21	10	0.8	0.4		0.496		0.496	0.198	4.10%
22	10.5	0.9	0.45		0.533		0.533	0.24	5.00%
23	11	0.8	0.4		0.604		0.604	0.241	5.00%
24	11.5	0.9	0.45		0.542		0.542	0.244	5.10%
25	12	1	0.5		0.569		0.569	0.284	5.90%
26	12.5	0.9	0.45		0.556		0.556	0.25	5.20%
27	13	0.9	0.45		0.536		0.536	0.241	5.00%
28	13.5	0.9	0.45		0.425		0.425	0.191	4.00%
29	14	0.7	0.35		0.345		0.345	0.121	2.50%
30	14.5	0.7	0.35		0.272		0.272	0.095	2.00%
31	15	0.3	0.15		0.178		0.178	0.027	0.60%
32	15.5	0.1	0.05		0.099		0.099	0.005	0.10%
33	16	0	0		0		0	0	0



FLOWTRACKER WADING DISCHARGE

Site: GC09  
 Initial Bank: REW  
 Serial Number: 1148  
 Date: 2007/07/25 07:01:32

Width:	5
Area:	0.4
Discharge:	0.226
Average Velocity:	0.563

Section	Distance	Depth	Area	Velocity				Section Discharge	% Discharge
				.2D	.6D	.8D	Average		
1	0	0	0		0		0	0	0
2	2	0.05	0.062		2.168		2.168	0.135	59.70%
3	2.5	0.08	0.04		0.026		0.026	0.001	0.40%
4	3	0.1	0.04		0.574		0.574	0.023	10.20%
5	3.3	0.2	0.06		0.463		0.463	0.028	12.40%
6	3.6	0.2	0.06		0.156		0.156	0.009	4.00%
7	3.9	0.2	0.14		0.231		0.231	0.032	14.20%
8	5	0	0		0		0	0	0

FLOWTRACKER WADING DISCHARGE

Site: UT5  
 Initial Bank: REW  
 Serial Number: 1148  
 Date: 2007/07/25 08:44:54

Width:	3
Area:	0.51
Discharge:	0.04
Average Velocity:	0.079

Section	Distance	Depth	Area	Velocity				Section Discharge	% Discharge
				.2D	.6D	.8D	Average		
1	0	0	0		0		0	0	0
2	0.5	0.2	0.08		0.061		0.061	0.005	12.50%
3	0.8	0.2	0.06		0.075		0.075	0.005	12.50%
4	1.1	0.2	0.06		0.141		0.141	0.008	20.00%
5	1.4	0.2	0.06		0.165		0.165	0.01	25.00%
6	1.7	0.2	0.06		0.125		0.125	0.007	17.50%
7	2	0.2	0.06		0.071		0.071	0.004	10.00%
8	2.3	0.2	0.06		0.04		0.04	0.002	5.00%
9	2.6	0.2	0.07		0.026		0.026	0.002	5.00%
10	3	0	0		0		0	0	0

FLOWTRACKER WADING DISCHARGE

Site: UNTRIB6  
 Initial Bank: REW  
 Serial Number: 1148  
 Date: 2007/07/25 07:51:13

Width:	4
Area:	2.12
Discharge:	0.066
Average Velocity:	0.031

Section	Distance	Depth	Area	Velocity				Section Discharge	% Discharge
				.2D	.6D	.8D	Average		
1	0	0	0		0		0	0	
2	1	0.4	0.26		0.012		0.012	0.003	4.50%
3	1.3	0.4	0.12		0.028		0.028	0.003	4.50%
4	1.6	0.4	0.18		0.034		0.034	0.006	9.10%
5	2.2	0.8	0.36		0.031		0.031	0.011	16.70%
6	2.5	0.8	0.24		0.052		0.052	0.012	18.20%
7	2.8	0.9	0.27		0.041		0.041	0.011	16.70%
8	3.1	0.9	0.27		0.032		0.032	0.009	13.60%
9	3.4	0.9	0.27		0.026		0.026	0.007	10.60%
10	3.7	0.5	0.15		0.02		0.02	0.003	4.50%
11	4	0	0		0		0	0	0

Site	Date	Time	Area(ft <sup>2</sup> )	Width(ft)	Total Discharge(cfs)	Top Discharge(cfs)	Middle Discharge(cfs)	Bottom Discharge(cfs)
3459	7/25/2007	9:15	320.6	65	15.1	2.6	9.5	3

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

FLOWTRACKER WADING DISCHARGE

Site: 2291  
 Initial Bank: LEW  
 Serial Number: 1130  
 Date: 2007/07/25 12:56:17

Width:	17
Area:	8.97
Discharge:	5.197
Average Velocity:	0.579

Section	Distance	Depth	Area	Velocity				Section Discharge	% Discharge
				.2D	.6D	.8D	Average		
1	3	0	0		0		0	0	
2	4	0.2	0.2		0.504		0.504	0.101	1.90%
3	5	0.3	0.3		0.071		0.071	0.021	0.40%
4	6	0.2	0.2		0.291		0.291	0.058	1.10%
5	7	0.3	0.3		0.675		0.675	0.202	3.90%
6	8	0.4	0.4		0.681		0.681	0.273	5.30%
7	9	0.5	0.5		0.657		0.657	0.329	6.30%
8	10	0.5	0.5		0.69		0.69	0.345	6.60%
9	11	0.5	0.5		0.783		0.783	0.392	7.50%
10	12	0.5	0.5		0.716		0.716	0.358	6.90%
11	13	0.6	0.6		0.745		0.745	0.447	8.60%
12	14	0.6	0.6		0.684		0.684	0.41	7.90%
13	15	0.7	0.7		0.663		0.663	0.464	8.90%
14	16	0.9	0.675		0.724		0.724	0.488	9.40%
15	16.5	1	0.5		0.521		0.521	0.26	5.00%
16	17	1	0.5		0.437		0.437	0.219	4.20%
17	17.5	0.9	0.45		0.519		0.519	0.234	4.50%
18	18	0.8	0.4		0.482		0.482	0.193	3.70%
19	18.5	0.8	0.4		0.437		0.437	0.175	3.40%
20	19	1	0.75		0.304		0.304	0.228	4.40%
21	20	0	0		0		0	0	0

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

FLOWTRACKER WADING DISCHARGE

Site: 3384  
 Initial Bank: LEW  
 Serial Number: 1130  
 Date: 2007/07/25 10:51:02

Width:	11
Area:	9.77
Discharge:	5.57
Average Velocity:	0.57

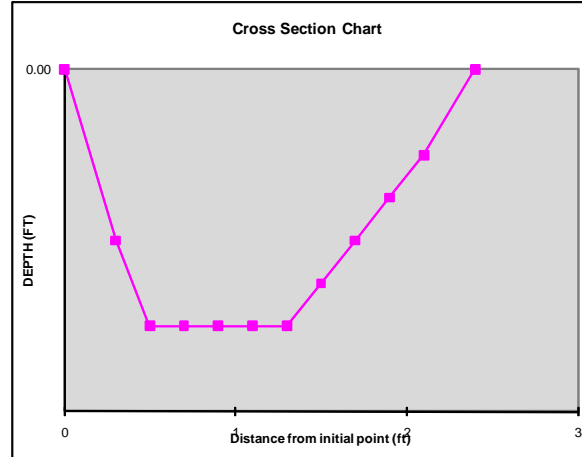
Section	Distance	Depth	Area	Velocity				Section Discharge	% Discharge
				.2D	.6D	.8D	Average		
1	2	0	0		0		0	0	
2	3.5	0.8	0.8		0.248		0.248	0.199	3.60%
3	4	0.9	0.45		0.358		0.358	0.161	2.90%
4	4.5	0.8	0.4		0.56		0.56	0.224	4.00%
5	5	1	0.5		0.629		0.629	0.314	5.60%
6	5.5	1.2	0.6		0.679		0.679	0.408	7.30%
7	6	1.4	0.525		0.748		0.748	0.393	7.10%
8	6.3	1.4	0.35		0.798		0.798	0.279	5.00%
9	6.5	1.4	0.525		0.935		0.935	0.491	8.80%
10	7	1.4	0.7		0.643		0.643	0.45	8.10%
11	7.5	1.3	0.65		0.726		0.726	0.472	8.50%
12	8	1.3	0.65		0.701		0.701	0.455	8.20%
13	8.5	1.1	0.55		0.757		0.757	0.416	7.50%
14	9	1	0.5		0.577		0.577	0.288	5.20%
15	9.5	1	0.5		0.585		0.585	0.293	5.30%
16	10	1	0.5		0.494		0.494	0.247	4.40%
17	10.5	1	0.5		0.457		0.457	0.229	4.10%
18	11	0.8	0.4		0.333		0.333	0.133	2.40%
19	11.5	0.6	0.3		0.394		0.394	0.118	2.10%
20	12	0.5	0.375		0.002		0.002	0.001	0.00%
21	13	0	0		0		0	0	0

**DISCHARGE** *STREAM CROSS-SECTION SPREADSHEET*

Site Number: 3393 Subsegment: 040304 Waterbody: unnamed trib  
 Site Description: at LA Hwy 16 bridge  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/25/2007

WIDTH <sup>1</sup> (ft):	2.40
AREA <sup>2</sup> (ft <sup>2</sup> ):	0.50
AVG. DEPTH <sup>3</sup> (ft):	0.21

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6,7</sup>
1	0.0	0.15	0.00	0.00	
2	0.3	0.25	0.20	0.05	10.10%
3	0.5	0.20	0.30	0.06	12.12%
4	0.7	0.20	0.30	0.06	12.12%
5	0.9	0.20	0.30	0.06	12.12%
6	1.1	0.20	0.30	0.06	12.12%
7	1.3	0.20	0.30	0.06	12.12%
8	1.5	0.20	0.25	0.05	10.10%
9	1.7	0.20	0.20	0.04	8.08%
10	1.9	0.20	0.15	0.03	6.06%
11	2.1	0.25	0.10	0.03	5.05%
12	2.4	0.15	0.00	0.00	0.00%
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>2.40</b>		<b>0.50</b>	<b>100.00%</b>



**DROGUE-**  
 Traveled 20ft in 220 sec

Data Collection Crew		Office Data Work	
Measurement made by:	Cal Fontenot	Data Input by / Date:	07/27/2007
Notetaker/Recorder:	Terry Hicks	Data Input Checked by / Date:	07/27/2007
Other:			

- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**Appendix F3 – Field Notes**

<b>Gray's Creek 040304 Insitu</b>											
Site	Site	Date	Time	Temp	pH	Cond	DO	DO%	Salinity	Depth (m)	Secchi (in)
GC10	3390	7/25/2007	8:30 AM	25.50	6.82	380.0	2.35	29.0	0.20	0.3	0.6
GC09A	3460	7/25/2007	10:00 AM	25.20	6.87	403.0	2.6	31.7	0.20	0.3	0.6
GC09	3389	7/25/2007	9:30 AM	25.75	7.95	363.7	3.48	104.2	0.18	.4 in	8
GC08	3388	7/25/2007	8:15 AM	24.89	6.94	304.9	1.15	13.9	0.15	0.5	12
GC07	3387	7/25/2007	9:45 AM	26.34	7.28	141.9	1.28	16.0	0.22	0.3	6
GC06	3386	7/25/2007	11:30 AM	26.19	7.41	426.3	1.2	14.8	0.21	0.3	6
GC05	3385	7/25/2007	9:35 AM	25.21	7.27	431.7	0.8	9.7	0.22	0.2	
GC04	3384	7/25/2007	10:15 AM	25.04	7.17	407.7	3.12	37.7	0.20	0.5	9
GC03	2291	7/25/2007	11:50 AM	25.73	7.24	392.8	5.07	62.2	0.20	0.3	8
GC02	239	7/25/2007	12:10 PM	25.72	6.80	309.3	4.05	49.6	0.15	0.8	12
GC01	3459	7/25/2007	9:40 AM	28.89	6.78	83.7	5.48	71.0	0.03	1.0	15
GCL01	3391	7/25/2007	10:45 AM	30.19	7.03	103.8	7.85	103.8	0.02	1.0	18
UT601	3396	7/25/2007	11:00 AM	24.61	7.15	278.5	2.84	34.4	0.13	6 in	6
UT501	3395	7/25/2007	12:00 PM	25.09	7.10	255.4	2.82	34.3	0.12	4 in	2
UT201	3393	7/25/2007	12:02 PM	26.18	7.40	324.6	5.51	68.1	0.16	0.1	7
DSSTP	3398	7/25/2007	8:45 AM	26.73	7.02	458.7	0.71	9.0	0.23	0.3	

**Grays Creek  
(040304)  
Project # ES2007002  
Survey Report  
July 2007**

Grays Creek is located in the Ponchartrain Basin in subsegment 040304. The creek was surveyed from its headwaters near Hwy 1026 to the confluence with Amite River. The survey was conducted on July 24 through July 26, 2007. Land use along Grays Creek is primarily residential as well as pasture towards the bottom.

Eleven (11) continuous monitors were placed in Grays Creek on Tuesday, July 24 and were set to log during the survey until picked up on Thursday, July 26, 2007. Continuous monitors were placed at sites GC-10 (3390), GC-09a (3460), GC-09 (3389), GC-08 (3388), GC-07 (3387), GC-06 (3386), GC-04 (3384), GC-03 (2291), GC-02 (0239), GC-01 (3459), and GCL-01 (3391). All monitors functioned throughout the survey resulting in a good data set.

A dye study was performed between sites GC-01 and GC-02. Dye was dumped on Tuesday, July 24, 2007. Two (2) fixed dye monitors were set out at two locations between sites GC-01 and GC-02. The first monitor was set out to catch the dye cloud overnight after an initial boat run. The second fixed dye monitor was set out due to the tree canopy being too thick to allow a boat run. A more detailed explanation of the dye study can be found on the Watershed Shared Network (ws\_surveys) Grays Creek file under Dye Study Log.

Water Quality samples were taken throughout the length of Grays Creek along with In-Situ field readings. Water Quality samples were taken at all of the sites except for sites MC-01 (3392), UT4-01 (3394), and WB-01 (3397) because there was no flow. Discharge measurements were taken at sites GC-09, GC-07, GC-06, GC-01, UT6-01 (3396), UT5-01 (3395), and UT2-01 (3393). Cross sections were taken at all main stem sites. Included with this report are all survey data including: field notes, discharge measurements, site GPS, stream cross-sections, continuous monitor data, and water quality sample records. Data from the dye study, which includes site GPS, dye concentration log, stream cross-sections and a field log, are also included. Electronic copies of this data are available on the Watershed Shared Network (ws\_surveys).

On Tuesday, July 24, 2007, our dye crew found a large machine grinding trees and brush along the banks of lower Grays Creek. A heavy debris load of tree trunks and limbs could be found in the water leaving a very large debris field. Other DEQ personnel were notified. They then notified the company doing the cutting and the tree grinding was stopped during the middle of our survey. The grinding has not resumed. Besides the tree grinding, the survey crews encountered no other notable problems.



Site Information

Site #: 3390 Subsegment: 040304 Date: 7-24-07 Time: 1010  
~~9:50~~  
 Waterbody: Grays Creek  
 Tapedown 1: \_\_\_\_\_ Staff Gauge 1: \_\_\_\_\_ Gauge Height 1: \_\_\_\_\_  
 Site Location†: Downstream from Grays Canal Behind Willow Point Subdivision  
 Personnel: Fontenot, Yves

Type of Work: Recon  Data Collection

Weather Conditions:  Clear  Overcast  Drizzle/Light Rain  Showers

Temperature (°F):  Hot >85°  Warm >75°  Mild >65°  Cool >60°  Cold <60°

Wind (mph):  <1  1-5  6-10  11-15  >16

Wind Direction:  NW  N  NE  SW  S  SE  E  W  Variable

Cloud Cover:  0-10%  11-40%  41-70%  71-100%

Waterbody Characteristics:  
 Waterbody Type:  Stream  Lake

Flowing:  Measurable Flow:  Flow Direction:  Upstream  Downstream  Tidally Influenced:

Wind Influence:  Wind Influence Direction:  Upstream  Downstream

Algae Present  Sedimentation/Turbidity Present in Water Column

Floating/Aquatic Vegetation % Surface Coverage:  <1  1-25%  26-50%  51-75%  76-100%

Water Quality Samples Taken:  Water Quality Field Parameters:  Profiling:

Water Quality Field Parameters

Time: \_\_\_\_\_ Temp. (°C): \_\_\_\_\_ pH: \_\_\_\_\_ SpCond (µmhos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_ Secchi (in): \_\_\_\_\_  
 InSitu Probe ID: \_\_\_\_\_

Continuous Monitor Deployed:  Continuous Monitor ID: 43538  
 Continuous Monitor Retrieved:  Continuous Monitor Depth (m): 15.3  
 Water Level Monitor Deployed:  Instrument ID: \_\_\_\_\_

Flow Measurement:  Type of Measurement:  Wading  Stationary  Moving Boat

Instrument ID: \_\_\_\_\_  
 Velocity Monitor Deployed  Instrument ID: \_\_\_\_\_

Velocity Estimated:  Drogue Estimate:  Dye Estimate:

Right Descending Bank Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_  
 Mid Stream Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_  
 Left Descending Bank Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_

Cross Section Measurement:  Type of Measurement Manual:  Fathometer

Fathometer ID: \_\_\_\_\_

GPS Measurement:  Site GPS:  Cross Section GPS:

Photos Taken:  Picture File #: \_\_\_\_\_

† All work is done within 100 yard radius of Site

Site 3390 Date: 7-24-07

Tapedown Established:  Tapedown Location: \_\_\_\_\_  
 Benchmark Established:  Benchmark Location: \_\_\_\_\_  
 Survey Equipment Used:

Time of Travel Measurement:  Type of Site: Injection  Collection   
 Amount of Dye Injected (ml): \_\_\_\_\_

Physical Site Characteristics: Natural Waterbody:  Man Altered Waterbody:   
 Man-Made Waterbody:   
 Waterbody Dry/Intermittent:   
 Waterbody Bottom: Sandy  Clay  Gravel  Hard Clay  Soft Silt   
 Sand/Silt  Rock/Gravel/Silt  Concrete   
 Control Structure Present:  Location: \_\_\_\_\_  
 Type: Man Made Dam  Flow Regulation Device  Beaver Dam  Log Jam   
 Land Use: Agriculture  Forestry  Municipal  Industrial  Field/Pasture  Wetland   
 Percent Tree Canopy Cover 0-25%  26-50%  51-75%  76-100%

Recon Information:  
 Discharge Measurement: Wading  Boat  Stream Depth (ft): \_\_\_\_\_  
 Continuous Monitor Deployment: Fixed  Bouy

Boat Accessible:  Nearest Launch: \_\_\_\_\_  
 Bridge  Bridge Safe:  Bridge Height: \_\_\_\_\_

Profiling Measurements:							
Time: _____	Temp.(°C): _____	pH: _____	Spcond(µmhos/cm): _____	D.O.: _____	D.O. %: _____	Salinity: _____	Depth (m): _____
Time: _____	Temp.(°C): _____	pH: _____	Spcond(µmhos/cm): _____	D.O.: _____	D.O. %: _____	Salinity: _____	Depth (m): _____
Time: _____	Temp.(°C): _____	pH: _____	Spcond(µmhos/cm): _____	D.O.: _____	D.O. %: _____	Salinity: _____	Depth (m): _____

Comments:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

References

Convert Feet to Meters	Convert Celsius to Fahrenheit	
0.5 ft ≅ 0.15 m	20 ≅ 68	25 ≅ 77
1.0 ft ≅ 0.30 m	21 ≅ 69.8	26 ≅ 78.8
1.5 ft ≅ 0.45 m	22 ≅ 71.6	27 ≅ 80.6
2.0 ft ≅ 0.60 m	23 ≅ 73.4	28 ≅ 82.4
2.5 ft ≅ 0.75 m	24 ≅ 75.2	29 ≅ 84.2

Site Information

Site #: 3390 Subsegment: 040304 Date: 7-25-07 Time: 0830  
 Waterbody: Grays Creek  
 Tapedown 1: \_\_\_\_\_ Staff Gauge 1: \_\_\_\_\_ Gauge Height 1: \_\_\_\_\_  
 Site Location†: Downstream from Grays Creek Canal Behind Willow Point  
 Personnel: Fontenot, Yves Subdivisor

Type of Work: Recon  Data Collection

Weather Conditions:   
 Clear  Overcast  Drizzle/Light Rain  Showers   
 Temperature (°F): Hot >85°  Warm >75°  Mild >65°  Cool >60°  Cold <60°   
 Wind (mph): <1  1-5  6-10  11-15  >16   
 Wind Direction: NW  N  NE  SW  S  SE  E  W  Variable

Cloud Cover: 0-10%  11-40%  41-70%  71-100%

Waterbody Characteristics:  
 Waterbody Type: Stream  Not Flowing  
 Flowing:  Measurable Flow:  Flow Direction Upstream  Downstream  Tidally Influenced:   
 Wind Influence:  Wind Influence Direction: Upstream  Downstream

Waterbody Type: Lake  Wind Influence:  Tidally Influenced:   
 Algae Present  Sedimentation/Turbidity Present in Water Column   
 Floating/Aquatic Vegetation % Surface Coverage: <1  1-25%  26-50%   
 51-75%  76-100%

Water Quality Samples Taken:  Water Quality Field Parameters:  Profiling:

Water Quality Field Parameters

Time: 0830 Temp.(°C): 25.5 pH: 6.82 SpCond(µmhos/cm): 380.0  
 D.O.: 2.35 D.O. %: 29.0 Salinity: .20 Depth (m): 0.3 Secchi (in): 0.6  
 InSitu Probe ID: 43546

Continuous Monitor Deployed:  Continuous Monitor ID: \_\_\_\_\_  
 Continuous Monitor Retrieved:  Continuous Monitor Depth (m): \_\_\_\_\_  
 Water Level Monitor Deployed:  Instrument ID: \_\_\_\_\_

Flow Measurement:  Type of Measurement: Wading  Stationary  Moving Boat

Instrument ID: \_\_\_\_\_  
 Velocity Monitor Deployed  Instrument ID: \_\_\_\_\_

Velocity Estimated:  Drogue Estimate:  Dye Estimate:   
 Right Descending Bank Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_  
 Mid Stream Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_  
 Left Descending Bank Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_

Cross Section Measurement:  Type of Measurement Manual:  Fathometer   
 Fathometer ID: \_\_\_\_\_

GPS Measurement:  Site GPS:  Cross Section GPS:

Photos Taken:  Picture File #s: \_\_\_\_\_

† All work is done within 100 yard radius of Site

Site 3390 Date: 7-24-07

Tapedown Established:  Tapedown Location: \_\_\_\_\_  
 Benchmark Established:  Benchmark Location: \_\_\_\_\_  
 Survey Equipment Used:

Time of Travel Measurement:  Type of Site: Injection  Collection   
 Amount of Dye Injected (ml): \_\_\_\_\_

Physical Site Characteristics: Natural Waterbody:  Man Altered Waterbody:   
 Man-Made Waterbody:   
 Waterbody Dry/Intermittent:   
 Waterbody Bottom: Sandy  Clay  Gravel  Hard Clay  Soft Silt   
 Sand/Silt  Rock/Gravel/Silt  Concrete   
 Control Structure Present:  Location: \_\_\_\_\_  
 Type: Man Made Dam  Flow Regulation Device  Beaver Dam  Log Jam   
 Land Use: Agriculture  Forestry  Municipal  Industrial  Field/Pasture  Wetland   
 Percent Tree Canopy Cover 0-25%  26-50%  51-75%  76-100%

Recon Information:  
 Discharge Measurement: Wading  Boat  Stream Depth (ft): \_\_\_\_\_  
 Continuous Monitor Deployment: Fixed:  Bouy:   
 Boat Accessible:  Nearest Launch: \_\_\_\_\_  
 Bridge  Bridge Safe:  Bridge Height: \_\_\_\_\_

Profiling Measurements:  
 Time: \_\_\_\_\_ Temp. (°C): \_\_\_\_\_ pH: \_\_\_\_\_ Spcond (µmhos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_  
 Time: \_\_\_\_\_ Temp. (°C): \_\_\_\_\_ pH: \_\_\_\_\_ Spcond (µmhos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_  
 Time: \_\_\_\_\_ Temp. (°C): \_\_\_\_\_ pH: \_\_\_\_\_ Spcond (µmhos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_

Comments: Not Flowing

References

Convert Feet to Meters	Convert Celsius to Fahrenheit	
0.5 ft ≅ 0.15 m	20 ≅ 68	25 ≅ 77
1.0 ft ≅ 0.30 m	21 ≅ 69.8	26 ≅ 78.8
1.5 ft ≅ 0.45 m	22 ≅ 71.6	27 ≅ 80.6
2.0 ft ≅ 0.60 m	23 ≅ 73.4	28 ≅ 82.4
2.5 ft ≅ 0.75 m	24 ≅ 75.2	29 ≅ 84.2

X-section

1.4	.8	6.5ft	2.0	11ft	1.6
1.5	.8	7	2.0	11.5	1.4
2	1.2	7.5	2.0	12	.5
2.5	1.3	8	2.0		
3	1.5	8.5	2.1		
3.5	1.6	9	2.0		
4	1.5	9.5	2.0		
4.5	1.8	10	2.0		
5	1.9	10.5	1.8		
5.5	2.0				
6	2.0				

Field Site Survey.doc  
 Revision 4.2  
 Revised 06/27/2007

Site Information

Site #: 3390 Subsegment: 040304 Date: 7-26-07 Time: 10:35  
 Waterbody: Grays Creek  
 Tapedown 1: \_\_\_\_\_ Staff Gauge 1: \_\_\_\_\_ Gauge Height 1: \_\_\_\_\_  
 Site Location†: Down stream from Canal Behind Willow Point  
 Personnel: Fontenot, Yves Subdivision

Type of Work: Recon  Data Collection

Weather Conditions: Clear  Overcast  Drizzle/Light Rain  Showers

Temperature (°F): Hot >85°  Warm > 75°  Mild > 65°  Cool > 60°  Cold < 60°

Wind (mph): <1  1-5  6-10  11-15  >16

Wind Direction: NW  N  NE  SW  S  SE  E  W  Variable

Cloud Cover: 0-10%  11-40%  41-70%  71-100%

Waterbody Characteristics:  
 Waterbody Type: Stream

Flowing:  Measurable Flow:  Flow Direction Upstream  Downstream  Tidally Influenced:

Wind Influence:  Wind Influence Direction: Upstream  Downstream

Waterbody Type: Lake  Wind Influence:  Tidally Influenced:

Algae Present  Sedimentation/Turbidity Present in Water Column

Floating/Aquatic Vegetation % Surface Coverage: <1  1-25%  26-50%  51-75%  76-100%

Water Quality Samples Taken:  Water Quality Field Parameters:  Profiling:

Water Quality Field Parameters

Time: \_\_\_\_\_ Temp.(°C): \_\_\_\_\_ pH: \_\_\_\_\_ SpCond(µmhos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_ Secchi (in): \_\_\_\_\_  
 InSitu Probe ID: \_\_\_\_\_

Continuous Monitor Deployed:  Continuous Monitor ID: 43538  
 Continuous Monitor Retrieved:  Continuous Monitor Depth (m): 0.3  
 Water Level Monitor Deployed:  Instrument ID: \_\_\_\_\_

Flow Measurement:  Type of Measurement: Wading  Stationary  Moving Boat

Instrument ID: \_\_\_\_\_  
 Velocity Monitor Deployed  Instrument ID: \_\_\_\_\_

Velocity Estimated:  Drogue Estimate:  Dye Estimate:

Right Descending Bank Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_  
 Mid Stream Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_  
 Left Descending Bank Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_

Cross Section Measurement:  Type of Measurement Manual:  Fathometer

Fathometer ID: \_\_\_\_\_

GPS Measurement:  Site GPS:  Cross Section GPS:

Photos Taken:  Picture File #s: \_\_\_\_\_

† All work is done within 100 yard radius of Site

Site 3460 Date: 7-24-07

Tapedown Established:  Tapedown Location: \_\_\_\_\_  
 Benchmark Established:  Benchmark Location: \_\_\_\_\_  
 Survey Equipment Used:

Time of Travel Measurement:  Type of Site: Injection  Collection   
 Amount of Dye Injected (ml): \_\_\_\_\_

Physical Site Characteristics: Natural Waterbody:  Man Altered Waterbody:   
 Man-Made Waterbody:   
 Waterbody Dry/Intermittent:   
 Waterbody Bottom: Sandy  Clay  Gravel  Hard Clay  Soft Silt   
 Sand/Silt  Rock/Gravel/Silt  Concrete   
 Control Structure Present:  Location: \_\_\_\_\_  
 Type: Man Made Dam  Flow Regulation Device  Beaver Dam  Log Jam   
 Land Use: Agriculture  Forestry  Municipal  Industrial  Field/Pasture  Wetland   
 Percent Tree Canopy Cover 0-25%  26-50%  51-75%  76-100%

Recon Information:  
 Discharge Measurement: Wading  Boat  Stream Depth (ft): \_\_\_\_\_  
 Continuous Monitor Deployment: Fixed  Bouy

Boat Accessible:  Nearest Launch: \_\_\_\_\_  
 Bridge  Bridge Safe:  Bridge Height: \_\_\_\_\_

Profiling Measurements:  
 Time: \_\_\_\_\_ Temp.( °C): \_\_\_\_\_ pH: \_\_\_\_\_ Spcond(µhmos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_  
 Time: \_\_\_\_\_ Temp.( °C): \_\_\_\_\_ pH: \_\_\_\_\_ Spcond(µhmos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_  
 Time: \_\_\_\_\_ Temp.( °C): \_\_\_\_\_ pH: \_\_\_\_\_ Spcond(µhmos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_

Comments:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

References

Convert Feet to Meters	Convert Celsius to Fahrenheit	
0.5 ft ≅ 0.15 m	20 ≅ 68	25 ≅ 77
1.0 ft ≅ 0.30 m	21 ≅ 69.8	26 ≅ 78.8
1.5 ft ≅ 0.45 m	22 ≅ 71.6	27 ≅ 80.6
2.0 ft ≅ 0.60 m	23 ≅ 73.4	28 ≅ 82.4
2.5 ft ≅ 0.75 m	24 ≅ 75.2	29 ≅ 84.2

Site Information

Site #: 3460 Subsegment: 040304 Date: 7-25-07 Time: 1000  
 Waterbody: Grays Creek  
 Tapedown 1: \_\_\_\_\_ Staff Gauge 1: \_\_\_\_\_ Gauge Height 1: \_\_\_\_\_  
 Site Location†: 60yds Downstream from Sewage Pipe Behind willow Point Subdivision  
 Personnel: Fontenot, Yves  
 Type of Work: Recon  Data Collection   
 Weather Conditions: Clear  Overcast  Drizzle/Light Rain  Showers   
 Temperature (°F): Hot >85°  Warm >75°  Mild >65°  Cool >60°  Cold <60°   
 Wind (mph): <1  1-5  6-10  11-15  >16   
 Wind Direction: NW  N  NE  SW  S  SE  E  W  Variable   
 Cloud Cover: 0-10%  11-40%  41-70%  71-100%   
 Waterbody Characteristics: Waterbody Type: Stream  **NOT FLOWING**  
 Flowing:  Measurable Flow:  Flow Direction Upstream  Downstream  Tidally Influenced:   
 Wind Influence:  Wind Influence Direction: Upstream  Downstream   
 Waterbody Type: Lake  Wind Influence:  Tidally Influenced:   
 Algae Present  Sedimentation/Turbidity Present in Water Column   
 Floating/Aquatic Vegetation % Surface Coverage: <1  1-25%  26-50%  51-75%  76-100%

Water Quality Samples Taken:  Water Quality Field Parameters:  Profiling:

Water Quality Field Parameters

Time: 0845 Temp. (°C): 26.20 pH: 6.87 SpCond (µmhos/cm): 403.0  
 D.O.: 2.60 D.O. %: 31.7 Salinity: 0.20 Depth (m): .3 Secchi (in): .6  
 InSitu Probe ID: 43546

Continuous Monitor Deployed:  Continuous Monitor ID: \_\_\_\_\_  
 Continuous Monitor Retrieved:  Continuous Monitor Depth (m): \_\_\_\_\_  
 Water Level Monitor Deployed:  Instrument ID: \_\_\_\_\_

Flow Measurement:  Type of Measurement: Wading  Stationary  Moving Boat   
 Instrument ID: \_\_\_\_\_  
 Velocity Monitor Deployed  Instrument ID: \_\_\_\_\_

Velocity Estimated:  Drogue Estimate:  Dye Estimate:   
 Right Descending Bank Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_  
 Mid Stream Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_  
 Left Descending Bank Distance (ft): \_\_\_\_\_ Time (s): \_\_\_\_\_

Cross Section Measurement:  Type of Measurement Manual:  Fathometer   
 Fathometer ID: \_\_\_\_\_

GPS Measurement:  Site GPS:  Cross Section GPS:

Photos Taken:  Picture File #s: \_\_\_\_\_

† All work is done within 100 yard radius of Site

Site 3398 Date: 7/25/07

Photos Taken:  Picture File #: \_\_\_\_\_

Tapedown Established:  Tapedown Location: \_\_\_\_\_  
 Benchmark Established:  Benchmark Location: \_\_\_\_\_  
 Survey Equipment Used:

Time of Travel Measurement:  Type of Site: Injection  Collection   
 Amount of Dye Injected (ml): \_\_\_\_\_

Physical Site Characteristics: Natural Waterbody:  Man Altered Waterbody:   
 Man-Made Waterbody:   
 Stream Dry/Intermittent:   
 Stream Bottom: Sandy  Clay  Gravel  Hard Clay  Soft Silt   
 Sand/Silt  Rock/Gravel/Silt  Concrete   
 Control Structure Present:  Location: \_\_\_\_\_  
 Type: Man Made Dam  Flow Regulation Device  Beaver Dam  Log Jam   
 Land Use: Agriculture  Forestry  Municipal  Industrial  Field/Pasture  Wetland   
 Percent Tree Canopy Cover 0-25%  26-50%  51-75%  76-100%

Recon Information:  
 Discharge Measurement: Wading  Boat  Stream Depth (ft): \_\_\_\_\_  
 Continuous Monitor Deployment: Fixed  Bouy   
 Boat Accessible:  Nearest Launch: \_\_\_\_\_  
 Bridge  Bridge Safe  Bridge Height: \_\_\_\_\_

Profiling Measurements:  
 Time: \_\_\_\_\_ Temp. (°C): \_\_\_\_\_ pH: \_\_\_\_\_ Spcond(µhos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_  
 Time: \_\_\_\_\_ Temp. (°C): \_\_\_\_\_ pH: \_\_\_\_\_ Spcond(µhos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_  
 Time: \_\_\_\_\_ Temp. (°C): \_\_\_\_\_ pH: \_\_\_\_\_ Spcond(µhos/cm): \_\_\_\_\_  
 D.O.: \_\_\_\_\_ D.O. %: \_\_\_\_\_ Salinity: \_\_\_\_\_ Depth (m): \_\_\_\_\_

Comments:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
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References

Convert Feet to Meters	Convert Celsius to Fahrenheit	
0.5 ft ≈ 0.15 m	20 ≈ 68	25 ≈ 77
1.0 ft ≈ 0.30 m	21 ≈ 69.8	26 ≈ 78.8
1.5 ft ≈ 0.45 m	22 ≈ 71.6	27 ≈ 80.6
2.0 ft ≈ 0.60 m	23 ≈ 73.4	28 ≈ 82.4
2.5 ft ≈ 0.75 m	24 ≈ 75.2	29 ≈ 84.2



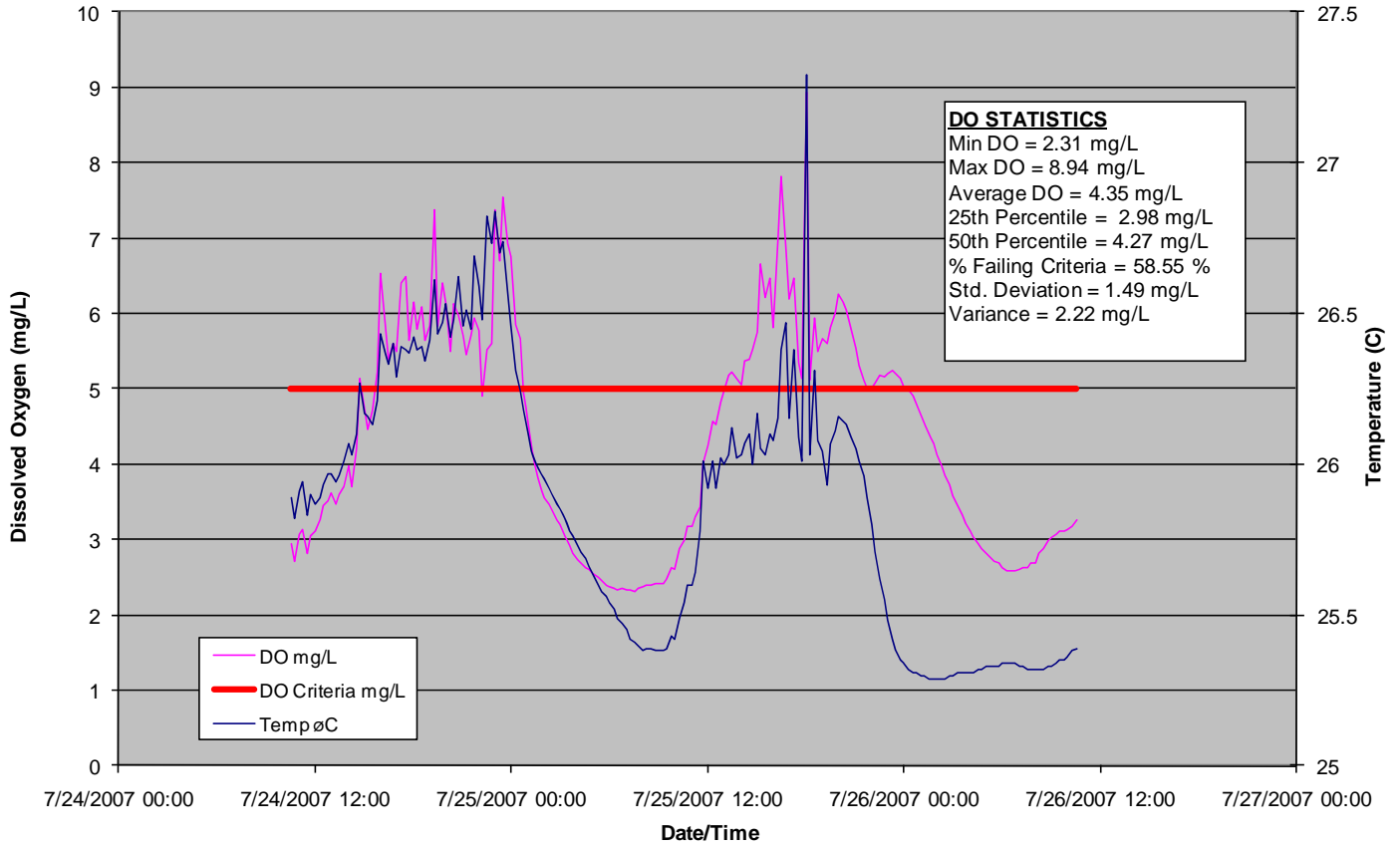
**Appendix F4 – Continuous Monitor**



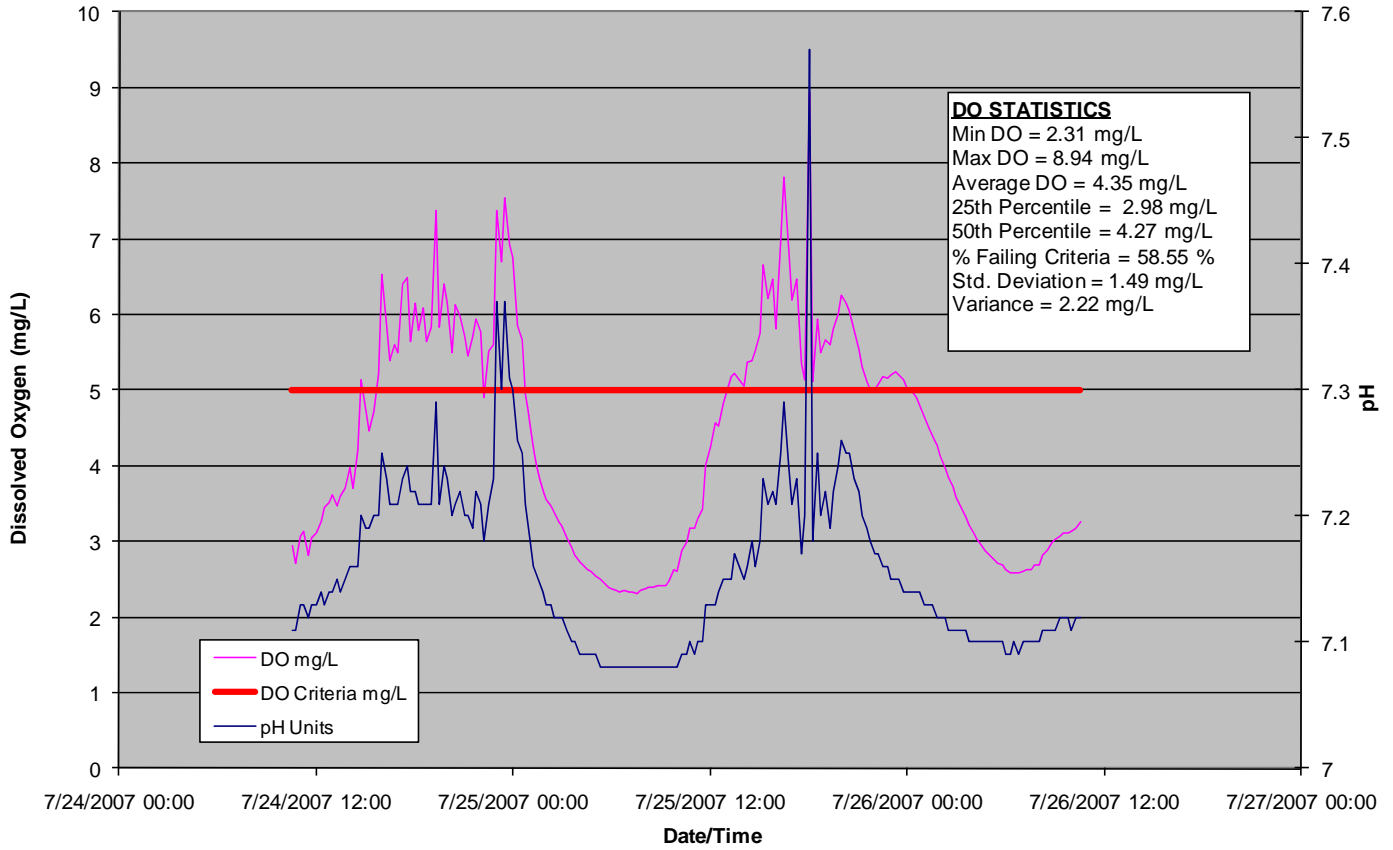
<b>Gray's Creek 040304 - Continuous Monitor Data Summary</b>							
<b>Site</b>		<b>Temp (C)</b>	<b>pH (units)</b>	<b>SpCond (umhos/cm)</b>	<b>DO % Sat</b>	<b>DO (mg/L)</b>	<b>Salinity (ppt)</b>
<b>GC01 (3459)</b>	<b>Average</b>	28.92	6.97	115.119	76.99	5.83	0.05
	<b>Minimum</b>	25.11	6.57	67.000	13.70	1.11	0.02
	<b>Maximum</b>	32.20	8.28	225.000	142.60	10.46	0.11
<b>GC02 (0239)</b>	<b>Average</b>	25.86	7.16	297.860	53.62	4.35	0.14
	<b>Minimum</b>	25.29	7.08	247.000	28.20	2.31	0.12
	<b>Maximum</b>	27.29	7.57	313.000	112.90	8.94	0.15
<b>GC03 (2291)</b>	<b>Average</b>	25.97	7.30	347.487	49.51	3.99	0.17
	<b>Minimum</b>	22.01	7.03	219.000	27.30	2.27	0.10
	<b>Maximum</b>	28.28	7.76	2095.000	92.40	8.02	1.12
<b>GC04 (3384)</b>	<b>Average</b>	25.76	7.13	392.536	41.49	3.36	0.19
	<b>Minimum</b>	24.70	7.04	378.000	18.00	1.48	0.19
	<b>Maximum</b>	27.10	7.32	408.000	89.70	7.21	0.20
<b>GC06 (3386)</b>	<b>Average</b>	24.86	7.29	432.153	10.00	0.83	0.22
	<b>Minimum</b>	23.88	7.09	421.000	0.60	0.05	0.21
	<b>Maximum</b>	26.01	7.36	445.000	36.10	2.99	0.22
<b>GC07 (3387)</b>	<b>Average</b>	26.09	7.18	418.000	1.40	0.69	0.21
	<b>Minimum</b>	29.77	7.39	446.000	24.90	0.11	0.22
	<b>Maximum</b>	27.68	7.27	433.193	8.78	1.91	0.22
<b>GC08 (3388)</b>	<b>Average</b>	25.62	6.74	308.146	7.17	0.58	0.15
	<b>Minimum</b>	24.86	6.61	299.000	3.00	0.24	0.14
	<b>Maximum</b>	26.47	6.79	321.000	13.40	1.08	0.16
<b>GC09 (3389)</b>	<b>Average</b>	28.76	8.95	357.794	89.76	6.77	0.18
	<b>Minimum</b>	24.05	7.75	326.000	45.00	3.54	0.16
	<b>Maximum</b>	36.69	10.52	390.000	167.60	11.59	0.19
<b>GC10 (3390)</b>	<b>Average</b>	26.69	6.87	403.870	41.21	3.28	0.20
	<b>Minimum</b>	25.42	6.71	301.000	11.20	0.91	0.15
	<b>Maximum</b>	28.31	7.08	470.000	71.40	5.57	0.24
<b>GCL01 (3391)</b>	<b>Average</b>	30.38	7.09	66.922	102.14	7.66	0.02
	<b>Minimum</b>	29.49	6.73	65.000	78.80	6.00	0.02
	<b>Maximum</b>	31.30	8.28	71.000	134.70	9.96	0.02
<b>GC09A (3460)</b>	<b>Average</b>	26.23	6.67	367.078	46.94	3.77	0.18
	<b>Minimum</b>	25.06	6.61	316.000	24.00	1.98	0.15
	<b>Maximum</b>	27.57	6.77	423.000	85.80	6.78	0.21

Gray's Creek Initial Conditions								
Reach	Temp	Source	Salinity	Source	DO	Source	Chl A	Source
Reach 1	27.73	Cont Mont Avg (GC09, GC10)	0.19	Cont Mont Avg (GC09, GC10)	3.23	Cont Mont (Min + 1) Avg (GC09, GC10)	5.4	GC10
Reach 2	27.19	Cont Mont Avg (GC08, GC09)	0.16	Cont Mont Avg (GC08, GC09)	2.89	Cont Mont (Min + 1) Avg (GC08, GC09)	2.8	GC09
Reach 3	25.85	Cont Mont Avg (GC07, GC08)	0.18	Cont Mont Avg (GC07, GC08)	1.18	Cont Mont (Min + 1) Avg (GC07, GC08)	1.1	GC08
Reach 4	25.85	Cont Mont Avg (GC07, GC08)	0.18	Cont Mont Avg (GC07, GC08)	1.18	Cont Mont (Min + 1) Avg (GC07, GC08)	1.1	GC08
Reach 5	25.85	Cont Mont Avg (GC07, GC08)	0.18	Cont Mont Avg (GC07, GC08)	1.18	Cont Mont (Min + 1) Avg (GC07, GC08)	237	GC07
Reach 6	26.84	Cont Mont Avg (GC06, GC07)	0.21	Cont Mont Avg (GC06, GC07)	1.08	Cont Mont (Min + 1) Avg (GC06, GC07)	237	GC07
Reach 7	26.56	Cont Mont Avg (GC04, GC06)	0.21	Cont Mont Avg (GC04, GC06)	1.77	Cont Mont (Min + 1) Avg (GC04, GC06)	259	GC06
Reach 8	27.69	Cont Mont Avg (GC03, GC04)	0.18	Cont Mont Avg (GC03, GC04)	2.88	Cont Mont (Min + 1) Avg (GC03, GC04)	142	GC04
Reach 9	27.79	Cont Mont Avg (GC02, GC03)	0.16	Cont Mont Avg (GC02, GC03)	3.29	Cont Mont (Min + 1) Avg (GC02, GC03)	109	GC03
Reach 10	27.39	Cont Mont Avg (GC01, GC02)	0.09	Cont Mont Avg (GC01, GC02)	2.71	Cont Mont (Min + 1) Avg (GC01, GC02)	106	GC02
Reach 11	29.65	Cont Mont Avg (GCL01, GC01)	0.03	Cont Mont Avg (GCL01, GC01)	4.56	Cont Mont (Min + 1) Avg (GCL01, GC01)	80.0	GC01

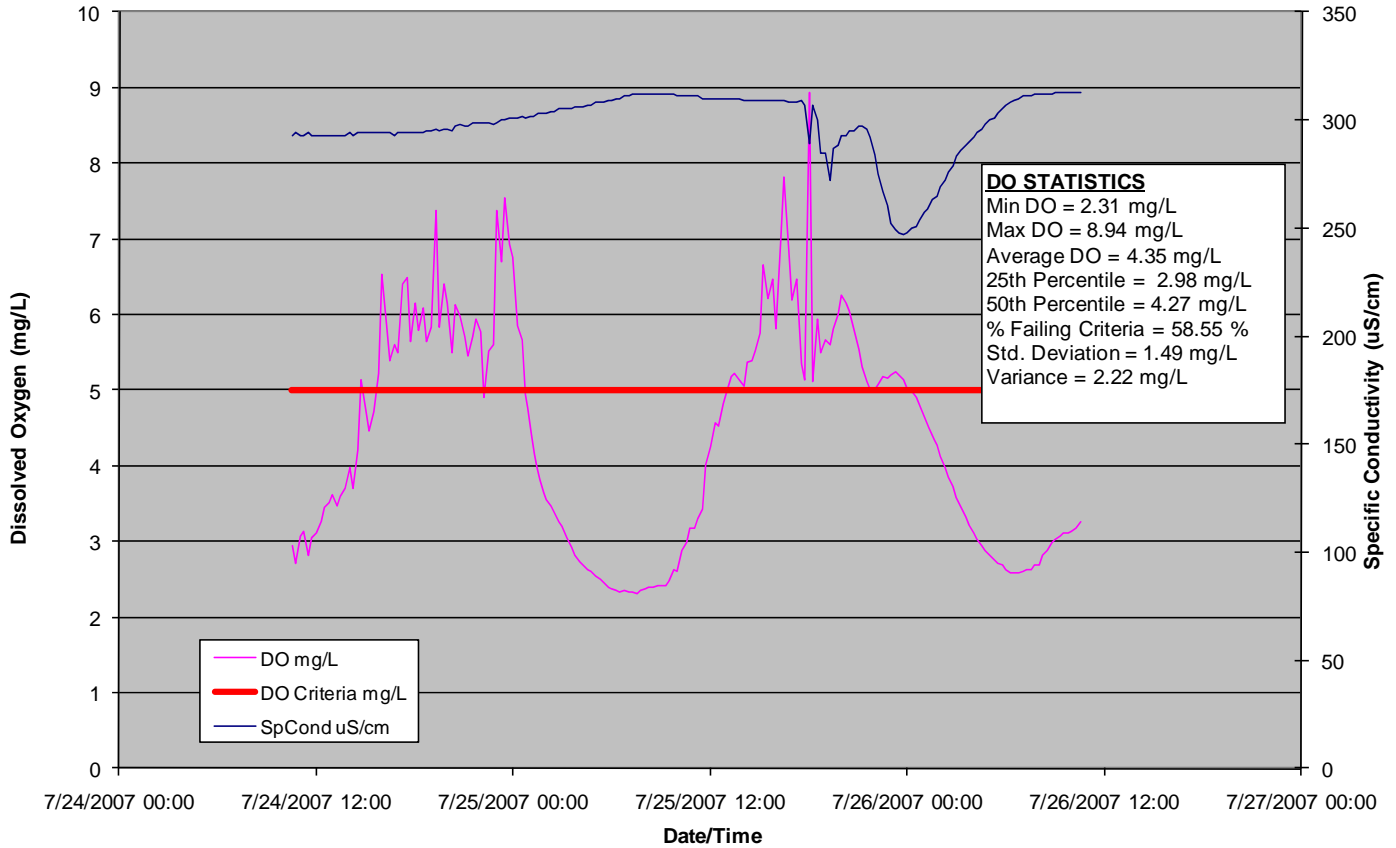
**Site Number: 0239 GC-02, Site Name: GC downstream of Hwy 1032  
Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time**



**Site Number: 0239 GC-02, Site Name: GC downstream of Hwy 1032**  
**Subsegment: 040304, DO & pH vs. Date/Time**



**Site Number: 0239 GC-02, Site Name: GC downstream of Hwy 1032**  
**Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 0239 GC-02 Site Name: GC downstream of Hwy 1032						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
Average	25.86	7.16	297.86	53.62	4.35	0.14
Minimum	25.29	7.08	247.00	28.20	2.31	0.12
Maximum	27.29	7.57	313.00	112.90	8.94	0.15
Geometric Mean	25.86	7.16			4.09	0.14
25th Percentile	25.39	7.10	294.00	36.40	2.98	0.14
30th Percentile	25.44	7.11	294.00	37.96	3.11	0.14
40th Percentile	25.71	7.13	296.00	42.68	3.47	0.14
50th Percentile	25.92	7.14	300.00	52.50	4.27	0.15
Standard Deviation	0.44	0.07	15.20	18.71	1.49	0.01
Variance	0.20	0.00	231.13	349.97	2.22	
Data Row Count			193			
Total Values						
Failing DO Criteria			113			
Percent failing DO Criteria			58.55 %			

### Grays Creek Subsegment 040304 Site 0239 GC-02 Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO	DO	SALINITY	Is DO <	DO
MMDDYY	HHMM	MMDDYYYY	øC	Units	uS/cm	PERCENT	mg/L	ppt	Criteria	Criteria
		HHMM				Sat			5	mg/L
7/24/2007	10:30	7/24/2007 10:30	25.89	7.11	293	36.4	2.95	0.14	1	5
7/24/2007	10:45	7/24/2007 10:45	25.82	7.11	294	33.4	2.71	0.14	1	5
7/24/2007	11:00	7/24/2007 11:00	25.91	7.13	293	37.7	3.06	0.14	1	5
7/24/2007	11:15	7/24/2007 11:15	25.94	7.13	293	38.5	3.13	0.14	1	5
7/24/2007	11:30	7/24/2007 11:30	25.83	7.12	294	34.7	2.82	0.14	1	5
7/24/2007	11:45	7/24/2007 11:45	25.9	7.13	293	37.6	3.05	0.14	1	5
7/24/2007	12:00	7/24/2007 12:00	25.87	7.13	293	38.2	3.11	0.14	1	5
7/24/2007	12:15	7/24/2007 12:15	25.89	7.14	293	40.2	3.27	0.14	1	5
7/24/2007	12:30	7/24/2007 12:30	25.93	7.13	293	42.5	3.45	0.14	1	5
7/24/2007	12:45	7/24/2007 12:45	25.97	7.14	293	43.5	3.52	0.14	1	5
7/24/2007	13:00	7/24/2007 13:00	25.97	7.14	293	44.6	3.62	0.14	1	5
7/24/2007	13:15	7/24/2007 13:15	25.94	7.15	293	42.6	3.46	0.14	1	5
7/24/2007	13:30	7/24/2007 13:30	25.96	7.14	293	44.4	3.6	0.14	1	5
7/24/2007	13:45	7/24/2007 13:45	26.01	7.15	293	45.7	3.7	0.14	1	5
7/24/2007	14:00	7/24/2007 14:00	26.07	7.16	294	49	3.97	0.14	1	5
7/24/2007	14:15	7/24/2007 14:15	26.03	7.16	293	45.7	3.71	0.14	1	5
7/24/2007	14:30	7/24/2007 14:30	26.1	7.16	294	52.1	4.21	0.14	1	5
7/24/2007	14:45	7/24/2007 14:45	26.27	7.2	294	63.8	5.14	0.14	0	5
7/24/2007	15:00	7/24/2007 15:00	26.17	7.19	294	58.6	4.74	0.14	1	5
7/24/2007	15:15	7/24/2007 15:15	26.16	7.19	294	55.2	4.46	0.14	1	5
7/24/2007	15:30	7/24/2007 15:30	26.13	7.2	294	58.3	4.72	0.14	1	5
7/24/2007	15:45	7/24/2007 15:45	26.21	7.2	294	64.7	5.22	0.14	0	5
7/24/2007	16:00	7/24/2007 16:00	26.43	7.25	294	81.1	6.52	0.14	0	5
7/24/2007	16:15	7/24/2007 16:15	26.37	7.23	294	72.8	5.86	0.14	0	5
7/24/2007	16:30	7/24/2007 16:30	26.33	7.21	294	66.9	5.39	0.14	0	5
7/24/2007	16:45	7/24/2007 16:45	26.4	7.21	293	69.6	5.6	0.14	0	5
7/24/2007	17:00	7/24/2007 17:00	26.29	7.21	294	68.1	5.5	0.14	0	5
7/24/2007	17:15	7/24/2007 17:15	26.39	7.23	294	79.7	6.41	0.14	0	5
7/24/2007	17:30	7/24/2007 17:30	26.38	7.24	294	80.5	6.48	0.14	0	5
7/24/2007	17:45	7/24/2007 17:45	26.37	7.22	294	70.1	5.64	0.14	0	5
7/24/2007	18:00	7/24/2007 18:00	26.42	7.22	294	76.6	6.16	0.14	0	5
7/24/2007	18:15	7/24/2007 18:15	26.38	7.21	294	72.1	5.8	0.14	0	5
7/24/2007	18:30	7/24/2007 18:30	26.39	7.21	294	75.6	6.09	0.14	0	5
7/24/2007	18:45	7/24/2007 18:45	26.34	7.21	295	70	5.64	0.14	0	5
7/24/2007	19:00	7/24/2007 19:00	26.41	7.21	295	72.6	5.84	0.14	0	5
7/24/2007	19:15	7/24/2007 19:15	26.61	7.29	296	92	7.38	0.14	0	5
7/24/2007	19:30	7/24/2007 19:30	26.43	7.21	295	72.4	5.83	0.14	0	5
7/24/2007	19:45	7/24/2007 19:45	26.47	7.24	296	79.8	6.41	0.14	0	5
7/24/2007	20:00	7/24/2007 20:00	26.53	7.23	296	76.6	6.15	0.14	0	5
7/24/2007	20:15	7/24/2007 20:15	26.42	7.2	295	68.3	5.5	0.14	0	5
7/24/2007	20:30	7/24/2007 20:30	26.48	7.21	297	76.3	6.13	0.14	0	5
7/24/2007	20:45	7/24/2007 20:45	26.62	7.22	298	74.7	5.99	0.14	0	5
7/24/2007	21:00	7/24/2007 21:00	26.46	7.2	297	71	5.71	0.14	0	5
7/24/2007	21:15	7/24/2007 21:15	26.51	7.2	297	67.8	5.45	0.14	0	5



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	21:30	7/24/2007 21:30	26.45	7.19	299	71	5.71	0.14	0	5
7/24/2007	21:45	7/24/2007 21:45	26.69	7.22	299	74.1	5.93	0.15	0	5
7/24/2007	22:00	7/24/2007 22:00	26.59	7.21	299	71.8	5.76	0.15	0	5
7/24/2007	22:15	7/24/2007 22:15	26.48	7.18	299	61	4.9	0.14	1	5
7/24/2007	22:30	7/24/2007 22:30	26.82	7.21	299	69	5.51	0.14	0	5
7/24/2007	22:45	7/24/2007 22:45	26.73	7.23	298	70.1	5.61	0.14	0	5
7/24/2007	23:00	7/24/2007 23:00	26.84	7.37	299	92.4	7.38	0.15	0	5
7/24/2007	23:15	7/24/2007 23:15	26.7	7.3	300	83.7	6.7	0.15	0	5
7/24/2007	23:30	7/24/2007 23:30	26.74	7.37	300	94.5	7.55	0.15	0	5
7/24/2007	23:45	7/24/2007 23:45	26.57	7.31	301	86.3	6.93	0.15	0	5
7/25/2007	0:00	7/25/2007 00:00	26.46	7.3	301	84.2	6.77	0.15	0	5
7/25/2007	0:15	7/25/2007 00:15	26.31	7.26	301	72.7	5.86	0.15	0	5
7/25/2007	0:30	7/25/2007 00:30	26.24	7.25	302	70.2	5.66	0.15	0	5
7/25/2007	0:45	7/25/2007 00:45	26.18	7.21	301	61.1	4.94	0.15	1	5
7/25/2007	1:00	7/25/2007 01:00	26.1	7.18	302	56.2	4.55	0.15	1	5
7/25/2007	1:15	7/25/2007 01:15	26.04	7.16	302	52	4.22	0.15	1	5
7/25/2007	1:30	7/25/2007 01:30	26	7.15	303	48.4	3.92	0.15	1	5
7/25/2007	1:45	7/25/2007 01:45	25.97	7.14	303	45.4	3.68	0.15	1	5
7/25/2007	2:00	7/25/2007 02:00	25.95	7.13	303	43.7	3.55	0.15	1	5
7/25/2007	2:15	7/25/2007 02:15	25.92	7.13	304	42.7	3.47	0.15	1	5
7/25/2007	2:30	7/25/2007 02:30	25.9	7.12	304	41.6	3.38	0.15	1	5
7/25/2007	2:45	7/25/2007 02:45	25.87	7.12	305	40.3	3.27	0.15	1	5
7/25/2007	3:00	7/25/2007 03:00	25.85	7.12	305	39.3	3.19	0.15	1	5
7/25/2007	3:15	7/25/2007 03:15	25.82	7.11	305	37.5	3.05	0.15	1	5
7/25/2007	3:30	7/25/2007 03:30	25.78	7.1	305	35.9	2.92	0.15	1	5
7/25/2007	3:45	7/25/2007 03:45	25.76	7.1	306	34.6	2.82	0.15	1	5
7/25/2007	4:00	7/25/2007 04:00	25.73	7.09	306	33.6	2.74	0.15	1	5
7/25/2007	4:15	7/25/2007 04:15	25.71	7.09	306	33.2	2.7	0.15	1	5
7/25/2007	4:30	7/25/2007 04:30	25.69	7.09	307	32.3	2.63	0.15	1	5
7/25/2007	4:45	7/25/2007 04:45	25.66	7.09	307	32	2.61	0.15	1	5
7/25/2007	5:00	7/25/2007 05:00	25.63	7.09	308	31.3	2.55	0.15	1	5
7/25/2007	5:15	7/25/2007 05:15	25.6	7.08	308	30.5	2.49	0.15	1	5
7/25/2007	5:30	7/25/2007 05:30	25.58	7.08	308	30.1	2.46	0.15	1	5
7/25/2007	5:45	7/25/2007 05:45	25.56	7.08	309	29.3	2.39	0.15	1	5
7/25/2007	6:00	7/25/2007 06:00	25.54	7.08	309	29.1	2.38	0.15	1	5
7/25/2007	6:15	7/25/2007 06:15	25.52	7.08	310	28.9	2.36	0.15	1	5
7/25/2007	6:30	7/25/2007 06:30	25.49	7.08	310	28.6	2.34	0.15	1	5
7/25/2007	6:45	7/25/2007 06:45	25.47	7.08	311	28.7	2.35	0.15	1	5
7/25/2007	7:00	7/25/2007 07:00	25.45	7.08	311	28.5	2.33	0.15	1	5
7/25/2007	7:15	7/25/2007 07:15	25.42	7.08	312	28.5	2.33	0.15	1	5
7/25/2007	7:30	7/25/2007 07:30	25.41	7.08	312	28.2	2.31	0.15	1	5
7/25/2007	7:45	7/25/2007 07:45	25.4	7.08	312	28.6	2.35	0.15	1	5
7/25/2007	8:00	7/25/2007 08:00	25.38	7.08	312	28.9	2.37	0.15	1	5
7/25/2007	8:15	7/25/2007 08:15	25.39	7.08	312	29.2	2.39	0.15	1	5
7/25/2007	8:30	7/25/2007 08:30	25.39	7.08	312	29.1	2.39	0.15	1	5
7/25/2007	8:45	7/25/2007 08:45	25.38	7.08	312	29.4	2.41	0.15	1	5
7/25/2007	9:00	7/25/2007 09:00	25.38	7.08	312	29.5	2.42	0.15	1	5
7/25/2007	9:15	7/25/2007 09:15	25.38	7.08	312	29.5	2.42	0.15	1	5
7/25/2007	9:30	7/25/2007 09:30	25.39	7.08	312	30.2	2.48	0.15	1	5
7/25/2007	9:45	7/25/2007 09:45	25.43	7.08	312	32.1	2.63	0.15	1	5

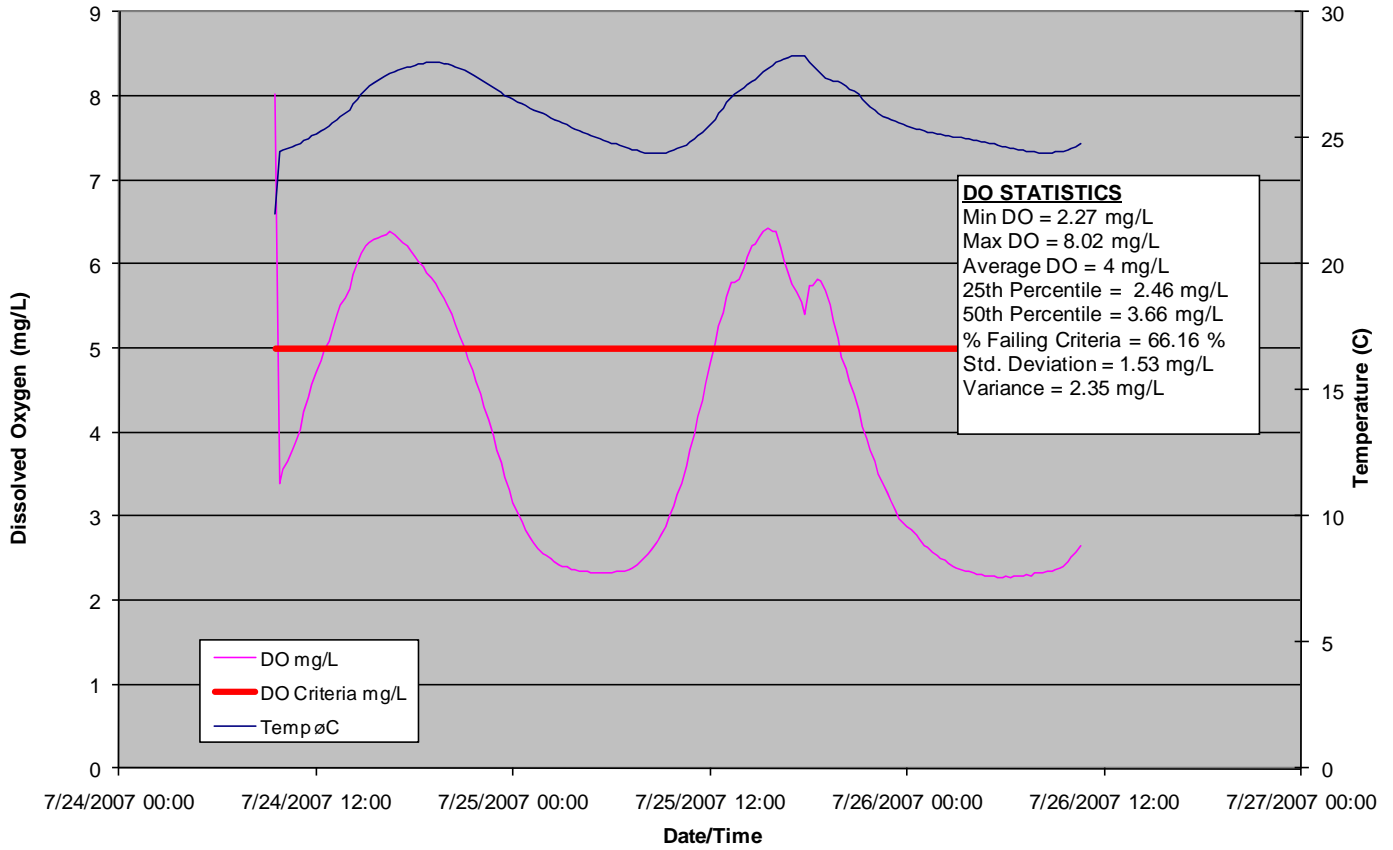
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	10:00	7/25/2007 10:00	25.42	7.08	311	31.7	2.6	0.15	1	5
7/25/2007	10:15	7/25/2007 10:15	25.49	7.09	311	35.4	2.89	0.15	1	5
7/25/2007	10:30	7/25/2007 10:30	25.54	7.09	311	36.5	2.98	0.15	1	5
7/25/2007	10:45	7/25/2007 10:45	25.6	7.1	311	39	3.18	0.15	1	5
7/25/2007	11:00	7/25/2007 11:00	25.6	7.09	311	38.8	3.17	0.15	1	5
7/25/2007	11:15	7/25/2007 11:15	25.64	7.1	311	40.5	3.3	0.15	1	5
7/25/2007	11:30	7/25/2007 11:30	25.78	7.1	310	42.1	3.43	0.15	1	5
7/25/2007	11:45	7/25/2007 11:45	26.01	7.13	310	49.4	4.01	0.15	1	5
7/25/2007	12:00	7/25/2007 12:00	25.92	7.13	310	52.5	4.26	0.15	1	5
7/25/2007	12:15	7/25/2007 12:15	26.01	7.13	310	56.2	4.56	0.15	1	5
7/25/2007	12:30	7/25/2007 12:30	25.92	7.14	310	55.6	4.52	0.15	1	5
7/25/2007	12:45	7/25/2007 12:45	26.02	7.15	310	59.5	4.82	0.15	1	5
7/25/2007	13:00	7/25/2007 13:00	26	7.15	310	61.3	4.97	0.15	1	5
7/25/2007	13:15	7/25/2007 13:15	26.03	7.15	310	64	5.18	0.15	0	5
7/25/2007	13:30	7/25/2007 13:30	26.12	7.17	310	64.6	5.22	0.15	0	5
7/25/2007	13:45	7/25/2007 13:45	26.02	7.16	310	63.5	5.14	0.15	0	5
7/25/2007	14:00	7/25/2007 14:00	26.03	7.15	309	62.3	5.05	0.15	0	5
7/25/2007	14:15	7/25/2007 14:15	26.07	7.16	309	66.2	5.36	0.15	0	5
7/25/2007	14:30	7/25/2007 14:30	26.1	7.18	309	66.6	5.38	0.15	0	5
7/25/2007	14:45	7/25/2007 14:45	26	7.16	309	68.1	5.52	0.15	0	5
7/25/2007	15:00	7/25/2007 15:00	26.17	7.18	309	71.1	5.74	0.15	0	5
7/25/2007	15:15	7/25/2007 15:15	26.05	7.23	309	82.3	6.66	0.15	0	5
7/25/2007	15:30	7/25/2007 15:30	26.03	7.21	309	76.8	6.22	0.15	0	5
7/25/2007	15:45	7/25/2007 15:45	26.1	7.22	309	79.9	6.47	0.15	0	5
7/25/2007	16:00	7/25/2007 16:00	26.08	7.21	309	71.9	5.82	0.15	0	5
7/25/2007	16:15	7/25/2007 16:15	26.15	7.25	309	86.2	6.97	0.15	0	5
7/25/2007	16:30	7/25/2007 16:30	26.38	7.29	309	97.1	7.82	0.15	0	5
7/25/2007	16:45	7/25/2007 16:45	26.47	7.24	308	85.4	6.86	0.15	0	5
7/25/2007	17:00	7/25/2007 17:00	26.15	7.21	308	76.5	6.19	0.15	0	5
7/25/2007	17:15	7/25/2007 17:15	26.38	7.23	308	80.4	6.47	0.15	0	5
7/25/2007	17:30	7/25/2007 17:30	26.09	7.17	309	66.1	5.35	0.15	0	5
7/25/2007	17:45	7/25/2007 17:45	26.01	7.2	307	63.3	5.13	0.15	0	5
7/25/2007	18:00	7/25/2007 18:00	27.29	7.57	289	112.9	8.94	0.14	0	5
7/25/2007	18:15	7/25/2007 18:15	26.03	7.18	307	63.2	5.12	0.15	0	5
7/25/2007	18:30	7/25/2007 18:30	26.31	7.25	300	73.6	5.93	0.15	0	5
7/25/2007	18:45	7/25/2007 18:45	26.08	7.2	285	67.8	5.49	0.14	0	5
7/25/2007	19:00	7/25/2007 19:00	26.04	7.22	285	70	5.67	0.14	0	5
7/25/2007	19:15	7/25/2007 19:15	25.93	7.19	272	69.1	5.61	0.13	0	5
7/25/2007	19:30	7/25/2007 19:30	26.07	7.22	287	71.8	5.81	0.14	0	5
7/25/2007	19:45	7/25/2007 19:45	26.11	7.24	288	74.1	6	0.14	0	5
7/25/2007	20:00	7/25/2007 20:00	26.16	7.26	293	77.3	6.25	0.14	0	5
7/25/2007	20:15	7/25/2007 20:15	26.14	7.25	293	76	6.14	0.14	0	5
7/25/2007	20:30	7/25/2007 20:30	26.13	7.25	295	74.6	6.04	0.14	0	5
7/25/2007	20:45	7/25/2007 20:45	26.09	7.23	295	71.6	5.8	0.14	0	5
7/25/2007	21:00	7/25/2007 21:00	26.05	7.22	297	68.4	5.54	0.14	0	5
7/25/2007	21:15	7/25/2007 21:15	26.01	7.2	297	65.3	5.3	0.14	0	5
7/25/2007	21:30	7/25/2007 21:30	25.96	7.19	296	63	5.11	0.14	0	5
7/25/2007	21:45	7/25/2007 21:45	25.89	7.18	292	61.8	5.02	0.14	0	5
7/25/2007	22:00	7/25/2007 22:00	25.8	7.17	284	61.6	5.01	0.14	0	5
7/25/2007	22:15	7/25/2007 22:15	25.71	7.17	275	62.1	5.07	0.13	0	5

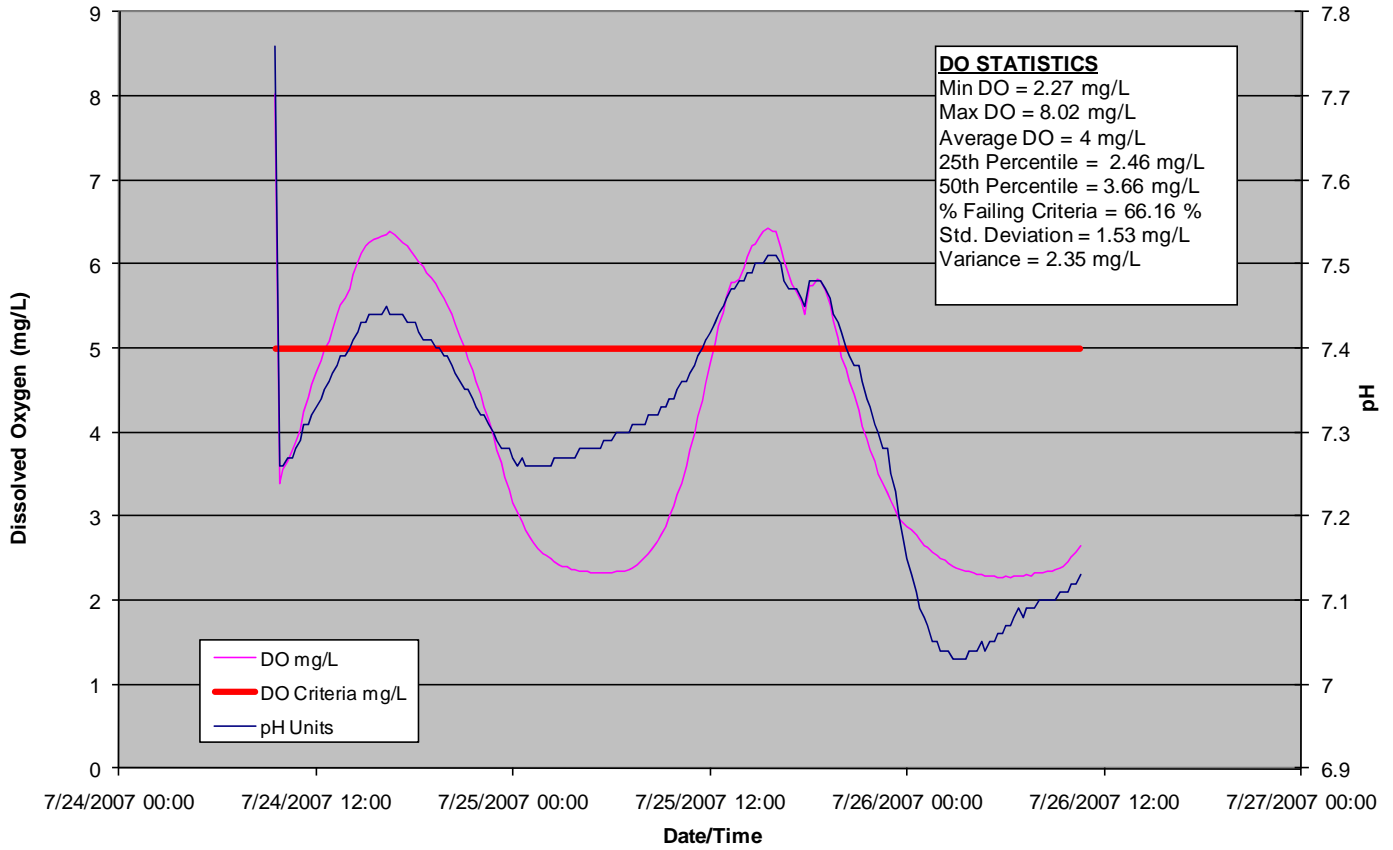
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	22:30	7/25/2007 22:30	25.62	7.16	267	63.3	5.17	0.13	0	5
7/25/2007	22:45	7/25/2007 22:45	25.55	7.16	260	63	5.15	0.12	0	5
7/25/2007	23:00	7/25/2007 23:00	25.48	7.15	252	63.5	5.2	0.12	0	5
7/25/2007	23:15	7/25/2007 23:15	25.42	7.15	249	63.9	5.24	0.12	0	5
7/25/2007	23:30	7/25/2007 23:30	25.38	7.15	248	63.4	5.2	0.12	0	5
7/25/2007	23:45	7/25/2007 23:45	25.35	7.14	247	62.6	5.14	0.12	0	5
7/26/2007	0:00	7/26/2007 00:00	25.34	7.14	248	61.3	5.03	0.12	0	5
7/26/2007	0:15	7/26/2007 00:15	25.32	7.14	250	60.8	4.99	0.12	1	5
7/26/2007	0:30	7/26/2007 00:30	25.31	7.14	251	59.8	4.91	0.12	1	5
7/26/2007	0:45	7/26/2007 00:45	25.31	7.14	254	58.4	4.79	0.12	1	5
7/26/2007	1:00	7/26/2007 01:00	25.3	7.13	257	56.8	4.66	0.12	1	5
7/26/2007	1:15	7/26/2007 01:15	25.3	7.13	259	55.4	4.55	0.12	1	5
7/26/2007	1:30	7/26/2007 01:30	25.29	7.13	263	53.6	4.4	0.13	1	5
7/26/2007	1:45	7/26/2007 01:45	25.29	7.12	265	52	4.27	0.13	1	5
7/26/2007	2:00	7/26/2007 02:00	25.29	7.12	269	50.1	4.12	0.13	1	5
7/26/2007	2:15	7/26/2007 02:15	25.29	7.12	272	48.4	3.98	0.13	1	5
7/26/2007	2:30	7/26/2007 02:30	25.29	7.11	276	46.8	3.84	0.13	1	5
7/26/2007	2:45	7/26/2007 02:45	25.3	7.11	279	45.3	3.72	0.13	1	5
7/26/2007	3:00	7/26/2007 03:00	25.3	7.11	283	43.6	3.58	0.14	1	5
7/26/2007	3:15	7/26/2007 03:15	25.31	7.11	286	42.1	3.45	0.14	1	5
7/26/2007	3:30	7/26/2007 03:30	25.31	7.11	288	40.6	3.33	0.14	1	5
7/26/2007	3:45	7/26/2007 03:45	25.31	7.1	290	39.1	3.21	0.14	1	5
7/26/2007	4:00	7/26/2007 04:00	25.31	7.1	292	37.9	3.11	0.14	1	5
7/26/2007	4:15	7/26/2007 04:15	25.31	7.1	294	36.9	3.03	0.14	1	5
7/26/2007	4:30	7/26/2007 04:30	25.32	7.1	296	35.9	2.95	0.14	1	5
7/26/2007	4:45	7/26/2007 04:45	25.32	7.1	298	35.2	2.89	0.14	1	5
7/26/2007	5:00	7/26/2007 05:00	25.33	7.1	300	34.3	2.82	0.15	1	5
7/26/2007	5:15	7/26/2007 05:15	25.33	7.1	301	33.6	2.76	0.15	1	5
7/26/2007	5:30	7/26/2007 05:30	25.33	7.1	303	33	2.71	0.15	1	5
7/26/2007	5:45	7/26/2007 05:45	25.33	7.1	305	32.6	2.68	0.15	1	5
7/26/2007	6:00	7/26/2007 06:00	25.34	7.09	307	31.9	2.62	0.15	1	5
7/26/2007	6:15	7/26/2007 06:15	25.34	7.09	308	31.6	2.59	0.15	1	5
7/26/2007	6:30	7/26/2007 06:30	25.34	7.1	309	31.5	2.59	0.15	1	5
7/26/2007	6:45	7/26/2007 06:45	25.34	7.09	310	31.5	2.58	0.15	1	5
7/26/2007	7:00	7/26/2007 07:00	25.33	7.1	311	31.8	2.61	0.15	1	5
7/26/2007	7:15	7/26/2007 07:15	25.33	7.1	311	32.1	2.63	0.15	1	5
7/26/2007	7:30	7/26/2007 07:30	25.32	7.1	311	31.9	2.62	0.15	1	5
7/26/2007	7:45	7/26/2007 07:45	25.32	7.1	312	32.6	2.68	0.15	1	5
7/26/2007	8:00	7/26/2007 08:00	25.32	7.1	312	32.7	2.69	0.15	1	5
7/26/2007	8:15	7/26/2007 08:15	25.32	7.11	312	34.2	2.81	0.15	1	5
7/26/2007	8:30	7/26/2007 08:30	25.32	7.11	312	35.2	2.89	0.15	1	5
7/26/2007	8:45	7/26/2007 08:45	25.33	7.11	312	36.4	2.98	0.15	1	5
7/26/2007	9:00	7/26/2007 09:00	25.33	7.11	313	36.7	3.02	0.15	1	5
7/26/2007	9:15	7/26/2007 09:15	25.34	7.12	313	37.5	3.08	0.15	1	5
7/26/2007	9:30	7/26/2007 09:30	25.35	7.12	313	38	3.12	0.15	1	5
7/26/2007	9:45	7/26/2007 09:45	25.35	7.12	313	37.9	3.11	0.15	1	5
7/26/2007	10:00	7/26/2007 10:00	25.36	7.11	313	38.3	3.14	0.15	1	5
7/26/2007	10:15	7/26/2007 10:15	25.38	7.12	313	38.8	3.18	0.15	1	5
7/26/2007	10:30	7/26/2007 10:30	25.39	7.12	313	39.8	3.26	0.15	1	5

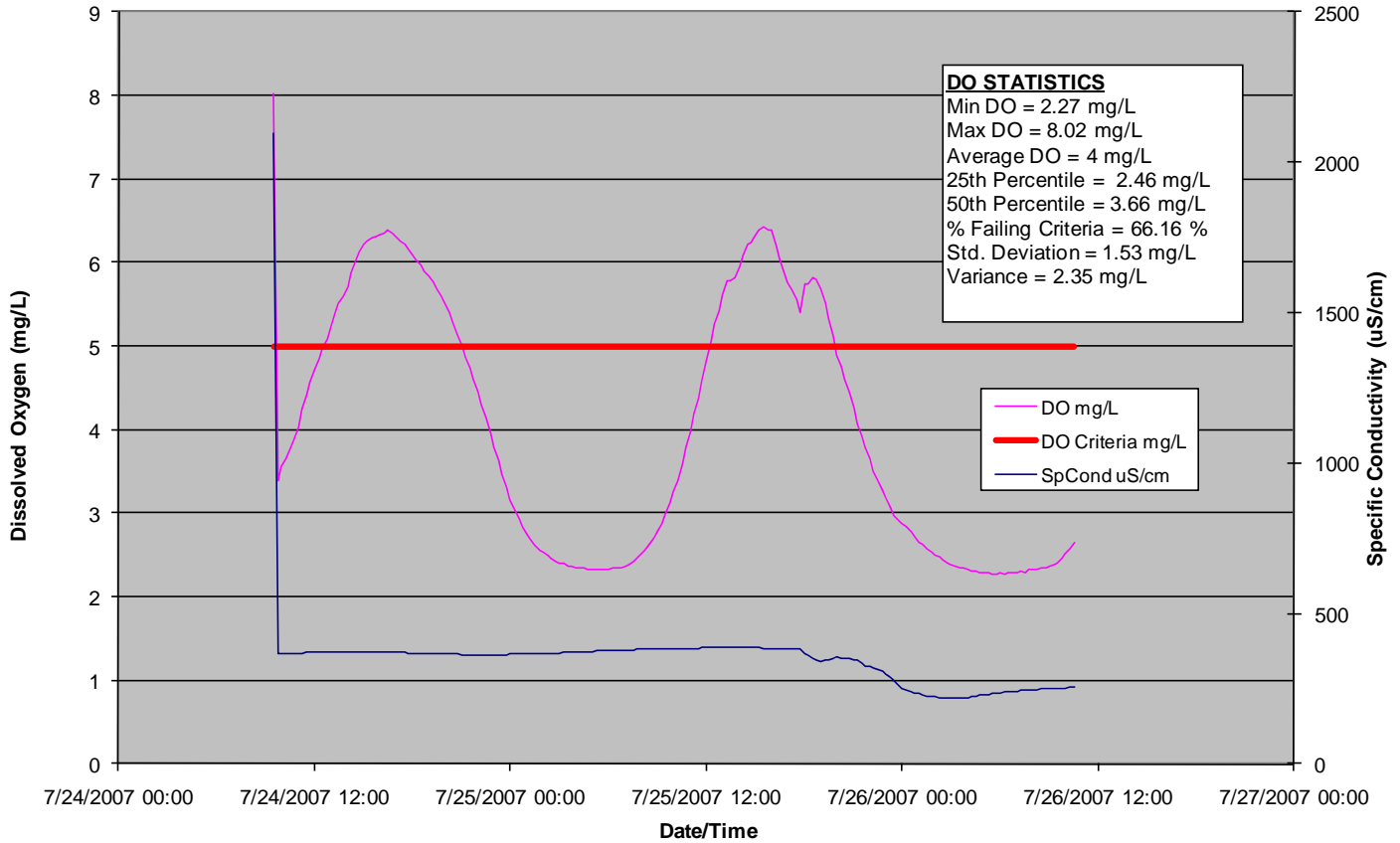
**Site Number: 2291 GC-03, Site Name: GC downstream of Scivicque Road  
Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time**



**Site Number: 2291 GC-03, Site Name: GC downstream of Scivicque Road  
Subsegment: 040304, DO & pH vs. Date/Time**



**Site Number: 2291 GC-03, Site Name: GC downstream of Scivicque Road  
 Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 2291 GC-03 Site Name: GC downstream of Scivicque Road						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
Average	25.97	7.30	347.49	49.51	3.99	0.17
Minimum	22.01	7.03	219.00	27.30	2.27	0.10
Maximum	28.28	7.76	2095.00	92.40	8.02	1.12
Geometric Mean	25.94	7.30			3.70	
25th Percentile	24.83	7.26	319.00	29.60	2.46	0.16
30th Percentile	24.96	7.27	348.60	30.98	2.56	0.17
40th Percentile	25.26	7.28	364.00	35.78	2.92	0.18
50th Percentile	25.66	4.00	368.00	45.10	3.65	0.18
Standard Deviation	1.29	0.14	137.66	19.80	1.53	0.07
Variance	1.66	0.02	18950.52	391.85	2.33	0.01
Data Row Count			197			
Total Values Failing			130			
Percent failing DO Criteria			65.99 %			

