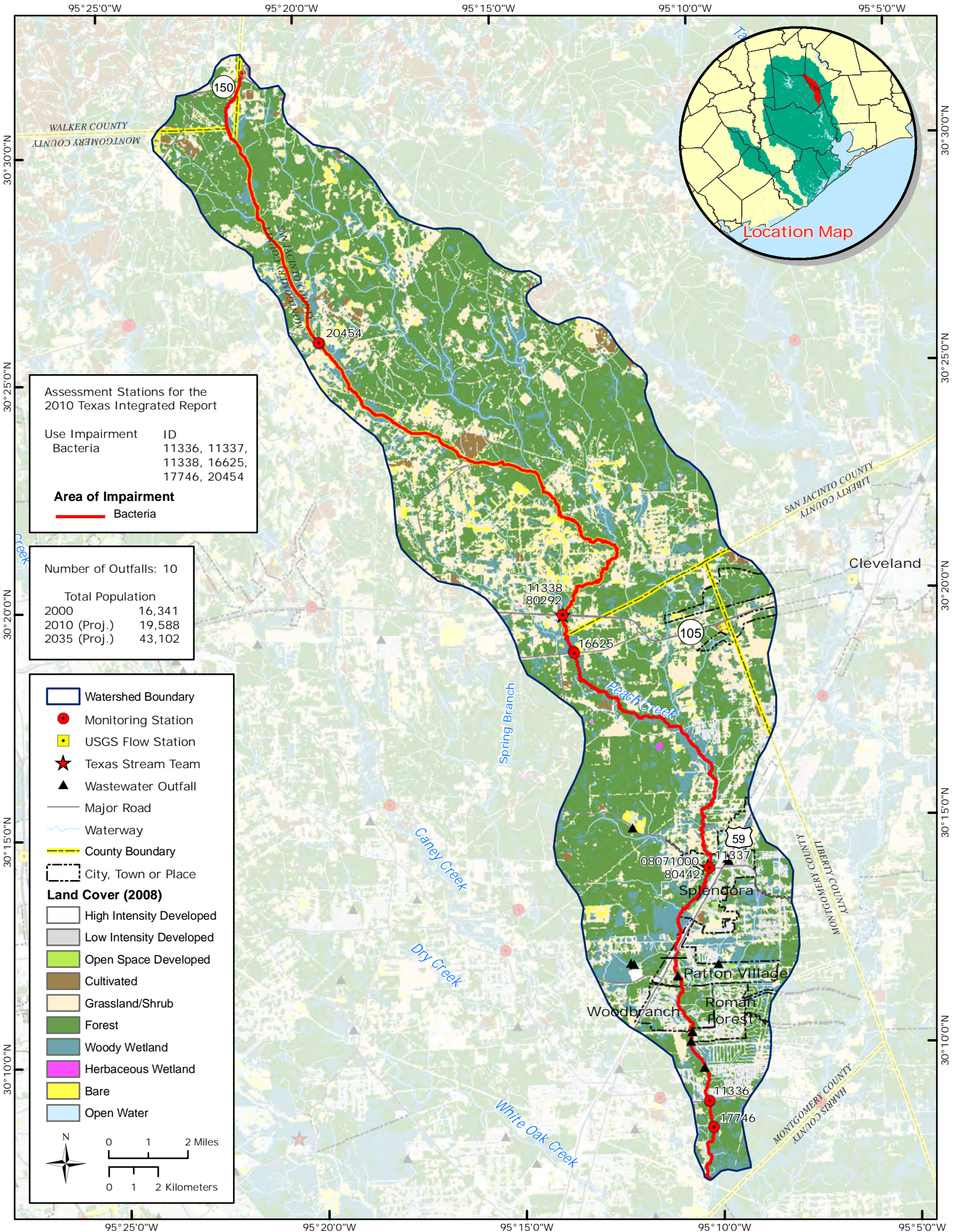


# PEACH CREEK - SEGMENT 1011



Assessment Stations for the 2010 Texas Integrated Report

Use Impairment	ID
Bacteria	11336, 11337, 11338, 16625, 17746, 20454

**Area of Impairment**

— Bacteria

Number of Outfalls: 10

Total Population	2000	2010 (Proj.)	2035 (Proj.)
	16,341	19,588	43,102

**Legend**

- Watershed Boundary
- Monitoring Station
- USGS Flow Station
- Texas Stream Team
- Wastewater Outfall
- Major Road
- Waterway
- County Boundary
- City, Town or Place

