

US EPA ARCHIVE DOCUMENT

TOTAL MAXIMUM DAILY LOAD (TMDL)

For
Nutrients

In
Black Point Channel (WBID 1637)

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TABLE OF CONTENTS

1.0 INTRODUCTION..... 1

2.0 PROBLEM DEFINITION 3

3.0 WATERSHED DESCRIPTION..... 4

4.0 WATER QUALITY STANDARD AND TARGET IDENTIFICATION..... 6

 4.1. NARRATIVE NUTRIENTS (CLASS II AND III, FRESH AND MARINE) 6

5.0 NUTRIENT TMDL 7

6.0 WATER QUALITY ASSESSMENT 8

 6.1 WATER QUALITY DATA 8

7.0 APPROACH..... 9

8.0 TMDL..... 10

REFERENCES..... 12

US EPA ARCHIVE DOCUMENT

LIST OF FIGURES

Figure 1	FDEP Group 2 River Basins	2
Figure 2	Tampa Bay Tributaries Basin	2
Figure 3	Land Use in WBID 1637.....	5

LIST OF TABLES

Table 1	Land use Distribution for Black Point Channel	4
Table 2	Current Loads and Hydrologically Adjusted TMDL Loads for Black Point Channel prescribed by the Tampa Bay Nitrogen Management Consortium’s TMDL.....	9
Table 3	TMDL Allocations for Black Point Channel.....	11

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SUMMARY SHEET
Total Maximum Daily Load (TMDL)

1. 303(d) Listed Waterbody Information**State:** Florida**Major River Basin:** Tampa Bay Tributaries**Impaired Waterbody for TMDLs (1998 303(d) List)**

WBID	Segment Name	River Basin	County	Constituent(s)
1637	Black Point Channel	Hillsborough	Hillsborough	Nutrients

2. TMDL Endpoints (i.e., Targets):**Nutrients, Class III Waters (marine):**

Black Point Channel – WBID 1637: The TMDLs are based upon an interpretation of narrative water quality standards which protect waters from anthropogenic nutrient enrichment and concentrations that cause an imbalance in natural populations of aquatic flora and fauna.

3. Nutrient Allocation

Waterbody	Parameter ¹	TMDL (lb/day) ²	TMDL (lb/year) ²	WLA ³		LA (lb/year)
				Facility (lb/year)	MS4 (lb/year)	
Black Point Channel	TN	450	164,120	162,600	880	640

Notes:

- TN = total nitrogen
- TMDL addresses 303(d) listings for nutrients. For convenience, the TMDL is provided in both units of lbs/day and lbs/year, but are intended to be implemented on an annual basis.
- The WLA component includes individual allocations for NPDES facilities (e.g., WWTPs) and MS4s as contained in Table 2 of this report.

4. Endangered Species (yes or blank): Yes**5. EPA Lead on TMDL (EPA or blank):** EPA**6. TMDL Considers Point Source, Nonpoint Source, or both:** Both

7. Major NPDES Discharges to surface waters addressed in TMDL: Yes.

Name	NPDES #	Discharge Type	Receiving Stream
Hillsborough Co. MS4	FLS000006	MS4	Black Point Channel / Hillsborough Bay
Kinder Morgan Ammonia Facility	FL0122904	NPDES	Hillsborough Bay
Kinder Morgan Port Sutton		NPDES	Hillsborough Bay
Kinder Morgan Hartford Terminal		NPDES	Hillsborough Bay
Kinder Morgan Material Losses Tampaplex	FL0000264	NPDES	Hillsborough Bay
Kinder Morgan Port Sutton Material Losses	Unidentified	NPDES	Hillsborough Bay
Teco	FL0000809	NPDES	Hillsborough Bay
Yara North America	FL0038652	NPDES	Hillsborough Bay

TOTAL MAXIMUM DAILY LOAD (TMDL) FOR NUTRIENTS IN BLACK POINT CHANNEL (WBID 1637)