### Grays Creek Subsegment 040304 Site 2291 GC-03 Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO	DO	SALINITY	Is DO <	DO
MMDDYY	HHMM	MMDDYYYY	øC	Units	uS/cm	PERCENT	mg/L	ppt	Criteria	Criteria
		HHMM				Sat			5	mg/L
7/24/2007	9:30	7/24/2007 09:30	22.01	7.76	2095	92.4	8.02	1.12	0	5
7/24/2007	9:45	7/24/2007 09:45	24.49	7.26	367	40.7	3.39	0.18	1	5
7/24/2007	10:00	7/24/2007 10:00	24.54	7.26	368	42.7	3.56	0.18	1	5
7/24/2007	10:15	7/24/2007 10:15	24.59	7.27	368	44	3.66	0.18	1	5
7/24/2007	10:30	7/24/2007 10:30	24.66	7.27	368	45.5	3.78	0.18	1	5
7/24/2007	10:45	7/24/2007 10:45	24.71	7.28	369	46.7	3.88	0.18	1	5
7/24/2007	11:00	7/24/2007 11:00	24.78	7.29	369	48.7	4.04	0.18	1	5
7/24/2007	11:15	7/24/2007 11:15	24.88	7.31	369	51.3	4.24	0.18	1	5
7/24/2007	11:30	7/24/2007 11:30	24.99	7.31	370	53.4	4.41	0.18	1	5
7/24/2007	11:45	7/24/2007 11:45	25.09	7.32	370	55.5	4.57	0.18	1	5
7/24/2007	12:00	7/24/2007 12:00	25.17	7.33	371	57.3	4.71	0.18	0	5
7/24/2007	12:15	7/24/2007 12:15	25.28	7.34	371	59.2	4.86	0.18	1	5
7/24/2007	12:30	7/24/2007 12:30	25.37	7.35	371	60.9	4.99	0.18	1	5
7/24/2007	12:45	7/24/2007 12:45	25.45	7.36	372	62.1	5.08	0.18	0	5
7/24/2007	13:00	7/24/2007 13:00	25.57	7.37	372	63.8	5.21	0.18	0	5
7/24/2007	13:15	7/24/2007 13:15	25.71	7.38	372	66.3	5.4	0.18	0	5
7/24/2007	13:30	7/24/2007 13:30	25.83	7.39	372	67.7	5.51	0.18	0	5
7/24/2007	13:45	7/24/2007 13:45	25.95	7.39	372	68.8	5.59	0.18	0	5
7/24/2007	14:00	7/24/2007 14:00	26.13	7.4	372	70.5	5.7	0.18	0	5
7/24/2007	14:15	7/24/2007 14:15	26.35	7.41	372	73	5.88	0.18	0	5
7/24/2007	14:30	7/24/2007 14:30	26.57	7.42	372	75	6.02	0.18	0	5
7/24/2007	14:45	7/24/2007 14:45	26.76	7.43	372	76.7	6.13	0.18	0	5
7/24/2007	15:00	7/24/2007 15:00	26.92	7.43	372	77.9	6.21	0.18	0	5
7/24/2007	15:15	7/24/2007 15:15	27.06	7.44	372	78.7	6.26	0.18	0	5
7/24/2007	15:30	7/24/2007 15:30	27.19	7.44	372	79.3	6.29	0.18	0	5
7/24/2007	15:45	7/24/2007 15:45	27.3	7.44	372	79.7	6.31	0.18	0	5
7/24/2007	16:00	7/24/2007 16:00	27.4	7.44	372	80.2	6.33	0.18	0	5
7/24/2007	16:15	7/24/2007 16:15	27.49	7.45	372	80.6	6.36	0.18	0	5
7/24/2007	16:30	7/24/2007 16:30	27.57	7.44	371	81	6.38	0.18	0	5
7/24/2007	16:45	7/24/2007 16:45	27.63	7.44	371	80.7	6.35	0.18	0	5
7/24/2007	17:00	7/24/2007 17:00	27.69	7.44	371	80.4	6.32	0.18	0	5
7/24/2007	17:15	7/24/2007 17:15	27.74	7.44	370	79.7	6.26	0.18	0	5
7/24/2007	17:30	7/24/2007 17:30	27.8	7.43	370	79.2	6.21	0.18	0	5
7/24/2007	17:45	7/24/2007 17:45	27.84	7.43	369	78.5	6.16	0.18	0	5
7/24/2007	18:00	7/24/2007 18:00	27.89	7.43	369	77.8	6.09	0.18	0	5
7/24/2007	18:15	7/24/2007 18:15	27.93	7.42	368	76.9	6.02	0.18	0	5
7/24/2007	18:30	7/24/2007 18:30	27.96	7.41	368	76.2	5.97	0.18	0	5
7/24/2007	18:45	7/24/2007 18:45	27.99	7.41	368	75.4	5.9	0.18	0	5
7/24/2007	19:00	7/24/2007 19:00	28	7.41	367	74.6	5.83	0.18	0	5
7/24/2007	19:15	7/24/2007 19:15	28.01	7.4	367	73.8	5.77	0.18	0	5
7/24/2007	19:30	7/24/2007 19:30	28	7.4	366	72.8	5.69	0.18	0	5
7/24/2007	19:45	7/24/2007 19:45	27.97	7.39	366	71.6	5.6	0.18	0	5
7/24/2007	20:00	7/24/2007 20:00	27.94	7.39	365	70.3	5.51	0.18	0	5
7/24/2007	20:15	7/24/2007 20:15	27.89	7.38	364	68.9	5.4	0.18	0	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	20:30	7/24/2007 20:30	27.84	7.37	364	67.4	5.28	0.18	0	5
7/24/2007	20:45	7/24/2007 20:45	27.77	7.36	364	65.5	5.14	0.18	0	5
7/24/2007	21:00	7/24/2007 21:00	27.69	7.35	363	63.7	5.01	0.18	0	5
7/24/2007	21:15	7/24/2007 21:15	27.62	7.35	363	61.8	4.87	0.18	1	5
7/24/2007	21:30	7/24/2007 21:30	27.53	7.34	363	60	4.73	0.18	1	5
7/24/2007	21:45	7/24/2007 21:45	27.43	7.33	363	58.3	4.6	0.18	1	5
7/24/2007	22:00	7/24/2007 22:00	27.33	7.32	362	56.3	4.46	0.18	1	5
7/24/2007	22:15	7/24/2007 22:15	27.23	7.32	362	54.3	4.31	0.18	1	5
7/24/2007	22:30	7/24/2007 22:30	27.12	7.31	363	52.1	4.14	0.18	1	5
7/24/2007	22:45	7/24/2007 22:45	27.01	7.3	363	49.8	3.96	0.18	1	5
7/24/2007	23:00	7/24/2007 23:00	26.9	7.29	363	47.6	3.79	0.18	1	5
7/24/2007	23:15	7/24/2007 23:15	26.8	7.28	363	45.4	3.63	0.18	1	5
7/24/2007	23:30	7/24/2007 23:30	26.7	7.28	363	43.3	3.47	0.18	1	5
7/24/2007	23:45	7/24/2007 23:45	26.61	7.28	363	41.3	3.31	0.18	1	5
7/25/2007	0:00	7/25/2007 00:00	26.52	7.27	364	39.4	3.17	0.18	1	5
7/25/2007	0:15	7/25/2007 00:15	26.44	7.26	364	37.8	3.04	0.18	1	5
7/25/2007	0:30	7/25/2007 00:30	26.36	7.27	364	36.4	2.93	0.18	1	5
7/25/2007	0:45	7/25/2007 00:45	26.28	7.26	365	35.1	2.83	0.18	1	5
7/25/2007	1:00	7/25/2007 01:00	26.2	7.26	365	34.1	2.75	0.18	1	5
7/25/2007	1:15	7/25/2007 01:15	26.12	7.26	366	33.2	2.68	0.18	1	5
7/25/2007	1:30	7/25/2007 01:30	26.04	7.26	366	32.3	2.62	0.18	1	5
7/25/2007	1:45	7/25/2007 01:45	25.96	7.26	367	31.6	2.56	0.18	1	5
7/25/2007	2:00	7/25/2007 02:00	25.89	7.26	367	31.1	2.53	0.18	1	5
7/25/2007	2:15	7/25/2007 02:15	25.81	7.26	368	30.6	2.49	0.18	1	5
7/25/2007	2:30	7/25/2007 02:30	25.73	7.27	368	30.2	2.46	0.18	1	5
7/25/2007	2:45	7/25/2007 02:45	25.66	7.27	369	29.8	2.43	0.18	1	5
7/25/2007	3:00	7/25/2007 03:00	25.58	7.27	369	29.6	2.41	0.18	1	5
7/25/2007	3:15	7/25/2007 03:15	25.51	7.27	370	29.3	2.4	0.18	1	5
7/25/2007	3:30	7/25/2007 03:30	25.43	7.27	371	29	2.37	0.18	1	5
7/25/2007	3:45	7/25/2007 03:45	25.36	7.27	371	28.8	2.37	0.18	1	5
7/25/2007	4:00	7/25/2007 04:00	25.29	7.28	372	28.7	2.35	0.18	1	5
7/25/2007	4:15	7/25/2007 04:15	25.23	7.28	372	28.6	2.35	0.18	1	5
7/25/2007	4:30	7/25/2007 04:30	25.16	7.28	373	28.5	2.34	0.18	1	5
7/25/2007	4:45	7/25/2007 04:45	25.1	7.28	373	28.2	2.32	0.18	1	5
7/25/2007	5:00	7/25/2007 05:00	25.04	7.28	374	28.2	2.33	0.19	1	5
7/25/2007	5:15	7/25/2007 05:15	24.98	7.28	375	28.1	2.32	0.19	1	5
7/25/2007	5:30	7/25/2007 05:30	24.92	7.29	375	28.1	2.33	0.19	1	5
7/25/2007	5:45	7/25/2007 05:45	24.86	7.29	376	28.2	2.33	0.19	1	5
7/25/2007	6:00	7/25/2007 06:00	24.81	7.29	376	28.1	2.33	0.19	1	5
7/25/2007	6:15	7/25/2007 06:15	24.75	7.3	377	28.2	2.34	0.19	1	5
7/25/2007	6:30	7/25/2007 06:30	24.7	7.3	377	28.2	2.34	0.19	1	5
7/25/2007	6:45	7/25/2007 06:45	24.65	7.3	378	28.3	2.35	0.19	1	5
7/25/2007	7:00	7/25/2007 07:00	24.59	7.3	378	28.4	2.37	0.19	1	5
7/25/2007	7:15	7/25/2007 07:15	24.54	7.31	379	28.7	2.39	0.19	1	5
7/25/2007	7:30	7/25/2007 07:30	24.5	7.31	379	29	2.42	0.19	1	5
7/25/2007	7:45	7/25/2007 07:45	24.46	7.31	380	29.4	2.46	0.19	1	5
7/25/2007	8:00	7/25/2007 08:00	24.43	7.31	380	30.1	2.51	0.19	1	5
7/25/2007	8:15	7/25/2007 08:15	24.41	7.32	381	30.7	2.56	0.19	1	5
7/25/2007	8:30	7/25/2007 08:30	24.39	7.32	381	31.5	2.63	0.19	1	5
7/25/2007	8:45	7/25/2007 08:45	24.39	7.32	381	32.4	2.7	0.19	1	5



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	9:00	7/25/2007 09:00	24.4	7.33	382	33.3	2.78	0.19	1	5
7/25/2007	9:15	7/25/2007 09:15	24.42	7.33	382	34.4	2.87	0.19	1	5
7/25/2007	9:30	7/25/2007 09:30	24.45	7.34	382	35.9	2.99	0.19	1	5
7/25/2007	9:45	7/25/2007 09:45	24.5	7.34	383	37.5	3.12	0.19	1	5
7/25/2007	10:00	7/25/2007 10:00	24.56	7.35	383	39	3.25	0.19	1	5
7/25/2007	10:15	7/25/2007 10:15	24.64	7.36	384	40.9	3.39	0.19	1	5
7/25/2007	10:30	7/25/2007 10:30	24.73	7.36	384	43.3	3.59	0.19	1	5
7/25/2007	10:45	7/25/2007 10:45	24.83	7.37	385	45.7	3.78	0.19	1	5
7/25/2007	11:00	7/25/2007 11:00	24.94	7.38	385	48.1	3.98	0.19	1	5
7/25/2007	11:15	7/25/2007 11:15	25.07	7.39	385	50.7	4.18	0.19	1	5
7/25/2007	11:30	7/25/2007 11:30	25.21	7.4	385	53.2	4.38	0.19	1	5
7/25/2007	11:45	7/25/2007 11:45	25.34	7.41	386	55.9	4.58	0.19	1	5
7/25/2007	12:00	7/25/2007 12:00	25.55	7.42	386	59.2	4.84	0.19	1	5
7/25/2007	12:15	7/25/2007 12:15	25.75	7.43	386	62.1	5.06	0.19	0	5
7/25/2007	12:30	7/25/2007 12:30	25.96	7.44	387	64.9	5.26	0.19	0	5
7/25/2007	12:45	7/25/2007 12:45	26.18	7.45	387	67.2	5.43	0.19	0	5
7/25/2007	13:00	7/25/2007 13:00	26.4	7.46	387	69.7	5.61	0.19	0	5
7/25/2007	13:15	7/25/2007 13:15	26.62	7.47	387	72.2	5.78	0.19	0	5
7/25/2007	13:30	7/25/2007 13:30	26.74	7.47	387	72.4	5.79	0.19	0	5
7/25/2007	13:45	7/25/2007 13:45	26.87	7.48	387	73	5.82	0.19	0	5
7/25/2007	14:00	7/25/2007 14:00	26.98	7.48	387	74.7	5.95	0.19	0	5
7/25/2007	14:15	7/25/2007 14:15	27.12	7.49	387	76.5	6.08	0.19	0	5
7/25/2007	14:30	7/25/2007 14:30	27.25	7.49	386	78.4	6.21	0.19	0	5
7/25/2007	14:45	7/25/2007 14:45	27.34	7.5	386	78.9	6.24	0.19	0	5
7/25/2007	15:00	7/25/2007 15:00	27.5	7.5	386	80.2	6.33	0.19	0	5
7/25/2007	15:15	7/25/2007 15:15	27.64	7.5	386	81.1	6.38	0.19	0	5
7/25/2007	15:30	7/25/2007 15:30	27.77	7.51	385	81.8	6.42	0.19	0	5
7/25/2007	15:45	7/25/2007 15:45	27.89	7.51	385	81.5	6.38	0.19	0	5
7/25/2007	16:00	7/25/2007 16:00	28	7.51	384	81.6	6.38	0.19	0	5
7/25/2007	16:15	7/25/2007 16:15	28.06	7.5	384	79.4	6.2	0.19	0	5
7/25/2007	16:30	7/25/2007 16:30	28.13	7.48	384	77.4	6.04	0.19	0	5
7/25/2007	16:45	7/25/2007 16:45	28.19	7.47	383	75.4	5.88	0.19	0	5
7/25/2007	17:00	7/25/2007 17:00	28.23	7.47	383	73.9	5.76	0.19	0	5
7/25/2007	17:15	7/25/2007 17:15	28.27	7.47	382	72.9	5.67	0.19	0	5
7/25/2007	17:30	7/25/2007 17:30	28.28	7.46	381	71.4	5.56	0.19	0	5
7/25/2007	17:45	7/25/2007 17:45	28.26	7.45	380	69.3	5.4	0.19	0	5
7/25/2007	18:00	7/25/2007 18:00	27.99	7.48	367	73.5	5.75	0.18	0	5
7/25/2007	18:15	7/25/2007 18:15	27.9	7.48	363	73.3	5.74	0.18	0	5
7/25/2007	18:30	7/25/2007 18:30	27.69	7.48	352	74	5.82	0.17	0	5
7/25/2007	18:45	7/25/2007 18:45	27.56	7.48	347	73.6	5.8	0.17	0	5
7/25/2007	19:00	7/25/2007 19:00	27.4	7.47	342	72	5.69	0.17	0	5
7/25/2007	19:15	7/25/2007 19:15	27.32	7.46	343	69.7	5.51	0.17	0	5
7/25/2007	19:30	7/25/2007 19:30	27.26	7.44	346	67.1	5.32	0.17	0	5
7/25/2007	19:45	7/25/2007 19:45	27.22	7.43	351	64.4	5.11	0.17	0	5
7/25/2007	20:00	7/25/2007 20:00	27.18	7.42	355	61.6	4.89	0.18	1	5
7/25/2007	20:15	7/25/2007 20:15	27.06	7.4	352	59.8	4.75	0.17	1	5
7/25/2007	20:30	7/25/2007 20:30	26.95	7.39	350	57.9	4.61	0.17	1	5
7/25/2007	20:45	7/25/2007 20:45	26.84	7.38	349	55.8	4.45	0.17	1	5
7/25/2007	21:00	7/25/2007 21:00	26.71	7.38	347	53.4	4.27	0.17	1	5
7/25/2007	21:15	7/25/2007 21:15	26.57	7.36	344	50.8	4.07	0.17	1	5

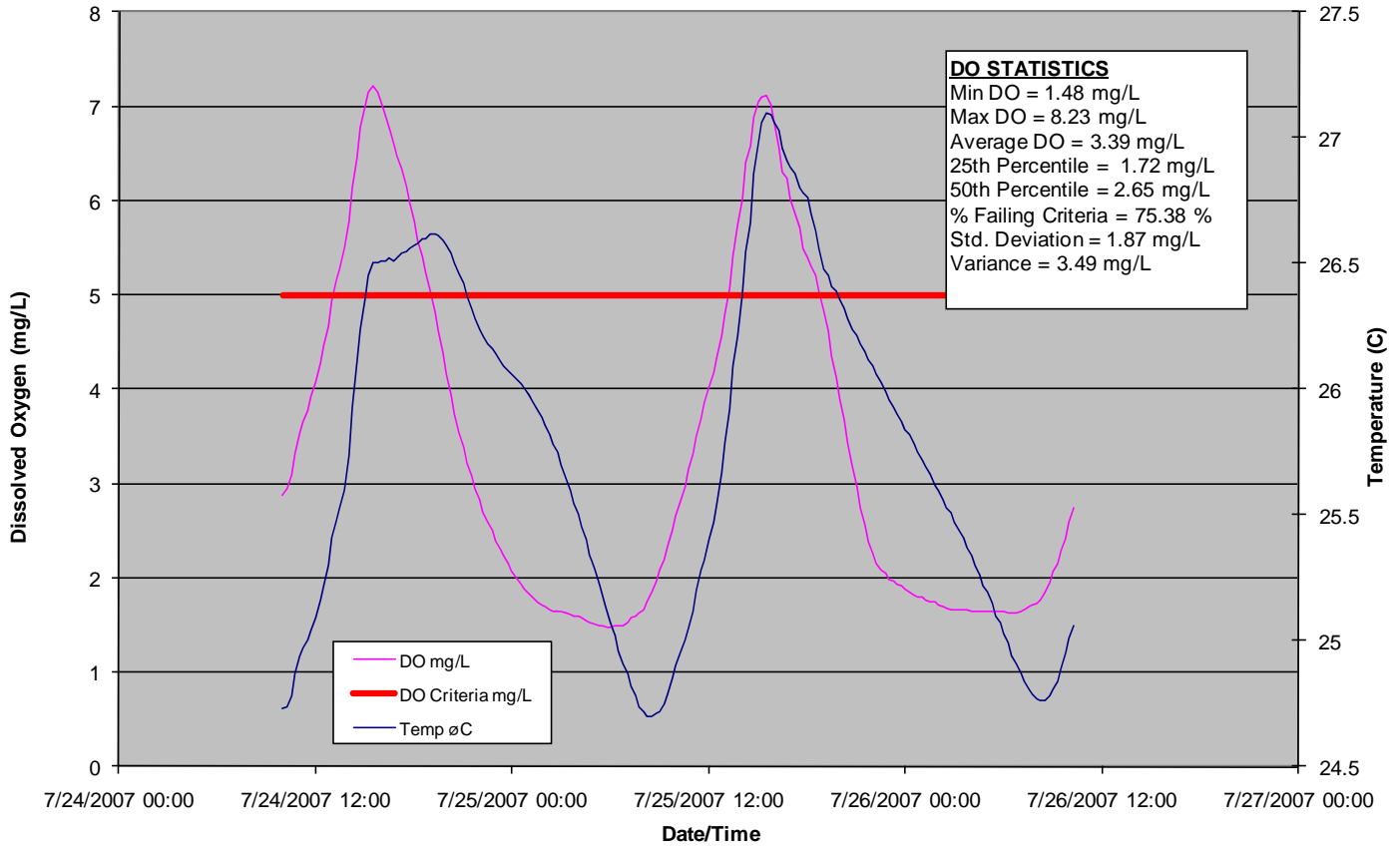
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	21:30	7/25/2007 21:30	26.39	7.34	335	48.7	3.92	0.16	1	5
7/25/2007	21:45	7/25/2007 21:45	26.22	7.33	326	46.9	3.79	0.16	1	5
7/25/2007	22:00	7/25/2007 22:00	26.09	7.31	322	45.1	3.65	0.16	1	5
7/25/2007	22:15	7/25/2007 22:15	25.98	7.3	319	43.2	3.5	0.16	1	5
7/25/2007	22:30	7/25/2007 22:30	25.88	7.28	314	41.7	3.39	0.15	1	5
7/25/2007	22:45	7/25/2007 22:45	25.79	7.28	308	40.4	3.28	0.15	1	5
7/25/2007	23:00	7/25/2007 23:00	25.71	7.25	299	39	3.18	0.15	1	5
7/25/2007	23:15	7/25/2007 23:15	25.64	7.23	288	37.6	3.07	0.14	1	5
7/25/2007	23:30	7/25/2007 23:30	25.57	7.2	275	36.5	2.98	0.13	1	5
7/25/2007	23:45	7/25/2007 23:45	25.52	7.17	263	35.7	2.92	0.13	1	5
7/26/2007	0:00	7/26/2007 00:00	25.47	7.15	253	35	2.87	0.12	1	5
7/26/2007	0:15	7/26/2007 00:15	25.42	7.13	245	34.5	2.83	0.12	1	5
7/26/2007	0:30	7/26/2007 00:30	25.37	7.11	241	34	2.79	0.11	1	5
7/26/2007	0:45	7/26/2007 00:45	25.33	7.09	237	33.1	2.72	0.11	1	5
7/26/2007	1:00	7/26/2007 01:00	25.3	7.08	233	32.2	2.65	0.11	1	5
7/26/2007	1:15	7/26/2007 01:15	25.25	7.07	229	32	2.63	0.11	1	5
7/26/2007	1:30	7/26/2007 01:30	25.22	7.05	226	31.4	2.58	0.11	1	5
7/26/2007	1:45	7/26/2007 01:45	25.18	7.05	224	30.9	2.54	0.1	1	5
7/26/2007	2:00	7/26/2007 02:00	25.15	7.04	222	30.3	2.5	0.1	1	5
7/26/2007	2:15	7/26/2007 02:15	25.11	7.04	220	30	2.47	0.1	1	5
7/26/2007	2:30	7/26/2007 02:30	25.08	7.04	220	29.6	2.44	0.1	1	5
7/26/2007	2:45	7/26/2007 02:45	25.06	7.03	219	29.2	2.41	0.1	1	5
7/26/2007	3:00	7/26/2007 03:00	25.03	7.03	219	28.9	2.39	0.1	1	5
7/26/2007	3:15	7/26/2007 03:15	25	7.03	219	28.6	2.36	0.1	1	5
7/26/2007	3:30	7/26/2007 03:30	24.97	7.03	220	28.5	2.35	0.1	1	5
7/26/2007	3:45	7/26/2007 03:45	24.94	7.04	220	28.3	2.34	0.1	1	5
7/26/2007	4:00	7/26/2007 04:00	24.92	7.04	221	28.1	2.32	0.1	1	5
7/26/2007	4:15	7/26/2007 04:15	24.89	7.04	223	27.8	2.3	0.1	1	5
7/26/2007	4:30	7/26/2007 04:30	24.86	7.05	225	27.7	2.3	0.1	1	5
7/26/2007	4:45	7/26/2007 04:45	24.83	7.04	227	27.5	2.28	0.11	1	5
7/26/2007	5:00	7/26/2007 05:00	24.79	7.05	229	27.5	2.28	0.11	1	5
7/26/2007	5:15	7/26/2007 05:15	24.76	7.05	231	27.5	2.28	0.11	1	5
7/26/2007	5:30	7/26/2007 05:30	24.72	7.06	233	27.4	2.27	0.11	1	5
7/26/2007	5:45	7/26/2007 05:45	24.68	7.06	235	27.3	2.27	0.11	1	5
7/26/2007	6:00	7/26/2007 06:00	24.64	7.07	236	27.4	2.28	0.11	1	5
7/26/2007	6:15	7/26/2007 06:15	24.61	7.07	238	27.3	2.27	0.11	1	5
7/26/2007	6:30	7/26/2007 06:30	24.57	7.08	239	27.4	2.28	0.11	1	5
7/26/2007	6:45	7/26/2007 06:45	24.54	7.09	241	27.5	2.29	0.11	1	5
7/26/2007	7:00	7/26/2007 07:00	24.51	7.08	242	27.5	2.29	0.11	1	5
7/26/2007	7:15	7/26/2007 07:15	24.48	7.09	244	27.5	2.3	0.12	1	5
7/26/2007	7:30	7/26/2007 07:30	24.46	7.09	245	27.5	2.29	0.12	1	5
7/26/2007	7:45	7/26/2007 07:45	24.44	7.09	246	27.8	2.32	0.12	1	5
7/26/2007	8:00	7/26/2007 08:00	24.42	7.1	247	27.8	2.32	0.12	1	5
7/26/2007	8:15	7/26/2007 08:15	24.42	7.1	247	27.9	2.33	0.12	1	5
7/26/2007	8:30	7/26/2007 08:30	24.42	7.1	249	28.1	2.35	0.12	1	5
7/26/2007	8:45	7/26/2007 08:45	24.42	7.1	249	28.2	2.35	0.12	1	5
7/26/2007	9:00	7/26/2007 09:00	24.44	7.1	250	28.4	2.37	0.12	1	5
7/26/2007	9:15	7/26/2007 09:15	24.46	7.11	251	28.6	2.38	0.12	1	5
7/26/2007	9:30	7/26/2007 09:30	24.49	7.11	251	28.9	2.41	0.12	1	5
7/26/2007	9:45	7/26/2007 09:45	24.53	7.11	252	29.5	2.46	0.12	1	5

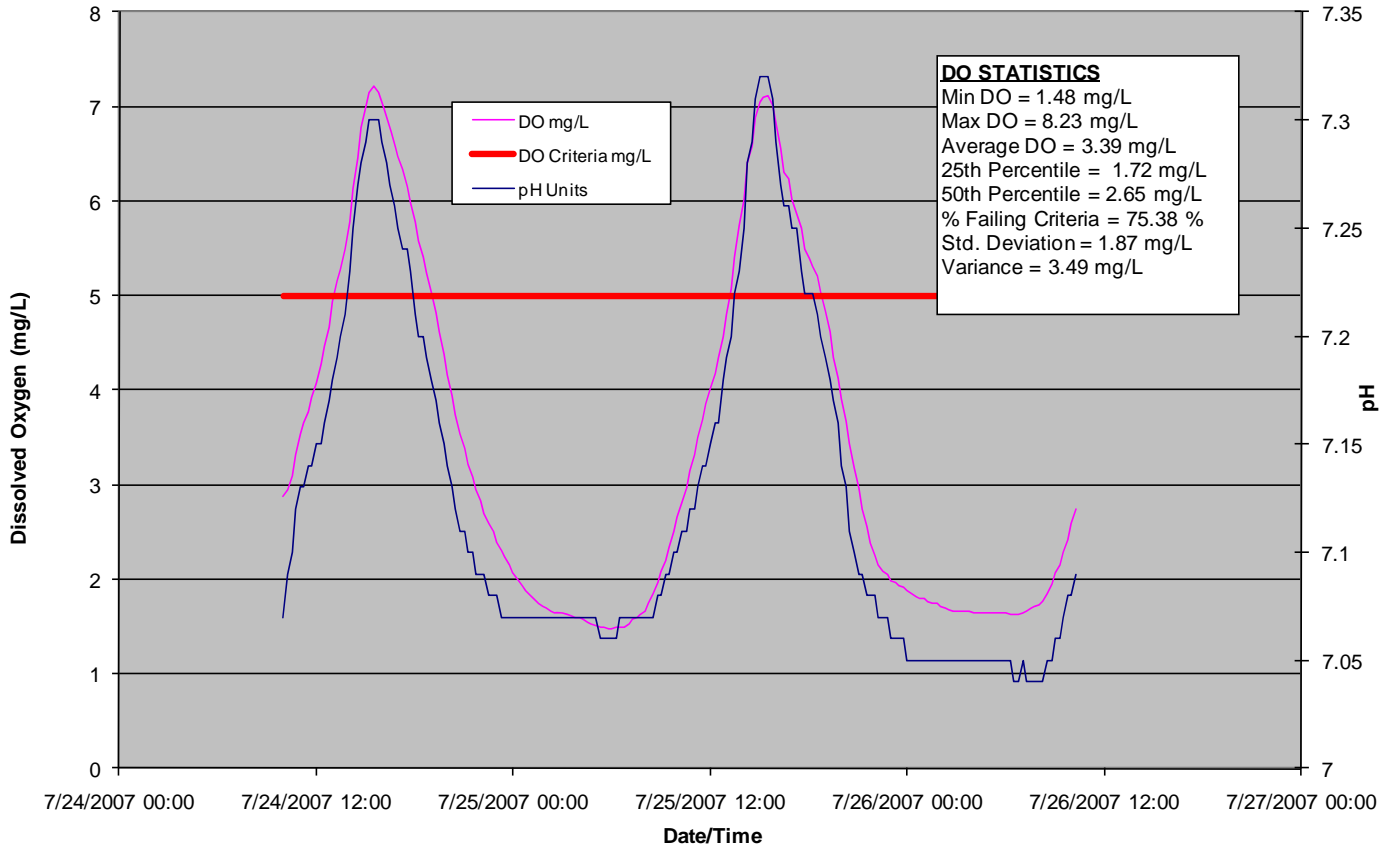
Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

7/26/2007	10:00	7/26/2007 10:00	24.59	7.12	253	30.1	2.51	0.12	1	5
7/26/2007	10:15	7/26/2007 10:15	24.67	7.12	254	31	2.57	0.12	1	5
7/26/2007	10:30	7/26/2007 10:30	24.75	7.13	255	32	2.65	0.12	1	5

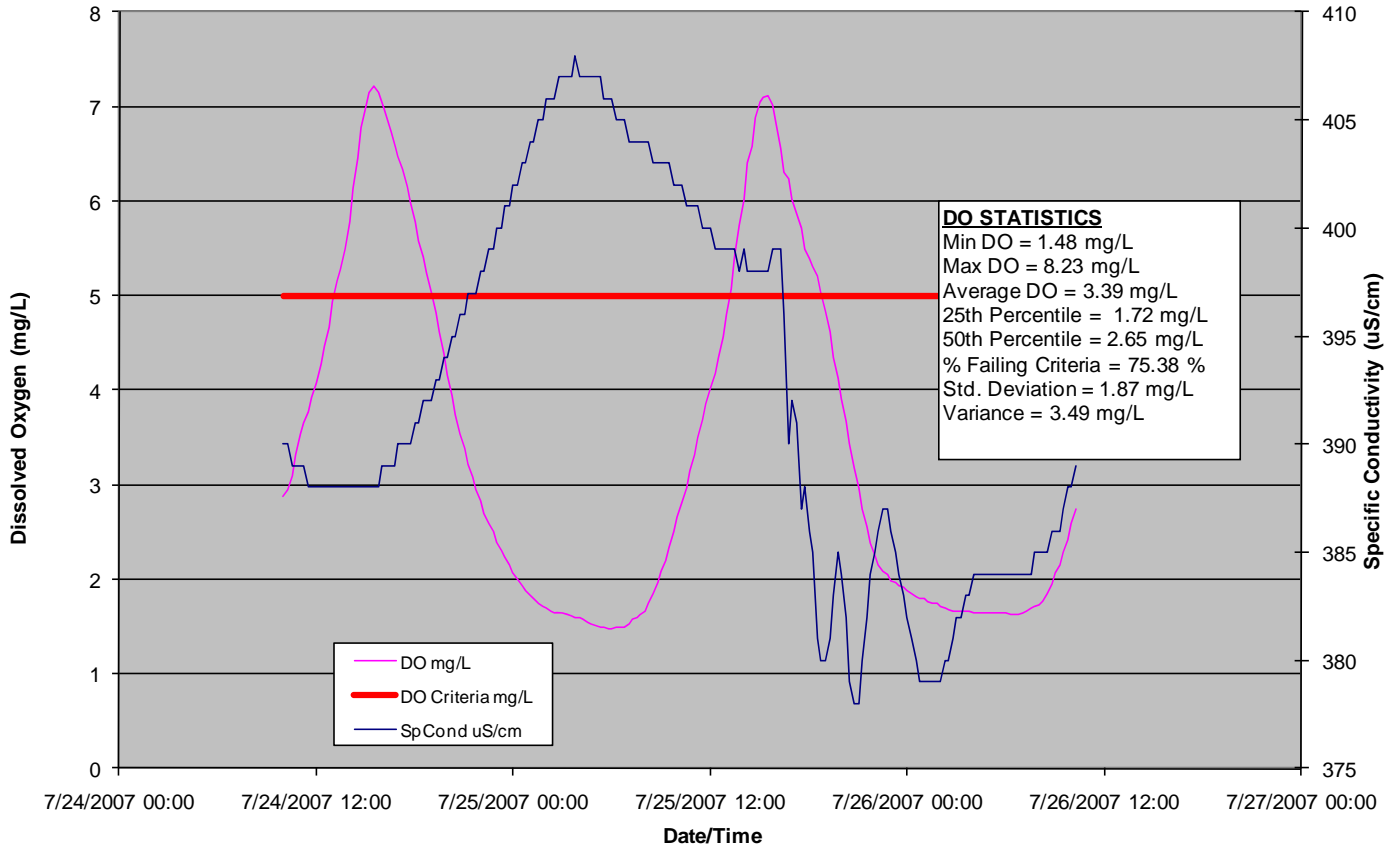
**Site Number: 3384 GC-04, Site Name: GC downstream of Hwy 1033  
Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time**



Site Number: 3384 GC-04, Site Name: GC downstream of Hwy 1033  
Subsegment: 040304, DO & pH vs. Date/Time



**Site Number: 3384 GC-04, Site Name: GC downstream of Hwy 1033  
 Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 3384 GC-04 Site Name: GC downstream of Hwy 1033						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
<b>Average</b>	25.76	7.13	392.54	41.49	3.36	0.19
<b>Minimum</b>	24.70	7.04	378.00	18.00	1.48	0.19
<b>Maximum</b>	27.10	7.32	408.00	89.70	7.21	0.20
<b>Geometric Mean</b>	25.75	7.13		35.77	2.91	
<b>25th Percentile</b>	25.11	7.07	385.00	20.93	1.71	0.19
<b>30th Percentile</b>	25.23	7.07	386.00	22.09	1.80	0.19
<b>40th Percentile</b>	25.50	7.07	388.00	25.34	2.06	0.19
<b>50th Percentile</b>	25.77	7.09	390.00	32.10	2.62	0.19
<b>Standard Deviation</b>	0.69	0.08	8.78	23.10	1.84	0.00
<b>Variance</b>	0.47	0.01	77.17	533.42	3.38	0.00

<b>Data Row Count</b>	194
<b>Total Values Failing</b>	
<b>DO Criteria</b>	147
<b>Percent failing DO Criteria</b>	75.77 %

### Grays Creek Subsegment 040304 Site 3384 GC-04 Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO	DO	SALINITY	Is DO <	DO
MMDDYY	HHMM	MMDDYYYY	øC	Units	uS/cm	PERCENT	mg/L	ppt	Criteria	Criteria
		HHMM				Sat			5	mg/L
7/24/2007	10:00	7/24/2007 10:00	24.73	7.07	390	34.5	2.87	0.19	1	5
7/24/2007	10:15	7/24/2007 10:15	24.74	7.09	390	35.6	2.95	0.19	1	5
7/24/2007	10:30	7/24/2007 10:30	24.78	7.1	389	37.3	3.09	0.19	1	5
7/24/2007	10:45	7/24/2007 10:45	24.87	7.12	389	40	3.31	0.19	1	5
7/24/2007	11:00	7/24/2007 11:00	24.94	7.13	389	42.7	3.53	0.19	1	5
7/24/2007	11:15	7/24/2007 11:15	24.97	7.13	389	44.3	3.66	0.19	1	5
7/24/2007	11:30	7/24/2007 11:30	25	7.14	388	45.8	3.78	0.19	1	5
7/24/2007	11:45	7/24/2007 11:45	25.04	7.14	388	47.7	3.93	0.19	1	5
7/24/2007	12:00	7/24/2007 12:00	25.09	7.15	388	49.4	4.07	0.19	1	5
7/24/2007	12:15	7/24/2007 12:15	25.16	7.15	388	52	4.28	0.19	1	5
7/24/2007	12:30	7/24/2007 12:30	25.22	7.16	388	54.3	4.46	0.19	1	5
7/24/2007	12:45	7/24/2007 12:45	25.3	7.17	388	56.9	4.67	0.19	1	5
7/24/2007	13:00	7/24/2007 13:00	25.41	7.18	388	60.3	4.94	0.19	1	5
7/24/2007	13:15	7/24/2007 13:15	25.48	7.19	388	63	5.16	0.19	0	5
7/24/2007	13:30	7/24/2007 13:30	25.53	7.2	388	64.6	5.28	0.19	0	5
7/24/2007	13:45	7/24/2007 13:45	25.6	7.21	388	67.4	5.5	0.19	0	5
7/24/2007	14:00	7/24/2007 14:00	25.74	7.23	388	71	5.78	0.19	0	5
7/24/2007	14:15	7/24/2007 14:15	25.93	7.25	388	75.5	6.13	0.19	0	5
7/24/2007	14:30	7/24/2007 14:30	26.11	7.27	388	79.9	6.46	0.19	0	5
7/24/2007	14:45	7/24/2007 14:45	26.24	7.28	388	84	6.78	0.19	0	5
7/24/2007	15:00	7/24/2007 15:00	26.36	7.29	388	86.9	6.99	0.19	0	5
7/24/2007	15:15	7/24/2007 15:15	26.45	7.3	388	88.9	7.15	0.19	0	5
7/24/2007	15:30	7/24/2007 15:30	26.5	7.3	388	89.7	7.21	0.19	0	5
7/24/2007	15:45	7/24/2007 15:45	26.5	7.3	388	88.9	7.14	0.19	0	5
7/24/2007	16:00	7/24/2007 16:00	26.51	7.29	389	87.7	7.04	0.19	0	5
7/24/2007	16:15	7/24/2007 16:15	26.51	7.28	389	86	6.9	0.19	0	5
7/24/2007	16:30	7/24/2007 16:30	26.52	7.27	389	84.5	6.78	0.19	0	5
7/24/2007	16:45	7/24/2007 16:45	26.51	7.26	389	82.3	6.61	0.19	0	5
7/24/2007	17:00	7/24/2007 17:00	26.52	7.25	390	80.6	6.47	0.19	0	5
7/24/2007	17:15	7/24/2007 17:15	26.54	7.24	390	78.9	6.33	0.19	0	5
7/24/2007	17:30	7/24/2007 17:30	26.55	7.24	390	76.8	6.16	0.19	0	5
7/24/2007	17:45	7/24/2007 17:45	26.56	7.23	390	74.6	5.98	0.19	0	5
7/24/2007	18:00	7/24/2007 18:00	26.57	7.21	391	72	5.78	0.19	0	5
7/24/2007	18:15	7/24/2007 18:15	26.58	7.2	391	69.6	5.58	0.19	0	5
7/24/2007	18:30	7/24/2007 18:30	26.6	7.2	392	67.4	5.41	0.19	0	5
7/24/2007	18:45	7/24/2007 18:45	26.6	7.19	392	65.4	5.24	0.19	0	5
7/24/2007	19:00	7/24/2007 19:00	26.62	7.18	392	62.9	5.04	0.2	0	5
7/24/2007	19:15	7/24/2007 19:15	26.62	7.17	393	60.1	4.82	0.2	1	5
7/24/2007	19:30	7/24/2007 19:30	26.61	7.16	393	57.6	4.62	0.2	1	5
7/24/2007	19:45	7/24/2007 19:45	26.59	7.15	394	54.6	4.38	0.2	1	5
7/24/2007	20:00	7/24/2007 20:00	26.57	7.14	394	51.9	4.16	0.2	1	5
7/24/2007	20:15	7/24/2007 20:15	26.54	7.13	395	49.1	3.94	0.2	1	5
7/24/2007	20:30	7/24/2007 20:30	26.5	7.12	395	46.5	3.73	0.2	1	5
7/24/2007	20:45	7/24/2007 20:45	26.46	7.11	396	44.1	3.54	0.2	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	21:00	7/24/2007 21:00	26.42	7.11	396	42	3.38	0.2	1	5
7/24/2007	21:15	7/24/2007 21:15	26.37	7.1	397	40	3.22	0.2	1	5
7/24/2007	21:30	7/24/2007 21:30	26.32	7.1	397	38.2	3.08	0.2	1	5
7/24/2007	21:45	7/24/2007 21:45	26.28	7.09	397	36.5	2.94	0.2	1	5
7/24/2007	22:00	7/24/2007 22:00	26.24	7.09	398	35	2.82	0.2	1	5
7/24/2007	22:15	7/24/2007 22:15	26.21	7.09	398	33.5	2.7	0.2	1	5
7/24/2007	22:30	7/24/2007 22:30	26.18	7.08	399	32.1	2.59	0.2	1	5
7/24/2007	22:45	7/24/2007 22:45	26.16	7.08	399	30.9	2.5	0.2	1	5
7/24/2007	23:00	7/24/2007 23:00	26.14	7.08	400	29.6	2.39	0.2	1	5
7/24/2007	23:15	7/24/2007 23:15	26.11	7.07	400	28.6	2.31	0.2	1	5
7/24/2007	23:30	7/24/2007 23:30	26.09	7.07	401	27.6	2.23	0.2	1	5
7/24/2007	23:45	7/24/2007 23:45	26.07	7.07	401	26.6	2.15	0.2	1	5
7/25/2007	0:00	7/25/2007 00:00	26.06	7.07	402	25.5	2.06	0.2	1	5
7/25/2007	0:15	7/25/2007 00:15	26.04	7.07	402	24.7	2	0.2	1	5
7/25/2007	0:30	7/25/2007 00:30	26.02	7.07	403	23.9	1.93	0.2	1	5
7/25/2007	0:45	7/25/2007 00:45	26	7.07	403	23.2	1.88	0.2	1	5
7/25/2007	1:00	7/25/2007 01:00	25.98	7.07	404	22.6	1.83	0.2	1	5
7/25/2007	1:15	7/25/2007 01:15	25.95	7.07	404	22.2	1.8	0.2	1	5
7/25/2007	1:30	7/25/2007 01:30	25.92	7.07	405	21.5	1.75	0.2	1	5
7/25/2007	1:45	7/25/2007 01:45	25.89	7.07	405	21.2	1.72	0.2	1	5
7/25/2007	2:00	7/25/2007 02:00	25.86	7.07	406	20.8	1.69	0.2	1	5
7/25/2007	2:15	7/25/2007 02:15	25.82	7.07	406	20.6	1.67	0.2	1	5
7/25/2007	2:30	7/25/2007 02:30	25.78	7.07	406	20.3	1.65	0.2	1	5
7/25/2007	2:45	7/25/2007 02:45	25.75	7.07	407	20.2	1.65	0.2	1	5
7/25/2007	3:00	7/25/2007 03:00	25.7	7.07	407	20.2	1.64	0.2	1	5
7/25/2007	3:15	7/25/2007 03:15	25.65	7.07	407	19.9	1.63	0.2	1	5
7/25/2007	3:30	7/25/2007 03:30	25.6	7.07	407	19.8	1.62	0.2	1	5
7/25/2007	3:45	7/25/2007 03:45	25.55	7.07	408	19.6	1.6	0.2	1	5
7/25/2007	4:00	7/25/2007 04:00	25.5	7.07	407	19.4	1.59	0.2	1	5
7/25/2007	4:15	7/25/2007 04:15	25.45	7.07	407	19.2	1.57	0.2	1	5
7/25/2007	4:30	7/25/2007 04:30	25.4	7.07	407	18.9	1.55	0.2	1	5
7/25/2007	4:45	7/25/2007 04:45	25.34	7.07	407	18.6	1.53	0.2	1	5
7/25/2007	5:00	7/25/2007 05:00	25.29	7.07	407	18.4	1.51	0.2	1	5
7/25/2007	5:15	7/25/2007 05:15	25.23	7.06	407	18.2	1.49	0.2	1	5
7/25/2007	5:30	7/25/2007 05:30	25.18	7.06	406	18.1	1.49	0.2	1	5
7/25/2007	5:45	7/25/2007 05:45	25.12	7.06	406	18	1.48	0.2	1	5
7/25/2007	6:00	7/25/2007 06:00	25.07	7.06	406	18	1.48	0.2	1	5
7/25/2007	6:15	7/25/2007 06:15	25.02	7.06	405	18	1.49	0.2	1	5
7/25/2007	6:30	7/25/2007 06:30	24.96	7.07	405	18	1.49	0.2	1	5
7/25/2007	6:45	7/25/2007 06:45	24.91	7.07	405	18.1	1.5	0.2	1	5
7/25/2007	7:00	7/25/2007 07:00	24.87	7.07	404	18.5	1.53	0.2	1	5
7/25/2007	7:15	7/25/2007 07:15	24.82	7.07	404	19	1.57	0.2	1	5
7/25/2007	7:30	7/25/2007 07:30	24.78	7.07	404	19.4	1.6	0.2	1	5
7/25/2007	7:45	7/25/2007 07:45	24.74	7.07	404	19.6	1.63	0.2	1	5
7/25/2007	8:00	7/25/2007 08:00	24.72	7.07	404	20.1	1.67	0.2	1	5
7/25/2007	8:15	7/25/2007 08:15	24.7	7.07	404	21.1	1.75	0.2	1	5
7/25/2007	8:30	7/25/2007 08:30	24.7	7.07	403	22.2	1.84	0.2	1	5
7/25/2007	8:45	7/25/2007 08:45	24.71	7.08	403	23.7	1.97	0.2	1	5
7/25/2007	9:00	7/25/2007 09:00	24.72	7.08	403	25.1	2.08	0.2	1	5
7/25/2007	9:15	7/25/2007 09:15	24.75	7.09	403	26.5	2.2	0.2	1	5



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

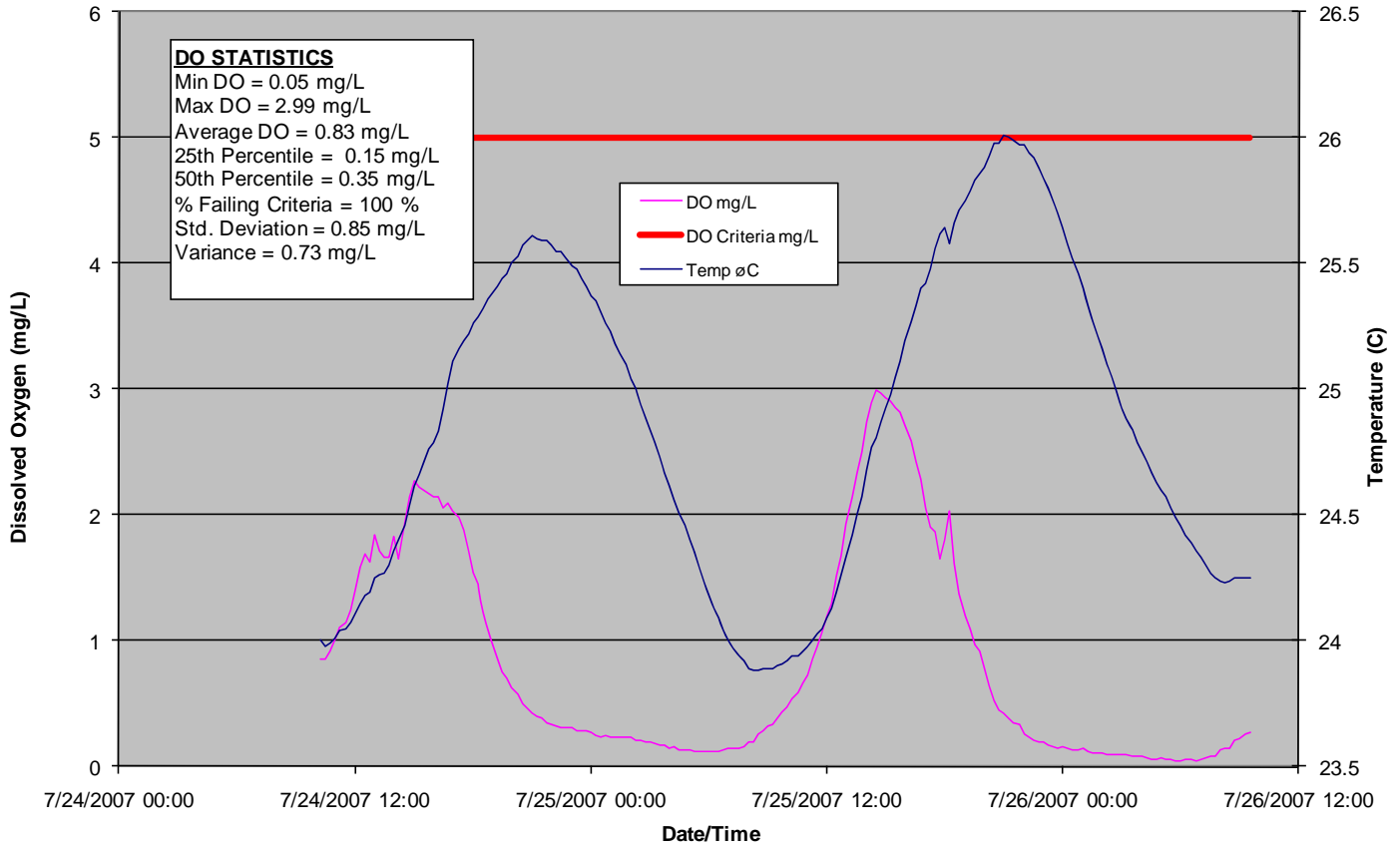
7/25/2007	9:30	7/25/2007 09:30	24.79	7.09	403	28.2	2.34	0.2	1	5
7/25/2007	9:45	7/25/2007 09:45	24.85	7.1	402	30.2	2.5	0.2	1	5
7/25/2007	10:00	7/25/2007 10:00	24.9	7.1	402	32.1	2.65	0.2	1	5
7/25/2007	10:15	7/25/2007 10:15	24.95	7.11	402	34	2.81	0.2	1	5
7/25/2007	10:30	7/25/2007 10:30	25	7.11	401	35.9	2.97	0.2	1	5
7/25/2007	10:45	7/25/2007 10:45	25.05	7.12	401	38.2	3.15	0.2	1	5
7/25/2007	11:00	7/25/2007 11:00	25.12	7.12	401	40.3	3.32	0.2	1	5
7/25/2007	11:15	7/25/2007 11:15	25.2	7.13	401	42.7	3.51	0.2	1	5
7/25/2007	11:30	7/25/2007 11:30	25.28	7.14	400	44.8	3.68	0.2	1	5
7/25/2007	11:45	7/25/2007 11:45	25.32	7.14	400	47	3.86	0.2	1	5
7/25/2007	12:00	7/25/2007 12:00	25.4	7.15	400	49	4.02	0.2	1	5
7/25/2007	12:15	7/25/2007 12:15	25.47	7.16	399	51	4.18	0.2	1	5
7/25/2007	12:30	7/25/2007 12:30	25.55	7.16	399	53.2	4.35	0.2	1	5
7/25/2007	12:45	7/25/2007 12:45	25.67	7.18	399	56	4.56	0.2	1	5
7/25/2007	13:00	7/25/2007 13:00	25.79	7.19	399	58.9	4.8	0.2	1	5
7/25/2007	13:15	7/25/2007 13:15	25.92	7.2	399	62.5	5.08	0.2	0	5
7/25/2007	13:30	7/25/2007 13:30	26.09	7.22	399	66.8	5.41	0.2	0	5
7/25/2007	13:45	7/25/2007 13:45	26.21	7.23	398	71.1	5.74	0.2	0	5
7/25/2007	14:00	7/25/2007 14:00	26.38	7.25	399	74.8	6.02	0.2	0	5
7/25/2007	14:15	7/25/2007 14:15	26.55	7.28	398	79.7	6.4	0.2	0	5
7/25/2007	14:30	7/25/2007 14:30	26.66	7.29	398	82.1	6.57	0.2	0	5
7/25/2007	14:45	7/25/2007 14:45	26.86	7.31	398	86	6.87	0.2	0	5
7/25/2007	15:00	7/25/2007 15:00	26.98	7.32	398	88.5	7.04	0.2	0	5
7/25/2007	15:15	7/25/2007 15:15	27.06	7.32	398	89.4	7.1	0.2	0	5
7/25/2007	15:30	7/25/2007 15:30	27.1	7.32	398	89.5	7.11	0.2	0	5
7/25/2007	15:45	7/25/2007 15:45	27.09	7.31	399	88.2	7.01	0.2	0	5
7/25/2007	16:00	7/25/2007 16:00	27.06	7.29	399	85.9	6.83	0.2	0	5
7/25/2007	16:15	7/25/2007 16:15	27.03	7.27	399	82.3	6.55	0.2	0	5
7/25/2007	16:30	7/25/2007 16:30	26.96	7.26	396	79.3	6.31	0.2	0	5
7/25/2007	16:45	7/25/2007 16:45	26.91	7.26	390	78.2	6.24	0.19	0	5
7/25/2007	17:00	7/25/2007 17:00	26.88	7.25	392	75.4	6.01	0.19	0	5
7/25/2007	17:15	7/25/2007 17:15	26.86	7.25	391	73.6	5.87	0.19	0	5
7/25/2007	17:30	7/25/2007 17:30	26.8	7.23	387	71.6	5.72	0.19	0	5
7/25/2007	17:45	7/25/2007 17:45	26.78	7.22	388	68.8	5.5	0.19	0	5
7/25/2007	18:00	7/25/2007 18:00	26.76	7.22	386	67.5	5.4	0.19	0	5
7/25/2007	18:15	7/25/2007 18:15	26.7	7.22	385	66.3	5.3	0.19	0	5
7/25/2007	18:30	7/25/2007 18:30	26.63	7.21	381	65	5.21	0.19	0	5
7/25/2007	18:45	7/25/2007 18:45	26.56	7.2	380	62.7	5.03	0.19	0	5
7/25/2007	19:00	7/25/2007 19:00	26.48	7.19	380	60.2	4.84	0.19	1	5
7/25/2007	19:15	7/25/2007 19:15	26.45	7.18	381	57.3	4.61	0.19	1	5
7/25/2007	19:30	7/25/2007 19:30	26.41	7.17	383	54.1	4.35	0.19	1	5
7/25/2007	19:45	7/25/2007 19:45	26.39	7.16	385	51.2	4.12	0.19	1	5
7/25/2007	20:00	7/25/2007 20:00	26.36	7.14	384	48.5	3.9	0.19	1	5
7/25/2007	20:15	7/25/2007 20:15	26.32	7.13	382	45.5	3.67	0.19	1	5
7/25/2007	20:30	7/25/2007 20:30	26.28	7.11	379	42.6	3.43	0.19	1	5
7/25/2007	20:45	7/25/2007 20:45	26.24	7.1	378	39.5	3.18	0.19	1	5
7/25/2007	21:00	7/25/2007 21:00	26.21	7.09	378	36.7	2.96	0.19	1	5
7/25/2007	21:15	7/25/2007 21:15	26.18	7.09	380	33.9	2.74	0.19	1	5
7/25/2007	21:30	7/25/2007 21:30	26.15	7.08	382	31.6	2.56	0.19	1	5
7/25/2007	21:45	7/25/2007 21:45	26.12	7.08	384	29.5	2.38	0.19	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

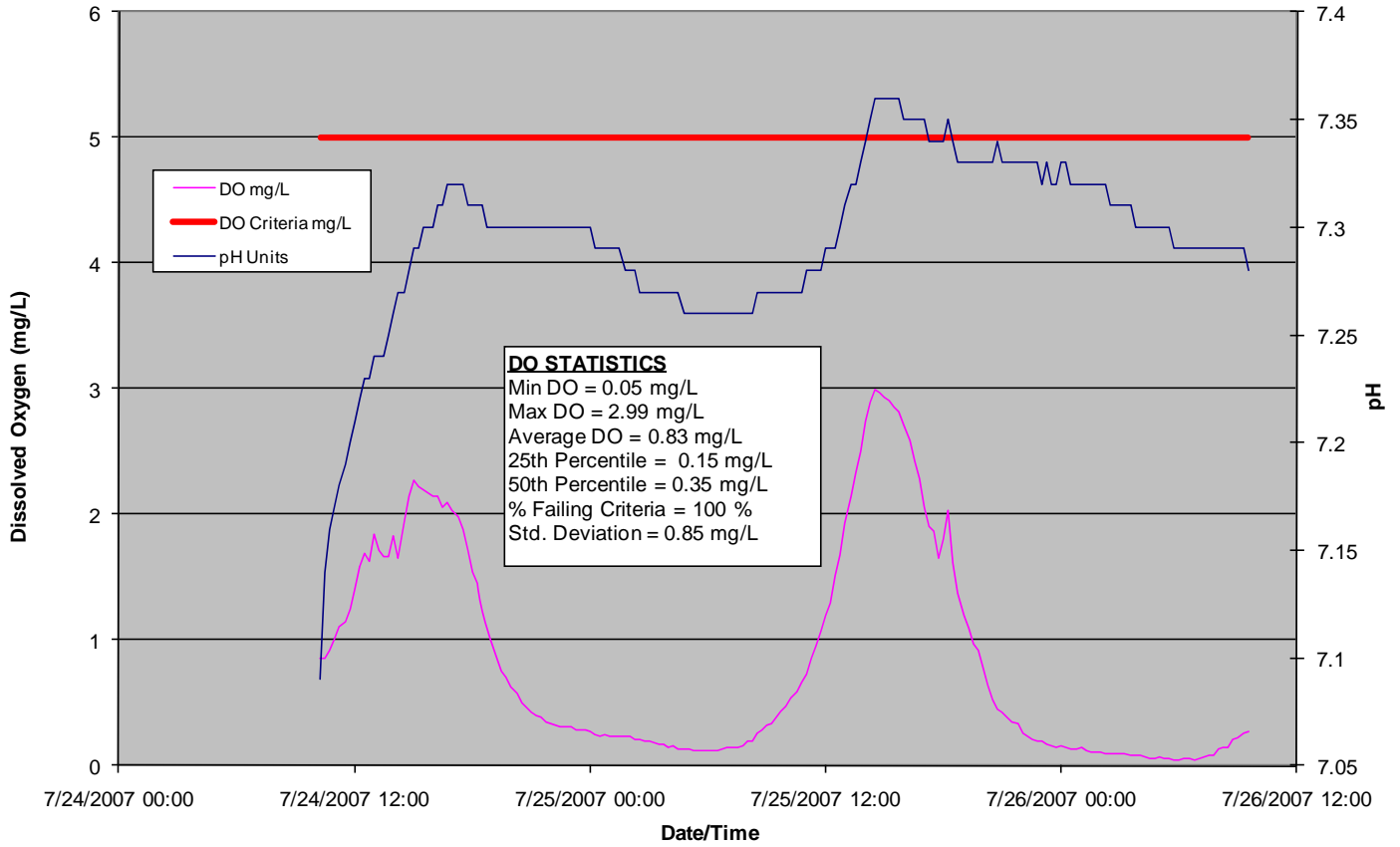
7/25/2007	22:00	7/25/2007 22:00	26.09	7.08	385	27.9	2.26	0.19	1	5
7/25/2007	22:15	7/25/2007 22:15	26.06	7.07	386	26.7	2.16	0.19	1	5
7/25/2007	22:30	7/25/2007 22:30	26.03	7.07	387	25.9	2.09	0.19	1	5
7/25/2007	22:45	7/25/2007 22:45	25.99	7.07	387	25.3	2.05	0.19	1	5
7/25/2007	23:00	7/25/2007 23:00	25.96	7.06	386	24.6	1.99	0.19	1	5
7/25/2007	23:15	7/25/2007 23:15	25.93	7.06	385	24.3	1.97	0.19	1	5
7/25/2007	23:30	7/25/2007 23:30	25.9	7.06	384	23.9	1.94	0.19	1	5
7/25/2007	23:45	7/25/2007 23:45	25.87	7.06	383	23.5	1.91	0.19	1	5
7/26/2007	0:00	7/26/2007 00:00	25.84	7.05	382	23.1	1.88	0.19	1	5
7/26/2007	0:15	7/26/2007 00:15	25.82	7.05	381	22.7	1.85	0.19	1	5
7/26/2007	0:30	7/26/2007 00:30	25.78	7.05	380	22.4	1.82	0.19	1	5
7/26/2007	0:45	7/26/2007 00:45	25.75	7.05	379	22.1	1.8	0.19	1	5
7/26/2007	1:00	7/26/2007 01:00	25.72	7.05	379	22	1.79	0.19	1	5
7/26/2007	1:15	7/26/2007 01:15	25.69	7.05	379	21.7	1.77	0.19	1	5
7/26/2007	1:30	7/26/2007 01:30	25.66	7.05	379	21.4	1.75	0.19	1	5
7/26/2007	1:45	7/26/2007 01:45	25.62	7.05	379	21.3	1.74	0.19	1	5
7/26/2007	2:00	7/26/2007 02:00	25.6	7.05	379	21	1.71	0.19	1	5
7/26/2007	2:15	7/26/2007 02:15	25.56	7.05	380	20.9	1.7	0.19	1	5
7/26/2007	2:30	7/26/2007 02:30	25.53	7.05	380	20.5	1.68	0.19	1	5
7/26/2007	2:45	7/26/2007 02:45	25.51	7.05	381	20.4	1.67	0.19	1	5
7/26/2007	3:00	7/26/2007 03:00	25.47	7.05	382	20.4	1.67	0.19	1	5
7/26/2007	3:15	7/26/2007 03:15	25.44	7.05	382	20.4	1.67	0.19	1	5
7/26/2007	3:30	7/26/2007 03:30	25.41	7.05	383	20.3	1.66	0.19	1	5
7/26/2007	3:45	7/26/2007 03:45	25.37	7.05	383	20.2	1.66	0.19	1	5
7/26/2007	4:00	7/26/2007 04:00	25.34	7.05	384	20.1	1.65	0.19	1	5
7/26/2007	4:15	7/26/2007 04:15	25.3	7.05	384	20.1	1.65	0.19	1	5
7/26/2007	4:30	7/26/2007 04:30	25.26	7.05	384	20.1	1.65	0.19	1	5
7/26/2007	4:45	7/26/2007 04:45	25.22	7.05	384	20.1	1.65	0.19	1	5
7/26/2007	5:00	7/26/2007 05:00	25.19	7.05	384	20	1.65	0.19	1	5
7/26/2007	5:15	7/26/2007 05:15	25.15	7.05	384	20.1	1.65	0.19	1	5
7/26/2007	5:30	7/26/2007 05:30	25.1	7.05	384	20.1	1.65	0.19	1	5
7/26/2007	5:45	7/26/2007 05:45	25.07	7.05	384	20.1	1.65	0.19	1	5
7/26/2007	6:00	7/26/2007 06:00	25.03	7.05	384	20	1.65	0.19	1	5
7/26/2007	6:15	7/26/2007 06:15	24.99	7.05	384	19.8	1.63	0.19	1	5
7/26/2007	6:30	7/26/2007 06:30	24.94	7.04	384	19.7	1.63	0.19	1	5
7/26/2007	6:45	7/26/2007 06:45	24.91	7.04	384	19.7	1.63	0.19	1	5
7/26/2007	7:00	7/26/2007 07:00	24.87	7.05	384	20	1.65	0.19	1	5
7/26/2007	7:15	7/26/2007 07:15	24.84	7.04	384	20.1	1.66	0.19	1	5
7/26/2007	7:30	7/26/2007 07:30	24.81	7.04	384	20.5	1.7	0.19	1	5
7/26/2007	7:45	7/26/2007 07:45	24.79	7.04	385	20.6	1.71	0.19	1	5
7/26/2007	8:00	7/26/2007 08:00	24.77	7.04	385	20.8	1.73	0.19	1	5
7/26/2007	8:15	7/26/2007 08:15	24.76	7.04	385	21.4	1.77	0.19	1	5
7/26/2007	8:30	7/26/2007 08:30	24.76	7.05	385	22.3	1.85	0.19	1	5
7/26/2007	8:45	7/26/2007 08:45	24.78	7.05	386	23.6	1.95	0.19	1	5
7/26/2007	9:00	7/26/2007 09:00	24.81	7.06	386	24.8	2.06	0.19	1	5
7/26/2007	9:15	7/26/2007 09:15	24.84	7.06	386	26.1	2.16	0.19	1	5
7/26/2007	9:30	7/26/2007 09:30	24.89	7.07	387	27.7	2.29	0.19	1	5
7/26/2007	9:45	7/26/2007 09:45	24.95	7.08	388	29.5	2.43	0.19	1	5
7/26/2007	10:00	7/26/2007 10:00	25.01	7.08	388	31.3	2.59	0.19	1	5
7/26/2007	10:15	7/26/2007 10:15	25.06	7.09	389	33.3	2.74	0.19	1	5



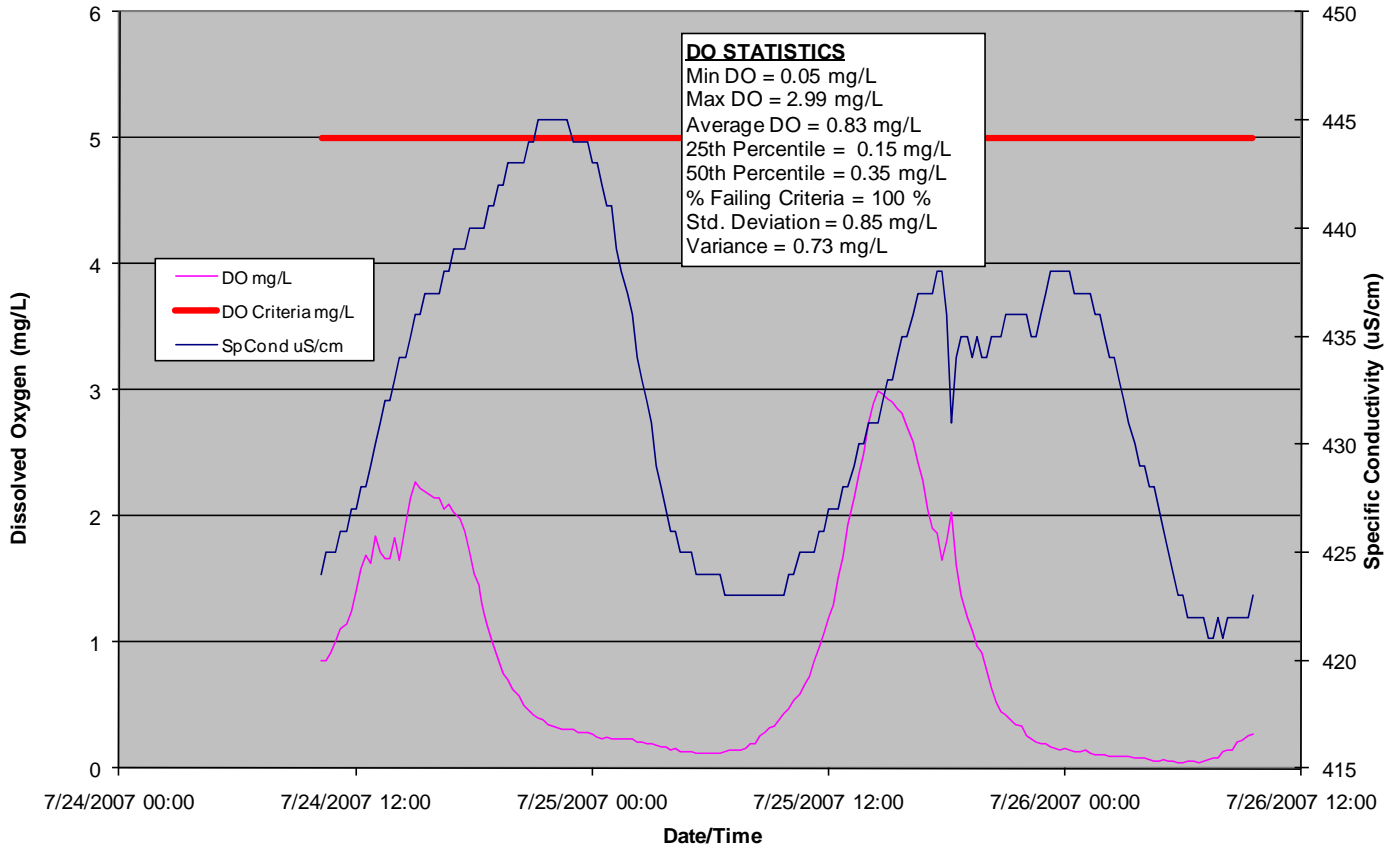
**Site Number: 3386 GC-06, Site Name: GC downstream of Hwy 1026  
Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time**



Site Number: 3386 GC-06, Site Name: GC downstream of Hwy 1026  
Subsegment: 040304, DO & pH vs. Date/Time



**Site Number: 3386 GC-06, Site Name: GC downstream of Hwy 1026  
 Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 3386 GC-06 Site Name: GC downstream of Hwy 1026						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
Average	24.86	7.29	432.15	10.00	0.83	0.22
Minimum	23.88	7.09	421.00	0.60	0.05	0.21
Maximum	26.01	7.36	445.00	36.10	2.99	0.22
Geometric Mean	24.85	7.29		5.22	0.43	0.22
25th Percentile	24.25	7.27	425.00	1.83	0.15	0.21
30th Percentile	24.34	7.28	426.70	2.17	0.19	0.21
40th Percentile	24.59	7.29	429.60	3.00	0.25	0.22
50th Percentile	24.84	7.30	433.00	4.30	0.35	0.22
Standard Deviation	0.65	0.04	7.04	10.33	0.85	0.00
Variance	0.42	0.00	49.53	106.69	0.73	0.00
Data Row Count	190					
Total Values Failing	190					
DO Criteria	190					
Percent failing DO	100.00 %					
Criteria	100.00 %					

### Grays Creek Subsegment 040304 Site 3386 GC-06 Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO	DO	SALINITY	Is DO <	DO
MMDDYY	HHMM	MMDDYYYY	øC	Units	uS/cm	PERCENT	mg/L	ppt	Criteria	Criteria
		HHMM				Sat			5	mg/L
7/24/2007	10:15	7/24/2007 10:15	24	7.09	424	10.2	0.86	0.21	1	5
7/24/2007	10:30	7/24/2007 10:30	23.98	7.14	425	10.1	0.85	0.21	1	5
7/24/2007	10:45	7/24/2007 10:45	23.99	7.16	425	10.9	0.92	0.21	1	5
7/24/2007	11:00	7/24/2007 11:00	24.01	7.17	425	11.9	1	0.21	1	5
7/24/2007	11:15	7/24/2007 11:15	24.04	7.18	426	13.2	1.11	0.21	1	5
7/24/2007	11:30	7/24/2007 11:30	24.05	7.19	426	13.7	1.15	0.21	1	5
7/24/2007	11:45	7/24/2007 11:45	24.07	7.2	427	14.9	1.25	0.21	1	5
7/24/2007	12:00	7/24/2007 12:00	24.11	7.21	427	16.8	1.41	0.21	1	5
7/24/2007	12:15	7/24/2007 12:15	24.15	7.22	428	19	1.59	0.21	1	5
7/24/2007	12:30	7/24/2007 12:30	24.18	7.23	428	20.2	1.69	0.21	1	5
7/24/2007	12:45	7/24/2007 12:45	24.19	7.23	429	19.4	1.63	0.21	1	5
7/24/2007	13:00	7/24/2007 13:00	24.25	7.24	430	22	1.84	0.22	1	5
7/24/2007	13:15	7/24/2007 13:15	24.26	7.24	431	20.5	1.72	0.22	1	5
7/24/2007	13:30	7/24/2007 13:30	24.27	7.24	432	19.8	1.66	0.22	1	5
7/24/2007	13:45	7/24/2007 13:45	24.3	7.25	432	19.8	1.66	0.22	1	5
7/24/2007	14:00	7/24/2007 14:00	24.36	7.26	433	21.9	1.83	0.22	1	5
7/24/2007	14:15	7/24/2007 14:15	24.4	7.27	434	19.8	1.65	0.22	1	5
7/24/2007	14:30	7/24/2007 14:30	24.46	7.27	434	23.2	1.94	0.22	1	5
7/24/2007	14:45	7/24/2007 14:45	24.54	7.28	435	25.7	2.14	0.22	1	5
7/24/2007	15:00	7/24/2007 15:00	24.62	7.29	436	27.3	2.27	0.22	1	5
7/24/2007	15:15	7/24/2007 15:15	24.66	7.29	436	26.7	2.22	0.22	1	5
7/24/2007	15:30	7/24/2007 15:30	24.71	7.3	437	26.3	2.19	0.22	1	5
7/24/2007	15:45	7/24/2007 15:45	24.76	7.3	437	26.2	2.17	0.22	1	5
7/24/2007	16:00	7/24/2007 16:00	24.79	7.3	437	26	2.15	0.22	1	5
7/24/2007	16:15	7/24/2007 16:15	24.83	7.31	437	25.8	2.14	0.22	1	5
7/24/2007	16:30	7/24/2007 16:30	24.92	7.31	438	25	2.06	0.22	1	5
7/24/2007	16:45	7/24/2007 16:45	25.02	7.32	438	25.3	2.09	0.22	1	5
7/24/2007	17:00	7/24/2007 17:00	25.11	7.32	439	24.6	2.03	0.22	1	5
7/24/2007	17:15	7/24/2007 17:15	25.16	7.32	439	24.1	1.98	0.22	1	5
7/24/2007	17:30	7/24/2007 17:30	25.19	7.32	439	22.9	1.88	0.22	1	5
7/24/2007	17:45	7/24/2007 17:45	25.22	7.31	440	20.8	1.71	0.22	1	5
7/24/2007	18:00	7/24/2007 18:00	25.26	7.31	440	18.8	1.54	0.22	1	5
7/24/2007	18:15	7/24/2007 18:15	25.29	7.31	440	17.6	1.45	0.22	1	5
7/24/2007	18:30	7/24/2007 18:30	25.32	7.31	440	15.2	1.24	0.22	1	5
7/24/2007	18:45	7/24/2007 18:45	25.36	7.3	441	13.4	1.1	0.22	1	5
7/24/2007	19:00	7/24/2007 19:00	25.38	7.3	441	11.8	0.97	0.22	1	5
7/24/2007	19:15	7/24/2007 19:15	25.41	7.3	442	10.6	0.87	0.22	1	5
7/24/2007	19:30	7/24/2007 19:30	25.44	7.3	442	9.2	0.75	0.22	1	5
7/24/2007	19:45	7/24/2007 19:45	25.46	7.3	443	8.5	0.7	0.22	1	5
7/24/2007	20:00	7/24/2007 20:00	25.5	7.3	443	7.7	0.63	0.22	1	5
7/24/2007	20:15	7/24/2007 20:15	25.53	7.3	443	7	0.57	0.22	1	5
7/24/2007	20:30	7/24/2007 20:30	25.57	7.3	443	6.1	0.5	0.22	1	5
7/24/2007	20:45	7/24/2007 20:45	25.59	7.3	444	5.6	0.46	0.22	1	5
7/24/2007	21:00	7/24/2007 21:00	25.61	7.3	444	5.2	0.42	0.22	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	21:15	7/24/2007 21:15	25.6	7.3	445	4.9	0.4	0.22	1	5
7/24/2007	21:30	7/24/2007 21:30	25.59	7.3	445	4.7	0.38	0.22	1	5
7/24/2007	21:45	7/24/2007 21:45	25.59	7.3	445	4.3	0.35	0.22	1	5
7/24/2007	22:00	7/24/2007 22:00	25.57	7.3	445	4	0.33	0.22	1	5
7/24/2007	22:15	7/24/2007 22:15	25.55	7.3	445	4	0.32	0.22	1	5
7/24/2007	22:30	7/24/2007 22:30	25.55	7.3	445	3.8	0.31	0.22	1	5
7/24/2007	22:45	7/24/2007 22:45	25.52	7.3	445	3.8	0.31	0.22	1	5
7/24/2007	23:00	7/24/2007 23:00	25.49	7.3	444	3.8	0.31	0.22	1	5
7/24/2007	23:15	7/24/2007 23:15	25.48	7.3	444	3.5	0.29	0.22	1	5
7/24/2007	23:30	7/24/2007 23:30	25.44	7.3	444	3.6	0.29	0.22	1	5
7/24/2007	23:45	7/24/2007 23:45	25.41	7.3	444	3.4	0.28	0.22	1	5
7/25/2007	0:00	7/25/2007 00:00	25.37	7.3	443	3.3	0.27	0.22	1	5
7/25/2007	0:15	7/25/2007 00:15	25.35	7.29	443	3.1	0.25	0.22	1	5
7/25/2007	0:30	7/25/2007 00:30	25.31	7.29	442	3	0.24	0.22	1	5
7/25/2007	0:45	7/25/2007 00:45	25.26	7.29	441	3	0.25	0.22	1	5
7/25/2007	1:00	7/25/2007 01:00	25.23	7.29	441	2.8	0.23	0.22	1	5
7/25/2007	1:15	7/25/2007 01:15	25.18	7.29	439	2.9	0.24	0.22	1	5
7/25/2007	1:30	7/25/2007 01:30	25.14	7.29	438	2.9	0.23	0.22	1	5
7/25/2007	1:45	7/25/2007 01:45	25.1	7.28	437	2.7	0.23	0.22	1	5
7/25/2007	2:00	7/25/2007 02:00	25.04	7.28	436	2.8	0.23	0.22	1	5
7/25/2007	2:15	7/25/2007 02:15	25	7.28	434	2.5	0.21	0.22	1	5
7/25/2007	2:30	7/25/2007 02:30	24.94	7.27	433	2.5	0.21	0.22	1	5
7/25/2007	2:45	7/25/2007 02:45	24.89	7.27	432	2.4	0.19	0.22	1	5
7/25/2007	3:00	7/25/2007 03:00	24.84	7.27	431	2.3	0.19	0.22	1	5
7/25/2007	3:15	7/25/2007 03:15	24.79	7.27	429	2.1	0.18	0.21	1	5
7/25/2007	3:30	7/25/2007 03:30	24.73	7.27	428	2.1	0.17	0.21	1	5
7/25/2007	3:45	7/25/2007 03:45	24.67	7.27	427	2	0.17	0.21	1	5
7/25/2007	4:00	7/25/2007 04:00	24.62	7.27	426	1.8	0.15	0.21	1	5
7/25/2007	4:15	7/25/2007 04:15	24.56	7.27	426	1.9	0.16	0.21	1	5
7/25/2007	4:30	7/25/2007 04:30	24.51	7.27	425	1.5	0.13	0.21	1	5
7/25/2007	4:45	7/25/2007 04:45	24.46	7.26	425	1.5	0.13	0.21	1	5
7/25/2007	5:00	7/25/2007 05:00	24.4	7.26	425	1.5	0.13	0.21	1	5
7/25/2007	5:15	7/25/2007 05:15	24.35	7.26	424	1.5	0.12	0.21	1	5
7/25/2007	5:30	7/25/2007 05:30	24.29	7.26	424	1.4	0.12	0.21	1	5
7/25/2007	5:45	7/25/2007 05:45	24.23	7.26	424	1.5	0.12	0.21	1	5
7/25/2007	6:00	7/25/2007 06:00	24.18	7.26	424	1.4	0.12	0.21	1	5
7/25/2007	6:15	7/25/2007 06:15	24.13	7.26	424	1.4	0.12	0.21	1	5
7/25/2007	6:30	7/25/2007 06:30	24.09	7.26	424	1.5	0.12	0.21	1	5
7/25/2007	6:45	7/25/2007 06:45	24.04	7.26	423	1.5	0.13	0.21	1	5
7/25/2007	7:00	7/25/2007 07:00	24	7.26	423	1.6	0.14	0.21	1	5
7/25/2007	7:15	7/25/2007 07:15	23.97	7.26	423	1.6	0.14	0.21	1	5
7/25/2007	7:30	7/25/2007 07:30	23.94	7.26	423	1.8	0.15	0.21	1	5
7/25/2007	7:45	7/25/2007 07:45	23.92	7.26	423	1.9	0.16	0.21	1	5
7/25/2007	8:00	7/25/2007 08:00	23.89	7.26	423	2.2	0.19	0.21	1	5
7/25/2007	8:15	7/25/2007 08:15	23.88	7.26	423	2.3	0.19	0.21	1	5
7/25/2007	8:30	7/25/2007 08:30	23.88	7.27	423	3	0.26	0.21	1	5
7/25/2007	8:45	7/25/2007 08:45	23.89	7.27	423	3.5	0.29	0.21	1	5
7/25/2007	9:00	7/25/2007 09:00	23.89	7.27	423	3.8	0.32	0.21	1	5
7/25/2007	9:15	7/25/2007 09:15	23.89	7.27	423	4	0.34	0.21	1	5
7/25/2007	9:30	7/25/2007 09:30	23.9	7.27	423	4.6	0.39	0.21	1	5



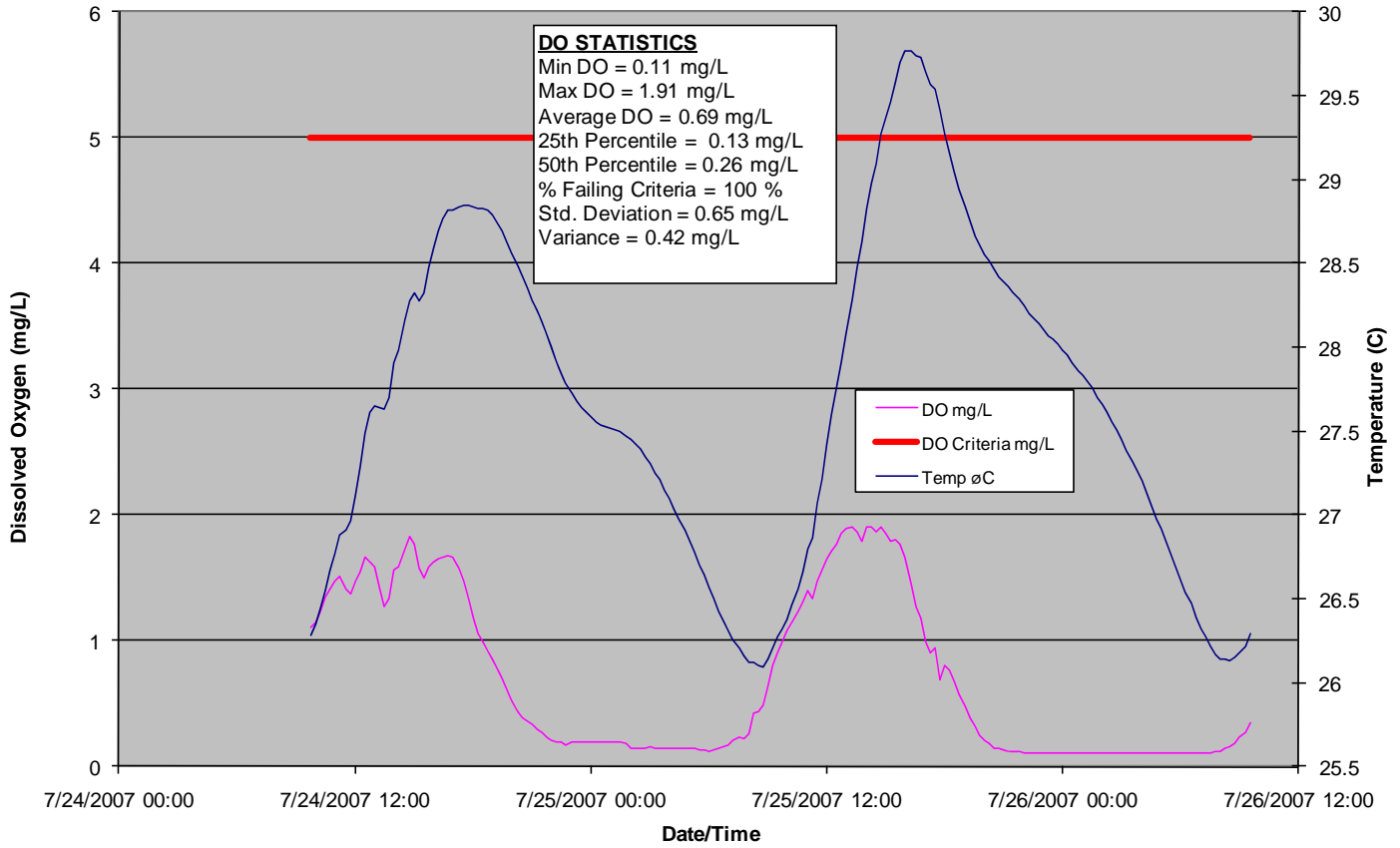
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	9:45	7/25/2007 09:45	23.91	7.27	423	5.3	0.44	0.21	1	5
7/25/2007	10:00	7/25/2007 10:00	23.92	7.27	424	5.6	0.47	0.21	1	5
7/25/2007	10:15	7/25/2007 10:15	23.94	7.27	424	6.4	0.54	0.21	1	5
7/25/2007	10:30	7/25/2007 10:30	23.94	7.27	425	7	0.59	0.21	1	5
7/25/2007	10:45	7/25/2007 10:45	23.96	7.27	425	7.9	0.66	0.21	1	5
7/25/2007	11:00	7/25/2007 11:00	23.98	7.28	425	8.6	0.73	0.21	1	5
7/25/2007	11:15	7/25/2007 11:15	24	7.28	425	10.2	0.85	0.21	1	5
7/25/2007	11:30	7/25/2007 11:30	24.03	7.28	426	11.3	0.95	0.21	1	5
7/25/2007	11:45	7/25/2007 11:45	24.05	7.28	426	12.7	1.07	0.21	1	5
7/25/2007	12:00	7/25/2007 12:00	24.09	7.29	427	14.3	1.2	0.21	1	5
7/25/2007	12:15	7/25/2007 12:15	24.13	7.29	427	15.5	1.3	0.21	1	5
7/25/2007	12:30	7/25/2007 12:30	24.19	7.29	427	18.1	1.51	0.21	1	5
7/25/2007	12:45	7/25/2007 12:45	24.26	7.3	428	20	1.68	0.21	1	5
7/25/2007	13:00	7/25/2007 13:00	24.33	7.31	428	23.2	1.93	0.21	1	5
7/25/2007	13:15	7/25/2007 13:15	24.42	7.32	429	25.8	2.15	0.21	1	5
7/25/2007	13:30	7/25/2007 13:30	24.5	7.32	430	28.1	2.34	0.22	1	5
7/25/2007	13:45	7/25/2007 13:45	24.57	7.33	430	30	2.5	0.22	1	5
7/25/2007	14:00	7/25/2007 14:00	24.68	7.34	431	33	2.74	0.22	1	5
7/25/2007	14:15	7/25/2007 14:15	24.77	7.35	431	34.9	2.89	0.22	1	5
7/25/2007	14:30	7/25/2007 14:30	24.81	7.36	431	36.1	2.99	0.22	1	5
7/25/2007	14:45	7/25/2007 14:45	24.87	7.36	432	35.8	2.97	0.22	1	5
7/25/2007	15:00	7/25/2007 15:00	24.93	7.36	433	35.4	2.93	0.22	1	5
7/25/2007	15:15	7/25/2007 15:15	24.98	7.36	433	35.2	2.9	0.22	1	5
7/25/2007	15:30	7/25/2007 15:30	25.05	7.36	434	34.7	2.86	0.22	1	5
7/25/2007	15:45	7/25/2007 15:45	25.11	7.36	435	34.3	2.82	0.22	1	5
7/25/2007	16:00	7/25/2007 16:00	25.19	7.35	435	33.1	2.72	0.22	1	5
7/25/2007	16:15	7/25/2007 16:15	25.27	7.35	436	31.6	2.59	0.22	1	5
7/25/2007	16:30	7/25/2007 16:30	25.33	7.35	437	29.6	2.43	0.22	1	5
7/25/2007	16:45	7/25/2007 16:45	25.4	7.35	437	28	2.29	0.22	1	5
7/25/2007	17:00	7/25/2007 17:00	25.42	7.35	437	25.2	2.06	0.22	1	5
7/25/2007	17:15	7/25/2007 17:15	25.48	7.34	437	23.3	1.91	0.22	1	5
7/25/2007	17:30	7/25/2007 17:30	25.56	7.34	438	22.9	1.87	0.22	1	5
7/25/2007	17:45	7/25/2007 17:45	25.62	7.34	438	20.2	1.65	0.22	1	5
7/25/2007	18:00	7/25/2007 18:00	25.64	7.34	436	22	1.8	0.22	1	5
7/25/2007	18:15	7/25/2007 18:15	25.58	7.35	431	24.8	2.03	0.22	1	5
7/25/2007	18:30	7/25/2007 18:30	25.66	7.34	434	19.9	1.62	0.22	1	5
7/25/2007	18:45	7/25/2007 18:45	25.71	7.33	435	16.8	1.37	0.22	1	5
7/25/2007	19:00	7/25/2007 19:00	25.75	7.33	435	14.6	1.19	0.22	1	5
7/25/2007	19:15	7/25/2007 19:15	25.79	7.33	434	13.4	1.09	0.22	1	5
7/25/2007	19:30	7/25/2007 19:30	25.83	7.33	435	11.9	0.97	0.22	1	5
7/25/2007	19:45	7/25/2007 19:45	25.86	7.33	434	11.3	0.92	0.22	1	5
7/25/2007	20:00	7/25/2007 20:00	25.88	7.33	434	9.6	0.78	0.22	1	5
7/25/2007	20:15	7/25/2007 20:15	25.93	7.33	435	7.9	0.64	0.22	1	5
7/25/2007	20:30	7/25/2007 20:30	25.98	7.33	435	6.5	0.52	0.22	1	5
7/25/2007	20:45	7/25/2007 20:45	25.98	7.34	435	5.5	0.45	0.22	1	5
7/25/2007	21:00	7/25/2007 21:00	26.01	7.33	436	5.3	0.43	0.22	1	5
7/25/2007	21:15	7/25/2007 21:15	26	7.33	436	4.7	0.38	0.22	1	5
7/25/2007	21:30	7/25/2007 21:30	25.99	7.33	436	4.3	0.35	0.22	1	5
7/25/2007	21:45	7/25/2007 21:45	25.97	7.33	436	4	0.33	0.22	1	5
7/25/2007	22:00	7/25/2007 22:00	25.97	7.33	436	3.2	0.26	0.22	1	5