**Land Cover (2008)**

- High Intensity Developed
- Low Intensity Developed
- Open Space Developed
- Cultivated
- Grassland/Shrub
- Forest
- Woody Wetland
- Herbaceous Wetland
- Bare
- Open Water

Scale: 0 1 2 Miles / 0 1 2 Kilometers

<b>Segment Number:</b>	<b>1011</b>	<b>Name:</b>	<b>Peach Creek</b>			
<b>Length:</b>	57 miles	<b>Watershed Area:</b>	151 square miles	<b>Designated Uses:</b>	High Aquatic Life; Contact Recreation; Public Water Supply	
<b>Number of Active Monitoring Stations:</b>	4	<b>Texas Stream Team Monitors:</b>	2	<b>Permitted Outfalls:</b>	10	
<b>Description:</b>	From the confluence with Caney Creek in Montgomery County to SH 150 in Walker County					

Degree of Impairment and Overall Trends						
Segment ID	Dissolved Oxygen	Bacteria	Nutrients	PCBs/Dioxin	Chlorophyll <i>a</i>	Other
1011		100				

Indicates general improvement    
  Indicates general degradation    
 Numbers indicate percent of segment impaired

FY 2011 Active Monitoring Stations				
Site ID	Site Description	Frequency	Monitoring Entity	Parameter Groups
11336	Peach Creek at FM 1485	Bimonthly	COH / WQC	Field, Conventional, Bacteria
16625	Peach Creek at Old Hwy 105	Bimonthly	COH / WQC	Field, Conventional, Bacteria
17746	Peach Creek at Lake Houston Speedway	Quarterly	TCEQ	Field, Conventional, Bacteria, Chlorophyll- <i>a</i>
17746	Peach Creek at Lake Houston Speedway	Twice / Month	TCEQ	Flow, Biological Assessment
20454	Peach Creek at County Line Road-FM 3081	Quarterly	H-GAC	Field, Conventional, Bacteria, Flow

Segment 1011			
Standards		Screening Levels	
Temperature (°C):	32	Ammonia (mg/L):	0.33
Dissolved Oxygen (24-Hr Average) (mg/L):	5.0	Nitrate-N (mg/L):	1.95
Dissolved Oxygen (Absolute Minima) (mg/L):	3.0	Orthophosphate Phosphorus (mg/L):	0.37
pH (standard units):	6.5-8.5	Total Phosphorus (mg/L):	0.69
<i>E. coli</i> (MPN/100 mL) (grab):	394	Chlorophyll- <i>a</i> (µg/L):	14.1
<i>E. coli</i> (MPN/100 mL) (geometric mean):	126		
Chloride (mg/L as Cl):	50		
Sulfate (mg/L as SO <sub>4</sub> ):	50		
Total Dissolved Solids (mg/L):	300		

Water Quality Issues Summary					
Issue	2008 Assessment	Draft 2010 Assessment	Affected Area	Possible Causes / Influences / Concerns Voiced by Stakeholders	Possible Solutions / Actions To Be Taken
Bacteria	I	I	Entire segment	<ul style="list-style-type: none"> <li>- WWTP non-compliance, overflows, collection system by-passes</li> <li>- Small, privately-run WWTP</li> <li>- Developments with septic tanks</li> <li>- Animal waste from agricultural production, hobby farms, and riding stables</li> <li>- Rapid urbanization and increased impervious cover, especially in the lower portion of the watershed</li> <li>- Direct and dry weather discharges</li> <li>- Improper or no pet waste disposal</li> <li>- Non-point sources in the upper portion of the watershed</li> </ul>	<ul style="list-style-type: none"> <li>- Increase monitoring requirements for self-reporting</li> <li>- Impose new or stricter bacteria limits than those designated by TCEQ</li> <li>- Regionalize wastewater treatment to prevent or minimize number of small package plants and reduce septic tank dependency</li> <li>- Require larger partials of land in developments platted to use OSSF</li> <li>- More public education regarding OSSF operations and maintenance</li> <li>- More public education regarding pet waste disposal</li> <li>- Improve storm water controls in new developments by adding bacteria reduction measures</li> <li>- Improve compliance and enforcement of existing storm water quality permits to minimize</li> <li>- Improve construction oversight to minimize TSS discharges to waterways</li> <li>- Implement stream fencing or alternative water supplies to keep livestock out of or away from waterways</li> <li>- Promote and implement Water Quality Management Plans for individual agricultural properties</li> </ul>