1.0 INTRODUCTION

Section 303(d) of the Clean Water Act requires each state to list those waters within its boundaries for which technology based effluent limitations are not stringent enough to protect any water quality standard applicable to such waters. Listed waters are prioritized with respect to designated use classifications and the severity of pollution. In accordance with this prioritization, states are required to develop Total Maximum Daily Loads (TMDLs) for those waterbodies that are not meeting water quality standards. The TMDL process establishes the allowable loadings of pollutants or other quantifiable parameters for a waterbody based on the relationship between pollution sources and in-stream water quality conditions, so that states can establish water quality based controls to reduce pollution from both point and nonpoint sources and restore and maintain the quality of their water resources (USEPA, 1991).

The Florida Department of Environmental Protection (FDEP) developed a statewide approach to managing water resources on the basis of natural boundaries, such as river basins, rather than political boundaries. This watershed management approach is the framework FDEP uses for developing and implementing TMDLs. The state's 52 basins are divided into five groups. Water quality is assessed in each group on a rotating five-year cycle. FDEP also established five Water Management Districts (WMD) responsible for managing ground and surface water supplies in the counties encompassing their districts. Black Point Channel is a Group 2 waterbody (Figure 1) managed by the Southwest Florida Water Management District (SWFWMD).

For the purpose of planning and management, the WMDs divide their districts into planning units defined as either an individual primary tributary basin or a group of adjacent primary tributary basins with similar characteristics. Black Point Channel is located within the Hillsborough River Planning Unit, which covers the extent of the Hillsborough River Watershed. Planning units contain smaller, hydrological based units called drainage basins, which are further divided into water segments. A water segment usually contains only one unique waterbody type (stream, lake, canal, etc.) and is typically about five square miles in area. Unique waterbody identification (WBIDs) numbers are assigned to each water segment. The stream segment addressed in this TMDL report is designated WBID 1637 (Black Point Channel). The location of this WBID can be seen in Figure 2.