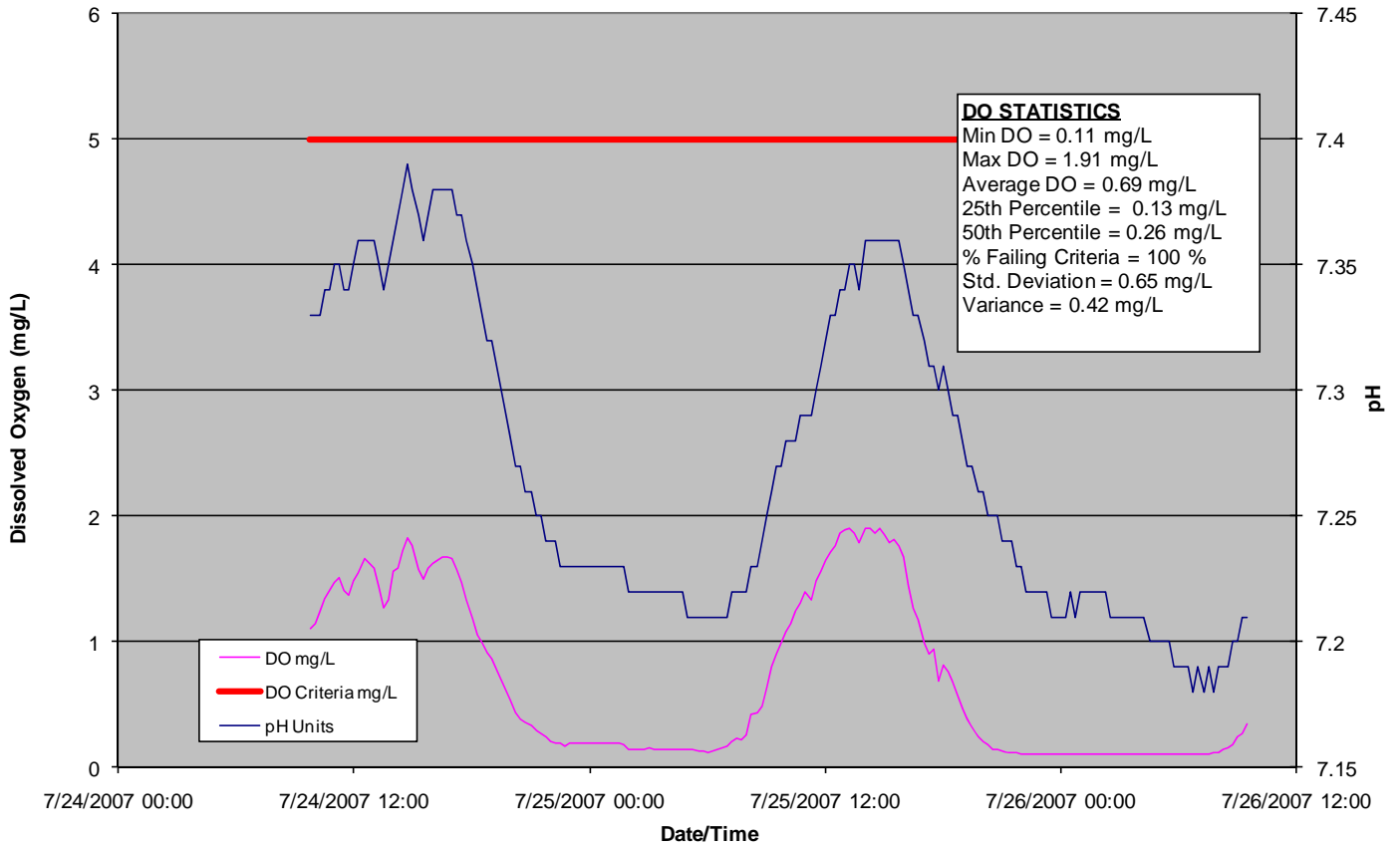
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	22:15	7/25/2007 22:15	25.94	7.33	435	2.8	0.23	0.22	1	5
7/25/2007	22:30	7/25/2007 22:30	25.92	7.33	435	2.6	0.21	0.22	1	5
7/25/2007	22:45	7/25/2007 22:45	25.88	7.33	436	2.4	0.19	0.22	1	5
7/25/2007	23:00	7/25/2007 23:00	25.84	7.32	437	2.3	0.19	0.22	1	5
7/25/2007	23:15	7/25/2007 23:15	25.8	7.33	438	2.1	0.17	0.22	1	5
7/25/2007	23:30	7/25/2007 23:30	25.75	7.32	438	1.9	0.16	0.22	1	5
7/25/2007	23:45	7/25/2007 23:45	25.7	7.32	438	1.9	0.15	0.22	1	5
7/26/2007	0:00	7/26/2007 00:00	25.64	7.33	438	1.9	0.16	0.22	1	5
7/26/2007	0:15	7/26/2007 00:15	25.58	7.33	438	1.7	0.14	0.22	1	5
7/26/2007	0:30	7/26/2007 00:30	25.52	7.32	437	1.6	0.13	0.22	1	5
7/26/2007	0:45	7/26/2007 00:45	25.46	7.32	437	1.6	0.13	0.22	1	5
7/26/2007	1:00	7/26/2007 01:00	25.4	7.32	437	1.7	0.14	0.22	1	5
7/26/2007	1:15	7/26/2007 01:15	25.33	7.32	437	1.5	0.12	0.22	1	5
7/26/2007	1:30	7/26/2007 01:30	25.27	7.32	436	1.3	0.11	0.22	1	5
7/26/2007	1:45	7/26/2007 01:45	25.21	7.32	436	1.4	0.11	0.22	1	5
7/26/2007	2:00	7/26/2007 02:00	25.16	7.32	435	1.3	0.11	0.22	1	5
7/26/2007	2:15	7/26/2007 02:15	25.1	7.32	434	1.2	0.1	0.22	1	5
7/26/2007	2:30	7/26/2007 02:30	25.05	7.31	434	1.2	0.1	0.22	1	5
7/26/2007	2:45	7/26/2007 02:45	24.99	7.31	433	1.2	0.1	0.22	1	5
7/26/2007	3:00	7/26/2007 03:00	24.93	7.31	432	1.2	0.1	0.22	1	5
7/26/2007	3:15	7/26/2007 03:15	24.88	7.31	431	1.1	0.09	0.22	1	5
7/26/2007	3:30	7/26/2007 03:30	24.84	7.31	430	0.9	0.08	0.22	1	5
7/26/2007	3:45	7/26/2007 03:45	24.79	7.3	429	0.9	0.08	0.21	1	5
7/26/2007	4:00	7/26/2007 04:00	24.75	7.3	429	0.9	0.08	0.21	1	5
7/26/2007	4:15	7/26/2007 04:15	24.71	7.3	428	0.8	0.07	0.21	1	5
7/26/2007	4:30	7/26/2007 04:30	24.67	7.3	428	0.7	0.06	0.21	1	5
7/26/2007	4:45	7/26/2007 04:45	24.63	7.3	427	0.7	0.06	0.21	1	5
7/26/2007	5:00	7/26/2007 05:00	24.6	7.3	426	0.8	0.07	0.21	1	5
7/26/2007	5:15	7/26/2007 05:15	24.57	7.3	425	0.7	0.06	0.21	1	5
7/26/2007	5:30	7/26/2007 05:30	24.53	7.3	424	0.7	0.06	0.21	1	5
7/26/2007	5:45	7/26/2007 05:45	24.49	7.29	423	0.6	0.05	0.21	1	5
7/26/2007	6:00	7/26/2007 06:00	24.46	7.29	423	0.6	0.05	0.21	1	5
7/26/2007	6:15	7/26/2007 06:15	24.42	7.29	422	0.7	0.06	0.21	1	5
7/26/2007	6:30	7/26/2007 06:30	24.39	7.29	422	0.7	0.06	0.21	1	5
7/26/2007	6:45	7/26/2007 06:45	24.36	7.29	422	0.6	0.05	0.21	1	5
7/26/2007	7:00	7/26/2007 07:00	24.33	7.29	422	0.7	0.06	0.21	1	5
7/26/2007	7:15	7/26/2007 07:15	24.3	7.29	421	0.9	0.07	0.21	1	5
7/26/2007	7:30	7/26/2007 07:30	24.27	7.29	421	1	0.08	0.21	1	5
7/26/2007	7:45	7/26/2007 07:45	24.25	7.29	422	0.9	0.08	0.21	1	5
7/26/2007	8:00	7/26/2007 08:00	24.24	7.29	421	1.5	0.13	0.21	1	5
7/26/2007	8:15	7/26/2007 08:15	24.23	7.29	422	1.6	0.14	0.21	1	5
7/26/2007	8:30	7/26/2007 08:30	24.24	7.29	422	1.8	0.15	0.21	1	5
7/26/2007	8:45	7/26/2007 08:45	24.25	7.29	422	2.5	0.21	0.21	1	5
7/26/2007	9:00	7/26/2007 09:00	24.25	7.29	422	2.6	0.22	0.21	1	5
7/26/2007	9:15	7/26/2007 09:15	24.25	7.29	422	3.2	0.26	0.21	1	5
7/26/2007	9:30	7/26/2007 09:30	24.25	7.28	423	3.2	0.27	0.21	1	5

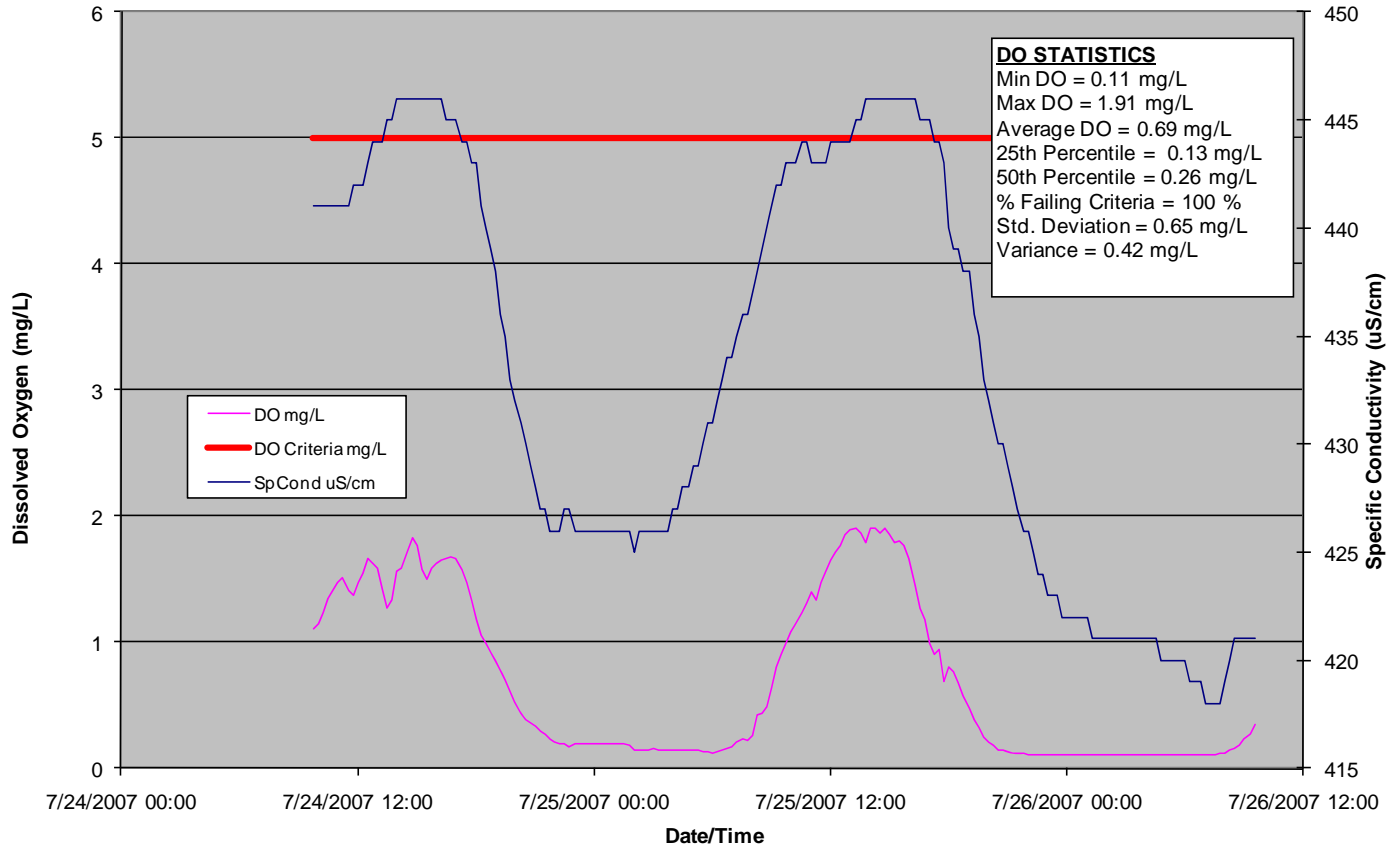
**Site Number: 3387 GC-07, Site Name: GC downstream of Wax Road and DS POTW,  
Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time**



**Site Number: 3387 GC-07, Site Name: GC downstream of Wax Road and DS POTW,  
Subsegment: 040304, DO & pH vs. Date/Time**



**Site Number: 3387 GC-07, Site Name: GC downstream of Wax Road and DS POTW,  
 Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 3387 GC-07 Site Name: GC downstream of Wax Road and DS POTW						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
Minimum	26.09	7.18	418.00	1.40	0.11	0.21
Maximum	29.77	7.39	446.00	24.90	1.91	0.22
Average	27.68	7.27	433.19	8.78	0.69	0.22
Geometric Mean	27.66	7.27		4.97	0.39	0.22
25th Percentile	26.84	7.22	426.00	1.70	0.13	0.21
30th Percentile	27.04	7.22	426.00	1.90	0.15	0.21
40th Percentile	27.43	7.23	427.00	2.40	0.19	0.21
50th Percentile	27.64	7.25	432.00	3.30	0.27	0.22
Standard Deviation	1.00	0.06	9.67	8.35	0.65	0.00
Variance	1.00	0.00	93.42	69.71	0.42	0.00

Data Row Count	192
Total Values Failing	
DO Criteria	192
Percent failing DO	
Criteria	100.00 %

### Grays Creek Subsegment 040304 Site 3387 GC-07 Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO	DO	SALINITY	Is DO <	DO
MMDDYY	HHMM	MMDDYYYY	øC	Units	uS/cm	PERCENT	mg/L	ppt	Criteria	Criteria
		HHMM				Sat			5	mg/L
7/24/2007	9:45	7/24/2007 09:45	26.28	7.33	441	13.7	1.11	0.22	1	5
7/24/2007	10:00	7/24/2007 10:00	26.35	7.33	441	14.2	1.14	0.22	1	5
7/24/2007	10:15	7/24/2007 10:15	26.44	7.33	441	15.4	1.24	0.22	1	5
7/24/2007	10:30	7/24/2007 10:30	26.55	7.34	441	16.9	1.35	0.22	1	5
7/24/2007	10:45	7/24/2007 10:45	26.67	7.34	441	17.6	1.41	0.22	1	5
7/24/2007	11:00	7/24/2007 11:00	26.77	7.35	441	18.4	1.47	0.22	1	5
7/24/2007	11:15	7/24/2007 11:15	26.88	7.35	441	19	1.51	0.22	1	5
7/24/2007	11:30	7/24/2007 11:30	26.91	7.34	441	17.7	1.41	0.22	1	5
7/24/2007	11:45	7/24/2007 11:45	26.97	7.34	442	17.2	1.37	0.22	1	5
7/24/2007	12:00	7/24/2007 12:00	27.12	7.35	442	18.6	1.48	0.22	1	5
7/24/2007	12:15	7/24/2007 12:15	27.29	7.36	442	19.6	1.55	0.22	1	5
7/24/2007	12:30	7/24/2007 12:30	27.49	7.36	443	21.1	1.66	0.22	1	5
7/24/2007	12:45	7/24/2007 12:45	27.61	7.36	444	20.7	1.63	0.22	1	5
7/24/2007	13:00	7/24/2007 13:00	27.65	7.36	444	20.2	1.59	0.22	1	5
7/24/2007	13:15	7/24/2007 13:15	27.64	7.35	444	18.2	1.43	0.22	1	5
7/24/2007	13:30	7/24/2007 13:30	27.63	7.34	445	16.2	1.27	0.22	1	5
7/24/2007	13:45	7/24/2007 13:45	27.7	7.35	445	17	1.33	0.22	1	5
7/24/2007	14:00	7/24/2007 14:00	27.91	7.36	446	19.9	1.56	0.22	1	5
7/24/2007	14:15	7/24/2007 14:15	27.98	7.37	446	20.3	1.59	0.22	1	5
7/24/2007	14:30	7/24/2007 14:30	28.16	7.38	446	22.2	1.73	0.22	1	5
7/24/2007	14:45	7/24/2007 14:45	28.28	7.39	446	23.6	1.83	0.22	1	5
7/24/2007	15:00	7/24/2007 15:00	28.32	7.38	446	22.7	1.76	0.22	1	5
7/24/2007	15:15	7/24/2007 15:15	28.28	7.37	446	20.2	1.57	0.22	1	5
7/24/2007	15:30	7/24/2007 15:30	28.32	7.36	446	19.3	1.5	0.22	1	5
7/24/2007	15:45	7/24/2007 15:45	28.48	7.37	446	20.5	1.59	0.22	1	5
7/24/2007	16:00	7/24/2007 16:00	28.59	7.38	446	21	1.63	0.22	1	5
7/24/2007	16:15	7/24/2007 16:15	28.69	7.38	446	21.4	1.65	0.22	1	5
7/24/2007	16:30	7/24/2007 16:30	28.77	7.38	445	21.7	1.67	0.22	1	5
7/24/2007	16:45	7/24/2007 16:45	28.82	7.38	445	21.8	1.68	0.22	1	5
7/24/2007	17:00	7/24/2007 17:00	28.82	7.38	445	21.6	1.66	0.22	1	5
7/24/2007	17:15	7/24/2007 17:15	28.84	7.37	444	20.5	1.58	0.22	1	5
7/24/2007	17:30	7/24/2007 17:30	28.85	7.37	444	19.1	1.47	0.22	1	5
7/24/2007	17:45	7/24/2007 17:45	28.85	7.36	443	17.3	1.33	0.22	1	5
7/24/2007	18:00	7/24/2007 18:00	28.84	7.35	443	15.3	1.18	0.22	1	5
7/24/2007	18:15	7/24/2007 18:15	28.83	7.34	441	13.8	1.06	0.22	1	5
7/24/2007	18:30	7/24/2007 18:30	28.83	7.33	440	12.8	0.99	0.22	1	5
7/24/2007	18:45	7/24/2007 18:45	28.82	7.32	439	12	0.92	0.22	1	5
7/24/2007	19:00	7/24/2007 19:00	28.79	7.32	438	11.1	0.86	0.22	1	5
7/24/2007	19:15	7/24/2007 19:15	28.74	7.31	436	10.1	0.78	0.22	1	5
7/24/2007	19:30	7/24/2007 19:30	28.69	7.3	435	9.1	0.7	0.22	1	5
7/24/2007	19:45	7/24/2007 19:45	28.63	7.29	433	7.9	0.61	0.22	1	5
7/24/2007	20:00	7/24/2007 20:00	28.56	7.28	432	6.7	0.52	0.22	1	5
7/24/2007	20:15	7/24/2007 20:15	28.49	7.27	431	5.6	0.44	0.22	1	5
7/24/2007	20:30	7/24/2007 20:30	28.42	7.27	430	4.9	0.38	0.22	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	20:45	7/24/2007 20:45	28.35	7.26	429	4.6	0.36	0.21	1	5
7/24/2007	21:00	7/24/2007 21:00	28.28	7.26	428	4.2	0.33	0.21	1	5
7/24/2007	21:15	7/24/2007 21:15	28.22	7.25	427	3.8	0.3	0.21	1	5
7/24/2007	21:30	7/24/2007 21:30	28.15	7.25	427	3.4	0.27	0.21	1	5
7/24/2007	21:45	7/24/2007 21:45	28.08	7.24	426	3.1	0.24	0.21	1	5
7/24/2007	22:00	7/24/2007 22:00	28	7.24	426	2.7	0.21	0.21	1	5
7/24/2007	22:15	7/24/2007 22:15	27.92	7.24	426	2.5	0.19	0.21	1	5
7/24/2007	22:30	7/24/2007 22:30	27.85	7.23	427	2.4	0.19	0.21	1	5
7/24/2007	22:45	7/24/2007 22:45	27.78	7.23	427	2.2	0.17	0.21	1	5
7/24/2007	23:00	7/24/2007 23:00	27.73	7.23	426	2.4	0.19	0.21	1	5
7/24/2007	23:15	7/24/2007 23:15	27.68	7.23	426	2.4	0.19	0.21	1	5
7/24/2007	23:30	7/24/2007 23:30	27.64	7.23	426	2.5	0.2	0.21	1	5
7/24/2007	23:45	7/24/2007 23:45	27.61	7.23	426	2.5	0.2	0.21	1	5
7/25/2007	0:00	7/25/2007 00:00	27.58	7.23	426	2.5	0.2	0.21	1	5
7/25/2007	0:15	7/25/2007 00:15	27.56	7.23	426	2.5	0.2	0.21	1	5
7/25/2007	0:30	7/25/2007 00:30	27.54	7.23	426	2.5	0.2	0.21	1	5
7/25/2007	0:45	7/25/2007 00:45	27.53	7.23	426	2.4	0.19	0.21	1	5
7/25/2007	1:00	7/25/2007 01:00	27.52	7.23	426	2.4	0.19	0.21	1	5
7/25/2007	1:15	7/25/2007 01:15	27.51	7.23	426	2.4	0.19	0.21	1	5
7/25/2007	1:30	7/25/2007 01:30	27.5	7.23	426	2.4	0.19	0.21	1	5
7/25/2007	1:45	7/25/2007 01:45	27.47	7.23	426	2.2	0.18	0.21	1	5
7/25/2007	2:00	7/25/2007 02:00	27.45	7.22	425	1.9	0.15	0.21	1	5
7/25/2007	2:15	7/25/2007 02:15	27.42	7.22	426	1.9	0.15	0.21	1	5
7/25/2007	2:30	7/25/2007 02:30	27.39	7.22	426	1.8	0.15	0.21	1	5
7/25/2007	2:45	7/25/2007 02:45	27.35	7.22	426	1.9	0.15	0.21	1	5
7/25/2007	3:00	7/25/2007 03:00	27.31	7.22	426	2	0.16	0.21	1	5
7/25/2007	3:15	7/25/2007 03:15	27.25	7.22	426	1.9	0.15	0.21	1	5
7/25/2007	3:30	7/25/2007 03:30	27.21	7.22	426	1.9	0.15	0.21	1	5
7/25/2007	3:45	7/25/2007 03:45	27.15	7.22	426	1.9	0.15	0.21	1	5
7/25/2007	4:00	7/25/2007 04:00	27.1	7.22	427	1.9	0.15	0.21	1	5
7/25/2007	4:15	7/25/2007 04:15	27.03	7.22	427	1.9	0.15	0.21	1	5
7/25/2007	4:30	7/25/2007 04:30	26.98	7.22	428	1.8	0.15	0.21	1	5
7/25/2007	4:45	7/25/2007 04:45	26.91	7.22	428	1.8	0.14	0.21	1	5
7/25/2007	5:00	7/25/2007 05:00	26.84	7.21	429	1.7	0.14	0.21	1	5
7/25/2007	5:15	7/25/2007 05:15	26.78	7.21	429	1.7	0.14	0.21	1	5
7/25/2007	5:30	7/25/2007 05:30	26.7	7.21	430	1.7	0.13	0.22	1	5
7/25/2007	5:45	7/25/2007 05:45	26.64	7.21	431	1.6	0.13	0.22	1	5
7/25/2007	6:00	7/25/2007 06:00	26.57	7.21	431	1.5	0.12	0.22	1	5
7/25/2007	6:15	7/25/2007 06:15	26.5	7.21	432	1.6	0.13	0.22	1	5
7/25/2007	6:30	7/25/2007 06:30	26.43	7.21	433	1.8	0.14	0.22	1	5
7/25/2007	6:45	7/25/2007 06:45	26.37	7.21	434	1.9	0.16	0.22	1	5
7/25/2007	7:00	7/25/2007 07:00	26.31	7.21	434	2.2	0.17	0.22	1	5
7/25/2007	7:15	7/25/2007 07:15	26.25	7.22	435	2.6	0.21	0.22	1	5
7/25/2007	7:30	7/25/2007 07:30	26.21	7.22	436	2.9	0.23	0.22	1	5
7/25/2007	7:45	7/25/2007 07:45	26.16	7.22	436	2.8	0.22	0.22	1	5
7/25/2007	8:00	7/25/2007 08:00	26.12	7.22	437	3.2	0.26	0.22	1	5
7/25/2007	8:15	7/25/2007 08:15	26.12	7.23	438	5.2	0.42	0.22	1	5
7/25/2007	8:30	7/25/2007 08:30	26.1	7.23	439	5.4	0.44	0.22	1	5
7/25/2007	8:45	7/25/2007 08:45	26.09	7.24	440	6.1	0.49	0.22	1	5
7/25/2007	9:00	7/25/2007 09:00	26.14	7.25	441	8	0.64	0.22	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

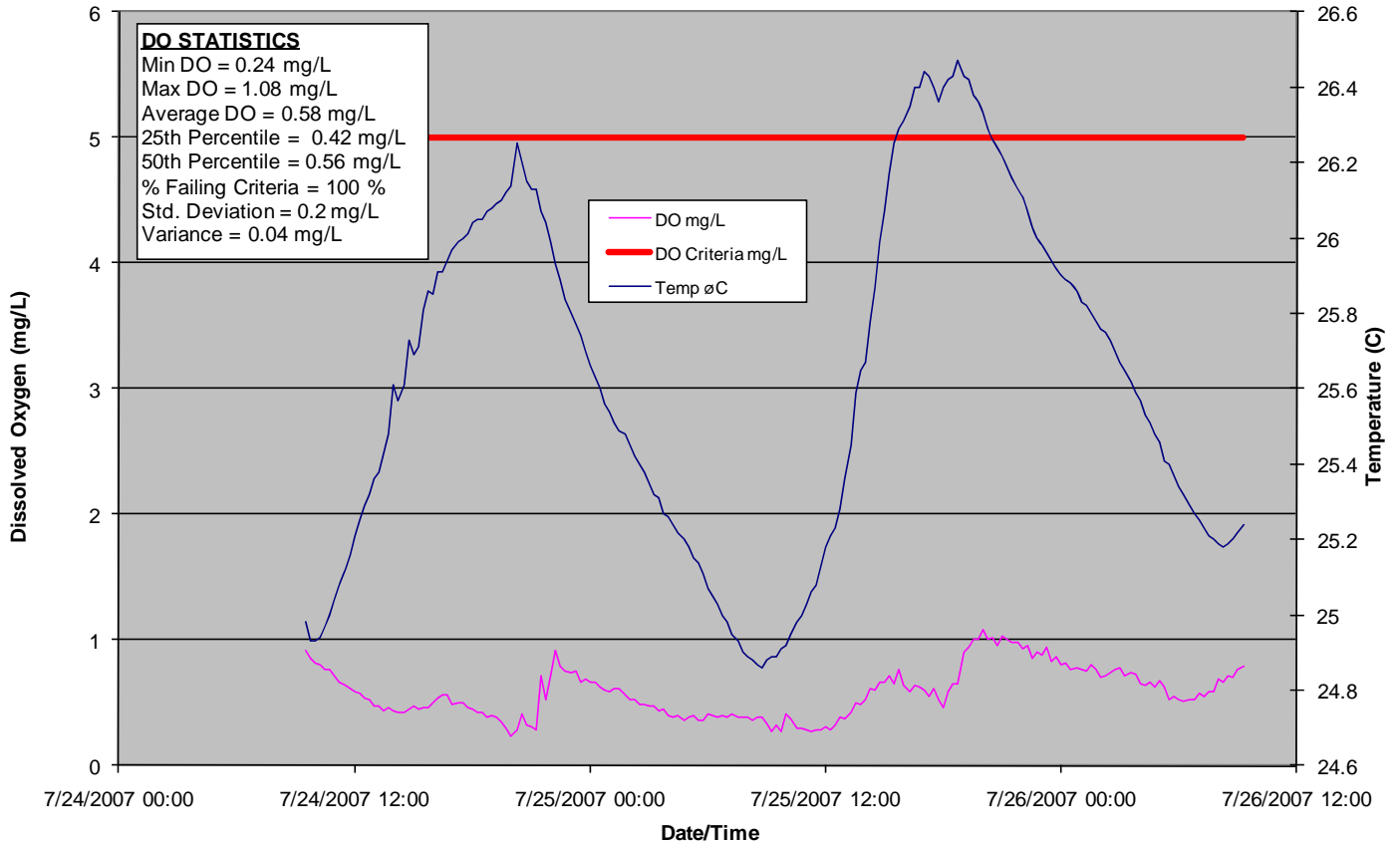
7/25/2007	9:15	7/25/2007 09:15	26.21	7.26	442	10	0.8	0.22	1	5
7/25/2007	9:30	7/25/2007 09:30	26.27	7.27	442	11.2	0.91	0.22	1	5
7/25/2007	9:45	7/25/2007 09:45	26.32	7.27	443	12.2	0.99	0.22	1	5
7/25/2007	10:00	7/25/2007 10:00	26.38	7.28	443	13.5	1.08	0.22	1	5
7/25/2007	10:15	7/25/2007 10:15	26.46	7.28	443	14.4	1.15	0.22	1	5
7/25/2007	10:30	7/25/2007 10:30	26.56	7.28	444	15.4	1.24	0.22	1	5
7/25/2007	10:45	7/25/2007 10:45	26.66	7.29	444	16.3	1.31	0.22	1	5
7/25/2007	11:00	7/25/2007 11:00	26.8	7.29	443	17.6	1.4	0.22	1	5
7/25/2007	11:15	7/25/2007 11:15	26.86	7.29	443	16.6	1.33	0.22	1	5
7/25/2007	11:30	7/25/2007 11:30	27.07	7.3	443	18.6	1.48	0.22	1	5
7/25/2007	11:45	7/25/2007 11:45	27.21	7.31	443	19.7	1.56	0.22	1	5
7/25/2007	12:00	7/25/2007 12:00	27.42	7.32	444	20.9	1.65	0.22	1	5
7/25/2007	12:15	7/25/2007 12:15	27.6	7.33	444	21.7	1.71	0.22	1	5
7/25/2007	12:30	7/25/2007 12:30	27.75	7.33	444	22.5	1.76	0.22	1	5
7/25/2007	12:45	7/25/2007 12:45	27.91	7.34	444	23.7	1.86	0.22	1	5
7/25/2007	13:00	7/25/2007 13:00	28.08	7.34	444	24.2	1.89	0.22	1	5
7/25/2007	13:15	7/25/2007 13:15	28.29	7.35	445	24.6	1.91	0.22	1	5
7/25/2007	13:30	7/25/2007 13:30	28.48	7.35	445	24.2	1.87	0.22	1	5
7/25/2007	13:45	7/25/2007 13:45	28.63	7.34	446	23.1	1.79	0.22	1	5
7/25/2007	14:00	7/25/2007 14:00	28.83	7.36	446	24.6	1.9	0.22	1	5
7/25/2007	14:15	7/25/2007 14:15	28.98	7.36	446	24.9	1.91	0.22	1	5
7/25/2007	14:30	7/25/2007 14:30	29.09	7.36	446	24.4	1.87	0.22	1	5
7/25/2007	14:45	7/25/2007 14:45	29.27	7.36	446	24.8	1.9	0.22	1	5
7/25/2007	15:00	7/25/2007 15:00	29.37	7.36	446	24.2	1.85	0.22	1	5
7/25/2007	15:15	7/25/2007 15:15	29.46	7.36	446	23.5	1.79	0.22	1	5
7/25/2007	15:30	7/25/2007 15:30	29.58	7.36	446	23.8	1.81	0.22	1	5
7/25/2007	15:45	7/25/2007 15:45	29.7	7.36	446	23.2	1.76	0.22	1	5
7/25/2007	16:00	7/25/2007 16:00	29.77	7.35	446	22.1	1.67	0.22	1	5
7/25/2007	16:15	7/25/2007 16:15	29.77	7.34	446	19.2	1.45	0.22	1	5
7/25/2007	16:30	7/25/2007 16:30	29.74	7.33	445	16.7	1.27	0.22	1	5
7/25/2007	16:45	7/25/2007 16:45	29.73	7.33	445	15.5	1.18	0.22	1	5
7/25/2007	17:00	7/25/2007 17:00	29.64	7.32	445	13	0.99	0.22	1	5
7/25/2007	17:15	7/25/2007 17:15	29.57	7.31	444	12	0.91	0.22	1	5
7/25/2007	17:30	7/25/2007 17:30	29.54	7.31	444	12.4	0.94	0.22	1	5
7/25/2007	17:45	7/25/2007 17:45	29.42	7.3	443	9.1	0.69	0.22	1	5
7/25/2007	18:00	7/25/2007 18:00	29.27	7.31	440	10.6	0.81	0.22	1	5
7/25/2007	18:15	7/25/2007 18:15	29.16	7.3	439	10.1	0.77	0.22	1	5
7/25/2007	18:30	7/25/2007 18:30	29.05	7.29	439	8.8	0.68	0.22	1	5
7/25/2007	18:45	7/25/2007 18:45	28.94	7.29	438	7.4	0.57	0.22	1	5
7/25/2007	19:00	7/25/2007 19:00	28.84	7.28	438	6.1	0.47	0.22	1	5
7/25/2007	19:15	7/25/2007 19:15	28.75	7.27	436	5	0.39	0.22	1	5
7/25/2007	19:30	7/25/2007 19:30	28.67	7.27	435	4.1	0.32	0.22	1	5
7/25/2007	19:45	7/25/2007 19:45	28.61	7.26	433	3.3	0.25	0.22	1	5
7/25/2007	20:00	7/25/2007 20:00	28.55	7.26	432	2.8	0.21	0.22	1	5
7/25/2007	20:15	7/25/2007 20:15	28.51	7.25	431	2.3	0.18	0.22	1	5
7/25/2007	20:30	7/25/2007 20:30	28.47	7.25	430	2	0.15	0.22	1	5
7/25/2007	20:45	7/25/2007 20:45	28.42	7.25	430	1.9	0.15	0.22	1	5
7/25/2007	21:00	7/25/2007 21:00	28.39	7.24	429	1.7	0.13	0.21	1	5
7/25/2007	21:15	7/25/2007 21:15	28.36	7.24	428	1.6	0.12	0.21	1	5
7/25/2007	21:30	7/25/2007 21:30	28.32	7.24	427	1.5	0.12	0.21	1	5



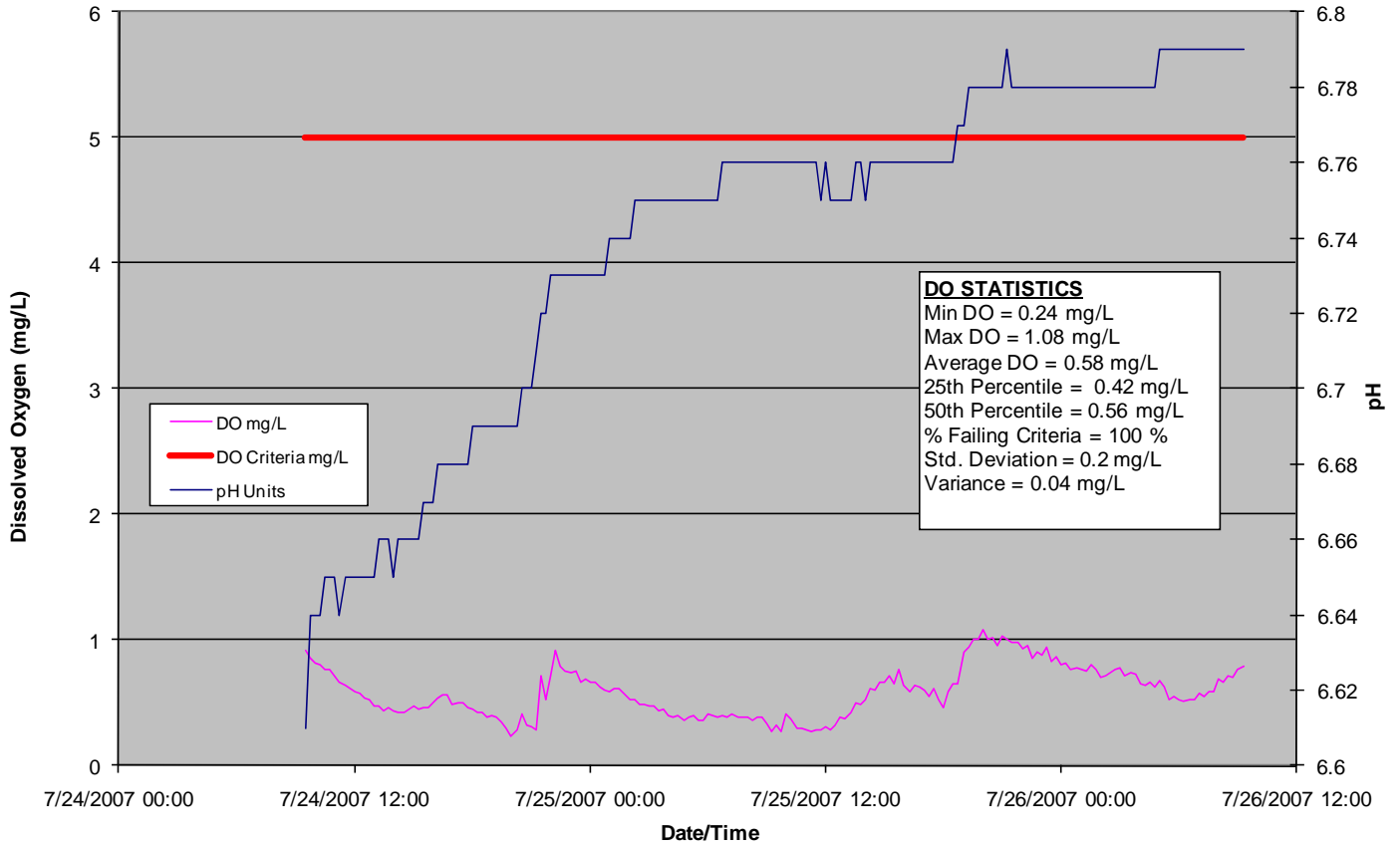
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	21:45	7/25/2007 21:45	28.29	7.23	426	1.5	0.12	0.21	1	5
7/25/2007	22:00	7/25/2007 22:00	28.25	7.23	426	1.4	0.11	0.21	1	5
7/25/2007	22:15	7/25/2007 22:15	28.2	7.22	425	1.4	0.11	0.21	1	5
7/25/2007	22:30	7/25/2007 22:30	28.17	7.22	424	1.4	0.11	0.21	1	5
7/25/2007	22:45	7/25/2007 22:45	28.14	7.22	424	1.4	0.11	0.21	1	5
7/25/2007	23:00	7/25/2007 23:00	28.11	7.22	423	1.4	0.11	0.21	1	5
7/25/2007	23:15	7/25/2007 23:15	28.07	7.22	423	1.4	0.11	0.21	1	5
7/25/2007	23:30	7/25/2007 23:30	28.05	7.21	423	1.4	0.11	0.21	1	5
7/25/2007	23:45	7/25/2007 23:45	28.02	7.21	422	1.4	0.11	0.21	1	5
7/26/2007	0:00	7/26/2007 00:00	27.98	7.21	422	1.4	0.11	0.21	1	5
7/26/2007	0:15	7/26/2007 00:15	27.95	7.21	422	1.4	0.11	0.21	1	5
7/26/2007	0:30	7/26/2007 00:30	27.91	7.22	422	1.4	0.11	0.21	1	5
7/26/2007	0:45	7/26/2007 00:45	27.86	7.21	422	1.5	0.11	0.21	1	5
7/26/2007	1:00	7/26/2007 01:00	27.83	7.22	422	1.4	0.11	0.21	1	5
7/26/2007	1:15	7/26/2007 01:15	27.79	7.22	421	1.4	0.11	0.21	1	5
7/26/2007	1:30	7/26/2007 01:30	27.75	7.22	421	1.4	0.11	0.21	1	5
7/26/2007	1:45	7/26/2007 01:45	27.7	7.22	421	1.4	0.11	0.21	1	5
7/26/2007	2:00	7/26/2007 02:00	27.66	7.22	421	1.4	0.11	0.21	1	5
7/26/2007	2:15	7/26/2007 02:15	27.61	7.22	421	1.4	0.11	0.21	1	5
7/26/2007	2:30	7/26/2007 02:30	27.56	7.21	421	1.4	0.11	0.21	1	5
7/26/2007	2:45	7/26/2007 02:45	27.51	7.21	421	1.4	0.11	0.21	1	5
7/26/2007	3:00	7/26/2007 03:00	27.45	7.21	421	1.4	0.11	0.21	1	5
7/26/2007	3:15	7/26/2007 03:15	27.38	7.21	421	1.4	0.11	0.21	1	5
7/26/2007	3:30	7/26/2007 03:30	27.32	7.21	421	1.4	0.11	0.21	1	5
7/26/2007	3:45	7/26/2007 03:45	27.26	7.21	421	1.4	0.11	0.21	1	5
7/26/2007	4:00	7/26/2007 04:00	27.2	7.21	421	1.4	0.11	0.21	1	5
7/26/2007	4:15	7/26/2007 04:15	27.13	7.21	421	1.4	0.11	0.21	1	5
7/26/2007	4:30	7/26/2007 04:30	27.05	7.2	421	1.4	0.11	0.21	1	5
7/26/2007	4:45	7/26/2007 04:45	26.98	7.2	420	1.4	0.11	0.21	1	5
7/26/2007	5:00	7/26/2007 05:00	26.92	7.2	420	1.4	0.11	0.21	1	5
7/26/2007	5:15	7/26/2007 05:15	26.84	7.2	420	1.4	0.11	0.21	1	5
7/26/2007	5:30	7/26/2007 05:30	26.77	7.2	420	1.4	0.11	0.21	1	5
7/26/2007	5:45	7/26/2007 05:45	26.69	7.19	420	1.4	0.11	0.21	1	5
7/26/2007	6:00	7/26/2007 06:00	26.62	7.19	420	1.4	0.11	0.21	1	5
7/26/2007	6:15	7/26/2007 06:15	26.54	7.19	419	1.4	0.11	0.21	1	5
7/26/2007	6:30	7/26/2007 06:30	26.47	7.19	419	1.4	0.11	0.21	1	5
7/26/2007	6:45	7/26/2007 06:45	26.39	7.18	419	1.4	0.11	0.21	1	5
7/26/2007	7:00	7/26/2007 07:00	26.32	7.19	418	1.4	0.11	0.21	1	5
7/26/2007	7:15	7/26/2007 07:15	26.27	7.18	418	1.4	0.11	0.21	1	5
7/26/2007	7:30	7/26/2007 07:30	26.22	7.19	418	1.4	0.11	0.21	1	5
7/26/2007	7:45	7/26/2007 07:45	26.17	7.18	418	1.4	0.12	0.21	1	5
7/26/2007	8:00	7/26/2007 08:00	26.14	7.19	419	1.4	0.12	0.21	1	5
7/26/2007	8:15	7/26/2007 08:15	26.14	7.19	420	1.7	0.14	0.21	1	5
7/26/2007	8:30	7/26/2007 08:30	26.13	7.19	421	2	0.16	0.21	1	5
7/26/2007	8:45	7/26/2007 08:45	26.15	7.2	421	2.2	0.18	0.21	1	5
7/26/2007	9:00	7/26/2007 09:00	26.18	7.2	421	2.9	0.24	0.21	1	5
7/26/2007	9:15	7/26/2007 09:15	26.22	7.21	421	3.3	0.27	0.21	1	5
7/26/2007	9:30	7/26/2007 09:30	26.29	7.21	421	4.3	0.35	0.21	1	5

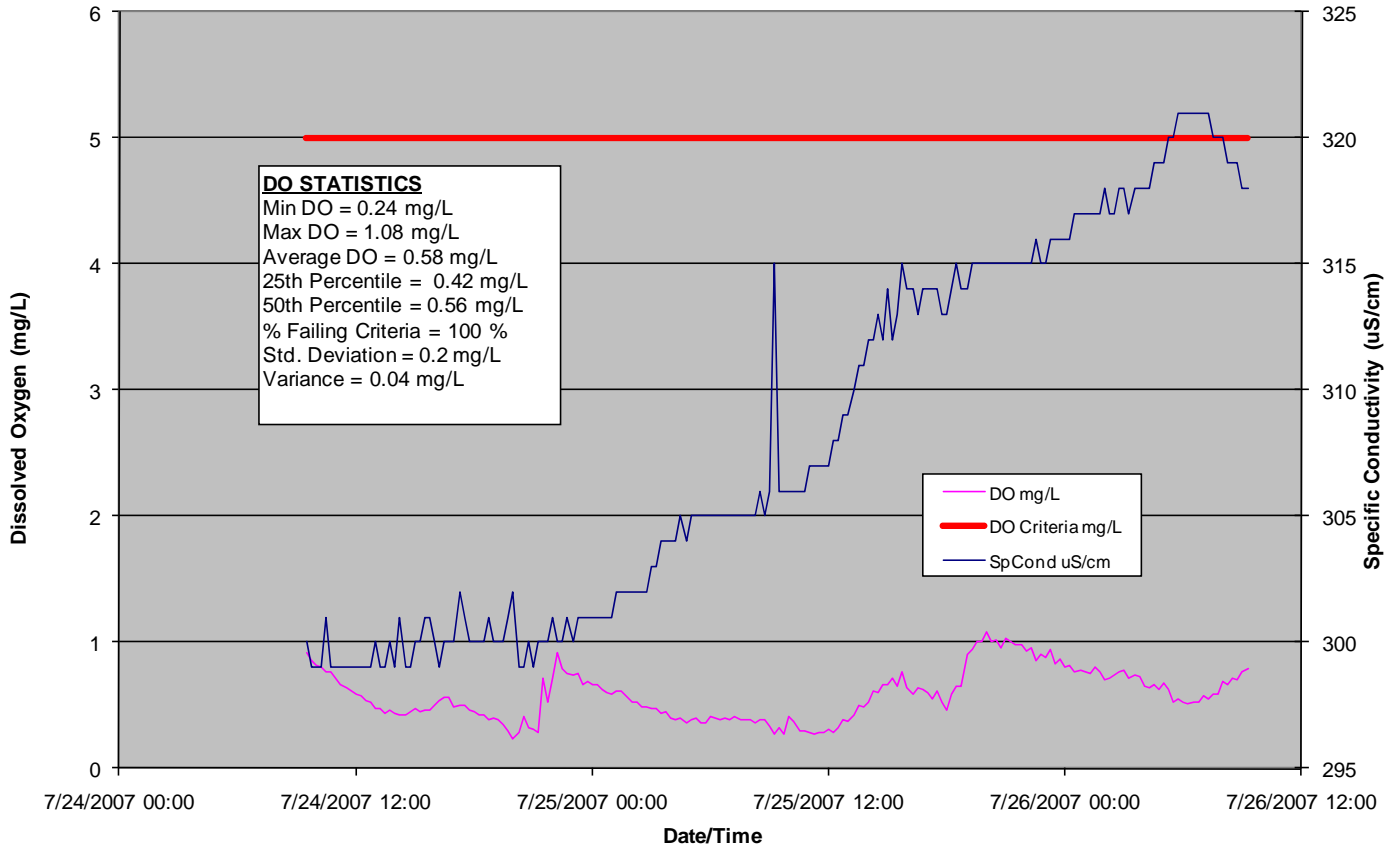
**Site Number: 3388 GC-08, Site Name: GC downstream of Forrest Delatte Road and upstream of DS POTW, Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time**



**Site Number: 3388 GC-08, Site Name: GC downstream of Forrest Delatte Road and upstream of DS POTW, Subsegment: 040304, DO & pH vs. Date/Time**



**Site Number: 3388 GC-08, Site Name: GC downstream of Forrest Delatte Road and upstream of DS POTW, Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 3388 GC-08 Site Name: GC downstream of Forrest Delatte Road and upstream of DS POTW						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
Average	25.62	6.74	308.15	7.17	0.58	0.151
Minimum	24.86	6.61	299.00	3.00	0.24	0.140
Maximum	26.47	6.79	321.00	13.40	1.08	0.160
Geometric Mean	25.62	6.74		6.75	0.55	0.151
25th Percentile	25.22	6.72	301.00	5.10	0.42	0.150
30th Percentile	25.27	6.73	301.00	5.53	0.45	0.150
40th Percentile	25.42	6.75	304.40	6.20	0.50	0.150
50th Percentile	25.61	6.76	306.00	6.90	0.56	0.150
Standard Deviation	0.47	0.05	7.50	2.47	0.20	0.004
Variance	0.22	0.00	56.20	6.10	0.04	0.000

Data Row Count	192
Total Values Failing	
DO Criteria	192
Percent failing DO	
Criteria	100.00 %

### Grays Creek Subsegment 040304 Site 3388 GC-08 Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO PERCENT	DO	SALINITY	Is DO < Criteria	DO Criteria
MMDDYY	HHMM	MMDDYYYY HHMM	øC	Units	uS/cm	Sat	mg/L	ppt	5	mg/L
7/24/2007	9:30	7/24/2007 09:30	24.98	6.61	300	11.2	0.92	0.15	1	5
7/24/2007	9:45	7/24/2007 09:45	24.93	6.64	299	10.4	0.86	0.15	1	5
7/24/2007	10:00	7/24/2007 10:00	24.93	6.64	299	9.9	0.82	0.15	1	5
7/24/2007	10:15	7/24/2007 10:15	24.94	6.64	299	9.8	0.81	0.15	1	5
7/24/2007	10:30	7/24/2007 10:30	24.97	6.65	301	9.4	0.77	0.15	1	5
7/24/2007	10:45	7/24/2007 10:45	25	6.65	299	9.2	0.76	0.15	1	5
7/24/2007	11:00	7/24/2007 11:00	25.04	6.65	299	8.6	0.71	0.15	1	5
7/24/2007	11:15	7/24/2007 11:15	25.08	6.64	299	8.1	0.66	0.15	1	5
7/24/2007	11:30	7/24/2007 11:30	25.12	6.65	299	7.8	0.64	0.14	1	5
7/24/2007	11:45	7/24/2007 11:45	25.16	6.65	299	7.5	0.62	0.14	1	5
7/24/2007	12:00	7/24/2007 12:00	25.21	6.65	299	7.2	0.59	0.14	1	5
7/24/2007	12:15	7/24/2007 12:15	25.25	6.65	299	7	0.58	0.15	1	5
7/24/2007	12:30	7/24/2007 12:30	25.29	6.65	299	6.6	0.54	0.14	1	5
7/24/2007	12:45	7/24/2007 12:45	25.32	6.65	299	6.4	0.53	0.14	1	5
7/24/2007	13:00	7/24/2007 13:00	25.36	6.65	300	5.7	0.47	0.15	1	5
7/24/2007	13:15	7/24/2007 13:15	25.38	6.66	299	5.8	0.47	0.14	1	5
7/24/2007	13:30	7/24/2007 13:30	25.43	6.66	299	5.4	0.44	0.15	1	5
7/24/2007	13:45	7/24/2007 13:45	25.48	6.66	300	5.6	0.46	0.15	1	5
7/24/2007	14:00	7/24/2007 14:00	25.61	6.65	299	5.4	0.44	0.14	1	5
7/24/2007	14:15	7/24/2007 14:15	25.57	6.66	301	5.2	0.43	0.15	1	5
7/24/2007	14:30	7/24/2007 14:30	25.61	6.66	299	5.1	0.42	0.15	1	5
7/24/2007	14:45	7/24/2007 14:45	25.73	6.66	299	5.5	0.45	0.15	1	5
7/24/2007	15:00	7/24/2007 15:00	25.69	6.66	300	5.8	0.47	0.15	1	5
7/24/2007	15:15	7/24/2007 15:15	25.71	6.66	300	5.6	0.45	0.15	1	5
7/24/2007	15:30	7/24/2007 15:30	25.81	6.67	301	5.7	0.46	0.15	1	5
7/24/2007	15:45	7/24/2007 15:45	25.86	6.67	301	5.6	0.46	0.15	1	5
7/24/2007	16:00	7/24/2007 16:00	25.85	6.67	300	6.1	0.5	0.15	1	5
7/24/2007	16:15	7/24/2007 16:15	25.91	6.68	299	6.7	0.54	0.14	1	5
7/24/2007	16:30	7/24/2007 16:30	25.91	6.68	300	6.8	0.56	0.15	1	5
7/24/2007	16:45	7/24/2007 16:45	25.94	6.68	300	7	0.56	0.15	1	5
7/24/2007	17:00	7/24/2007 17:00	25.97	6.68	300	6	0.49	0.15	1	5
7/24/2007	17:15	7/24/2007 17:15	25.99	6.68	302	6.2	0.5	0.15	1	5
7/24/2007	17:30	7/24/2007 17:30	26	6.68	301	6.2	0.5	0.15	1	5
7/24/2007	17:45	7/24/2007 17:45	26.01	6.68	300	5.7	0.46	0.15	1	5
7/24/2007	18:00	7/24/2007 18:00	26.04	6.69	300	5.6	0.45	0.15	1	5
7/24/2007	18:15	7/24/2007 18:15	26.05	6.69	300	5.2	0.42	0.15	1	5
7/24/2007	18:30	7/24/2007 18:30	26.05	6.69	300	5.2	0.42	0.15	1	5
7/24/2007	18:45	7/24/2007 18:45	26.07	6.69	301	4.8	0.39	0.15	1	5
7/24/2007	19:00	7/24/2007 19:00	26.08	6.69	300	4.9	0.4	0.15	1	5
7/24/2007	19:15	7/24/2007 19:15	26.09	6.69	300	4.7	0.38	0.15	1	5
7/24/2007	19:30	7/24/2007 19:30	26.1	6.69	300	4.3	0.35	0.15	1	5
7/24/2007	19:45	7/24/2007 19:45	26.12	6.69	301	3.7	0.3	0.15	1	5
7/24/2007	20:00	7/24/2007 20:00	26.14	6.69	302	3	0.24	0.15	1	5
7/24/2007	20:15	7/24/2007 20:15	26.25	6.69	299	3.4	0.28	0.14	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	20:30	7/24/2007 20:30	26.2	6.7	299	5.1	0.41	0.15	1	5
7/24/2007	20:45	7/24/2007 20:45	26.15	6.7	300	3.9	0.32	0.15	1	5
7/24/2007	21:00	7/24/2007 21:00	26.13	6.7	299	3.9	0.31	0.15	1	5
7/24/2007	21:15	7/24/2007 21:15	26.13	6.71	300	3.5	0.28	0.15	1	5
7/24/2007	21:30	7/24/2007 21:30	26.07	6.72	300	8.7	0.71	0.15	1	5
7/24/2007	21:45	7/24/2007 21:45	26.04	6.72	300	6.4	0.52	0.15	1	5
7/24/2007	22:00	7/24/2007 22:00	25.99	6.73	301	8.7	0.71	0.15	1	5
7/24/2007	22:15	7/24/2007 22:15	25.93	6.73	300	11.4	0.92	0.15	1	5
7/24/2007	22:30	7/24/2007 22:30	25.89	6.73	300	9.8	0.79	0.15	1	5
7/24/2007	22:45	7/24/2007 22:45	25.84	6.73	301	9.3	0.75	0.15	1	5
7/24/2007	23:00	7/24/2007 23:00	25.8	6.73	300	9.1	0.74	0.15	1	5
7/24/2007	23:15	7/24/2007 23:15	25.77	6.73	301	9.2	0.75	0.15	1	5
7/24/2007	23:30	7/24/2007 23:30	25.74	6.73	301	8.2	0.67	0.15	1	5
7/24/2007	23:45	7/24/2007 23:45	25.7	6.73	301	8.4	0.69	0.15	1	5
7/25/2007	0:00	7/25/2007 00:00	25.66	6.73	301	8.1	0.66	0.15	1	5
7/25/2007	0:15	7/25/2007 00:15	25.63	6.73	301	8.2	0.67	0.15	1	5
7/25/2007	0:30	7/25/2007 00:30	25.6	6.73	301	7.8	0.63	0.15	1	5
7/25/2007	0:45	7/25/2007 00:45	25.56	6.73	301	7.3	0.6	0.15	1	5
7/25/2007	1:00	7/25/2007 01:00	25.54	6.74	301	7.2	0.59	0.15	1	5
7/25/2007	1:15	7/25/2007 01:15	25.51	6.74	302	7.4	0.61	0.15	1	5
7/25/2007	1:30	7/25/2007 01:30	25.49	6.74	302	7.5	0.61	0.15	1	5
7/25/2007	1:45	7/25/2007 01:45	25.48	6.74	302	6.8	0.56	0.15	1	5
7/25/2007	2:00	7/25/2007 02:00	25.45	6.74	302	6.3	0.52	0.15	1	5
7/25/2007	2:15	7/25/2007 02:15	25.42	6.75	302	6.5	0.53	0.15	1	5
7/25/2007	2:30	7/25/2007 02:30	25.4	6.75	302	5.9	0.49	0.15	1	5
7/25/2007	2:45	7/25/2007 02:45	25.38	6.75	302	6	0.49	0.15	1	5
7/25/2007	3:00	7/25/2007 03:00	25.35	6.75	303	5.8	0.48	0.15	1	5
7/25/2007	3:15	7/25/2007 03:15	25.32	6.75	303	5.8	0.47	0.15	1	5
7/25/2007	3:30	7/25/2007 03:30	25.31	6.75	304	5.4	0.44	0.15	1	5
7/25/2007	3:45	7/25/2007 03:45	25.27	6.75	304	5.5	0.45	0.15	1	5
7/25/2007	4:00	7/25/2007 04:00	25.26	6.75	304	4.8	0.4	0.15	1	5
7/25/2007	4:15	7/25/2007 04:15	25.24	6.75	304	4.6	0.38	0.15	1	5
7/25/2007	4:30	7/25/2007 04:30	25.22	6.75	305	4.9	0.4	0.15	1	5
7/25/2007	4:45	7/25/2007 04:45	25.2	6.75	304	4.4	0.36	0.15	1	5
7/25/2007	5:00	7/25/2007 05:00	25.18	6.75	305	4.7	0.38	0.15	1	5
7/25/2007	5:15	7/25/2007 05:15	25.15	6.75	305	4.9	0.4	0.15	1	5
7/25/2007	5:30	7/25/2007 05:30	25.14	6.75	305	4.4	0.36	0.15	1	5
7/25/2007	5:45	7/25/2007 05:45	25.11	6.75	305	4.4	0.36	0.15	1	5
7/25/2007	6:00	7/25/2007 06:00	25.07	6.75	305	4.9	0.41	0.15	1	5
7/25/2007	6:15	7/25/2007 06:15	25.05	6.75	305	4.8	0.4	0.15	1	5
7/25/2007	6:30	7/25/2007 06:30	25.03	6.75	305	4.8	0.39	0.15	1	5
7/25/2007	6:45	7/25/2007 06:45	25	6.76	305	4.8	0.4	0.15	1	5
7/25/2007	7:00	7/25/2007 07:00	24.98	6.76	305	4.6	0.38	0.15	1	5
7/25/2007	7:15	7/25/2007 07:15	24.95	6.76	305	5	0.41	0.15	1	5
7/25/2007	7:30	7/25/2007 07:30	24.93	6.76	305	4.7	0.39	0.15	1	5
7/25/2007	7:45	7/25/2007 07:45	24.9	6.76	305	4.8	0.39	0.15	1	5
7/25/2007	8:00	7/25/2007 08:00	24.89	6.76	305	4.7	0.39	0.15	1	5
7/25/2007	8:15	7/25/2007 08:15	24.88	6.76	305	4.4	0.36	0.15	1	5
7/25/2007	8:30	7/25/2007 08:30	24.87	6.76	306	4.6	0.38	0.15	1	5
7/25/2007	8:45	7/25/2007 08:45	24.86	6.76	305	4.7	0.39	0.15	1	5

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 Subsegment 040304  
 Originated: November 23, 2010

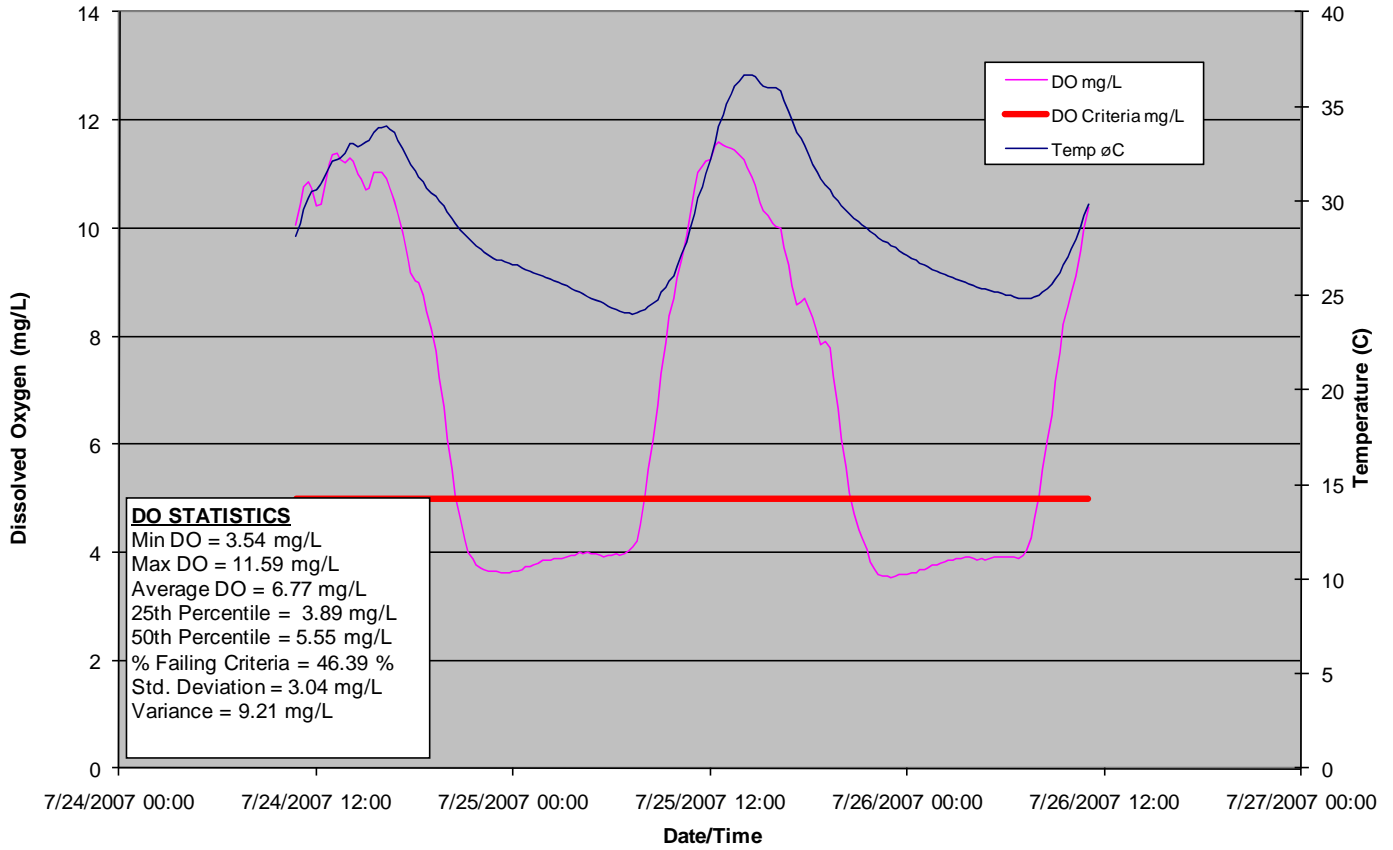
7/25/2007	9:00	7/25/2007 09:00	24.88	6.76	306	4	0.33	0.15	1	5
7/25/2007	9:15	7/25/2007 09:15	24.89	6.76	315	3.3	0.27	0.15	1	5
7/25/2007	9:30	7/25/2007 09:30	24.89	6.76	306	3.9	0.32	0.15	1	5
7/25/2007	9:45	7/25/2007 09:45	24.91	6.76	306	3.3	0.27	0.15	1	5
7/25/2007	10:00	7/25/2007 10:00	24.92	6.76	306	4.9	0.41	0.15	1	5
7/25/2007	10:15	7/25/2007 10:15	24.95	6.76	306	4.5	0.37	0.15	1	5
7/25/2007	10:30	7/25/2007 10:30	24.98	6.76	306	3.7	0.3	0.15	1	5
7/25/2007	10:45	7/25/2007 10:45	25	6.76	306	3.7	0.3	0.15	1	5
7/25/2007	11:00	7/25/2007 11:00	25.03	6.76	307	3.5	0.29	0.15	1	5
7/25/2007	11:15	7/25/2007 11:15	25.06	6.76	307	3.3	0.27	0.15	1	5
7/25/2007	11:30	7/25/2007 11:30	25.08	6.76	307	3.4	0.28	0.15	1	5
7/25/2007	11:45	7/25/2007 11:45	25.13	6.75	307	3.6	0.29	0.15	1	5
7/25/2007	12:00	7/25/2007 12:00	25.18	6.76	307	3.7	0.31	0.15	1	5
7/25/2007	12:15	7/25/2007 12:15	25.21	6.75	308	3.5	0.29	0.15	1	5
7/25/2007	12:30	7/25/2007 12:30	25.23	6.75	308	3.9	0.32	0.15	1	5
7/25/2007	12:45	7/25/2007 12:45	25.28	6.75	309	4.7	0.39	0.15	1	5
7/25/2007	13:00	7/25/2007 13:00	25.36	6.75	309	4.5	0.37	0.15	1	5
7/25/2007	13:15	7/25/2007 13:15	25.45	6.75	310	5.1	0.42	0.15	1	5
7/25/2007	13:30	7/25/2007 13:30	25.59	6.76	311	6.1	0.5	0.15	1	5
7/25/2007	13:45	7/25/2007 13:45	25.65	6.76	311	6	0.49	0.15	1	5
7/25/2007	14:00	7/25/2007 14:00	25.67	6.75	312	6.5	0.53	0.15	1	5
7/25/2007	14:15	7/25/2007 14:15	25.78	6.76	312	7.7	0.62	0.15	1	5
7/25/2007	14:30	7/25/2007 14:30	25.87	6.76	313	7.4	0.6	0.15	1	5
7/25/2007	14:45	7/25/2007 14:45	25.99	6.76	312	8.3	0.67	0.15	1	5
7/25/2007	15:00	7/25/2007 15:00	26.07	6.76	314	8.1	0.66	0.15	1	5
7/25/2007	15:15	7/25/2007 15:15	26.17	6.76	312	8.9	0.72	0.15	1	5
7/25/2007	15:30	7/25/2007 15:30	26.25	6.76	313	8.1	0.65	0.15	1	5
7/25/2007	15:45	7/25/2007 15:45	26.29	6.76	315	9.6	0.77	0.15	1	5
7/25/2007	16:00	7/25/2007 16:00	26.31	6.76	314	7.9	0.64	0.15	1	5
7/25/2007	16:15	7/25/2007 16:15	26.35	6.76	314	7.4	0.59	0.15	1	5
7/25/2007	16:30	7/25/2007 16:30	26.4	6.76	313	7.9	0.64	0.15	1	5
7/25/2007	16:45	7/25/2007 16:45	26.4	6.76	314	7.8	0.63	0.15	1	5
7/25/2007	17:00	7/25/2007 17:00	26.44	6.76	314	7.5	0.6	0.15	1	5
7/25/2007	17:15	7/25/2007 17:15	26.43	6.76	314	6.8	0.55	0.15	1	5
7/25/2007	17:30	7/25/2007 17:30	26.4	6.76	314	7.6	0.62	0.15	1	5
7/25/2007	17:45	7/25/2007 17:45	26.36	6.76	313	6.5	0.52	0.15	1	5
7/25/2007	18:00	7/25/2007 18:00	26.4	6.76	313	5.8	0.46	0.15	1	5
7/25/2007	18:15	7/25/2007 18:15	26.42	6.76	314	7.3	0.59	0.15	1	5
7/25/2007	18:30	7/25/2007 18:30	26.43	6.76	315	8	0.65	0.15	1	5
7/25/2007	18:45	7/25/2007 18:45	26.47	6.77	314	8.1	0.65	0.15	1	5
7/25/2007	19:00	7/25/2007 19:00	26.43	6.77	314	11.3	0.91	0.15	1	5
7/25/2007	19:15	7/25/2007 19:15	26.42	6.78	315	11.7	0.94	0.15	1	5
7/25/2007	19:30	7/25/2007 19:30	26.38	6.78	315	12.6	1.01	0.15	1	5
7/25/2007	19:45	7/25/2007 19:45	26.36	6.78	315	12.6	1.01	0.15	1	5
7/25/2007	20:00	7/25/2007 20:00	26.33	6.78	315	13.4	1.08	0.15	1	5
7/25/2007	20:15	7/25/2007 20:15	26.29	6.78	315	12.5	1.01	0.15	1	5
7/25/2007	20:30	7/25/2007 20:30	26.26	6.78	315	12.6	1.02	0.15	1	5
7/25/2007	20:45	7/25/2007 20:45	26.24	6.78	315	11.9	0.96	0.15	1	5
7/25/2007	21:00	7/25/2007 21:00	26.22	6.78	315	12.7	1.03	0.15	1	5
7/25/2007	21:15	7/25/2007 21:15	26.19	6.79	315	12.5	1.01	0.15	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

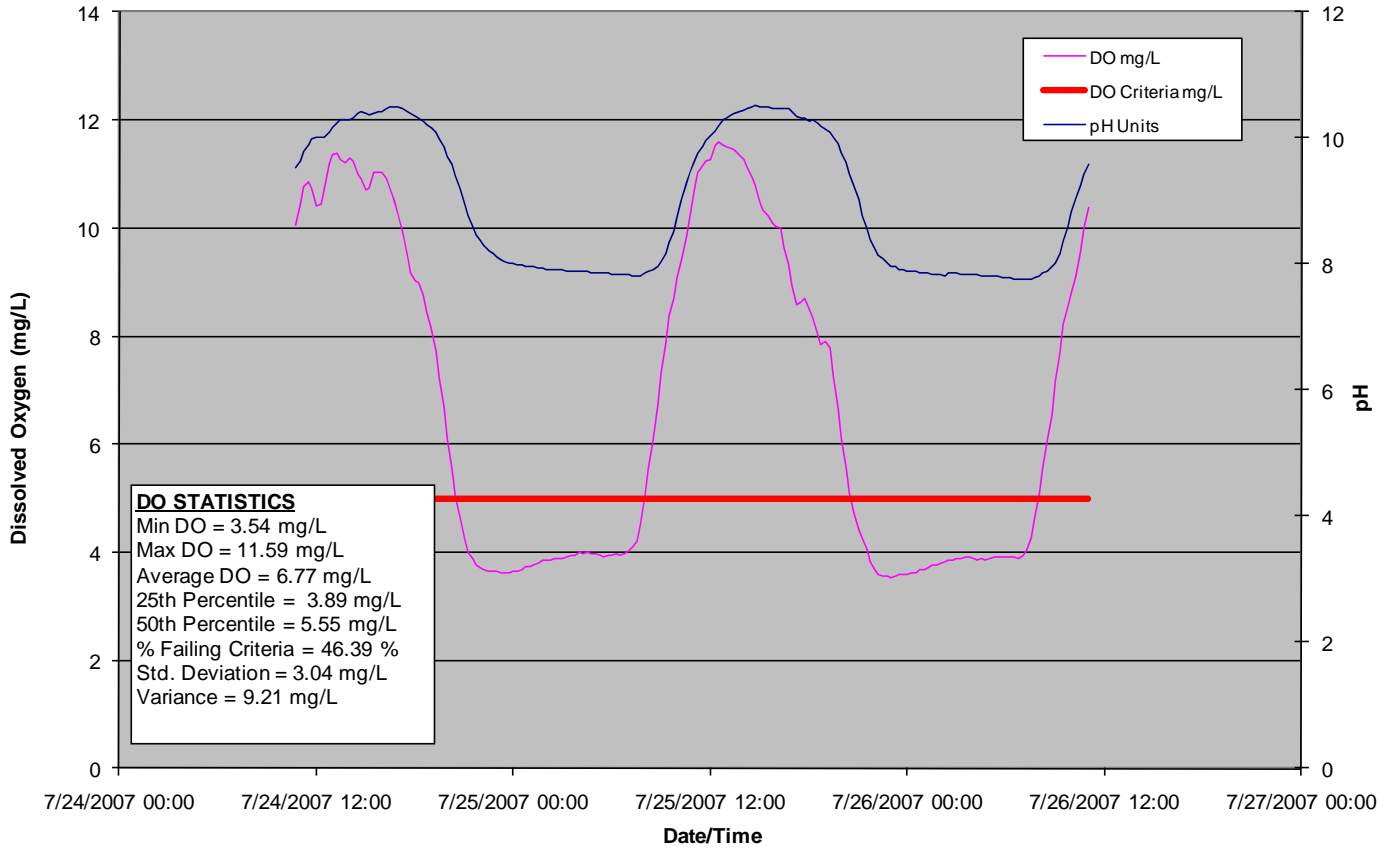
7/25/2007	21:30	7/25/2007 21:30	26.16	6.78	315	12.1	0.98	0.15	1	5
7/25/2007	21:45	7/25/2007 21:45	26.13	6.78	315	12.2	0.98	0.15	1	5
7/25/2007	22:00	7/25/2007 22:00	26.11	6.78	315	11.5	0.93	0.15	1	5
7/25/2007	22:15	7/25/2007 22:15	26.07	6.78	315	11.9	0.96	0.15	1	5
7/25/2007	22:30	7/25/2007 22:30	26.03	6.78	316	10.7	0.86	0.15	1	5
7/25/2007	22:45	7/25/2007 22:45	26	6.78	315	11.2	0.9	0.15	1	5
7/25/2007	23:00	7/25/2007 23:00	25.98	6.78	315	10.9	0.88	0.15	1	5
7/25/2007	23:15	7/25/2007 23:15	25.96	6.78	316	11.5	0.94	0.15	1	5
7/25/2007	23:30	7/25/2007 23:30	25.94	6.78	316	10.3	0.83	0.15	1	5
7/25/2007	23:45	7/25/2007 23:45	25.92	6.78	316	10.8	0.87	0.15	1	5
7/26/2007	0:00	7/26/2007 00:00	25.9	6.78	316	10	0.81	0.15	1	5
7/26/2007	0:15	7/26/2007 00:15	25.89	6.78	316	10.1	0.82	0.15	1	5
7/26/2007	0:30	7/26/2007 00:30	25.88	6.78	317	9.5	0.77	0.15	1	5
7/26/2007	0:45	7/26/2007 00:45	25.86	6.78	317	9.5	0.78	0.15	1	5
7/26/2007	1:00	7/26/2007 01:00	25.83	6.78	317	9.5	0.77	0.15	1	5
7/26/2007	1:15	7/26/2007 01:15	25.82	6.78	317	9.2	0.75	0.15	1	5
7/26/2007	1:30	7/26/2007 01:30	25.8	6.78	317	9.9	0.8	0.15	1	5
7/26/2007	1:45	7/26/2007 01:45	25.78	6.78	317	9.3	0.76	0.15	1	5
7/26/2007	2:00	7/26/2007 02:00	25.76	6.78	318	8.6	0.7	0.15	1	5
7/26/2007	2:15	7/26/2007 02:15	25.75	6.78	317	8.7	0.71	0.15	1	5
7/26/2007	2:30	7/26/2007 02:30	25.73	6.78	317	9.1	0.74	0.15	1	5
7/26/2007	2:45	7/26/2007 02:45	25.7	6.78	318	9.3	0.76	0.15	1	5
7/26/2007	3:00	7/26/2007 03:00	25.67	6.78	318	9.5	0.78	0.15	1	5
7/26/2007	3:15	7/26/2007 03:15	25.65	6.78	317	8.8	0.72	0.15	1	5
7/26/2007	3:30	7/26/2007 03:30	25.62	6.78	318	9.1	0.74	0.15	1	5
7/26/2007	3:45	7/26/2007 03:45	25.59	6.78	318	9	0.73	0.16	1	5
7/26/2007	4:00	7/26/2007 04:00	25.57	6.78	318	7.9	0.65	0.15	1	5
7/26/2007	4:15	7/26/2007 04:15	25.53	6.78	318	7.8	0.64	0.16	1	5
7/26/2007	4:30	7/26/2007 04:30	25.51	6.78	319	8.2	0.67	0.16	1	5
7/26/2007	4:45	7/26/2007 04:45	25.48	6.78	319	7.7	0.63	0.16	1	5
7/26/2007	5:00	7/26/2007 05:00	25.46	6.79	319	8.2	0.68	0.16	1	5
7/26/2007	5:15	7/26/2007 05:15	25.41	6.79	320	7.7	0.63	0.16	1	5
7/26/2007	5:30	7/26/2007 05:30	25.4	6.79	320	6.5	0.53	0.16	1	5
7/26/2007	5:45	7/26/2007 05:45	25.37	6.79	321	6.7	0.55	0.16	1	5
7/26/2007	6:00	7/26/2007 06:00	25.34	6.79	321	6.4	0.52	0.16	1	5
7/26/2007	6:15	7/26/2007 06:15	25.32	6.79	321	6.2	0.51	0.16	1	5
7/26/2007	6:30	7/26/2007 06:30	25.29	6.79	321	6.5	0.53	0.16	1	5
7/26/2007	6:45	7/26/2007 06:45	25.27	6.79	321	6.3	0.52	0.16	1	5
7/26/2007	7:00	7/26/2007 07:00	25.25	6.79	321	7.1	0.58	0.16	1	5
7/26/2007	7:15	7/26/2007 07:15	25.23	6.79	321	6.7	0.55	0.16	1	5
7/26/2007	7:30	7/26/2007 07:30	25.21	6.79	320	7.2	0.59	0.16	1	5
7/26/2007	7:45	7/26/2007 07:45	25.2	6.79	320	7.2	0.59	0.16	1	5
7/26/2007	8:00	7/26/2007 08:00	25.19	6.79	320	8.4	0.69	0.16	1	5
7/26/2007	8:15	7/26/2007 08:15	25.18	6.79	319	8.1	0.67	0.16	1	5
7/26/2007	8:30	7/26/2007 08:30	25.19	6.79	319	8.6	0.71	0.16	1	5
7/26/2007	8:45	7/26/2007 08:45	25.2	6.79	319	8.5	0.7	0.16	1	5
7/26/2007	9:00	7/26/2007 09:00	25.22	6.79	318	9.4	0.77	0.15	1	5
7/26/2007	9:15	7/26/2007 09:15	25.24	6.79	318	9.6	0.79	0.16	1	5



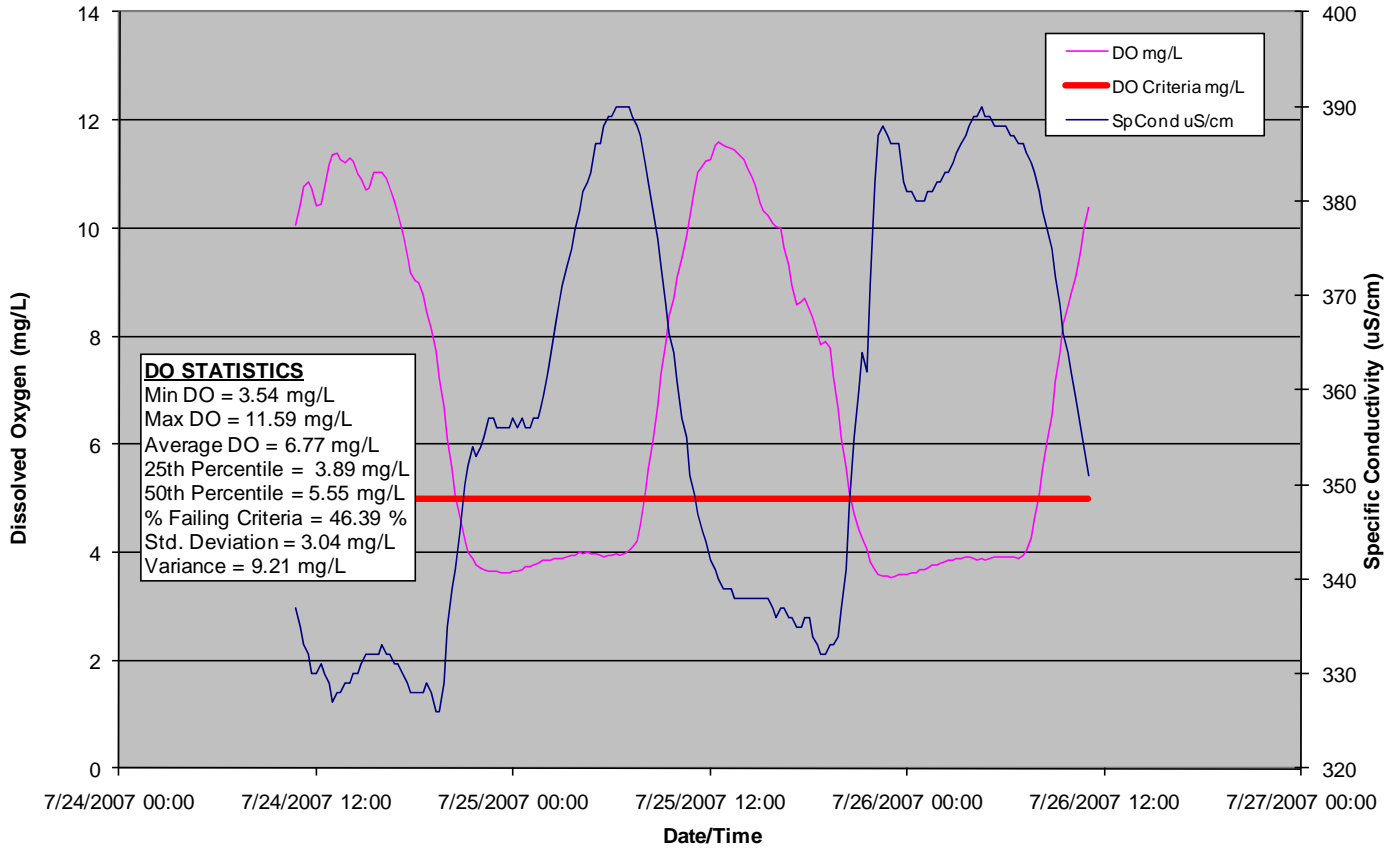
Site Number: 3389 GC-09, Site Name: GC 80 yards downstream of Hwy 190  
Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time



Site Number: 3389 GC-09, Site Name: GC 80 yards downstream of Hwy 190  
Subsegment: 040304, DO & pH vs. Date/Time



**Site Number: 3389 GC-09, Site Name: GC 80 yards downstream of Hwy 190  
 Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 3389 GC-09 Site Name: GC 80 yards downstream of Hwy 190						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
Average	28.76	8.95	357.79	89.76	6.77	0.18
Minimum	24.05	7.75	326.00	45.00	3.54	0.16
Maximum	36.69	10.52	390.00	167.60	11.59	0.19
Geometric Mean	28.55	8.89			6.10	0.18
25th Percentile	25.74	7.88	336.00	47.40	3.89	0.16
30th Percentile	26.03	7.90	338.00	47.60	3.91	0.17
40th Percentile	26.75	8.02	347.20	49.16	4.02	0.17
50th Percentile	27.79	8.54	356.00	72.60	5.55	0.18
Standard Deviation	3.59	1.10	22.29	44.90	3.04	0.01
Variance	12.89	1.20	496.64	2015.76	9.21	0.00
Data Row Count			194			
Total Values Failing			90			
Percent failing DO			46.39 %			
Criteria						

### Grays Creek Subsegment 040304 Site 3389 GC-09 Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO PERCENT	DO	SALINITY	Is DO < Criteria	DO Criteria
MMDDYY	HHMM	MMDDYYYY HHMM	øC	Units	uS/cm	Sat	mg/L	ppt	5	mg/L
7/24/2007	10:45	7/24/2007 10:45	28.13	9.54	337	129	10.07	0.17	0	5
7/24/2007	11:00	7/24/2007 11:00	28.85	9.63	335	135.4	10.43	0.16	0	5
7/24/2007	11:15	7/24/2007 11:15	29.62	9.78	333	141.8	10.78	0.16	0	5
7/24/2007	11:30	7/24/2007 11:30	30.15	9.89	332	143.9	10.84	0.16	0	5
7/24/2007	11:45	7/24/2007 11:45	30.53	9.99	330	143.6	10.75	0.16	0	5
7/24/2007	12:00	7/24/2007 12:00	30.61	10.01	330	139.2	10.4	0.16	0	5
7/24/2007	12:15	7/24/2007 12:15	30.93	10.01	331	140.5	10.44	0.16	0	5
7/24/2007	12:30	7/24/2007 12:30	31.25	10.02	330	145.4	10.75	0.16	0	5
7/24/2007	12:45	7/24/2007 12:45	31.77	10.09	329	152.5	11.18	0.16	0	5
7/24/2007	13:00	7/24/2007 13:00	32.11	10.17	327	156.1	11.37	0.16	0	5
7/24/2007	13:15	7/24/2007 13:15	32.17	10.25	328	156.4	11.38	0.16	0	5
7/24/2007	13:30	7/24/2007 13:30	32.31	10.3	328	155.4	11.28	0.16	0	5
7/24/2007	13:45	7/24/2007 13:45	32.49	10.3	329	154.8	11.21	0.16	0	5
7/24/2007	14:00	7/24/2007 14:00	33	10.29	329	157.4	11.3	0.16	0	5
7/24/2007	14:15	7/24/2007 14:15	33.04	10.32	330	156.9	11.25	0.16	0	5
7/24/2007	14:30	7/24/2007 14:30	32.87	10.38	330	153	11.01	0.16	0	5
7/24/2007	14:45	7/24/2007 14:45	32.94	10.43	331	152	10.92	0.16	0	5
7/24/2007	15:00	7/24/2007 15:00	33.13	10.39	332	149.5	10.71	0.16	0	5
7/24/2007	15:15	7/24/2007 15:15	33.2	10.37	332	150	10.73	0.16	0	5
7/24/2007	15:30	7/24/2007 15:30	33.61	10.38	332	155.2	11.03	0.16	0	5
7/24/2007	15:45	7/24/2007 15:45	33.85	10.41	332	156	11.04	0.16	0	5
7/24/2007	16:00	7/24/2007 16:00	33.9	10.43	333	155.9	11.02	0.16	0	5
7/24/2007	16:15	7/24/2007 16:15	33.99	10.47	332	154.4	10.9	0.16	0	5
7/24/2007	16:30	7/24/2007 16:30	33.82	10.49	332	151.8	10.75	0.16	0	5
7/24/2007	16:45	7/24/2007 16:45	33.61	10.49	331	147.9	10.5	0.16	0	5
7/24/2007	17:00	7/24/2007 17:00	33.2	10.49	331	143.3	10.25	0.16	0	5
7/24/2007	17:15	7/24/2007 17:15	32.78	10.47	330	137.9	9.94	0.16	0	5
7/24/2007	17:30	7/24/2007 17:30	32.32	10.43	329	130.8	9.5	0.16	0	5
7/24/2007	17:45	7/24/2007 17:45	31.93	10.39	328	125.6	9.18	0.16	0	5
7/24/2007	18:00	7/24/2007 18:00	31.62	10.35	328	122.6	9.01	0.16	0	5
7/24/2007	18:15	7/24/2007 18:15	31.3	10.31	328	121.6	8.98	0.16	0	5
7/24/2007	18:30	7/24/2007 18:30	31.02	10.26	328	117.9	8.75	0.16	0	5
7/24/2007	18:45	7/24/2007 18:45	30.7	10.21	329	113.2	8.45	0.16	0	5
7/24/2007	19:00	7/24/2007 19:00	30.42	10.16	328	108.5	8.14	0.16	0	5
7/24/2007	19:15	7/24/2007 19:15	30.22	10.09	326	102.8	7.73	0.16	0	5
7/24/2007	19:30	7/24/2007 19:30	29.96	9.99	326	95.4	7.21	0.16	0	5
7/24/2007	19:45	7/24/2007 19:45	29.73	9.86	329	88.1	6.69	0.16	0	5
7/24/2007	20:00	7/24/2007 20:00	29.4	9.72	335	79.8	6.09	0.16	0	5
7/24/2007	20:15	7/24/2007 20:15	29.11	9.57	339	72.2	5.54	0.17	0	5
7/24/2007	20:30	7/24/2007 20:30	28.84	9.4	341	65.5	5.05	0.17	0	5
7/24/2007	20:45	7/24/2007 20:45	28.51	9.21	345	60	4.65	0.17	1	5
7/24/2007	21:00	7/24/2007 21:00	28.23	8.96	350	54.5	4.25	0.17	1	5
7/24/2007	21:15	7/24/2007 21:15	28.03	8.76	352	51.1	4	0.17	1	5
7/24/2007	21:30	7/24/2007 21:30	27.8	8.59	354	49.4	3.88	0.17	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	21:45	7/24/2007 21:45	27.64	8.46	353	47.9	3.77	0.17	1	5
7/24/2007	22:00	7/24/2007 22:00	27.44	8.36	354	47.1	3.72	0.17	1	5
7/24/2007	22:15	7/24/2007 22:15	27.28	8.28	355	46.4	3.67	0.17	1	5
7/24/2007	22:30	7/24/2007 22:30	27.12	8.21	357	46.1	3.66	0.18	1	5
7/24/2007	22:45	7/24/2007 22:45	26.99	8.17	357	45.9	3.66	0.18	1	5
7/24/2007	23:00	7/24/2007 23:00	26.91	8.12	356	45.6	3.64	0.18	1	5
7/24/2007	23:15	7/24/2007 23:15	26.87	8.07	356	45.5	3.63	0.18	1	5
7/24/2007	23:30	7/24/2007 23:30	26.8	8.04	356	45.4	3.62	0.18	1	5
7/24/2007	23:45	7/24/2007 23:45	26.74	8.02	356	45.4	3.63	0.18	1	5
7/25/2007	0:00	7/25/2007 00:00	26.64	8	357	45.6	3.65	0.18	1	5
7/25/2007	0:15	7/25/2007 00:15	26.59	7.99	356	45.7	3.66	0.18	1	5
7/25/2007	0:30	7/25/2007 00:30	26.49	7.98	357	45.9	3.69	0.18	1	5
7/25/2007	0:45	7/25/2007 00:45	26.38	7.96	356	46.3	3.73	0.18	1	5
7/25/2007	1:00	7/25/2007 01:00	26.3	7.95	356	46.4	3.74	0.18	1	5
7/25/2007	1:15	7/25/2007 01:15	26.17	7.95	357	46.8	3.78	0.18	1	5
7/25/2007	1:30	7/25/2007 01:30	26.14	7.94	357	47.2	3.81	0.18	1	5
7/25/2007	1:45	7/25/2007 01:45	26.03	7.93	359	47.4	3.84	0.18	1	5
7/25/2007	2:00	7/25/2007 02:00	25.96	7.92	361	47.5	3.85	0.18	1	5
7/25/2007	2:15	7/25/2007 02:15	25.86	7.92	364	47.6	3.86	0.18	1	5
7/25/2007	2:30	7/25/2007 02:30	25.79	7.91	366	47.7	3.88	0.18	1	5
7/25/2007	2:45	7/25/2007 02:45	25.72	7.9	369	47.7	3.89	0.18	1	5
7/25/2007	3:00	7/25/2007 03:00	25.62	7.9	371	47.5	3.87	0.18	1	5
7/25/2007	3:15	7/25/2007 03:15	25.52	7.89	373	47.9	3.92	0.18	1	5
7/25/2007	3:30	7/25/2007 03:30	25.4	7.89	375	48.1	3.94	0.19	1	5
7/25/2007	3:45	7/25/2007 03:45	25.29	7.89	377	48.2	3.95	0.19	1	5
7/25/2007	4:00	7/25/2007 04:00	25.18	7.88	379	48.5	3.99	0.19	1	5
7/25/2007	4:15	7/25/2007 04:15	25.09	7.88	381	48.3	3.98	0.19	1	5
7/25/2007	4:30	7/25/2007 04:30	24.97	7.88	382	48.4	4	0.19	1	5
7/25/2007	4:45	7/25/2007 04:45	24.87	7.87	383	48.1	3.98	0.19	1	5
7/25/2007	5:00	7/25/2007 05:00	24.73	7.87	386	47.8	3.97	0.19	1	5
7/25/2007	5:15	7/25/2007 05:15	24.67	7.86	386	47.6	3.95	0.19	1	5
7/25/2007	5:30	7/25/2007 05:30	24.59	7.85	388	47.1	3.92	0.19	1	5
7/25/2007	5:45	7/25/2007 05:45	24.47	7.85	389	47.1	3.93	0.19	1	5
7/25/2007	6:00	7/25/2007 06:00	24.38	7.84	389	47	3.93	0.19	1	5
7/25/2007	6:15	7/25/2007 06:15	24.26	7.84	390	47.3	3.96	0.19	1	5
7/25/2007	6:30	7/25/2007 06:30	24.21	7.83	390	47.2	3.95	0.19	1	5
7/25/2007	6:45	7/25/2007 06:45	24.13	7.83	390	47.4	3.98	0.19	1	5
7/25/2007	7:00	7/25/2007 07:00	24.07	7.83	390	47.8	4.02	0.19	1	5
7/25/2007	7:15	7/25/2007 07:15	24.05	7.82	389	48.8	4.1	0.19	1	5
7/25/2007	7:30	7/25/2007 07:30	24.11	7.82	388	50.1	4.2	0.19	1	5
7/25/2007	7:45	7/25/2007 07:45	24.16	7.82	387	53.9	4.51	0.19	1	5
7/25/2007	8:00	7/25/2007 08:00	24.27	7.85	384	60.5	5.06	0.19	0	5
7/25/2007	8:15	7/25/2007 08:15	24.4	7.88	382	66.2	5.53	0.19	0	5
7/25/2007	8:30	7/25/2007 08:30	24.59	7.91	379	73.1	6.08	0.19	0	5
7/25/2007	8:45	7/25/2007 08:45	24.81	7.97	376	81.2	6.72	0.19	0	5
7/25/2007	9:00	7/25/2007 09:00	25.15	8.03	373	88.8	7.31	0.18	0	5
7/25/2007	9:15	7/25/2007 09:15	25.42	8.16	369	96	7.86	0.18	0	5
7/25/2007	9:30	7/25/2007 09:30	25.78	8.34	366	102.9	8.37	0.18	0	5
7/25/2007	9:45	7/25/2007 09:45	26.07	8.51	364	107.4	8.69	0.18	0	5
7/25/2007	10:00	7/25/2007 10:00	26.58	8.75	361	113.3	9.09	0.18	0	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	10:15	7/25/2007 10:15	27.2	9.05	357	119.2	9.45	0.18	0	5
7/25/2007	10:30	7/25/2007 10:30	27.81	9.28	355	125.7	9.86	0.17	0	5
7/25/2007	10:45	7/25/2007 10:45	28.47	9.45	351	131.5	10.2	0.17	0	5
7/25/2007	11:00	7/25/2007 11:00	29.31	9.63	349	140.6	10.74	0.17	0	5
7/25/2007	11:15	7/25/2007 11:15	30.14	9.76	347	146.3	11.02	0.17	0	5
7/25/2007	11:30	7/25/2007 11:30	30.77	9.86	345	149.5	11.14	0.17	0	5
7/25/2007	11:45	7/25/2007 11:45	31.47	9.96	344	152.6	11.24	0.17	0	5
7/25/2007	12:00	7/25/2007 12:00	32.22	10.03	342	154.9	11.26	0.17	0	5
7/25/2007	12:15	7/25/2007 12:15	33.16	10.12	341	161	11.53	0.17	0	5
7/25/2007	12:30	7/25/2007 12:30	33.96	10.2	340	164.1	11.59	0.17	0	5
7/25/2007	12:45	7/25/2007 12:45	34.56	10.28	339	164.8	11.52	0.17	0	5
7/25/2007	13:00	7/25/2007 13:00	35.15	10.32	339	166.1	11.5	0.17	0	5
7/25/2007	13:15	7/25/2007 13:15	35.64	10.36	339	167	11.48	0.17	0	5
7/25/2007	13:30	7/25/2007 13:30	36.04	10.38	338	167.6	11.44	0.17	0	5
7/25/2007	13:45	7/25/2007 13:45	36.36	10.42	338	167.3	11.36	0.17	0	5
7/25/2007	14:00	7/25/2007 14:00	36.66	10.45	338	166.6	11.26	0.17	0	5
7/25/2007	14:15	7/25/2007 14:15	36.69	10.47	338	164.6	11.12	0.17	0	5
7/25/2007	14:30	7/25/2007 14:30	36.68	10.5	338	161.9	10.94	0.17	0	5
7/25/2007	14:45	7/25/2007 14:45	36.57	10.52	338	159.4	10.79	0.17	0	5
7/25/2007	15:00	7/25/2007 15:00	36.27	10.5	338	153.8	10.46	0.17	0	5
7/25/2007	15:15	7/25/2007 15:15	36.04	10.5	338	151.1	10.32	0.17	0	5
7/25/2007	15:30	7/25/2007 15:30	35.99	10.5	338	149.6	10.22	0.17	0	5
7/25/2007	15:45	7/25/2007 15:45	36.01	10.47	337	147.9	10.1	0.17	0	5
7/25/2007	16:00	7/25/2007 16:00	36.01	10.46	336	146.7	10.02	0.16	0	5
7/25/2007	16:15	7/25/2007 16:15	35.85	10.47	337	146.1	10.01	0.17	0	5
7/25/2007	16:30	7/25/2007 16:30	35.3	10.48	337	139.6	9.64	0.17	0	5
7/25/2007	16:45	7/25/2007 16:45	34.76	10.48	336	133.8	9.32	0.16	0	5
7/25/2007	17:00	7/25/2007 17:00	34.28	10.43	336	127	8.93	0.16	0	5
7/25/2007	17:15	7/25/2007 17:15	33.63	10.35	335	120.7	8.57	0.16	0	5
7/25/2007	17:30	7/25/2007 17:30	33.26	10.32	335	121.1	8.65	0.16	0	5
7/25/2007	17:45	7/25/2007 17:45	32.94	10.31	336	121.2	8.71	0.16	0	5
7/25/2007	18:00	7/25/2007 18:00	32.38	10.27	336	117.1	8.49	0.16	0	5
7/25/2007	18:15	7/25/2007 18:15	31.96	10.28	334	114.3	8.35	0.16	0	5
7/25/2007	18:30	7/25/2007 18:30	31.56	10.25	333	109.4	8.05	0.16	0	5
7/25/2007	18:45	7/25/2007 18:45	31.19	10.18	332	106	7.84	0.16	0	5
7/25/2007	19:00	7/25/2007 19:00	30.84	10.15	332	106.3	7.91	0.16	0	5
7/25/2007	19:15	7/25/2007 19:15	30.57	10.1	333	103.9	7.77	0.16	0	5
7/25/2007	19:30	7/25/2007 19:30	30.26	10.01	333	96.4	7.25	0.16	0	5
7/25/2007	19:45	7/25/2007 19:45	29.99	9.91	334	88.3	6.67	0.16	0	5
7/25/2007	20:00	7/25/2007 20:00	29.74	9.77	337	80.5	6.11	0.17	0	5
7/25/2007	20:15	7/25/2007 20:15	29.51	9.62	341	73	5.56	0.17	0	5
7/25/2007	20:30	7/25/2007 20:30	29.3	9.43	348	66.6	5.09	0.17	0	5
7/25/2007	20:45	7/25/2007 20:45	29.1	9.24	355	61.5	4.72	0.17	1	5
7/25/2007	21:00	7/25/2007 21:00	28.91	9.02	360	57.6	4.43	0.18	1	5
7/25/2007	21:15	7/25/2007 21:15	28.74	8.76	364	55.3	4.26	0.18	1	5
7/25/2007	21:30	7/25/2007 21:30	28.57	8.56	362	52.4	4.05	0.18	1	5
7/25/2007	21:45	7/25/2007 21:45	28.38	8.38	371	49.1	3.82	0.18	1	5
7/25/2007	22:00	7/25/2007 22:00	28.2	8.23	382	47.1	3.67	0.19	1	5
7/25/2007	22:15	7/25/2007 22:15	28.06	8.13	387	46.1	3.6	0.19	1	5
7/25/2007	22:30	7/25/2007 22:30	27.9	8.08	388	45.4	3.56	0.19	1	5