## Segment Discussion

**Watershed Characteristics:** The watershed is dominated by forested land with the Sam Houston National Forest in the upper reach. Peach Creek flows into the East Fork San Jacinto River approximately two miles upstream from Lake Houston, the major drinking water supply for the region. Several small communities including Splendora, Patton Village, Roman Forest, and Woodbranch are located in the lower reach of the watershed. These residential communities are growing quickly especially along the U.S. Highway 59 corridor.

**Water Quality Issues:** This segment does not support its designated use for contact recreation. The 2008 and *Draft* 2010 Texas Integrated Reports (IRs) list the entire segment as impaired for the bacteria geometric mean. The bacteria single grab criteria was also found to be impaired in the *Draft* 2010 IR, but it was only reported as a concern in the 2008 IR.

**Special Studies/Projects:** In the past five years, this segment was included in the Lake Houston TMDL project for bacteria and is now part of the geographical area included in the Bacteria Implementation Plan which is currently being finalized. For more information, please refer to the detailed discussions of the Lake Houston TMDL project and the BIG located at the beginning of the water quality section of the 2011 Basin Summary Report.

**Trends:** Regression analysis of watershed-level data revealed statistically significant trends for three water quality parameters. The annual medians of two parameters – alkalinity and chloride – are increasing over time while sulfate is decreasing over the same time period. In all three cases the changes are slight. Station level analysis suggests a number of other trends, but as in the case of the watershed-level trends, the trends are not dramatic. The most noteworthy trends discovered were slight positive trends in *E. coli* densities at stations 11336 and 16625. For all data over the period of record, the rate of single-sample exceedances of the 126 MPN/100 mL standard for geomeans at those stations is 44% and 73% respectively. Plots of data from those two stations follow. While there are three wastewater outfalls upstream from station 11336, there are none upstream from 16625. There are multiple potential sources of bacterial contamination in this watershed. There are many small ranches and hobby farms, as well as many septic systems (OSSF) , in the upstream portion of Peach Creek.

Chlorophyll *a* and nutrients have not been identified as concerns in this watershed and our analysis does not suggest any concerns. Trends are slight and measured values over the period of record are well below screening levels at the most representative stations. There appeared to be a slight downward trend for chlorophyll *a* at the most downstream station (17746), but this is likely an artifact of lowered quantitation limits for the data submitted to TCEQ. Plots of total phosphorus (TP) data collected at station 11336 and a plot with chlorophyll *a* and nitrate nitrogen (nitrate) data are reproduced in the following tables.