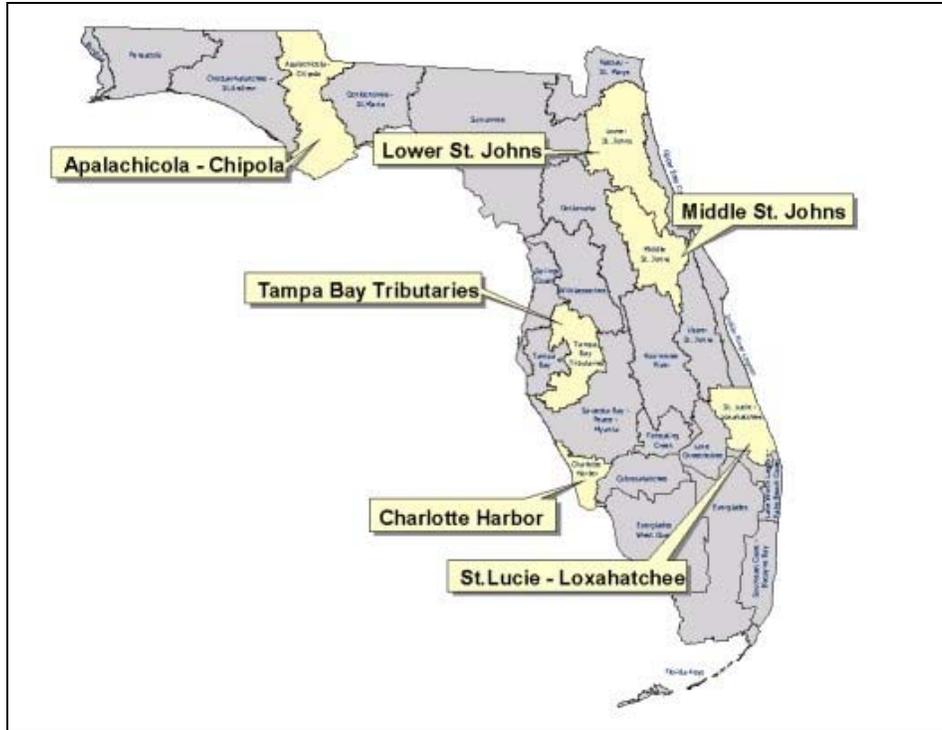


Figure 1 FDEP Group 2 River Basins

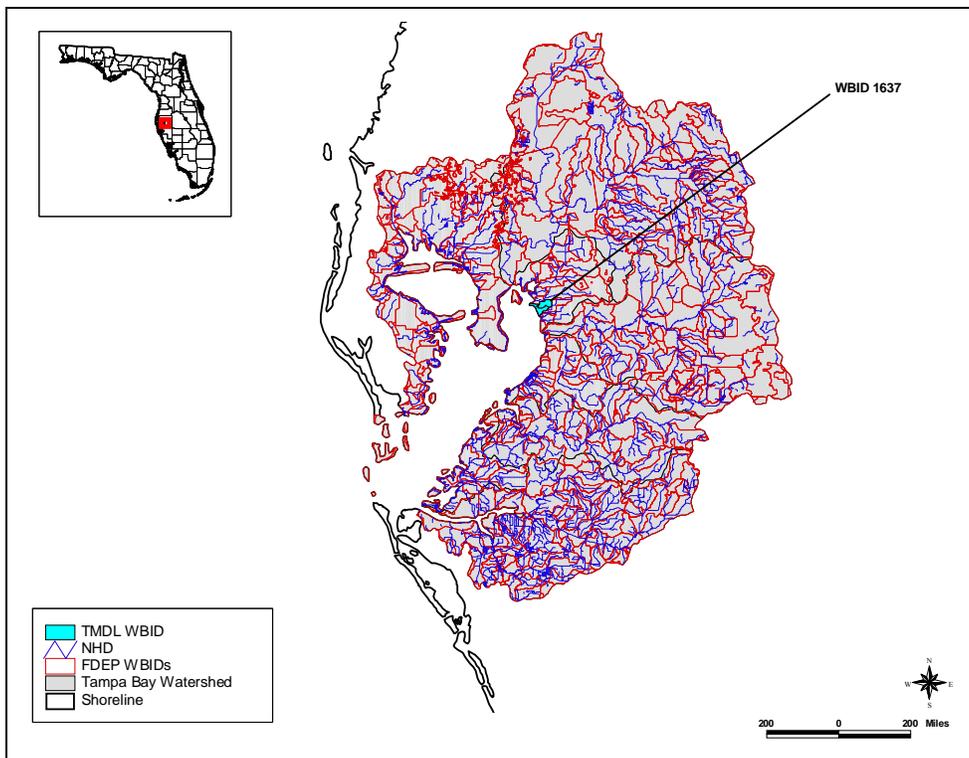


Figure 2 Tampa Bay Tributaries Basin

2.0 PROBLEM DEFINITION

Florida's final 1998 Section 303(d) list identified Black Point Channel as not supporting water quality standards (WQS). The TMDL addressed in this document is being established pursuant to USEPA commitments in the 1998 Consent Decree in the Florida TMDL lawsuit (Florida Wildlife Federation, et al. v. Carol Browner, et al., Civil Action No. 4: 98CV356-WS, 1998). After assessing all readily available water quality data, USEPA is responsible for developing a TMDL in WBID 1637 (Black Point Channel). The parameter addressed in this TMDL is total nitrogen.

Black Point Channel is designated as a Class III marine WBID having a designated use for recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. The level of impairment is denoted as threatened, partially or not supporting designated uses. A waterbody that is classified as threatened currently meets WQS but trends indicate the designated use may not be met in the next listing cycle. A waterbody classified as partially supporting designated uses is defined as somewhat impacted by pollution and water quality criteria are exceeded on some frequency. For this category, water quality is considered moderately impacted. A waterbody that is categorized as not supporting is highly impacted by pollution and water quality criteria are exceeded on a regular or frequent basis. In such waterbodies, water quality is considered severely impacted.