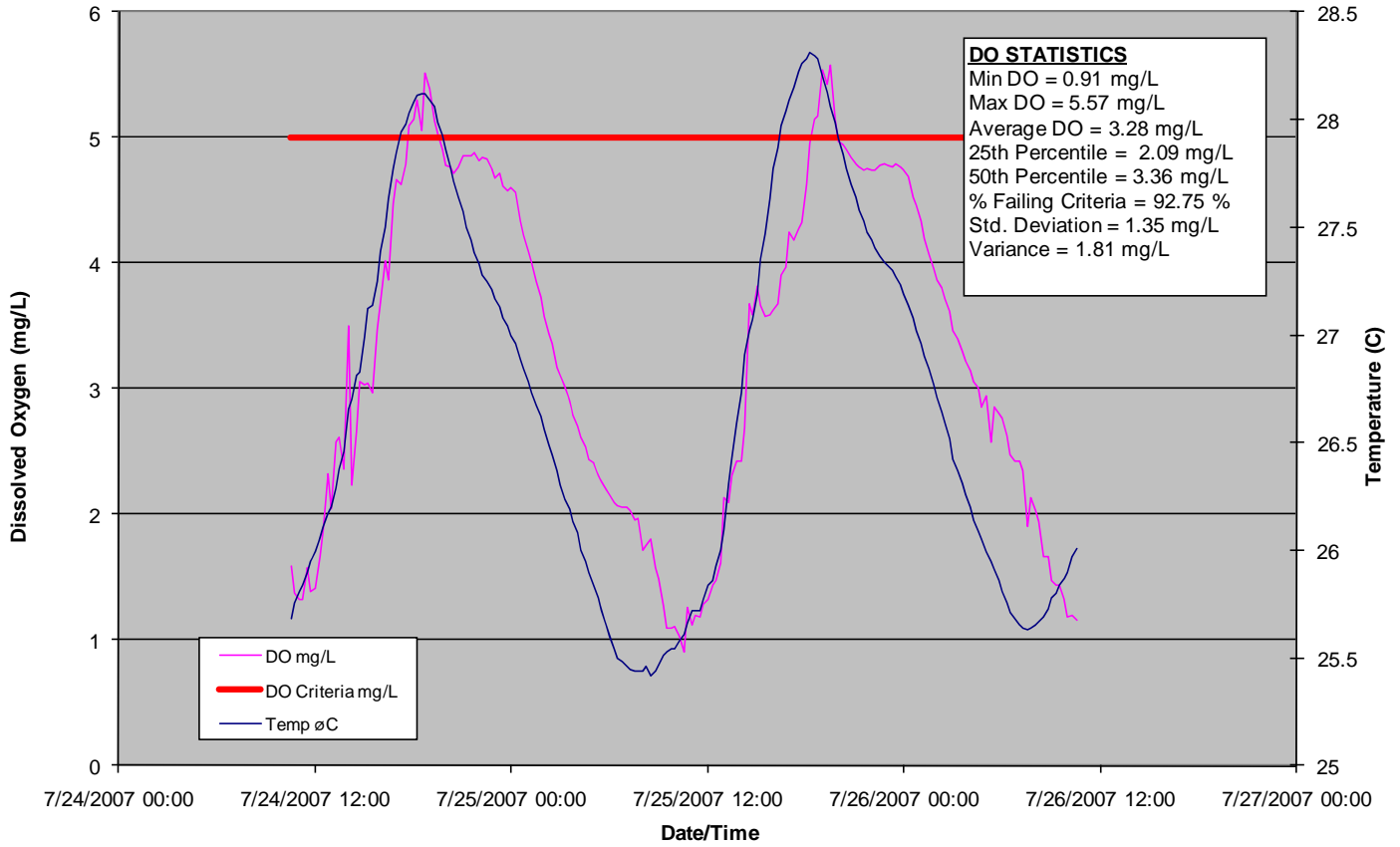
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	22:45	7/25/2007 22:45	27.78	8.02	387	45.2	3.55	0.19	1	5
7/25/2007	23:00	7/25/2007 23:00	27.66	7.97	386	45	3.54	0.19	1	5
7/25/2007	23:15	7/25/2007 23:15	27.53	7.95	386	45.2	3.56	0.19	1	5
7/25/2007	23:30	7/25/2007 23:30	27.4	7.92	386	45.3	3.58	0.19	1	5
7/25/2007	23:45	7/25/2007 23:45	27.25	7.9	382	45.4	3.6	0.19	1	5
7/26/2007	0:00	7/26/2007 00:00	27.12	7.89	381	45.3	3.6	0.19	1	5
7/26/2007	0:15	7/26/2007 00:15	26.98	7.88	381	45.4	3.61	0.19	1	5
7/26/2007	0:30	7/26/2007 00:30	26.85	7.88	380	45.5	3.63	0.19	1	5
7/26/2007	0:45	7/26/2007 00:45	26.73	7.86	380	46	3.68	0.19	1	5
7/26/2007	1:00	7/26/2007 01:00	26.62	7.86	380	46	3.69	0.19	1	5
7/26/2007	1:15	7/26/2007 01:15	26.5	7.85	381	46.4	3.72	0.19	1	5
7/26/2007	1:30	7/26/2007 01:30	26.37	7.84	381	46.9	3.77	0.19	1	5
7/26/2007	1:45	7/26/2007 01:45	26.27	7.84	382	46.9	3.78	0.19	1	5
7/26/2007	2:00	7/26/2007 02:00	26.18	7.83	382	47.1	3.8	0.19	1	5
7/26/2007	2:15	7/26/2007 02:15	26.09	7.82	383	47.2	3.82	0.19	1	5
7/26/2007	2:30	7/26/2007 02:30	26	7.87	383	47.4	3.85	0.19	1	5
7/26/2007	2:45	7/26/2007 02:45	25.93	7.85	384	47.6	3.86	0.19	1	5
7/26/2007	3:00	7/26/2007 03:00	25.86	7.85	385	47.9	3.89	0.19	1	5
7/26/2007	3:15	7/26/2007 03:15	25.78	7.84	386	47.8	3.89	0.19	1	5
7/26/2007	3:30	7/26/2007 03:30	25.7	7.83	387	48	3.91	0.19	1	5
7/26/2007	3:45	7/26/2007 03:45	25.63	7.83	388	48	3.91	0.19	1	5
7/26/2007	4:00	7/26/2007 04:00	25.54	7.83	389	47.3	3.87	0.19	1	5
7/26/2007	4:15	7/26/2007 04:15	25.47	7.83	389	47.1	3.85	0.19	1	5
7/26/2007	4:30	7/26/2007 04:30	25.4	7.82	390	47.2	3.87	0.19	1	5
7/26/2007	4:45	7/26/2007 04:45	25.34	7.82	389	47	3.86	0.19	1	5
7/26/2007	5:00	7/26/2007 05:00	25.28	7.81	389	47.4	3.89	0.19	1	5
7/26/2007	5:15	7/26/2007 05:15	25.23	7.8	388	47.5	3.91	0.19	1	5
7/26/2007	5:30	7/26/2007 05:30	25.17	7.8	388	47.4	3.9	0.19	1	5
7/26/2007	5:45	7/26/2007 05:45	25.11	7.79	388	47.5	3.91	0.19	1	5
7/26/2007	6:00	7/26/2007 06:00	25.03	7.78	388	47.3	3.91	0.19	1	5
7/26/2007	6:15	7/26/2007 06:15	24.98	7.78	387	47.4	3.91	0.19	1	5
7/26/2007	6:30	7/26/2007 06:30	24.93	7.77	387	47.2	3.9	0.19	1	5
7/26/2007	6:45	7/26/2007 06:45	24.89	7.76	386	47.1	3.89	0.19	1	5
7/26/2007	7:00	7/26/2007 07:00	24.87	7.75	386	47.5	3.93	0.19	1	5
7/26/2007	7:15	7/26/2007 07:15	24.85	7.76	385	48.8	4.04	0.19	1	5
7/26/2007	7:30	7/26/2007 07:30	24.87	7.77	384	51.7	4.28	0.19	1	5
7/26/2007	7:45	7/26/2007 07:45	24.93	7.79	383	56	4.63	0.19	1	5
7/26/2007	8:00	7/26/2007 08:00	25.03	7.82	381	61.4	5.06	0.19	0	5
7/26/2007	8:15	7/26/2007 08:15	25.15	7.85	379	67.1	5.53	0.19	0	5
7/26/2007	8:30	7/26/2007 08:30	25.34	7.89	377	74	6.07	0.19	0	5
7/26/2007	8:45	7/26/2007 08:45	25.57	7.95	375	80.2	6.55	0.19	0	5
7/26/2007	9:00	7/26/2007 09:00	25.89	8.01	372	88.2	7.16	0.18	0	5
7/26/2007	9:15	7/26/2007 09:15	26.23	8.16	369	95.5	7.7	0.18	0	5
7/26/2007	9:30	7/26/2007 09:30	26.66	8.37	366	102.6	8.22	0.18	0	5
7/26/2007	9:45	7/26/2007 09:45	27.07	8.6	364	107.4	8.54	0.18	0	5
7/26/2007	10:00	7/26/2007 10:00	27.47	8.82	362	111.2	8.78	0.18	0	5
7/26/2007	10:15	7/26/2007 10:15	27.98	9.04	359	116.6	9.12	0.18	0	5
7/26/2007	10:30	7/26/2007 10:30	28.63	9.25	356	123.8	9.57	0.18	0	5
7/26/2007	10:45	7/26/2007 10:45	29.25	9.43	354	130.5	9.99	0.17	0	5
7/26/2007	11:00	7/26/2007 11:00	29.82	9.57	351	136.9	10.37	0.17	0	5

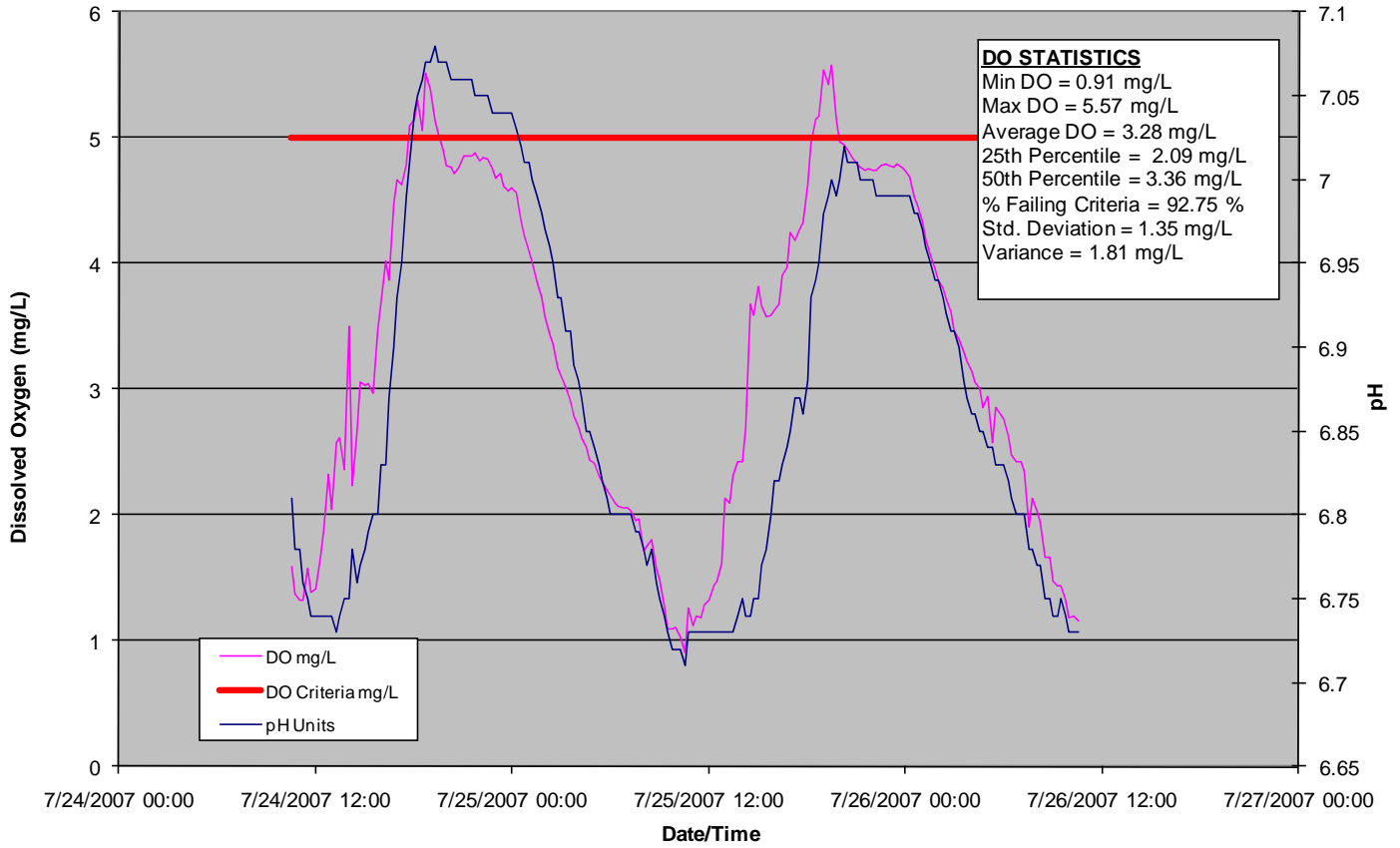




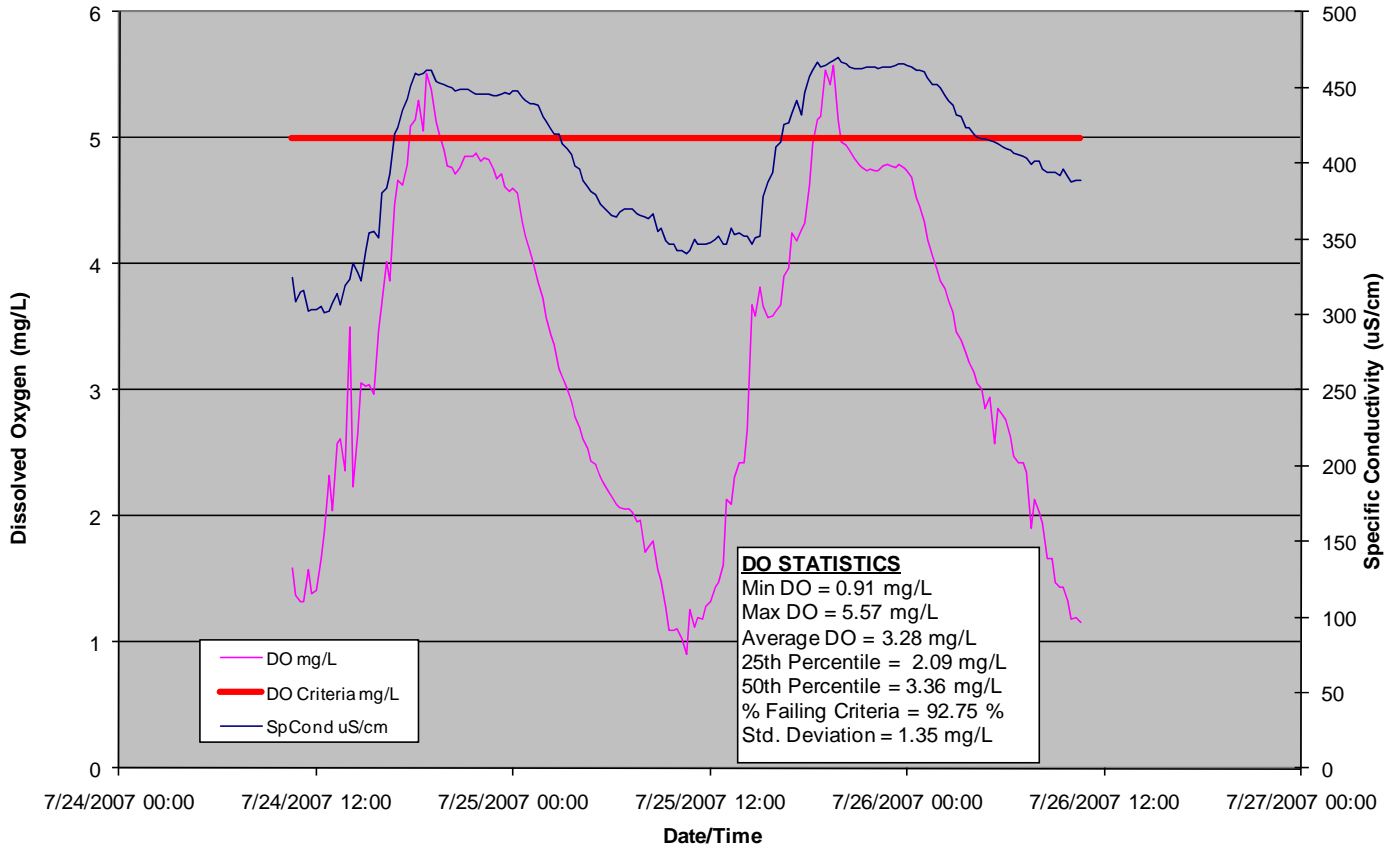
**Site Number: 3390 GC-10, Site Name: GC downstream of Gray's Creek Canal  
Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time**



**Site Number: 3390 GC-10, Site Name: GC downstream of Gray's Creek Canal  
Subsegment: 040304, DO & pH vs. Date/Time**



**Site Number: 3390 GC-10, Site Name: GC downstream of Gray's Creek Canal  
 Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 3390 GC-10 Site Name: GC downstream of Gray's Creek Canal						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
Average	26.69	6.87	403.87	41.21	3.28	0.20
Minimum	25.42	6.71	301.00	11.20	0.91	0.15
Maximum	28.31	7.08	470.00	71.40	5.57	0.24
Geometric Mean	26.68	6.87		36.99	2.96	0.20
25th Percentile	25.86	6.77	363.00	25.60	2.09	0.18
30th Percentile	25.95	6.78	370.00	28.76	2.32	0.18
40th Percentile	26.23	6.81	394.00	33.86	2.75	0.20
50th Percentile	26.64	6.85	411.00	41.90	3.36	0.21
Standard Deviation	0.89	0.12	49.23	17.41	1.35	0.03
Variance	0.79	0.01	2424.06	303.10	1.81	0.00

Data Row Count	193
Total Values Failing	
DO Criteria	179
Percent failing DO Criteria	92.75 %

### Grays Creek Subsegment 040304 Site 3390 GC-10 Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO	DO	SALINITY	Is DO <	DO
MMDDYY	HHMM	MMDDYYYY	øC	Units	uS/cm	PERCENT	mg/L	ppt	Criteria	Criteria
		HHMM				Sat			5	mg/L
7/24/2007	10:30	7/24/2007 10:30	25.68	6.81	324	19.5	1.59	0.16	1	5
7/24/2007	10:45	7/24/2007 10:45	25.76	6.78	309	16.9	1.37	0.15	1	5
7/24/2007	11:00	7/24/2007 11:00	25.81	6.78	315	16.2	1.32	0.15	1	5
7/24/2007	11:15	7/24/2007 11:15	25.84	6.76	316	16.2	1.32	0.15	1	5
7/24/2007	11:30	7/24/2007 11:30	25.9	6.75	302	19.5	1.58	0.15	1	5
7/24/2007	11:45	7/24/2007 11:45	25.95	6.74	303	17.2	1.39	0.15	1	5
7/24/2007	12:00	7/24/2007 12:00	25.99	6.74	303	17.4	1.41	0.15	1	5
7/24/2007	12:15	7/24/2007 12:15	26.06	6.74	305	20.6	1.67	0.15	1	5
7/24/2007	12:30	7/24/2007 12:30	26.11	6.74	301	23.3	1.88	0.15	1	5
7/24/2007	12:45	7/24/2007 12:45	26.17	6.74	302	28.8	2.32	0.15	1	5
7/24/2007	13:00	7/24/2007 13:00	26.2	6.74	307	25.4	2.05	0.15	1	5
7/24/2007	13:15	7/24/2007 13:15	26.29	6.73	314	31.9	2.57	0.15	1	5
7/24/2007	13:30	7/24/2007 13:30	26.38	6.74	306	32.4	2.61	0.15	1	5
7/24/2007	13:45	7/24/2007 13:45	26.46	6.75	319	29.4	2.36	0.16	1	5
7/24/2007	14:00	7/24/2007 14:00	26.66	6.75	323	43.7	3.5	0.16	1	5
7/24/2007	14:15	7/24/2007 14:15	26.7	6.78	334	27.9	2.23	0.16	1	5
7/24/2007	14:30	7/24/2007 14:30	26.81	6.76	328	33.3	2.66	0.16	1	5
7/24/2007	14:45	7/24/2007 14:45	26.83	6.77	322	38.4	3.06	0.16	1	5
7/24/2007	15:00	7/24/2007 15:00	26.99	6.78	342	38	3.03	0.17	1	5
7/24/2007	15:15	7/24/2007 15:15	27.12	6.79	354	38.4	3.05	0.17	1	5
7/24/2007	15:30	7/24/2007 15:30	27.14	6.8	355	37.4	2.97	0.17	1	5
7/24/2007	15:45	7/24/2007 15:45	27.25	6.8	351	43.9	3.48	0.17	1	5
7/24/2007	16:00	7/24/2007 16:00	27.39	6.83	380	46.7	3.69	0.19	1	5
7/24/2007	16:15	7/24/2007 16:15	27.5	6.83	383	51	4.02	0.19	1	5
7/24/2007	16:30	7/24/2007 16:30	27.63	6.87	393	49.2	3.87	0.2	1	5
7/24/2007	16:45	7/24/2007 16:45	27.77	6.9	419	57.1	4.48	0.21	1	5
7/24/2007	17:00	7/24/2007 17:00	27.85	6.93	424	59.5	4.67	0.21	1	5
7/24/2007	17:15	7/24/2007 17:15	27.94	6.95	435	59.2	4.63	0.22	1	5
7/24/2007	17:30	7/24/2007 17:30	27.98	6.99	442	61.2	4.79	0.22	1	5
7/24/2007	17:45	7/24/2007 17:45	28.03	7.01	451	65.3	5.1	0.23	0	5
7/24/2007	18:00	7/24/2007 18:00	28.08	7.04	459	66	5.15	0.23	0	5
7/24/2007	18:15	7/24/2007 18:15	28.11	7.05	458	68	5.3	0.23	0	5
7/24/2007	18:30	7/24/2007 18:30	28.12	7.06	459	64.9	5.06	0.23	0	5
7/24/2007	18:45	7/24/2007 18:45	28.12	7.07	461	70.6	5.51	0.23	0	5
7/24/2007	19:00	7/24/2007 19:00	28.09	7.07	462	69.1	5.39	0.23	0	5
7/24/2007	19:15	7/24/2007 19:15	28.06	7.08	454	65.7	5.13	0.23	0	5
7/24/2007	19:30	7/24/2007 19:30	27.99	7.07	453	64.3	5.03	0.23	0	5
7/24/2007	19:45	7/24/2007 19:45	27.93	7.07	452	62.6	4.9	0.23	1	5
7/24/2007	20:00	7/24/2007 20:00	27.86	7.07	451	60.9	4.78	0.23	1	5
7/24/2007	20:15	7/24/2007 20:15	27.78	7.06	450	60.7	4.77	0.23	1	5
7/24/2007	20:30	7/24/2007 20:30	27.71	7.06	448	60	4.71	0.23	1	5
7/24/2007	20:45	7/24/2007 20:45	27.64	7.06	449	60.5	4.76	0.23	1	5
7/24/2007	21:00	7/24/2007 21:00	27.57	7.06	449	61.6	4.85	0.23	1	5
7/24/2007	21:15	7/24/2007 21:15	27.5	7.06	449	61.5	4.85	0.23	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	21:30	7/24/2007 21:30	27.44	7.06	447	61.4	4.85	0.22	1	5
7/24/2007	21:45	7/24/2007 21:45	27.38	7.05	446	61.7	4.88	0.22	1	5
7/24/2007	22:00	7/24/2007 22:00	27.33	7.05	446	60.9	4.82	0.22	1	5
7/24/2007	22:15	7/24/2007 22:15	27.28	7.05	446	61.1	4.84	0.22	1	5
7/24/2007	22:30	7/24/2007 22:30	27.25	7.05	446	60.9	4.83	0.22	1	5
7/24/2007	22:45	7/24/2007 22:45	27.21	7.04	445	59.9	4.75	0.22	1	5
7/24/2007	23:00	7/24/2007 23:00	27.17	7.04	445	59	4.68	0.22	1	5
7/24/2007	23:15	7/24/2007 23:15	27.13	7.04	446	59.4	4.72	0.22	1	5
7/24/2007	23:30	7/24/2007 23:30	27.08	7.04	447	58.1	4.62	0.22	1	5
7/24/2007	23:45	7/24/2007 23:45	27.04	7.04	446	57.6	4.58	0.22	1	5
7/25/2007	0:00	7/25/2007 00:00	27	7.04	448	57.8	4.6	0.22	1	5
7/25/2007	0:15	7/25/2007 00:15	26.96	7.03	448	57.2	4.56	0.23	1	5
7/25/2007	0:30	7/25/2007 00:30	26.89	7.02	444	54.4	4.34	0.22	1	5
7/25/2007	0:45	7/25/2007 00:45	26.84	7.01	441	52.9	4.22	0.22	1	5
7/25/2007	1:00	7/25/2007 01:00	26.78	7.01	439	51.3	4.1	0.22	1	5
7/25/2007	1:15	7/25/2007 01:15	26.73	7	439	50	4	0.22	1	5
7/25/2007	1:30	7/25/2007 01:30	26.67	6.99	438	48.2	3.86	0.22	1	5
7/25/2007	1:45	7/25/2007 01:45	26.62	6.98	431	46.5	3.73	0.22	1	5
7/25/2007	2:00	7/25/2007 02:00	26.56	6.97	428	44.6	3.58	0.21	1	5
7/25/2007	2:15	7/25/2007 02:15	26.49	6.96	422	42.9	3.44	0.21	1	5
7/25/2007	2:30	7/25/2007 02:30	26.44	6.95	419	41.9	3.36	0.21	1	5
7/25/2007	2:45	7/25/2007 02:45	26.37	6.93	419	39.4	3.17	0.21	1	5
7/25/2007	3:00	7/25/2007 03:00	26.3	6.93	413	38.6	3.11	0.21	1	5
7/25/2007	3:15	7/25/2007 03:15	26.24	6.91	410	37.4	3.02	0.2	1	5
7/25/2007	3:30	7/25/2007 03:30	26.19	6.91	406	36.1	2.91	0.2	1	5
7/25/2007	3:45	7/25/2007 03:45	26.13	6.89	398	34.5	2.79	0.2	1	5
7/25/2007	4:00	7/25/2007 04:00	26.08	6.88	396	33.4	2.7	0.2	1	5
7/25/2007	4:15	7/25/2007 04:15	26	6.87	389	32.3	2.61	0.19	1	5
7/25/2007	4:30	7/25/2007 04:30	25.95	6.85	384	31.3	2.54	0.19	1	5
7/25/2007	4:45	7/25/2007 04:45	25.9	6.85	381	30.1	2.44	0.19	1	5
7/25/2007	5:00	7/25/2007 05:00	25.84	6.84	379	29.7	2.41	0.19	1	5
7/25/2007	5:15	7/25/2007 05:15	25.78	6.83	373	28.4	2.31	0.18	1	5
7/25/2007	5:30	7/25/2007 05:30	25.72	6.82	371	27.8	2.26	0.18	1	5
7/25/2007	5:45	7/25/2007 05:45	25.65	6.81	368	26.9	2.2	0.18	1	5
7/25/2007	6:00	7/25/2007 06:00	25.6	6.8	366	26.5	2.16	0.18	1	5
7/25/2007	6:15	7/25/2007 06:15	25.54	6.8	364	25.6	2.1	0.18	1	5
7/25/2007	6:30	7/25/2007 06:30	25.5	6.8	368	25.3	2.07	0.18	1	5
7/25/2007	6:45	7/25/2007 06:45	25.48	6.8	370	25.2	2.06	0.18	1	5
7/25/2007	7:00	7/25/2007 07:00	25.46	6.8	370	25.1	2.06	0.18	1	5
7/25/2007	7:15	7/25/2007 07:15	25.45	6.8	370	24.8	2.03	0.18	1	5
7/25/2007	7:30	7/25/2007 07:30	25.44	6.79	367	23.8	1.95	0.18	1	5
7/25/2007	7:45	7/25/2007 07:45	25.44	6.79	366	24.1	1.97	0.18	1	5
7/25/2007	8:00	7/25/2007 08:00	25.44	6.78	364	21	1.72	0.18	1	5
7/25/2007	8:15	7/25/2007 08:15	25.46	6.77	363	21.4	1.75	0.18	1	5
7/25/2007	8:30	7/25/2007 08:30	25.42	6.78	367	22.1	1.81	0.18	1	5
7/25/2007	8:45	7/25/2007 08:45	25.44	6.76	355	19.1	1.57	0.18	1	5
7/25/2007	9:00	7/25/2007 09:00	25.47	6.75	357	18.2	1.49	0.18	1	5
7/25/2007	9:15	7/25/2007 09:15	25.51	6.74	349	15.5	1.27	0.17	1	5
7/25/2007	9:30	7/25/2007 09:30	25.53	6.73	346	13.4	1.09	0.17	1	5
7/25/2007	9:45	7/25/2007 09:45	25.54	6.72	346	13.5	1.1	0.17	1	5

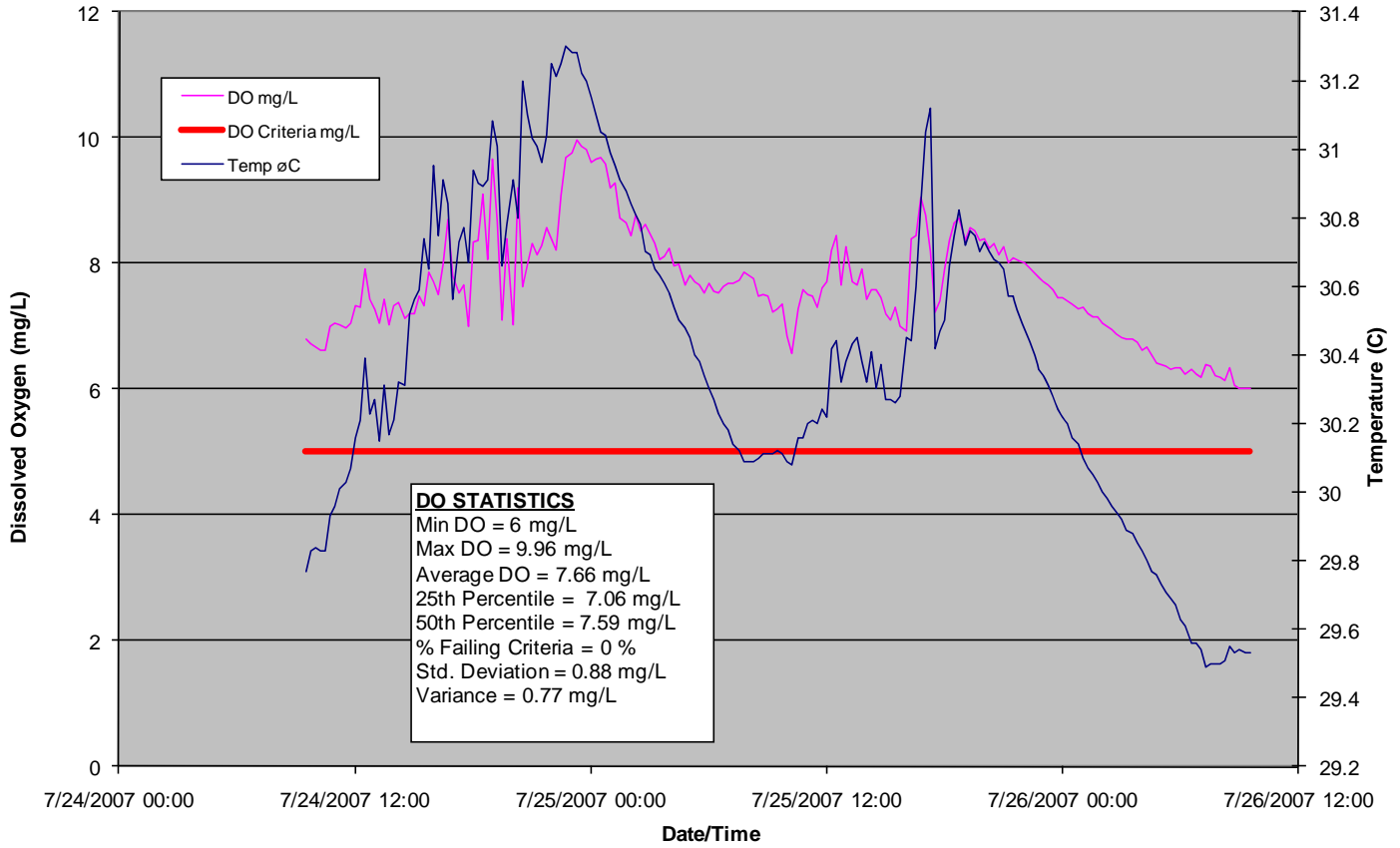
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	10:00	7/25/2007 10:00	25.54	6.72	342	13.5	1.11	0.17	1	5
7/25/2007	10:15	7/25/2007 10:15	25.58	6.72	342	12.6	1.03	0.17	1	5
7/25/2007	10:30	7/25/2007 10:30	25.61	6.71	340	11.2	0.91	0.17	1	5
7/25/2007	10:45	7/25/2007 10:45	25.66	6.73	342	15.5	1.26	0.17	1	5
7/25/2007	11:00	7/25/2007 11:00	25.72	6.73	350	13.8	1.12	0.17	1	5
7/25/2007	11:15	7/25/2007 11:15	25.72	6.73	347	14.6	1.19	0.17	1	5
7/25/2007	11:30	7/25/2007 11:30	25.72	6.73	347	14.5	1.18	0.17	1	5
7/25/2007	11:45	7/25/2007 11:45	25.77	6.73	347	15.9	1.29	0.17	1	5
7/25/2007	12:00	7/25/2007 12:00	25.84	6.73	348	16.3	1.32	0.17	1	5
7/25/2007	12:15	7/25/2007 12:15	25.86	6.73	350	17.7	1.44	0.17	1	5
7/25/2007	12:30	7/25/2007 12:30	25.93	6.73	352	18.3	1.48	0.17	1	5
7/25/2007	12:45	7/25/2007 12:45	26	6.73	346	19.8	1.61	0.17	1	5
7/25/2007	13:00	7/25/2007 13:00	26.1	6.73	346	26.3	2.13	0.17	1	5
7/25/2007	13:15	7/25/2007 13:15	26.31	6.73	357	25.9	2.09	0.18	1	5
7/25/2007	13:30	7/25/2007 13:30	26.43	6.73	353	28.7	2.31	0.17	1	5
7/25/2007	13:45	7/25/2007 13:45	26.59	6.74	354	30.3	2.43	0.17	1	5
7/25/2007	14:00	7/25/2007 14:00	26.73	6.75	352	30.3	2.42	0.17	1	5
7/25/2007	14:15	7/25/2007 14:15	26.91	6.74	352	33.7	2.69	0.17	1	5
7/25/2007	14:30	7/25/2007 14:30	27.02	6.74	346	46.2	3.68	0.17	1	5
7/25/2007	14:45	7/25/2007 14:45	27.07	6.75	351	45.2	3.59	0.17	1	5
7/25/2007	15:00	7/25/2007 15:00	27.19	6.75	352	48.2	3.82	0.17	1	5
7/25/2007	15:15	7/25/2007 15:15	27.35	6.77	378	46.3	3.66	0.19	1	5
7/25/2007	15:30	7/25/2007 15:30	27.47	6.78	388	45.4	3.58	0.19	1	5
7/25/2007	15:45	7/25/2007 15:45	27.63	6.8	394	45.6	3.59	0.2	1	5
7/25/2007	16:00	7/25/2007 16:00	27.77	6.82	411	46.3	3.63	0.21	1	5
7/25/2007	16:15	7/25/2007 16:15	27.87	6.82	414	47	3.68	0.21	1	5
7/25/2007	16:30	7/25/2007 16:30	27.97	6.83	426	50	3.91	0.21	1	5
7/25/2007	16:45	7/25/2007 16:45	28.04	6.84	427	50.8	3.97	0.21	1	5
7/25/2007	17:00	7/25/2007 17:00	28.09	6.85	433	54.4	4.25	0.22	1	5
7/25/2007	17:15	7/25/2007 17:15	28.15	6.87	441	53.6	4.18	0.22	1	5
7/25/2007	17:30	7/25/2007 17:30	28.22	6.87	432	54.8	4.27	0.22	1	5
7/25/2007	17:45	7/25/2007 17:45	28.26	6.86	447	55.5	4.32	0.22	1	5
7/25/2007	18:00	7/25/2007 18:00	28.28	6.88	457	59.5	4.63	0.23	1	5
7/25/2007	18:15	7/25/2007 18:15	28.31	6.93	462	63.7	4.95	0.23	1	5
7/25/2007	18:30	7/25/2007 18:30	28.3	6.94	467	66.2	5.15	0.24	0	5
7/25/2007	18:45	7/25/2007 18:45	28.28	6.95	464	66.4	5.17	0.23	0	5
7/25/2007	19:00	7/25/2007 19:00	28.2	6.98	465	71.2	5.54	0.23	0	5
7/25/2007	19:15	7/25/2007 19:15	28.13	6.99	467	69.6	5.43	0.23	0	5
7/25/2007	19:30	7/25/2007 19:30	28.06	7	468	71.4	5.57	0.24	0	5
7/25/2007	19:45	7/25/2007 19:45	27.99	6.99	470	65.9	5.15	0.24	0	5
7/25/2007	20:00	7/25/2007 20:00	27.91	7	467	63.4	4.97	0.24	1	5
7/25/2007	20:15	7/25/2007 20:15	27.84	7.02	466	63.1	4.94	0.23	1	5
7/25/2007	20:30	7/25/2007 20:30	27.77	7.01	464	62.6	4.91	0.23	1	5
7/25/2007	20:45	7/25/2007 20:45	27.7	7.01	463	61.6	4.84	0.23	1	5
7/25/2007	21:00	7/25/2007 21:00	27.64	7.01	463	60.9	4.79	0.23	1	5
7/25/2007	21:15	7/25/2007 21:15	27.58	7	463	60.5	4.77	0.23	1	5
7/25/2007	21:30	7/25/2007 21:30	27.53	7	464	60.1	4.74	0.23	1	5
7/25/2007	21:45	7/25/2007 21:45	27.48	7	464	60.3	4.75	0.23	1	5
7/25/2007	22:00	7/25/2007 22:00	27.44	7	464	60	4.74	0.23	1	5
7/25/2007	22:15	7/25/2007 22:15	27.4	6.99	463	60	4.74	0.23	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

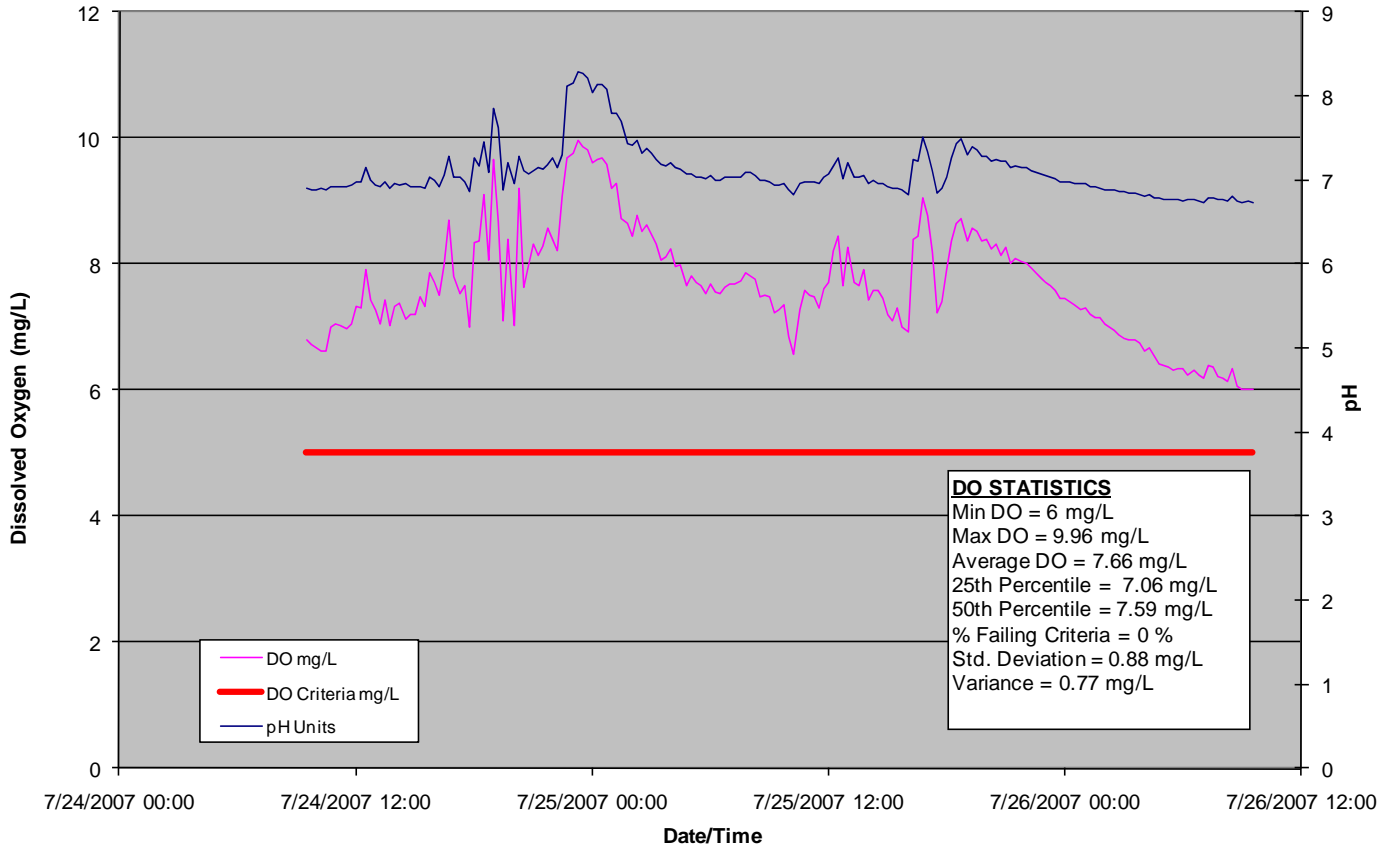
7/25/2007	22:30	7/25/2007 22:30	27.37	6.99	464	60.5	4.78	0.23	1	5
7/25/2007	22:45	7/25/2007 22:45	27.34	6.99	464	60.6	4.79	0.23	1	5
7/25/2007	23:00	7/25/2007 23:00	27.32	6.99	464	60.4	4.78	0.23	1	5
7/25/2007	23:15	7/25/2007 23:15	27.3	6.99	465	60.3	4.77	0.23	1	5
7/25/2007	23:30	7/25/2007 23:30	27.27	6.99	466	60.4	4.79	0.23	1	5
7/25/2007	23:45	7/25/2007 23:45	27.23	6.99	466	60.2	4.77	0.23	1	5
7/26/2007	0:00	7/26/2007 00:00	27.19	6.99	465	59.7	4.74	0.23	1	5
7/26/2007	0:15	7/26/2007 00:15	27.14	6.99	464	59.1	4.69	0.23	1	5
7/26/2007	0:30	7/26/2007 00:30	27.08	6.98	462	56.9	4.52	0.23	1	5
7/26/2007	0:45	7/26/2007 00:45	27.02	6.98	461	56	4.46	0.23	1	5
7/26/2007	1:00	7/26/2007 01:00	26.96	6.97	460	54.3	4.33	0.23	1	5
7/26/2007	1:15	7/26/2007 01:15	26.9	6.96	456	52.6	4.19	0.23	1	5
7/26/2007	1:30	7/26/2007 01:30	26.84	6.95	452	51	4.07	0.23	1	5
7/26/2007	1:45	7/26/2007 01:45	26.77	6.94	452	49.4	3.95	0.23	1	5
7/26/2007	2:00	7/26/2007 02:00	26.71	6.94	450	48.3	3.87	0.23	1	5
7/26/2007	2:15	7/26/2007 02:15	26.64	6.93	445	47.6	3.81	0.22	1	5
7/26/2007	2:30	7/26/2007 02:30	26.59	6.92	441	46.2	3.71	0.22	1	5
7/26/2007	2:45	7/26/2007 02:45	26.52	6.91	438	45.1	3.62	0.22	1	5
7/26/2007	3:00	7/26/2007 03:00	26.42	6.91	432	43	3.46	0.22	1	5
7/26/2007	3:15	7/26/2007 03:15	26.37	6.9	431	42.3	3.4	0.22	1	5
7/26/2007	3:30	7/26/2007 03:30	26.31	6.88	424	41	3.3	0.21	1	5
7/26/2007	3:45	7/26/2007 03:45	26.26	6.87	423	39.9	3.22	0.21	1	5
7/26/2007	4:00	7/26/2007 04:00	26.2	6.86	419	39	3.15	0.21	1	5
7/26/2007	4:15	7/26/2007 04:15	26.14	6.86	417	37.8	3.06	0.21	1	5
7/26/2007	4:30	7/26/2007 04:30	26.09	6.85	416	37	3	0.21	1	5
7/26/2007	4:45	7/26/2007 04:45	26.05	6.85	416	35.3	2.86	0.21	1	5
7/26/2007	5:00	7/26/2007 05:00	25.99	6.84	415	36.3	2.94	0.21	1	5
7/26/2007	5:15	7/26/2007 05:15	25.95	6.84	414	31.8	2.58	0.21	1	5
7/26/2007	5:30	7/26/2007 05:30	25.91	6.83	413	35.2	2.86	0.21	1	5
7/26/2007	5:45	7/26/2007 05:45	25.86	6.83	411	34.6	2.81	0.2	1	5
7/26/2007	6:00	7/26/2007 06:00	25.81	6.83	410	33.9	2.76	0.2	1	5
7/26/2007	6:15	7/26/2007 06:15	25.76	6.82	409	32.4	2.63	0.2	1	5
7/26/2007	6:30	7/26/2007 06:30	25.71	6.81	407	30.3	2.47	0.2	1	5
7/26/2007	6:45	7/26/2007 06:45	25.68	6.8	406	29.8	2.43	0.2	1	5
7/26/2007	7:00	7/26/2007 07:00	25.65	6.8	405	29.7	2.43	0.2	1	5
7/26/2007	7:15	7/26/2007 07:15	25.64	6.8	404	28.8	2.35	0.2	1	5
7/26/2007	7:30	7/26/2007 07:30	25.63	6.78	399	23.5	1.91	0.2	1	5
7/26/2007	7:45	7/26/2007 07:45	25.64	6.78	401	26.1	2.13	0.2	1	5
7/26/2007	8:00	7/26/2007 08:00	25.65	6.77	401	24.8	2.03	0.2	1	5
7/26/2007	8:15	7/26/2007 08:15	25.67	6.77	396	23.8	1.94	0.2	1	5
7/26/2007	8:30	7/26/2007 08:30	25.69	6.75	394	20.5	1.67	0.2	1	5
7/26/2007	8:45	7/26/2007 08:45	25.73	6.75	394	20.5	1.67	0.2	1	5
7/26/2007	9:00	7/26/2007 09:00	25.78	6.74	394	18	1.47	0.2	1	5
7/26/2007	9:15	7/26/2007 09:15	25.8	6.74	392	17.7	1.44	0.19	1	5
7/26/2007	9:30	7/26/2007 09:30	25.84	6.75	396	17.7	1.44	0.2	1	5
7/26/2007	9:45	7/26/2007 09:45	25.87	6.74	391	16.3	1.32	0.19	1	5
7/26/2007	10:00	7/26/2007 10:00	25.9	6.73	388	14.5	1.18	0.19	1	5
7/26/2007	10:15	7/26/2007 10:15	25.97	6.73	389	14.9	1.2	0.19	1	5
7/26/2007	10:30	7/26/2007 10:30	26.01	6.73	389	14.3	1.16	0.19	1	5

**Site Number: 3391 GCL-01, Site Name: Gray's Creek Lake  
Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time**

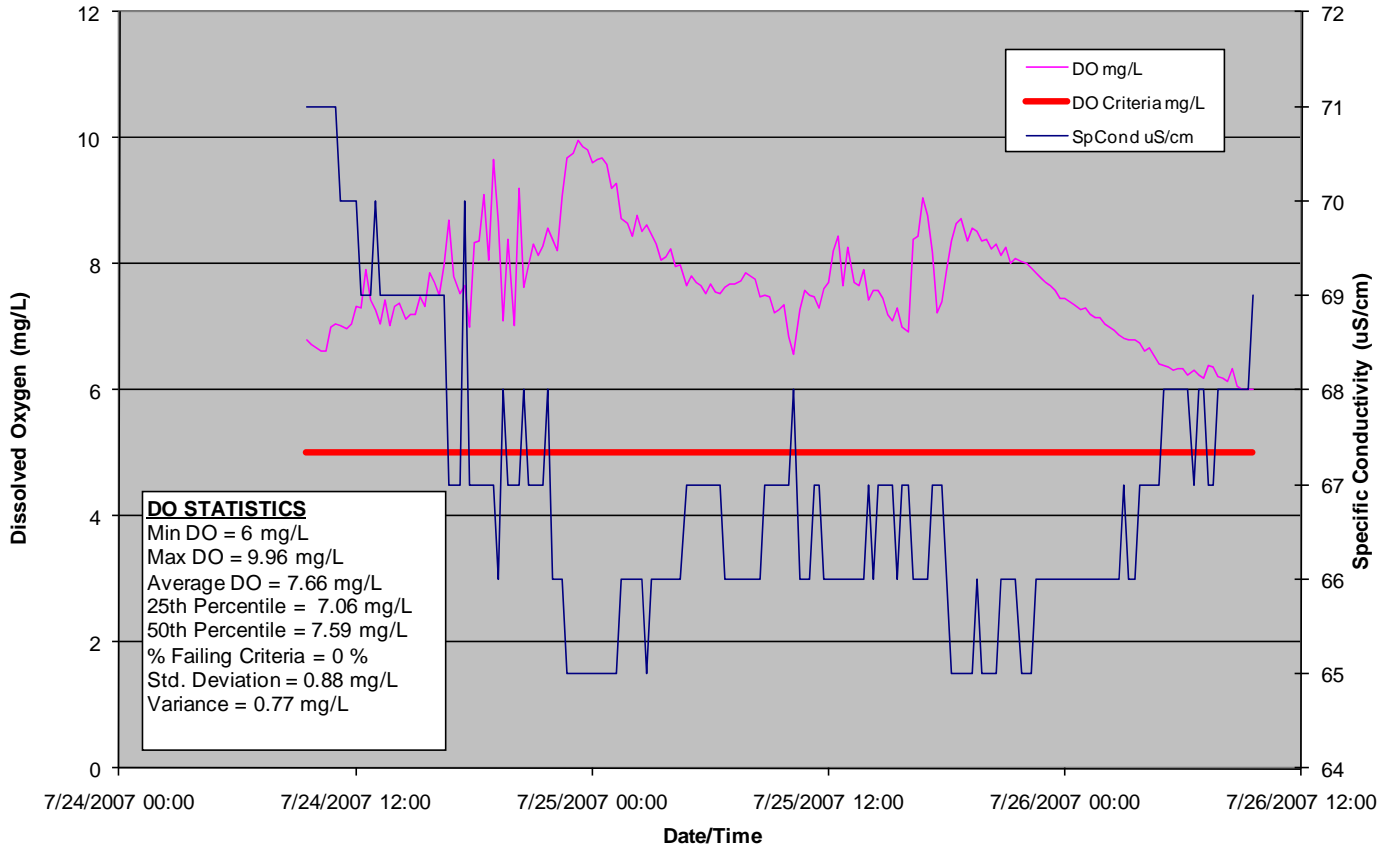




Site Number: 3391 GCL-01, Site Name: Gray's Creek Lake  
Subsegment: 040304, DO & pH vs. Date/Time



**Site Number: 3391 GCL-01, Site Name: Gray's Creek Lake**  
**Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 3391 GCL-01 Site Name: Gray's Creek Lake						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
Average	30.38	7.09	66.92	102.14	7.66	0.02
Minimum	29.49	6.73	65.00	78.80	6.00	0.02
Maximum	31.30	8.28	71.00	134.70	9.96	0.02
Geometric Mean	30.38	7.09			7.61	0.00
25th Percentile	30.09	6.91	66.00	94.50	7.06	0.02
30th Percentile	30.14	6.93	66.00	96.36	7.23	0.02
40th Percentile	30.24	6.96	66.00	98.86	7.44	0.02
50th Percentile	30.36	7.01	67.00	101.00	7.59	0.02
Standard Deviation	0.46	0.32	1.48	12.40	0.88	0.00
Variance	0.21	0.10	2.19	153.66	0.77	0.00

Data Row Count	193
Total Values Failing	
DO Criteria	0
Percent failing DO Criteria	0.00 %

### Grays Creek Subsegment 040304 Site 3391 GCL-01 Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO	DO	SALINITY	Is DO <	DO
MMDDYY	HHMM	MMDDYYYY	øC	Units	uS/cm	PERCENT	mg/L	ppt	Criteria	Criteria
		HHMM				Sat			5	mg/L
7/24/2007	9:30	7/24/2007 09:30	29.77	6.9	71	89.5	6.79	0.02	0	5
7/24/2007	9:45	7/24/2007 09:45	29.83	6.88	71	88.8	6.73	0.02	0	5
7/24/2007	10:00	7/24/2007 10:00	29.84	6.89	71	88	6.67	0.02	0	5
7/24/2007	10:15	7/24/2007 10:15	29.83	6.9	71	87.2	6.61	0.02	0	5
7/24/2007	10:30	7/24/2007 10:30	29.83	6.89	71	87.5	6.63	0.02	0	5
7/24/2007	10:45	7/24/2007 10:45	29.93	6.93	71	92.7	7.01	0.02	0	5
7/24/2007	11:00	7/24/2007 11:00	29.96	6.92	71	93.1	7.04	0.02	0	5
7/24/2007	11:15	7/24/2007 11:15	30.01	6.93	70	93	7.03	0.02	0	5
7/24/2007	11:30	7/24/2007 11:30	30.03	6.92	70	92.2	6.97	0.02	0	5
7/24/2007	11:45	7/24/2007 11:45	30.07	6.94	70	93.5	7.05	0.02	0	5
7/24/2007	12:00	7/24/2007 12:00	30.16	6.97	70	97.1	7.32	0.02	0	5
7/24/2007	12:15	7/24/2007 12:15	30.21	6.98	69	97	7.3	0.02	0	5
7/24/2007	12:30	7/24/2007 12:30	30.39	7.15	69	105.5	7.92	0.02	0	5
7/24/2007	12:45	7/24/2007 12:45	30.23	6.99	69	98.6	7.43	0.02	0	5
7/24/2007	13:00	7/24/2007 13:00	30.27	6.94	70	96.9	7.29	0.02	0	5
7/24/2007	13:15	7/24/2007 13:15	30.15	6.92	69	93.6	7.06	0.02	0	5
7/24/2007	13:30	7/24/2007 13:30	30.31	6.97	69	99	7.44	0.02	0	5
7/24/2007	13:45	7/24/2007 13:45	30.17	6.91	69	93.1	7.02	0.02	0	5
7/24/2007	14:00	7/24/2007 14:00	30.21	6.96	69	97.2	7.32	0.02	0	5
7/24/2007	14:15	7/24/2007 14:15	30.32	6.94	69	98.3	7.39	0.02	0	5
7/24/2007	14:30	7/24/2007 14:30	30.31	6.95	69	94.7	7.12	0.02	0	5
7/24/2007	14:45	7/24/2007 14:45	30.52	6.92	69	96.3	7.21	0.02	0	5
7/24/2007	15:00	7/24/2007 15:00	30.56	6.92	69	96.4	7.21	0.02	0	5
7/24/2007	15:15	7/24/2007 15:15	30.59	6.93	69	100	7.48	0.02	0	5
7/24/2007	15:30	7/24/2007 15:30	30.74	6.9	69	98.2	7.33	0.02	0	5
7/24/2007	15:45	7/24/2007 15:45	30.65	7.03	69	105.3	7.87	0.02	0	5
7/24/2007	16:00	7/24/2007 16:00	30.95	6.99	69	103.5	7.7	0.02	0	5
7/24/2007	16:15	7/24/2007 16:15	30.75	6.92	69	100.7	7.51	0.02	0	5
7/24/2007	16:30	7/24/2007 16:30	30.91	7.05	69	107.3	7.98	0.02	0	5
7/24/2007	16:45	7/24/2007 16:45	30.84	7.29	67	116.6	8.69	0.02	0	5
7/24/2007	17:00	7/24/2007 17:00	30.56	7.04	67	104.2	7.8	0.02	0	5
7/24/2007	17:15	7/24/2007 17:15	30.73	7.04	67	101	7.54	0.02	0	5
7/24/2007	17:30	7/24/2007 17:30	30.77	6.98	70	102.7	7.66	0.02	0	5
7/24/2007	17:45	7/24/2007 17:45	30.67	6.87	67	93.7	7	0.02	0	5
7/24/2007	18:00	7/24/2007 18:00	30.94	7.27	67	112.3	8.35	0.02	0	5
7/24/2007	18:15	7/24/2007 18:15	30.9	7.17	67	112.5	8.37	0.02	0	5
7/24/2007	18:30	7/24/2007 18:30	30.89	7.46	67	122.3	9.1	0.02	0	5
7/24/2007	18:45	7/24/2007 18:45	30.91	7.09	67	108.5	8.07	0.02	0	5
7/24/2007	19:00	7/24/2007 19:00	31.08	7.86	67	130.2	9.66	0.02	0	5
7/24/2007	19:15	7/24/2007 19:15	31.01	7.63	66	116.7	8.66	0.02	0	5
7/24/2007	19:30	7/24/2007 19:30	30.66	6.89	68	95.2	7.11	0.02	0	5
7/24/2007	19:45	7/24/2007 19:45	30.78	7.21	67	112.5	8.39	0.02	0	5
7/24/2007	20:00	7/24/2007 20:00	30.91	6.96	67	94.5	7.03	0.02	0	5
7/24/2007	20:15	7/24/2007 20:15	30.8	7.29	67	123.3	9.19	0.02	0	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	20:30	7/24/2007 20:30	31.2	7.12	68	103.1	7.63	0.02	0	5
7/24/2007	20:45	7/24/2007 20:45	31.1	7.08	67	107.8	7.99	0.02	0	5
7/24/2007	21:00	7/24/2007 21:00	31.03	7.12	67	112	8.32	0.02	0	5
7/24/2007	21:15	7/24/2007 21:15	31.01	7.14	67	109.6	8.14	0.02	0	5
7/24/2007	21:30	7/24/2007 21:30	30.96	7.13	67	111.4	8.28	0.02	0	5
7/24/2007	21:45	7/24/2007 21:45	31.04	7.19	68	115.3	8.56	0.02	0	5
7/24/2007	22:00	7/24/2007 22:00	31.25	7.27	66	113.3	8.38	0.02	0	5
7/24/2007	22:15	7/24/2007 22:15	31.21	7.14	66	111	8.22	0.02	0	5
7/24/2007	22:30	7/24/2007 22:30	31.25	7.3	66	122.8	9.08	0.02	0	5
7/24/2007	22:45	7/24/2007 22:45	31.3	8.12	65	131	9.68	0.02	0	5
7/24/2007	23:00	7/24/2007 23:00	31.28	8.16	65	131.9	9.75	0.02	0	5
7/24/2007	23:15	7/24/2007 23:15	31.28	8.28	65	134.7	9.96	0.02	0	5
7/24/2007	23:30	7/24/2007 23:30	31.22	8.26	65	133.2	9.86	0.02	0	5
7/24/2007	23:45	7/24/2007 23:45	31.2	8.22	65	132.5	9.81	0.02	0	5
7/25/2007	0:00	7/25/2007 00:00	31.15	8.05	65	129.7	9.61	0.02	0	5
7/25/2007	0:15	7/25/2007 00:15	31.1	8.13	65	130.1	9.65	0.02	0	5
7/25/2007	0:30	7/25/2007 00:30	31.05	8.14	65	130.5	9.68	0.02	0	5
7/25/2007	0:45	7/25/2007 00:45	31.04	8.07	65	129.1	9.58	0.02	0	5
7/25/2007	1:00	7/25/2007 01:00	30.99	7.79	65	123.8	9.2	0.02	0	5
7/25/2007	1:15	7/25/2007 01:15	30.95	7.79	65	124.8	9.28	0.02	0	5
7/25/2007	1:30	7/25/2007 01:30	30.91	7.7	66	117	8.71	0.02	0	5
7/25/2007	1:45	7/25/2007 01:45	30.88	7.43	66	116	8.64	0.02	0	5
7/25/2007	2:00	7/25/2007 02:00	30.84	7.41	66	113.4	8.45	0.02	0	5
7/25/2007	2:15	7/25/2007 02:15	30.81	7.48	66	117.6	8.77	0.02	0	5
7/25/2007	2:30	7/25/2007 02:30	30.78	7.32	66	114.3	8.52	0.02	0	5
7/25/2007	2:45	7/25/2007 02:45	30.7	7.37	65	115.3	8.61	0.02	0	5
7/25/2007	3:00	7/25/2007 03:00	30.69	7.32	66	113.4	8.47	0.02	0	5
7/25/2007	3:15	7/25/2007 03:15	30.65	7.24	66	111.2	8.31	0.02	0	5
7/25/2007	3:30	7/25/2007 03:30	30.63	7.19	66	107.8	8.06	0.02	0	5
7/25/2007	3:45	7/25/2007 03:45	30.61	7.17	66	108.6	8.12	0.02	0	5
7/25/2007	4:00	7/25/2007 04:00	30.58	7.2	66	109.9	8.23	0.02	0	5
7/25/2007	4:15	7/25/2007 04:15	30.54	7.15	66	106.3	7.96	0.02	0	5
7/25/2007	4:30	7/25/2007 04:30	30.5	7.13	66	106.5	7.98	0.02	0	5
7/25/2007	4:45	7/25/2007 04:45	30.48	7.07	67	102.3	7.67	0.02	0	5
7/25/2007	5:00	7/25/2007 05:00	30.45	7.08	67	104	7.8	0.02	0	5
7/25/2007	5:15	7/25/2007 05:15	30.4	7.03	67	102.6	7.7	0.02	0	5
7/25/2007	5:30	7/25/2007 05:30	30.38	7.04	67	101.9	7.65	0.02	0	5
7/25/2007	5:45	7/25/2007 05:45	30.34	7.01	67	100	7.52	0.02	0	5
7/25/2007	6:00	7/25/2007 06:00	30.3	7.05	67	102.1	7.68	0.02	0	5
7/25/2007	6:15	7/25/2007 06:15	30.27	7	67	100.4	7.56	0.02	0	5
7/25/2007	6:30	7/25/2007 06:30	30.23	7	67	100.2	7.54	0.02	0	5
7/25/2007	6:45	7/25/2007 06:45	30.2	7.03	66	101.4	7.64	0.02	0	5
7/25/2007	7:00	7/25/2007 07:00	30.18	7.04	66	102	7.69	0.02	0	5
7/25/2007	7:15	7/25/2007 07:15	30.14	7.04	66	101.9	7.68	0.02	0	5
7/25/2007	7:30	7/25/2007 07:30	30.12	7.04	66	102.5	7.73	0.02	0	5
7/25/2007	7:45	7/25/2007 07:45	30.09	7.09	66	104.1	7.86	0.02	0	5
7/25/2007	8:00	7/25/2007 08:00	30.09	7.09	66	103.6	7.82	0.02	0	5
7/25/2007	8:15	7/25/2007 08:15	30.09	7.05	66	102.8	7.76	0.02	0	5
7/25/2007	8:30	7/25/2007 08:30	30.1	7	66	99.3	7.49	0.02	0	5
7/25/2007	8:45	7/25/2007 08:45	30.11	7	67	99.5	7.5	0.02	0	5

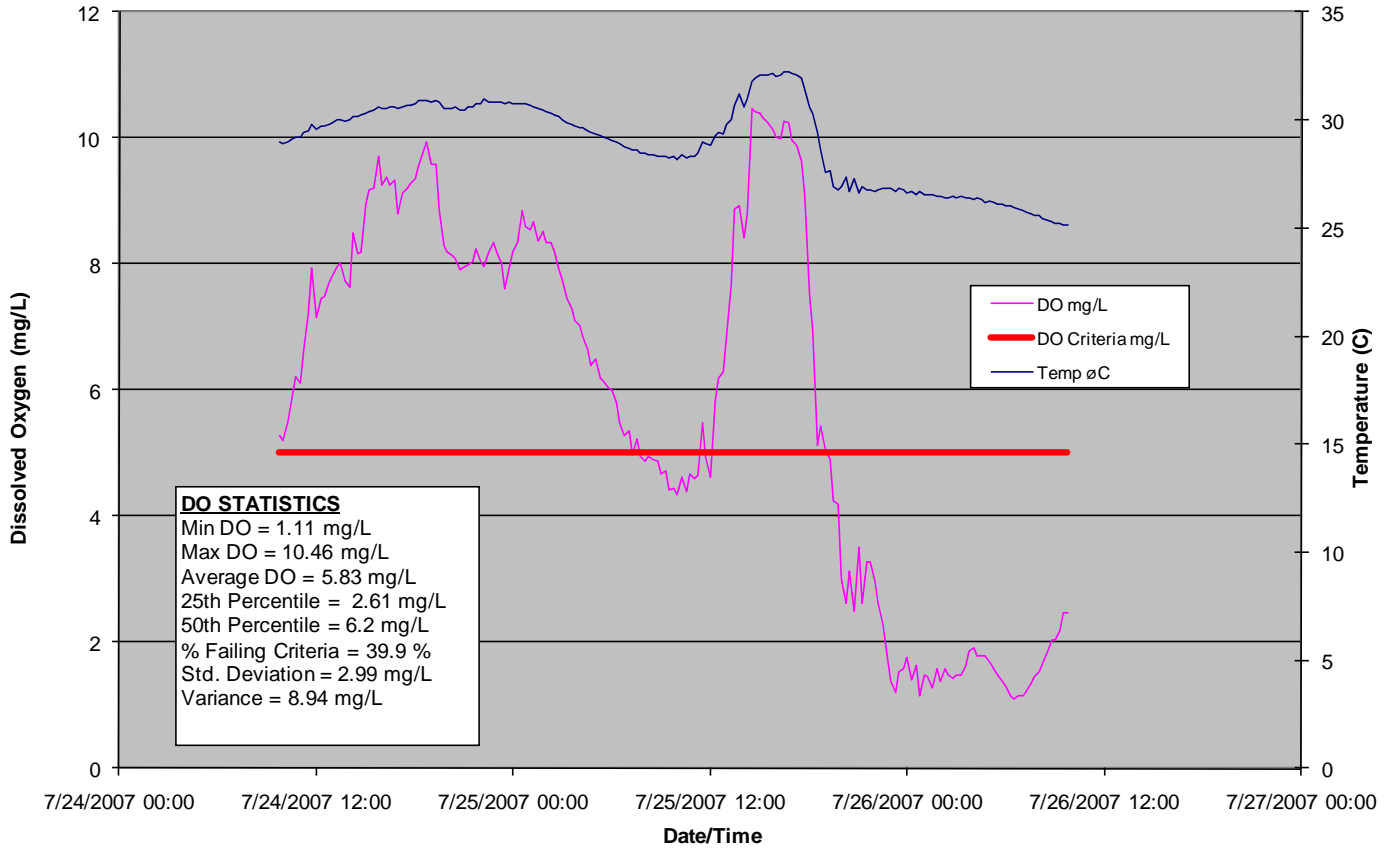
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	9:00	7/25/2007 09:00	30.11	6.98	67	99.1	7.47	0.02	0	5
7/25/2007	9:15	7/25/2007 09:15	30.11	6.94	67	95.9	7.24	0.02	0	5
7/25/2007	9:30	7/25/2007 09:30	30.12	6.94	67	96.5	7.28	0.02	0	5
7/25/2007	9:45	7/25/2007 09:45	30.11	6.96	67	97.6	7.36	0.02	0	5
7/25/2007	10:00	7/25/2007 10:00	30.09	6.89	67	91	6.86	0.02	0	5
7/25/2007	10:15	7/25/2007 10:15	30.08	6.83	68	87.1	6.57	0.02	0	5
7/25/2007	10:30	7/25/2007 10:30	30.16	6.96	66	96.6	7.28	0.02	0	5
7/25/2007	10:45	7/25/2007 10:45	30.16	6.97	66	100.6	7.58	0.02	0	5
7/25/2007	11:00	7/25/2007 11:00	30.2	6.98	66	99.5	7.5	0.02	0	5
7/25/2007	11:15	7/25/2007 11:15	30.21	6.98	67	99.4	7.49	0.02	0	5
7/25/2007	11:30	7/25/2007 11:30	30.2	6.96	67	97	7.31	0.02	0	5
7/25/2007	11:45	7/25/2007 11:45	30.24	7.03	66	100.9	7.6	0.02	0	5
7/25/2007	12:00	7/25/2007 12:00	30.22	7.07	66	102.3	7.7	0.02	0	5
7/25/2007	12:15	7/25/2007 12:15	30.42	7.17	66	109.5	8.22	0.02	0	5
7/25/2007	12:30	7/25/2007 12:30	30.44	7.27	66	112.6	8.45	0.02	0	5
7/25/2007	12:45	7/25/2007 12:45	30.32	7.02	66	101.7	7.65	0.02	0	5
7/25/2007	13:00	7/25/2007 13:00	30.38	7.21	66	110.1	8.27	0.02	0	5
7/25/2007	13:15	7/25/2007 13:15	30.43	7.03	66	102.6	7.7	0.02	0	5
7/25/2007	13:30	7/25/2007 13:30	30.45	7.03	66	102.3	7.67	0.02	0	5
7/25/2007	13:45	7/25/2007 13:45	30.38	7.06	66	105.3	7.9	0.02	0	5
7/25/2007	14:00	7/25/2007 14:00	30.32	6.95	67	99	7.44	0.02	0	5
7/25/2007	14:15	7/25/2007 14:15	30.41	6.99	66	101.2	7.59	0.02	0	5
7/25/2007	14:30	7/25/2007 14:30	30.3	6.96	67	100.7	7.57	0.02	0	5
7/25/2007	14:45	7/25/2007 14:45	30.37	6.95	67	99.4	7.46	0.02	0	5
7/25/2007	15:00	7/25/2007 15:00	30.27	6.92	67	95.9	7.21	0.02	0	5
7/25/2007	15:15	7/25/2007 15:15	30.27	6.91	67	94.5	7.11	0.02	0	5
7/25/2007	15:30	7/25/2007 15:30	30.26	6.91	66	97	7.3	0.02	0	5
7/25/2007	15:45	7/25/2007 15:45	30.28	6.89	67	93	6.99	0.02	0	5
7/25/2007	16:00	7/25/2007 16:00	30.45	6.83	67	92.4	6.93	0.02	0	5
7/25/2007	16:15	7/25/2007 16:15	30.44	7.25	66	111.8	8.38	0.02	0	5
7/25/2007	16:30	7/25/2007 16:30	30.6	7.22	66	112.8	8.44	0.02	0	5
7/25/2007	16:45	7/25/2007 16:45	30.84	7.5	66	121.6	9.06	0.02	0	5
7/25/2007	17:00	7/25/2007 17:00	31.05	7.34	66	118.1	8.77	0.02	0	5
7/25/2007	17:15	7/25/2007 17:15	31.12	7.12	67	110.5	8.19	0.02	0	5
7/25/2007	17:30	7/25/2007 17:30	30.42	6.84	67	96.4	7.24	0.02	0	5
7/25/2007	17:45	7/25/2007 17:45	30.47	6.9	67	98.7	7.4	0.02	0	5
7/25/2007	18:00	7/25/2007 18:00	30.5	7.03	66	105.7	7.92	0.02	0	5
7/25/2007	18:15	7/25/2007 18:15	30.66	7.27	65	111.8	8.36	0.02	0	5
7/25/2007	18:30	7/25/2007 18:30	30.75	7.44	65	115.8	8.64	0.02	0	5
7/25/2007	18:45	7/25/2007 18:45	30.82	7.49	65	117.1	8.73	0.02	0	5
7/25/2007	19:00	7/25/2007 19:00	30.72	7.31	65	112	8.36	0.02	0	5
7/25/2007	19:15	7/25/2007 19:15	30.76	7.39	65	114.7	8.56	0.02	0	5
7/25/2007	19:30	7/25/2007 19:30	30.75	7.35	66	114.1	8.51	0.02	0	5
7/25/2007	19:45	7/25/2007 19:45	30.7	7.28	65	112	8.36	0.02	0	5
7/25/2007	20:00	7/25/2007 20:00	30.73	7.28	65	112.3	8.38	0.02	0	5
7/25/2007	20:15	7/25/2007 20:15	30.7	7.23	65	110.1	8.23	0.02	0	5
7/25/2007	20:30	7/25/2007 20:30	30.68	7.25	65	111.4	8.32	0.02	0	5
7/25/2007	20:45	7/25/2007 20:45	30.67	7.22	66	109	8.14	0.02	0	5
7/25/2007	21:00	7/25/2007 21:00	30.65	7.22	66	110.6	8.27	0.02	0	5
7/25/2007	21:15	7/25/2007 21:15	30.57	7.14	66	107	8.01	0.02	0	5

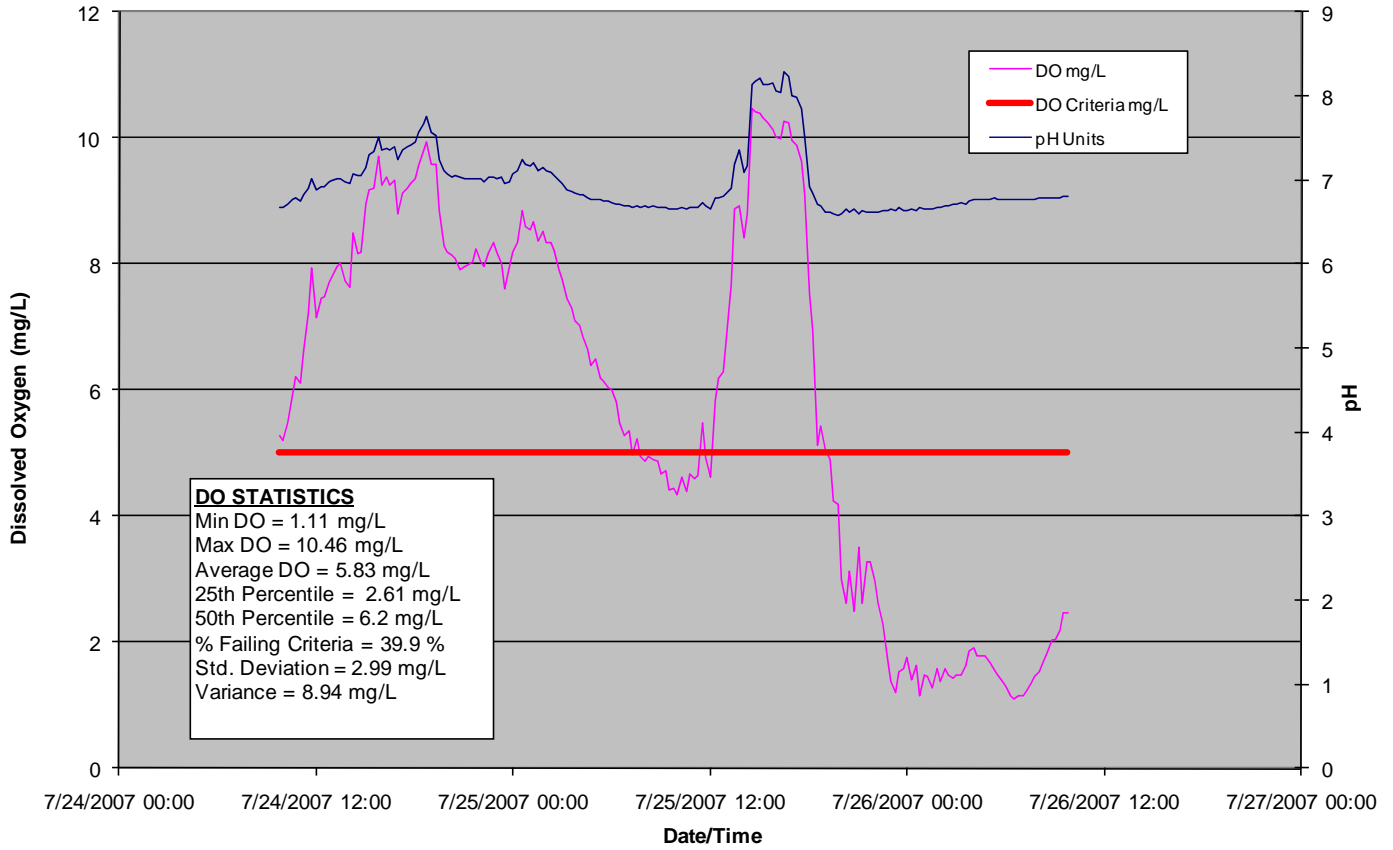
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	21:30	7/25/2007 21:30	30.57	7.16	66	108	8.08	0.02	0	5
7/25/2007	21:45	7/25/2007 21:45	30.51	7.14	65	107.3	8.04	0.02	0	5
7/25/2007	22:00	7/25/2007 22:00	30.48	7.14	65	106.8	8.01	0.02	0	5
7/25/2007	22:15	7/25/2007 22:15	30.44	7.11	65	105.7	7.93	0.02	0	5
7/25/2007	22:30	7/25/2007 22:30	30.41	7.09	66	104.9	7.87	0.02	0	5
7/25/2007	22:45	7/25/2007 22:45	30.36	7.07	66	103.7	7.78	0.02	0	5
7/25/2007	23:00	7/25/2007 23:00	30.34	7.05	66	102.6	7.71	0.02	0	5
7/25/2007	23:15	7/25/2007 23:15	30.31	7.03	66	102	7.67	0.02	0	5
7/25/2007	23:30	7/25/2007 23:30	30.28	7.01	66	100.7	7.57	0.02	0	5
7/25/2007	23:45	7/25/2007 23:45	30.24	6.97	66	99.1	7.46	0.02	0	5
7/26/2007	0:00	7/26/2007 00:00	30.22	6.98	66	98.9	7.45	0.02	0	5
7/26/2007	0:15	7/26/2007 00:15	30.2	6.97	66	98.2	7.4	0.02	0	5
7/26/2007	0:30	7/26/2007 00:30	30.16	6.96	66	97.6	7.36	0.02	0	5
7/26/2007	0:45	7/26/2007 00:45	30.14	6.95	66	96.6	7.28	0.02	0	5
7/26/2007	1:00	7/26/2007 01:00	30.1	6.95	66	96.9	7.31	0.02	0	5
7/26/2007	1:15	7/26/2007 01:15	30.07	6.92	66	95.6	7.21	0.02	0	5
7/26/2007	1:30	7/26/2007 01:30	30.05	6.92	66	94.5	7.14	0.02	0	5
7/26/2007	1:45	7/26/2007 01:45	30.03	6.91	66	94.5	7.14	0.02	0	5
7/26/2007	2:00	7/26/2007 02:00	30	6.88	66	93.3	7.06	0.02	0	5
7/26/2007	2:15	7/26/2007 02:15	29.98	6.89	66	92.4	6.99	0.02	0	5
7/26/2007	2:30	7/26/2007 02:30	29.96	6.88	66	91.8	6.94	0.02	0	5
7/26/2007	2:45	7/26/2007 02:45	29.94	6.87	66	90.9	6.88	0.02	0	5
7/26/2007	3:00	7/26/2007 03:00	29.92	6.86	67	90.3	6.83	0.02	0	5
7/26/2007	3:15	7/26/2007 03:15	29.89	6.85	66	89.8	6.8	0.02	0	5
7/26/2007	3:30	7/26/2007 03:30	29.88	6.84	66	89.7	6.79	0.02	0	5
7/26/2007	3:45	7/26/2007 03:45	29.85	6.83	67	88.9	6.74	0.02	0	5
7/26/2007	4:00	7/26/2007 04:00	29.83	6.81	67	87.5	6.63	0.02	0	5
7/26/2007	4:15	7/26/2007 04:15	29.8	6.82	67	87.8	6.66	0.02	0	5
7/26/2007	4:30	7/26/2007 04:30	29.77	6.79	67	86.2	6.54	0.02	0	5
7/26/2007	4:45	7/26/2007 04:45	29.76	6.78	67	84.7	6.42	0.02	0	5
7/26/2007	5:00	7/26/2007 05:00	29.73	6.77	68	84.1	6.39	0.02	0	5
7/26/2007	5:15	7/26/2007 05:15	29.71	6.76	68	83.9	6.37	0.02	0	5
7/26/2007	5:30	7/26/2007 05:30	29.69	6.76	68	83.2	6.32	0.02	0	5
7/26/2007	5:45	7/26/2007 05:45	29.67	6.76	68	83.5	6.34	0.02	0	5
7/26/2007	6:00	7/26/2007 06:00	29.63	6.75	68	83.3	6.33	0.02	0	5
7/26/2007	6:15	7/26/2007 06:15	29.61	6.76	68	81.9	6.23	0.02	0	5
7/26/2007	6:30	7/26/2007 06:30	29.56	6.76	67	83	6.32	0.02	0	5
7/26/2007	6:45	7/26/2007 06:45	29.56	6.75	68	81.8	6.23	0.02	0	5
7/26/2007	7:00	7/26/2007 07:00	29.54	6.73	68	81.3	6.19	0.02	0	5
7/26/2007	7:15	7/26/2007 07:15	29.49	6.78	67	83.6	6.38	0.02	0	5
7/26/2007	7:30	7/26/2007 07:30	29.5	6.78	67	83.4	6.36	0.02	0	5
7/26/2007	7:45	7/26/2007 07:45	29.5	6.76	68	81.5	6.21	0.02	0	5
7/26/2007	8:00	7/26/2007 08:00	29.5	6.76	68	81.2	6.19	0.02	0	5
7/26/2007	8:15	7/26/2007 08:15	29.51	6.75	68	80.6	6.15	0.02	0	5
7/26/2007	8:30	7/26/2007 08:30	29.55	6.8	68	83.2	6.34	0.02	0	5
7/26/2007	8:45	7/26/2007 08:45	29.53	6.75	68	79.6	6.06	0.02	0	5
7/26/2007	9:00	7/26/2007 09:00	29.54	6.74	68	78.8	6	0.02	0	5
7/26/2007	9:15	7/26/2007 09:15	29.53	6.75	68	79	6.02	0.02	0	5
7/26/2007	9:30	7/26/2007 09:30	29.53	6.74	69	78.8	6.01	0.02	0	5

**Site Number: 3459 GC-01, Site Name: GC upstream of Gray's Creek Lake  
Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time**

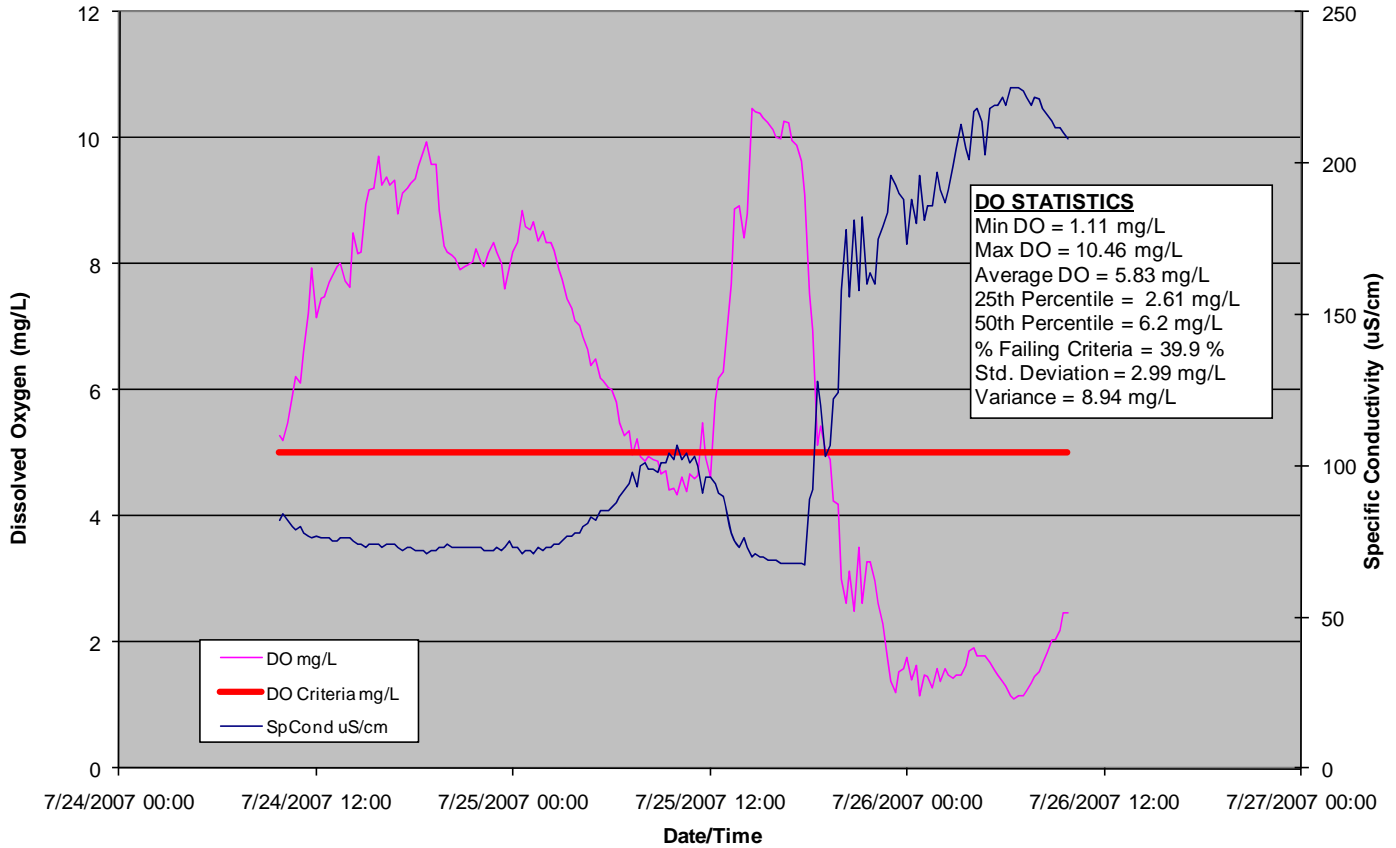


**Site Number: 3459 GC-01, Site Name: GC upstream of Gray's Creek Lake  
Subsegment: 040304, DO & pH vs. Date/Time**





**Site Number: 3459 GC-01, Site Name: GC upstream of Gray's Creek Lake  
 Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 3459 GC-01 Site Name: GC upstream of Gray's Creek Lake						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
Average	28.92	6.97	115.12	76.99	5.83	0.05
Minimum	25.11	6.57	67.00	13.70	1.11	0.02
Maximum	32.20	8.28	225.00	142.60	10.46	0.11
Geometric Mean	28.85	6.96			4.79	0.04
25th Percentile	26.77	6.69	73.00	32.80	2.61	0.02
30th Percentile	27.47	6.72	74.00	54.68	4.30	0.02
40th Percentile	28.61	6.77	76.00	64.14	5.03	0.03
50th Percentile	29.36	6.79	84.00	81.10	6.20	0.03
Standard Deviation	1.96	0.40	55.51	41.05	2.99	0.03
Variance	3.86	0.16	3081.53	1684.95	8.94	0.00
Data Row Count	193					
Total Values Failing DO Criteria	77					
Percent failing DO Criteria	39.90 %					