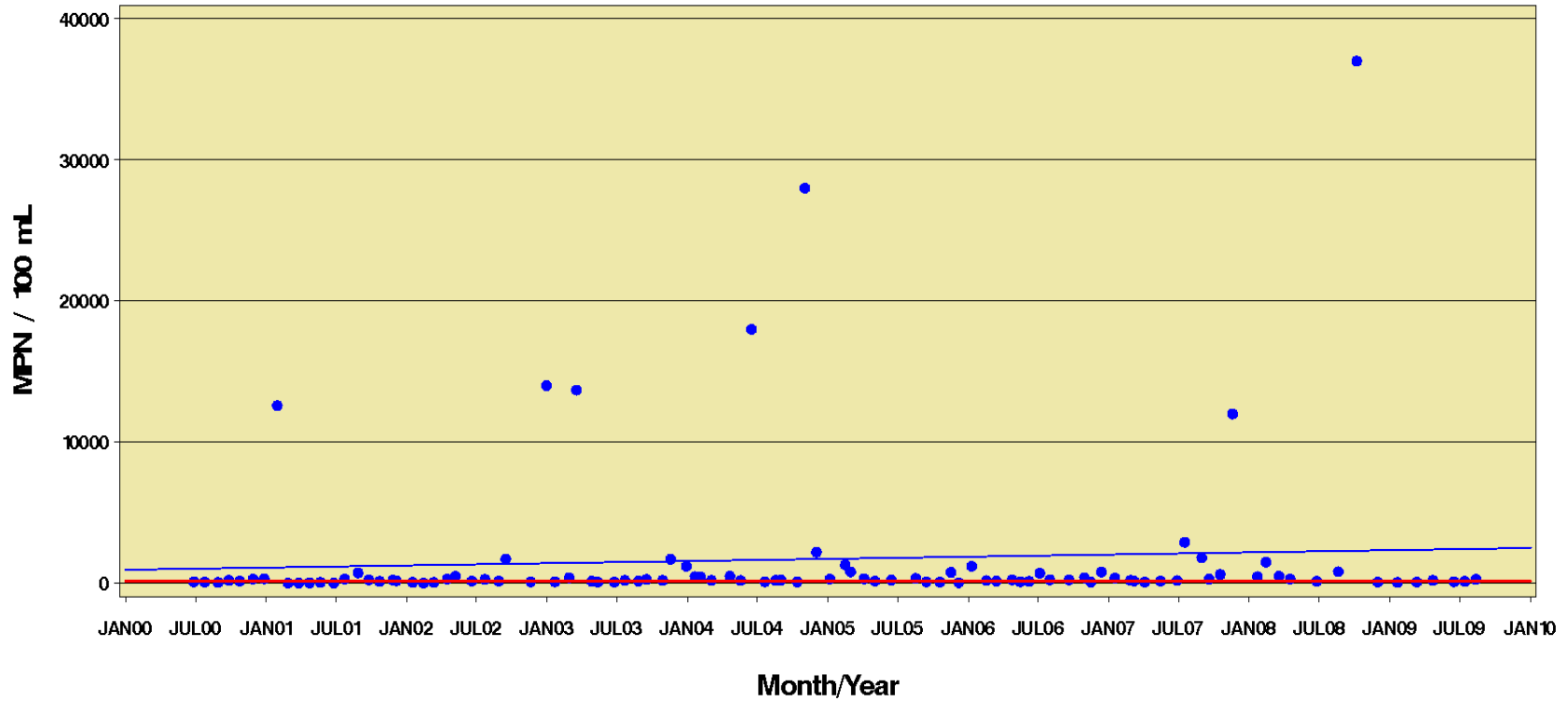
Dissolved oxygen is trending higher at station 16625, located in the middle region of the watershed and well upstream from the small communities of Splendora, Patton Village, and Woodbranch. A plot of dissolved oxygen data follows.

### Recommendations:

- Address the various concerns found in this segment summary through stakeholder participation.
- Continue collecting water quality data to support actions associated with watershed protection plan development and future modeling.
- Work with local partner and contract labs to lower detection limits for nutrients

## Peach Creek

Station: 11336 Segment: 1011 Parameter: E. Coli  
2010 Water Quality Standard: 126 MPN / 100 mL  
Assessment Unit: 1011\_02



Trends are considered significant if the p-value is < 0.10

Trend is significant at  $p=0.0666$  R-Square= 0.0332 T-Value= 1.8550 Number of Samples= 102