To determine the status of surface water quality in the state, three categories of data – chemistry data, biological data, and fish consumption advisories – were evaluated to determine potential impairments. The level of impairment is defined in the Identification of Impaired Surface Waters Rule (IWR), Section 62-303 of the Florida Administrative Code (F.A.C.). The IWR defines the threshold for determining if waters should be included on the state's planning list and verified list. Potential impairments are determined by assessing whether a waterbody meets the criteria for inclusion on the planning list. Once a waterbody is on the planning list, additional data and information will be collected and examined to determine if the water should be included on the verified list.

3.0 WATERSHED DESCRIPTION

Black Point Channel (WBID 1637) is directly adjacent to the Hillsborough Bay portion of the greater Tampa Bay located in Hillsborough County, Florida (Figure 3). The stream and its tributaries drain 6.8 km² (2.6 mi²). The watershed is highly developed. The dominant land use in the watershed is Urban Residential & Built-Up (49 percent); with most of that being commercial and industrial (Table 1). Transportation and utilities and forest are the other major components of the Black Point Channel watershed. There are several NPDES permitted surface water dischargers in the watershed. The Black Point Channel watershed lies within an MS4 permitted service area for Hillsborough County (FLS000006). The MS4 includes ditches, curbs, gutters, storm sewers, and similar means of collecting or conveying runoff that do not connect with a wastewater collection system or treatment plant.

Table 1 Land use Distribution for Black Point Channel

Impaired Waterbody	WBID(s)	Unit ²	Urban Residential & Built-Up	Agriculture	Rangeland	Forest	Water	Wetlands	Transportation & Utilities	Total
Black Point Channel	1636, 1637	Km ²	3.4	0.1	0.4	1.0	0.4	0.4	1.1	6.8
		Percent	49.4	2.1	5.3	15.3	5.4	5.8	16.1	100.0

Notes:

1. Land use data are based on 2006 SWFWMD land cover features categorized according to the Florida Land Use and Cover Classification System (FLUCCS). The features were photo interpreted from 2006 one-foot color infrared digital aerial photographs at the 1:12,000 scale. Areas in the table represent the watershed draining to the impaired segment.
2. Km²= square kilometers.
3. The urban/residential and built-up category includes commercial, industrial, and extractive uses.