### Grays Creek Subsegment 040304 Site 3459 GC-01 Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO	DO	SALINITY	Is DO <	DO
MMDDYY	HHMM	MMDDYYYY	øC	Units	uS/cm	PERCENT	mg/L	ppt	Criteria	Criteria
		HHMM				Sat			5	mg/L
7/24/2007	9:45	7/24/2007 09:45	28.97	6.67	82	68.8	5.29	0.03	0	5
7/24/2007	10:00	7/24/2007 10:00	28.91	6.68	84	67.5	5.2	0.03	0	5
7/24/2007	10:15	7/24/2007 10:15	29.01	6.72	82	71.3	5.48	0.03	0	5
7/24/2007	10:30	7/24/2007 10:30	29.11	6.76	80	77.1	5.92	0.03	0	5
7/24/2007	10:45	7/24/2007 10:45	29.22	6.78	79	81.1	6.21	0.03	0	5
7/24/2007	11:00	7/24/2007 11:00	29.24	6.75	80	79.8	6.11	0.03	0	5
7/24/2007	11:15	7/24/2007 11:15	29.4	6.83	78	86.6	6.61	0.03	0	5
7/24/2007	11:30	7/24/2007 11:30	29.53	6.9	77	95	7.24	0.03	0	5
7/24/2007	11:45	7/24/2007 11:45	29.8	7.02	76	104.8	7.94	0.03	0	5
7/24/2007	12:00	7/24/2007 12:00	29.59	6.88	77	94	7.15	0.03	0	5
7/24/2007	12:15	7/24/2007 12:15	29.69	6.92	76	98.2	7.46	0.03	0	5
7/24/2007	12:30	7/24/2007 12:30	29.74	6.93	76	98.4	7.47	0.03	0	5
7/24/2007	12:45	7/24/2007 12:45	29.76	6.97	76	101.6	7.71	0.03	0	5
7/24/2007	13:00	7/24/2007 13:00	29.88	6.99	75	103	7.8	0.02	0	5
7/24/2007	13:15	7/24/2007 13:15	29.98	7.01	75	105.1	7.95	0.02	0	5
7/24/2007	13:30	7/24/2007 13:30	29.98	7.01	76	106	8.01	0.02	0	5
7/24/2007	13:45	7/24/2007 13:45	29.94	6.97	76	102.2	7.73	0.03	0	5
7/24/2007	14:00	7/24/2007 14:00	29.99	6.96	76	101	7.63	0.03	0	5
7/24/2007	14:15	7/24/2007 14:15	30.17	7.08	75	112.6	8.49	0.02	0	5
7/24/2007	14:30	7/24/2007 14:30	30.14	7.05	74	108.3	8.16	0.02	0	5
7/24/2007	14:45	7/24/2007 14:45	30.21	7.06	74	108.7	8.19	0.02	0	5
7/24/2007	15:00	7/24/2007 15:00	30.33	7.15	73	119	8.94	0.02	0	5
7/24/2007	15:15	7/24/2007 15:15	30.4	7.31	74	122.3	9.18	0.02	0	5
7/24/2007	15:30	7/24/2007 15:30	30.46	7.33	74	122.6	9.19	0.02	0	5
7/24/2007	15:45	7/24/2007 15:45	30.64	7.5	74	130	9.72	0.02	0	5
7/24/2007	16:00	7/24/2007 16:00	30.52	7.36	73	123.5	9.25	0.02	0	5
7/24/2007	16:15	7/24/2007 16:15	30.56	7.38	74	125.4	9.38	0.02	0	5
7/24/2007	16:30	7/24/2007 16:30	30.58	7.35	74	123.8	9.26	0.02	0	5
7/24/2007	16:45	7/24/2007 16:45	30.64	7.4	74	124.9	9.34	0.02	0	5
7/24/2007	17:00	7/24/2007 17:00	30.54	7.25	73	117.6	8.8	0.02	0	5
7/24/2007	17:15	7/24/2007 17:15	30.62	7.36	72	122	9.12	0.02	0	5
7/24/2007	17:30	7/24/2007 17:30	30.68	7.39	73	123.4	9.21	0.02	0	5
7/24/2007	17:45	7/24/2007 17:45	30.68	7.42	73	124.2	9.28	0.02	0	5
7/24/2007	18:00	7/24/2007 18:00	30.73	7.46	72	125.3	9.35	0.02	0	5
7/24/2007	18:15	7/24/2007 18:15	30.91	7.56	72	128.3	9.55	0.02	0	5
7/24/2007	18:30	7/24/2007 18:30	30.88	7.66	72	131.3	9.78	0.02	0	5
7/24/2007	18:45	7/24/2007 18:45	30.92	7.76	71	133.5	9.93	0.02	0	5
7/24/2007	19:00	7/24/2007 19:00	30.81	7.56	72	128.5	9.58	0.02	0	5
7/24/2007	19:15	7/24/2007 19:15	30.89	7.53	72	128.7	9.58	0.02	0	5
7/24/2007	19:30	7/24/2007 19:30	30.81	7.25	73	118.9	8.86	0.02	0	5
7/24/2007	19:45	7/24/2007 19:45	30.54	7.11	73	110.8	8.3	0.02	0	5
7/24/2007	20:00	7/24/2007 20:00	30.52	7.07	74	109.3	8.19	0.02	0	5
7/24/2007	20:15	7/24/2007 20:15	30.52	7.04	73	108.6	8.13	0.02	0	5
7/24/2007	20:30	7/24/2007 20:30	30.58	7.06	73	108.3	8.1	0.02	0	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	20:45	7/24/2007 20:45	30.44	7.03	73	105.3	7.9	0.02	0	5
7/24/2007	21:00	7/24/2007 21:00	30.48	7.02	73	106.1	7.95	0.02	0	5
7/24/2007	21:15	7/24/2007 21:15	30.6	7.02	73	107	8	0.02	0	5
7/24/2007	21:30	7/24/2007 21:30	30.63	7.01	73	107.7	8.05	0.02	0	5
7/24/2007	21:45	7/24/2007 21:45	30.73	7.02	73	110.3	8.24	0.02	0	5
7/24/2007	22:00	7/24/2007 22:00	30.72	7.02	73	107.7	8.04	0.02	0	5
7/24/2007	22:15	7/24/2007 22:15	30.94	6.97	72	107	7.96	0.02	0	5
7/24/2007	22:30	7/24/2007 22:30	30.82	7.03	72	110	8.19	0.02	0	5
7/24/2007	22:45	7/24/2007 22:45	30.85	7.04	72	111.8	8.33	0.02	0	5
7/24/2007	23:00	7/24/2007 23:00	30.83	7.02	73	109.8	8.18	0.02	0	5
7/24/2007	23:15	7/24/2007 23:15	30.84	7.03	72	107.5	8.01	0.02	0	5
7/24/2007	23:30	7/24/2007 23:30	30.76	6.96	73	102	7.61	0.02	0	5
7/24/2007	23:45	7/24/2007 23:45	30.82	6.97	75	106.9	7.97	0.02	0	5
7/25/2007	0:00	7/25/2007 00:00	30.79	7.07	73	109.8	8.19	0.02	0	5
7/25/2007	0:15	7/25/2007 00:15	30.79	7.11	73	112	8.35	0.02	0	5
7/25/2007	0:30	7/25/2007 00:30	30.77	7.24	71	118.6	8.85	0.02	0	5
7/25/2007	0:45	7/25/2007 00:45	30.72	7.18	72	115.2	8.6	0.02	0	5
7/25/2007	1:00	7/25/2007 01:00	30.67	7.17	72	114.4	8.55	0.02	0	5
7/25/2007	1:15	7/25/2007 01:15	30.61	7.21	71	116.1	8.68	0.02	0	5
7/25/2007	1:30	7/25/2007 01:30	30.52	7.12	73	111.7	8.37	0.02	0	5
7/25/2007	1:45	7/25/2007 01:45	30.48	7.15	72	113.6	8.52	0.02	0	5
7/25/2007	2:00	7/25/2007 02:00	30.4	7.11	73	111.1	8.33	0.02	0	5
7/25/2007	2:15	7/25/2007 02:15	30.34	7.1	73	111	8.34	0.02	0	5
7/25/2007	2:30	7/25/2007 02:30	30.26	7.06	74	109.1	8.21	0.02	0	5
7/25/2007	2:45	7/25/2007 02:45	30.14	7	74	105	7.92	0.02	0	5
7/25/2007	3:00	7/25/2007 03:00	30.02	6.95	75	102.7	7.76	0.02	0	5
7/25/2007	3:15	7/25/2007 03:15	29.87	6.89	77	98.4	7.45	0.03	0	5
7/25/2007	3:30	7/25/2007 03:30	29.83	6.87	77	96.3	7.3	0.03	0	5
7/25/2007	3:45	7/25/2007 03:45	29.72	6.85	78	93.6	7.11	0.03	0	5
7/25/2007	4:00	7/25/2007 04:00	29.68	6.83	78	92.5	7.03	0.03	0	5
7/25/2007	4:15	7/25/2007 04:15	29.61	6.82	80	90	6.85	0.03	0	5
7/25/2007	4:30	7/25/2007 04:30	29.52	6.79	81	87.3	6.65	0.03	0	5
7/25/2007	4:45	7/25/2007 04:45	29.39	6.76	83	83.7	6.39	0.03	0	5
7/25/2007	5:00	7/25/2007 05:00	29.36	6.77	82	84.9	6.49	0.03	0	5
7/25/2007	5:15	7/25/2007 05:15	29.25	6.76	85	80.9	6.2	0.03	0	5
7/25/2007	5:30	7/25/2007 05:30	29.21	6.75	85	80.2	6.14	0.03	0	5
7/25/2007	5:45	7/25/2007 05:45	29.13	6.75	85	78.8	6.05	0.03	0	5
7/25/2007	6:00	7/25/2007 06:00	29.07	6.74	86	78.2	6	0.03	0	5
7/25/2007	6:15	7/25/2007 06:15	28.99	6.72	88	75.7	5.82	0.03	0	5
7/25/2007	6:30	7/25/2007 06:30	28.92	6.72	90	71.2	5.48	0.03	0	5
7/25/2007	6:45	7/25/2007 06:45	28.79	6.7	92	68.4	5.28	0.03	0	5
7/25/2007	7:00	7/25/2007 07:00	28.7	6.7	94	69.1	5.35	0.04	0	5
7/25/2007	7:15	7/25/2007 07:15	28.59	6.68	98	64.2	4.97	0.04	1	5
7/25/2007	7:30	7/25/2007 07:30	28.59	6.69	93	67.6	5.23	0.03	0	5
7/25/2007	7:45	7/25/2007 07:45	28.5	6.68	100	63.9	4.96	0.04	1	5
7/25/2007	8:00	7/25/2007 08:00	28.44	6.69	101	62.7	4.87	0.04	1	5
7/25/2007	8:15	7/25/2007 08:15	28.41	6.68	99	63.8	4.95	0.04	1	5
7/25/2007	8:30	7/25/2007 08:30	28.37	6.69	99	62.8	4.89	0.04	1	5
7/25/2007	8:45	7/25/2007 08:45	28.35	6.68	98	62.7	4.88	0.04	1	5
7/25/2007	9:00	7/25/2007 09:00	28.3	6.67	101	60.2	4.68	0.04	1	5

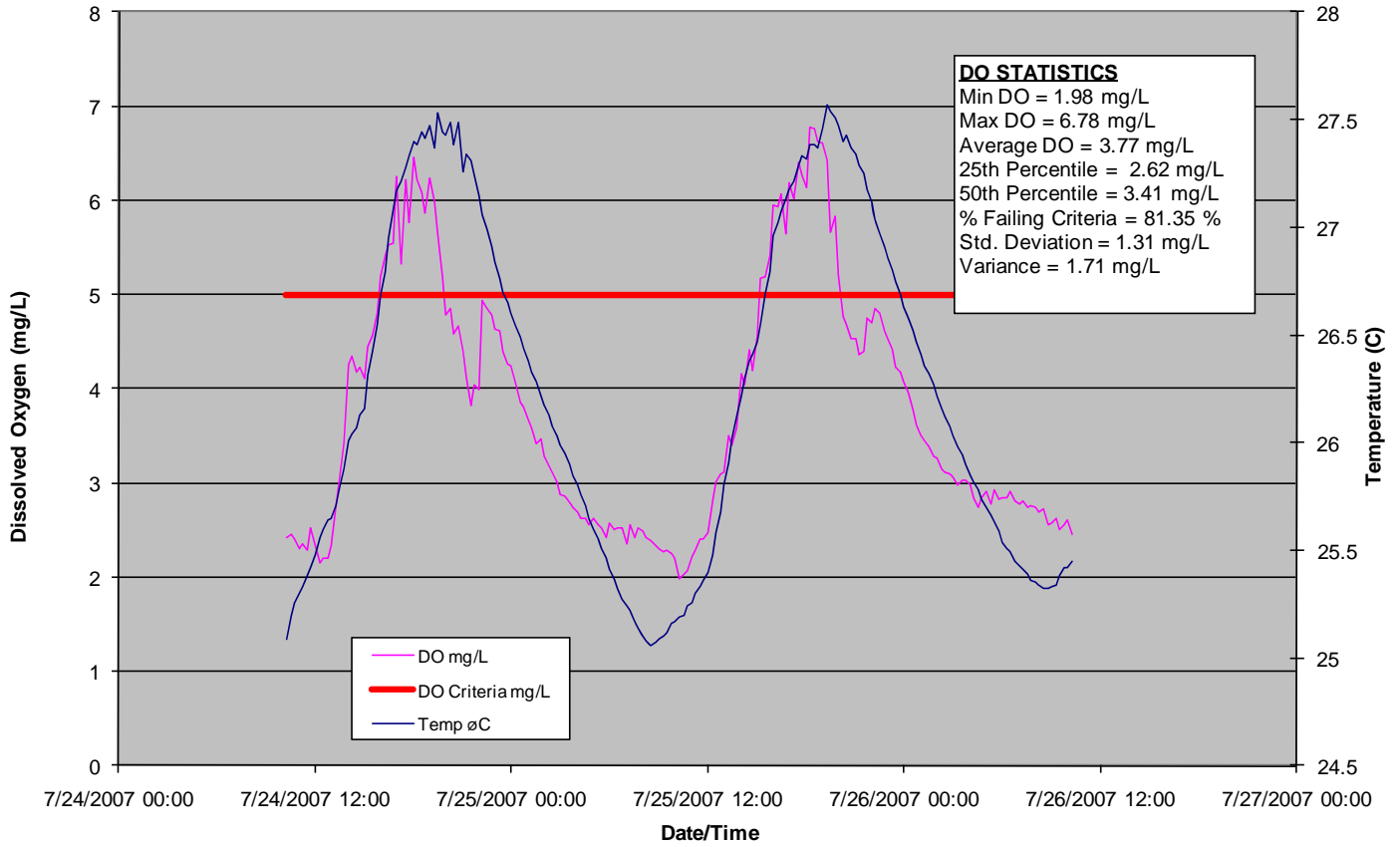
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	9:15	7/25/2007 09:15	28.29	6.67	101	60.5	4.71	0.04	1	5
7/25/2007	9:30	7/25/2007 09:30	28.26	6.66	104	56.9	4.43	0.04	1	5
7/25/2007	9:45	7/25/2007 09:45	28.29	6.66	102	57.1	4.45	0.04	1	5
7/25/2007	10:00	7/25/2007 10:00	28.19	6.66	107	55.6	4.33	0.04	1	5
7/25/2007	10:15	7/25/2007 10:15	28.36	6.67	102	59.6	4.63	0.04	1	5
7/25/2007	10:30	7/25/2007 10:30	28.28	6.66	104	56.5	4.4	0.04	1	5
7/25/2007	10:45	7/25/2007 10:45	28.33	6.67	101	60.1	4.68	0.04	1	5
7/25/2007	11:00	7/25/2007 11:00	28.34	6.67	103	59	4.59	0.04	1	5
7/25/2007	11:15	7/25/2007 11:15	28.46	6.68	100	59.8	4.64	0.04	1	5
7/25/2007	11:30	7/25/2007 11:30	28.95	6.73	91	71	5.47	0.03	0	5
7/25/2007	11:45	7/25/2007 11:45	28.9	6.7	96	63.9	4.92	0.03	1	5
7/25/2007	12:00	7/25/2007 12:00	28.85	6.65	96	59.8	4.61	0.04	1	5
7/25/2007	12:15	7/25/2007 12:15	29.27	6.78	94	76.1	5.83	0.04	0	5
7/25/2007	12:30	7/25/2007 12:30	29.4	6.78	91	81.1	6.2	0.03	0	5
7/25/2007	12:45	7/25/2007 12:45	29.38	6.8	90	82.3	6.29	0.03	0	5
7/25/2007	13:00	7/25/2007 13:00	29.78	6.85	85	90.3	6.85	0.03	0	5
7/25/2007	13:15	7/25/2007 13:15	30	6.9	78	101.8	7.69	0.03	0	5
7/25/2007	13:30	7/25/2007 13:30	30.66	7.19	75	118.6	8.87	0.03	0	5
7/25/2007	13:45	7/25/2007 13:45	31.17	7.36	73	120.4	8.92	0.02	0	5
7/25/2007	14:00	7/25/2007 14:00	30.6	7.09	76	112.5	8.41	0.03	0	5
7/25/2007	14:15	7/25/2007 14:15	30.94	7.17	73	118.2	8.79	0.02	0	5
7/25/2007	14:30	7/25/2007 14:30	31.76	8.14	70	142.6	10.46	0.02	0	5
7/25/2007	14:45	7/25/2007 14:45	31.95	8.18	71	142.5	10.42	0.02	0	5
7/25/2007	15:00	7/25/2007 15:00	32.08	8.21	70	142.6	10.4	0.02	0	5
7/25/2007	15:15	7/25/2007 15:15	32.09	8.14	70	141.5	10.32	0.02	0	5
7/25/2007	15:30	7/25/2007 15:30	32.08	8.14	69	140.6	10.25	0.02	0	5
7/25/2007	15:45	7/25/2007 15:45	32.13	8.16	69	139.1	10.14	0.02	0	5
7/25/2007	16:00	7/25/2007 16:00	32.04	8.06	69	137.1	10.01	0.02	0	5
7/25/2007	16:15	7/25/2007 16:15	32.06	8.05	68	136.7	9.98	0.02	0	5
7/25/2007	16:30	7/25/2007 16:30	32.2	8.28	68	141.1	10.27	0.02	0	5
7/25/2007	16:45	7/25/2007 16:45	32.2	8.23	68	140.7	10.24	0.02	0	5
7/25/2007	17:00	7/25/2007 17:00	32.15	8.01	68	136.5	9.95	0.02	0	5
7/25/2007	17:15	7/25/2007 17:15	32.08	7.99	68	135.6	9.89	0.02	0	5
7/25/2007	17:30	7/25/2007 17:30	31.94	7.85	68	131.9	9.64	0.02	0	5
7/25/2007	17:45	7/25/2007 17:45	31.44	7.51	67	123.4	9.1	0.02	0	5
7/25/2007	18:00	7/25/2007 18:00	30.58	6.92	89	100.7	7.54	0.03	0	5
7/25/2007	18:15	7/25/2007 18:15	30.34	6.85	92	92.3	6.94	0.03	0	5
7/25/2007	18:30	7/25/2007 18:30	29.42	6.72	128	67	5.12	0.05	0	5
7/25/2007	18:45	7/25/2007 18:45	28.61	6.69	120	70	5.42	0.05	0	5
7/25/2007	19:00	7/25/2007 19:00	27.55	6.62	103	63.9	5.04	0.04	0	5
7/25/2007	19:15	7/25/2007 19:15	27.63	6.62	107	62	4.89	0.04	1	5
7/25/2007	19:30	7/25/2007 19:30	26.94	6.59	122	53.3	4.25	0.05	1	5
7/25/2007	19:45	7/25/2007 19:45	26.75	6.57	124	52.5	4.2	0.05	1	5
7/25/2007	20:00	7/25/2007 20:00	26.93	6.6	158	37.4	2.99	0.07	1	5
7/25/2007	20:15	7/25/2007 20:15	27.35	6.65	178	33	2.61	0.08	1	5
7/25/2007	20:30	7/25/2007 20:30	26.68	6.61	156	39	3.12	0.07	1	5
7/25/2007	20:45	7/25/2007 20:45	27.25	6.66	181	31.5	2.49	0.08	1	5
7/25/2007	21:00	7/25/2007 21:00	26.62	6.59	158	43.8	3.51	0.07	1	5
7/25/2007	21:15	7/25/2007 21:15	26.92	6.64	182	32.8	2.62	0.08	1	5
7/25/2007	21:30	7/25/2007 21:30	26.74	6.62	160	41	3.28	0.07	1	5

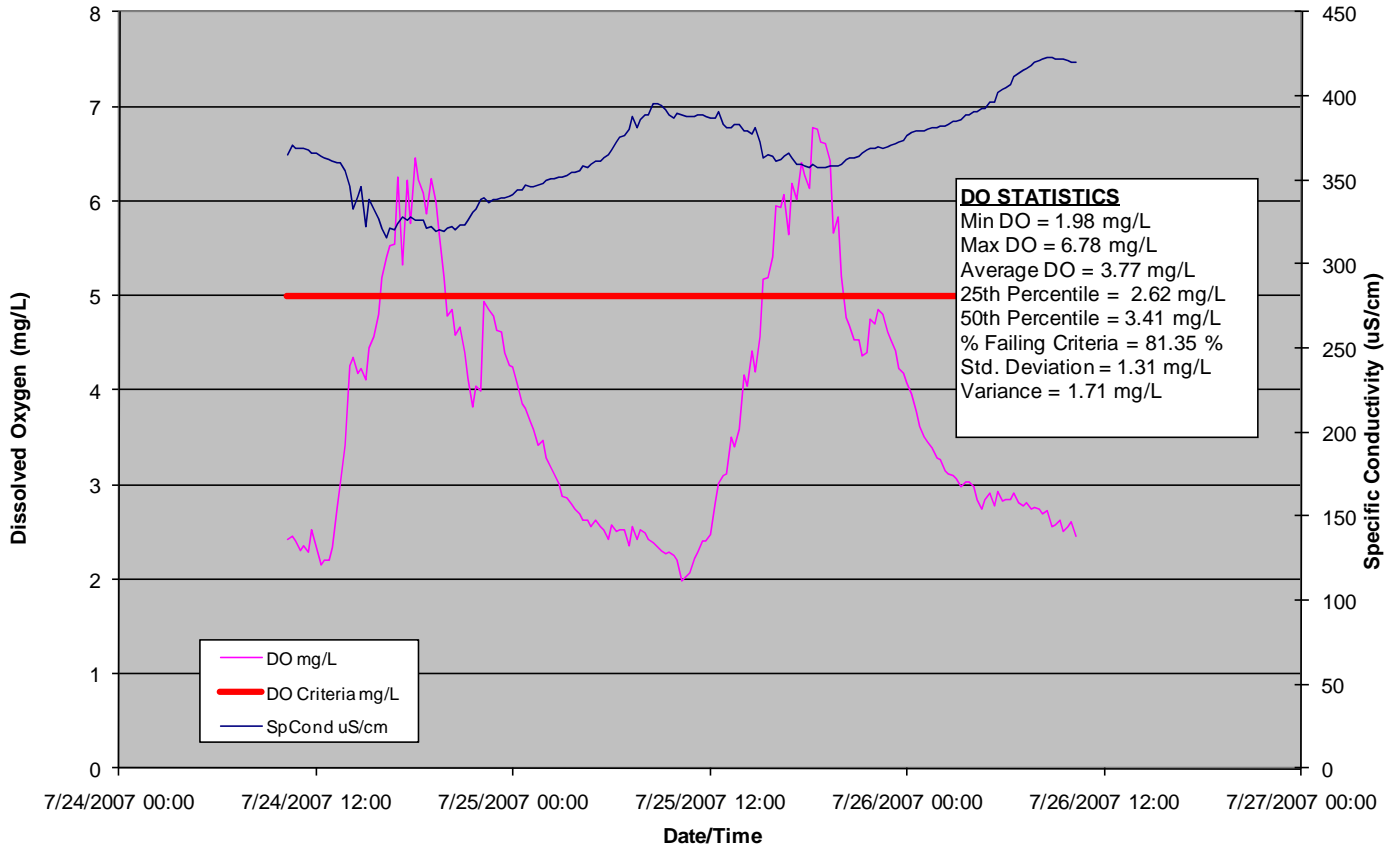
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	21:45	7/25/2007 21:45	26.74	6.62	164	41.1	3.29	0.07	1	5
7/25/2007	22:00	7/25/2007 22:00	26.67	6.62	160	37.1	2.97	0.07	1	5
7/25/2007	22:15	7/25/2007 22:15	26.75	6.62	175	32.6	2.61	0.08	1	5
7/25/2007	22:30	7/25/2007 22:30	26.87	6.63	179	28.6	2.28	0.08	1	5
7/25/2007	22:45	7/25/2007 22:45	26.82	6.64	184	21.7	1.74	0.08	1	5
7/25/2007	23:00	7/25/2007 23:00	26.87	6.65	196	17.4	1.39	0.09	1	5
7/25/2007	23:15	7/25/2007 23:15	26.72	6.64	193	15.1	1.21	0.09	1	5
7/25/2007	23:30	7/25/2007 23:30	26.83	6.67	190	19.2	1.53	0.09	1	5
7/25/2007	23:45	7/25/2007 23:45	26.77	6.64	188	19.8	1.59	0.09	1	5
7/26/2007	0:00	7/26/2007 00:00	26.59	6.64	173	22	1.76	0.08	1	5
7/26/2007	0:15	7/26/2007 00:15	26.66	6.65	188	17.5	1.4	0.09	1	5
7/26/2007	0:30	7/26/2007 00:30	26.53	6.64	180	20.4	1.64	0.08	1	5
7/26/2007	0:45	7/26/2007 00:45	26.7	6.67	196	14.3	1.14	0.09	1	5
7/26/2007	1:00	7/26/2007 01:00	26.53	6.65	181	18.4	1.48	0.08	1	5
7/26/2007	1:15	7/26/2007 01:15	26.53	6.65	186	18.1	1.45	0.08	1	5
7/26/2007	1:30	7/26/2007 01:30	26.52	6.65	186	16	1.29	0.08	1	5
7/26/2007	1:45	7/26/2007 01:45	26.47	6.68	197	19.6	1.57	0.09	1	5
7/26/2007	2:00	7/26/2007 02:00	26.47	6.67	191	17.2	1.39	0.09	1	5
7/26/2007	2:15	7/26/2007 02:15	26.38	6.69	187	19.5	1.57	0.09	1	5
7/26/2007	2:30	7/26/2007 02:30	26.41	6.69	191	18.4	1.48	0.09	1	5
7/26/2007	2:45	7/26/2007 02:45	26.47	6.71	199	17.6	1.42	0.09	1	5
7/26/2007	3:00	7/26/2007 03:00	26.43	6.71	205	18.4	1.48	0.09	1	5
7/26/2007	3:15	7/26/2007 03:15	26.46	6.73	213	18.4	1.48	0.1	1	5
7/26/2007	3:30	7/26/2007 03:30	26.37	6.72	205	20.2	1.63	0.09	1	5
7/26/2007	3:45	7/26/2007 03:45	26.4	6.75	201	23.2	1.87	0.09	1	5
7/26/2007	4:00	7/26/2007 04:00	26.35	6.76	217	23.8	1.92	0.1	1	5
7/26/2007	4:15	7/26/2007 04:15	26.42	6.77	218	22.2	1.79	0.1	1	5
7/26/2007	4:30	7/26/2007 04:30	26.3	6.77	214	22	1.78	0.1	1	5
7/26/2007	4:45	7/26/2007 04:45	26.18	6.76	203	22.2	1.79	0.09	1	5
7/26/2007	5:00	7/26/2007 05:00	26.24	6.77	218	20.9	1.69	0.1	1	5
7/26/2007	5:15	7/26/2007 05:15	26.21	6.78	219	19.4	1.56	0.1	1	5
7/26/2007	5:30	7/26/2007 05:30	26.13	6.77	219	18.1	1.47	0.1	1	5
7/26/2007	5:45	7/26/2007 05:45	26.07	6.77	222	16.9	1.37	0.1	1	5
7/26/2007	6:00	7/26/2007 06:00	26.01	6.76	219	16.1	1.31	0.1	1	5
7/26/2007	6:15	7/26/2007 06:15	26	6.77	225	14.3	1.16	0.11	1	5
7/26/2007	6:30	7/26/2007 06:30	25.96	6.77	225	13.7	1.11	0.11	1	5
7/26/2007	6:45	7/26/2007 06:45	25.89	6.77	225	14	1.14	0.11	1	5
7/26/2007	7:00	7/26/2007 07:00	25.83	6.77	224	14.3	1.16	0.1	1	5
7/26/2007	7:15	7/26/2007 07:15	25.76	6.77	222	15	1.22	0.1	1	5
7/26/2007	7:30	7/26/2007 07:30	25.65	6.76	219	16.5	1.35	0.1	1	5
7/26/2007	7:45	7/26/2007 07:45	25.6	6.77	222	17.9	1.46	0.1	1	5
7/26/2007	8:00	7/26/2007 08:00	25.55	6.78	221	18.6	1.52	0.1	1	5
7/26/2007	8:15	7/26/2007 08:15	25.45	6.78	218	20.3	1.67	0.1	1	5
7/26/2007	8:30	7/26/2007 08:30	25.37	6.78	216	22.5	1.84	0.1	1	5
7/26/2007	8:45	7/26/2007 08:45	25.27	6.79	214	24.9	2.05	0.1	1	5
7/26/2007	9:00	7/26/2007 09:00	25.25	6.79	212	25	2.05	0.1	1	5
7/26/2007	9:15	7/26/2007 09:15	25.22	6.79	212	26.8	2.2	0.1	1	5
7/26/2007	9:30	7/26/2007 09:30	25.12	6.81	210	30	2.47	0.1	1	5
7/26/2007	9:45	7/26/2007 09:45	25.11	6.81	208	30	2.47	0.1	1	5

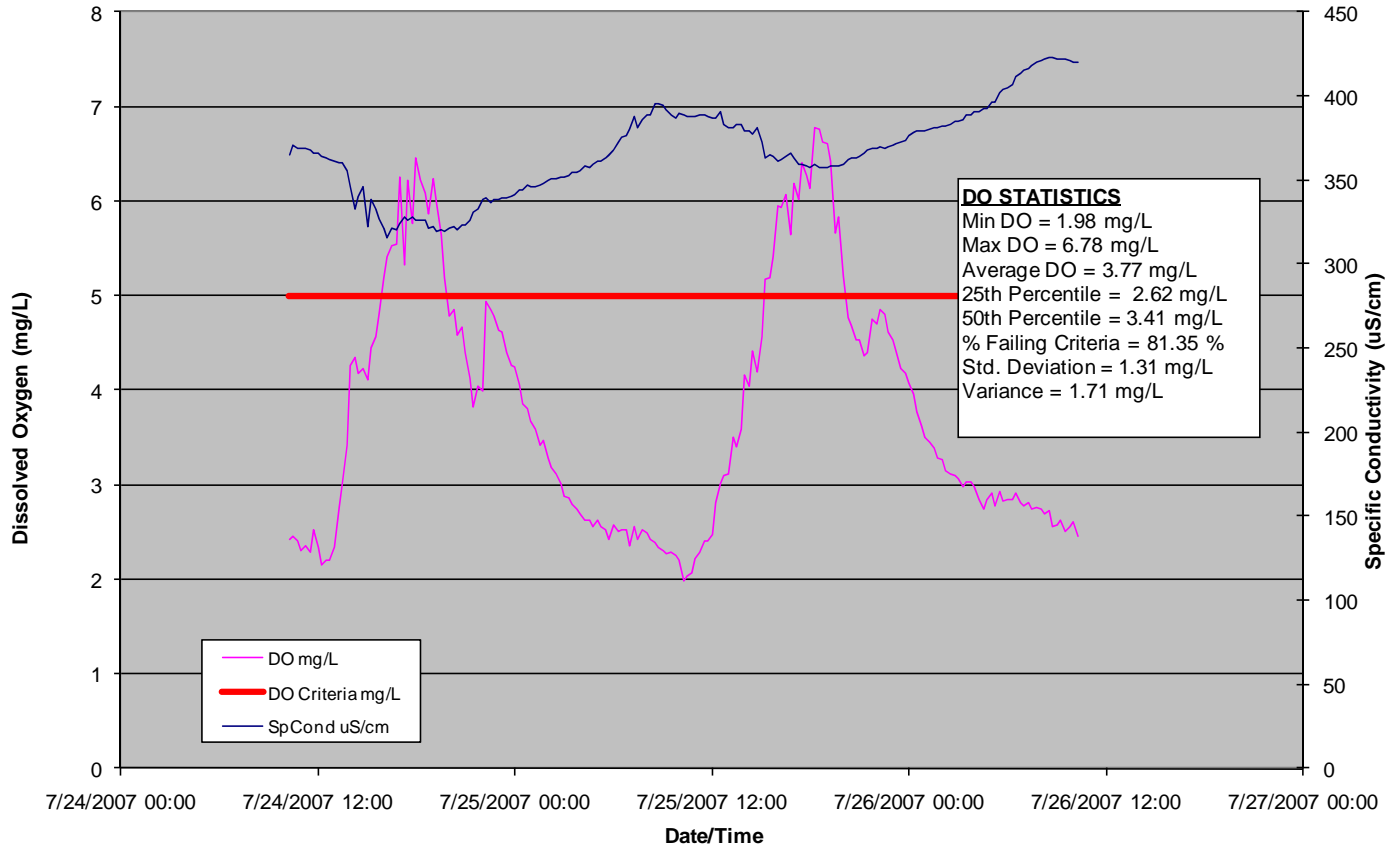
**Site Number: 3460 GC09A, Site Name: GC 60 yards downstream of sewage pipe,  
Subsegment: 040304, DO & Temperature (deg C) vs. Date/Time**



**Site Number: 3460 GC09A, Site Name: GC 60 yards downstream of sewage pipe,  
Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



**Site Number: 3460 GC09A, Site Name: GC 60 yards downstream of sewage pipe,  
 Subsegment: 040304, DO & Specific Conductivity vs. Date/Time**



Site Number: 3460 GC09A Site Name: GC 60 yards downstream of sewage pipe						
Subsegment #: 40304 Date: 7/24/2007						
	Temp deg C	pH	SpCond uS/cm	DO %	DO mg/L	Salinity
<b>Average</b>	26.23	6.67	367.08	46.94	3.77	0.18
<b>Minimum</b>	25.06	6.61	316.00	24.00	1.98	0.15
<b>Maximum</b>	27.57	6.77	423.00	85.80	6.78	0.21
<b>Geometric Mean</b>	26.22	6.67			3.56	0.18
<b>25th Percentile</b>	25.48	6.65	350.00	32.20	2.62	0.17
<b>30th Percentile</b>	25.60	6.65	356.60	33.86	2.76	0.18
<b>40th Percentile</b>	25.85	6.66	361.00	36.70	2.98	0.18
<b>50th Percentile</b>	26.13	6.67	366.00	42.00	3.41	0.18
<b>Standard Deviation</b>	0.79	0.03	26.94	16.91	1.31	0.01
<b>Variance</b>	0.63	0.00	725.50	286.12	1.71	0.00

<b>Data Row Count</b>	193
<b>Total Values</b>	
<b>Failing DO Criteria</b>	157
<b>Percent failing DO Criteria</b>	81.35 %



### Grays Creek Subsegment 040304 Site 3460 GC09A Cont Mont Data

Date_	Time	Date+Time	Temp	pH	SpCond	DO	DO	SALINITY	Is DO <	DO
MMDDYY	HHMM	MMDDYYYY	øC	Units	uS/cm	PERCENT	mg/L	ppt	Criteria	Criteria
		HHMM				Sat			5	mg/L
7/24/2007	10:15	7/24/2007 10:15	25.09	6.68	365	29.4	2.42	0.18	1	5
7/24/2007	10:30	7/24/2007 10:30	25.2	6.68	371	29.9	2.46	0.18	1	5
7/24/2007	10:45	7/24/2007 10:45	25.26	6.67	369	29.2	2.4	0.18	1	5
7/24/2007	11:00	7/24/2007 11:00	25.3	6.66	369	28	2.3	0.18	1	5
7/24/2007	11:15	7/24/2007 11:15	25.33	6.66	369	28.6	2.35	0.18	1	5
7/24/2007	11:30	7/24/2007 11:30	25.38	6.65	368	27.8	2.28	0.18	1	5
7/24/2007	11:45	7/24/2007 11:45	25.42	6.65	366	30.8	2.52	0.18	1	5
7/24/2007	12:00	7/24/2007 12:00	25.48	6.64	366	28.5	2.33	0.18	1	5
7/24/2007	12:15	7/24/2007 12:15	25.56	6.63	364	26.4	2.16	0.18	1	5
7/24/2007	12:30	7/24/2007 12:30	25.6	6.63	363	27	2.21	0.18	1	5
7/24/2007	12:45	7/24/2007 12:45	25.64	6.63	362	27	2.21	0.18	1	5
7/24/2007	13:00	7/24/2007 13:00	25.65	6.63	361	28.7	2.34	0.18	1	5
7/24/2007	13:15	7/24/2007 13:15	25.71	6.63	360	33.8	2.76	0.18	1	5
7/24/2007	13:30	7/24/2007 13:30	25.78	6.64	360	37	3.01	0.18	1	5
7/24/2007	13:45	7/24/2007 13:45	25.88	6.64	356	42	3.41	0.18	1	5
7/24/2007	14:00	7/24/2007 14:00	26.01	6.65	346	52.7	4.27	0.17	1	5
7/24/2007	14:15	7/24/2007 14:15	26.04	6.64	333	53.6	4.34	0.16	1	5
7/24/2007	14:30	7/24/2007 14:30	26.07	6.64	340	51.5	4.17	0.17	1	5
7/24/2007	14:45	7/24/2007 14:45	26.13	6.63	346	52.2	4.22	0.17	1	5
7/24/2007	15:00	7/24/2007 15:00	26.16	6.62	322	50.9	4.11	0.16	1	5
7/24/2007	15:15	7/24/2007 15:15	26.31	6.65	338	55.1	4.44	0.17	1	5
7/24/2007	15:30	7/24/2007 15:30	26.42	6.64	333	56.8	4.57	0.16	1	5
7/24/2007	15:45	7/24/2007 15:45	26.55	6.64	327	59.8	4.8	0.16	1	5
7/24/2007	16:00	7/24/2007 16:00	26.68	6.63	321	64.8	5.19	0.16	0	5
7/24/2007	16:15	7/24/2007 16:15	26.79	6.65	316	67.6	5.41	0.15	0	5
7/24/2007	16:30	7/24/2007 16:30	26.95	6.66	321	69.3	5.52	0.16	0	5
7/24/2007	16:45	7/24/2007 16:45	27.08	6.66	320	69.9	5.55	0.16	0	5
7/24/2007	17:00	7/24/2007 17:00	27.17	6.67	324	78.8	6.25	0.16	0	5
7/24/2007	17:15	7/24/2007 17:15	27.21	6.66	328	67.1	5.32	0.16	0	5
7/24/2007	17:30	7/24/2007 17:30	27.28	6.67	326	78.5	6.22	0.16	0	5
7/24/2007	17:45	7/24/2007 17:45	27.33	6.68	328	72.9	5.77	0.16	0	5
7/24/2007	18:00	7/24/2007 18:00	27.4	6.7	326	81.6	6.45	0.16	0	5
7/24/2007	18:15	7/24/2007 18:15	27.38	6.7	326	78.6	6.22	0.16	0	5
7/24/2007	18:30	7/24/2007 18:30	27.44	6.69	326	77.1	6.09	0.16	0	5
7/24/2007	18:45	7/24/2007 18:45	27.41	6.68	321	74.3	5.87	0.16	0	5
7/24/2007	19:00	7/24/2007 19:00	27.47	6.68	322	78.9	6.23	0.16	0	5
7/24/2007	19:15	7/24/2007 19:15	27.37	6.66	319	75.8	5.99	0.16	0	5
7/24/2007	19:30	7/24/2007 19:30	27.53	6.66	320	71.7	5.65	0.16	0	5
7/24/2007	19:45	7/24/2007 19:45	27.44	6.65	319	65.7	5.19	0.16	0	5
7/24/2007	20:00	7/24/2007 20:00	27.43	6.64	321	60.5	4.78	0.16	1	5
7/24/2007	20:15	7/24/2007 20:15	27.49	6.63	322	61.6	4.86	0.16	1	5
7/24/2007	20:30	7/24/2007 20:30	27.38	6.63	320	57.9	4.58	0.16	1	5
7/24/2007	20:45	7/24/2007 20:45	27.49	6.62	323	59.2	4.67	0.16	1	5
7/24/2007	21:00	7/24/2007 21:00	27.26	6.61	323	55.4	4.39	0.16	1	5

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	21:15	7/24/2007 21:15	27.34	6.63	326	52.2	4.13	0.16	1	5
7/24/2007	21:30	7/24/2007 21:30	27.31	6.62	331	48.2	3.82	0.16	1	5
7/24/2007	21:45	7/24/2007 21:45	27.24	6.66	333	51.1	4.05	0.16	1	5
7/24/2007	22:00	7/24/2007 22:00	27.15	6.72	338	50.3	3.99	0.17	1	5
7/24/2007	22:15	7/24/2007 22:15	27.06	6.73	339	62.1	4.94	0.17	1	5
7/24/2007	22:30	7/24/2007 22:30	26.99	6.73	337	61	4.86	0.17	1	5
7/24/2007	22:45	7/24/2007 22:45	26.91	6.72	338	59.9	4.78	0.17	1	5
7/24/2007	23:00	7/24/2007 23:00	26.84	6.71	338	58.2	4.64	0.17	1	5
7/24/2007	23:15	7/24/2007 23:15	26.76	6.71	339	57.7	4.62	0.17	1	5
7/24/2007	23:30	7/24/2007 23:30	26.7	6.7	339	54.9	4.4	0.17	1	5
7/24/2007	23:45	7/24/2007 23:45	26.65	6.69	340	53.4	4.27	0.17	1	5
7/25/2007	0:00	7/25/2007 00:00	26.6	6.7	341	52.9	4.24	0.17	1	5
7/25/2007	0:15	7/25/2007 00:15	26.54	6.69	344	50.6	4.06	0.17	1	5
7/25/2007	0:30	7/25/2007 00:30	26.49	6.68	344	48	3.86	0.17	1	5
7/25/2007	0:45	7/25/2007 00:45	26.44	6.67	347	47.4	3.81	0.17	1	5
7/25/2007	1:00	7/25/2007 01:00	26.38	6.67	346	45.6	3.67	0.17	1	5
7/25/2007	1:15	7/25/2007 01:15	26.33	6.66	346	44.4	3.58	0.17	1	5
7/25/2007	1:30	7/25/2007 01:30	26.28	6.66	347	42.4	3.42	0.17	1	5
7/25/2007	1:45	7/25/2007 01:45	26.22	6.66	348	42.9	3.46	0.17	1	5
7/25/2007	2:00	7/25/2007 02:00	26.17	6.66	350	40.6	3.28	0.17	1	5
7/25/2007	2:15	7/25/2007 02:15	26.13	6.66	351	39.3	3.18	0.17	1	5
7/25/2007	2:30	7/25/2007 02:30	26.08	6.65	351	38.5	3.12	0.17	1	5
7/25/2007	2:45	7/25/2007 02:45	26.03	6.66	352	37.3	3.02	0.17	1	5
7/25/2007	3:00	7/25/2007 03:00	25.99	6.65	352	35.5	2.88	0.17	1	5
7/25/2007	3:15	7/25/2007 03:15	25.95	6.65	353	35.2	2.86	0.17	1	5
7/25/2007	3:30	7/25/2007 03:30	25.9	6.65	355	34.4	2.8	0.17	1	5
7/25/2007	3:45	7/25/2007 03:45	25.85	6.64	355	33.9	2.75	0.17	1	5
7/25/2007	4:00	7/25/2007 04:00	25.8	6.64	356	33	2.69	0.18	1	5
7/25/2007	4:15	7/25/2007 04:15	25.76	6.64	358	32.2	2.62	0.18	1	5
7/25/2007	4:30	7/25/2007 04:30	25.71	6.64	357	32.2	2.62	0.18	1	5
7/25/2007	4:45	7/25/2007 04:45	25.65	6.64	359	31.3	2.55	0.18	1	5
7/25/2007	5:00	7/25/2007 05:00	25.6	6.64	361	32.2	2.63	0.18	1	5
7/25/2007	5:15	7/25/2007 05:15	25.55	6.64	361	31.4	2.56	0.18	1	5
7/25/2007	5:30	7/25/2007 05:30	25.51	6.64	363	31	2.53	0.18	1	5
7/25/2007	5:45	7/25/2007 05:45	25.46	6.64	365	29.6	2.42	0.18	1	5
7/25/2007	6:00	7/25/2007 06:00	25.41	6.65	368	31.3	2.57	0.18	1	5
7/25/2007	6:15	7/25/2007 06:15	25.37	6.66	373	30.6	2.51	0.18	1	5
7/25/2007	6:30	7/25/2007 06:30	25.32	6.66	375	30.8	2.53	0.19	1	5
7/25/2007	6:45	7/25/2007 06:45	25.27	6.65	376	30.8	2.53	0.19	1	5
7/25/2007	7:00	7/25/2007 07:00	25.24	6.66	380	28.8	2.36	0.19	1	5
7/25/2007	7:15	7/25/2007 07:15	25.22	6.68	388	31.1	2.56	0.19	1	5
7/25/2007	7:30	7/25/2007 07:30	25.17	6.67	381	29.5	2.43	0.19	1	5
7/25/2007	7:45	7/25/2007 07:45	25.14	6.67	386	30.6	2.52	0.19	1	5
7/25/2007	8:00	7/25/2007 08:00	25.1	6.67	389	30.2	2.49	0.19	1	5
7/25/2007	8:15	7/25/2007 08:15	25.08	6.67	389	29.4	2.43	0.19	1	5
7/25/2007	8:30	7/25/2007 08:30	25.06	6.67	395	29	2.39	0.2	1	5
7/25/2007	8:45	7/25/2007 08:45	25.07	6.67	395	28.3	2.33	0.2	1	5
7/25/2007	9:00	7/25/2007 09:00	25.09	6.66	394	27.9	2.3	0.2	1	5
7/25/2007	9:15	7/25/2007 09:15	25.1	6.65	392	27.6	2.27	0.19	1	5
7/25/2007	9:30	7/25/2007 09:30	25.12	6.65	389	27.7	2.28	0.19	1	5

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7/25/2007	9:45	7/25/2007 09:45	25.16	6.65	387	27.4	2.26	0.19	1	5
7/25/2007	10:00	7/25/2007 10:00	25.17	6.65	390	26.9	2.21	0.19	1	5
7/25/2007	10:15	7/25/2007 10:15	25.19	6.64	389	24	1.98	0.19	1	5
7/25/2007	10:30	7/25/2007 10:30	25.2	6.64	388	24.7	2.03	0.19	1	5
7/25/2007	10:45	7/25/2007 10:45	25.24	6.64	388	25.2	2.07	0.19	1	5
7/25/2007	11:00	7/25/2007 11:00	25.26	6.64	388	27	2.22	0.19	1	5
7/25/2007	11:15	7/25/2007 11:15	25.3	6.65	389	27.9	2.29	0.19	1	5
7/25/2007	11:30	7/25/2007 11:30	25.33	6.65	389	29.2	2.4	0.19	1	5
7/25/2007	11:45	7/25/2007 11:45	25.36	6.65	388	29.3	2.4	0.19	1	5
7/25/2007	12:00	7/25/2007 12:00	25.4	6.65	387	30.2	2.47	0.19	1	5
7/25/2007	12:15	7/25/2007 12:15	25.48	6.65	387	34.4	2.81	0.19	1	5
7/25/2007	12:30	7/25/2007 12:30	25.58	6.65	391	36.9	3.01	0.19	1	5
7/25/2007	12:45	7/25/2007 12:45	25.68	6.65	383	38	3.1	0.19	1	5
7/25/2007	13:00	7/25/2007 13:00	25.8	6.65	381	38.4	3.12	0.19	1	5
7/25/2007	13:15	7/25/2007 13:15	25.91	6.66	381	43.3	3.51	0.19	1	5
7/25/2007	13:30	7/25/2007 13:30	26.02	6.66	383	42	3.4	0.19	1	5
7/25/2007	13:45	7/25/2007 13:45	26.12	6.67	383	44.4	3.59	0.19	1	5
7/25/2007	14:00	7/25/2007 14:00	26.22	6.67	379	51.6	4.16	0.19	1	5
7/25/2007	14:15	7/25/2007 14:15	26.3	6.67	379	50.3	4.05	0.19	1	5
7/25/2007	14:30	7/25/2007 14:30	26.38	6.67	377	54.9	4.42	0.19	1	5
7/25/2007	14:45	7/25/2007 14:45	26.41	6.68	381	52.2	4.2	0.19	1	5
7/25/2007	15:00	7/25/2007 15:00	26.47	6.68	373	56.9	4.57	0.18	1	5
7/25/2007	15:15	7/25/2007 15:15	26.55	6.67	363	64.6	5.18	0.18	0	5
7/25/2007	15:30	7/25/2007 15:30	26.69	6.67	365	64.8	5.19	0.18	0	5
7/25/2007	15:45	7/25/2007 15:45	26.79	6.68	364	67.6	5.41	0.18	0	5
7/25/2007	16:00	7/25/2007 16:00	26.96	6.68	361	74.7	5.95	0.18	0	5
7/25/2007	16:15	7/25/2007 16:15	27.02	6.71	362	74.7	5.94	0.18	0	5
7/25/2007	16:30	7/25/2007 16:30	27.07	6.73	364	76.3	6.07	0.18	0	5
7/25/2007	16:45	7/25/2007 16:45	27.13	6.73	366	71	5.64	0.18	0	5
7/25/2007	17:00	7/25/2007 17:00	27.18	6.73	363	78	6.19	0.18	0	5
7/25/2007	17:15	7/25/2007 17:15	27.21	6.73	359	75.8	6.01	0.18	0	5
7/25/2007	17:30	7/25/2007 17:30	27.29	6.76	359	81	6.41	0.18	0	5
7/25/2007	17:45	7/25/2007 17:45	27.33	6.75	358	79.2	6.27	0.18	0	5
7/25/2007	18:00	7/25/2007 18:00	27.32	6.75	357	77.5	6.14	0.18	0	5
7/25/2007	18:15	7/25/2007 18:15	27.38	6.77	359	85.8	6.78	0.18	0	5
7/25/2007	18:30	7/25/2007 18:30	27.38	6.76	357	85.5	6.76	0.18	0	5
7/25/2007	18:45	7/25/2007 18:45	27.37	6.75	357	83.7	6.62	0.18	0	5
7/25/2007	19:00	7/25/2007 19:00	27.46	6.75	357	83.7	6.6	0.18	0	5
7/25/2007	19:15	7/25/2007 19:15	27.57	6.76	358	81.5	6.43	0.18	0	5
7/25/2007	19:30	7/25/2007 19:30	27.54	6.72	358	71.8	5.66	0.18	0	5
7/25/2007	19:45	7/25/2007 19:45	27.51	6.71	358	73.9	5.83	0.18	0	5
7/25/2007	20:00	7/25/2007 20:00	27.47	6.69	359	65.9	5.2	0.18	0	5
7/25/2007	20:15	7/25/2007 20:15	27.4	6.69	362	60.2	4.76	0.18	1	5
7/25/2007	20:30	7/25/2007 20:30	27.43	6.68	363	59.4	4.69	0.18	1	5
7/25/2007	20:45	7/25/2007 20:45	27.37	6.67	363	57.2	4.53	0.18	1	5
7/25/2007	21:00	7/25/2007 21:00	27.34	6.68	364	57.4	4.54	0.18	1	5
7/25/2007	21:15	7/25/2007 21:15	27.29	6.7	366	55.2	4.37	0.18	1	5
7/25/2007	21:30	7/25/2007 21:30	27.25	6.71	368	55.4	4.39	0.18	1	5
7/25/2007	21:45	7/25/2007 21:45	27.18	6.76	369	59.9	4.75	0.18	1	5
7/25/2007	22:00	7/25/2007 22:00	27.12	6.76	369	59.2	4.7	0.18	1	5

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7/25/2007	22:15	7/25/2007 22:15	27.04	6.75	370	60.9	4.85	0.18	1	5
7/25/2007	22:30	7/25/2007 22:30	26.97	6.75	369	60.2	4.8	0.18	1	5
7/25/2007	22:45	7/25/2007 22:45	26.91	6.74	370	57.8	4.61	0.18	1	5
7/25/2007	23:00	7/25/2007 23:00	26.86	6.73	371	56.9	4.54	0.18	1	5
7/25/2007	23:15	7/25/2007 23:15	26.8	6.72	372	55.2	4.41	0.18	1	5
7/25/2007	23:30	7/25/2007 23:30	26.75	6.72	373	52.9	4.23	0.18	1	5
7/25/2007	23:45	7/25/2007 23:45	26.69	6.71	374	52.1	4.17	0.19	1	5
7/26/2007	0:00	7/26/2007 00:00	26.63	6.71	376	50.7	4.07	0.19	1	5
7/26/2007	0:15	7/26/2007 00:15	26.58	6.7	378	49.4	3.96	0.19	1	5
7/26/2007	0:30	7/26/2007 00:30	26.52	6.69	379	47.1	3.78	0.19	1	5
7/26/2007	0:45	7/26/2007 00:45	26.47	6.69	379	45	3.62	0.19	1	5
7/26/2007	1:00	7/26/2007 01:00	26.41	6.69	379	43.7	3.51	0.19	1	5
7/26/2007	1:15	7/26/2007 01:15	26.36	6.68	380	42.9	3.45	0.19	1	5
7/26/2007	1:30	7/26/2007 01:30	26.32	6.67	381	41.9	3.38	0.19	1	5
7/26/2007	1:45	7/26/2007 01:45	26.27	6.67	381	40.6	3.28	0.19	1	5
7/26/2007	2:00	7/26/2007 02:00	26.22	6.68	382	40.4	3.26	0.19	1	5
7/26/2007	2:15	7/26/2007 02:15	26.16	6.68	382	38.9	3.15	0.19	1	5
7/26/2007	2:30	7/26/2007 02:30	26.12	6.67	383	38.6	3.12	0.19	1	5
7/26/2007	2:45	7/26/2007 02:45	26.08	6.67	385	38.3	3.1	0.19	1	5
7/26/2007	3:00	7/26/2007 03:00	26.03	6.67	385	37.9	3.07	0.19	1	5
7/26/2007	3:15	7/26/2007 03:15	25.98	6.67	386	36.7	2.98	0.19	1	5
7/26/2007	3:30	7/26/2007 03:30	25.94	6.67	389	37.3	3.03	0.19	1	5
7/26/2007	3:45	7/26/2007 03:45	25.9	6.68	389	37.3	3.03	0.19	1	5
7/26/2007	4:00	7/26/2007 04:00	25.85	6.68	391	36.7	2.98	0.19	1	5
7/26/2007	4:15	7/26/2007 04:15	25.82	6.67	391	35	2.85	0.19	1	5
7/26/2007	4:30	7/26/2007 04:30	25.78	6.67	393	33.9	2.75	0.2	1	5
7/26/2007	4:45	7/26/2007 04:45	25.74	6.66	393	34.9	2.84	0.2	1	5
7/26/2007	5:00	7/26/2007 05:00	25.7	6.67	396	35.7	2.91	0.2	1	5
7/26/2007	5:15	7/26/2007 05:15	25.66	6.68	396	34.1	2.78	0.2	1	5
7/26/2007	5:30	7/26/2007 05:30	25.63	6.68	402	35.9	2.93	0.2	1	5
7/26/2007	5:45	7/26/2007 05:45	25.59	6.68	404	34.6	2.83	0.2	1	5
7/26/2007	6:00	7/26/2007 06:00	25.54	6.68	405	34.7	2.84	0.2	1	5
7/26/2007	6:15	7/26/2007 06:15	25.51	6.69	407	34.8	2.85	0.2	1	5
7/26/2007	6:30	7/26/2007 06:30	25.49	6.68	412	35.6	2.91	0.21	1	5
7/26/2007	6:45	7/26/2007 06:45	25.45	6.69	413	34.4	2.81	0.21	1	5
7/26/2007	7:00	7/26/2007 07:00	25.43	6.69	415	34	2.78	0.21	1	5
7/26/2007	7:15	7/26/2007 07:15	25.41	6.69	416	34.3	2.81	0.21	1	5
7/26/2007	7:30	7/26/2007 07:30	25.39	6.69	418	33.5	2.75	0.21	1	5
7/26/2007	7:45	7/26/2007 07:45	25.36	6.69	420	33.7	2.76	0.21	1	5
7/26/2007	8:00	7/26/2007 08:00	25.35	6.69	421	33.4	2.74	0.21	1	5
7/26/2007	8:15	7/26/2007 08:15	25.34	6.69	422	32.7	2.69	0.21	1	5
7/26/2007	8:30	7/26/2007 08:30	25.32	6.69	423	33.2	2.72	0.21	1	5
7/26/2007	8:45	7/26/2007 08:45	25.32	6.67	423	31.2	2.56	0.21	1	5
7/26/2007	9:00	7/26/2007 09:00	25.33	6.67	422	31.5	2.58	0.21	1	5
7/26/2007	9:15	7/26/2007 09:15	25.34	6.67	422	32.1	2.63	0.21	1	5
7/26/2007	9:30	7/26/2007 09:30	25.38	6.67	422	30.6	2.51	0.21	1	5
7/26/2007	9:45	7/26/2007 09:45	25.42	6.67	421	31.1	2.55	0.21	1	5
7/26/2007	10:00	7/26/2007 10:00	25.42	6.67	420	31.8	2.6	0.21	1	5
7/26/2007	10:15	7/26/2007 10:15	25.45	6.67	420	29.9	2.45	0.21	1	5

## **Appendix F5 – BOD Calculations**

## Gray's Creek 040304 Lab BOD Calculations Summary

Survey Site	Site ID	CBOD1 (mg/l)	k rate (1/day)	Lag time (days)	CBOD2 (mg/l)	k rate (1/day)	Lag time (days)	NBOD (mg/l)	k rate (1/day)	Lag time (days)
GC02	239	10.1221	0.1024	3.3947	8.5829	0.0405	10.5000	9.5241	0.1012	0.8750
GC03	2291	7.1009	0.2915	0.1458	13.7253	0.0619	13.6030	19.4708	0.2525	3.3947
GC04	3384	7.4471	0.2594	0.1215	14.4695	0.0596	15.9606	25.0653	0.2324	3.6053
GC06	3386	20.7935	0.1785	0.2674	21.3359	0.0323	19.8576	34.7820	0.4691	10.4757
GC07	3387	25.4067	0.2657	2.1956	17.2395	0.0310	19.6024	38.3181	0.5235	10.5527
GC08	3388	4.1570	0.1517	0.0000	4.7993	0.0304	17.5000	3.2642	0.2456	5.2500
GC09	3389	4.3635	0.0852	0.2431	2.6908	0.0298	21.9513	1.9596	0.1425	3.3056
GC10	3390	1.5329	0.5951	0.4548	4.8642	0.0319	15.7500	3.1739	0.3568	6.4167
GCL01	3391	4.6881	0.1805	0.2471	2.0923	0.0371	20.2708	1.6522	0.2937	13.8056
UT201	3393	3.7276	0.2239	0.1944	5.7487	0.0310	14.0000	4.4447	0.2937	3.3056
UT501	3395	6.1283	0.1139	0.0000	6.9350	0.0252	16.6699	4.6372	0.1356	2.4306
UT601	3396	2.5904	0.2456	0.3403	4.1082	0.0298	16.0417	6.1739	0.3350	3.5000
	3398	34.4957	0.1465	0.2998	17.5008	0.0314	22.4097	42.1591	0.2387	9.2928
GC01	3459	6.9709	0.2657	0.3443	4.3925	0.0312	16.3333	2.8696	0.1941	7.0000
GC09A	3460	1.3613	0.5951	0.5425	4.5692	0.0382	13.3194	3.0389	0.5951	6.9206

Select Site to Graph: (LAB ID#AK20409) GC downstream of Hwy 1032 (0239)

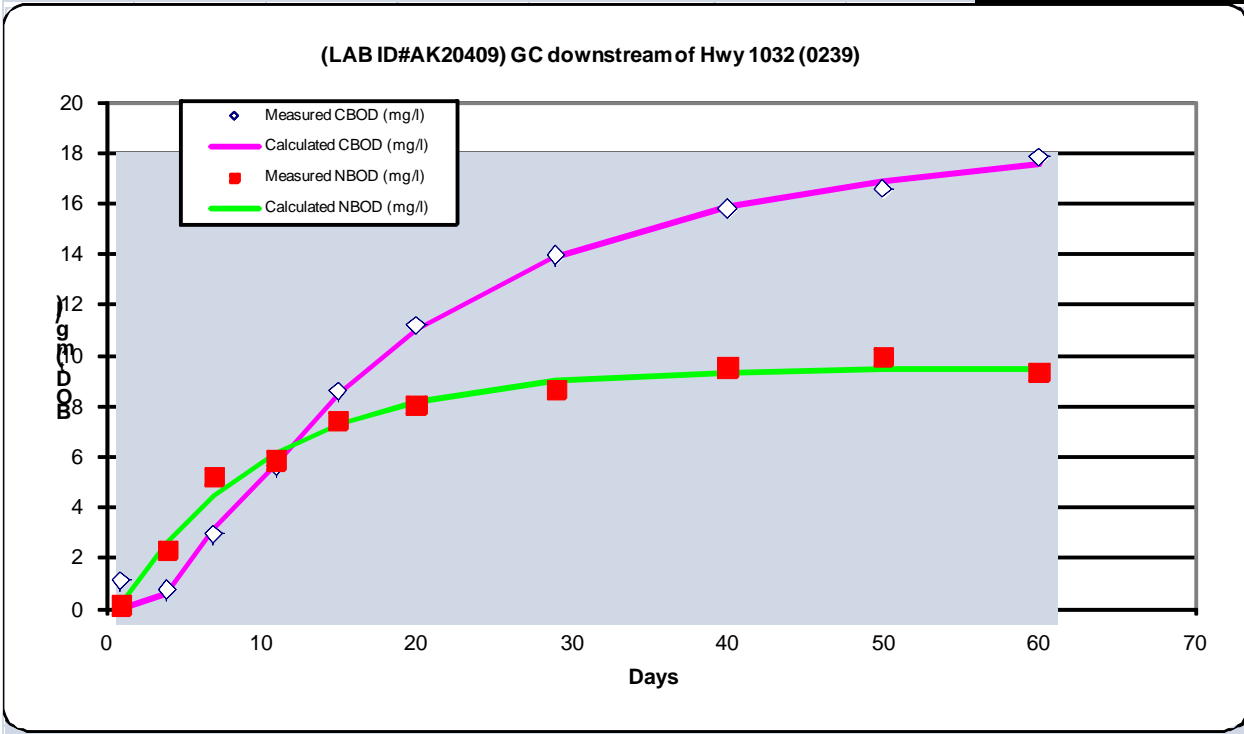
Refresh Data for  
 Current Site (2  
 Components)

Calculate for all  
 Sites (2  
 Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	9.5240602	10.122056	8.5829296
k rate (1/day)	0.10125	0.1023958	0.0405208
Lag time (days)	0.875	3.394676	10.5

Set Breakpoint  
 Manually (2  
 Components)

Breakpoint: 11th day



Select Site to Graph: (LAB ID#AK20415) GC downstream of Scivicque Road (2291)

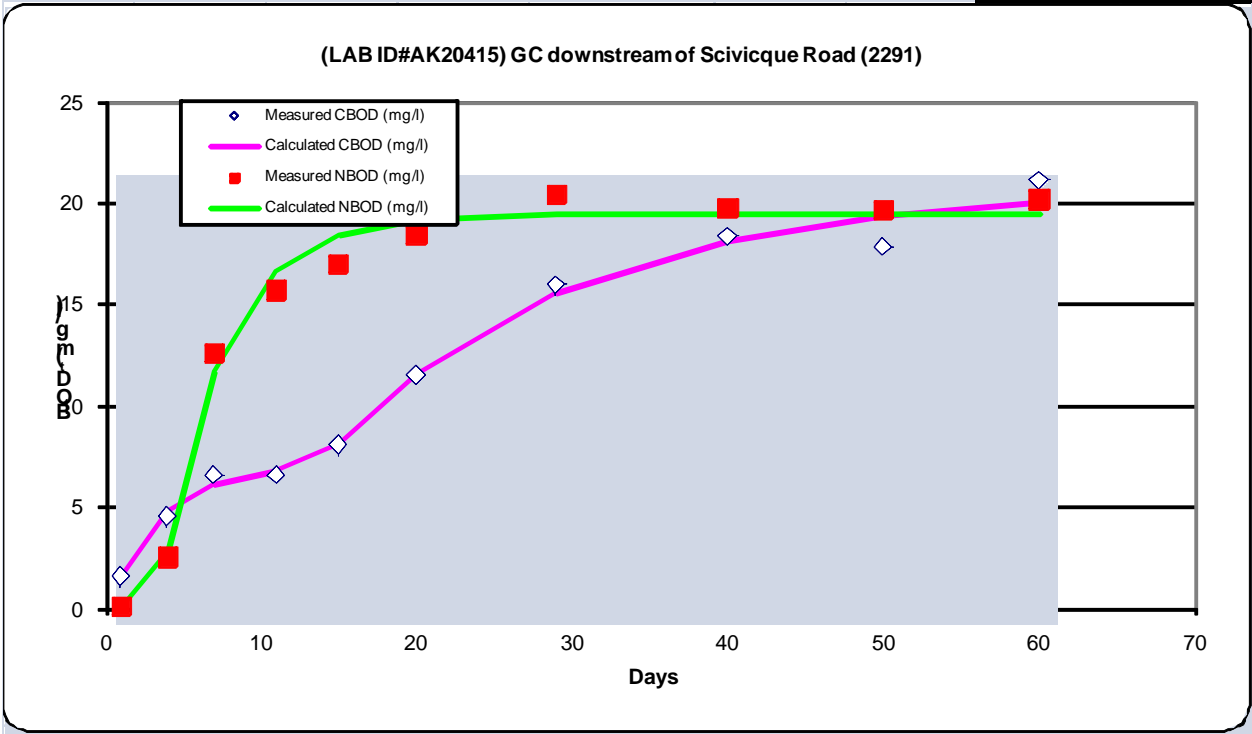
Refresh Data for  
 Current Site (2  
 Components)

Calculate for all  
 Sites (2  
 Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	19.470757	7.1009007	13.725274
k rate (1/day)	0.2525	0.2914583	0.0619097
Lag time (days)	3.3946757	0.1458333	13.603009

Set Breakpoint  
 Manually (2  
 Components)

Breakpoint: 11th day





Select Site to Graph: (LAB ID#AK20426) GC downstream of Hwy 1033 (3384)

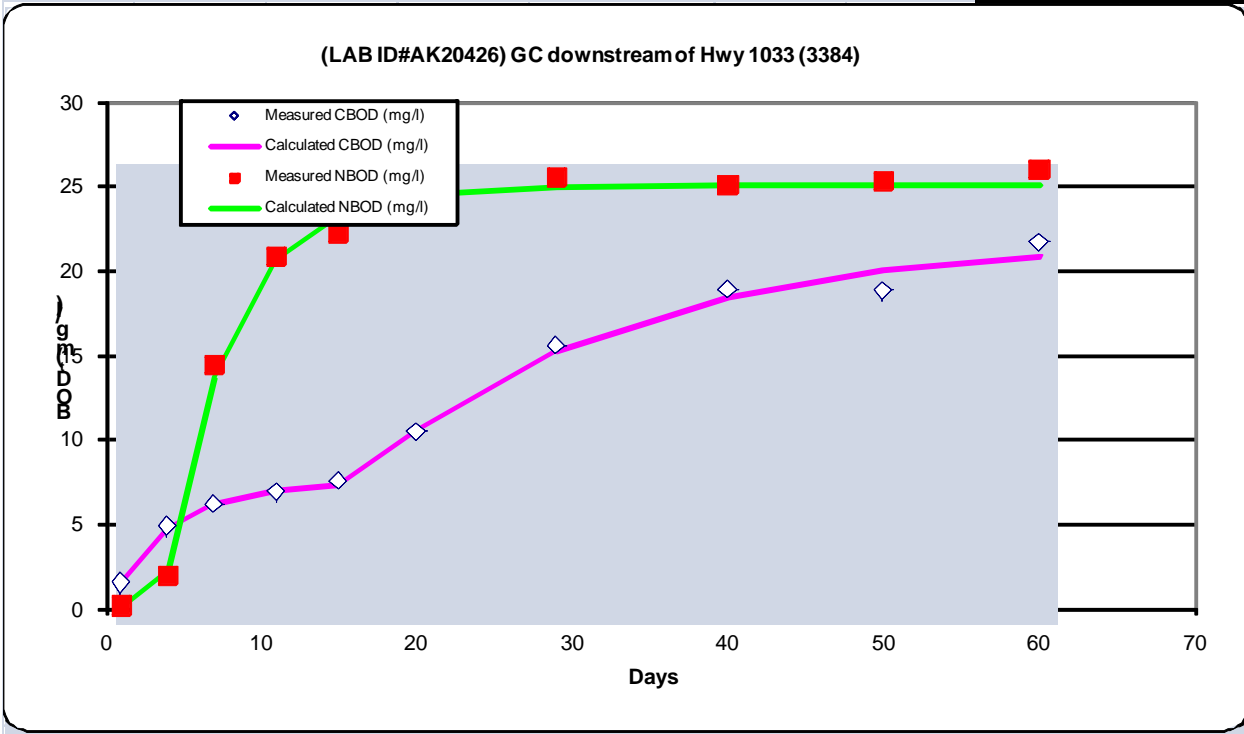
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	25.065294	7.4471297	14.46952
k rate (1/day)	0.2324479	0.259375	0.0596181
Lag time (days)	3.6053243	0.1215278	15.960648

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 15th day



Select Site to Graph: (LAB ID#AK20437) GC downstream of Hwy 1026 (3386)

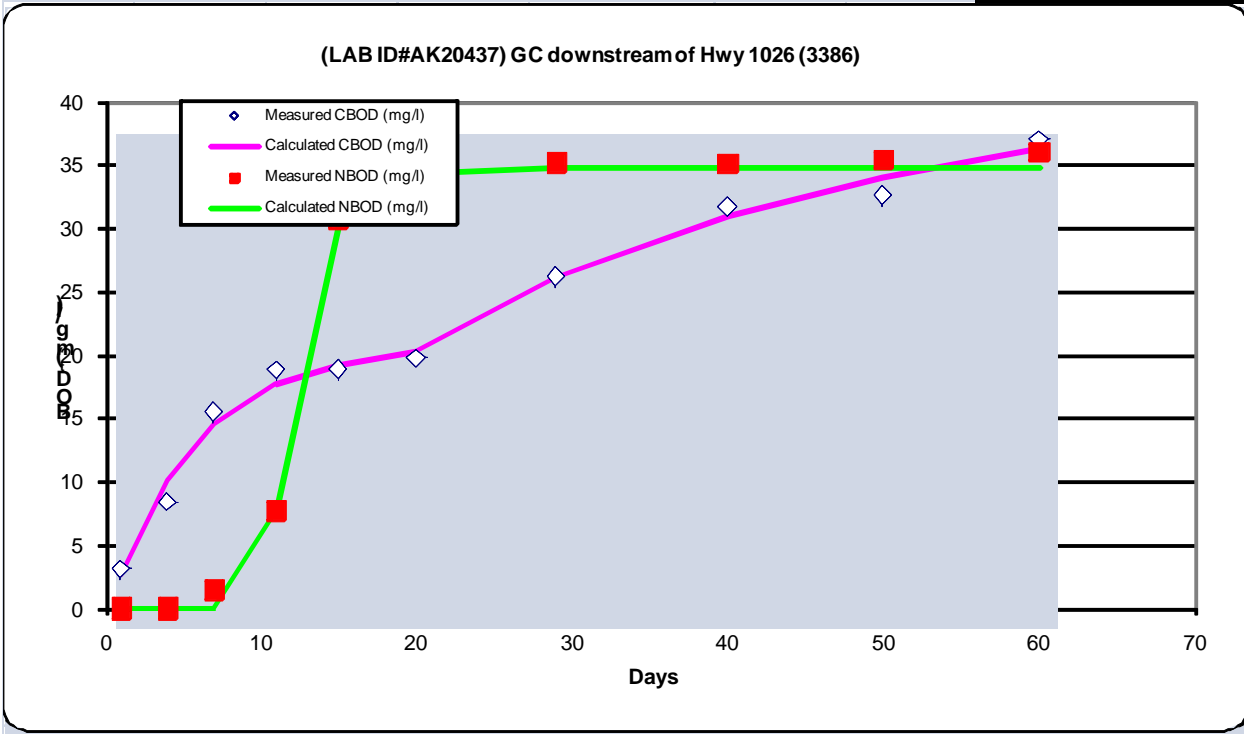
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	34.782036	20.793503	21.33593
k rate (1/day)	0.4690625	0.178546	0.032309
Lag time (days)	10.475695	0.2673611	19.857639

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 20th day



Select Site to Graph: (LAB ID#AK20443) GC downstream of Wax Road and DS POTW (3387)

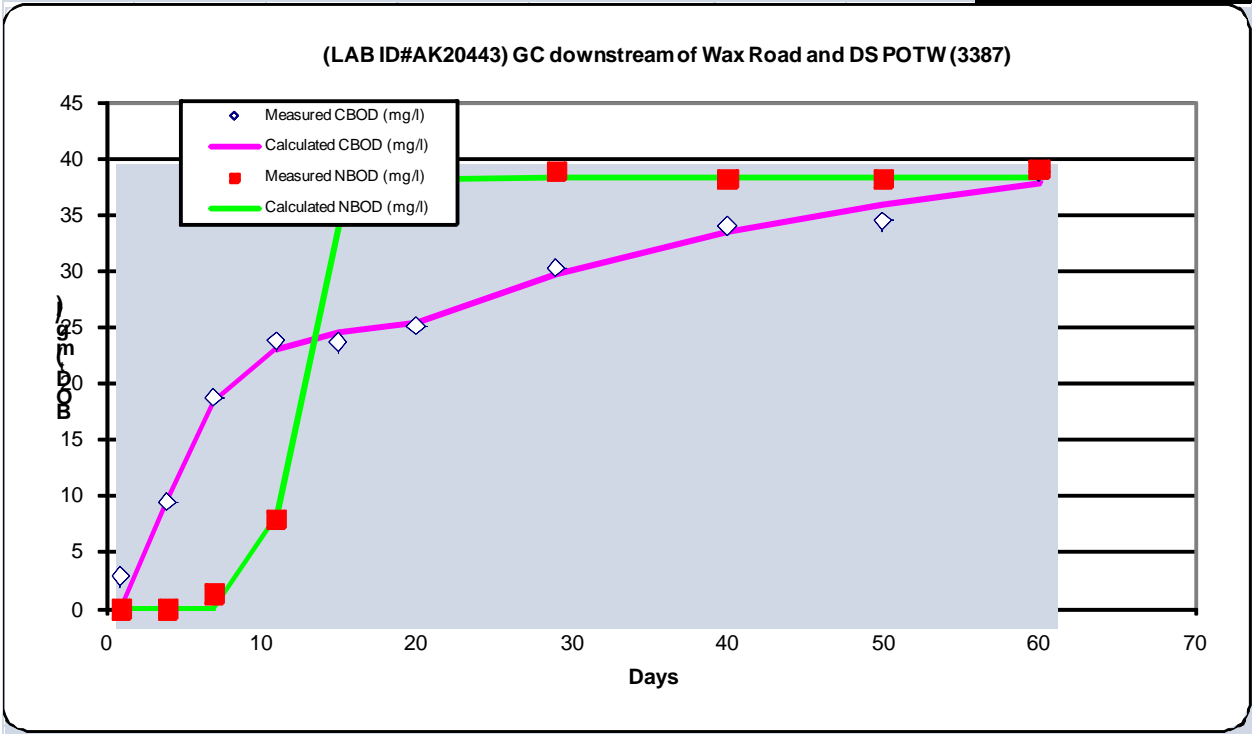
Refresh Data for  
 Current Site (2  
 Components)

Calculate for all  
 Sites (2  
 Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	38.318054	25.406651	17.239452
k rate (1/day)	0.5235373	0.2657248	0.0309722
Lag time (days)	10.552662	2.1956019	19.60243

Set Breakpoint  
 Manually (2  
 Components)

Breakpoint: 15th day



Select Site to Graph: (LAB ID#AK20449) GC downstream of Forrest Delatte Road and upstream of DS POTW (3388) ▼

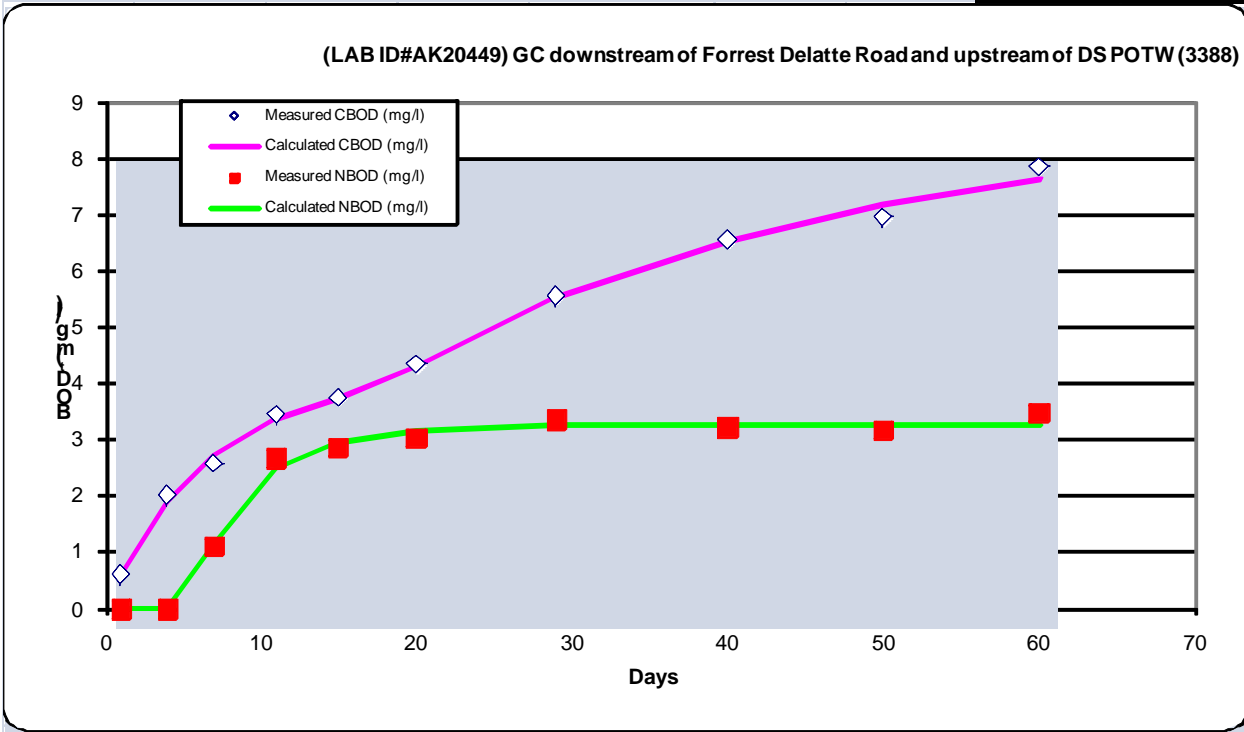
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	3.2641649	4.1569586	4.7993317
k rate (1/day)	0.245625	0.1516667	0.0303993
Lag time (days)	5.25	0	17.5

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 15th day



Select Site to Graph: (LAB ID#AK20459) GC 80 yds downstream of Hwy 190 (3389)

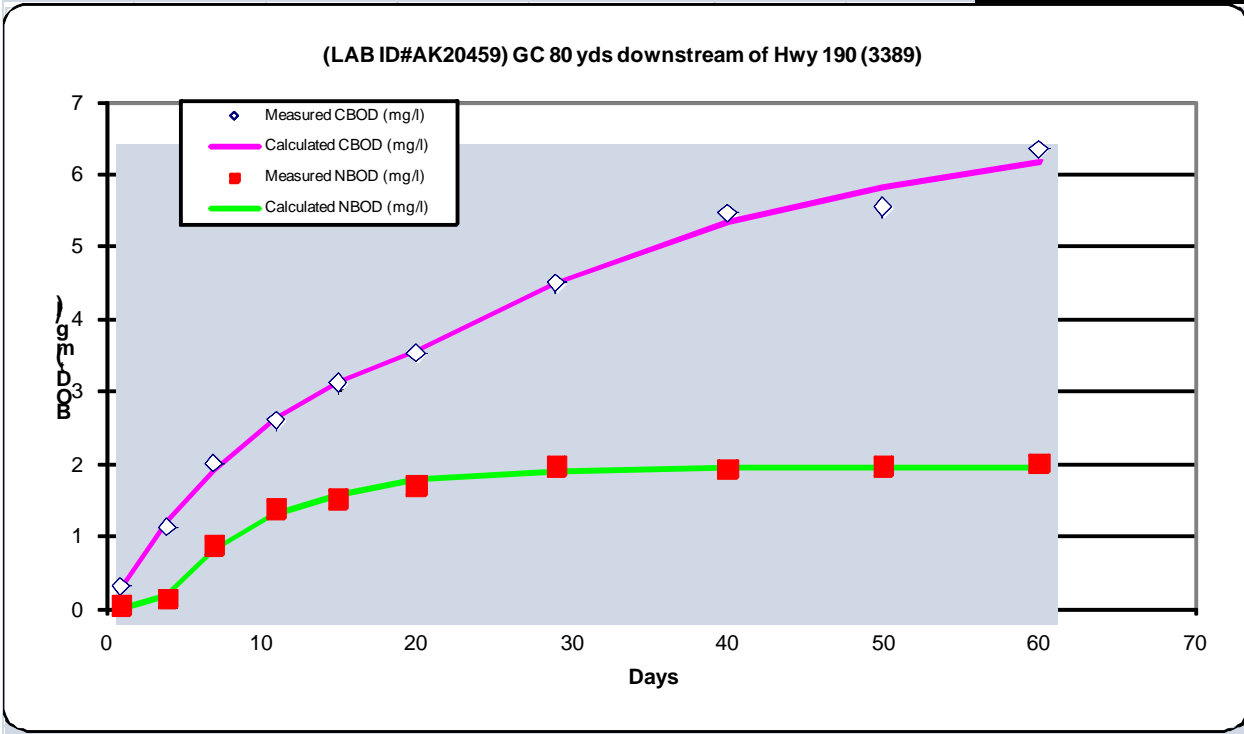
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	1.9595991	4.3634782	2.6908357
k rate (1/day)	0.1425	0.0852083	0.0297627
Lag time (days)	3.3055556	0.2430555	21.951292

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 15th day



Select Site to Graph: (LAB ID#AK20465) GC downstream of Gray's Creek Canal (3390)

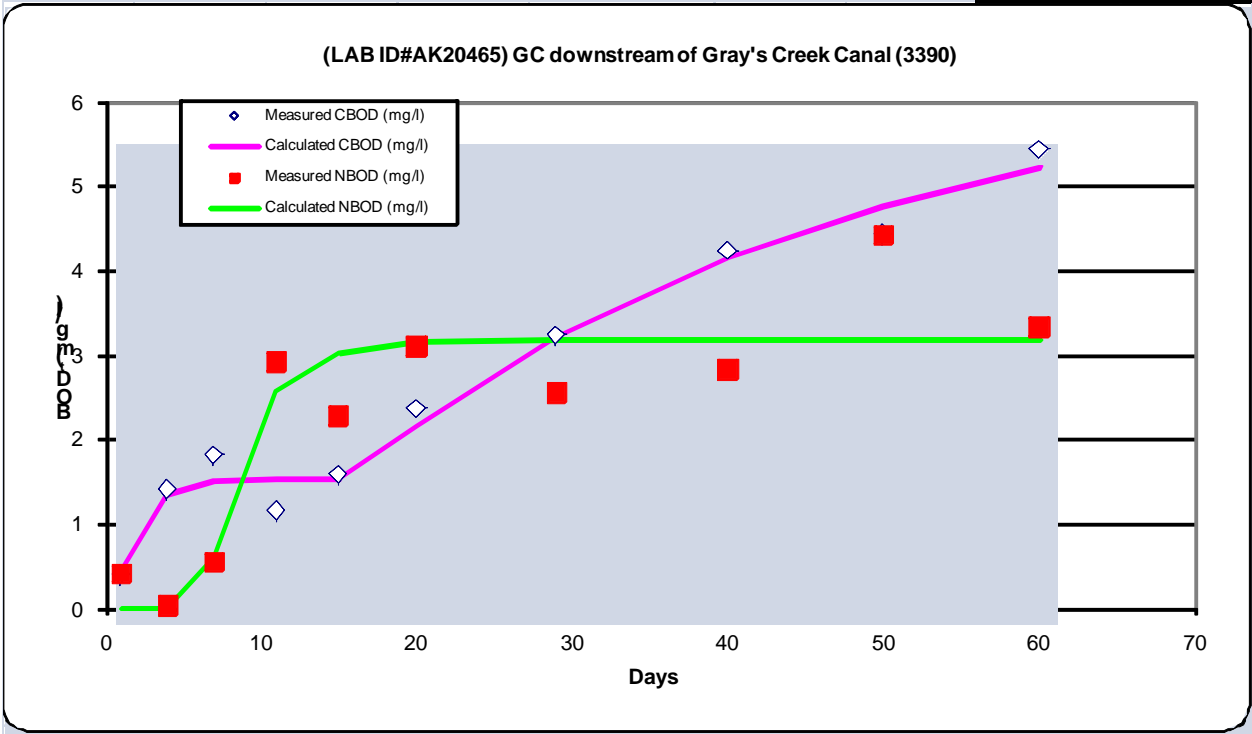
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	3.1739285	1.532939	4.8641624
k rate (1/day)	0.3567708	0.5950994	0.0319271
Lag time (days)	6.4166665	0.4547727	15.75

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 15th day



Select Site to Graph: (LAB ID#AK20471) Gray's Creek Lake (3391) ▼

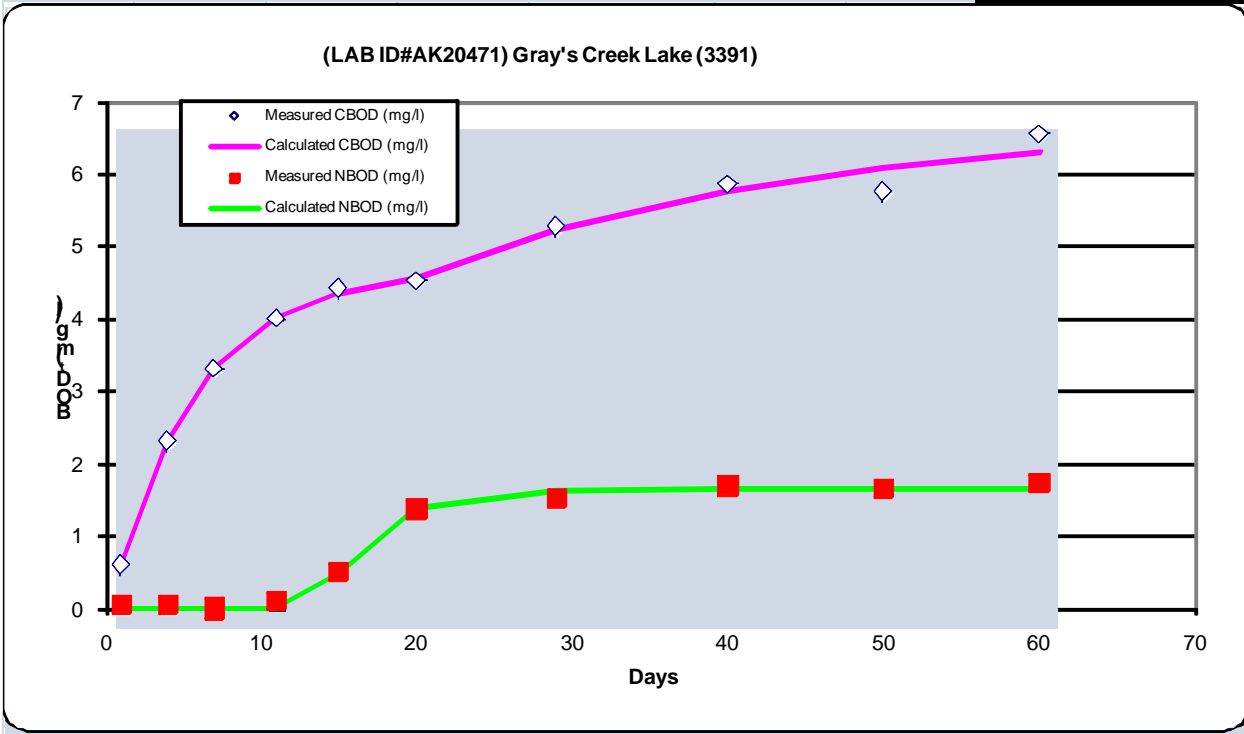
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	1.652182	4.6880875	2.0923083
k rate (1/day)	0.29375	0.1804955	0.0370833
Lag time (days)	13.805555	0.2471065	20.270834

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 20th day



Select Site to Graph: (LAB ID#AK20477) Unnamed Trib at Hwy 16 (3393)