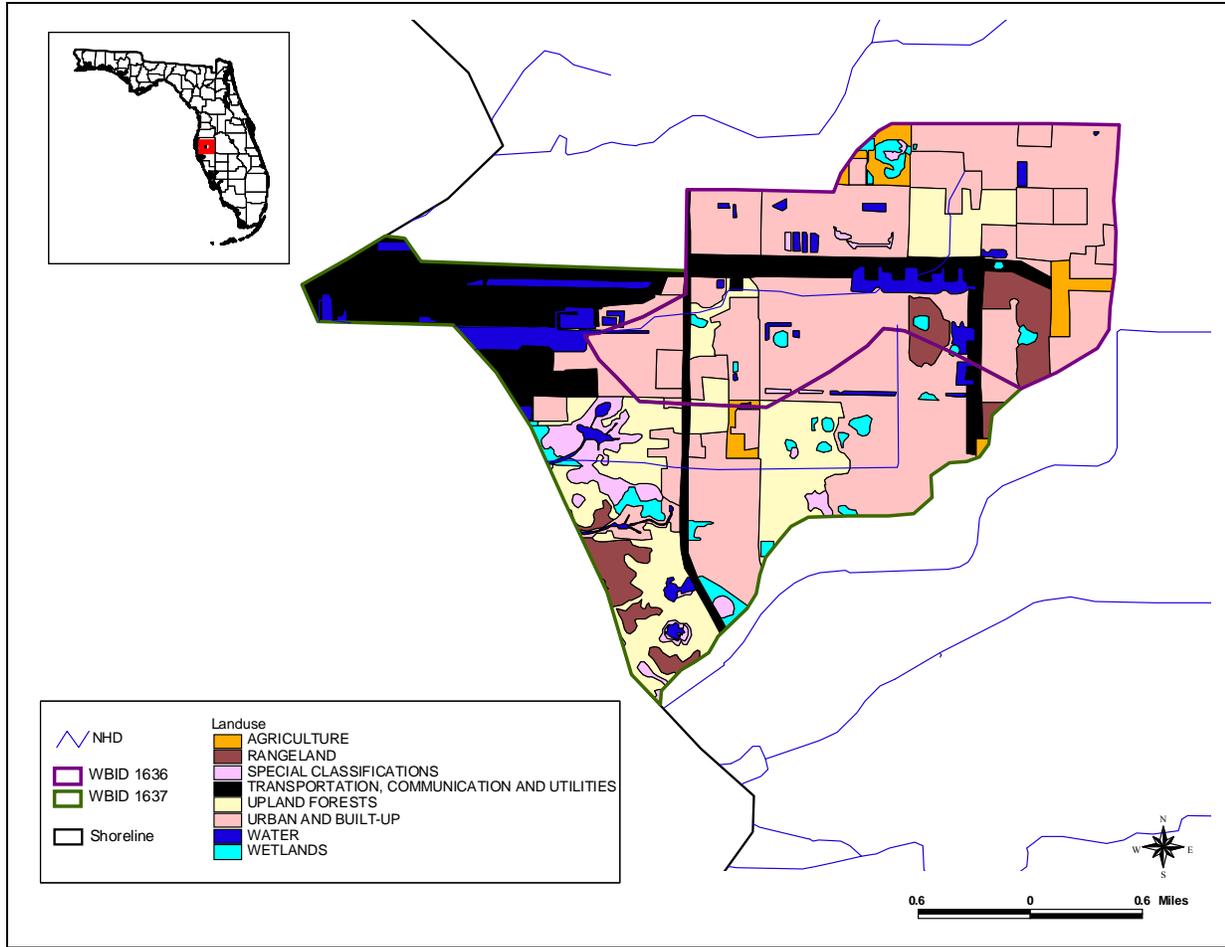


Figure 3 Land Use in WBID 1637

4.0 WATER QUALITY STANDARD AND TARGET IDENTIFICATION

Black Point Channel watershed is Class III Marine with designated uses of Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife. Designated use classifications are described in the Florida Administrative Code (F.A.C.), Section 62-302.400(1), and water quality criteria for protection of all classes of waters are established in F.A.C. 62-302.530. Individual criteria should be considered in conjunction with other provisions in water quality standards, including Section 62-302.500 F.A.C. [Surface Waters: Minimum Criteria, General Criteria] that apply to all waters unless alternative criteria are specified in F.A.C. Section 62-302.530.

4.1. Narrative Nutrients (Class II and III, Fresh and Marine)

The State of Florida has a narrative water quality criterion for nutrients that applies to Classes I, II, and III (including fresh and marine waters) and states that:

“In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna.” [Section 62.302.530 (48)(b) F.A.C.]

The state also has an additional narrative water quality criterion for nutrients that applies to all classes of water and states that:

“The discharge of nutrients shall continue to be limited as needed to prevent violations of other standards contained in this chapter. Man-induced nutrient enrichment (total nitrogen or total phosphorus) shall be considered degradation in relation to the provisions of Sections 62-302.300, 62-302.700, and 62-4.242, F.A.C.” [see Section 62.302.530 (48)(a) F.A.C.]

5.0 NUTRIENT TMDL

- The Consent Decree identifies the WBID impaired for nutrients.