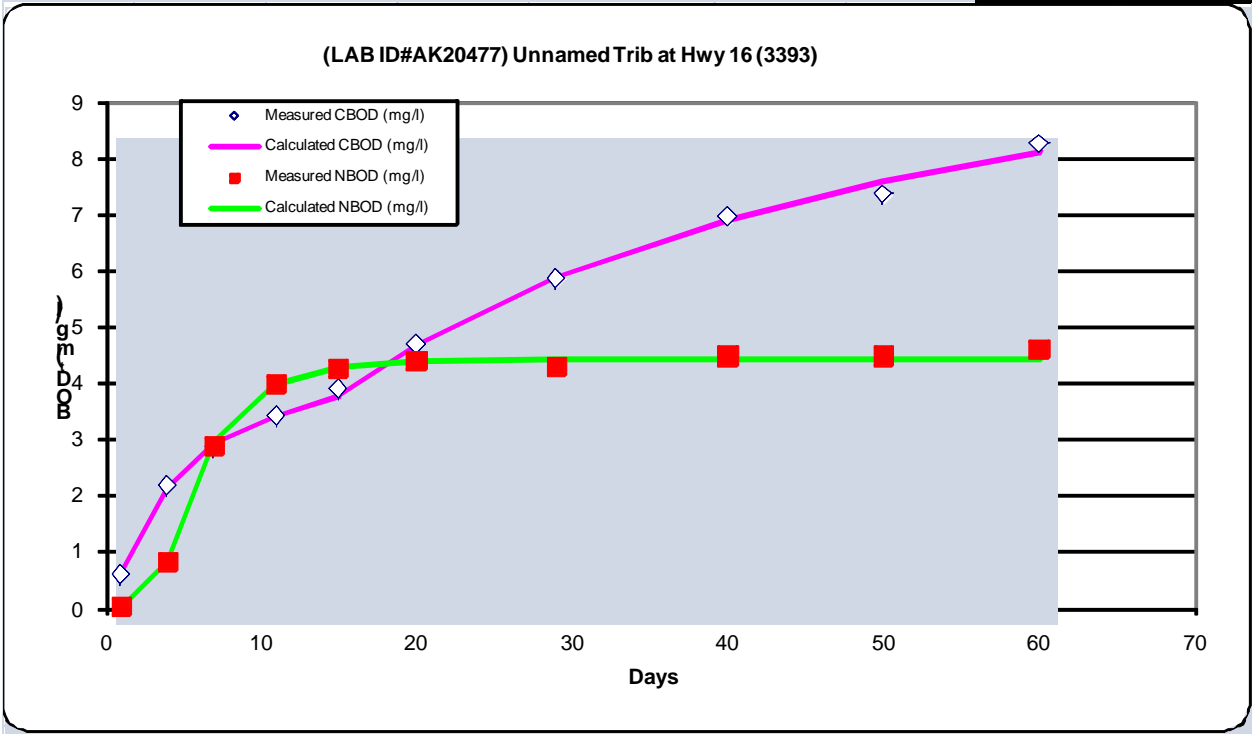
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	4.4447484	3.7276058	5.7486506
k rate (1/day)	0.29375	0.2238542	0.0309722
Lag time (days)	3.3055556	0.1944444	14

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 11th day





Select Site to Graph: (LAB ID#AK20483) Unnamed Trib at Forrest Delatte Road near Homer Laurence Lane (3395) ▼

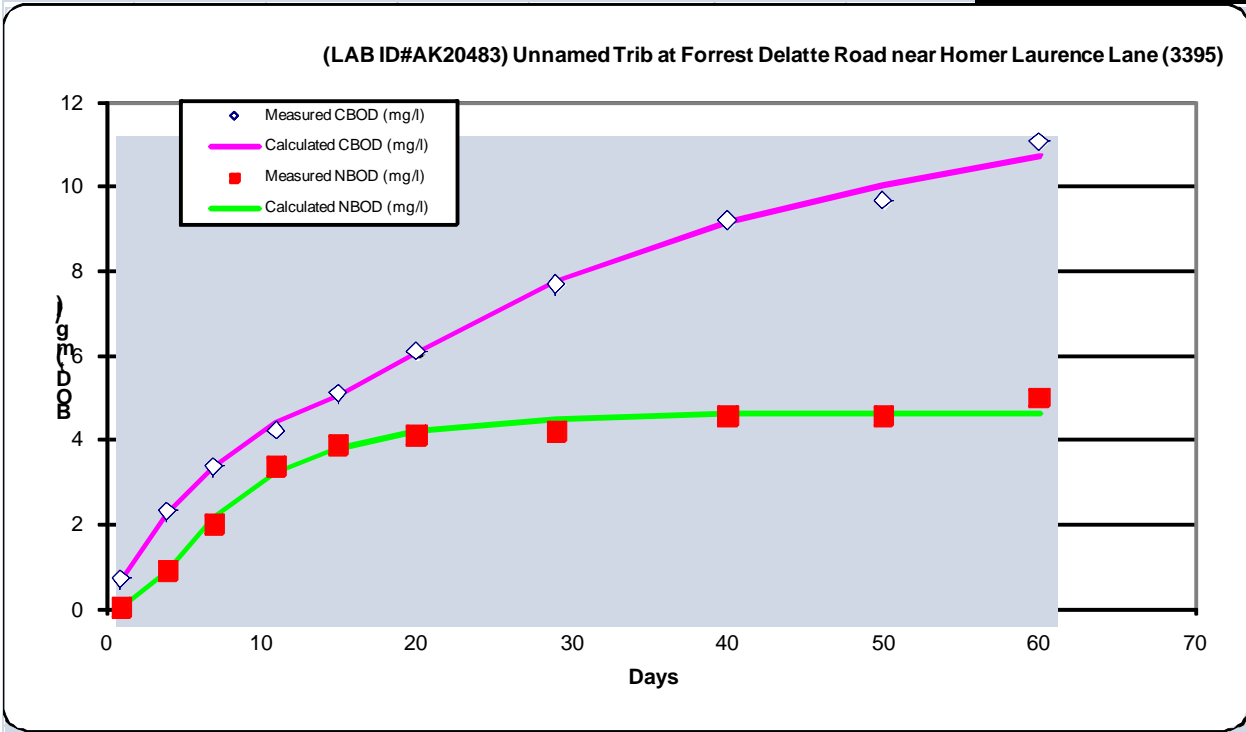
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	4.6371746	6.1283369	6.9350004
k rate (1/day)	0.135625	0.1138542	0.0252431
Lag time (days)	2.4305556	0	16.669897

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 15th day



Select Site to Graph: (LAB ID#AK20489) Unnamed Trib at Doug Wax Road (3396)

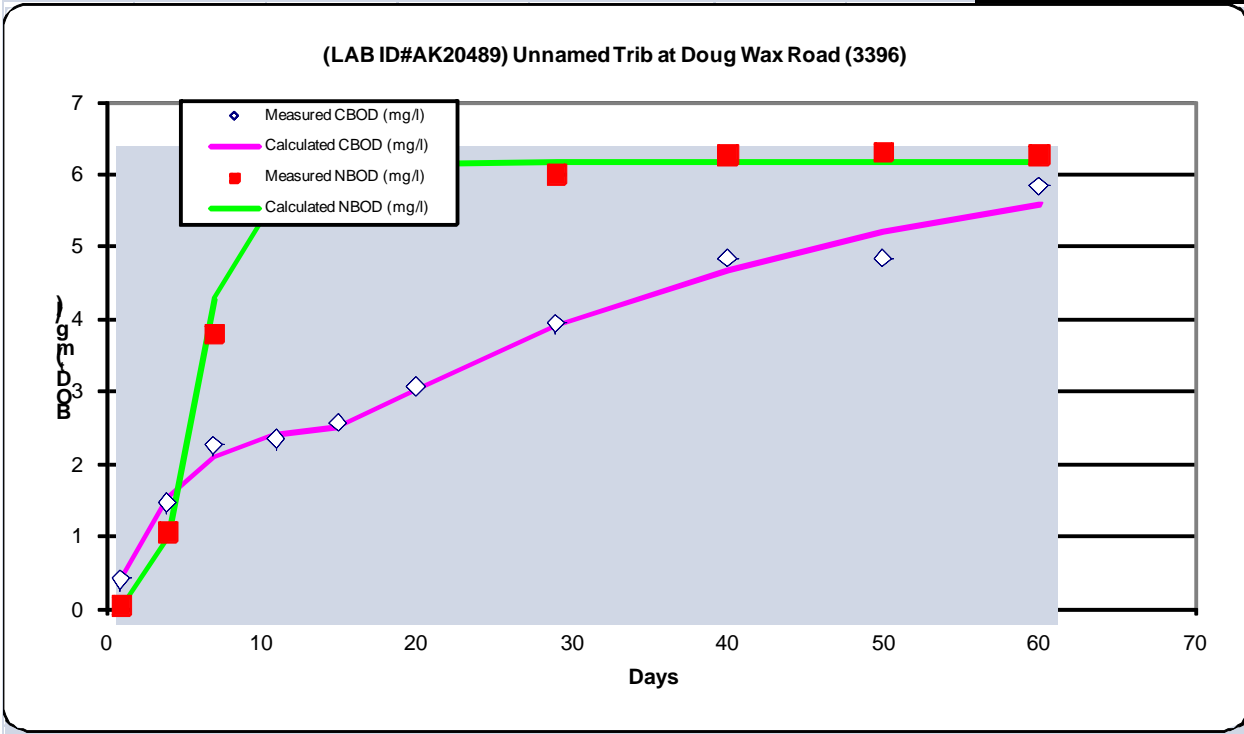
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	6.173943	2.5904405	4.1081858
k rate (1/day)	0.335	0.245625	0.0298264
Lag time (days)	3.5	0.3402778	16.041668

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 11th day



Select Site to Graph: (LAB ID#AK20495) Denham Springs POTW (3398)

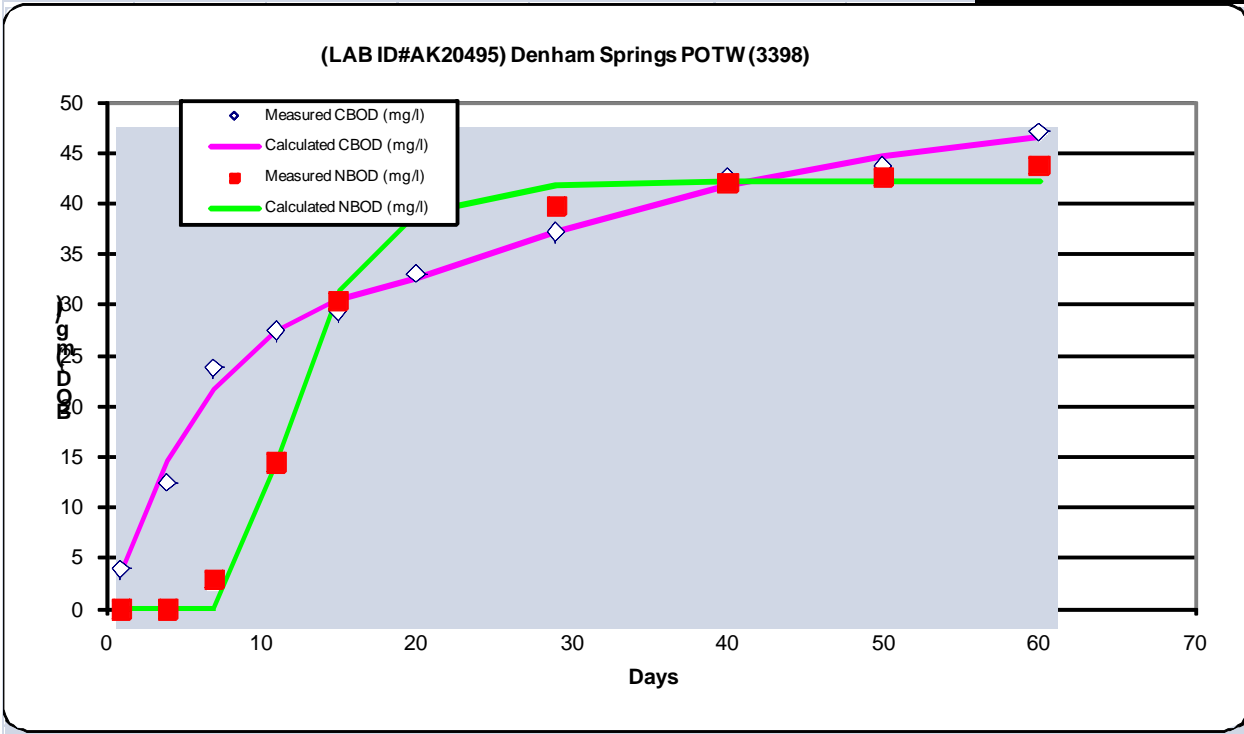
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	42.159096	34.495712	17.500757
k rate (1/day)	0.23875	0.1465104	0.0313542
Lag time (days)	9.2928228	0.2997685	22.409721

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 20th day



Select Site to Graph: (LAB ID#AK20506) Gray's Creek upstream of Gray's Creek Lake (3459)

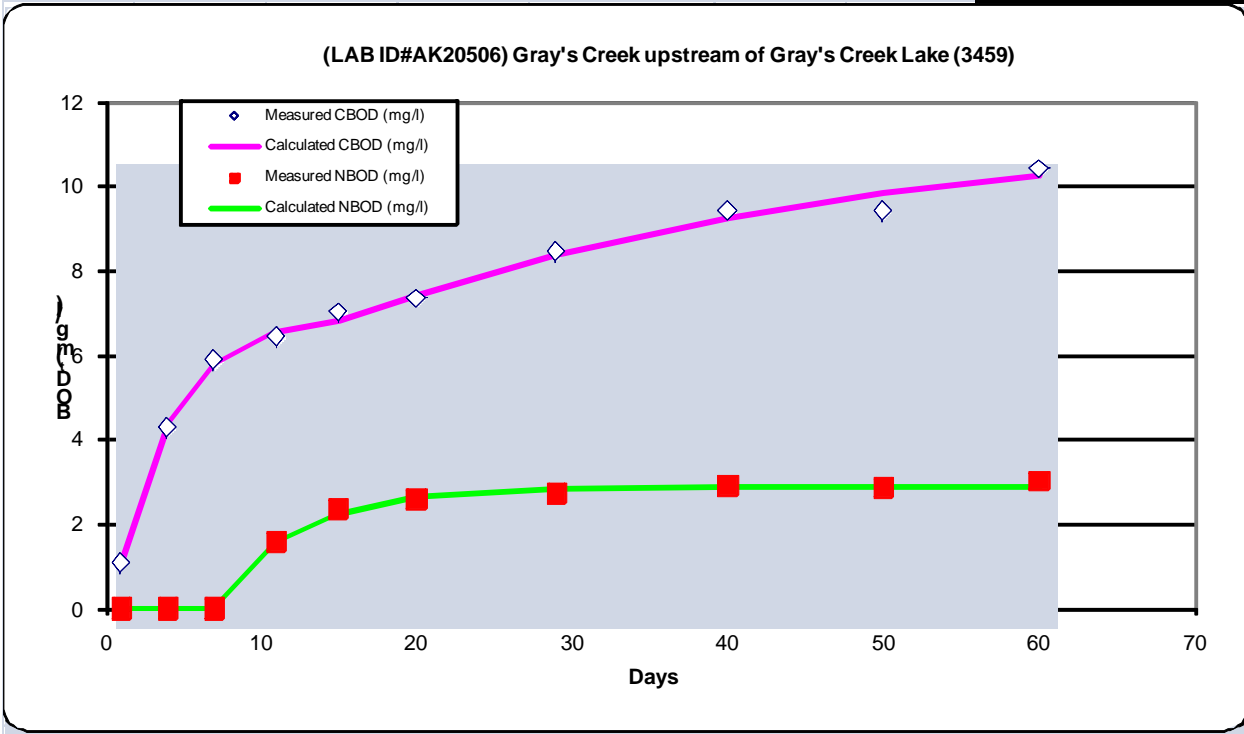
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	2.8695791	6.9709406	4.3925447
k rate (1/day)	0.1940625	0.2657248	0.0311632
Lag time (days)	7	0.3443287	16.333334

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 11th day



Select Site to Graph: (LAB ID#AK20517) GC 60 yds downstream of sewage pipe (3460)

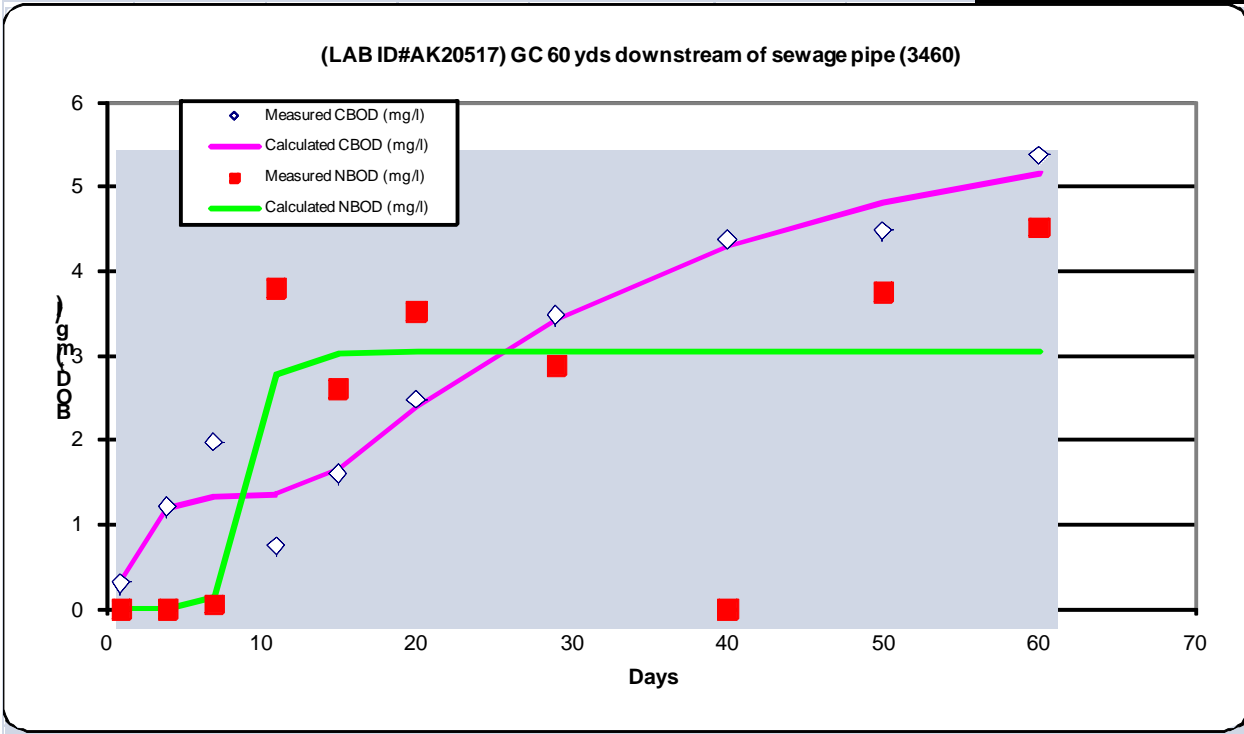
Refresh Data for  
Current Site (2  
Components)

Calculate for all  
Sites (2  
Components)

	NBOD	CBOD1	CBOD2
UBOD (mg/l)	3.0388918	1.3613241	4.5691977
k rate (1/day)	0.5950994	0.5950994	0.0382292
Lag time (days)	6.920557	0.5425146	13.319445

Set Breakpoint  
Manually (2  
Components)

Breakpoint: 11th day



**Appendix F6 – Grays Creek Stationary Site 1 Dye Study Calculations**

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

**Waterbody Name / Site Name:** Gray's Creek Stationary Site 1

Enter times in hours from the time of spill for:

Leading edge	7.6000	hours
Peak	9.2667	hours
Trailing edge	18.4333	hours

Peak concentration  ug/L

Rivermiles

Spill location	0.5505	miles
Observed location	0	miles

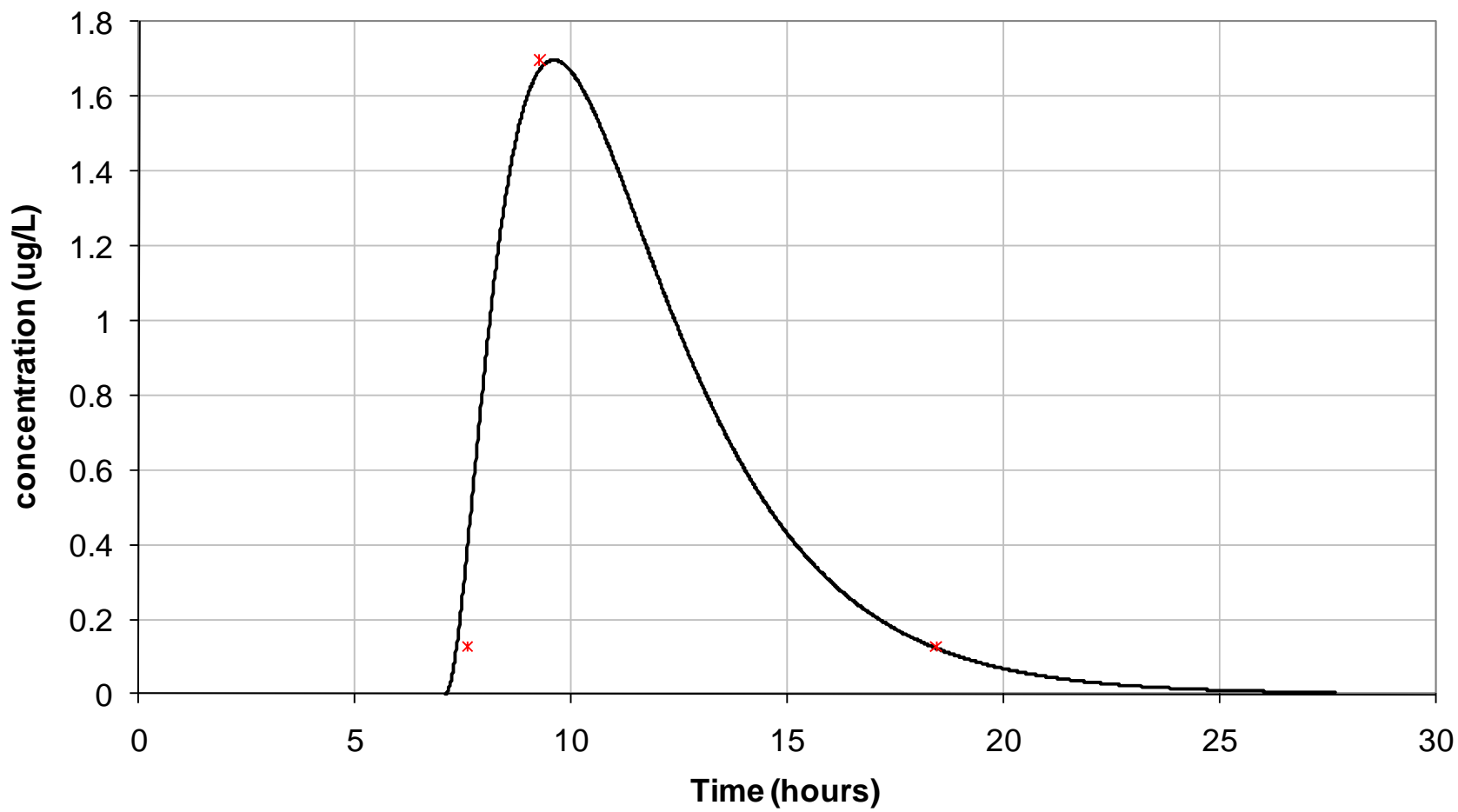
Reach Width (ft)	51.7778
Reach Depth (ft)	3.1725
Dye dumped (ml)	3785
Measured flow (cfs)	

Dump	7/24/07 10:44 AM		
Leading Edge	7/24/07 6:20 PM	0.316667	7.6000
Peak	7/24/07 8:00 PM	0.386111	9.2667
Trailing Edge	7/25/07 5:10 AM	0.768056	18.4333





### Concentration vs Time



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

DataSonde 4x 42471

Log File Name : GC FIX DYE 01

Setup Date (M/D/YYYY) : 7/24/2007

Setup Time (HH:MM:SS) : 15:39:20

Starting Date (M/D/YYYY) : 7/24/2007

Starting Time (HH:MM:SS) : 15:50:00

Stopping Date (M/D/YYYY) : 7/27/2007

Stopping Time (HH:MM:SS) : 16:30:00

Interval (HH:MM:SS) : 00:10:00

Sensor warmup (HH:MM:SS) : 00:00:30

Circltr warmup (HH:MM:SS) : 00:00:30

Distance from dump to station is 886 meters = 0.5505 miles

Dump at 10:44 on 07/24/07

Date M/D/YYYY	Time HH:MM:SS	RWT ppb	RWTV Volts	Temp °C	
7/24/2007	15:50:00	0	0.0097	32.5	
7/24/2007	16:00:00	0	0.0187	26.97	
7/24/2007	16:10:00	0	0.0191	27.02	
7/24/2007	16:20:00	0	0.0194	27.05	
7/24/2007	16:30:00	0	0.0187	27.02	
7/24/2007	16:40:00	0	0.0198	27.03	
7/24/2007	16:50:00	0	0.0197	26.93	
7/24/2007	17:00:00	0	0.0212	26.82	
7/24/2007	17:10:00	0	0.0234	26.91	
7/24/2007	17:20:00	0	0.0238	26.98	
7/24/2007	17:30:00	0	0.0233	26.87	
7/24/2007	17:40:00	0	0.0238	26.78	
7/24/2007	17:50:00	0	0.0256	26.83	
7/24/2007	18:00:00	0	0.0251	26.83	
7/24/2007	18:10:00	0	0.0262	26.85	
7/24/2007	18:20:00	3.32	0.0533	26.79	Leading Edge
7/24/2007	18:30:00	16.54	0.1088	26.8	
7/24/2007	18:40:00	8.3	0.0764	26.87	
7/24/2007	18:50:00	122.74	0.5455	26.78	
7/24/2007	19:00:00	160.5	0.7501	26.78	
7/24/2007	19:10:00	238.91	1.094	26.82	

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/24/2007	19:20:00	272.35	1.2412	26.82	
7/24/2007	19:30:00	280.96	1.2788	26.79	
7/24/2007	19:40:00	322.93	1.4659	26.81	
7/24/2007	19:50:00	322.32	1.4505	26.84	
7/24/2007	20:00:00	375.49	1.6972	26.85	Peak
7/24/2007	20:10:00	316.31	1.4366	26.81	
7/24/2007	20:20:00	292.01	1.3265	26.82	
7/24/2007	20:30:00	318	1.4441	26.88	
7/24/2007	20:40:00	301.89	1.3736	26.87	
7/24/2007	20:50:00	267.99	1.2228	26.84	
7/24/2007	21:00:00	223.41	1.0245	26.82	
7/24/2007	21:10:00	224.92	1.0284	26.86	
7/24/2007	21:20:00	213.22	0.9804	26.93	
7/24/2007	21:30:00	204.75	0.9437	26.85	
7/24/2007	21:40:00	212.56	0.9775	26.85	
7/24/2007	21:50:00	168.77	0.7813	26.87	
7/24/2007	22:00:00	159.21	0.7414	26.92	
7/24/2007	22:10:00	140.8	0.6602	26.82	
7/24/2007	22:20:00	185.15	0.8562	26.87	
7/24/2007	22:30:00	183.8	0.8502	26.9	
7/24/2007	22:40:00	159.3	0.7413	26.84	
7/24/2007	22:50:00	141.81	0.6595	26.87	
7/24/2007	23:00:00	143.03	0.6765	26.91	
7/24/2007	23:10:00	139.21	0.654	26.91	
7/24/2007	23:20:00	139.67	0.6563	26.87	
7/24/2007	23:30:00	98.5	0.4862	26.83	
7/24/2007	23:40:00	98.16	0.4642	26.77	
7/24/2007	23:50:00	96.37	0.4683	26.77	
7/25/2007	0:00:00	79.13	0.3865	26.84	
7/25/2007	0:10:00	64.2	0.3188	26.81	
7/25/2007	0:20:00	46.69	0.2444	26.79	
7/25/2007	0:30:00	59.08	0.2982	26.79	
7/25/2007	0:40:00	42.6	0.2253	26.75	
7/25/2007	0:50:00	30.49	0.1711	26.7	
7/25/2007	1:00:00	29.2	0.166	26.5	
7/25/2007	1:10:00	35.54	0.1946	26.51	
7/25/2007	1:20:00	48.4	0.2509	26.64	

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/25/2007	1:30:00	34	0.1896	26.56	
7/25/2007	1:40:00	26.85	0.1556	26.56	
7/25/2007	1:50:00	26.83	0.1582	26.52	
7/25/2007	2:00:00	24.74	0.1451	26.49	
7/25/2007	2:10:00	20.68	0.1276	26.47	
7/25/2007	2:20:00	20.51	0.1276	26.43	
7/25/2007	2:30:00	14.88	0.1027	26.39	
7/25/2007	2:40:00	13.17	0.0953	26.34	
7/25/2007	2:50:00	12.86	0.0937	26.32	
7/25/2007	3:00:00	11.33	0.0869	26.27	
7/25/2007	3:10:00	8.82	0.0759	26.25	
7/25/2007	3:20:00	7.43	0.0691	26.22	
7/25/2007	3:30:00	6.51	0.0652	26.19	
7/25/2007	3:40:00	4.78	0.0585	26.16	
7/25/2007	3:50:00	5.09	0.0593	26.14	
7/25/2007	4:00:00	4.72	0.0577	26.11	
7/25/2007	4:10:00	3.87	0.054	26.09	
7/25/2007	4:20:00	3.25	0.0511	26.07	
7/25/2007	4:30:00	2.81	0.0493	26.04	
7/25/2007	4:40:00	2.28	0.0468	26.01	
7/25/2007	4:50:00	1.83	0.0448	25.98	
7/25/2007	5:00:00	1.15	0.0419	25.96	
7/25/2007	5:10:00	0.46	0.0389	25.92	Trailing Edge
7/25/2007	5:20:00	0	0.0358	25.9	
7/25/2007	5:30:00	0	0.0336	25.88	
7/25/2007	5:40:00	0	0.0311	25.84	
7/25/2007	5:50:00	0	0.03	25.82	
7/25/2007	6:00:00	0	0.0287	25.79	
7/25/2007	6:10:00	0	0.0276	25.77	
7/25/2007	6:20:00	0	0.0261	25.74	
7/25/2007	6:30:00	0	0.0251	25.71	
7/25/2007	6:40:00	0	0.0248	25.69	
7/25/2007	6:50:00	0	0.0244	25.67	
7/25/2007	7:00:00	0	0.0243	25.66	
7/25/2007	7:10:00	0	0.024	25.63	
7/25/2007	7:20:00	0	0.0241	25.62	
7/25/2007	7:30:00	0	0.0241	25.6	

Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

7/25/2007	7:40:00	0	0.024	25.6
7/25/2007	7:50:00	0	0.0237	25.6
7/25/2007	8:00:00	0	0.0238	25.57
7/25/2007	8:10:00	0	0.0234	25.57
7/25/2007	8:20:00	0	0.0232	25.56
7/25/2007	8:30:00	0	0.023	25.55
7/25/2007	8:40:00	0	0.023	25.56
7/25/2007	8:50:00	0	0.0224	25.55
7/25/2007	9:00:00	0	0.0226	25.55
7/25/2007	9:10:00	0	0.0221	25.55
7/25/2007	9:20:00	0	0.0221	25.55
7/25/2007	9:30:00	0	0.0224	25.55
7/25/2007	9:40:00	0	0.0219	25.59
7/25/2007	9:50:00	0	0.0219	25.63
7/25/2007	10:00:00	0	0.0219	25.64
7/25/2007	10:10:00	0	0.0222	25.64
7/25/2007	10:20:00	0	0.0219	25.6
7/25/2007	10:30:00	0	0.0223	25.69
7/25/2007	10:40:00	0	0.0222	25.69
7/25/2007	10:50:00	0	0.0222	25.74
7/25/2007	11:00:00	0	0.0215	25.84
7/25/2007	11:10:00	0	0.0229	26.03
7/25/2007	11:20:00	0	0.0226	26.06
7/25/2007	11:30:00	0	0.0231	26.12
7/25/2007	11:40:00	0	0.0229	25.98
7/25/2007	11:50:00	0	0.0236	26.28
7/25/2007	12:00:00	0	0.0244	26.39
7/25/2007	12:10:00	0	0.0249	26.4
7/25/2007	12:20:00	0	0.0232	26.51
7/25/2007	12:30:00	0	0.0229	26.31
7/25/2007	12:40:00	0	0.0234	26.42
7/25/2007	12:50:00	0	0.0234	26.48
7/25/2007	13:00:00	0	0.0232	26.42
7/25/2007	13:10:00	0	0.0229	26.36
7/25/2007	13:20:00	0	0.023	26.43
7/25/2007	13:30:00	0	0.0226	26.53
7/25/2007	13:40:00	0	0.0225	26.37

Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

7/25/2007	13:50:00	0	0.0235	26.48
7/25/2007	14:00:00	0	0.0247	26.59
7/25/2007	14:10:00	0	0.0244	26.65
7/25/2007	14:20:00	0	0.024	26.66
7/25/2007	14:30:00	0	0.0239	26.43
7/25/2007	14:40:00	0	0.0249	26.74
7/25/2007	14:50:00	0	0.0249	26.85
7/25/2007	15:00:00	0	0.0244	26.68
7/25/2007	15:10:00	0	0.0255	26.66
7/25/2007	15:20:00	0	0.0252	26.72
7/25/2007	15:30:00	0	0.0264	26.92
7/25/2007	15:40:00	0	0.0273	26.91
7/25/2007	15:50:00	0	0.0262	26.96
7/25/2007	16:00:00	0	0.026	26.94
7/25/2007	16:10:00	0	0.0259	26.99
7/25/2007	16:20:00	0	0.026	26.96
7/25/2007	16:30:00	0	0.0266	26.92
7/25/2007	16:40:00	0	0.0259	26.97
7/25/2007	16:50:00	0	0.026	26.96
7/25/2007	17:00:00	0	0.0264	26.78
7/25/2007	17:10:00	0	0.0266	26.72
7/25/2007	17:20:00	0	0.0261	26.68
7/25/2007	17:30:00	0	0.0257	26.66
7/25/2007	17:40:00	0	0.0252	26.86
7/25/2007	17:50:00	0	0.0259	26.8
7/25/2007	18:00:00	0	0.0261	26.47
7/25/2007	18:10:00	0	0.0249	26.12
7/25/2007	18:20:00	0	0.0247	26.57
7/25/2007	18:30:00	0	0.0239	26.32
7/25/2007	18:40:00	0	0.0242	26.25
7/25/2007	18:50:00	0	0.0245	26.35
7/25/2007	19:00:00	0	0.024	26.34
7/25/2007	19:10:00	0	0.0237	26.32
7/25/2007	19:20:00	0	0.0238	26.34
7/25/2007	19:30:00	0	0.0237	26.54
7/25/2007	19:40:00	0	0.0238	26.45
7/25/2007	19:50:00	0	0.0242	26.19

Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

7/25/2007	20:00:00	0	0.0243	26.24
7/25/2007	20:10:00	0	0.0237	26.41
7/25/2007	20:20:00	0	0.0233	26.37
7/25/2007	20:30:00	0	0.0231	26.28
7/25/2007	20:40:00	0	0.0231	26.28
7/25/2007	20:50:00	0	0.0225	26.29
7/25/2007	21:00:00	0	0.0224	26.26
7/25/2007	21:10:00	0	0.0226	26.22
7/25/2007	21:20:00	0	0.0227	26.18
7/25/2007	21:30:00	0	0.0229	26.17
7/25/2007	21:40:00	0	0.0227	26.14
7/25/2007	21:50:00	0	0.0228	26.12
7/25/2007	22:00:00	0	0.0225	26.08
7/25/2007	22:10:00	0	0.0226	26.05
7/25/2007	22:20:00	0	0.0226	26.02
7/25/2007	22:30:00	0	0.0231	26
7/25/2007	22:40:00	0	0.0229	25.97
7/25/2007	22:50:00	0	0.0229	25.94
7/25/2007	23:00:00	0	0.0227	25.93
7/25/2007	23:10:00	0	0.0227	25.91
7/25/2007	23:20:00	0	0.0226	25.89
7/25/2007	23:30:00	0	0.0228	25.87
7/25/2007	23:40:00	0	0.0228	25.86
7/25/2007	23:50:00	0	0.0228	25.85
7/26/2007	0:00:00	0	0.0229	25.84
7/26/2007	0:10:00	0	0.0234	25.83
7/26/2007	0:20:00	0	0.0231	25.82
7/26/2007	0:30:00	0	0.0233	25.82
7/26/2007	0:40:00	0	0.0236	25.82
7/26/2007	0:50:00	0	0.0233	25.8
7/26/2007	1:00:00	0	0.0234	25.8
7/26/2007	1:10:00	0	0.0237	25.79
7/26/2007	1:20:00	0	0.0236	25.78
7/26/2007	1:30:00	0	0.0239	25.74
7/26/2007	1:40:00	0	0.024	25.72
7/26/2007	1:50:00	0	0.024	25.7
7/26/2007	2:00:00	0	0.024	25.68

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/26/2007	2:10:00	0	0.0242	25.64
7/26/2007	2:20:00	0	0.0246	25.6
7/26/2007	2:30:00	0	0.0243	25.55
7/26/2007	2:40:00	0	0.0243	25.51
7/26/2007	2:50:00	0	0.0241	25.44
7/26/2007	3:00:00	0	0.0239	25.38
7/26/2007	3:10:00	0	0.0241	25.34
7/26/2007	3:20:00	0	0.024	25.3
7/26/2007	3:30:00	0	0.0239	25.28
7/26/2007	3:40:00	0	0.0242	25.25
7/26/2007	3:50:00	0	0.0241	25.23
7/26/2007	4:00:00	0	0.024	25.23
7/26/2007	4:10:00	0	0.0241	25.21
7/26/2007	4:20:00	0	0.0239	25.2
7/26/2007	4:30:00	0	0.0239	25.19
7/26/2007	4:40:00	0	0.024	25.19
7/26/2007	4:50:00	0	0.0237	25.18
7/26/2007	5:00:00	0	0.0237	25.18
7/26/2007	5:10:00	0	0.0237	25.18
7/26/2007	5:20:00	0	0.0235	25.17
7/26/2007	5:30:00	0	0.0235	25.17
7/26/2007	5:40:00	0	0.0237	25.17
7/26/2007	5:50:00	0	0.0234	25.17
7/26/2007	6:00:00	0	0.0237	25.17
7/26/2007	6:10:00	0	0.0233	25.17
7/26/2007	6:20:00	0	0.0234	25.17
7/26/2007	6:30:00	0	0.023	25.17
7/26/2007	6:40:00	0	0.0232	25.17
7/26/2007	6:50:00	0	0.0231	25.17
7/26/2007	7:00:00	0	0.0229	25.17
7/26/2007	7:10:00	0	0.0232	25.17
7/26/2007	7:20:00	0	0.0231	25.18
7/26/2007	7:30:00	0	0.0228	25.18
7/26/2007	7:40:00	0	0.023	25.18
7/26/2007	7:50:00	0	0.0289	25.19
7/26/2007	8:00:00	0	0.0263	25.19
7/26/2007	8:10:00	0	0.0259	25.21



Grays Creek Watershed TMDL  
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7/26/2007	8:20:00	0	0.0267	25.21
7/26/2007	8:30:00	0	0.0262	25.23
7/26/2007	8:40:00	0	0.0254	25.25
7/26/2007	8:50:00	0	0.0254	25.26
7/26/2007	9:00:00	0	0.0262	25.3
7/26/2007	9:10:00	0	0.0263	25.32
7/26/2007	9:20:00	0	0.0261	25.32
7/26/2007	9:30:00	0	0.026	25.34
7/26/2007	9:40:00	0	0.0257	25.35
7/26/2007	9:50:00	0	0.0256	25.35
7/26/2007	10:00:00	0	0.0258	25.38
7/26/2007	10:10:00	0	0.0257	25.4
7/26/2007	10:20:00	0	0.0257	25.42
7/26/2007	10:30:00	0	0.0261	25.45
7/26/2007	10:40:00	0	0.026	25.48
7/26/2007	10:50:00	0	0.0264	25.51
7/26/2007	11:00:00	0	0.0264	25.53
7/26/2007	11:10:00	0	0.0269	25.54
7/26/2007	11:20:00	0	0.0272	25.64
7/26/2007	11:30:00	0	0.0044	25.9

**Appendix F7 – Grays Creek Stationary Site 2 Dye Study Calculations**

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

**Waterbody Name / Site Name:** Gray's Creek Stationary Site 2

Enter times in hours from the time of spill for:

Leading edge	37.7667	hours
Peak	43.7667	hours
Trailing edge	50.7667	hours

Peak concentration: 0.1799 ug/L

Rivermiles

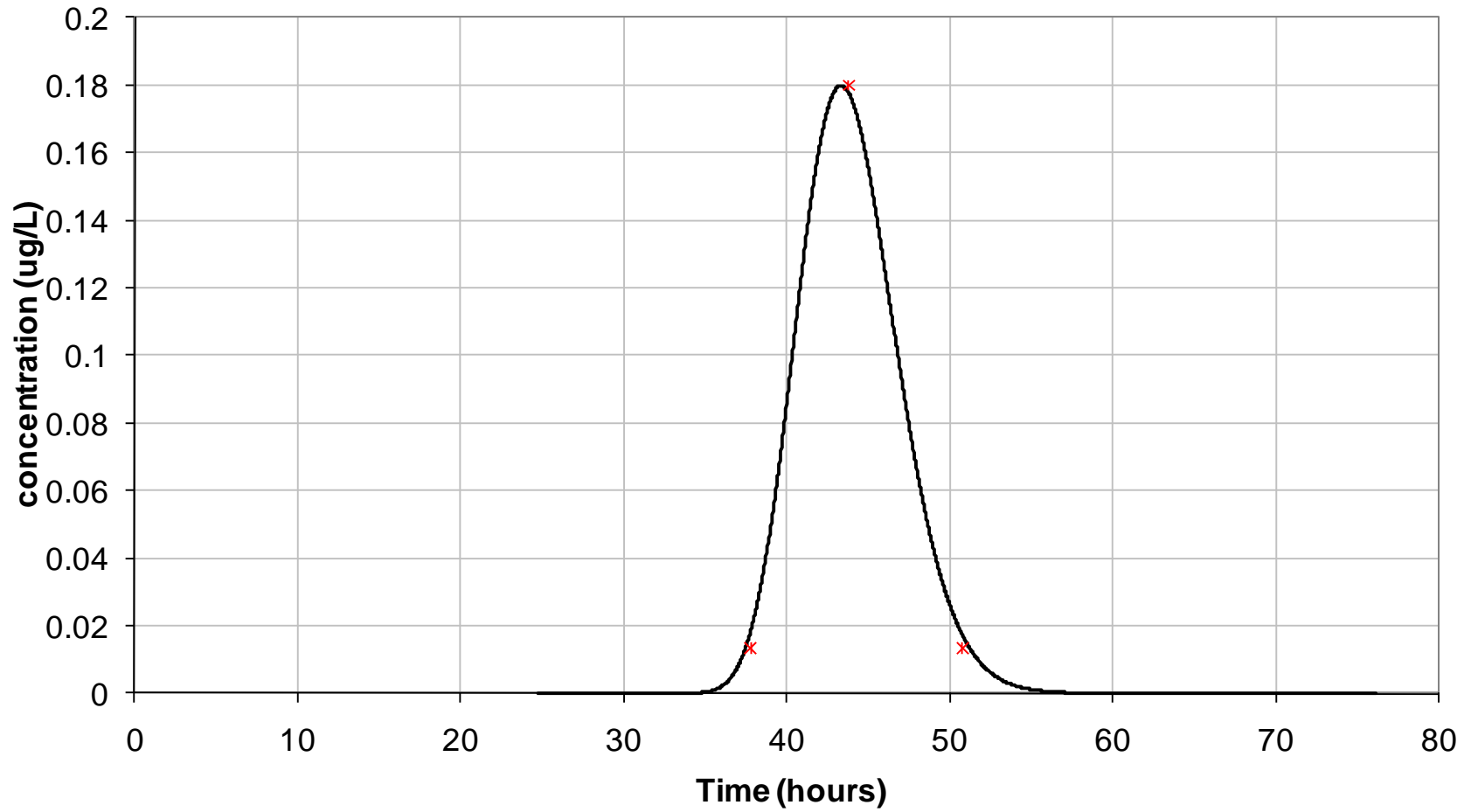
Spill location	1.9263	miles
Observed location	0	miles

Reach Width (ft)	51.7778
Reach Depth (ft)	3.1725
Dye dumped (ml)	3785.0000
Measured flow (cfs)	

Dump	7/24/07 10:44 AM		Hours
Leading Edge	7/26/07 12:30 AM	1.573611	37.76667
Peak	7/26/07 6:30 AM	1.823611	43.76667
Trailing Edge	7/26/07 1:30 PM	2.115278	50.76667



### Concentration vs Time



DataSonde 5X 43537  
Log File Name : GC FIX DYE 02  
Setup Date (M/D/YYYY) : 7/25/2007

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

Setup Time (HH:MM:SS) : 12:14:04  
 Starting Date (M/D/YYYY) : 7/25/2007  
 Starting Time (HH:MM:SS) : 12:30:00  
 Stopping Date (M/D/YYYY) : 7/30/2007  
 Stopping Time (HH:MM:SS) : 10:00:00  
 Interval (HH:MM:SS) : 00:10:00  
 Sensor warmup (HH:MM:SS) : 00:00:30  
 Circltr warmup (HH:MM:SS) : 00:00:30

Distance from dump to station is 3100 meters = 1.9263 miles

Dump at 10:44 on 07/24/07

Date M/D/YYYY	Time HH:MM:SS	RWT ppb	RWTV Volts	Temp °C	
7/25/2007	23:30:00	0	0.0226	26.71	
7/25/2007	23:40:00	0	0.0228	26.71	
7/25/2007	23:50:00	0	0.0231	26.72	
7/26/2007	0:00:00	0	0.0234	26.72	
7/26/2007	0:10:00	0	0.0235	26.68	
7/26/2007	0:20:00	0	0.0234	26.7	
7/26/2007	0:30:00	0.01	0.0239	26.67	Leading Edge
7/26/2007	0:40:00	0.11	0.0242	26.63	
7/26/2007	0:50:00	0.22	0.0247	26.62	
7/26/2007	1:00:00	0.49	0.0258	26.63	
7/26/2007	1:10:00	0.36	0.0253	26.58	
7/26/2007	1:20:00	0.78	0.0269	26.62	
7/26/2007	1:30:00	0.81	0.0271	26.63	
7/26/2007	1:40:00	1.41	0.0294	26.69	
7/26/2007	1:50:00	0.97	0.0277	26.72	
7/26/2007	2:00:00	1.82	0.031	26.73	
7/26/2007	2:10:00	2.57	0.0341	26.64	
7/26/2007	2:20:00	1.93	0.0316	26.66	
7/26/2007	2:30:00	2.06	0.032	26.64	
7/26/2007	2:40:00	2.49	0.0339	26.66	
7/26/2007	2:50:00	3.14	0.0364	26.61	
7/26/2007	3:00:00	3.63	0.0383	26.61	
7/26/2007	3:10:00	4.76	0.043	26.58	
7/26/2007	3:20:00	5.64	0.0466	26.53	
7/26/2007	3:30:00	6.69	0.0508	26.5	

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/26/2007	3:40:00	7	0.0521	26.45	
7/26/2007	3:50:00	8.04	0.0562	26.43	
7/26/2007	4:00:00	9.09	0.0606	26.38	
7/26/2007	4:10:00	10.34	0.0656	26.34	
7/26/2007	4:20:00	11.11	0.0687	26.32	
7/26/2007	4:30:00	12.64	0.0749	26.26	
7/26/2007	4:40:00	14.31	0.0819	26.19	
7/26/2007	4:50:00	16.9	0.0922	26.15	
7/26/2007	5:00:00	19.71	0.1037	26.11	
7/26/2007	5:10:00	22.55	0.1152	26.07	
7/26/2007	5:20:00	25.34	0.1263	26.04	
7/26/2007	5:30:00	26.85	0.1323	26.01	
7/26/2007	5:40:00	30.11	0.1461	25.96	
7/26/2007	5:50:00	31.19	0.1501	25.93	
7/26/2007	6:00:00	33.8	0.1604	25.88	
7/26/2007	6:10:00	35.21	0.1664	25.82	
7/26/2007	6:20:00	37.76	0.1768	25.77	
<b>7/26/2007</b>	<b>6:30:00</b>	<b>38.64</b>	<b>0.1799</b>	<b>25.69</b>	<b>Peak</b>
7/26/2007	6:40:00	38.54	0.1799	25.62	
7/26/2007	6:50:00	38.3	0.179	25.56	
7/26/2007	7:00:00	36.83	0.1728	25.48	
7/26/2007	7:10:00	35.67	0.1682	25.43	
7/26/2007	7:20:00	33.62	0.1598	25.35	
7/26/2007	7:30:00	32.82	0.1566	25.32	
7/26/2007	7:40:00	32.06	0.1535	25.28	
7/26/2007	7:50:00	29.2	0.1417	25.21	
7/26/2007	8:00:00	25.96	0.129	25.13	
7/26/2007	8:10:00	24.2	0.1219	25.12	
7/26/2007	8:20:00	21.86	0.1123	25.09	
7/26/2007	8:30:00	18.74	0.0996	25.04	
7/26/2007	8:40:00	17.45	0.0942	25.02	
7/26/2007	8:50:00	15.68	0.0873	24.99	
7/26/2007	9:00:00	13.6	0.0789	25.01	
7/26/2007	9:10:00	12.63	0.075	24.99	
7/26/2007	9:20:00	12.31	0.0737	25	
7/26/2007	9:30:00	11.59	0.0707	25	
7/26/2007	9:40:00	10.42	0.0657	24.99	

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

7/26/2007	9:50:00	9.15	0.0608	24.99	
7/26/2007	10:00:00	8.5	0.0579	25.02	
7/26/2007	10:10:00	8.06	0.0564	25.02	
7/26/2007	10:20:00	7.07	0.0524	25.03	
7/26/2007	10:30:00	6.17	0.0485	25.06	
7/26/2007	10:40:00	5.17	0.0447	25.08	
7/26/2007	10:50:00	4.33	0.0413	25.1	
7/26/2007	11:00:00	4.72	0.0428	25.11	
7/26/2007	11:10:00	3.46	0.0378	25.15	
7/26/2007	11:20:00	4.24	0.0409	25.06	
7/26/2007	11:30:00	2.99	0.0359	25.07	
7/26/2007	11:40:00	3.57	0.0381	25.08	
7/26/2007	11:50:00	3.11	0.0363	25.13	
7/26/2007	12:00:00	3.44	0.0375	25.14	
7/26/2007	12:10:00	2.09	0.0323	25.21	
7/26/2007	12:20:00	1.86	0.0313	25.24	
7/26/2007	12:30:00	1.42	0.0294	25.25	
7/26/2007	12:40:00	1.24	0.0288	25.29	
7/26/2007	12:50:00	1.3	0.0291	25.29	
7/26/2007	13:00:00	1.35	0.0293	25.36	
7/26/2007	13:10:00	1.04	0.028	25.35	
7/26/2007	13:20:00	0.43	0.0255	25.27	
7/26/2007	13:30:00	0.93	0.0276	25.4	Trailing Edge



## Dye Study Log

Grays Creek TMDL – July 24-26, 2007  
Subsegment 040304

### Day 1: Tuesday July 24

- Dye Dump just downstream of GC-02 @ 1044 hrs CDT (3:44 GMT) – Very little flow if any. Dye is dispersing up and downstream.
- Afternoon(1450 hrs CDT) – Made a boat run(Run 1) just below dump site. Dye not mixed well but logged a decent curve and peak just downstream of dump.
- 1550 hrs CDT – Set out a fixed monitor(just below Boat Run 1) to catch cloud overnight. See GC FIX DYE 01 and corresponding GPS location.

### Day 2: Wednesday July 25

- Visually located dye cloud between GC-01 and GC-02. Tree canopy is too thick to make a boat run.
- 1300 hrs CDT – Set out a 2<sup>nd</sup> fixed monitor just upstream of GC-01 to catch cloud overnight. See GC FIX DYE 02 and corresponding GPS location.

### Day 3: Thursday July 26

- 1130 hrs CDT- Picked up Fixed Dye Monitor(01). Dye cloud made it past the monitor.
- 1330 hrs CDT - Picked up Fixed Dye Monitor(02). Dye cloud made it past the monitor.

Collected Cross-Sections for entire reach of Dye Study. **Note: Cross-Sections designated Section A are between Dump and GC FIX DYE 01. Section B are between GC FIX DYE 01 and GC FIX DYE 02**

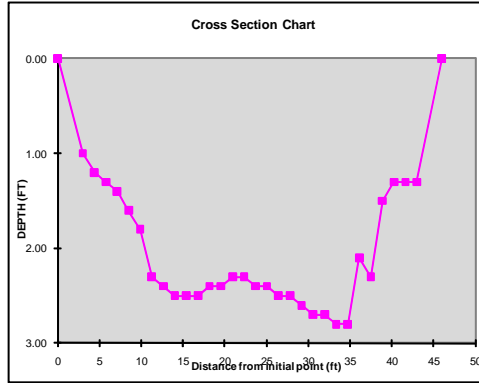
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: GC Dye XS - Dump Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: At Dump Site - Section A  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	46.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	88.90
AVG. DEPTH <sup>3</sup> (ft):	1.93

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6,7</sup>
1	0.00	1.50	0.00	0.00	
2	3.00	2.19	1.00	2.19	2.46%
3	4.38	1.38	1.20	1.66	1.86%
4	5.76	1.38	1.30	1.79	2.02%
5	7.14	1.38	1.40	1.93	2.17%
6	8.52	1.38	1.60	2.21	2.48%
7	9.90	1.38	1.80	2.48	2.79%
8	11.28	1.38	2.30	3.17	3.57%
9	12.66	1.38	2.40	3.31	3.72%
10	14.03	1.38	2.50	3.45	3.88%
11	15.41	1.38	2.50	3.45	3.88%
12	16.79	1.38	2.50	3.45	3.88%
13	18.17	1.38	2.40	3.31	3.72%
14	19.55	1.38	2.40	3.31	3.72%
15	20.93	1.38	2.30	3.17	3.57%
16	22.31	1.38	2.30	3.17	3.57%
17	23.69	1.38	2.40	3.31	3.72%
18	25.07	1.38	2.40	3.31	3.72%
19	26.45	1.38	2.50	3.45	3.88%
20	27.83	1.38	2.50	3.45	3.88%
21	29.21	1.38	2.60	3.59	4.03%
22	30.59	1.38	2.70	3.72	4.19%
23	31.97	1.38	2.70	3.72	4.19%
24	33.34	1.38	2.80	3.86	4.34%
25	34.72	1.38	2.80	3.86	4.34%
26	36.10	1.38	2.10	2.90	3.26%
27	37.48	1.38	2.30	3.17	3.57%
28	38.86	1.38	1.50	2.07	2.33%
29	40.24	1.38	1.30	1.79	2.02%
30	41.62	1.38	1.30	1.79	2.02%
31	43.00	2.19	1.30	2.85	3.20%
32	46.00	1.50	0.00	0.00	0.00%
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>	<b>46.00</b>			<b>88.90</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Garner, Lafleur	Data Inputted by / Date:	Garner 08/01/2007
Notetaker/Recorder:	Garner	Data Input Checked by / Date:	Earles
Other:			

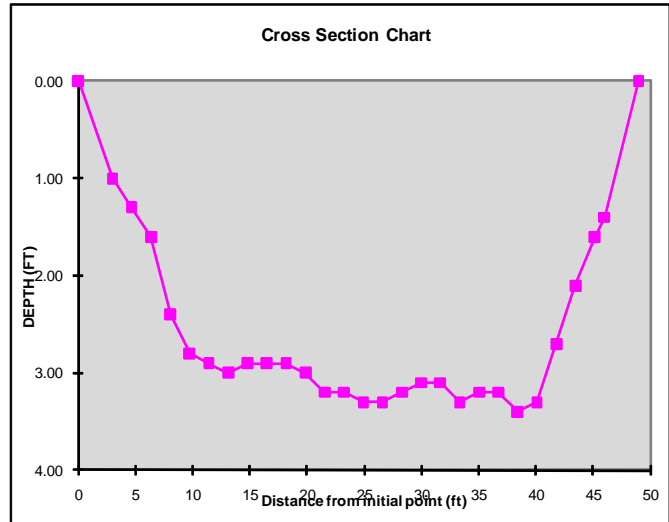
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: GC Dye XS - 01 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Section A-Between Dump and GC FIX DYE 01  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	49.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	123.90
AVG. DEPTH <sup>3</sup> (ft):	2.53

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6, 8, 7</sup>
1	0.00	1.50	0.00	0.00	
2	3.00	2.34	1.00	2.34	1.89%
3	4.69	1.69	1.30	2.19	1.77%
4	6.37	1.69	1.60	2.70	2.18%
5	8.06	1.69	2.40	4.05	3.27%
6	9.74	1.69	2.80	4.72	3.81%
7	11.43	1.69	2.90	4.89	3.95%
8	13.12	1.69	3.00	5.06	4.08%
9	14.80	1.69	2.90	4.89	3.95%
10	16.49	1.69	2.90	4.89	3.95%
11	18.17	1.69	2.90	4.89	3.95%
12	19.86	1.69	3.00	5.06	4.08%
13	21.55	1.69	3.20	5.40	4.35%
14	23.23	1.69	3.20	5.40	4.35%
15	24.92	1.69	3.30	5.56	4.49%
16	26.60	1.69	3.30	5.56	4.49%
17	28.29	1.69	3.20	5.40	4.35%
18	29.98	1.69	3.10	5.23	4.22%
19	31.66	1.69	3.10	5.23	4.22%
20	33.35	1.69	3.30	5.56	4.49%
21	35.03	1.69	3.20	5.40	4.35%
22	36.72	1.69	3.20	5.40	4.35%
23	38.41	1.69	3.40	5.73	4.63%
24	40.09	1.69	3.30	5.56	4.49%
25	41.78	1.69	2.70	4.55	3.67%
26	43.46	1.69	2.10	3.54	2.86%
27	45.15	1.26	1.60	2.02	1.63%
28	45.99	1.93	1.40	2.70	2.18%
29	49.00	1.50	0.00	0.00	0.00%
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>49.00</b>		<b>123.90</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Garner, Laffleur	Data Inputted by / Date:	Gamer 08/01/2007
Notetaker/Recorder:	Garner	Data Input Checked by / Date:	Earles
Other:			

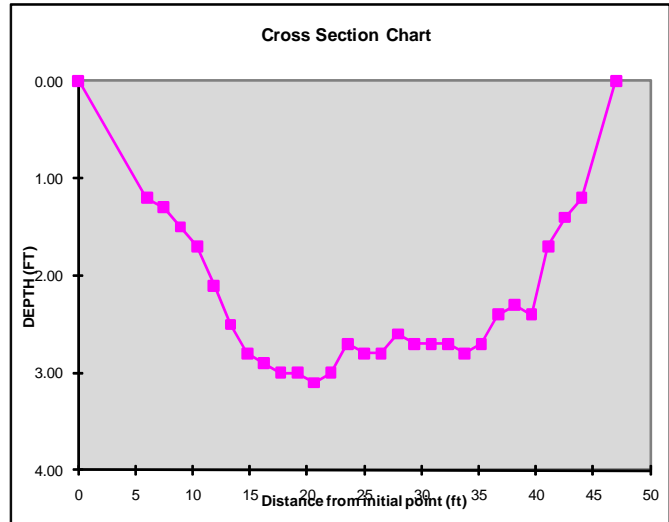
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: GC Dye XS - 02 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Section A-At Fix Monitor Site GC FIX DYE 01  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	47.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	97.18
AVG. DEPTH <sup>3</sup> (ft):	2.07

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6, 8, 7</sup>
1	0.00	3.00	0.00	0.00	
2	6.00	3.73	1.20	4.48	4.61%
3	7.46	1.46	1.30	1.90	1.96%
4	8.92	1.46	1.50	2.19	2.26%
5	10.38	1.46	1.70	2.48	2.56%
6	11.85	1.46	2.10	3.07	3.16%
7	13.31	1.46	2.50	3.65	3.76%
8	14.77	1.46	2.80	4.09	4.21%
9	16.23	1.46	2.90	4.24	4.36%
10	17.69	1.46	3.00	4.38	4.51%
11	19.15	1.46	3.00	4.38	4.51%
12	20.62	1.46	3.10	4.53	4.66%
13	22.08	1.46	3.00	4.38	4.51%
14	23.54	1.46	2.70	3.95	4.06%
15	25.00	1.46	2.80	4.09	4.21%
16	26.46	1.46	2.80	4.09	4.21%
17	27.92	1.46	2.60	3.80	3.91%
18	29.38	1.46	2.70	3.95	4.06%
19	30.85	1.46	2.70	3.95	4.06%
20	32.31	1.46	2.70	3.95	4.06%
21	33.77	1.46	2.80	4.09	4.21%
22	35.23	1.46	2.70	3.95	4.06%
23	36.69	1.46	2.40	3.51	3.61%
24	38.15	1.46	2.30	3.36	3.46%
25	39.61	1.46	2.40	3.51	3.61%
26	41.08	1.46	1.70	2.48	2.56%
27	42.54	1.46	1.40	2.05	2.11%
28	44.00	2.23	1.20	2.68	2.76%
29	47.00	1.50	0.00	0.00	0.00%
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>47.00</b>		<b>97.18</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Garner, Laffleur	Data Inputted by / Date:	Gamer 08/01/2007
Notetaker/Recorder:	Garner	Data Input Checked by / Date:	Earles
Other:			

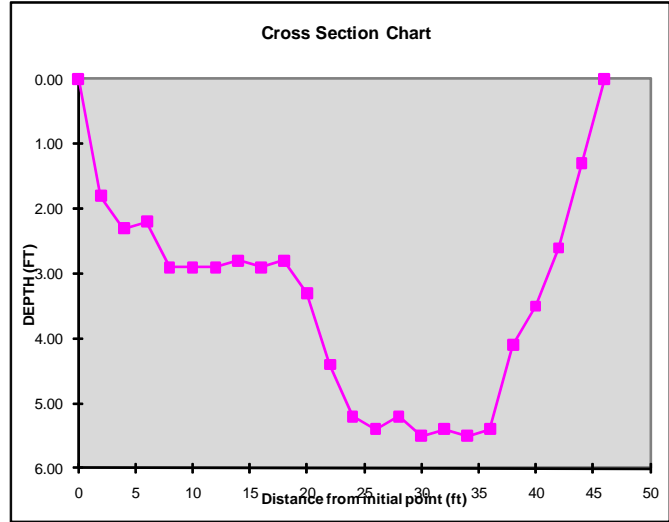
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: GC Dye XS - 03 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Section B-Between GC FIX DYE 01 and 02  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	46.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	160.60
AVG. DEPTH <sup>3</sup> (ft):	3.49

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6, 8, 7</sup>
1	0.00	1.00	0.00	0.00	
2	2.00	2.00	1.80	3.60	2.24%
3	4.00	2.00	2.30	4.60	2.86%
4	6.00	2.00	2.20	4.40	2.74%
5	8.00	2.00	2.90	5.80	3.61%
6	10.00	2.00	2.90	5.80	3.61%
7	12.00	2.00	2.90	5.80	3.61%
8	14.00	2.00	2.80	5.60	3.49%
9	16.00	2.00	2.90	5.80	3.61%
10	18.00	2.00	2.80	5.60	3.49%
11	20.00	2.00	3.30	6.60	4.11%
12	22.00	2.00	4.40	8.80	5.48%
13	24.00	2.00	5.20	10.40	6.48%
14	26.00	2.00	5.40	10.80	6.72%
15	28.00	2.00	5.20	10.40	6.48%
16	30.00	2.00	5.50	11.00	6.85%
17	32.00	2.00	5.40	10.80	6.72%
18	34.00	2.00	5.50	11.00	6.85%
19	36.00	2.00	5.40	10.80	6.72%
20	38.00	2.00	4.10	8.20	5.11%
21	40.00	2.00	3.50	7.00	4.36%
22	42.00	2.00	2.60	5.20	3.24%
23	44.00	2.00	1.30	2.60	1.62%
24	46.00	1.00	0.00	0.00	0.00%
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>46.00</b>		<b>160.60</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Garner, Laffleur	Data Inputted by / Date:	Garner 08/01/2007
Notetaker/Recorder:	Garner	Data Input Checked by / Date:	Earles
Other:			

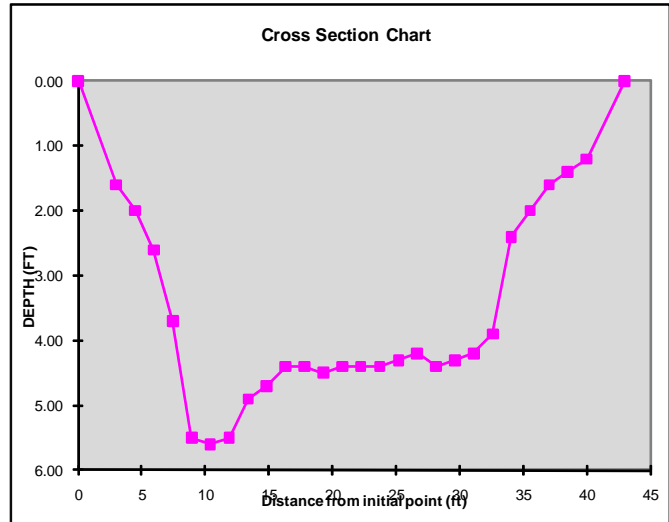
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: GC Dye XS - 04 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Section B-Between GC FIX DYE 01 and 02  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	43.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	144.95
AVG. DEPTH <sup>3</sup> (ft):	3.37

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6, 8, 7</sup>
1	0.00	1.50	0.00	0.00	
2	3.00	2.24	1.60	3.58	2.47%
3	4.48	1.48	2.00	2.96	2.04%
4	5.96	1.48	2.60	3.85	2.65%
5	7.44	1.48	3.70	5.48	3.78%
6	8.92	1.48	5.50	8.14	5.62%
7	10.40	1.48	5.60	8.29	5.72%
8	11.88	1.48	5.50	8.14	5.62%
9	13.36	1.48	4.90	7.25	5.00%
10	14.84	1.48	4.70	6.96	4.80%
11	16.32	1.48	4.40	6.51	4.49%
12	17.80	1.48	4.40	6.51	4.49%
13	19.28	1.48	4.50	6.66	4.59%
14	20.76	1.48	4.40	6.51	4.49%
15	22.24	1.48	4.40	6.51	4.49%
16	23.72	1.48	4.40	6.51	4.49%
17	25.20	1.48	4.30	6.36	4.39%
18	26.68	1.48	4.20	6.22	4.29%
19	28.16	1.48	4.40	6.51	4.49%
20	29.64	1.48	4.30	6.36	4.39%
21	31.12	1.48	4.20	6.22	4.29%
22	32.60	1.48	3.90	5.77	3.98%
23	34.08	1.48	2.40	3.55	2.45%
24	35.56	1.48	2.00	2.96	2.04%
25	37.04	1.48	1.60	2.37	1.63%
26	38.52	1.48	1.40	2.07	1.43%
27	40.00	2.24	1.20	2.69	1.85%
28	43.00	1.50	0.00	0.00	0.00%
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>43.00</b>		<b>144.95</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Garner, Laffleur	Data Inputted by / Date:	Garner 08/01/2007
Notetaker/Recorder:	Garner	Data Input Checked by / Date:	Earles
Other:			

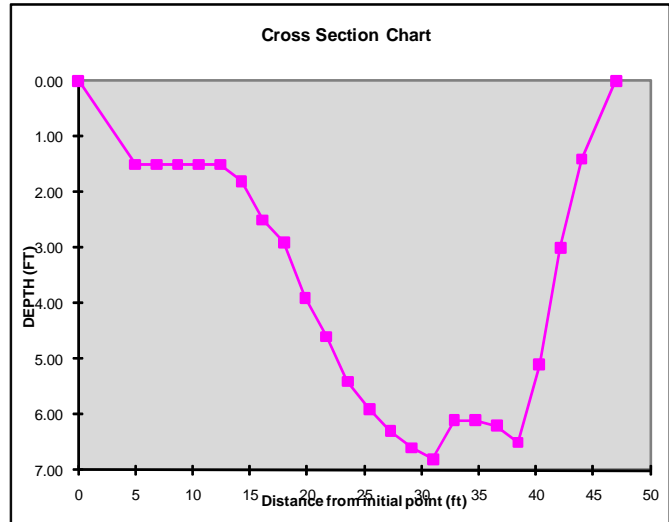
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: GC Dye XS - 05 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Section B-Between GC FIX DYE 01 and 02  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	47.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	167.69
AVG. DEPTH <sup>3</sup> (ft):	3.57

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6, 8, 7</sup>
1	0.00	2.50	0.00	0.00	
2	5.00	3.43	1.50	5.14	3.07%
3	6.86	1.86	1.50	2.79	1.66%
4	8.71	1.86	1.50	2.79	1.66%
5	10.57	1.86	1.50	2.79	1.66%
6	12.43	1.86	1.50	2.79	1.66%
7	14.29	1.86	1.80	3.34	1.99%
8	16.14	1.86	2.50	4.64	2.77%
9	18.00	1.86	2.90	5.39	3.21%
10	19.86	1.86	3.90	7.24	4.32%
11	21.71	1.86	4.60	8.54	5.09%
12	23.57	1.86	5.40	10.03	5.98%
13	25.43	1.86	5.90	10.96	6.53%
14	27.28	1.86	6.30	11.70	6.98%
15	29.14	1.86	6.60	12.26	7.31%
16	31.00	1.86	6.80	12.63	7.53%
17	32.86	1.86	6.10	11.33	6.76%
18	34.71	1.86	6.10	11.33	6.76%
19	36.57	1.86	6.20	11.51	6.87%
20	38.43	1.86	6.50	12.07	7.20%
21	40.28	1.86	5.10	9.47	5.65%
22	42.14	1.86	3.00	5.57	3.32%
23	44.00	2.43	1.40	3.40	2.03%
24	47.00	1.50	0.00	0.00	0.00%
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>47.00</b>		<b>167.69</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Garner, Laffleur	Data Inputted by / Date:	Garner 08/01/2007
Notetaker/Recorder:	Garner	Data Input Checked by / Date:	Earles
Other:			

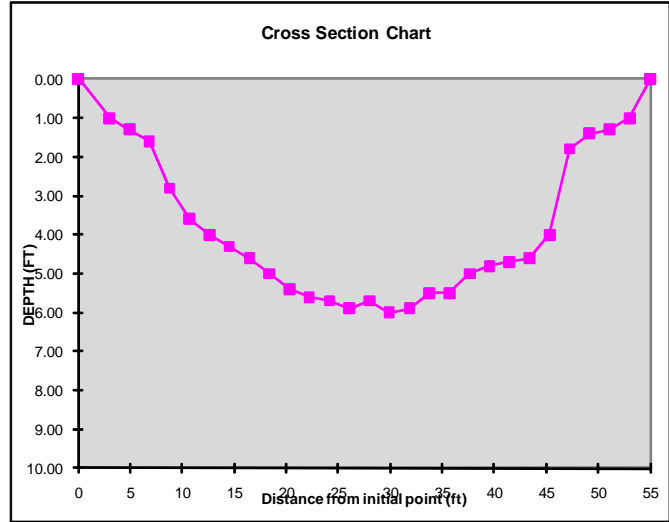
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: GC Dye XS - 06 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Section B-Between GC FIX DYE 01 and 02  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	55.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	208.26
AVG. DEPTH <sup>3</sup> (ft):	3.79

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6, 8, 7</sup>
1	0.00	1.50	0.00	0.00	
2	3.00	2.46	1.00	2.46	1.18%
3	4.92	1.92	1.30	2.50	1.20%
4	6.85	1.92	1.60	3.08	1.48%
5	8.77	1.92	2.80	5.38	2.59%
6	10.69	1.92	3.60	6.92	3.32%
7	12.62	1.92	4.00	7.69	3.69%
8	14.54	1.92	4.30	8.27	3.97%
9	16.46	1.92	4.60	8.85	4.25%
10	18.38	1.92	5.00	9.62	4.62%
11	20.31	1.92	5.40	10.38	4.99%
12	22.23	1.92	5.60	10.77	5.17%
13	24.15	1.92	5.70	10.96	5.26%
14	26.08	1.92	5.90	11.35	5.45%
15	28.00	1.92	5.70	10.96	5.26%
16	29.92	1.92	6.00	11.54	5.54%
17	31.85	1.92	5.90	11.35	5.45%
18	33.77	1.92	5.50	10.58	5.08%
19	35.69	1.92	5.50	10.58	5.08%
20	37.61	1.92	5.00	9.62	4.62%
21	39.54	1.92	4.80	9.23	4.43%
22	41.46	1.92	4.70	9.04	4.34%
23	43.38	1.92	4.60	8.85	4.25%
24	45.31	1.92	4.00	7.69	3.69%
25	47.23	1.92	1.80	3.46	1.66%
26	49.15	1.92	1.40	2.69	1.29%
27	51.08	1.92	1.30	2.50	1.20%
28	53.00	1.96	1.00	1.96	0.94%
29	55.00	1.00	0.00	0.00	0.00%
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>55.00</b>		<b>208.26</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Garner, Laffleur	Data Inputted by / Date:	Garner 08/01/2007
Notetaker/Recorder:	Garner	Data Input Checked by / Date:	Earles
Other:			

- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

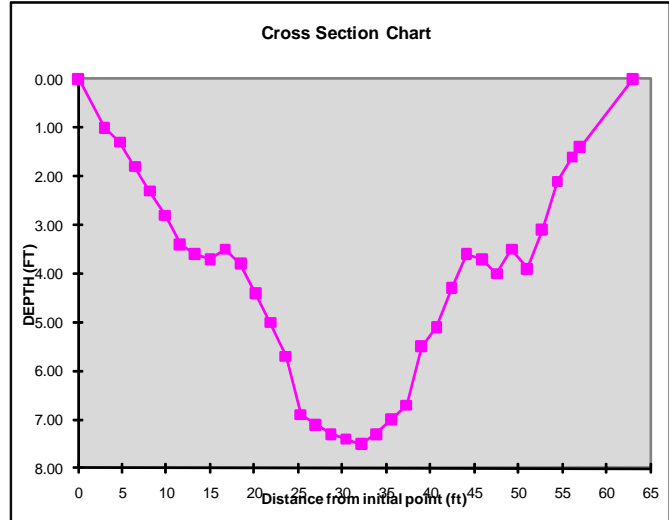


**STREAM CROSS-SECTION SPREADSHEET**

Site Number: XC Dye XS - 07 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Section B-Between GC FIX DYE 01 and 02  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	63.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	244.55
AVG. DEPTH <sup>3</sup> (ft):	3.88

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6, 8, 7</sup>
1	0.00	1.50	0.00	0.00	
2	3.00	2.36	1.00	2.36	0.96%
3	4.71	1.71	1.30	2.23	0.91%
4	6.43	1.71	1.80	3.09	1.26%
5	8.14	1.71	2.30	3.94	1.61%
6	9.86	1.71	2.80	4.80	1.96%
7	11.57	1.71	3.40	5.83	2.38%
8	13.28	1.71	3.60	6.17	2.52%
9	15.00	1.71	3.70	6.34	2.59%
10	16.71	1.71	3.50	6.00	2.45%
11	18.43	1.71	3.80	6.51	2.66%
12	20.14	1.71	4.40	7.54	3.08%
13	21.85	1.71	5.00	8.57	3.50%
14	23.57	1.71	5.70	9.77	3.99%
15	25.28	1.71	6.90	11.83	4.84%
16	27.00	1.71	7.10	12.17	4.98%
17	28.71	1.71	7.30	12.51	5.12%
18	30.42	1.71	7.40	12.68	5.19%
19	32.14	1.71	7.50	12.86	5.26%
20	33.85	1.71	7.30	12.51	5.12%
21	35.57	1.71	7.00	12.00	4.91%
22	37.28	1.71	6.70	11.48	4.70%
23	38.99	1.71	5.50	9.43	3.85%
24	40.71	1.71	5.10	8.74	3.57%
25	42.42	1.71	4.30	7.37	3.01%
26	44.14	1.71	3.60	6.17	2.52%
27	45.85	1.71	3.70	6.34	2.59%
28	47.56	1.71	4.00	6.86	2.80%
29	49.28	1.71	3.50	6.00	2.45%
30	50.99	1.71	3.90	6.68	2.73%
31	52.71	1.71	3.10	5.31	2.17%
32	54.42	1.71	2.10	3.60	1.47%
33	56.13	1.29	1.60	2.06	0.84%
34	57.0	3.43	1.40	4.81	1.97%
35	63.0	3.00	0.00	0.00	0.00%
36					
37					
38					
39					
40					
<b>Total</b>		<b>63.00</b>		<b>244.55</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	Garner, Laffleur	Data Inputted by / Date:	Garner 08/01/2007
Notetaker/Recorder:	Garner	Data Input Checked by / Date:	Earles
Other:			

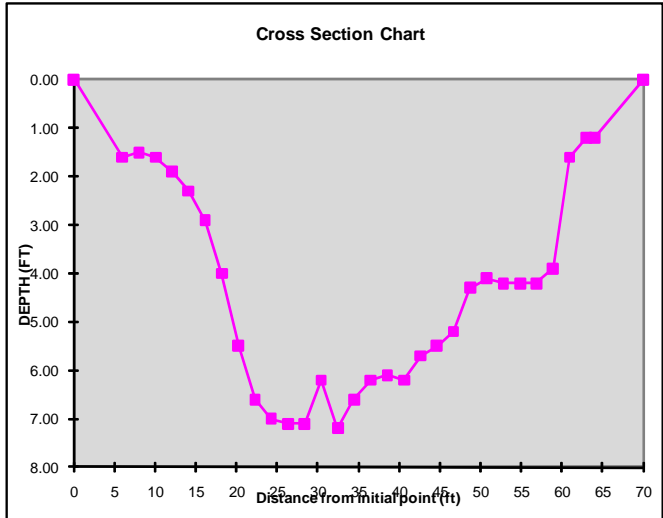
- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.

**STREAM CROSS-SECTION SPREADSHEET**

Site Number: C Dye XS - 08 Subsegment: 040304 Waterbody: Grays Creek  
 Site Description: Section B-At GC FIX DYE 02 Monitor  
 Type of Equipment:  Fathometer  Hydrotrac  Manual  
 Initial Bank:  RDB  LDB  
 Tapedown: \_\_\_\_\_  
 Gauge Height: \_\_\_\_\_  
 Date: 7/26/2007

WIDTH <sup>1</sup> (ft):	70.00
AREA <sup>2</sup> (ft <sup>2</sup> ):	274.78
AVG. DEPTH <sup>3</sup> (ft):	3.93

Subsection	Distance from initial point (ft)	Width <sup>4</sup> (ft)	Depth (ft)	Area <sup>5</sup> (sq.ft.)	Area of element as % of Total Area <sup>6,7</sup>
1	0.00	3.00	0.00	0.00	
2	6.00	4.02	1.60	6.43	2.34%
3	8.04	2.04	1.50	3.05	1.11%
4	10.07	2.04	1.60	3.26	1.18%
5	12.11	2.04	1.90	3.87	1.41%
6	14.14	2.04	2.30	4.68	1.70%
7	16.18	2.04	2.90	5.90	2.15%
8	18.21	2.04	4.00	8.14	2.96%
9	20.25	2.04	5.50	11.19	4.07%
10	22.28	2.04	6.60	13.43	4.89%
11	24.32	2.04	7.00	14.25	5.18%
12	26.35	2.04	7.10	14.45	5.26%
13	28.39	2.04	7.10	14.45	5.26%
14	30.42	2.04	6.20	12.62	4.59%
15	32.46	2.04	7.20	14.65	5.33%
16	34.49	2.04	6.60	13.43	4.89%
17	36.53	2.04	6.20	12.62	4.59%
18	38.56	2.04	6.10	12.41	4.52%
19	40.60	2.04	6.20	12.62	4.59%
20	42.63	2.04	5.70	11.60	4.22%
21	44.67	2.04	5.50	11.19	4.07%
22	46.70	2.04	5.20	10.58	3.85%
23	48.74	2.04	4.30	8.75	3.18%
24	50.77	2.04	4.10	8.34	3.04%
25	52.81	2.04	4.20	8.55	3.11%
26	54.84	2.04	4.20	8.55	3.11%
27	56.88	2.04	4.20	8.55	3.11%
28	58.91	2.04	3.90	7.94	2.89%
29	60.95	2.04	1.60	3.26	1.18%
30	62.98	1.53	1.20	1.83	0.67%
31	64.00	3.51	1.20	4.21	1.53%
32	70.00	3.00	0.00	0.00	0.00%
33					
34					
35					
36					
37					
38					
39					
40					
<b>Total</b>		<b>70.00</b>		<b>274.78</b>	<b>100.00%</b>



Data Collection Crew		Office Data Work	
Measurement made by:	<u>Garner, Laffeur</u>	Data Input by / Date:	<u>Gamer 08/01/2007</u>
Notetaker/Recorder:	<u>Garner</u>	Data Input Checked by / Date:	<u>Earles</u>
Other:			

- Note 1: WIDTH (ft) = sum of the width column
- Note 2: AREA (sq.ft.) = sum of the area column
- Note 3: AVG. DEPTH (ft) = area/width (using the values from this table)
- Note 4: Width of element
- Note 5: Area=Width\*Depth for element
- Note 6: Percent area = element area/total area x 100%
- Note 7: Percent area should be less than 10% as per USGS standard.
- Note 8: Blank fields are cleared from all calculations.
- Note 9: The cross sections are taken at areas representative of the stream.



**Appendix G– Historical and Ambient Data**

**Appendix G1 – Ambient Data Calcs for WQN 0239**



**Appendix G2 – Land Use**

## *Land Use Summary*

*Subsegment:* 40304

*Data Source Name:* LA-GAP June 2000

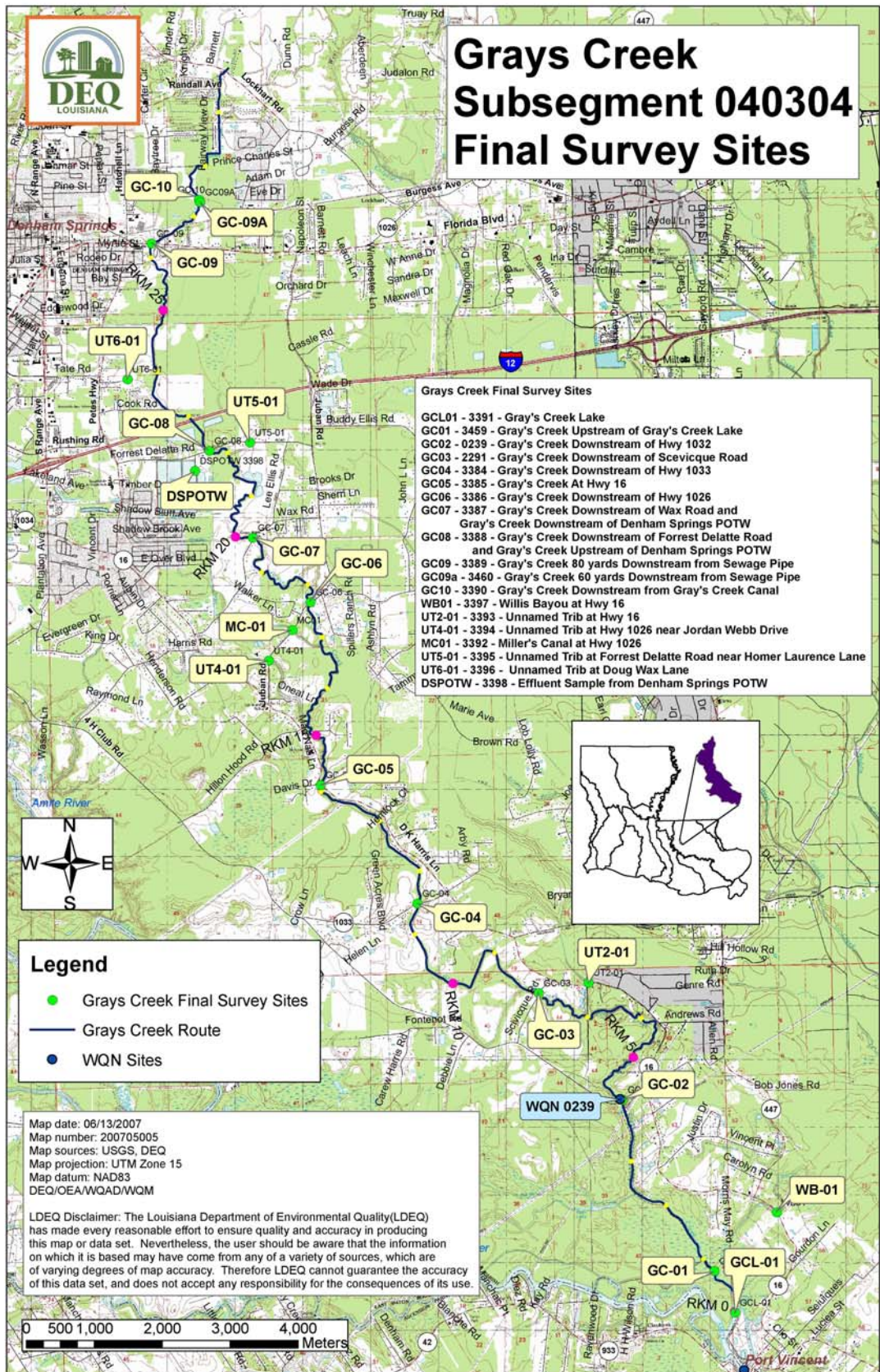
<i>Grid Name</i>	<i>Area (Acres)</i>	<i>% Land Use</i>
Upland Forest Mixed	4834.41	22.99
Vegetated Urban	4535.07	21.57
Agriculture/Cropland/Grassland	3457.34	16.44
Upland Forest Evergreen	2287.33	10.88
Wetland Forest Deciduous	2150.33	10.23
Upland S/S Mixed	1198.04	5.70
Water	1190.03	5.66
Wetland Forest Mixed	503.06	2.39
Upland S/S Evergreen	460.36	2.19
Upland S/S Deciduous	203.27	0.97
Upland Forest Deciduous	91.85	0.44
Upland Barren	42.92	0.20
Wetland S/S Deciduous	37.81	0.18
Fresh Marsh	32.47	0.15
Non-Vegetated Urban	2.67	0.01



## **Appendix H – Maps and Diagrams**

**Appendix H1-**

**Overview map**



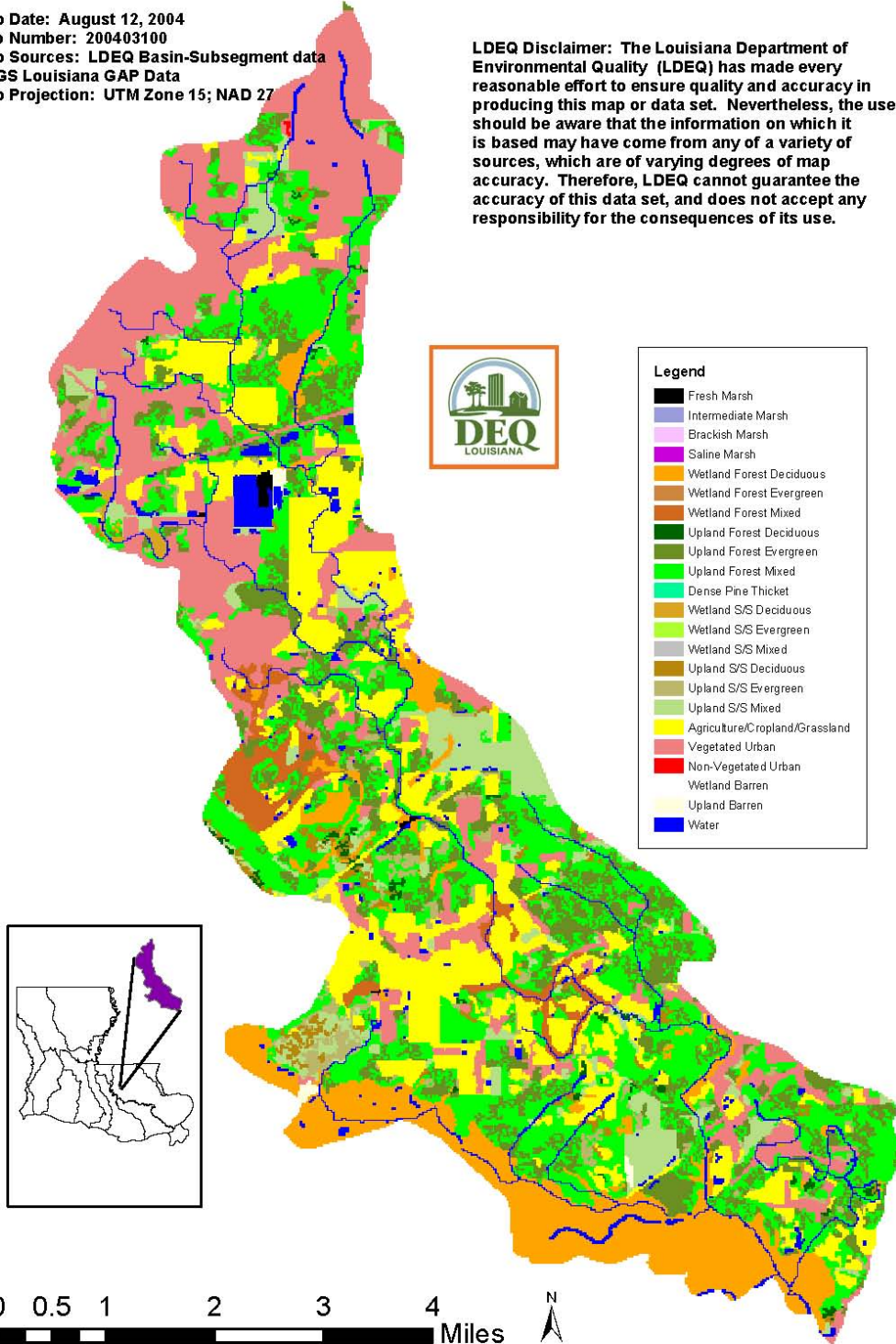
**Appendix H2 – Land Use Map**



## LDEQ Basin Subsegment 040304 - Grays Creek - Headwaters to the Amite River

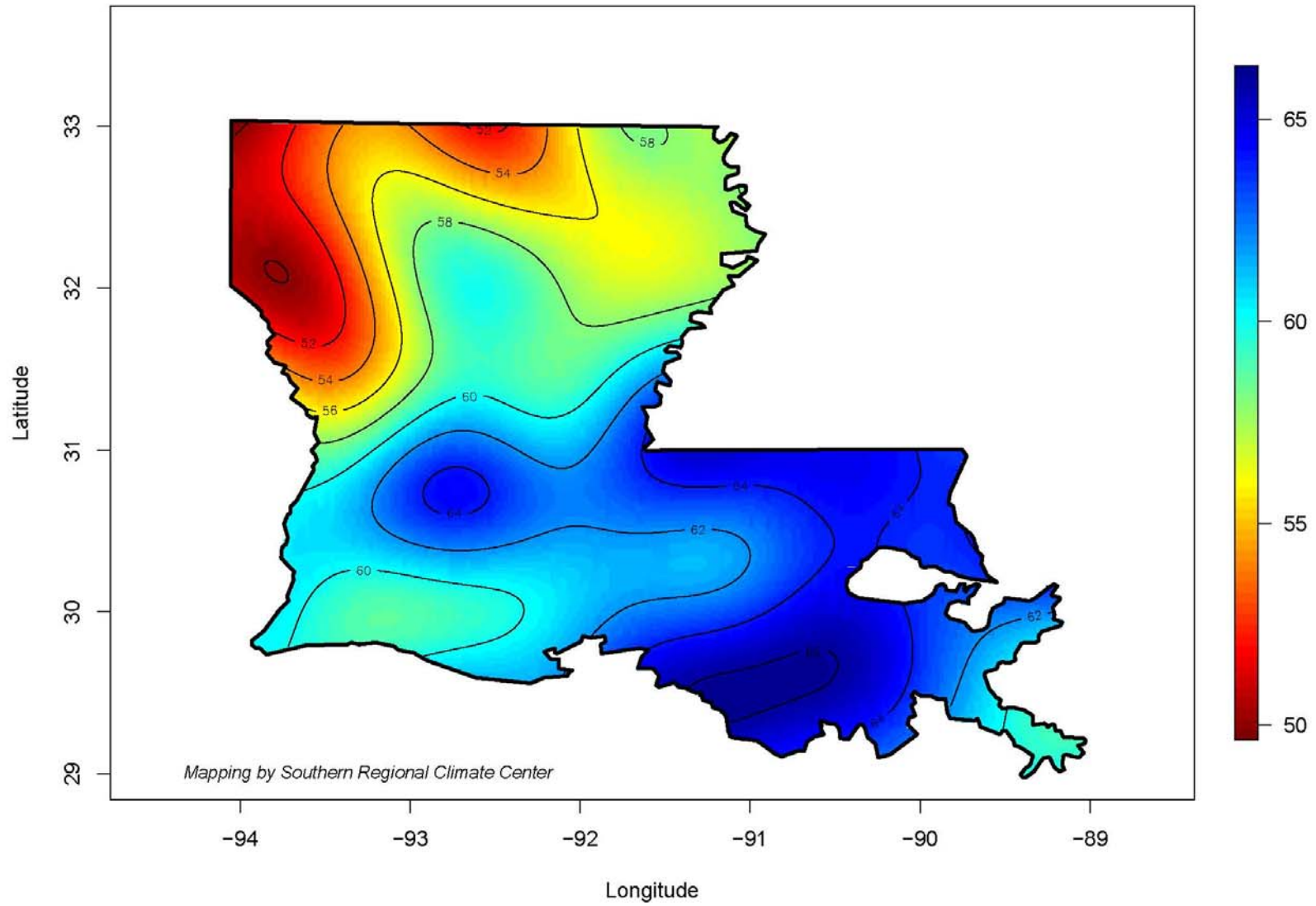
Map Date: August 12, 2004  
 Map Number: 200403100  
 Map Sources: LDEQ Basin-Subsegment data  
 USGS Louisiana GAP Data  
 Map Projection: UTM Zone 15; NAD 27

**LDEQ Disclaimer:** The Louisiana Department of Environmental Quality (LDEQ) has made every reasonable effort to ensure quality and accuracy in producing this map or data set. Nevertheless, the user should be aware that the information on which it is based may have come from any of a variety of sources, which are of varying degrees of map accuracy. Therefore, LDEQ cannot guarantee the accuracy of this data set, and does not accept any responsibility for the consequences of its use.