Essentially, the Tampa Bay Nitrogen Management Consortium Declaration goals are consistent with the concept established in the State of Florida water quality standards for narrative nutrients (62-302.530 (48(b)) F.A.C.), which states, “In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna.” Thus, a healthy macrophyte-based aquatic ecosystem within Hillsborough Bay would be a direct indication of full support of aquatic flora and fauna. The first part of the Tampa Bay Nitrogen Management Consortium’s Declaration reads:

“From the uppermost reaches of Old Tampa Bay and Hillsborough Bay to the mouth of the bay at Egmont Key, the Tampa Bay estuary is made up of a variety of habitats where fish and other wildlife find shelter and food. They range from lush underwater beds of seagrasses, to tidal marshes and mangrove swamps. Abundant and healthy habitats are critical to the health of the bay. Without them, Tampa Bay would lack the diversity of fish, birds and other wildlife that contribute to the natural wonder of the region and is essential to its economic vitality.

Submerged seagrass is among the most important habitats because it serves as shelter, nursery, and food source for a diverse variety of species and stabilizes the bay bottom. Restoration of seagrass habitat is the top priority goal of local government and agency partners of the Tampa Bay Estuary Program. The key to restoring seagrass is improving and then maintaining adequate water clarity that allows light to penetrate into the shallow waters of the bay where seagrasses grow. And the key to maintaining water clarity is preventing excessive nitrogen – a nutrient necessary for plant growth – from entering the bay and stimulating the growth of microscopic algae that cloud the water and prevents light from reaching the seagrasses.” (Tampa, 6/23/2009).

6.0 Water Quality Assessment

FDEP maintains ambient monitoring stations throughout the basin and allows public access to the monitoring results via the internet in their IWR database. Data collected at monitoring stations within the impaired WBID and reported in IWR Run 35 were used in the analysis.

6.1 Water Quality Data

The water quality parameters and WBIDs are required to be included in the present TMDL because they were included on Florida's 1998 303(d) listing (see summary sheet). In addition, an independent assessment was made using the most recent data for WBID 1637 in order to determine present water quality conditions and confirm impairment. Data were compared to the State of Florida Water Quality Standards to determine potential for impairment for nutrients. Nutrients were assessed based on a weight-of-evidence approach that takes into account nutrient concentrations, chlorophyll *a* levels, and dissolved oxygen concentrations. The state of Florida typically uses chlorophyll *a* as the primary indicator of nutrient enrichment, because its concentrations are a good measure of the biomass of phytoplankton, i.e. microscopic algae that drift in the water column.

7.0 Approach

The Tampa Bay Nitrogen Management Consortium has identified Tampa Bay as being impaired for nutrients, with total nitrogen (TN) being the causative pollutant. In an effort to restore the health of the ecologically important sea grasses, the consortium has proposed a TMDL that targets the amount of total nitrogen allowed to enter Tampa Bay. The Tampa Bay Nitrogen Management Consortium issued its final draft on May 29, 2009, with annual load limits for all sources of point and non-point sources to Tampa Bay. The bay was divided into four sections and each was given a loading reduction, with Black Point Channel falling into the Hillsborough Bay section. For this nutrient TMDL, the reductions are based entirely on the reductions set forth in the proposed Tampa Bay Nitrogen Management Consortium's TMDL. As a whole, Hillsborough Bay must achieve a 24 percent overall total nitrogen reduction. Black Point Channel only makes up 0.2 percent of the total drainage area of the Hillsborough Bay watershed. Due to the small area of Black Point Channel, it has a small non-point source contribution. The vast majority of the reductions for Black Point Channel must come from NPDES permitted discharges. The current loads prescribed under the proposed Tampa Bay Nitrogen Management Consortium's TMDL can be seen in Table 2.