## **Appendix H3 – La Precipitation Map**

ANNUAL - PRCP based on 1971-2000 normals



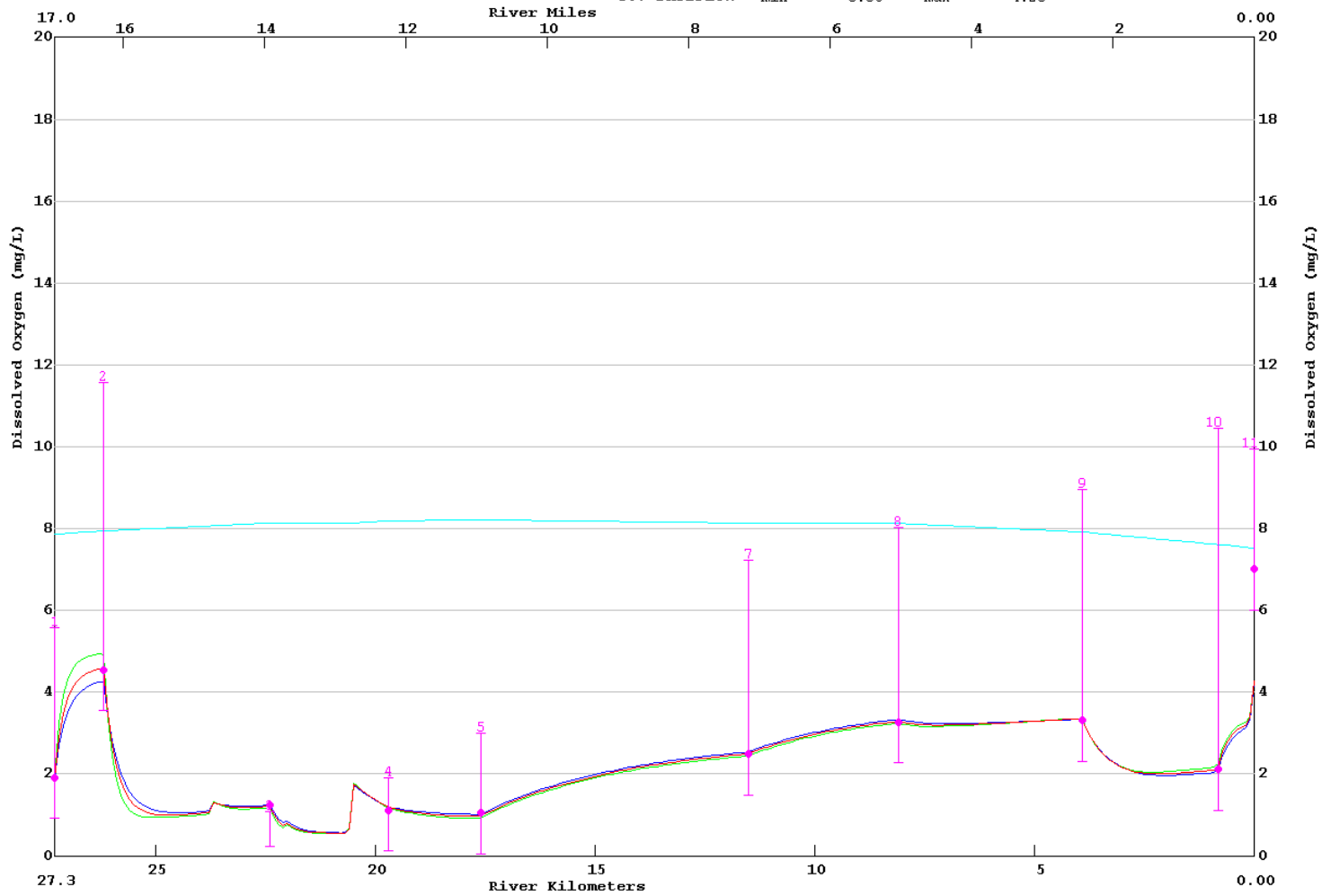
**Appendix I – Sensitivity Analysis**



**Appendix I1 – Sensitivity Output Graphs**

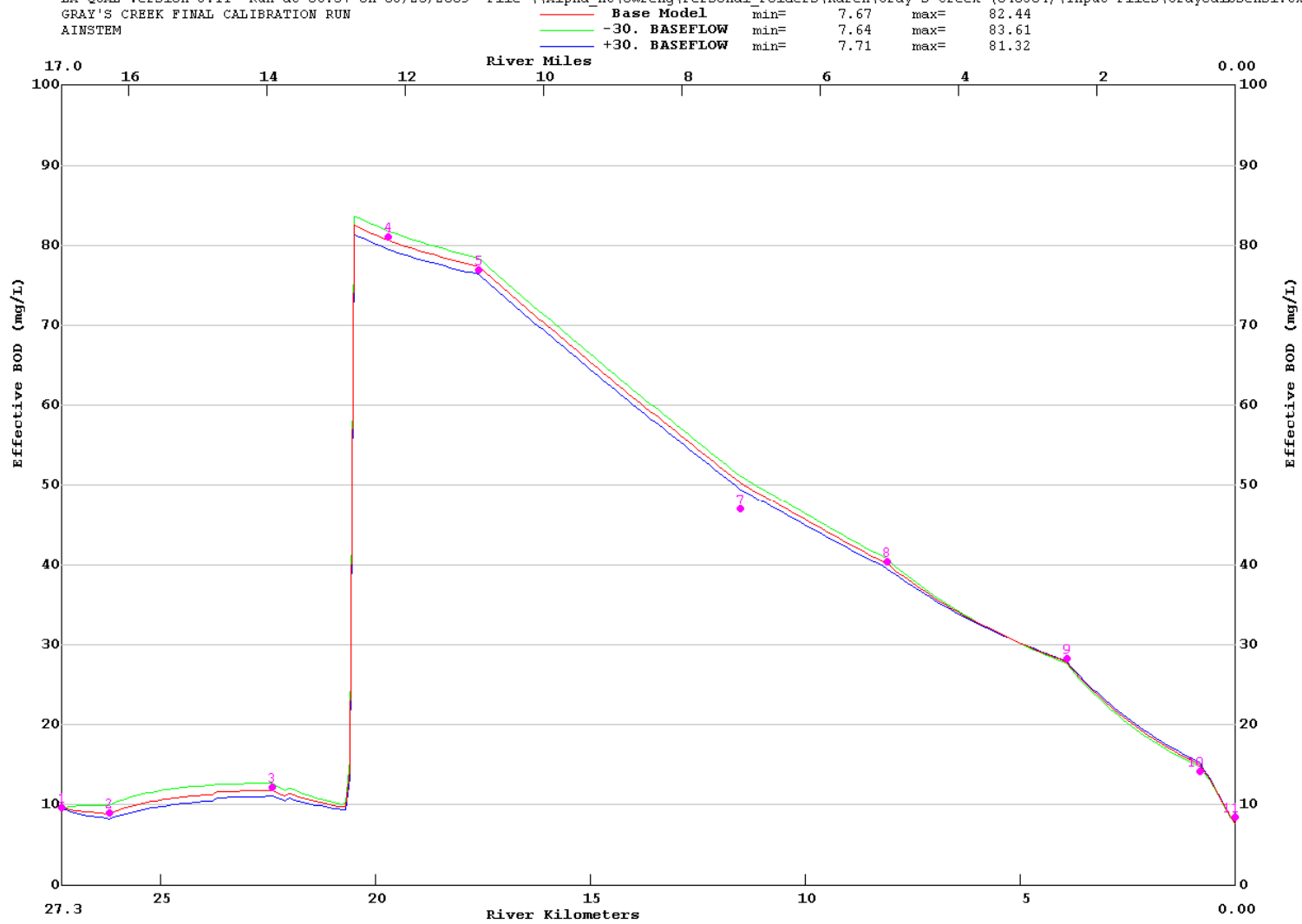
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

LA-QUAL Version 8.11 Run at 06:57 on 08/25/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalbsensi.txt  
 GRAY'S CREEK FINAL CALIBRATION RUN  
 AINSTEM



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

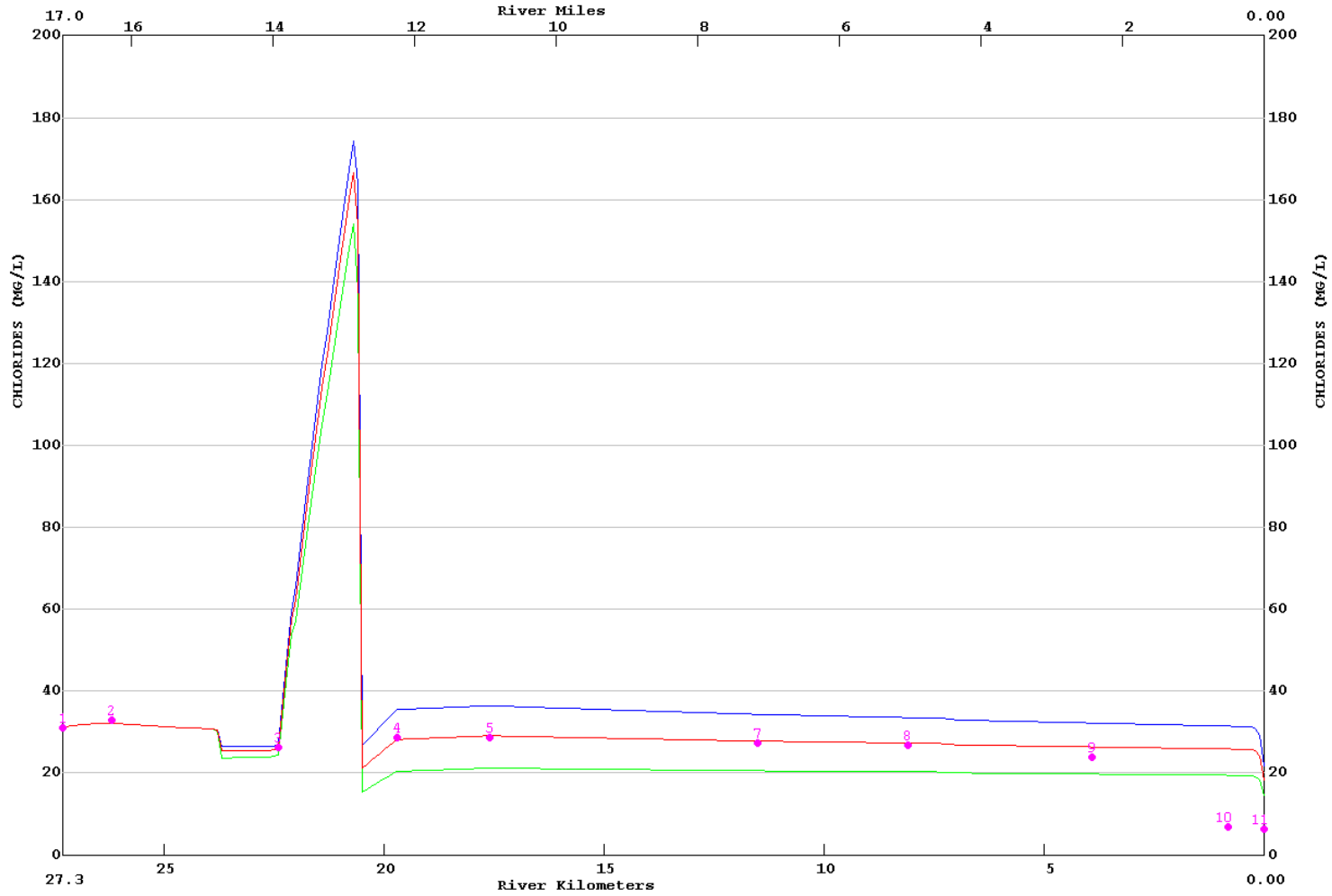
LA-QUAL Version 8.11 Run at 06:57 on 08/25/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalbsensi.txt  
 GRAY'S CREEK FINAL CALIBRATION RUN  
 AINSTEM



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

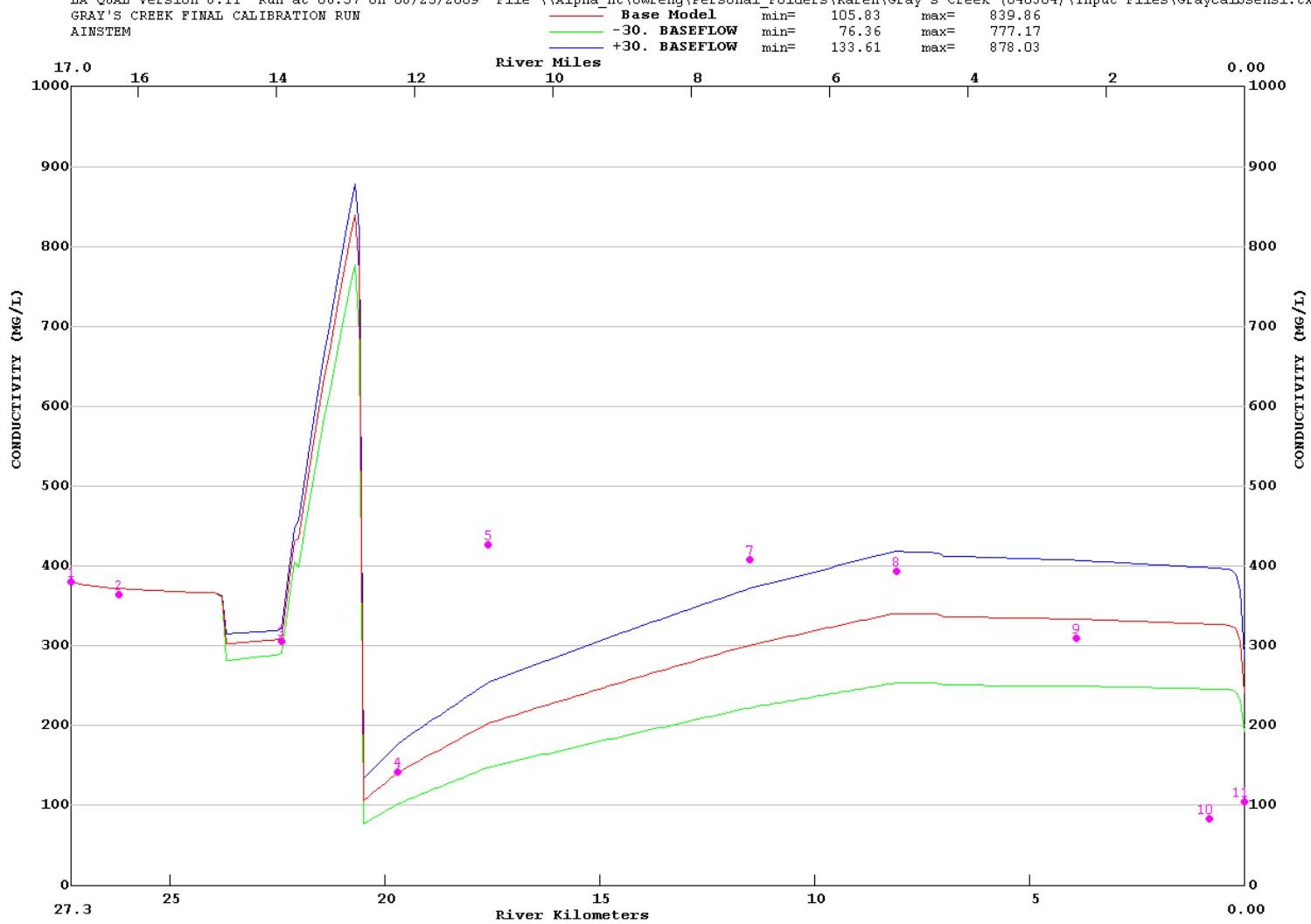
LA-QUAL Version 8.11 Run at 06:57 on 08/25/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalbsensi.txt  
 GRAY'S CREEK FINAL CALIBRATION RUN  
 AINSTEM

Model	min=	max=
Base Model	18.34	166.60
-30. BASEFLOW	14.39	154.17
+30. BASEFLOW	21.77	174.17



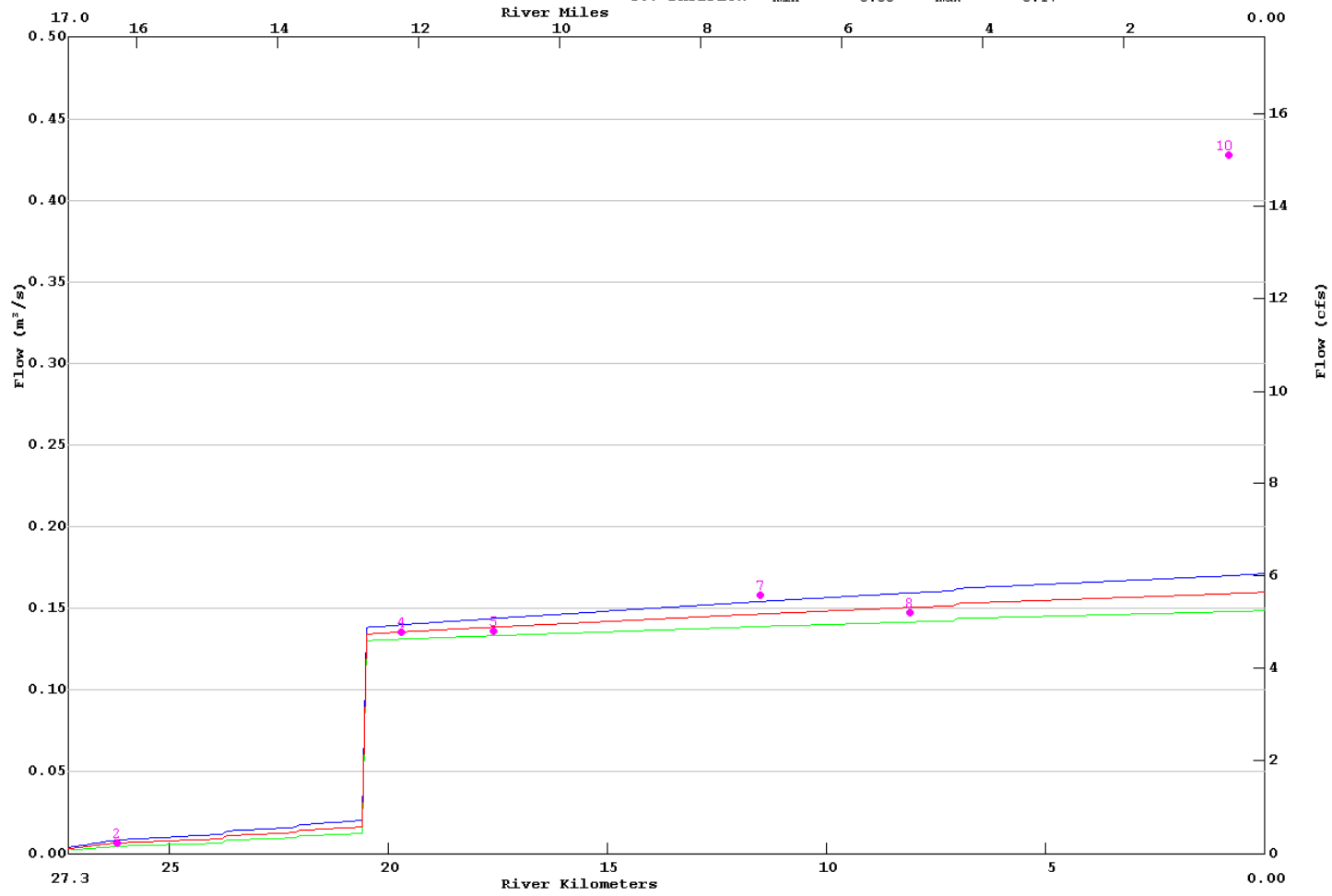
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

LA-QUAL Version 8.11 Run at 06:57 on 08/25/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalbsensi.txt  
 GRAY'S CREEK FINAL CALIBRATION RUN  
 AINSTEM



Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

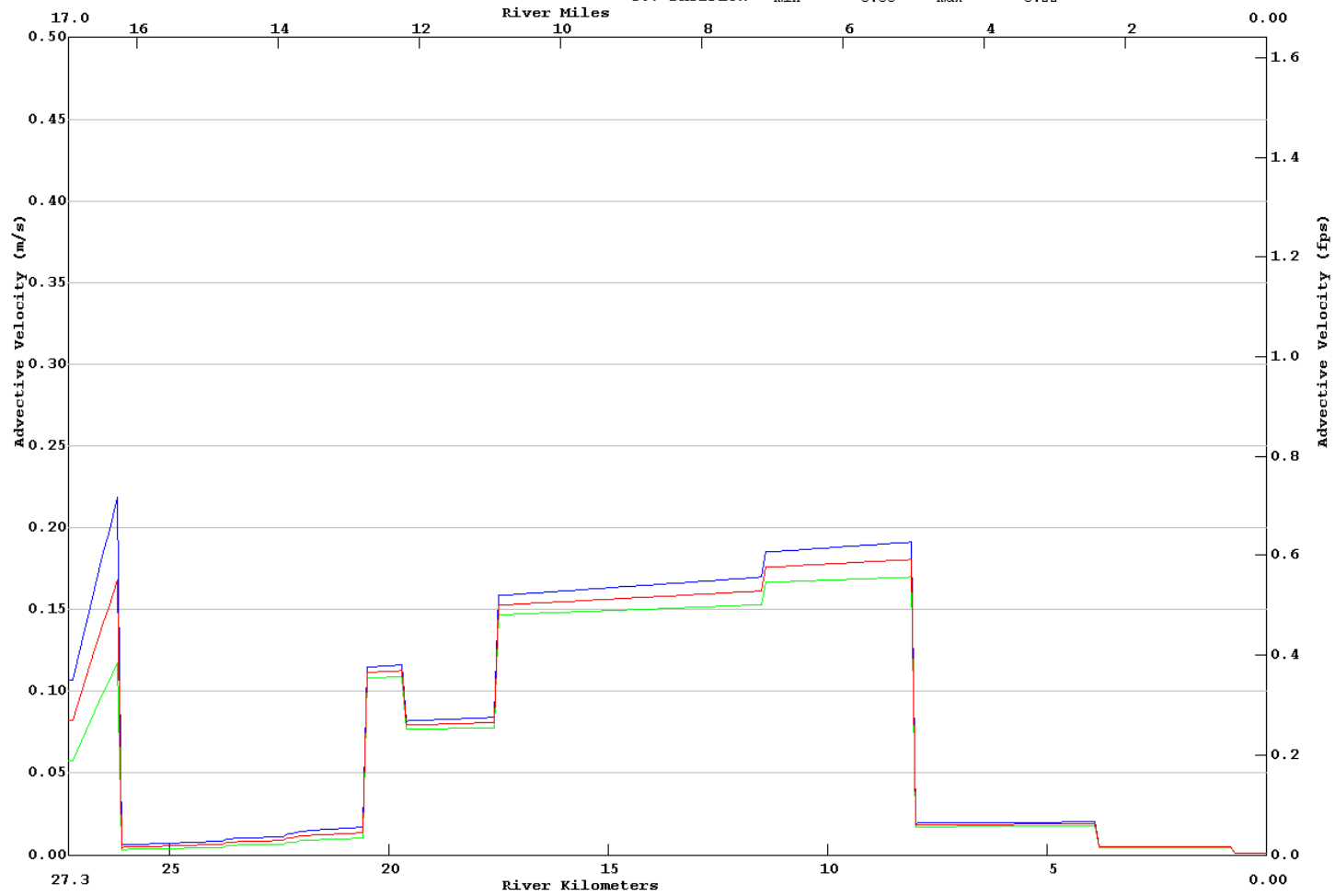
LA-QUAL Version 8.11 Run at 06:57 on 08/25/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalbsensi.txt  
 GRAY'S CREEK FINAL CALIBRATION RUN  
 AINSTEM



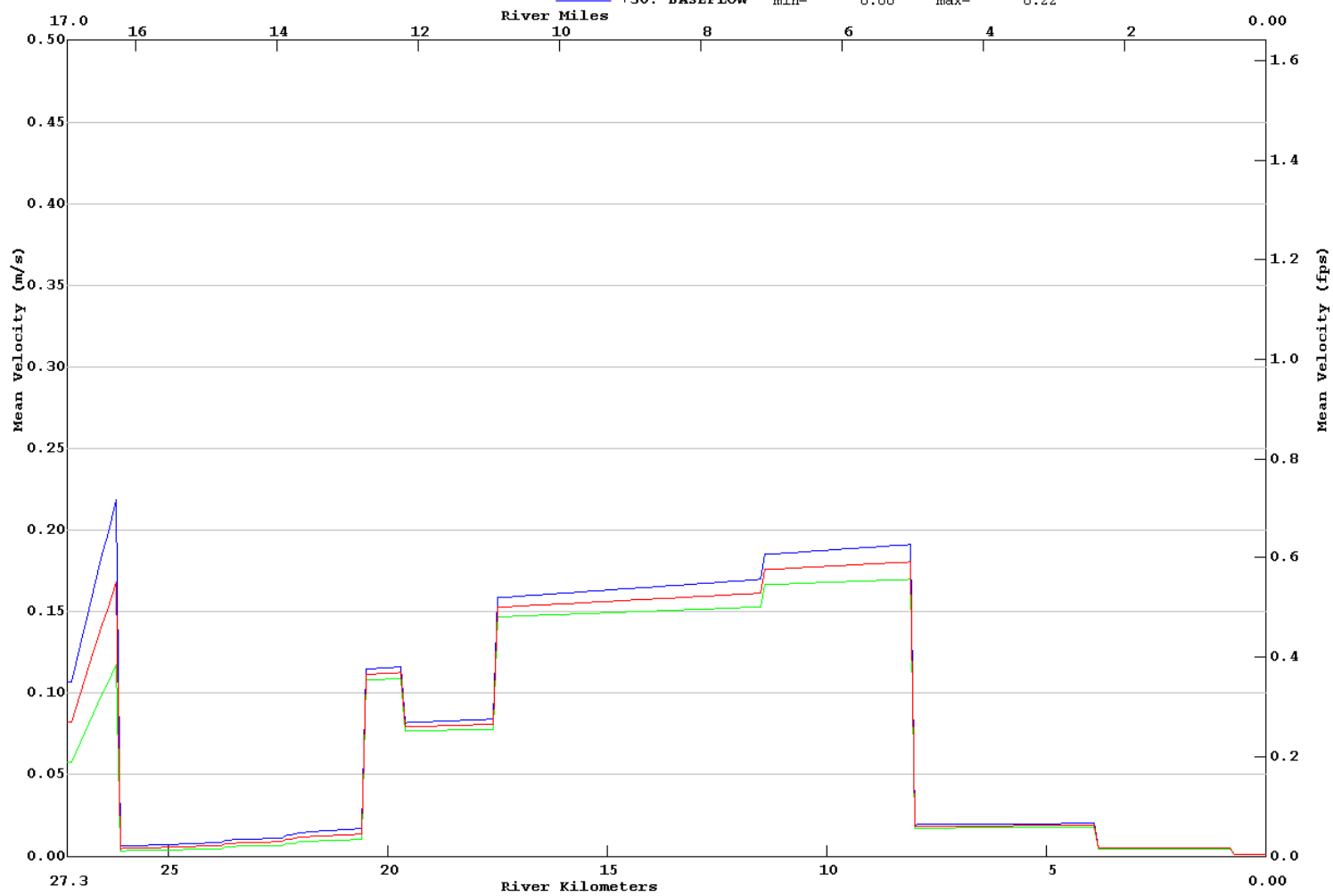
Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

LA-QUAL Version 8.11 Run at 06:57 on 08/25/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalbsensi.txt  
 GRAY'S CREEK FINAL CALIBRATION RUN  
 AINSTEM

Base Model	min=	0.00	max=	0.18
-30. BASEFLOW	min=	0.00	max=	0.17
+30. BASEFLOW	min=	0.00	max=	0.22



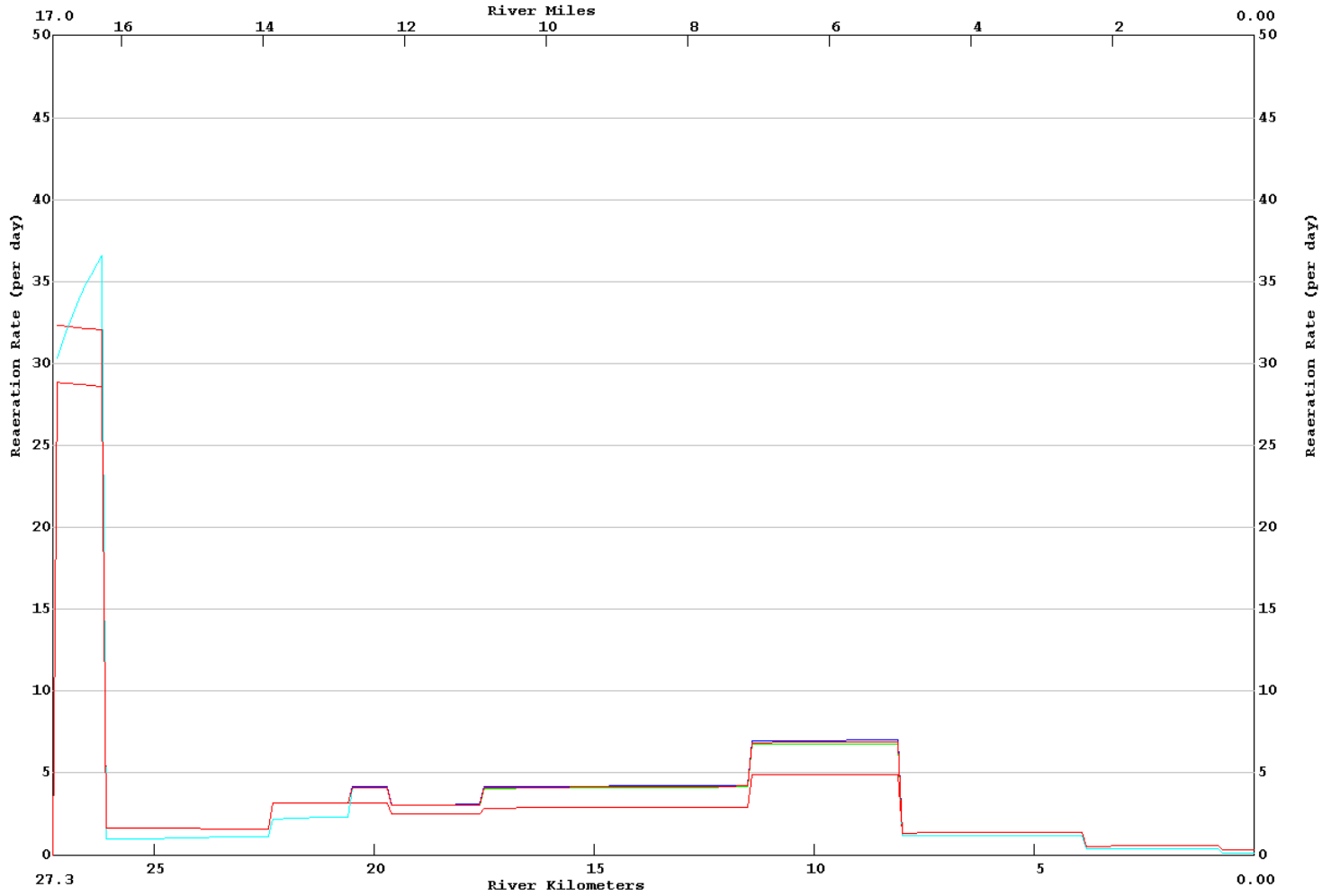
LA-QUAL Version 8.11 Run at 06:57 on 08/25/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalbsensi.txt  
 GRAY'S CREEK FINAL CALIBRATION RUN  
 AINSTEM





Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

LA-QUAL Version 8.11 Run at 06:57 on 08/25/2009 File \\Alpha\_nt\owreng\Personal\_Folders\Karen\Gray's Creek (040304)\Input Files\Graycalbsensi.txt  
 GRAY'S CREEK FINAL CALIBRATION RUN  
 AINSTEM



**Appendix I2 – Sensitivity Output Data Set**

Grays Creek Watershed TMDL  
Subsegment 040304  
Originated: November 23, 2010

### GRAYS CREEK 040304 Sensitivity Analysis Input Data Set

```
CNTROL01      GRAYS CREEK WATERSHED MODEL
CNTROL02      GRAYS CREEK FINAL CALIBRATION RUN
CNTROL04 YES  METRIC UNITS
ENDATA01
MODOPT01     NO  TEMPERATURE
MODOPT02     NO  SALINITY
MODOPT03 YES  CONSERVATIVE MATERIAL I = CHLORIDES           IN MG/L
MODOPT04 YES  CONSERVATIVE MATERIAL II = CONDUCTIVITY      IN MG/L
MODOPT05 YES  DISSOLVED OXYGEN
MODOPT06 YES  BOD1 BIOCHEMICAL OXYGEN DEMAND
MODOPT06     NO  BOD2 BIOCHEMICAL OXYGEN DEMAND
MODOPT08     NO  NBOD OXYGEN DEMAND
MODOPT10     NO  PHOSPHORUS
MODOPT11     NO  CHLOROPHYLL A
MODOPT12     NO  MACROPHYTES
MODOPT13     NO  COLIFORM
ENDATA02
PROGRAM      KL MINIMUM                =      0.7
PROGRAM      INHIBITION CONTROL VALUE  =      3.
PROGRAM      K2 MAXIMUM                 =     25.0
PROGRAM      HYDRAULIC CALCULATION METHOD =      2.
PROGRAM      SETTLING RATE UNITS        =      1.
PROGRAM      DISPERSION EQUATION        =      3.
PROGRAM      ALGAE OXYGEN PROD          =      0.0
PROGRAM      EFFECTIVE BOD DUE TO ALGAE =      0.15
PROGRAM      B1 OXYGEN DEPENDENCE THRESHOLD =      1.0
PROGRAM      B2 OXYGEN DEPENDENCE THRESHOLD =      1.0
PROGRAM      MAXIMUM ITERATION LIMIT    =    1000.0
ENDATA03
!Temperature Correction Constants
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          *****
ENDATA04
ENDATA05
ENDATA06
ENDATA07
!Reach Identification Data
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
```

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

```

!
!      ***  --  *****-----*****-----
!      R#  ID  SITE NAME                RKM      RKM      LENGTH
REACH ID  1  GC GRAYS CREEK CANAL TO HWY 190    27.3     26.2     0.1
REACH ID  2  GC HIGHWAY 190 TO FORREST DELATTE    26.2     22.4     0.1
REACH ID  3  GC FORREST DELATTE ROAD TO DSPOTW     22.4     20.6     0.1
REACH ID  4  GC DENHAM SPRINGS POTW                20.6     20.5     0.1
REACH ID  5  GC DENHAM SPRINGS POTW TO WAX ROAD      20.5     19.7     0.1
REACH ID  6  GC WAX ROAD TO HIGHWAY 1026             19.7     17.6     0.1
REACH ID  7  GC HIGHWAY 1026 TO HIGHWAY 1033          17.6     11.5     0.1
REACH ID  8  GC HIGHWAY 1033 TO SCIVICQUE ROAD        11.5      8.1     0.1
REACH ID  9  GC SCIVICQUE ROAD TO HIGHWAY 1032        8.1      3.9     0.1
REACH ID 10  GC HIGHWAY 1032 TO RKM 0.8                3.9      0.8     0.1
REACH ID 11  GC RKM 0.8 TO GRAYS CREEK LAKE          0.8      0.0     0.1
  
```

ENDATA08

!Advective Hydraulic Coefficients

```

!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!
!      ***  -----*****-----*****-----*****
!
!      a      b      c      d      e      f
!      WIDTH  WIDTH  WIDTH DEPTH  DEPTH  DEPTH
!      R#  COEFF  EXP  CONST COEFF  EXP  CONST SLOPE MANNING
  
```

```

! Reach 1 - GC09
HYDR-1  1  0.00  0.20  1.524 0.00  0.30  0.025
! Reach 2 - GC08
HYDR-1  2  0.00  0.20  2.832 0.00  0.30  0.494
! Reach 3 - GC07 - Above Denham Springs POTW discharge
HYDR-1  3  0.00  0.20  4.877 0.00  0.30  0.247
! Reach 4 - Denham Springs POTW discharge
HYDR-1  4  0.00  0.20  4.877 0.00  0.30  0.247
! Reach 5 - GC07 - Below Denham Springs POTW discharge
HYDR-1  5  0.00  0.20  4.877 0.00  0.30  0.247
! Reach 6 - GC06
HYDR-1  6  0.00  0.20  5.486 0.00  0.30  0.312
! Reach 7 - GC04
HYDR-1  7  0.00  0.20  3.353 0.00  0.30  0.271
! Reach 8 - GC03
HYDR-1  8  0.00  0.20  5.182 0.00  0.30  0.161
! Reach 9 - GC02
HYDR-1  9  0.00  0.20  14.021 0.00  0.30  0.589
! Reach 10 - GC01
HYDR-1 10  0.00  0.20  21.641 0.00  0.30  1.514
! Reach 11 - GCL01
  
```

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Subsegment 040304

Originated: November 23, 2010

HYDR-1 11 0.00 0.20 60.960 0.00 0.30 2.965

ENDATA09

!Dispersive Hydraulic Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

!There were two dye studies done. One was toward the top of the survey and the other toward the bottom.

!The dispersion calculated from the dye study was entered into the overlay file under code 32.

!The range was set to the RKM of the most upstream dye sample site to the most downstream dye sample site  
!for Run 3.

!For the purposes of this TMDL the Dispersion coefficient for Dye Run 3 will be used in both dye studies.

!This is because the data was gathered over the longest time period allowing for a better

!dispersion of the dye into the water body.

!To take into consideration all modes of transport, equation 3, (DL = aHbQcVmd ) in Laqual was used.

!Using b=5/6, c=0, and d=1 will take into account all modes of transport in the manner of the Tracor and  
QUAL2E equations.

!The value for coefficient "a" was calibrated to within the boundaries of the final dye run by setting all  
other parameters

!to the previously mentioned values.

!	R#	RANGE	a	b	c	d
!	***	-----	*****	-----	*****	-----
HYDR-2	1	1.00	10.600	0.833	0.0	1.0
HYDR-2	2	1.00	10.600	0.833	0.0	1.0
HYDR-2	3	1.00	10.600	0.833	0.0	1.0
HYDR-2	4	1.00	10.600	0.833	0.0	1.0
HYDR-2	5	1.00	10.600	0.833	0.0	1.0
HYDR-2	6	1.00	10.600	0.833	0.0	1.0
HYDR-2	7	1.00	10.600	0.833	0.0	1.0
HYDR-2	8	1.00	10.600	0.833	0.0	1.0
HYDR-2	9	1.00	12.200	0.833	0.0	1.0
HYDR-2	10	1.00	12.200	0.833	0.0	1.0
HYDR-2	11	1.00	12.200	0.833	0.0	1.0

ENDATA10

!Initial Conditions

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! R# TEMP SALINITY DO NH3 N NIT NIT PHOS CHL A MACROPHYTES

!Temp - Cont Mont Avg (GC09,GC10)

!Salinity - Cont Mont Avg (GC09,GC10)

!DO - Cont Mont Avg Min (GC09,GC10) + 1

!Chlorophyll A - GC010

INITIAL 1 27.73 0.19 3.23 5.4

Grays Creek Watershed TMDL

Subsegment 040304

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```

!Temp - Cont Mont Avg (GC08,GC09)
!Salinity - Cont Mont Avg (GC08,GC09)
!DO - Cont Mont Avg Min (GC08,GC09) + 1
!Chlorophyll A - GC09
INITIAL      2      27.19      0.16      2.89      2.8
!Temp - Cont Mont Avg (GC07,GC08)
!Salinity - Cont Mont Avg (GC07,GC08)
!DO - Cont Mont Avg Min (GC07,GC08) + 1
!Chlorophyll A - GC08
INITIAL      3      25.85      0.18      1.18      1.1
!Temp - Cont Mont Avg (GC07,GC08)
!Salinity - Cont Mont Avg (GC07,GC08)
!DO - Cont Mont Avg Min (GC07,GC08) + 1
!Chlorophyll A - GC07
INITIAL      4      25.85      0.18      1.18      1.1
!Temp - Cont Mont Avg (GC07,GC08)
!Salinity - Cont Mont Avg (GC07,GC08)
!DO - Cont Mont Avg Min (GC07,GC08) + 1
!Chlorophyll A - GC07
INITIAL      5      25.85      0.18      1.18      237.0
!Temp - Cont Mont Avg (GC06,GC07)
!Salinity - Cont Mont Avg (GC06,GC07)
!DO - Cont Mont Avg Min (GC06,GC07) + 1
!Chlorophyll A - GC07
INITIAL      6      25.48      0.21      1.08      237.0
!Temp - Cont Mont Avg (GC04,GC06)
!Salinity - Cont Mont Avg (GC04,GC06)
!DO - Cont Mont Avg Min (GC04,GC06) + 1
!Chlorophyll A - GC06
INITIAL      7      25.31      0.21      1.77      259.0
!Temp - Cont Mont Avg (GC03,GC04)
!Salinity - Cont Mont Avg (GC03,GC04)
!DO - Cont Mont Avg Min (GC03,GC04) + 1
!Chlorophyll A - GC04
INITIAL      8      25.86      0.18      2.88      142.0
!Temp - Cont Mont Avg (GC02,GC03)
!Salinity - Cont Mont Avg (GC02,GC03)
!DO - Cont Mont Avg Min (GC02,GC03) + 1
!Chlorophyll A - GC03
INITIAL      9      25.91      0.16      3.29      109.0
!Temp - Cont Mont Avg (GC01,GC02)
!Salinity - Cont Mont Avg (GC01,GC02)

```

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!DO - Cont Mont Avg Min (GC01,GC02) + 1

!Chlorophyll A - GC02

INITIAL 10 27.39 0.09 2.71 106.0

!Temp - Cont Mont Avg (GCL01,GC01)

!Salinity - Cont Mont Avg (GCL01,GC01)

!DO - Cont Mont Avg Min (GCL01,GC01) + 1

!Chlorophyll A - GC01

INITIAL 11 29.65 0.03 4.56 80.0

ENDATA11

!Reaeration, Sediment Oxygen Demand and BOD Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8-----9

!2345678901234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

!	REA	KL	BOD 1	BOD 1	BOD 2	BOD 2		
!	R#	EQ	MIN	SOD	DECAY	SETT	DECAY	SETT

!Texas Equation used for all reaches.

!All settling and decay rates determined through calibration.

COEF-1	1	11.0	0.90	0.0750	0.05	0.3000	0.05
COEF-1	2	11.0	3.30	0.0750	0.05	0.3000	0.05
COEF-1	3	11.0	4.00	0.0750	0.05	0.3000	0.05
COEF-1	4	11.0	4.80	0.0750	0.10	0.3000	0.05
COEF-1	5	11.0	5.20	0.0750	0.10	0.3000	0.05
COEF-1	6	11.0	4.10	0.0750	0.10	0.3000	0.05
COEF-1	7	11.0	3.60	0.0750	0.10	0.5000	0.05
COEF-1	8	11.0	3.20	0.0750	0.10	0.5000	0.05
COEF-1	9	11.0	1.80	0.0750	0.10	0.3000	0.01
COEF-1	10	11.0	2.20	0.0750	0.10	0.3000	0.01
COEF-1	11	11.0	1.20	0.0750	0.10	0.3000	0.01

ENDATA12

!Nitrogen and Phosphorus Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

!	NBOD	NBOD	
!	R#	DECAY	SETT

!All settling and decay rates determined through calibration.

COEF-2	1	0.5000	0.40
COEF-2	2	0.5000	0.40
COEF-2	3	0.5000	0.40
COEF-2	4	0.5000	0.40
COEF-2	5	0.5000	0.40
COEF-2	6	0.5000	0.40

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COEF-2	7	0.5000	0.40
COEF-2	8	0.5000	0.40
COEF-2	9	0.5000	0.40
COEF-2	10	0.5000	0.40
COEF-2	11	0.5000	0.40

ENDATA13

ENDATA14

!Coliform and Nonconservative Coefficients

!-----1-----2-----3-----4-----5-----6-----7-----8  
!234567890123456789012345678901234567890123456789012345678901234567890  
! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

ENDATA15

!Incremental Data for Flow, Temperature, Salinity, and Conservatives

!-----1-----2-----3-----4-----5-----6-----7-----8  
!234567890123456789012345678901234567890123456789012345678901234567890  
! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! R# OUTFLOW INFLOW TEMP SALINITY CHLORIDE COND

!

!Temp - Cont Mont Avg (GC09,GC10)

!Salinity - Cont Mont Avg (GC09,GC10)

!Conductivity and Chlorides achieved through calibration.

INCR-1 1 0.0000 0.0036 27.73 0.19 33.0 365

!Temp - Cont Mont Avg (GC08,GC09)

!Salinity - Cont Mont Avg (GC08,GC09)

!Conductivity and Chlorides achieved through calibration.

INCR-1 2 0.0000 0.0041 27.190 0.16 27.0 350

!Temp - Cont Mont Avg (GC07,GC08)

!Salinity - Cont Mont Avg (GC07,GC08)

!Conductivity and Chlorides achieved through calibration.

INCR-1 3 0.0000 0.0028 25.850 0.18 900.0 3700

!Temp - Cont Mont Avg (GC06,GC07)

!Salinity - Cont Mont Avg (GC06,GC07)

!Conductivity and Chlorides achieved through calibration.

INCR-1 4 0.0000 0.0000 25.480 0.21 900.0 3700

!Temp - Cont Mont Avg (GC06,GC07)

!Salinity - Cont Mont Avg (GC06,GC07)

!Conductivity and Chlorides achieved through calibration.

INCR-1 5 0.0000 0.0013 25.480 0.21 750.0 3700

!Temp - Cont Mont Avg (GC06,GC07)

!Salinity - Cont Mont Avg (GC06,GC07)

!Conductivity and Chlorides achieved through calibration.

INCR-1 6 0.0000 0.0030 25.480 0.21 70.0 3000



Grays Creek Watershed TMDL

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Originated: November 23, 2010

```

!Temp - Cont Mont Avg (GC04,GC06)
!Salinity - Cont Mont Avg (GC04,GC06)
!Conductivity and Chlorides achieved through calibration.
INCR-1      7      0.0000  0.0080  25.310      0.21      5.0  2000
!Temp - Cont Mont Avg (GC03,GC04)
!Salinity - Cont Mont Avg (GC03,GC04)
INCR-1      8      0.0000  0.0040  25.860      0.18      10.0  1800
!Temp - Cont Mont Avg (GC02,GC03)
!Salinity - Cont Mont Avg (GC02,GC03)
INCR-1      9      0.0000  0.0040  25.910      0.16      0.0  180
!Temp - Cont Mont Avg (GC01,GC02)
!Salinity - Cont Mont Avg (GC01,GC02)
INCR-1     10      0.0000  0.0030  27.390      0.09      00.0  0
!Temp - Cont Mont Avg (GCL01,GC01)
!Salinity - Cont Mont Avg (GCL01,GC01)
INCR-1     11      0.0000  0.0010  29.650      0.03      0.0  0
  
```

ENDATA16

!Incremental Data for DO, BOD, and Nitrogen

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

!	R#	DO	BOD 1	NBOD	NH3 N	NIT NIT	BOD 2
!DO - Best Professional Judgement							
INCR-2	1	0.00	3.000	0.000			0.000
!DO - Best Professional Judgement							
INCR-2	2	0.00	3.000	0.000			0.000
!DO - Best Professional Judgement							
INCR-2	3	0.00	3.000	0.000			0.000
!DO - Best Professional Judgement							
INCR-2	4	0.00	3.000	0.000			0.000
!DO - Best Professional Judgement							
INCR-2	5	0.00	3.000	0.000			0.000
!DO - Best Professional Judgement							
INCR-2	6	0.00	3.000	0.000			0.000
!DO - Best Professional Judgement							
INCR-2	7	0.00	3.000	0.000			0.000
!DO - Best Professional Judgement							
INCR-2	8	0.00	3.000	0.000			0.000
!DO - Best Professional Judgement							
INCR-2	9	0.00	3.000	0.000			0.000
!DO - Best Professional Judgement							
INCR-2	10	0.00	3.000	0.000			0.000

Grays Creek Watershed TMDL

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!DO - Best Professional Judgement

INCR-2 11 0.00 3.000 0.000 0.000

ENDATA17

!Incremental Data for Phosphorus, Chlorophyll, Coliform and Nonconservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! R# PHOSPH CHL A COLIFORM NONCONSERVATIVE

INCR-3 1  
 INCR-3 2  
 INCR-3 3  
 INCR-3 4  
 INCR-3 5  
 INCR-3 6  
 INCR-3 7  
 INCR-3 8  
 INCR-3 9  
 INCR-3 10  
 INCR-3 11

ENDATA18

!Nonpoint Source Data

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! R# BOD 1 NBOD COLIFORM NONCONS DO BOD 2

NONPOINT 1 2.50 0.00  
 NONPOINT 2 17.00 0.00  
 NONPOINT 3 5.00 0.00  
 NONPOINT 4 3.00 0.00  
 NONPOINT 5 8.00 0.00  
 NONPOINT 6 1.00 0.00  
 NONPOINT 7 0.00 0.00  
 NONPOINT 8 1.00 0.00  
 NONPOINT 9 25.00 0.00  
 NONPOINT 10 1.00 0.00  
 NONPOINT 11 95.00 0.00

ENDATA19

!Headwater Data for Flow, Temperature, Salinity, and Conservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! E# NAME FLOW TEMP SALIN CHLORIDE COND

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!A minimal flow used as per LTP.

!Temp - Cont Mont Avg (GC01)

!Salinity - Cont Mont Avg (GC01)

!Chloride - Lab Data (GC01)

!Conductivity - Insitu (GC01)

HDWTR-1 1 HEADWATER 0.0028 26.69 0.20 31.1 380.0

ENDATA20

!Headwater Data for DO, BOD, and Nitrogen

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! E# DO BOD 1 NBOD NH3 N NIT NIT BOD 2

!DO - Cont Mont Avg Min (GC01) + 1

!BOD1, BOD2, and NBOD - (GC01)

HDWTR-2 1 1.91 9.5710 0.0000 0.0000

ENDATA21

!Headwater Data for Phosphorus, Chlorophyll, Coliform, and Nonconservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*

! E# PHOSPHOR CHL A COLIFORM NONCONSERVATIVE

HDWTR-3 1

ENDATA22

ENDATA23

!Wasteload Data for Flow, Temperature, Salinity, and Conservatives

!-----1-----2-----3-----4-----5-----6-----7-----8

!234567890123456789012345678901234567890123456789012345678901234567890

! \*\*\*\* -----\*\*\*\*\*-----\*\*\*\*\*-----\*\*\*\*\*

! E# NAME FLOW TEMP SALINITY CHLORIDE COND

!Average flow from DMR's were used.

!Penny's MHP AI#85193 Located on Unnamed Trib #6

WSTLD-1 36 UT#6 & PENNY MHP 0.0019 24.61 .0 0.0 0

!Average flow from DMR's were used.

!Lakeside Cove Subdivision AI#86480

!Clear Lake Subdivision AI#121715

WSTLD-1 53 UT#5 & CLUSTER 3 0.0011 25.09 .0 0.0 0

!Average flow from DMR's were used.

!Denham Springs POTW AI#19808

WSTLD-1 68 DS POTW 0.1178 30.00 .0 0.0 0

WSTLD-1 203 UT#2 0.0014 26.18 .0 0.0 0

ENDATA24

!Wasteload Data for DO, BOD, and Nitrogen

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```

!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          **** -----*****-----*****-----*****-----*****
!          E#      DO      BOD 1      NBOD      NH3 N      NIT NIT  BOD 2
!Penny's MHP AI#85193 Located on Unnamed Trib #6
WSTLD-2    36      2.84    12.8725      0.0000      0.0000
!Lakeside Cove Subdivision AI#86480
!Clear Lake Subdivision AI#121715
WSTLD-2    53      2.82    17.7005      0.0000      0.0000
!Denham Springs POTW AI#19808
WSTLD-2    68      2.00    52.1253      0.0000      0.0000
WSTLD-2   203      5.51    13.9210      0.0000      0.0000

```

ENDATA25

```

!Wasteload Data for Phosphorus, Chlorophyll, Coliform, and Nonconservatives
!-----1-----2-----3-----4-----5-----6-----7-----8
!234567890123456789012345678901234567890123456789012345678901234567890
!          **** -----*****-----*****-----*****

```

```

!          E#  PHOSPHOR  CHL A    COLIFORM NONCONSERVATIVE
!Penny's MHP AI#85193 Located on Unnamed Trib #6
WSTLD-3    36      5.4
!Lakeside Cove Subdivision AI#86480
!Clear Lake Subdivision AI#121715
WSTLD-3    53      6.3
!Denham Springs POTW AI#19808
WSTLD-3    68      0.0
WSTLD-3   203      2.6

```

ENDATA26

```

!Site GCL01 Cont Mont
LOWER BC TEMPERATURE = 30.38
!Site GCL01 Cont Mont
LOWER BC SALINITY = 0.02
!Site GCL01 Lab
LOWER BC CONSERVATIVE MATERIAL I = 6.20
!Site GCL01 Insitu
LOWER BC CONSERVATIVE MATERIAL II = 103.80
!Site GCL01 Cont Mont
LOWER BC DISSOLVED OXYGEN = 7.00
!Site GCL01 Lab
LOWER BC BOD1 BIOCHEMICAL OXYGEN DEMAND = 8.4326
!Site GCL01 Lab
LOWER BC BOD2 BIOCHEMICAL OXYGEN DEMAND = 0.0000
!Site GCL01 Lab

```





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**GRAYS CREEK 040304 Sensitivity Analysis Output Dataset**

LA-QUAL Version 8.11  
 Louisiana Department of Environmental Quality

Input file is \\Alpha\_nt\owreng\Personal\_Folders\Karen\Grays Creek (040304)\Input Files\Graycalbsensi.txt  
 Output produced at 06:57 on 08/25/2009

\$\$\$ DATA TYPE 1 (TITLES AND CONTROL CARDS) \$\$\$

CARD TYPE	CONTROL TITLES
TITLE01	GRAYS CREEK WATERSHED MODEL
TITLE02	GRAYS CREEK FINAL CALIBRATION RUN
CNTR0L04 YES	METRIC UNITS
ENDATA01	

\$\$\$ DATA TYPE 2 (MODEL OPTIONS) \$\$\$

CARD TYPE	MODEL OPTION
MODOPT01 NO	TEMPERATURE
MODOPT02 NO	SALINITY
MODOPT03 YES	CONSERVATIVE MATERIAL I = CHLORIDES IN MG/L
MODOPT04 YES	CONSERVATIVE MATERIAL II = CONDUCTIVITY IN MG/L
MODOPT05 YES	DISSOLVED OXYGEN
MODOPT06 YES	BOD1 BIOCHEMICAL OXYGEN DEMAND
MODOPT06 NO	BOD2 BIOCHEMICAL OXYGEN DEMAND
MODOPT08 NO	NBOD OXYGEN DEMAND
MODOPT10 NO	PHOSPHORUS
MODOPT11 NO	CHLOROPHYLL A
MODOPT12 NO	MACROPHYTES
MODOPT13 NO	COLIFORM
ENDATA02	

\$\$\$ DATA TYPE 3 (PROGRAM CONSTANTS) \$\$\$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE
PROGRAM	KL MINIMUM	= 0.70000 meters/day
PROGRAM	INHIBITION CONTROL VALUE	= 3.00000 (inhibit all rates but SOD)
PROGRAM	K2 MAXIMUM	= 25.00000 per day
PROGRAM	HYDRAULIC CALCULATION METHOD	= 2.00000 (widths and depths)
PROGRAM	SETTLING RATE UNITS	= 1.00000 (values entered as m/day)
PROGRAM	DISPERSION EQUATION	= 3.00000 (values entered as a function of D,Q,Vmean)
PROGRAM	ALGAE OXYGEN PROD	= 0.00000 mg O/ug chl a/day
PROGRAM	EFFECTIVE BOD DUE TO ALGAE	= 0.15000 mg/L BOD per ug/L chl a
PROGRAM	B1 OXYGEN DEPENDENCE THRESHOLD	= 1.00000 mg/L
PROGRAM	B2 OXYGEN DEPENDENCE THRESHOLD	= 1.00000 mg/L
PROGRAM	MAXIMUM ITERATION LIMIT	= 1000.00000
ENDATA03		

\$\$\$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) \$\$\$

CARD TYPE	RATE CODE	THETA VALUE
ENDATA04		

\$\$\$ CONSTANTS TYPE 5 (TEMPERATURE DATA) \$\$\$

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CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA05

\$\$\$ DATA TYPE 6 (ALGAE CONSTANTS) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA06

\$\$\$ DATA TYPE 7 (MACROPHYTE CONSTANTS) \$\$\$

CARD TYPE DESCRIPTION OF CONSTANT VALUE

ENDATA07

\$\$\$ DATA TYPE 8 (REACH IDENTIFICATION DATA) \$\$\$

CARD TYPE	REACH	ID	NAME	BEGIN REACH km	END REACH km	ELEM LENGTH km	REACH LENGTH km	ELEMS PER RCH	BEGIN ELEM NUM	END ELEM NUM
REACH ID	1	GC	GRAYS CREEK CANAL TO HWY 190	27.30	26.20	0.1000	1.10	11	1	11
REACH ID	2	GC	HIGHWAY 190 TO FORREST DELATTE	26.20	22.40	0.1000	3.80	38	12	49
REACH ID	3	GC	FORREST DELATTE ROAD TO DSPOTW	22.40	20.60	0.1000	1.80	18	50	67
REACH ID	4	GC	DENHAM SPRINGS POTW	20.60	20.50	0.1000	0.10	1	68	68
REACH ID	5	GC	DENHAM SPRINGS POTW TO WAX ROAD	20.50	19.70	0.1000	0.80	8	69	76
REACH ID	6	GC	WAX ROAD TO HIGHWAY 1026	19.70	17.60	0.1000	2.10	21	77	97
REACH ID	7	GC	HIGHWAY 1026 TO HIGHWAY 1033	17.60	11.50	0.1000	6.10	61	98	158
REACH ID	8	GC	HIGHWAY 1033 TO SCIVICQUE ROAD	11.50	8.10	0.1000	3.40	34	159	192
REACH ID	9	GC	SCIVICQUE ROAD TO HIGHWAY 1032	8.10	3.90	0.1000	4.20	42	193	234
REACH ID	10	GC	HIGHWAY 1032 TO RKM 0.8	3.90	0.80	0.1000	3.10	31	235	265
REACH ID	11	GC	RKM 0.8 TO GRAYS CREEK LAKE	0.80	0.00	0.1000	0.80	8	266	273

ENDATA08

\$\$\$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	WIDTH "A"	WIDTH "B"	WIDTH "C"	DEPTH "D"	DEPTH "E"	DEPTH "F"	SLOPE	MANNINGS "N"
HYDR-1	1	GC	0.000	0.200	1.524	0.000	0.300	0.025	0.00000	0.000
HYDR-1	2	GC	0.000	0.200	2.832	0.000	0.300	0.494	0.00000	0.000
HYDR-1	3	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	4	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	5	GC	0.000	0.200	4.877	0.000	0.300	0.247	0.00000	0.000
HYDR-1	6	GC	0.000	0.200	5.486	0.000	0.300	0.312	0.00000	0.000
HYDR-1	7	GC	0.000	0.200	3.353	0.000	0.300	0.271	0.00000	0.000
HYDR-1	8	GC	0.000	0.200	5.182	0.000	0.300	0.161	0.00000	0.000
HYDR-1	9	GC	0.000	0.200	14.021	0.000	0.300	0.589	0.00000	0.000
HYDR-1	10	GC	0.000	0.200	21.641	0.000	0.300	1.514	0.00000	0.000
HYDR-1	11	GC	0.000	0.200	60.960	0.000	0.300	2.965	0.00000	0.000

ENDATA09

\$\$\$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
HYDR	1	GC	1.00	10.600	0.833	0.000	1.000
HYDR	2	GC	1.00	10.600	0.833	0.000	1.000



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HYDR	3	GC	1.00	10.600	0.833	0.000	1.000
HYDR	4	GC	1.00	10.600	0.833	0.000	1.000
HYDR	5	GC	1.00	10.600	0.833	0.000	1.000
HYDR	6	GC	1.00	10.600	0.833	0.000	1.000
HYDR	7	GC	1.00	10.600	0.833	0.000	1.000
HYDR	8	GC	1.00	10.600	0.833	0.000	1.000
HYDR	9	GC	1.00	12.200	0.833	0.000	1.000
HYDR	10	GC	1.00	12.200	0.833	0.000	1.000
HYDR	11	GC	1.00	12.200	0.833	0.000	1.000

ENDATA10

\$\$\$ DATA TYPE 11 (INITIAL CONDITIONS) \$\$\$

CARD TYPE	REACH	ID	TEMP	SALIN	DO	NH3	NO3+2	PHOS	CHL A	MACRO
INITIAL	1	GC	27.73	0.19	3.23	0.00	0.00	0.00	5.40	0.00
INITIAL	2	GC	27.19	0.16	2.89	0.00	0.00	0.00	2.80	0.00
INITIAL	3	GC	25.85	0.18	1.18	0.00	0.00	0.00	1.10	0.00
INITIAL	4	GC	25.85	0.18	1.18	0.00	0.00	0.00	1.10	0.00
INITIAL	5	GC	25.85	0.18	1.18	0.00	0.00	0.00	237.00	0.00
INITIAL	6	GC	25.48	0.21	1.08	0.00	0.00	0.00	237.00	0.00
INITIAL	7	GC	25.31	0.21	1.77	0.00	0.00	0.00	259.00	0.00
INITIAL	8	GC	25.86	0.18	2.88	0.00	0.00	0.00	142.00	0.00
INITIAL	9	GC	25.91	0.16	3.29	0.00	0.00	0.00	109.00	0.00
INITIAL	10	GC	27.39	0.09	2.71	0.00	0.00	0.00	106.00	0.00
INITIAL	11	GC	29.65	0.03	4.56	0.00	0.00	0.00	80.00	0.00

ENDATA11

\$\$\$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) \$\$\$

CARD TYPE	RCH NUM	RCH ID	K2 OPT	K2 "A"	K2 "B"	K2 "C"	BKGRND SOD g/m <sup>2</sup> /d	BOD DECA per day	BOD SETT m/d	BOD CONV TO SOD	ANAER BOD2 DECA per day	BOD2 DECA per day	BOD2 SETT m/d	BOD2 CONV TO SOD	ANAER BOD2 DECA per day
COEF-1	1	GC	11 TEXAS	0.000	0.000	0.000	0.900	0.075	0.050	0.000	0.000	0.300	0.050	0.000	0.000
COEF-1	2	GC	11 TEXAS	0.000	0.000	0.000	3.300	0.075	0.050	0.000	0.000	0.300	0.050	0.000	0.000
COEF-1	3	GC	11 TEXAS	0.000	0.000	0.000	4.000	0.075	0.050	0.000	0.000	0.300	0.050	0.000	0.000
COEF-1	4	GC	11 TEXAS	0.000	0.000	0.000	4.800	0.075	0.100	0.000	0.000	0.300	0.050	0.000	0.000
COEF-1	5	GC	11 TEXAS	0.000	0.000	0.000	5.200	0.075	0.100	0.000	0.000	0.300	0.050	0.000	0.000
COEF-1	6	GC	11 TEXAS	0.000	0.000	0.000	4.100	0.075	0.100	0.000	0.000	0.300	0.050	0.000	0.000
COEF-1	7	GC	11 TEXAS	0.000	0.000	0.000	3.600	0.075	0.100	0.000	0.000	0.500	0.050	0.000	0.000
COEF-1	8	GC	11 TEXAS	0.000	0.000	0.000	3.200	0.075	0.100	0.000	0.000	0.500	0.050	0.000	0.000
COEF-1	9	GC	11 TEXAS	0.000	0.000	0.000	1.800	0.075	0.100	0.000	0.000	0.300	0.010	0.000	0.000
COEF-1	10	GC	11 TEXAS	0.000	0.000	0.000	2.200	0.075	0.100	0.000	0.000	0.300	0.010	0.000	0.000
COEF-1	11	GC	11 TEXAS	0.000	0.000	0.000	1.200	0.075	0.100	0.000	0.000	0.300	0.010	0.000	0.000

ENDATA12

\$\$\$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	NBOD DECA	NBOD SETT	ORGN CONV TO NH3	NH3 DECA	NH3 SRCE	PHOS SRCE	DENIT RATE
COEF-2	1	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000
COEF-2	2	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000
COEF-2	3	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000
COEF-2	4	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000
COEF-2	5	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000
COEF-2	6	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000
COEF-2	7	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000
COEF-2	8	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000

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COEF-2	REACH	ID	SECCHI	ALGAE:	ALGAE	ALG CONV	ALGAE	ALGAE	MACRO	MACRO
			DEPTH	CHL A	SETT	TO SOD	GROW	RESP	GROW	RESP
COEF-2	9	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000	0.000
COEF-2	10	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000	0.000
COEF-2	11	GC	0.500	0.400	0.000	0.000	0.000	0.000	0.000	0.000

ENDATA13

\$\$\$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	SECCHI	ALGAE:	ALGAE	ALG CONV	ALGAE	ALGAE	MACRO	MACRO	SHADING
			DEPTH	CHL A	SETT	TO SOD	GROW	RESP	GROW	RESP	

ENDATA14

\$\$\$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) \$\$\$

CARD TYPE	REACH	ID	COLIFORM	NCM	NCM	NCM CONV
			DIE-OFF	DECAY	SETT	TO SOD

ENDATA15

\$\$\$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	OUTFLOW	INFLOW	TEMP	SALIN	CM-I	CM-II	IN/DIST	OUT/DIST
INCR-1	1	GC	0.00000	0.00360	27.73	0.19	33.00	365.00	0.00327	0.00000
INCR-1	2	GC	0.00000	0.00410	27.19	0.16	27.00	350.00	0.00108	0.00000
INCR-1	3	GC	0.00000	0.00280	25.85	0.18	900.00	3700.00	0.00156	0.00000
INCR-1	4	GC	0.00000	0.00000	25.48	0.21	900.00	3700.00	0.00000	0.00000
INCR-1	5	GC	0.00000	0.00130	25.48	0.21	750.00	3700.00	0.00163	0.00000
INCR-1	6	GC	0.00000	0.00300	25.48	0.21	70.00	3000.00	0.00143	0.00000
INCR-1	7	GC	0.00000	0.00800	25.31	0.21	5.00	2000.00	0.00131	0.00000
INCR-1	8	GC	0.00000	0.00400	25.86	0.18	10.00	1800.00	0.00118	0.00000
INCR-1	9	GC	0.00000	0.00400	25.91	0.16	0.00	180.00	0.00095	0.00000
INCR-1	10	GC	0.00000	0.00300	27.39	0.09	0.00	0.00	0.00097	0.00000
INCR-1	11	GC	0.00000	0.00100	29.65	0.03	0.00	0.00	0.00125	0.00000

ENDATA16

\$\$\$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	REACH	ID	DO	BOD	NBOD	BOD#2
INCR-2	1	GC	0.00	3.00	0.00	0.00
INCR-2	2	GC	0.00	3.00	0.00	0.00
INCR-2	3	GC	0.00	3.00	0.00	0.00
INCR-2	4	GC	0.00	3.00	0.00	0.00
INCR-2	5	GC	0.00	3.00	0.00	0.00
INCR-2	6	GC	0.00	3.00	0.00	0.00
INCR-2	7	GC	0.00	3.00	0.00	0.00
INCR-2	8	GC	0.00	3.00	0.00	0.00
INCR-2	9	GC	0.00	3.00	0.00	0.00
INCR-2	10	GC	0.00	3.00	0.00	0.00
INCR-2	11	GC	0.00	3.00	0.00	0.00

ENDATA17

\$\$\$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	REACH	ID	PHOS	CHL A	COLI	NCM
INCR-3	1	GC	0.00	0.00	0.00	0.00
INCR-3	2	GC	0.00	0.00	0.00	0.00
INCR-3	3	GC	0.00	0.00	0.00	0.00

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INCR-3	4	GC	0.00	0.00	0.00	0.00
INCR-3	5	GC	0.00	0.00	0.00	0.00
INCR-3	6	GC	0.00	0.00	0.00	0.00
INCR-3	7	GC	0.00	0.00	0.00	0.00
INCR-3	8	GC	0.00	0.00	0.00	0.00
INCR-3	9	GC	0.00	0.00	0.00	0.00
INCR-3	10	GC	0.00	0.00	0.00	0.00
INCR-3	11	GC	0.00	0.00	0.00	0.00

ENDATA18

\$\$\$ DATA TYPE 19 (NONPOINT SOURCE DATA) \$\$\$

CARD TYPE	REACH	ID	BOD#1	NBOD	COLI	NCM	DO	BOD#2
NONPOINT	1	GC	2.50	0.00	0.00	0.00	0.00	0.00
NONPOINT	2	GC	17.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	3	GC	5.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	4	GC	3.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	5	GC	8.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	6	GC	1.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	7	GC	0.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	8	GC	1.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	9	GC	25.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	10	GC	1.00	0.00	0.00	0.00	0.00	0.00
NONPOINT	11	GC	95.00	0.00	0.00	0.00	0.00	0.00

ENDATA19

\$\$\$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	UNIT	FLOW m <sup>3</sup> /s	FLOW cfs	TEMP deg C	SALIN ppt	CM-I MG/L	CM-II MG/L	
HDWTR-1	1	HEADWATER	0	0.00280	0.099	26.69	0.20	31.100	380.000	0.00

ENDATA20

\$\$\$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD#1 mg/L	NBOD mg/L	mg/L	mg/L	BOD#2 mg/L
HDWTR-2	1	HEADWATER	1.91	9.57	0.00	0.00	0.00	0.00

ENDATA21

\$\$\$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
HDWTR-3	1	HEADWATER	0.00	0.00	0.00	0.00

ENDATA22

\$\$\$ DATA TYPE 23 (JUNCTION DATA) \$\$\$

CARD TYPE	JUNCTION ELEMENT	UPSTRM ELEMENT	RIVER KILOM	NAME
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ENDATA23

\$\$\$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) \$\$\$

Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

CARD TYPE	ELEMENT	RKILO	NAME	FLOW m <sup>3</sup> /s	FLOW cfs	FLOW MGD	TEMP deg C	SALIN ppt	CM-I MG/L	CM-II MG/L
WSTLD-1	36	23.80	UT#6 & PENNY MHP	0.00190	0.06709	0.043	24.61	0.00	0.000	0.000
WSTLD-1	53	22.10	UT#5 & CLUSTER 3	0.00110	0.03884	0.025	25.09	0.00	0.000	0.000
WSTLD-1	68	20.60	DS POTW	0.11780	4.15960	2.689	30.00	0.00	0.000	0.000
WSTLD-1	203	7.10	UT#2	0.00140	0.04944	0.032	26.18	0.00	0.000	0.000

\$\$\$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) \$\$\$

CARD TYPE	ELEMENT	NAME	DO mg/L	BOD mg/L	% BOD RMVL	NBOD mg/L	mg/L	% NITRIF	mg/L	BOD#2 mg/L
WSTLD-2	36	UT#6 & PENNY MHP	2.84	12.87	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	53	UT#5 & CLUSTER 3	2.82	17.70	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	68	DS POTW	2.00	52.13	0.00	0.00	0.00	0.00	0.00	0.00
WSTLD-2	203	UT#2	5.51	13.92	0.00	0.00	0.00	0.00	0.00	0.00

\$\$\$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) \$\$\$

CARD TYPE	ELEMENT	NAME	PHOS mg/L	CHL A mg/L	COLI mg/L	NCM mg/L
WSTLD-3	36	UT#6 & PENNY MHP	0.00	5.40	0.00	0.00
WSTLD-3	53	UT#5 & CLUSTER 3	0.00	6.30	0.00	0.00
WSTLD-3	68	DS POTW	0.00	0.00	0.00	0.00
WSTLD-3	203	UT#2	0.00	2.60	0.00	0.00

\$\$\$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) \$\$\$

CARD TYPE	CONSTITUENT	CONCENTRATION
LOWER BC	TEMPERATURE	= 30.380 deg C
LOWER BC	SALINITY	= 0.020 ppt
LOWER BC	CONSERVATIVE MATERIAL I	= 6.200 MG/L
LOWER BC	CONSERVATIVE MATERIAL II	= 103.800 MG/L
LOWER BC	DISSOLVED OXYGEN	= 7.000 mg/L
LOWER BC	BOD1 BIOCHEMICAL OXYGEN DEMAND	= 8.433 mg/L
LOWER BC	BOD2 BIOCHEMICAL OXYGEN DEMAND	= 0.000 mg/L
LOWER BC	CHLOROPHYLL A	= 23.400 µg/L
LOWER BC	NBOD	= 0.000 mg/L

\$\$\$ DATA TYPE 28 (DAM DATA) \$\$\$

CARD TYPE	ELEMENT	NAME	EQN	"A"	"B"	"H"
ENDATA28						

\$\$\$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) \$\$\$

CARD TYPE	PARAMETER	COL 1	COL 2	COL 3	COL 4	COL 5	COL 6	COL 7	COL 8
SENSITIV	BASEFLOW	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	CHLOR A	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	VELOCITY	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	TEMPERAT	2.0	-2.0	0.0	0.0	0.0	0.0	0.0	0.0

Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

SENSITIV	BOD DECA	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	BOD2 DEC	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	BOD SETT	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	BOD2 SET	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	NBOD DEC	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	NBOD SET	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	BENTHAL	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	DISPERSI	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	REAERATI	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	HDW FLOW	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	HDW DO	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	HDW BOD	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	HDW BOD2	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	HDW NBOD	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	DEPTH	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	WSL FLOW	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	WSL TEMP	2.0	-2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	WSL DO	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	WSL BOD	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	WSL BOD2	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	WSL NBOD	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	LBC TEMP	2.0	-2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	LBC DO	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	LBC BOD	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	LBC BOD2	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SENSITIV	LBC NBOD	30.0	-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

\$\$\$ DATA TYPE 30 (PLOT CONTROL CARDS) \$\$\$

NUMBER OF PLOTS = 1  
NUMBER OF REACHES IN PLOT 1 = 11  
PLOT RCH 1 2 3 4 5 6 7 8 9 10 11  
ENDATA30

\$\$\$ DATA TYPE 31 (OVERLAY PLOT DATA) \$\$\$

OVERLAY 1 Grayovl.txt :MAINSTEM  
ENDATA31

.....NO ERRORS DETECTED IN INPUT DATA  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED  
.....GRAPHICS DATA FOR PLOT 1 WRITTEN TO UNIT 21

FINAL REPORT HEADWATER GRAYS CREEK WATERSHED MODEL  
REACH NO. 1 GRAYS CREEK CANAL TO HWY 190 GRAYS CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM	TYPE	FLOW	TEMP	SALN	CM-I	CM-II	DO	BOD#1	BOD#2	EBOD#1	EBOD#2	ORGN	NH3	NO3+2	PHOS	CHL A	COLI	NCM
NO.			deg C	ppt	MG/L	MG/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	#/100mL	

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

1	HDWTR	0.00280	26.69	0.20	31.10	380.00	1.91	8.76	0.00	9.57	0.00	0.00	0.00	0.00	0.00	5.40	0.00	0.00
EACH	INCR	0.00033	27.73	0.19	33.00	365.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
1	27.30	27.20	0.00313	0.0	0.08208	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.040	0.082
2	27.20	27.10	0.00345	0.0	0.09067	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.044	0.091
3	27.10	27.00	0.00378	0.0	0.09926	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.049	0.099
4	27.00	26.90	0.00411	0.0	0.10785	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.053	0.108
5	26.90	26.80	0.00444	0.0	0.11644	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.057	0.116
6	26.80	26.70	0.00476	0.0	0.12503	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.061	0.125
7	26.70	26.60	0.00509	0.0	0.13362	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.066	0.134
8	26.60	26.50	0.00542	0.0	0.14221	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.070	0.142
9	26.50	26.40	0.00575	0.0	0.15080	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.074	0.151
10	26.40	26.30	0.00607	0.0	0.15939	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.078	0.159
11	26.30	26.20	0.00640	0.0	0.16798	0.01	0.03	1.52	3.81	152.40	0.04	0.00	0.000	0.082	0.168
TOT						0.11			41.91	1676.40					
AVG					0.1189		0.03	1.52			0.04				
CUM						0.11									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAT	BOD#1 SETT	ABOD#1 DECAT	BOD#2 DECAT	BOD#2 SETT	ABOD#2 DECAT	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAT	ORGN SETT	NH3 DECAT	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAT	NCM DECAT	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
1	27.200	7.86	28.87	0.11	2.40	0.00	0.42	0.00	0.00	1.46	1.46	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	27.100	7.87	28.85	0.11	2.40	0.00	0.42	0.00	0.00	1.46	1.46	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	27.000	7.88	28.82	0.11	2.39	0.00	0.42	0.00	0.00	1.45	1.45	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	26.900	7.88	28.80	0.11	2.39	0.00	0.42	0.00	0.00	1.45	1.45	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	26.800	7.89	28.77	0.11	2.39	0.00	0.42	0.00	0.00	1.44	1.44	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	26.700	7.90	28.75	0.11	2.39	0.00	0.42	0.00	0.00	1.44	1.44	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	26.600	7.91	28.72	0.11	2.38	0.00	0.42	0.00	0.00	1.43	1.43	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	26.500	7.91	28.70	0.11	2.38	0.00	0.42	0.00	0.00	1.43	1.43	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	26.400	7.92	28.67	0.10	2.38	0.00	0.42	0.00	0.00	1.42	1.42	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	26.300	7.93	28.65	0.10	2.37	0.00	0.42	0.00	0.00	1.42	1.42	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	26.200	7.93	28.62	0.10	2.37	0.00	0.42	0.00	0.00	1.42	1.42	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	20 DEG C	RATE	25.00	0.08	2.00	0.00	0.30	2.00	0.00	0.90			0.50	16.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00
*	g/m <sup>2</sup> /d																						
**	mg/L/day																						

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
1	27.200	27.68	0.19	31.30	378.42	2.90	8.69	0.00	9.47	0.00	0.00	0.00	0.00	0.00	0.00	5.16	0.00	0.	0.00
2	27.100	27.63	0.18	31.46	377.15	3.48	8.64	0.00	9.38	0.00	0.00	0.00	0.00	0.00	0.00	4.93	0.00	0.	0.00
3	27.000	27.58	0.18	31.59	376.10	3.85	8.60	0.00	9.30	0.00	0.00	0.00	0.00	0.00	0.00	4.69	0.00	0.	0.00
4	26.900	27.53	0.18	31.71	375.22	4.09	8.56	0.00	9.23	0.00	0.00	0.00	0.00	0.00	0.00	4.45	0.00	0.	0.00

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

5	26.800	27.48	0.18	31.80	374.46	4.24	8.53	0.00	9.16	0.00	0.00	0.00	0.00	0.00	0.00	4.22	0.00	0.	0.00
6	26.700	27.44	0.17	31.88	373.81	4.36	8.51	0.00	9.10	0.00	0.00	0.00	0.00	0.00	0.00	3.98	0.00	0.	0.00
7	26.600	27.39	0.17	31.96	373.25	4.43	8.49	0.00	9.05	0.00	0.00	0.00	0.00	0.00	0.00	3.75	0.00	0.	0.00
8	26.500	27.34	0.17	32.02	372.75	4.49	8.47	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	3.51	0.00	0.	0.00
9	26.400	27.29	0.17	32.07	372.31	4.54	8.46	0.00	8.95	0.00	0.00	0.00	0.00	0.00	0.00	3.27	0.00	0.	0.00
10	26.300	27.24	0.16	32.12	371.91	4.57	8.44	0.00	8.90	0.00	0.00	0.00	0.00	0.00	0.00	3.04	0.00	0.	0.00
11	26.200	27.19	0.16	32.17	371.55	4.57	8.44	0.00	8.86	0.00	0.00	0.00	0.00	0.00	0.00	2.80	0.00	0.	0.00

FINAL REPORT HEADWATER  
 REACH NO. 2 HIGHWAY 190 TO FORREST DELATTE

GRAYS CREEK WATERSHED MODEL  
 GRAYS CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
12	UPR RCH	0.00640	27.19	0.16	32.17	371.55	4.57	8.44	0.00	8.86	0.00	0.00	0.00	0.00	0.00	2.80	0.00	0.00
EACH	INCR	0.00011	27.19	0.16	27.00	350.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	
36	WSTLD	0.00190	24.61	0.00	0.00	0.00	2.84	12.87	0.00	12.87	0.00	0.00	0.00	0.00	0.00	5.40	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
12	26.20	26.10	0.00651	0.0	0.00465	0.25	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.027	0.005
13	26.10	26.00	0.00662	0.0	0.00473	0.24	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.028	0.005
14	26.00	25.90	0.00672	0.0	0.00481	0.24	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.028	0.005
15	25.90	25.80	0.00683	0.0	0.00488	0.24	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.029	0.005
16	25.80	25.70	0.00694	0.0	0.00496	0.23	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.029	0.005
17	25.70	25.60	0.00705	0.0	0.00504	0.23	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.030	0.005
18	25.60	25.50	0.00716	0.0	0.00511	0.23	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.030	0.005
19	25.50	25.40	0.00726	0.0	0.00519	0.22	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.031	0.005
20	25.40	25.30	0.00737	0.0	0.00527	0.22	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.031	0.005
21	25.30	25.20	0.00748	0.0	0.00535	0.22	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.031	0.005
22	25.20	25.10	0.00759	0.0	0.00542	0.21	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.032	0.005
23	25.10	25.00	0.00769	0.0	0.00550	0.21	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.032	0.006
24	25.00	24.90	0.00780	0.0	0.00558	0.21	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.033	0.006
25	24.90	24.80	0.00791	0.0	0.00565	0.20	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.033	0.006
26	24.80	24.70	0.00802	0.0	0.00573	0.20	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.034	0.006
27	24.70	24.60	0.00813	0.0	0.00581	0.20	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.034	0.006
28	24.60	24.50	0.00823	0.0	0.00589	0.20	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.035	0.006
29	24.50	24.40	0.00834	0.0	0.00596	0.19	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.035	0.006
30	24.40	24.30	0.00845	0.0	0.00604	0.19	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.036	0.006
31	24.30	24.20	0.00856	0.0	0.00612	0.19	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.036	0.006
32	24.20	24.10	0.00867	0.0	0.00619	0.19	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.036	0.006
33	24.10	24.00	0.00877	0.0	0.00627	0.18	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.037	0.006
34	24.00	23.90	0.00888	0.0	0.00635	0.18	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.037	0.006
35	23.90	23.80	0.00899	0.0	0.00643	0.18	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.038	0.006
36	23.80	23.70	0.01100	17.3	0.00786	0.15	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.046	0.008
37	23.70	23.60	0.01111	17.1	0.00794	0.15	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.047	0.008
38	23.60	23.50	0.01121	16.9	0.00802	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.047	0.008
39	23.50	23.40	0.01132	16.8	0.00809	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.048	0.008
40	23.40	23.30	0.01143	16.6	0.00817	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.048	0.008
41	23.30	23.20	0.01154	16.5	0.00825	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.049	0.008
42	23.20	23.10	0.01164	16.3	0.00832	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.049	0.008

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

43	23.10	23.00	0.01175	16.2	0.00840	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.049	0.008
44	23.00	22.90	0.01186	16.0	0.00848	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.050	0.008
45	22.90	22.80	0.01197	15.9	0.00855	0.14	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.050	0.009
46	22.80	22.70	0.01208	15.7	0.00863	0.13	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.051	0.009
47	22.70	22.60	0.01218	15.6	0.00871	0.13	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.051	0.009
48	22.60	22.50	0.01229	15.5	0.00879	0.13	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.052	0.009
49	22.50	22.40	0.01240	15.3	0.00886	0.13	0.49	2.83	139.90	283.20	1.40	0.00	0.000	0.052	0.009

TOT						7.00			5316.23	10761.60														
AVG						0.0063		0.49	2.83															1.40
CUM							7.11																	

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECATY 1/da	BOD#1 SETT 1/da	ABOD#1 DECATY 1/da	BOD#2 DECATY 1/da	BOD#2 SETT 1/da	ABOD#2 DECATY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECATY 1/da	ORGN SETT 1/da	NH3 DECATY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECATY 1/da	NCM DECATY 1/da	NCM SETT 1/da
12	26.100	7.94	1.62	0.10	0.12	0.00	0.41	0.00	0.00	5.18	5.18	5.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	26.000	7.94	1.62	0.10	0.12	0.00	0.41	0.00	0.00	5.17	5.17	5.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	25.900	7.95	1.62	0.10	0.12	0.00	0.41	0.00	0.00	5.16	5.16	5.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	25.800	7.95	1.62	0.10	0.12	0.00	0.41	0.00	0.00	5.14	5.14	5.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	25.700	7.96	1.62	0.10	0.12	0.00	0.41	0.00	0.00	5.13	5.13	5.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	25.600	7.96	1.62	0.10	0.12	0.00	0.41	0.00	0.00	5.12	5.12	5.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	25.500	7.97	1.62	0.10	0.12	0.00	0.41	0.00	0.00	5.11	5.11	5.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	25.400	7.97	1.61	0.10	0.12	0.00	0.41	0.00	0.00	5.10	5.10	5.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	25.300	7.98	1.61	0.10	0.12	0.00	0.41	0.00	0.00	5.09	5.09	5.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	25.200	7.98	1.61	0.10	0.12	0.00	0.41	0.00	0.00	5.08	5.08	5.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	25.100	7.99	1.61	0.10	0.12	0.00	0.41	0.00	0.00	5.06	5.06	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	25.000	7.99	1.61	0.10	0.12	0.00	0.41	0.00	0.00	5.05	5.05	5.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	24.900	8.00	1.61	0.10	0.12	0.00	0.40	0.00	0.00	5.04	5.04	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	24.800	8.00	1.61	0.10	0.12	0.00	0.40	0.00	0.00	5.03	5.03	5.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	24.700	8.01	1.61	0.10	0.12	0.00	0.40	0.00	0.00	5.02	5.02	5.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	24.600	8.01	1.61	0.10	0.12	0.00	0.40	0.00	0.00	5.01	5.01	5.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	24.500	8.02	1.60	0.10	0.12	0.00	0.40	0.00	0.00	5.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	24.400	8.02	1.60	0.10	0.12	0.00	0.40	0.00	0.00	4.99	4.99	4.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	24.300	8.03	1.60	0.10	0.12	0.00	0.40	0.00	0.00	4.98	4.98	4.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	24.200	8.03	1.60	0.10	0.12	0.00	0.40	0.00	0.00	4.96	4.96	4.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	24.100	8.04	1.60	0.10	0.12	0.00	0.40	0.00	0.00	4.95	4.95	4.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	24.000	8.04	1.60	0.10	0.12	0.00	0.40	0.00	0.00	4.94	4.94	4.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	23.900	8.05	1.60	0.10	0.12	0.00	0.40	0.00	0.00	4.93	4.93	4.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	23.800	8.06	1.60	0.10	0.12	0.00	0.40	0.00	0.00	4.92	4.92	4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	23.700	8.06	1.60	0.10	0.12	0.00	0.40	0.00	0.00	4.91	4.91	4.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	23.600	8.07	1.60	0.10	0.12	0.00	0.40	0.00	0.00	4.90	4.90	4.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	23.500	8.07	1.59	0.10	0.12	0.00	0.40	0.00	0.00	4.89	4.89	4.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	23.400	8.08	1.59	0.10	0.12	0.00	0.40	0.00	0.00	4.88	4.88	4.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	23.300	8.08	1.59	0.10	0.12	0.00	0.40	0.00	0.00	4.87	4.87	4.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	23.200	8.09	1.59	0.10	0.12	0.00	0.40	0.00	0.00	4.86	4.86	4.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	23.100	8.09	1.59	0.10	0.12	0.00	0.40	0.00	0.00	4.84	4.84	4.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	23.000	8.10	1.59	0.10	0.12	0.00	0.39	0.00	0.00	4.83	4.83	4.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	22.900	8.10	1.59	0.10	0.12	0.00	0.39	0.00	0.00	4.82	4.82	4.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	22.800	8.11	1.59	0.10	0.12	0.00	0.39	0.00	0.00	4.81	4.81	4.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	22.700	8.11	1.59	0.10	0.12	0.00	0.39	0.00	0.00	4.80	4.80	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	22.600	8.12	1.59	0.10	0.12	0.00	0.39	0.00	0.00	4.79	4.79	4.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	22.500	8.12	1.58	0.10	0.12	0.00	0.39	0.00	0.00	4.78	4.78	4.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	22.400	8.13	1.58	0.10	0.12	0.00	0.39	0.00	0.00	4.77	4.77	4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			1.42	0.08	0.10	0.00	0.30	0.10	0.00	3.30			0.50	0.81	0.00	0.00	0.00	0.00			0.00	0.00	0.00



Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

\* g/m<sup>2</sup>/d      \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
12	26.100	27.15	0.16	32.08	371.18	3.46	8.67	0.00	9.08	0.00	0.00	0.00	0.00	0.00	0.00	2.76	0.00	0.	0.00
13	26.000	27.12	0.16	32.00	370.84	2.71	8.87	0.00	9.28	0.00	0.00	0.00	0.00	0.00	0.00	2.71	0.00	0.	0.00
14	25.900	27.08	0.16	31.92	370.51	2.18	9.06	0.00	9.46	0.00	0.00	0.00	0.00	0.00	0.00	2.67	0.00	0.	0.00
15	25.800	27.05	0.16	31.84	370.18	1.81	9.23	0.00	9.62	0.00	0.00	0.00	0.00	0.00	0.00	2.62	0.00	0.	0.00
16	25.700	27.01	0.16	31.76	369.87	1.55	9.39	0.00	9.78	0.00	0.00	0.00	0.00	0.00	0.00	2.58	0.00	0.	0.00
17	25.600	26.98	0.16	31.69	369.56	1.37	9.54	0.00	9.92	0.00	0.00	0.00	0.00	0.00	0.00	2.53	0.00	0.	0.00
18	25.500	26.94	0.16	31.62	369.27	1.25	9.68	0.00	10.05	0.00	0.00	0.00	0.00	0.00	0.00	2.49	0.00	0.	0.00
19	25.400	26.91	0.16	31.55	368.98	1.16	9.80	0.00	10.17	0.00	0.00	0.00	0.00	0.00	0.00	2.44	0.00	0.	0.00
20	25.300	26.87	0.16	31.48	368.71	1.09	9.92	0.00	10.28	0.00	0.00	0.00	0.00	0.00	0.00	2.40	0.00	0.	0.00
21	25.200	26.84	0.17	31.42	368.44	1.05	10.03	0.00	10.39	0.00	0.00	0.00	0.00	0.00	0.00	2.35	0.00	0.	0.00
22	25.100	26.80	0.17	31.36	368.17	1.02	10.14	0.00	10.48	0.00	0.00	0.00	0.00	0.00	0.00	2.31	0.00	0.	0.00
23	25.000	26.77	0.17	31.30	367.92	1.00	10.23	0.00	10.57	0.00	0.00	0.00	0.00	0.00	0.00	2.26	0.00	0.	0.00
24	24.900	26.73	0.17	31.24	367.67	0.99	10.32	0.00	10.66	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.	0.00
25	24.800	26.70	0.17	31.18	367.43	0.99	10.41	0.00	10.74	0.00	0.00	0.00	0.00	0.00	0.00	2.17	0.00	0.	0.00
26	24.700	26.66	0.17	31.12	367.20	0.99	10.49	0.00	10.81	0.00	0.00	0.00	0.00	0.00	0.00	2.13	0.00	0.	0.00
27	24.600	26.63	0.17	31.07	366.97	0.99	10.57	0.00	10.88	0.00	0.00	0.00	0.00	0.00	0.00	2.08	0.00	0.	0.00
28	24.500	26.59	0.17	31.01	366.75	0.99	10.64	0.00	10.94	0.00	0.00	0.00	0.00	0.00	0.00	2.04	0.00	0.	0.00
29	24.400	26.56	0.17	30.96	366.53	1.00	10.70	0.00	11.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99	0.00	0.	0.00
30	24.300	26.52	0.17	30.91	366.32	1.01	10.77	0.00	11.06	0.00	0.00	0.00	0.00	0.00	0.00	1.95	0.00	0.	0.00
31	24.200	26.48	0.17	30.86	366.11	1.01	10.82	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	1.91	0.00	0.	0.00
32	24.100	26.45	0.17	30.81	365.91	1.02	10.88	0.00	11.16	0.00	0.00	0.00	0.00	0.00	0.00	1.86	0.00	0.	0.00
33	24.000	26.41	0.17	30.77	365.71	1.03	10.93	0.00	11.20	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.	0.00
34	23.900	26.38	0.17	30.70	365.31	1.04	10.98	0.00	11.25	0.00	0.00	0.00	0.00	0.00	0.00	1.77	0.00	0.	0.00
35	23.800	26.34	0.17	30.35	361.46	1.06	11.05	0.00	11.30	0.00	0.00	0.00	0.00	0.00	0.00	1.73	0.00	0.	0.00
36	23.700	26.31	0.17	25.34	302.11	1.30	11.37	0.00	11.62	0.00	0.00	0.00	0.00	0.00	0.00	1.68	0.00	0.	0.00
37	23.600	26.27	0.17	25.36	302.57	1.26	11.40	0.00	11.64	0.00	0.00	0.00	0.00	0.00	0.00	1.64	0.00	0.	0.00
38	23.500	26.24	0.17	25.38	303.03	1.23	11.42	0.00	11.66	0.00	0.00	0.00	0.00	0.00	0.00	1.59	0.00	0.	0.00
39	23.400	26.20	0.17	25.39	303.48	1.21	11.44	0.00	11.67	0.00	0.00	0.00	0.00	0.00	0.00	1.55	0.00	0.	0.00
40	23.300	26.17	0.18	25.41	303.91	1.19	11.46	0.00	11.69	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.	0.00
41	23.200	26.13	0.18	25.42	304.35	1.19	11.48	0.00	11.70	0.00	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.	0.00
42	23.100	26.10	0.18	25.44	304.77	1.18	11.50	0.00	11.72	0.00	0.00	0.00	0.00	0.00	0.00	1.41	0.00	0.	0.00
43	23.000	26.06	0.18	25.45	305.18	1.18	11.52	0.00	11.73	0.00	0.00	0.00	0.00	0.00	0.00	1.37	0.00	0.	0.00
44	22.900	26.03	0.18	25.46	305.59	1.18	11.54	0.00	11.74	0.00	0.00	0.00	0.00	0.00	0.00	1.32	0.00	0.	0.00
45	22.800	25.99	0.18	25.48	305.99	1.18	11.56	0.00	11.75	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.	0.00
46	22.700	25.96	0.18	25.49	306.38	1.19	11.58	0.00	11.76	0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00	0.	0.00
47	22.600	25.92	0.18	25.51	306.78	1.20	11.60	0.00	11.78	0.00	0.00	0.00	0.00	0.00	0.00	1.19	0.00	0.	0.00
48	22.500	25.89	0.18	25.55	307.25	1.20	11.61	0.00	11.79	0.00	0.00	0.00	0.00	0.00	0.00	1.14	0.00	0.	0.00
49	22.400	25.85	0.18	26.02	309.42	1.21	11.62	0.00	11.78	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00

FINAL REPORT HEADWATER  
 REACH NO. 3 FORREST DELATTE ROAD TO DSPOTW

GRAYS CREEK WATERSHED MODEL  
 GRAYS CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
50	UPR RCH	0.01240	25.85	0.18	26.02	309.42	1.21	11.62	0.00	11.78	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00
EACH	INCR	0.00016	25.85	0.18	900.00	3700.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	WSTLD	0.00110	25.09	0.00	0.00	0.00	2.82	17.70	0.00	17.70	0.00	0.00	0.00	0.00	0.00	6.30	0.00	0.00

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
50	22.40	22.30	0.01256	15.1	0.01042	0.11	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.034	0.010
51	22.30	22.20	0.01271	14.9	0.01055	0.11	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.035	0.011
52	22.20	22.10	0.01287	14.8	0.01068	0.11	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.035	0.011
53	22.10	22.00	0.01412	21.2	0.01172	0.10	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.039	0.012
54	22.00	21.90	0.01428	21.0	0.01185	0.10	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.039	0.012
55	21.90	21.80	0.01443	20.8	0.01198	0.10	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.040	0.012
56	21.80	21.70	0.01459	20.6	0.01211	0.10	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.040	0.012
57	21.70	21.60	0.01474	20.3	0.01224	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.040	0.012
58	21.60	21.50	0.01490	20.1	0.01237	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.041	0.012
59	21.50	21.40	0.01506	19.9	0.01250	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.041	0.012
60	21.40	21.30	0.01521	19.7	0.01263	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.042	0.013
61	21.30	21.20	0.01537	19.5	0.01276	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.042	0.013
62	21.20	21.10	0.01552	19.3	0.01289	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.043	0.013
63	21.10	21.00	0.01568	19.1	0.01301	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.043	0.013
64	21.00	20.90	0.01583	18.9	0.01314	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.043	0.013
65	20.90	20.80	0.01599	18.8	0.01327	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.044	0.013
66	20.80	20.70	0.01614	18.6	0.01340	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.044	0.013
67	20.70	20.60	0.01630	18.4	0.01353	0.09	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.045	0.014

TOT						1.71			2168.31	8778.60					
AVG					0.0122		0.25	4.88			1.20				
CUM						8.82									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAT	BOD#1 SETT	ABOD#1 DECAT	BOD#2 DECAT	BOD#2 SETT	ABOD#2 DECAT	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAT	ORGN SETT	NH3 DECAT	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAT	NCM DECAT	NCM SETT
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	1/da	1/da	1/da
50	22.300	8.13	3.17	0.10	0.23	0.00	0.39	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	22.200	8.13	3.17	0.08	0.23	0.00	0.33	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	22.100	8.13	3.17	0.07	0.23	0.00	0.29	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	22.000	8.13	3.17	0.08	0.23	0.00	0.31	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	21.900	8.13	3.17	0.07	0.23	0.00	0.28	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	21.800	8.13	3.17	0.06	0.23	0.00	0.26	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	21.700	8.13	3.17	0.06	0.23	0.00	0.24	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	21.600	8.13	3.17	0.06	0.23	0.00	0.24	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	21.500	8.13	3.17	0.06	0.23	0.00	0.23	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	21.400	8.13	3.17	0.06	0.23	0.00	0.22	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	21.300	8.13	3.17	0.06	0.23	0.00	0.22	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61	21.200	8.13	3.17	0.05	0.23	0.00	0.22	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	21.100	8.13	3.17	0.05	0.23	0.00	0.22	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63	21.000	8.13	3.17	0.05	0.23	0.00	0.22	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	20.900	8.13	3.17	0.05	0.23	0.00	0.22	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	20.800	8.13	3.17	0.05	0.23	0.00	0.22	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66	20.700	8.13	3.17	0.05	0.23	0.00	0.22	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67	20.600	8.13	3.17	0.06	0.23	0.00	0.26	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AVG	20 DEG C RATE		2.83	0.08	0.20	0.00	0.30	0.20	0.00	4.00			0.50	1.62	0.00	0.00	0.00	0.00			0.00	0.00	0.00
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\* g/m<sup>2</sup>/d      \*\* mg/L/day

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
50	22.300	25.85	0.18	36.72	350.89	0.99	11.36	0.00	11.52	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
51	22.200	25.85	0.18	47.27	391.83	0.84	11.12	0.00	11.29	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
52	22.100	25.85	0.18	57.42	430.67	0.74	10.93	0.00	11.10	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
53	22.000	25.85	0.18	62.37	434.20	0.79	11.24	0.00	11.40	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
54	21.900	25.85	0.18	71.50	469.77	0.71	11.05	0.00	11.21	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
55	21.800	25.85	0.18	80.42	504.57	0.66	10.87	0.00	11.04	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
56	21.700	25.85	0.18	89.16	538.63	0.63	10.71	0.00	10.87	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
57	21.600	25.85	0.18	97.71	571.97	0.60	10.55	0.00	10.72	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
58	21.500	25.85	0.18	106.08	604.62	0.58	10.41	0.00	10.57	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
59	21.400	25.85	0.18	114.28	636.59	0.57	10.27	0.00	10.44	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
60	21.300	25.85	0.18	122.32	667.91	0.57	10.14	0.00	10.31	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
61	21.200	25.85	0.18	130.19	698.59	0.56	10.02	0.00	10.18	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
62	21.100	25.85	0.18	137.90	728.66	0.56	9.90	0.00	10.06	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
63	21.000	25.85	0.18	145.46	758.13	0.56	9.78	0.00	9.95	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
64	20.900	25.85	0.18	152.87	787.02	0.55	9.68	0.00	9.84	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
65	20.800	25.85	0.18	160.11	815.25	0.55	9.58	0.00	9.74	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
66	20.700	25.85	0.18	166.60	839.86	0.56	9.63	0.00	9.79	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00
67	20.600	25.85	0.18	153.79	768.42	0.66	14.23	0.00	14.40	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.	0.00

FINAL REPORT HEADWATER  
 REACH NO. 4 DENHAM SPRINGS POTW

GRAYS CREEK WATERSHED MODEL  
 GRAYS CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
68	UPR RCH	0.01630	25.85	0.18	153.79	768.42	0.66	14.23	0.00	14.40	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00
68	WSTLD	0.11780	30.00	0.00	0.00	0.00	2.00	52.13	0.00	52.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
68	20.60	20.50	0.13410	90.1	0.11132	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.368	0.111
TOT						0.01			120.46	487.70					
AVG					0.1113		0.25	4.88			1.20				
CUM						8.83									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 1/da	BOD#1 SETT 1/da	ABOD#1 1/da	BOD#2 1/da	BOD#2 SETT 1/da	ABOD#2 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECATY 1/da	ORGN SETT 1/da	NH3 DECATY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECATY 1/da	NCM DECATY 1/da	NCM SETT 1/da
68	20.500	8.13	4.12	0.10	0.47	0.00	0.39	0.00	0.00	6.94	6.94	6.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

AVG 20 DEG C RATE 3.69 0.08 0.40 0.00 0.30 0.20 0.00 4.80 0.50 1.62 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00  
 \* g/m<sup>2</sup>/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
68	20.500	25.85	0.18	21.18	105.83	1.75	46.89	0.00	82.44	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAYS CREEK WATERSHED MODEL  
 REACH NO. 5 DENHAM SPRINGS POTW TO WAX ROAD GRAYS CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM	
69	UPR RCH	0.13410	25.85	0.18	21.18	105.83	1.75	46.89	0.00	82.44	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.00	0.00
	EACH INCR	0.00016	25.48	0.21	750.00	3700.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
69	20.50	20.40	0.13426	90.0	0.11146	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.369	0.111
70	20.40	20.30	0.13442	89.9	0.11159	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.369	0.112
71	20.30	20.20	0.13459	89.8	0.11173	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.369	0.112
72	20.20	20.10	0.13475	89.6	0.11186	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.370	0.112
73	20.10	20.00	0.13491	89.5	0.11200	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.370	0.112
74	20.00	19.90	0.13507	89.4	0.11213	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.371	0.112
75	19.90	19.80	0.13524	89.3	0.11227	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.371	0.112
76	19.80	19.70	0.13540	89.2	0.11240	0.01	0.25	4.88	120.46	487.70	1.20	0.00	0.000	0.372	0.112
TOT						0.08			963.70	3901.60					
AVG					0.1119		0.25	4.88			1.20				
CUM						8.91									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da
69	20.400	8.13	4.12	0.10	0.46	0.00	0.39	0.00	0.00	7.49	7.49	7.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	20.300	8.14	4.12	0.10	0.46	0.00	0.39	0.00	0.00	7.47	7.47	7.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71	20.200	8.15	4.11	0.10	0.46	0.00	0.39	0.00	0.00	7.45	7.45	7.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72	20.100	8.15	4.11	0.10	0.46	0.00	0.39	0.00	0.00	7.43	7.43	7.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	20.000	8.16	4.11	0.10	0.46	0.00	0.39	0.00	0.00	7.41	7.41	7.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
74	19.900	8.17	4.11	0.10	0.46	0.00	0.39	0.00	0.00	7.39	7.39	7.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	19.800	8.17	4.11	0.10	0.46	0.00	0.39	0.00	0.00	7.36	7.36	7.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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76	19.700	8.18	4.10	0.10	0.46	0.00	0.38	0.00	0.00	7.34	7.34	7.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			3.69	0.08	0.40	0.00	0.30	0.20	0.00	5.20			0.50	1.62	0.00	0.00	0.00	0.00		0.00	0.00	0.00
* g/m <sup>2</sup> /d			** mg/L/day																			

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
69	20.400	25.80	0.18	22.06	110.18	1.66	46.65	0.00	82.20	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
70	20.300	25.76	0.19	22.94	114.52	1.58	46.41	0.00	81.96	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
71	20.200	25.71	0.19	23.82	118.85	1.50	46.18	0.00	81.73	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
72	20.100	25.67	0.19	24.70	123.17	1.43	45.95	0.00	81.50	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
73	20.000	25.62	0.20	25.57	127.48	1.36	45.72	0.00	81.27	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
74	19.900	25.57	0.20	26.44	131.78	1.29	45.49	0.00	81.04	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
75	19.800	25.53	0.21	27.31	136.06	1.23	45.26	0.00	80.81	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00
76	19.700	25.48	0.21	28.15	140.31	1.18	45.03	0.00	80.58	0.00	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAYS CREEK WATERSHED MODEL  
 REACH NO. 6 WAX ROAD TO HIGHWAY 1026 GRAYS CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
77	UPR RCH	0.13540	25.48	0.21	28.15	140.31	1.18	45.03	0.00	80.58	0.00	0.00	0.00	0.00	0.00	237.00	0.00	0.00
EACH	INCR	0.00014	25.48	0.21	70.00	3000.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m <sup>3</sup> /s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m <sup>3</sup>	SURFACE AREA m <sup>2</sup>	X-SECT AREA m <sup>2</sup>	TIDAL PRISM m <sup>3</sup>	TIDAL VELO m/s	DISPRSN m <sup>2</sup> /s	MEAN VELO m/s
77	19.70	19.60	0.13554	89.1	0.07919	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.318	0.079
78	19.60	19.50	0.13569	89.0	0.07927	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.318	0.079
79	19.50	19.40	0.13583	88.9	0.07936	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.319	0.079
80	19.40	19.30	0.13597	88.8	0.07944	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.319	0.079
81	19.30	19.20	0.13611	88.7	0.07952	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.319	0.080
82	19.20	19.10	0.13626	88.7	0.07961	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.320	0.080
83	19.10	19.00	0.13640	88.6	0.07969	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.320	0.080
84	19.00	18.90	0.13654	88.5	0.07977	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.320	0.080
85	18.90	18.80	0.13669	88.4	0.07986	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.321	0.080
86	18.80	18.70	0.13683	88.3	0.07994	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.321	0.080
87	18.70	18.60	0.13697	88.2	0.08002	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.321	0.080
88	18.60	18.50	0.13711	88.1	0.08011	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.322	0.080
89	18.50	18.40	0.13726	88.0	0.08019	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.322	0.080
90	18.40	18.30	0.13740	87.9	0.08027	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.322	0.080
91	18.30	18.20	0.13754	87.8	0.08036	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.323	0.080
92	18.20	18.10	0.13769	87.7	0.08044	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.323	0.080
93	18.10	18.00	0.13783	87.6	0.08052	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.323	0.081
94	18.00	17.90	0.13797	87.6	0.08061	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.324	0.081
95	17.90	17.80	0.13811	87.5	0.08069	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.324	0.081

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96	17.80	17.70	0.13826	87.4	0.08078	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.324	0.081
97	17.70	17.60	0.13840	87.3	0.08086	0.01	0.31	5.49	171.16	548.60	1.71	0.00	0.000	0.325	0.081
TOT						0.30			3594.43	11520.60					
AVG					0.0800		0.31	5.49			1.71				
CUM						9.21									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECATY 1/da	BOD#1 SETT 1/da	ABOD#1 DECATY 1/da	BOD#2 DECATY 1/da	BOD#2 SETT 1/da	ABOD#2 DECATY 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECATY 1/da	ORGN SETT 1/da	NH3 DECATY 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECATY 1/da	NCM DECATY 1/da	NCM SETT 1/da
77	19.600	8.18	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.79	5.79	5.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	19.500	8.18	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	19.400	8.18	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	19.300	8.19	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81	19.200	8.19	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.78	5.78	5.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	19.100	8.19	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.77	5.77	5.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83	19.000	8.19	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.77	5.77	5.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84	18.900	8.19	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.77	5.77	5.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	18.800	8.19	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.76	5.76	5.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	18.700	8.19	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.76	5.76	5.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87	18.600	8.19	3.03	0.10	0.36	0.00	0.38	0.00	0.00	5.76	5.76	5.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	18.500	8.20	3.03	0.09	0.36	0.00	0.38	0.00	0.00	5.75	5.75	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89	18.400	8.20	3.03	0.09	0.36	0.00	0.37	0.00	0.00	5.75	5.75	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	18.300	8.20	3.03	0.09	0.36	0.00	0.37	0.00	0.00	5.75	5.75	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91	18.200	8.20	3.03	0.09	0.36	0.00	0.37	0.00	0.00	5.75	5.75	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	18.100	8.20	3.03	0.09	0.36	0.00	0.37	0.00	0.00	5.74	5.74	5.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
93	18.000	8.20	3.03	0.09	0.36	0.00	0.37	0.00	0.00	5.74	5.74	5.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	17.900	8.20	3.03	0.09	0.36	0.00	0.37	0.00	0.00	5.74	5.74	5.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	17.800	8.20	3.03	0.09	0.36	0.00	0.37	0.00	0.00	5.73	5.73	5.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
96	17.700	8.21	3.03	0.09	0.36	0.00	0.37	0.00	0.00	5.73	5.73	5.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97	17.600	8.21	3.03	0.09	0.36	0.00	0.37	0.00	0.00	5.73	5.73	5.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			2.73	0.08	0.32	0.00	0.30	0.16	0.00	4.10			0.50	1.28	0.00	0.00	0.00	0.00			0.00	0.00	0.00

\* g/m<sup>2</sup>/d                      \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
77	19.600	25.47	0.21	28.20	143.33	1.15	44.69	0.00	80.40	0.00	0.00	0.00	0.00	0.00	0.00	238.05	0.00	0.	0.00
78	19.500	25.46	0.21	28.24	146.34	1.13	44.35	0.00	80.22	0.00	0.00	0.00	0.00	0.00	0.00	239.10	0.00	0.	0.00
79	19.400	25.46	0.21	28.28	149.34	1.11	44.02	0.00	80.04	0.00	0.00	0.00	0.00	0.00	0.00	240.14	0.00	0.	0.00
80	19.300	25.45	0.21	28.33	152.34	1.09	43.68	0.00	79.86	0.00	0.00	0.00	0.00	0.00	0.00	241.19	0.00	0.	0.00
81	19.200	25.44	0.21	28.37	155.33	1.07	43.35	0.00	79.69	0.00	0.00	0.00	0.00	0.00	0.00	242.24	0.00	0.	0.00
82	19.100	25.43	0.21	28.42	158.31	1.06	43.03	0.00	79.52	0.00	0.00	0.00	0.00	0.00	0.00	243.29	0.00	0.	0.00
83	19.000	25.42	0.21	28.46	161.29	1.04	42.70	0.00	79.35	0.00	0.00	0.00	0.00	0.00	0.00	244.33	0.00	0.	0.00
84	18.900	25.42	0.21	28.50	164.25	1.03	42.38	0.00	79.19	0.00	0.00	0.00	0.00	0.00	0.00	245.38	0.00	0.	0.00
85	18.800	25.41	0.21	28.55	167.22	1.02	42.07	0.00	79.03	0.00	0.00	0.00	0.00	0.00	0.00	246.43	0.00	0.	0.00
86	18.700	25.40	0.21	28.59	170.18	1.00	41.75	0.00	78.87	0.00	0.00	0.00	0.00	0.00	0.00	247.48	0.00	0.	0.00
87	18.600	25.39	0.21	28.63	173.13	0.99	41.44	0.00	78.72	0.00	0.00	0.00	0.00	0.00	0.00	248.52	0.00	0.	0.00
88	18.500	25.38	0.21	28.68	176.07	0.99	41.13	0.00	78.57	0.00	0.00	0.00	0.00	0.00	0.00	249.57	0.00	0.	0.00
89	18.400	25.37	0.21	28.72	179.01	0.98	40.83	0.00	78.42	0.00	0.00	0.00	0.00	0.00	0.00	250.62	0.00	0.	0.00
90	18.300	25.37	0.21	28.76	181.94	0.97	40.52	0.00	78.27	0.00	0.00	0.00	0.00	0.00	0.00	251.67	0.00	0.	0.00

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

91	18.200	25.36	0.21	28.80	184.87	0.97	40.22	0.00	78.13	0.00	0.00	0.00	0.00	0.00	0.00	252.71	0.00	0.	0.00
92	18.100	25.35	0.21	28.85	187.79	0.97	39.93	0.00	77.99	0.00	0.00	0.00	0.00	0.00	0.00	253.76	0.00	0.	0.00
93	18.000	25.34	0.21	28.89	190.71	0.96	39.63	0.00	77.85	0.00	0.00	0.00	0.00	0.00	0.00	254.81	0.00	0.	0.00
94	17.900	25.33	0.21	28.93	193.62	0.96	39.34	0.00	77.72	0.00	0.00	0.00	0.00	0.00	0.00	255.86	0.00	0.	0.00
95	17.800	25.33	0.21	28.97	196.52	0.96	39.05	0.00	77.59	0.00	0.00	0.00	0.00	0.00	0.00	256.90	0.00	0.	0.00
96	17.700	25.32	0.21	29.02	199.41	0.96	38.77	0.00	77.46	0.00	0.00	0.00	0.00	0.00	0.00	257.95	0.00	0.	0.00
97	17.600	25.31	0.21	29.06	202.25	0.96	38.49	0.00	77.34	0.00	0.00	0.00	0.00	0.00	0.00	259.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
 REACH NO. 7 HIGHWAY 1026 TO HIGHWAY 1033

GRAYS CREEK WATERSHED MODEL  
 GRAYS CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
98	UPR RCH	0.13840	25.31	0.21	29.06	202.25	0.96	38.49	0.00	77.34	0.00	0.00	0.00	0.00	0.00	259.00	0.00	0.00
EACH	INCR	0.00013	25.31	0.21	5.00	2000.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
98	17.60	17.50	0.13853	87.2	0.15246	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.545	0.152
99	17.50	17.40	0.13866	87.1	0.15260	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.545	0.153
100	17.40	17.30	0.13879	87.0	0.15274	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.546	0.153
101	17.30	17.20	0.13892	87.0	0.15289	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.546	0.153
102	17.20	17.10	0.13906	86.9	0.15303	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.547	0.153
103	17.10	17.00	0.13919	86.8	0.15318	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.547	0.153
104	17.00	16.90	0.13932	86.7	0.15332	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.548	0.153
105	16.90	16.80	0.13945	86.6	0.15347	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.548	0.153
106	16.80	16.70	0.13958	86.5	0.15361	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.549	0.154
107	16.70	16.60	0.13971	86.5	0.15375	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.549	0.154
108	16.60	16.50	0.13984	86.4	0.15390	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.550	0.154
109	16.50	16.40	0.13997	86.3	0.15404	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.550	0.154
110	16.40	16.30	0.14010	86.2	0.15419	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.551	0.154
111	16.30	16.20	0.14024	86.1	0.15433	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.551	0.154
112	16.20	16.10	0.14037	86.1	0.15448	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.552	0.154
113	16.10	16.00	0.14050	86.0	0.15462	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.552	0.155
114	16.00	15.90	0.14063	85.9	0.15477	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.553	0.155
115	15.90	15.80	0.14076	85.8	0.15491	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.553	0.155
116	15.80	15.70	0.14089	85.7	0.15505	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.554	0.155
117	15.70	15.60	0.14102	85.7	0.15520	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.554	0.155
118	15.60	15.50	0.14115	85.6	0.15534	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.555	0.155
119	15.50	15.40	0.14129	85.5	0.15549	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.555	0.155
120	15.40	15.30	0.14142	85.4	0.15563	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.556	0.156
121	15.30	15.20	0.14155	85.3	0.15578	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.557	0.156
122	15.20	15.10	0.14168	85.3	0.15592	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.557	0.156
123	15.10	15.00	0.14181	85.2	0.15606	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.558	0.156
124	15.00	14.90	0.14194	85.1	0.15621	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.558	0.156
125	14.90	14.80	0.14207	85.0	0.15635	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.559	0.156
126	14.80	14.70	0.14220	84.9	0.15650	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.559	0.156
127	14.70	14.60	0.14233	84.9	0.15664	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.560	0.157
128	14.60	14.50	0.14247	84.8	0.15679	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.560	0.157
129	14.50	14.40	0.14260	84.7	0.15693	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.561	0.157

Grays Creek Watershed TMDL

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Originated: November 23, 2010

130	14.40	14.30	0.14273	84.6	0.15707	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.561	0.157
131	14.30	14.20	0.14286	84.6	0.15722	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.562	0.157
132	14.20	14.10	0.14299	84.5	0.15736	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.562	0.157
133	14.10	14.00	0.14312	84.4	0.15751	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.563	0.158
134	14.00	13.90	0.14325	84.3	0.15765	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.563	0.158
135	13.90	13.80	0.14338	84.2	0.15780	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.564	0.158
136	13.80	13.70	0.14351	84.2	0.15794	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.564	0.158
137	13.70	13.60	0.14365	84.1	0.15808	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.565	0.158
138	13.60	13.50	0.14378	84.0	0.15823	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.565	0.158
139	13.50	13.40	0.14391	83.9	0.15837	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.566	0.158
140	13.40	13.30	0.14404	83.9	0.15852	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.566	0.159
141	13.30	13.20	0.14417	83.8	0.15866	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.567	0.159
142	13.20	13.10	0.14430	83.7	0.15881	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.567	0.159
143	13.10	13.00	0.14443	83.6	0.15895	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.568	0.159
144	13.00	12.90	0.14456	83.6	0.15910	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.568	0.159
145	12.90	12.80	0.14469	83.5	0.15924	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.569	0.159
146	12.80	12.70	0.14483	83.4	0.15938	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.569	0.159
147	12.70	12.60	0.14496	83.3	0.15953	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.570	0.160
148	12.60	12.50	0.14509	83.3	0.15967	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.570	0.160
149	12.50	12.40	0.14522	83.2	0.15982	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.571	0.160
150	12.40	12.30	0.14535	83.1	0.15996	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.571	0.160
151	12.30	12.20	0.14548	83.0	0.16011	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.572	0.160
152	12.20	12.10	0.14561	83.0	0.16025	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.572	0.160
153	12.10	12.00	0.14574	82.9	0.16039	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.573	0.160
154	12.00	11.90	0.14588	82.8	0.16054	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.574	0.161
155	11.90	11.80	0.14601	82.7	0.16068	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.574	0.161
156	11.80	11.70	0.14614	82.7	0.16083	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.575	0.161
157	11.70	11.60	0.14627	82.6	0.16097	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.575	0.161
158	11.60	11.50	0.14640	82.5	0.16112	0.01	0.27	3.35	90.87	335.30	0.91	0.00	0.000	0.576	0.161

TOT						0.45			5542.84	20453.30					
AVG			0.1567				0.27	3.35				0.91			
CUM						9.66									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da
98	17.500	8.21	4.09	0.10	0.42	0.00	0.63	0.00	0.00	5.03	5.03	5.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99	17.400	8.20	4.09	0.10	0.42	0.00	0.63	0.00	0.00	5.04	5.04	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	17.300	8.20	4.10	0.10	0.42	0.00	0.63	0.00	0.00	5.04	5.04	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
101	17.200	8.20	4.10	0.10	0.42	0.00	0.63	0.00	0.00	5.04	5.04	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102	17.100	8.20	4.10	0.10	0.42	0.00	0.63	0.00	0.00	5.04	5.04	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
103	17.000	8.20	4.10	0.10	0.42	0.00	0.64	0.00	0.00	5.05	5.05	5.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104	16.900	8.20	4.10	0.10	0.42	0.00	0.64	0.00	0.00	5.05	5.05	5.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	16.800	8.20	4.10	0.10	0.42	0.00	0.64	0.00	0.00	5.05	5.05	5.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
106	16.700	8.19	4.11	0.10	0.42	0.00	0.64	0.00	0.00	5.06	5.06	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107	16.600	8.19	4.11	0.10	0.42	0.00	0.64	0.00	0.00	5.06	5.06	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
108	16.500	8.19	4.11	0.10	0.42	0.00	0.64	0.00	0.00	5.06	5.06	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
109	16.400	8.19	4.11	0.10	0.42	0.00	0.64	0.00	0.00	5.06	5.06	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	16.300	8.19	4.11	0.10	0.42	0.00	0.64	0.00	0.00	5.07	5.07	5.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
111	16.200	8.19	4.11	0.10	0.42	0.00	0.64	0.00	0.00	5.07	5.07	5.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112	16.100	8.19	4.12	0.10	0.42	0.00	0.64	0.00	0.00	5.07	5.07	5.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	16.000	8.18	4.12	0.10	0.42	0.00	0.64	0.00	0.00	5.08	5.08	5.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
114	15.900	8.18	4.12	0.10	0.42	0.00	0.64	0.00	0.00	5.08	5.08	5.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	15.800	8.18	4.12	0.10	0.42	0.00	0.64	0.00	0.00	5.08	5.08	5.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
116	15.700	8.18	4.12	0.10	0.42	0.00	0.64	0.00	0.00	5.08	5.08	5.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00





Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

105	16.800	25.38	0.21	28.88	215.78	1.35	37.05	0.00	73.60	0.00	0.00	0.00	0.00	0.00	0.00	243.66	0.00	0.	0.00
106	16.700	25.39	0.21	28.85	217.45	1.39	36.87	0.00	73.14	0.00	0.00	0.00	0.00	0.00	0.00	241.74	0.00	0.	0.00
107	16.600	25.40	0.21	28.83	219.13	1.43	36.70	0.00	72.67	0.00	0.00	0.00	0.00	0.00	0.00	239.82	0.00	0.	0.00
108	16.500	25.41	0.20	28.81	220.80	1.47	36.53	0.00	72.21	0.00	0.00	0.00	0.00	0.00	0.00	237.90	0.00	0.	0.00
109	16.400	25.42	0.20	28.79	222.46	1.51	36.36	0.00	71.75	0.00	0.00	0.00	0.00	0.00	0.00	235.98	0.00	0.	0.00
110	16.300	25.43	0.20	28.76	224.13	1.55	36.18	0.00	71.29	0.00	0.00	0.00	0.00	0.00	0.00	234.07	0.00	0.	0.00
111	16.200	25.44	0.20	28.74	225.79	1.58	36.01	0.00	70.84	0.00	0.00	0.00	0.00	0.00	0.00	232.15	0.00	0.	0.00
112	16.100	25.45	0.20	28.72	227.44	1.62	35.84	0.00	70.38	0.00	0.00	0.00	0.00	0.00	0.00	230.23	0.00	0.	0.00
113	16.000	25.45	0.20	28.70	229.10	1.65	35.68	0.00	69.92	0.00	0.00	0.00	0.00	0.00	0.00	228.31	0.00	0.	0.00
114	15.900	25.46	0.20	28.68	230.75	1.68	35.51	0.00	69.47	0.00	0.00	0.00	0.00	0.00	0.00	226.39	0.00	0.	0.00
115	15.800	25.47	0.20	28.65	232.40	1.72	35.34	0.00	69.01	0.00	0.00	0.00	0.00	0.00	0.00	224.48	0.00	0.	0.00
116	15.700	25.48	0.20	28.63	234.04	1.75	35.18	0.00	68.56	0.00	0.00	0.00	0.00	0.00	0.00	222.56	0.00	0.	0.00
117	15.600	25.49	0.20	28.61	235.69	1.78	35.01	0.00	68.11	0.00	0.00	0.00	0.00	0.00	0.00	220.64	0.00	0.	0.00
118	15.500	25.50	0.20	28.59	237.33	1.81	34.85	0.00	67.65	0.00	0.00	0.00	0.00	0.00	0.00	218.72	0.00	0.	0.00
119	15.400	25.51	0.20	28.57	238.96	1.83	34.68	0.00	67.20	0.00	0.00	0.00	0.00	0.00	0.00	216.80	0.00	0.	0.00
120	15.300	25.52	0.20	28.54	240.59	1.86	34.52	0.00	66.75	0.00	0.00	0.00	0.00	0.00	0.00	214.89	0.00	0.	0.00
121	15.200	25.53	0.20	28.52	242.22	1.89	34.36	0.00	66.31	0.00	0.00	0.00	0.00	0.00	0.00	212.97	0.00	0.	0.00
122	15.100	25.54	0.20	28.50	243.85	1.91	34.20	0.00	65.86	0.00	0.00	0.00	0.00	0.00	0.00	211.05	0.00	0.	0.00
123	15.000	25.54	0.20	28.48	245.48	1.94	34.04	0.00	65.41	0.00	0.00	0.00	0.00	0.00	0.00	209.13	0.00	0.	0.00
124	14.900	25.55	0.20	28.46	247.10	1.96	33.88	0.00	64.96	0.00	0.00	0.00	0.00	0.00	0.00	207.21	0.00	0.	0.00
125	14.800	25.56	0.20	28.44	248.72	1.99	33.72	0.00	64.52	0.00	0.00	0.00	0.00	0.00	0.00	205.30	0.00	0.	0.00
126	14.700	25.57	0.20	28.41	250.33	2.01	33.57	0.00	64.07	0.00	0.00	0.00	0.00	0.00	0.00	203.38	0.00	0.	0.00
127	14.600	25.58	0.20	28.39	251.94	2.03	33.41	0.00	63.63	0.00	0.00	0.00	0.00	0.00	0.00	201.46	0.00	0.	0.00
128	14.500	25.59	0.19	28.37	253.55	2.06	33.26	0.00	63.19	0.00	0.00	0.00	0.00	0.00	0.00	199.54	0.00	0.	0.00
129	14.400	25.60	0.19	28.35	255.16	2.08	33.10	0.00	62.74	0.00	0.00	0.00	0.00	0.00	0.00	197.62	0.00	0.	0.00
130	14.300	25.61	0.19	28.33	256.76	2.10	32.95	0.00	62.30	0.00	0.00	0.00	0.00	0.00	0.00	195.70	0.00	0.	0.00
131	14.200	25.62	0.19	28.31	258.36	2.12	32.80	0.00	61.86	0.00	0.00	0.00	0.00	0.00	0.00	193.79	0.00	0.	0.00
132	14.100	25.63	0.19	28.28	259.96	2.14	32.64	0.00	61.42	0.00	0.00	0.00	0.00	0.00	0.00	191.87	0.00	0.	0.00
133	14.000	25.63	0.19	28.26	261.55	2.16	32.49	0.00	60.99	0.00	0.00	0.00	0.00	0.00	0.00	189.95	0.00	0.	0.00
134	13.900	25.64	0.19	28.24	263.14	2.17	32.34	0.00	60.55	0.00	0.00	0.00	0.00	0.00	0.00	188.03	0.00	0.	0.00
135	13.800	25.65	0.19	28.22	264.73	2.19	32.19	0.00	60.11	0.00	0.00	0.00	0.00	0.00	0.00	186.11	0.00	0.	0.00
136	13.700	25.66	0.19	28.20	266.32	2.21	32.04	0.00	59.67	0.00	0.00	0.00	0.00	0.00	0.00	184.20	0.00	0.	0.00
137	13.600	25.67	0.19	28.18	267.90	2.23	31.90	0.00	59.24	0.00	0.00	0.00	0.00	0.00	0.00	182.28	0.00	0.	0.00
138	13.500	25.68	0.19	28.16	269.48	2.24	31.75	0.00	58.80	0.00	0.00	0.00	0.00	0.00	0.00	180.36	0.00	0.	0.00
139	13.400	25.69	0.19	28.14	271.06	2.26	31.60	0.00	58.37	0.00	0.00	0.00	0.00	0.00	0.00	178.44	0.00	0.	0.00
140	13.300	25.70	0.19	28.12	272.63	2.27	31.46	0.00	57.94	0.00	0.00	0.00	0.00	0.00	0.00	176.52	0.00	0.	0.00
141	13.200	25.71	0.19	28.09	274.20	2.29	31.31	0.00	57.50	0.00	0.00	0.00	0.00	0.00	0.00	174.61	0.00	0.	0.00
142	13.100	25.72	0.19	28.07	275.77	2.30	31.17	0.00	57.07	0.00	0.00	0.00	0.00	0.00	0.00	172.69	0.00	0.	0.00
143	13.000	25.72	0.19	28.05	277.34	2.32	31.03	0.00	56.64	0.00	0.00	0.00	0.00	0.00	0.00	170.77	0.00	0.	0.00
144	12.900	25.73	0.19	28.03	278.90	2.33	30.88	0.00	56.21	0.00	0.00	0.00	0.00	0.00	0.00	168.85	0.00	0.	0.00
145	12.800	25.74	0.19	28.01	280.46	2.34	30.74	0.00	55.78	0.00	0.00	0.00	0.00	0.00	0.00	166.93	0.00	0.	0.00
146	12.700	25.75	0.19	27.99	282.02	2.36	30.60	0.00	55.35	0.00	0.00	0.00	0.00	0.00	0.00	165.02	0.00	0.	0.00
147	12.600	25.76	0.19	27.97	283.57	2.37	30.46	0.00	54.93	0.00	0.00	0.00	0.00	0.00	0.00	163.10	0.00	0.	0.00
148	12.500	25.77	0.18	27.95	285.12	2.38	30.32	0.00	54.50	0.00	0.00	0.00	0.00	0.00	0.00	161.18	0.00	0.	0.00
149	12.400	25.78	0.18	27.93	286.67	2.39	30.18	0.00	54.07	0.00	0.00	0.00	0.00	0.00	0.00	159.26	0.00	0.	0.00
150	12.300	25.79	0.18	27.91	288.22	2.40	30.05	0.00	53.65	0.00	0.00	0.00	0.00	0.00	0.00	157.34	0.00	0.	0.00
151	12.200	25.80	0.18	27.89	289.76	2.42	29.91	0.00	53.22	0.00	0.00	0.00	0.00	0.00	0.00	155.43	0.00	0.	0.00
152	12.100	25.81	0.18	27.87	291.30	2.43	29.77	0.00	52.80	0.00	0.00	0.00	0.00	0.00	0.00	153.51	0.00	0.	0.00
153	12.000	25.81	0.18	27.84	292.84	2.44	29.64	0.00	52.38	0.00	0.00	0.00	0.00	0.00	0.00	151.59	0.00	0.	0.00
154	11.900	25.82	0.18	27.82	294.37	2.45	29.50	0.00	51.95	0.00	0.00	0.00	0.00	0.00	0.00	149.67	0.00	0.	0.00
155	11.800	25.83	0.18	27.80	295.91	2.46	29.37	0.00	51.53	0.00	0.00	0.00	0.00	0.00	0.00	147.75	0.00	0.	0.00
156	11.700	25.84	0.18	27.78	297.43	2.47	29.23	0.00	51.11	0.00	0.00	0.00	0.00	0.00	0.00	145.84	0.00	0.	0.00
157	11.600	25.85	0.18	27.76	298.96	2.48	29.10	0.00	50.69	0.00	0.00	0.00	0.00	0.00	0.00	143.92	0.00	0.	0.00
158	11.500	25.86	0.18	27.74	300.47	2.49	28.97	0.00	50.27	0.00	0.00	0.00	0.00	0.00	0.00	142.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 8 HIGHWAY 1033 TO SCIVICQUE ROAD

GRAYS CREEK WATERSHED MODEL  
GRAYS CREEK FINAL CALIBRATION RUN

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
159	UPR RCH	0.14640	25.86	0.18	27.74	300.47	2.49	28.97	0.00	50.27	0.00	0.00	0.00	0.00	0.00	142.00	0.00	0.00
EACH	INCR	0.00012	25.86	0.18	10.00	1800.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
159	11.50	11.40	0.14652	82.4	0.17562	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.407	0.176
160	11.40	11.30	0.14664	82.4	0.17576	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.407	0.176
161	11.30	11.20	0.14675	82.3	0.17590	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.407	0.176
162	11.20	11.10	0.14687	82.2	0.17604	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.408	0.176
163	11.10	11.00	0.14699	82.2	0.17618	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.408	0.176
164	11.00	10.90	0.14711	82.1	0.17632	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.408	0.176
165	10.90	10.80	0.14722	82.1	0.17646	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.409	0.176
166	10.80	10.70	0.14734	82.0	0.17660	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.409	0.177
167	10.70	10.60	0.14746	81.9	0.17674	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.409	0.177
168	10.60	10.50	0.14758	81.9	0.17689	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.410	0.177
169	10.50	10.40	0.14769	81.8	0.17703	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.410	0.177
170	10.40	10.30	0.14781	81.7	0.17717	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.410	0.177
171	10.30	10.20	0.14793	81.7	0.17731	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.411	0.177
172	10.20	10.10	0.14805	81.6	0.17745	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.411	0.177
173	10.10	10.00	0.14816	81.5	0.17759	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.411	0.178
174	10.00	9.90	0.14828	81.5	0.17773	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.411	0.178
175	9.90	9.80	0.14840	81.4	0.17787	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.412	0.178
176	9.80	9.70	0.14852	81.3	0.17801	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.412	0.178
177	9.70	9.60	0.14864	81.3	0.17816	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.412	0.178
178	9.60	9.50	0.14875	81.2	0.17830	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.413	0.178
179	9.50	9.40	0.14887	81.1	0.17844	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.413	0.178
180	9.40	9.30	0.14899	81.1	0.17858	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.413	0.179
181	9.30	9.20	0.14911	81.0	0.17872	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.414	0.179
182	9.20	9.10	0.14922	81.0	0.17886	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.414	0.179
183	9.10	9.00	0.14934	80.9	0.17900	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.414	0.179
184	9.00	8.90	0.14946	80.8	0.17914	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.415	0.179
185	8.90	8.80	0.14958	80.8	0.17928	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.415	0.179
186	8.80	8.70	0.14969	80.7	0.17942	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.415	0.179
187	8.70	8.60	0.14981	80.6	0.17957	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.416	0.180
188	8.60	8.50	0.14993	80.6	0.17971	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.416	0.180
189	8.50	8.40	0.15005	80.5	0.17985	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.416	0.180
190	8.40	8.30	0.15016	80.4	0.17999	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.417	0.180
191	8.30	8.20	0.15028	80.4	0.18013	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.417	0.180
192	8.20	8.10	0.15040	80.3	0.18027	0.01	0.16	5.18	83.43	518.20	0.83	0.00	0.000	0.417	0.180
TOT						0.22			2836.63	17618.80					
AVG					0.1779		0.16	5.18			0.83				
CUM						9.89									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O.	REAER RATE	BOD#1 DECAY	BOD#1 SETT	ABOD#1 DECAY	BOD#2 DECAY	BOD#2 SETT	ABOD#2 DECAY	BKGD SOD	FULL SOD	CORR SOD	ORGN DECAY	ORGN SETT	NH3 DECAY	NH3 SRCE	DENIT RATE	PO4 SRCE	ALG PROD	MAC PROD	COLI DECAY	NCM DECAY	NCM SETT	
		mg/L	1/da	1/da	1/da	1/da	1/da	1/da	1/da	*	*	*	1/da	1/da	1/da	*	1/da	*	**	**	**	1/da	1/da	1/da



Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

173	10.000	25.88	0.17	27.53	318.32	2.97	26.50	0.00	45.62	0.00	0.00	0.00	0.00	0.00	0.00	127.44	0.00	0.	0.00
174	9.900	25.88	0.17	27.52	319.49	2.99	26.35	0.00	45.32	0.00	0.00	0.00	0.00	0.00	0.00	126.47	0.00	0.	0.00
175	9.800	25.89	0.17	27.50	320.67	3.01	26.19	0.00	45.02	0.00	0.00	0.00	0.00	0.00	0.00	125.50	0.00	0.	0.00
176	9.700	25.89	0.17	27.49	321.84	3.03	26.04	0.00	44.72	0.00	0.00	0.00	0.00	0.00	0.00	124.53	0.00	0.	0.00
177	9.600	25.89	0.17	27.48	323.01	3.05	25.89	0.00	44.42	0.00	0.00	0.00	0.00	0.00	0.00	123.56	0.00	0.	0.00
178	9.500	25.89	0.17	27.46	324.18	3.07	25.73	0.00	44.12	0.00	0.00	0.00	0.00	0.00	0.00	122.59	0.00	0.	0.00
179	9.400	25.89	0.17	27.45	325.34	3.09	25.58	0.00	43.83	0.00	0.00	0.00	0.00	0.00	0.00	121.62	0.00	0.	0.00
180	9.300	25.89	0.17	27.43	326.51	3.11	25.43	0.00	43.53	0.00	0.00	0.00	0.00	0.00	0.00	120.65	0.00	0.	0.00
181	9.200	25.89	0.17	27.42	327.67	3.13	25.29	0.00	43.24	0.00	0.00	0.00	0.00	0.00	0.00	119.68	0.00	0.	0.00
182	9.100	25.90	0.17	27.41	328.83	3.14	25.14	0.00	42.94	0.00	0.00	0.00	0.00	0.00	0.00	118.71	0.00	0.	0.00
183	9.000	25.90	0.17	27.39	329.99	3.16	24.99	0.00	42.65	0.00	0.00	0.00	0.00	0.00	0.00	117.74	0.00	0.	0.00
184	8.900	25.90	0.16	27.38	331.15	3.18	24.85	0.00	42.36	0.00	0.00	0.00	0.00	0.00	0.00	116.76	0.00	0.	0.00
185	8.800	25.90	0.16	27.37	332.30	3.19	24.70	0.00	42.07	0.00	0.00	0.00	0.00	0.00	0.00	115.79	0.00	0.	0.00
186	8.700	25.90	0.16	27.35	333.46	3.21	24.56	0.00	41.78	0.00	0.00	0.00	0.00	0.00	0.00	114.82	0.00	0.	0.00
187	8.600	25.90	0.16	27.34	334.61	3.22	24.42	0.00	41.49	0.00	0.00	0.00	0.00	0.00	0.00	113.85	0.00	0.	0.00
188	8.500	25.90	0.16	27.33	335.76	3.23	24.27	0.00	41.21	0.00	0.00	0.00	0.00	0.00	0.00	112.88	0.00	0.	0.00
189	8.400	25.91	0.16	27.31	336.91	3.25	24.13	0.00	40.92	0.00	0.00	0.00	0.00	0.00	0.00	111.91	0.00	0.	0.00
190	8.300	25.91	0.16	27.30	338.05	3.26	23.99	0.00	40.63	0.00	0.00	0.00	0.00	0.00	0.00	110.94	0.00	0.	0.00
191	8.200	25.91	0.16	27.28	339.20	3.27	23.85	0.00	40.35	0.00	0.00	0.00	0.00	0.00	0.00	109.97	0.00	0.	0.00
192	8.100	25.91	0.16	27.27	340.31	3.28	23.70	0.00	40.05	0.00	0.00	0.00	0.00	0.00	0.00	109.00	0.00	0.	0.00

FINAL REPORT HEADWATER  
REACH NO. 9 SCIVICQUE ROAD TO HIGHWAY 1032

GRAYS CREEK WATERSHED MODEL  
GRAYS CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
193	UPR RCH	0.15040	25.91	0.16	27.27	340.31	3.28	23.70	0.00	40.05	0.00	0.00	0.00	0.00	0.00	109.00	0.00	0.00
EACH	INCR	0.00010	25.91	0.16	0.00	180.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
203	WSTLD	0.00140	26.18	0.00	0.00	0.00	5.51	13.92	0.00	13.92	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
193	8.10	8.00	0.15049	80.3	0.01822	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.143	0.018
194	8.00	7.90	0.15059	80.2	0.01823	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.143	0.018
195	7.90	7.80	0.15069	80.2	0.01825	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.143	0.018
196	7.80	7.70	0.15078	80.1	0.01826	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.143	0.018
197	7.70	7.60	0.15088	80.1	0.01827	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.143	0.018
198	7.60	7.50	0.15097	80.0	0.01828	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.144	0.018
199	7.50	7.40	0.15107	80.0	0.01829	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.144	0.018
200	7.40	7.30	0.15116	79.9	0.01830	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.144	0.018
201	7.30	7.20	0.15126	79.9	0.01832	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.144	0.018
202	7.20	7.10	0.15135	79.8	0.01833	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.144	0.018
203	7.10	7.00	0.15285	79.9	0.01851	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.145	0.019
204	7.00	6.90	0.15294	79.9	0.01852	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.145	0.019
205	6.90	6.80	0.15304	79.8	0.01853	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.145	0.019
206	6.80	6.70	0.15313	79.8	0.01854	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
207	6.70	6.60	0.15323	79.8	0.01855	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
208	6.60	6.50	0.15332	79.7	0.01857	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
209	6.50	6.40	0.15342	79.7	0.01858	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
210	6.40	6.30	0.15351	79.6	0.01859	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019

Grays Creek Watershed TMDL  
 Subsegment 040304

Originated: November 23, 2010

211	6.30	6.20	0.15361	79.6	0.01860	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
212	6.20	6.10	0.15370	79.5	0.01861	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
213	6.10	6.00	0.15380	79.5	0.01862	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
214	6.00	5.90	0.15389	79.4	0.01864	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
215	5.90	5.80	0.15399	79.4	0.01865	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
216	5.80	5.70	0.15409	79.3	0.01866	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.146	0.019
217	5.70	5.60	0.15418	79.3	0.01867	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
218	5.60	5.50	0.15428	79.2	0.01868	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
219	5.50	5.40	0.15437	79.2	0.01869	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
220	5.40	5.30	0.15447	79.1	0.01870	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
221	5.30	5.20	0.15456	79.1	0.01872	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
222	5.20	5.10	0.15466	79.0	0.01873	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
223	5.10	5.00	0.15475	79.0	0.01874	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
224	5.00	4.90	0.15485	78.9	0.01875	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
225	4.90	4.80	0.15494	78.9	0.01876	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
226	4.80	4.70	0.15504	78.8	0.01877	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
227	4.70	4.60	0.15513	78.8	0.01878	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.147	0.019
228	4.60	4.50	0.15523	78.7	0.01880	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
229	4.50	4.40	0.15532	78.7	0.01881	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
230	4.40	4.30	0.15542	78.6	0.01882	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
231	4.30	4.20	0.15551	78.6	0.01883	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
232	4.20	4.10	0.15561	78.5	0.01884	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
233	4.10	4.00	0.15570	78.5	0.01885	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
234	4.00	3.90	0.15580	78.4	0.01887	0.06	0.59	14.02	825.84	1402.10	8.26	0.00	0.000	0.148	0.019
TOT								2.62	34685.13	58888.22					
AVG					0.0186		0.59	14.02			8.26				
CUM						12.50									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da
193	8.000	8.11	1.33	0.10	0.20	0.00	0.39	0.00	0.00	2.62	2.62	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
194	7.900	8.11	1.33	0.10	0.20	0.00	0.39	0.00	0.00	2.62	2.62	2.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
195	7.800	8.10	1.33	0.10	0.20	0.00	0.39	0.00	0.00	2.63	2.63	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
196	7.700	8.10	1.33	0.10	0.20	0.00	0.39	0.00	0.00	2.63	2.63	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
197	7.600	8.09	1.33	0.10	0.20	0.00	0.40	0.00	0.00	2.64	2.64	2.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
198	7.500	8.09	1.33	0.10	0.20	0.00	0.40	0.00	0.00	2.65	2.65	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	7.400	8.08	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.65	2.65	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200	7.300	8.08	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.66	2.66	2.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
201	7.200	8.07	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.66	2.66	2.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
202	7.100	8.07	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.67	2.67	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
203	7.000	8.06	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.68	2.68	2.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
204	6.900	8.06	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.68	2.68	2.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
205	6.800	8.05	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.69	2.69	2.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
206	6.700	8.05	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.69	2.69	2.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
207	6.600	8.04	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.70	2.70	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208	6.500	8.04	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.71	2.71	2.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
209	6.400	8.03	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.71	2.71	2.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210	6.300	8.03	1.34	0.10	0.20	0.00	0.40	0.00	0.00	2.72	2.72	2.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
211	6.200	8.02	1.35	0.10	0.20	0.00	0.40	0.00	0.00	2.72	2.72	2.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
212	6.100	8.02	1.35	0.10	0.20	0.00	0.40	0.00	0.00	2.73	2.73	2.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
213	6.000	8.01	1.35	0.10	0.20	0.00	0.41	0.00	0.00	2.74	2.74	2.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
214	5.900	8.01	1.35	0.10	0.20	0.00	0.41	0.00	0.00	2.74	2.74	2.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
215	5.800	8.00	1.35	0.10	0.20	0.00	0.41	0.00	0.00	2.75	2.75	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
216	5.700	8.00	1.35	0.10	0.20	0.00	0.41	0.00	0.00	2.75	2.75	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grays Creek Watershed TMDL  
Subsegment 040304

Originated: November 23, 2010

217	5.600	7.99	1.35	0.10	0.20	0.00	0.41	0.00	0.00	2.76	2.76	2.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
218	5.500	7.99	1.35	0.10	0.20	0.00	0.41	0.00	0.00	2.77	2.77	2.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
219	5.400	7.98	1.35	0.10	0.20	0.00	0.41	0.00	0.00	2.77	2.77	2.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	5.300	7.98	1.35	0.10	0.20	0.00	0.41	0.00	0.00	2.78	2.78	2.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
221	5.200	7.97	1.35	0.10	0.20	0.00	0.41	0.00	0.00	2.79	2.79	2.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
222	5.100	7.97	1.36	0.10	0.20	0.00	0.41	0.00	0.00	2.79	2.79	2.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
223	5.000	7.96	1.36	0.10	0.20	0.00	0.41	0.00	0.00	2.80	2.80	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
224	4.900	7.96	1.36	0.10	0.20	0.00	0.41	0.00	0.00	2.80	2.80	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225	4.800	7.95	1.36	0.10	0.20	0.00	0.41	0.00	0.00	2.81	2.81	2.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
226	4.700	7.95	1.36	0.10	0.20	0.00	0.41	0.00	0.00	2.82	2.82	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
227	4.600	7.94	1.36	0.10	0.20	0.00	0.41	0.00	0.00	2.82	2.82	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
228	4.500	7.94	1.36	0.10	0.20	0.00	0.42	0.00	0.00	2.83	2.83	2.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
229	4.400	7.93	1.36	0.10	0.20	0.00	0.42	0.00	0.00	2.84	2.84	2.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	4.300	7.93	1.36	0.10	0.20	0.00	0.42	0.00	0.00	2.84	2.84	2.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
231	4.200	7.92	1.36	0.10	0.20	0.00	0.42	0.00	0.00	2.85	2.85	2.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
232	4.100	7.92	1.36	0.10	0.20	0.00	0.42	0.00	0.00	2.85	2.85	2.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
233	4.000	7.91	1.36	0.11	0.20	0.00	0.42	0.00	0.00	2.86	2.86	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
234	3.900	7.91	1.37	0.11	0.20	0.00	0.42	0.00	0.00	2.87	2.87	2.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AVG 20 DEG C RATE 1.19 0.08 0.17 0.00 0.30 0.02 0.00 1.80 0.50 0.68 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\* g/m²/d \*\* mg/L/day

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m³	COLI #/100mL	NCM
193	8.000	25.95	0.16	27.25	340.20	3.26	23.29	0.00	39.63	0.00	0.00	0.00	0.00	0.00	0.00	108.93	0.00	0.	0.00
194	7.900	25.98	0.16	27.24	340.10	3.24	22.89	0.00	39.22	0.00	0.00	0.00	0.00	0.00	0.00	108.86	0.00	0.	0.00
195	7.800	26.02	0.16	27.22	340.00	3.23	22.51	0.00	38.82	0.00	0.00	0.00	0.00	0.00	0.00	108.79	0.00	0.	0.00
196	7.700	26.05	0.15	27.20	339.90	3.22	22.13	0.00	38.43	0.00	0.00	0.00	0.00	0.00	0.00	108.71	0.00	0.	0.00
197	7.600	26.09	0.15	27.18	339.80	3.21	21.75	0.00	38.05	0.00	0.00	0.00	0.00	0.00	0.00	108.64	0.00	0.	0.00
198	7.500	26.12	0.15	27.17	339.70	3.20	21.39	0.00	37.67	0.00	0.00	0.00	0.00	0.00	0.00	108.57	0.00	0.	0.00
199	7.400	26.16	0.15	27.15	339.60	3.19	21.03	0.00	37.30	0.00	0.00	0.00	0.00	0.00	0.00	108.50	0.00	0.	0.00
200	7.300	26.19	0.15	27.13	339.50	3.19	20.68	0.00	36.94	0.00	0.00	0.00	0.00	0.00	0.00	108.43	0.00	0.	0.00
201	7.200	26.23	0.14	27.11	339.38	3.19	20.33	0.00	36.58	0.00	0.00	0.00	0.00	0.00	0.00	108.36	0.00	0.	0.00
202	7.100	26.26	0.14	27.08	339.07	3.19	19.99	0.00	36.23	0.00	0.00	0.00	0.00	0.00	0.00	108.29	0.00	0.	0.00
203	7.000	26.30	0.14	26.83	336.09	3.20	19.60	0.00	35.84	0.00	0.00	0.00	0.00	0.00	0.00	108.21	0.00	0.	0.00
204	6.900	26.33	0.14	26.82	335.99	3.20	19.28	0.00	35.50	0.00	0.00	0.00	0.00	0.00	0.00	108.14	0.00	0.	0.00
205	6.800	26.37	0.14	26.80	335.90	3.20	18.96	0.00	35.17	0.00	0.00	0.00	0.00	0.00	0.00	108.07	0.00	0.	0.00
206	6.700	26.40	0.14	26.78	335.80	3.20	18.65	0.00	34.85	0.00	0.00	0.00	0.00	0.00	0.00	108.00	0.00	0.	0.00
207	6.600	26.44	0.14	26.77	335.70	3.21	18.35	0.00	34.53	0.00	0.00	0.00	0.00	0.00	0.00	107.93	0.00	0.	0.00
208	6.500	26.47	0.13	26.75	335.60	3.21	18.05	0.00	34.22	0.00	0.00	0.00	0.00	0.00	0.00	107.86	0.00	0.	0.00
209	6.400	26.51	0.13	26.73	335.51	3.21	17.75	0.00	33.92	0.00	0.00	0.00	0.00	0.00	0.00	107.79	0.00	0.	0.00
210	6.300	26.54	0.13	26.72	335.41	3.21	17.46	0.00	33.62	0.00	0.00	0.00	0.00	0.00	0.00	107.71	0.00	0.	0.00
211	6.200	26.58	0.13	26.70	335.32	3.22	17.18	0.00	33.32	0.00	0.00	0.00	0.00	0.00	0.00	107.64	0.00	0.	0.00
212	6.100	26.61	0.13	26.68	335.22	3.22	16.90	0.00	33.03	0.00	0.00	0.00	0.00	0.00	0.00	107.57	0.00	0.	0.00
213	6.000	26.65	0.12	26.67	335.12	3.23	16.62	0.00	32.75	0.00	0.00	0.00	0.00	0.00	0.00	107.50	0.00	0.	0.00
214	5.900	26.69	0.12	26.65	335.03	3.23	16.35	0.00	32.47	0.00	0.00	0.00	0.00	0.00	0.00	107.43	0.00	0.	0.00
215	5.800	26.72	0.12	26.63	334.93	3.24	16.09	0.00	32.19	0.00	0.00	0.00	0.00	0.00	0.00	107.36	0.00	0.	0.00
216	5.700	26.76	0.12	26.62	334.84	3.24	15.83	0.00	31.92	0.00	0.00	0.00	0.00	0.00	0.00	107.29	0.00	0.	0.00
217	5.600	26.79	0.12	26.60	334.74	3.25	15.58	0.00	31.66	0.00	0.00	0.00	0.00	0.00	0.00	107.21	0.00	0.	0.00
218	5.500	26.83	0.12	26.58	334.64	3.26	15.33	0.00	31.40	0.00	0.00	0.00	0.00	0.00	0.00	107.14	0.00	0.	0.00
219	5.400	26.86	0.12	26.57	334.55	3.26	15.08	0.00	31.14	0.00	0.00	0.00	0.00	0.00	0.00	107.07	0.00	0.	0.00
220	5.300	26.90	0.11	26.55	334.45	3.27	14.84	0.00	30.89	0.00	0.00	0.00	0.00	0.00	0.00	107.00	0.00	0.	0.00
221	5.200	26.93	0.11	26.54	334.36	3.27	14.60	0.00	30.64	0.00	0.00	0.00	0.00	0.00	0.00	106.93	0.00	0.	0.00
222	5.100	26.97	0.11	26.52	334.26	3.28	14.37	0.00	30.40	0.00	0.00	0.00	0.00	0.00	0.00	106.86	0.00	0.	0.00
223	5.000	27.00	0.11	26.50	334.17	3.29	14.15	0.00	30.16	0.00	0.00	0.00	0.00	0.00	0.00	106.79	0.00	0.	0.00

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

224	4.900	27.04	0.11	26.49	334.07	3.29	13.92	0.00	29.93	0.00	0.00	0.00	0.00	0.00	0.00	106.71	0.00	0.	0.00
225	4.800	27.07	0.11	26.47	333.98	3.30	13.70	0.00	29.70	0.00	0.00	0.00	0.00	0.00	0.00	106.64	0.00	0.	0.00
226	4.700	27.11	0.10	26.45	333.88	3.30	13.49	0.00	29.47	0.00	0.00	0.00	0.00	0.00	0.00	106.57	0.00	0.	0.00
227	4.600	27.14	0.10	26.44	333.79	3.31	13.28	0.00	29.25	0.00	0.00	0.00	0.00	0.00	0.00	106.50	0.00	0.	0.00
228	4.500	27.18	0.10	26.42	333.70	3.31	13.07	0.00	29.03	0.00	0.00	0.00	0.00	0.00	0.00	106.43	0.00	0.	0.00
229	4.400	27.21	0.10	26.41	333.60	3.32	12.86	0.00	28.82	0.00	0.00	0.00	0.00	0.00	0.00	106.36	0.00	0.	0.00
230	4.300	27.25	0.10	26.39	333.51	3.33	12.66	0.00	28.61	0.00	0.00	0.00	0.00	0.00	0.00	106.29	0.00	0.	0.00
231	4.200	27.28	0.10	26.37	333.41	3.33	12.47	0.00	28.40	0.00	0.00	0.00	0.00	0.00	0.00	106.21	0.00	0.	0.00
232	4.100	27.32	0.09	26.36	333.32	3.34	12.28	0.00	28.20	0.00	0.00	0.00	0.00	0.00	0.00	106.14	0.00	0.	0.00
233	4.000	27.35	0.09	26.34	333.22	3.34	12.08	0.00	27.99	0.00	0.00	0.00	0.00	0.00	0.00	106.07	0.00	0.	0.00
234	3.900	27.39	0.09	26.32	333.11	3.32	11.85	0.00	27.75	0.00	0.00	0.00	0.00	0.00	0.00	106.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAYS CREEK WATERSHED MODEL  
 REACH NO. 10 HIGHWAY 1032 TO RKM 0.8 GRAYS CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
235	UPR RCH	0.15580	27.39	0.09	26.32	333.11	3.32	11.85	0.00	27.75	0.00	0.00	0.00	0.00	0.00	106.00	0.00	0.00
EACH	INCR	0.00010	27.39	0.09	0.00	0.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
235	3.90	3.80	0.15590	78.4	0.00476	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
236	3.80	3.70	0.15599	78.3	0.00476	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
237	3.70	3.60	0.15609	78.3	0.00476	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
238	3.60	3.50	0.15619	78.2	0.00477	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
239	3.50	3.40	0.15628	78.2	0.00477	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
240	3.40	3.30	0.15638	78.1	0.00477	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
241	3.30	3.20	0.15648	78.1	0.00478	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
242	3.20	3.10	0.15657	78.0	0.00478	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
243	3.10	3.00	0.15667	78.0	0.00478	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
244	3.00	2.90	0.15677	77.9	0.00478	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.082	0.005
245	2.90	2.80	0.15686	77.9	0.00479	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
246	2.80	2.70	0.15696	77.9	0.00479	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
247	2.70	2.60	0.15706	77.8	0.00479	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
248	2.60	2.50	0.15715	77.8	0.00480	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
249	2.50	2.40	0.15725	77.7	0.00480	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
250	2.40	2.30	0.15735	77.7	0.00480	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
251	2.30	2.20	0.15744	77.6	0.00481	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
252	2.20	2.10	0.15754	77.6	0.00481	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
253	2.10	2.00	0.15764	77.5	0.00481	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
254	2.00	1.90	0.15773	77.5	0.00481	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
255	1.90	1.80	0.15783	77.4	0.00482	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
256	1.80	1.70	0.15793	77.4	0.00482	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
257	1.70	1.60	0.15803	77.3	0.00482	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
258	1.60	1.50	0.15812	77.3	0.00483	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
259	1.50	1.40	0.15822	77.2	0.00483	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
260	1.40	1.30	0.15832	77.2	0.00483	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
261	1.30	1.20	0.15841	77.1	0.00483	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
262	1.20	1.10	0.15851	77.1	0.00484	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005



Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

263	1.10	1.00	0.15861	77.0	0.00484	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
264	1.00	0.90	0.15870	77.0	0.00484	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.083	0.005
265	0.90	0.80	0.15880	77.0	0.00485	0.24	1.51	21.64	3276.45	2164.10	32.76	0.00	0.000	0.084	0.005
TOT						7.47			101569.87	67087.12					
AVG					0.0048		1.51	21.64			32.76				
CUM						19.97									

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI 1/da	NCM DECAT 1/da	NCM SETT 1/da
235	3.800	7.90	0.53	0.11	0.08	0.00	0.42	0.00	0.00	3.52	3.52	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
236	3.700	7.89	0.53	0.11	0.08	0.00	0.42	0.00	0.00	3.54	3.54	3.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
237	3.600	7.88	0.53	0.11	0.08	0.00	0.42	0.00	0.00	3.55	3.55	3.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
238	3.500	7.87	0.53	0.11	0.08	0.00	0.42	0.00	0.00	3.57	3.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
239	3.400	7.86	0.53	0.11	0.08	0.00	0.43	0.00	0.00	3.59	3.59	3.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	3.300	7.85	0.54	0.11	0.08	0.00	0.43	0.00	0.00	3.60	3.60	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
241	3.200	7.84	0.54	0.11	0.08	0.00	0.43	0.00	0.00	3.62	3.62	3.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
242	3.100	7.83	0.54	0.11	0.08	0.00	0.43	0.00	0.00	3.63	3.63	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
243	3.000	7.82	0.54	0.11	0.08	0.00	0.43	0.00	0.00	3.65	3.65	3.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
244	2.900	7.81	0.54	0.11	0.08	0.00	0.43	0.00	0.00	3.67	3.67	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
245	2.800	7.80	0.54	0.11	0.08	0.00	0.43	0.00	0.00	3.69	3.69	3.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
246	2.700	7.79	0.54	0.11	0.08	0.00	0.44	0.00	0.00	3.70	3.70	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
247	2.600	7.78	0.54	0.11	0.08	0.00	0.44	0.00	0.00	3.72	3.72	3.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
248	2.500	7.77	0.54	0.11	0.08	0.00	0.44	0.00	0.00	3.74	3.74	3.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
249	2.400	7.76	0.54	0.11	0.08	0.00	0.44	0.00	0.00	3.75	3.75	3.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	2.300	7.75	0.54	0.11	0.08	0.00	0.44	0.00	0.00	3.77	3.77	3.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
251	2.200	7.74	0.54	0.11	0.08	0.00	0.44	0.00	0.00	3.79	3.79	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
252	2.100	7.73	0.54	0.11	0.08	0.00	0.45	0.00	0.00	3.81	3.81	3.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
253	2.000	7.72	0.54	0.11	0.08	0.00	0.45	0.00	0.00	3.82	3.82	3.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
254	1.900	7.71	0.55	0.11	0.08	0.00	0.45	0.00	0.00	3.84	3.84	3.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
255	1.800	7.70	0.55	0.11	0.08	0.00	0.45	0.00	0.00	3.86	3.86	3.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
256	1.700	7.69	0.55	0.11	0.08	0.00	0.45	0.00	0.00	3.88	3.88	3.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
257	1.600	7.68	0.55	0.11	0.08	0.00	0.45	0.00	0.00	3.89	3.89	3.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
258	1.500	7.67	0.55	0.11	0.08	0.00	0.45	0.00	0.00	3.91	3.91	3.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
259	1.400	7.66	0.55	0.11	0.08	0.00	0.46	0.00	0.00	3.93	3.93	3.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	1.300	7.65	0.55	0.11	0.08	0.00	0.46	0.00	0.00	3.95	3.95	3.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
261	1.200	7.64	0.55	0.12	0.08	0.00	0.46	0.00	0.00	3.97	3.97	3.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
262	1.100	7.63	0.55	0.12	0.08	0.00	0.46	0.00	0.00	3.98	3.98	3.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
263	1.000	7.62	0.55	0.12	0.08	0.00	0.46	0.00	0.00	4.00	4.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
264	0.900	7.61	0.55	0.12	0.08	0.00	0.46	0.00	0.00	4.02	4.02	4.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
265	0.800	7.60	0.55	0.12	0.08	0.00	0.46	0.00	0.00	4.04	4.04	4.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.46	0.08	0.07	0.00	0.30	0.01	0.00	2.20			0.50	0.26	0.00	0.00	0.00	0.00			0.00	0.00	0.00
*	g/m <sup>2</sup> /d																						
**			mg/L/day																				

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
235	3.800	27.46	0.09	26.31	332.90	3.08	11.32	0.00	27.09	0.00	0.00	0.00	0.00	0.00	0.00	105.16	0.00	0.	0.00
236	3.700	27.54	0.09	26.29	332.69	2.88	10.83	0.00	26.48	0.00	0.00	0.00	0.00	0.00	0.00	104.32	0.00	0.	0.00
237	3.600	27.61	0.08	26.27	332.48	2.72	10.37	0.00	25.89	0.00	0.00	0.00	0.00	0.00	0.00	103.48	0.00	0.	0.00

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Originated: November 23, 2010

238	3.500	27.68	0.08	26.26	332.28	2.58	9.92	0.00	25.32	0.00	0.00	0.00	0.00	0.00	102.65	0.00	0.	0.00
239	3.400	27.75	0.08	26.24	332.07	2.46	9.49	0.00	24.76	0.00	0.00	0.00	0.00	0.00	101.81	0.00	0.	0.00
240	3.300	27.83	0.08	26.23	331.87	2.36	9.08	0.00	24.23	0.00	0.00	0.00	0.00	0.00	100.97	0.00	0.	0.00
241	3.200	27.90	0.08	26.21	331.66	2.28	8.69	0.00	23.71	0.00	0.00	0.00	0.00	0.00	100.13	0.00	0.	0.00
242	3.100	27.97	0.07	26.19	331.46	2.21	8.31	0.00	23.21	0.00	0.00	0.00	0.00	0.00	99.29	0.00	0.	0.00
243	3.000	28.05	0.07	26.18	331.25	2.15	7.95	0.00	22.72	0.00	0.00	0.00	0.00	0.00	98.45	0.00	0.	0.00
244	2.900	28.12	0.07	26.16	331.05	2.11	7.60	0.00	22.25	0.00	0.00	0.00	0.00	0.00	97.61	0.00	0.	0.00
245	2.800	28.19	0.07	26.14	330.84	2.07	7.27	0.00	21.79	0.00	0.00	0.00	0.00	0.00	96.77	0.00	0.	0.00
246	2.700	28.26	0.07	26.13	330.64	2.05	6.96	0.00	21.35	0.00	0.00	0.00	0.00	0.00	95.94	0.00	0.	0.00
247	2.600	28.34	0.06	26.11	330.44	2.03	6.65	0.00	20.92	0.00	0.00	0.00	0.00	0.00	95.10	0.00	0.	0.00
248	2.500	28.41	0.06	26.10	330.23	2.01	6.36	0.00	20.50	0.00	0.00	0.00	0.00	0.00	94.26	0.00	0.	0.00
249	2.400	28.48	0.06	26.08	330.03	2.00	6.08	0.00	20.10	0.00	0.00	0.00	0.00	0.00	93.42	0.00	0.	0.00
250	2.300	28.56	0.06	26.06	329.83	2.00	5.82	0.00	19.70	0.00	0.00	0.00	0.00	0.00	92.58	0.00	0.	0.00
251	2.200	28.63	0.06	26.05	329.62	2.00	5.56	0.00	19.32	0.00	0.00	0.00	0.00	0.00	91.74	0.00	0.	0.00
252	2.100	28.70	0.06	26.03	329.42	2.00	5.32	0.00	18.95	0.00	0.00	0.00	0.00	0.00	90.90	0.00	0.	0.00
253	2.000	28.78	0.05	26.02	329.22	2.00	5.08	0.00	18.59	0.00	0.00	0.00	0.00	0.00	90.06	0.00	0.	0.00
254	1.900	28.85	0.05	26.00	329.02	2.01	4.86	0.00	18.24	0.00	0.00	0.00	0.00	0.00	89.23	0.00	0.	0.00
255	1.800	28.92	0.05	25.98	328.82	2.01	4.64	0.00	17.90	0.00	0.00	0.00	0.00	0.00	88.39	0.00	0.	0.00
256	1.700	28.99	0.05	25.97	328.61	2.02	4.44	0.00	17.57	0.00	0.00	0.00	0.00	0.00	87.55	0.00	0.	0.00
257	1.600	29.07	0.05	25.95	328.41	2.03	4.24	0.00	17.25	0.00	0.00	0.00	0.00	0.00	86.71	0.00	0.	0.00
258	1.500	29.14	0.04	25.94	328.21	2.04	4.05	0.00	16.94	0.00	0.00	0.00	0.00	0.00	85.87	0.00	0.	0.00
259	1.400	29.21	0.04	25.92	328.01	2.04	3.88	0.00	16.63	0.00	0.00	0.00	0.00	0.00	85.03	0.00	0.	0.00
260	1.300	29.29	0.04	25.90	327.81	2.05	3.70	0.00	16.33	0.00	0.00	0.00	0.00	0.00	84.19	0.00	0.	0.00
261	1.200	29.36	0.04	25.89	327.61	2.06	3.54	0.00	16.04	0.00	0.00	0.00	0.00	0.00	83.35	0.00	0.	0.00
262	1.100	29.43	0.04	25.87	327.41	2.07	3.38	0.00	15.76	0.00	0.00	0.00	0.00	0.00	82.52	0.00	0.	0.00
263	1.000	29.50	0.03	25.86	327.21	2.08	3.23	0.00	15.48	0.00	0.00	0.00	0.00	0.00	81.68	0.00	0.	0.00
264	0.900	29.58	0.03	25.84	327.01	2.09	3.10	0.00	15.22	0.00	0.00	0.00	0.00	0.00	80.84	0.00	0.	0.00
265	0.800	29.65	0.03	25.82	326.78	2.17	3.01	0.00	15.01	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.	0.00

FINAL REPORT HEADWATER GRAYS CREEK WATERSHED MODEL  
REACH NO. 11 RKM 0.8 TO GRAYS CREEK LAKE GRAYS CREEK FINAL CALIBRATION RUN

\*\*\*\*\* REACH INPUTS \*\*\*\*\*

ELEM NO.	TYPE	FLOW	TEMP deg C	SALN ppt	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	PHOS mg/L	CHL A µg/L	COLI #/100mL	NCM
266	UPR RCH	0.15880	29.65	0.03	25.82	326.78	2.17	3.01	0.00	15.01	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00
EACH	INCR	0.00013	29.65	0.03	0.00	0.00	0.00	3.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	

\*\*\*\*\* HYDRAULIC PARAMETER VALUES \*\*\*\*\*

ELEM NO.	BEGIN DIST km	ENDING DIST km	FLOW m³/s	PCT EFF	ADVCTV VELO m/s	TRAVEL TIME days	DEPTH m	WIDTH m	VOLUME m³	SURFACE AREA m²	X-SECT AREA m²	TIDAL PRISM m³	TIDAL VELO m/s	DISPRSN m²/s	MEAN VELO m/s
266	0.80	0.70	0.15892	76.9	0.00088	1.32	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
267	0.70	0.60	0.15905	76.8	0.00088	1.32	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
268	0.60	0.50	0.15917	76.8	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
269	0.50	0.40	0.15930	76.7	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
270	0.40	0.30	0.15942	76.7	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
271	0.30	0.20	0.15955	76.6	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
272	0.20	0.10	0.15967	76.5	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
273	0.10	0.00	0.15980	76.5	0.00088	1.31	2.96	60.96	18074.64	6096.00	180.75	0.00	0.000	0.027	0.001
TOT						10.50			144597.12	48768.00					
AVG					0.0009		2.96	60.96			180.75				

Grays Creek Watershed TMDL  
 Subsegment 040304  
 Originated: November 23, 2010  
 CUM

30.47

\*\*\*\*\* BIOLOGICAL AND PHYSICAL COEFFICIENTS \*\*\*\*\*

ELEM NO.	ENDING DIST	SAT D.O. mg/L	REAER RATE 1/da	BOD#1 DECAT 1/da	BOD#1 SETT 1/da	ABOD#1 DECAT 1/da	BOD#2 DECAT 1/da	BOD#2 SETT 1/da	ABOD#2 DECAT 1/da	BKGD SOD *	FULL SOD *	CORR SOD *	ORGN DECAT 1/da	ORGN SETT 1/da	NH3 DECAT 1/da	NH3 SRCE *	DENIT RATE 1/da	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAT 1/da	NCM DECAT 1/da	NCM SETT 1/da
266	0.700	7.59	0.28	0.12	0.04	0.00	0.47	0.00	0.00	2.22	2.22	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
267	0.600	7.58	0.28	0.12	0.04	0.00	0.47	0.00	0.00	2.23	2.23	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
268	0.500	7.57	0.28	0.12	0.04	0.00	0.47	0.00	0.00	2.24	2.24	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
269	0.400	7.56	0.28	0.12	0.04	0.00	0.47	0.00	0.00	2.25	2.25	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	0.300	7.54	0.28	0.12	0.04	0.00	0.47	0.00	0.00	2.27	2.27	2.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
271	0.200	7.53	0.28	0.12	0.04	0.00	0.48	0.00	0.00	2.28	2.28	2.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
272	0.100	7.52	0.29	0.12	0.04	0.00	0.48	0.00	0.00	2.29	2.29	2.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
273	0.000	7.51	0.29	0.12	0.04	0.00	0.48	0.00	0.00	2.31	2.31	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG 20 DEG C RATE			0.24	0.08	0.03	0.00	0.30	0.00	0.00	1.20			0.50	0.13	0.00	0.00	0.00	0.00			0.00	0.00	0.00
* g/m <sup>2</sup> /d			** mg/L/day																				

\*\*\*\*\* WATER QUALITY CONSTITUENT VALUES \*\*\*\*\*

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I MG/L	CM-II MG/L	DO mg/L	BOD#1 mg/L	BOD#2 mg/L	EBOD#1 mg/L	EBOD#2 mg/L	ORGN mg/L	NH3 mg/L	NO3+2 mg/L	TOTN mg/L	PHOS mg/L	CHL A µg/L	MACRO g/m <sup>3</sup>	COLI #/100mL	NCM
266	0.700	29.74	0.03	25.80	326.51	2.55	3.20	0.00	14.14	0.00	0.00	0.00	0.00	0.00	0.00	72.93	0.00	0.	0.00
267	0.600	29.83	0.03	25.78	326.24	2.79	3.35	0.00	13.23	0.00	0.00	0.00	0.00	0.00	0.00	65.85	0.00	0.	0.00
268	0.500	29.92	0.03	25.76	325.94	2.96	3.47	0.00	12.29	0.00	0.00	0.00	0.00	0.00	0.00	58.78	0.00	0.	0.00
269	0.400	30.01	0.02	25.72	325.50	3.06	3.57	0.00	11.33	0.00	0.00	0.00	0.00	0.00	0.00	51.70	0.00	0.	0.00
270	0.300	30.11	0.02	25.63	324.45	3.13	3.66	0.00	10.35	0.00	0.00	0.00	0.00	0.00	0.00	44.62	0.00	0.	0.00
271	0.200	30.20	0.02	25.31	320.77	3.19	3.73	0.00	9.36	0.00	0.00	0.00	0.00	0.00	0.00	37.55	0.00	0.	0.00
272	0.100	30.29	0.02	23.98	305.72	3.35	3.84	0.00	8.41	0.00	0.00	0.00	0.00	0.00	0.00	30.48	0.00	0.	0.00
273	0.000	30.38	0.02	18.34	241.63	4.26	4.16	0.00	7.67	0.00	0.00	0.00	0.00	0.00	0.00	23.40	0.00	0.	0.00

STREAM SUMMARY  
 HEADWATER

GRAYS CREEK WATERSHED MODEL  
 GRAYS CREEK FINAL CALIBRATION RUN

TRAVEL TIME	=	30.47 DAYS
MAXIMUM EFFLUENT	=	90.08 PERCENT
FLOW	=	0.00313 TO 0.15980 m <sup>3</sup> /s
DISPERSION	=	0.0265 TO 0.5756 m <sup>2</sup> /s
VELOCITY	=	0.00088 TO 0.18027 m/s
DEPTH	=	0.03 TO 2.96 m
WIDTH	=	1.52 TO 60.96 m
BOD DECAT	=	0.05 TO 0.12 per day
NH3 DECAT	=	0.00 TO 0.00 per day
SOD	=	1.42 TO 7.49 g/m <sup>2</sup> /d
NH3 SOURCE	=	0.00 TO 0.00 g/m <sup>2</sup> /d
REAERATION	=	0.28 TO 28.87 per day
BOD SETTLLING	=	0.04 TO 2.40 per day
NBOD DECAT	=	0.00 TO 0.00 per day
NBOD SETTLLING	=	0.00 TO 0.00 per day

Grays Creek Watershed TMDL

Subsegment 040304

Originated: November 23, 2010

TEMPERATURE = 25.31 TO 30.38 deg C  
DISSOLVED OXYGEN = 0.55 TO 4.57 mg/L

.....BEGIN SENSITIVITY RUN 1 ON PARAMETER SET 1 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 138 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 2 ON PARAMETER SET 1 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 118 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 3 ON PARAMETER SET 2 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 4 ON PARAMETER SET 2 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 5 ON PARAMETER SET 3 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 138 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 6 ON PARAMETER SET 3 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 135 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

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.....BEGIN SENSITIVITY RUN 7 ON PARAMETER SET 4 AND COLUMN 1
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 42 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
***** WARNING: NEGATIVE CONCENTRATIONS SET TO ZERO FOR Dissolved Oxygen
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.....BEGIN SENSITIVITY RUN 8 ON PARAMETER SET 4 AND COLUMN 2
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 288 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 9 ON PARAMETER SET 5 AND COLUMN 1
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 141 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 10 ON PARAMETER SET 5 AND COLUMN 2
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 169 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 11 ON PARAMETER SET 6 AND COLUMN 1
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 155 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 12 ON PARAMETER SET 6 AND COLUMN 2
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 113 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 13 ON PARAMETER SET 7 AND COLUMN 1
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 165 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 14 ON PARAMETER SET 7 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 118 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 15 ON PARAMETER SET 8 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 16 ON PARAMETER SET 8 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 17 ON PARAMETER SET 9 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 18 ON PARAMETER SET 9 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 19 ON PARAMETER SET 10 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 20 ON PARAMETER SET 10 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED

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.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 21 ON PARAMETER SET 11 AND COLUMN 1
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 40 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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\*\*\*\*\* WARNING: NEGATIVE CONCENTRATIONS SET TO ZERO FOR Dissolved Oxygen

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.....BEGIN SENSITIVITY RUN 22 ON PARAMETER SET 11 AND COLUMN 2
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 299 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 23 ON PARAMETER SET 12 AND COLUMN 1
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 24 ON PARAMETER SET 12 AND COLUMN 2
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 138 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 25 ON PARAMETER SET 13 AND COLUMN 1
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 299 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....BEGIN SENSITIVITY RUN 26 ON PARAMETER SET 13 AND COLUMN 2
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 78 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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\*\*\*\*\* WARNING: NEGATIVE CONCENTRATIONS SET TO ZERO FOR Dissolved Oxygen

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.....BEGIN SENSITIVITY RUN 27 ON PARAMETER SET 14 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 191 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 28 ON PARAMETER SET 14 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 134 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 29 ON PARAMETER SET 15 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 30 ON PARAMETER SET 15 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 31 ON PARAMETER SET 16 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 32 ON PARAMETER SET 16 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 33 ON PARAMETER SET 17 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED



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.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 34 ON PARAMETER SET 17 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 35 ON PARAMETER SET 18 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 36 ON PARAMETER SET 18 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 37 ON PARAMETER SET 19 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 135 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 38 ON PARAMETER SET 19 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 189 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 39 ON PARAMETER SET 20 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 215 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

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.....BEGIN SENSITIVITY RUN 40 ON PARAMETER SET 20 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 135 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 41 ON PARAMETER SET 21 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 42 ON PARAMETER SET 21 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 43 ON PARAMETER SET 22 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 191 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 44 ON PARAMETER SET 22 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 135 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 45 ON PARAMETER SET 23 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 135 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 46 ON PARAMETER SET 23 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 191 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

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.....BEGIN SENSITIVITY RUN 47 ON PARAMETER SET 24 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 48 ON PARAMETER SET 24 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 49 ON PARAMETER SET 25 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 50 ON PARAMETER SET 25 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 51 ON PARAMETER SET 26 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 52 ON PARAMETER SET 26 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 53 ON PARAMETER SET 27 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED

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.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 54 ON PARAMETER SET 27 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 55 ON PARAMETER SET 28 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 56 ON PARAMETER SET 28 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 57 ON PARAMETER SET 29 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 58 ON PARAMETER SET 29 AND COLUMN 2  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

.....BEGIN SENSITIVITY RUN 59 ON PARAMETER SET 30 AND COLUMN 1  
.....HYDRAULIC CALCULATIONS COMPLETED  
.....TRIDIAGONAL MATRIX TERMS INITIALIZED  
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS  
.....CONSTITUENT CALCULATIONS COMPLETED

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.....BEGIN SENSITIVITY RUN 60 ON PARAMETER SET 30 AND COLUMN 2
.....HYDRAULIC CALCULATIONS COMPLETED
.....TRIDIAGONAL MATRIX TERMS INITIALIZED
.....OXYGEN DEPENDENT RATES CONVERGENT IN 140 ITERATIONS
.....CONSTITUENT CALCULATIONS COMPLETED
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.....EXECUTION COMPLETED
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**SENSITIVITY ANALYSIS SUMMARY**

SENSITIVITY ANALYSIS SUMMARY

AINSTEM

GRAYS CREEK FINAL CALIBRATION RUN

Plot 1 Base Model Minimum DO = 0.55

Parameter	%Param Chg	Min D.O.	%D.O. Chg	%Param Chg	Min D.O.	%D.O. Chg
Stream Baseflow	30.	0.56	1.1	-30.	0.55	-0.8
Initial Chorophyll a	30.	0.55	0.0	-30.	0.55	0.0
Stream Velocity	30.	0.53	-3.9	-30.	0.59	5.8
Initial Temperature	2.	0.00	-100.0	-2.	1.34	142.1
CBOD Aerobic Decay Rate	30.	0.53	-5.1	-30.	0.59	6.3
CBOD2 Aerobic Decay Rate	30.	0.55	0.0	-30.	0.55	0.0
CBOD Settling Rate	30.	0.57	3.0	-30.	0.53	-3.5
CBOD2 Settling Rate	30.	0.55	0.0	-30.	0.55	0.0
NBOD Decay Rate	30.	0.55	0.0	-30.	0.55	0.0
NBOD Settling Rate	30.	0.55	0.0	-30.	0.55	0.0
Benthic Demand	30.	0.00	-100.0	-30.	1.91	244.9
Stream Dispersion	30.	0.55	0.0	-30.	0.55	0.0
Stream Reaeration	30.	1.90	242.4	-30.	0.00	-100.0
Headwater Flow	30.	0.55	0.1	-30.	0.55	-0.1
Headwater DO	30.	0.55	0.0	-30.	0.55	0.0
Headwater CBOD	30.	0.55	-0.2	-30.	0.55	0.1
Headwater CBOD2	30.	0.55	0.0	-30.	0.55	0.0
Headwater NBOD	30.	0.55	0.0	-30.	0.55	0.0
Stream Depth	30.	0.53	-5.1	-30.	0.59	6.3
Wasteload Flow	30.	0.55	-0.1	-30.	0.55	0.2
Wasteload Temperature	2.	0.55	0.0	-2.	0.55	0.0
Wasteload DO	30.	0.55	0.2	-30.	0.55	-0.2
Wasteload CBOD	30.	0.55	-1.2	-30.	0.56	1.2
Wasteload CBOD2	30.	0.55	0.0	-30.	0.55	0.0
Wasteload NBOD	30.	0.55	0.0	-30.	0.55	0.0
Lower Boundary Temperature	2.	0.55	0.0	-2.	0.55	0.0
Lower Boundary DO	30.	0.55	0.0	-30.	0.55	0.0
Lower Boundary CBOD	30.	0.55	0.0	-30.	0.55	0.0
Lower Boundary CBOD2	30.	0.55	0.0	-30.	0.55	0.0
Lower Boundary NBOD	30.	0.55	0.0	-30.	0.55	0.0