Table 2 Current Loads and Hydrologically Adjusted TMDL Loads for Black Point Channel prescribed by the Tampa Bay Nitrogen Management Consortium's TMDL

Entity	Entity Current TN Load (tons/year) ¹	Hydrologically Adjusted TN Load from TMDL(tons/yr) ²	Percent Reduction
Atmospheric Deposition	0.14	0.10	26
Groundwater/Springs/Conservation	0.16	0.22	0
Hillsborough Co. MS4 and Urban + Other Non-Point Sources	0.70	0.44	37
Kinder Morgan Ammonia Facility	179.20	75.00	58
Kinder Morgan Port Sutton			
Kinder Morgan Hartford Terminal			
Kinder Morgan Material Losses Tampaplex	0.30	3.40	0
Kinder Morgan Port Sutton Material Losses	0.00	1.80	0
Teco	1.00	0.80	20
Yara North America	0.50	0.30	40
Total WBID Load	182.00	82.06	55

¹Tampa Bay Nitrogen Management Consortium. 2008. Hydrologically Adjusted Loads by Segment. Draft report dated 12/10/2008.

²Tampa Bay Nitrogen Management Consortium. 2009. Draft Final TMDL Matrices. Draft report dated 5/29/2009.

8.0 TMDL

A total maximum daily load (TMDL) for a given pollutant and waterbody is comprised of the sum of individual wasteload allocations (WLAs) for point sources, and load allocations (LAs) for both nonpoint sources and natural background levels. In addition, the TMDL must include a margin of safety (MOS), either implicitly or explicitly, to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody. Conceptually, this definition is represented by the equation:

$$\text{TMDL} = \sum \text{WLAs} + \sum \text{LAs} + \text{MOS}$$

The TMDL is the total amount of pollutant that can be assimilated by the receiving waterbody and still achieve water quality standards and the waterbodies designated use. In TMDL development, allowable loadings from all pollutant sources that cumulatively amount to no more than the TMDL must be set and thereby provide the basis to establish water quality-based controls. These TMDLs are expressed as annual mass loads, since the approach used to determine the TMDL targets relied on annual loadings. The TMDLs targets were determined to be the conditions needed to restore and maintain healthy seagrass ecosystems. Trophic shifts and declines in seagrass communities are processes that tend to occur over longer periods. Furthermore, it is important to consider nutrient loading over time, since nutrients can accumulate in waterbodies.

The TMDL for Black Point Channel is based upon the proposed Tampa Bay Nitrogen Management Consortium's TMDL. The TMDL and its components are presented for Black Point Channel in Table 3. The TMDL is expressed as both daily and annual loads of TN and are calculated to achieve the narrative nutrient criteria. The TMDL is intended to be implemented on an annual basis. Achieving the narrative nutrient criteria is expected to also result in achieving appropriate D.O. and chlorophyll regimes as these impairments are a direct result of symptoms associated with cultural eutrophication caused by nutrient enrichment. Load Allocations for the nonpoint sources, and Waste Load Allocations for individual NPDES-permitted facilities, are provided in their respective sections below.

Table 3 TMDL Allocations for Black Point Channel

Waterbody	Parameter ¹	TMDL (lbs/day) ²	TMDL (lbs/year) ²	WLA ³		LA (lbs/year)
				Facilities (lbs/year)	MS4 (lbs/year)	
Black Point Channel	TN	450	164,120	162,600	880	640

Notes:

1. TN = total nitrogen
2. TMDL addresses 303(d) listings for nutrients. For convenience, the TMDL is provided in both units of lbs/day and lbs/year, but are intended to be implemented on an annual basis.
3. The WLA component includes individual allocations for NPDES facilities (e.g., WWTPs) and MS4s as contained in Table 2 of this report.

REFERENCES

Florida Administrative Code (F.A.C.). Chapter 62-302, Surface Water Quality Standards.

Florida Administrative Code (F.A.C.). Chapter 62-303, Surface Water Quality Standards.

Tampa Bay Nitrogen Management Consortium. 2009. Declaration of the Tampa Bay Nitrogen Management Consortium. Draft document dated 6/23/2009.

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United States Environmental Protection Agency (USEPA). 1991. *Guidance for Water Quality-based Decisions: The TMDL Process*. U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA-440/4-91-001, April 1991.