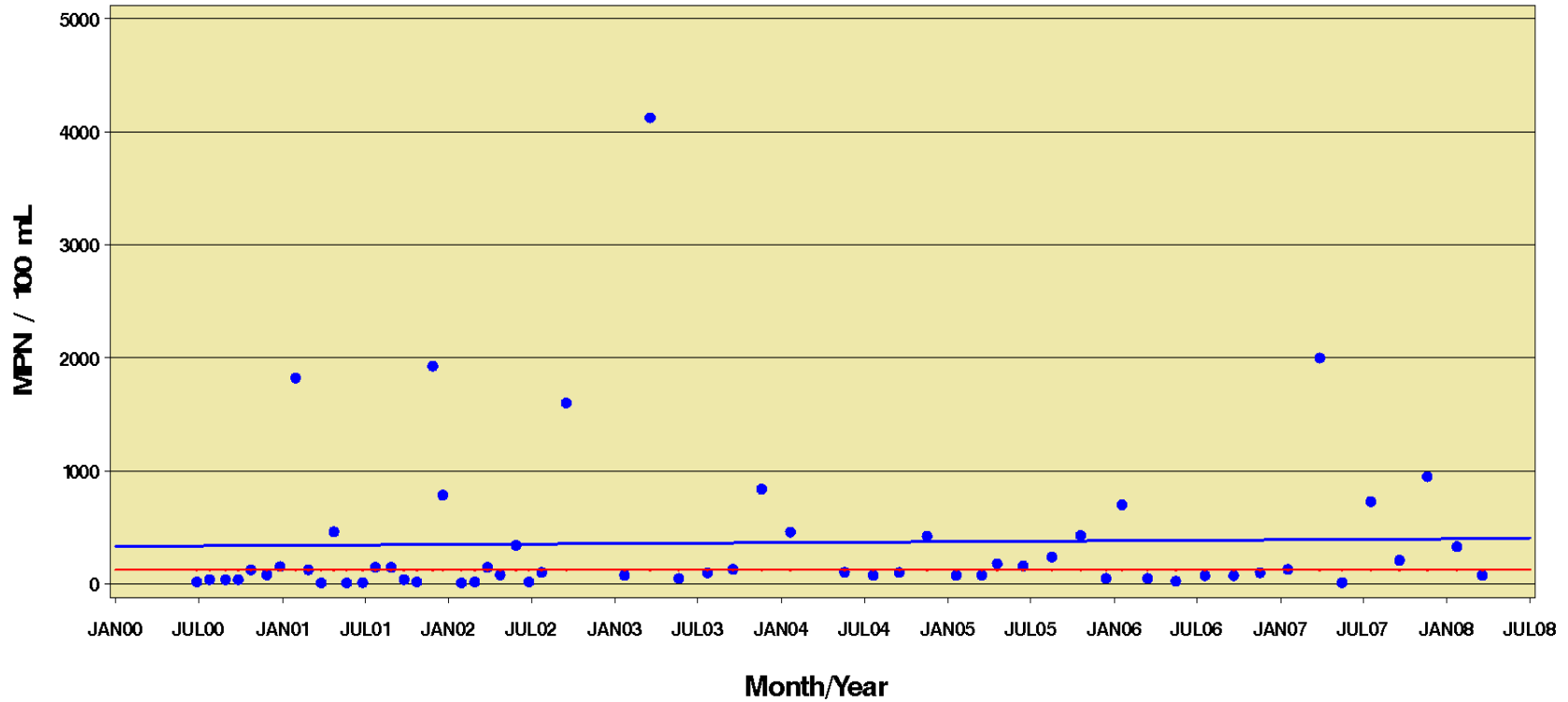
The blue regression line applies to the plot of actual values ; regression statistics are derived from regression of log-transformed data

Red line indicates the applicable 2010 Water Quality Standard

The regression analysis used to identify this water quality trend includes data submitted by the City of Houston Water Quality Control Laboratory for the period 2007 through 2009 that TCEQ has determined to be unsuitable for the Texas Integrated Report and other decision making purposes. The results are included here for illustrative purposes.

## Peach Creek

Station: 16625 Segment: 1011 Parameter: E. Coli  
2010 Water Quality Standard: 126 MPN / 100 mL  
Assessment Unit: 1011\_01



Trends are considered significant if the p-value is  $< 0.10$

Trend is significant at  $p=0.1040$  R-Square= 0.0457 T-Value= 1.6520 Number of Samples= 59

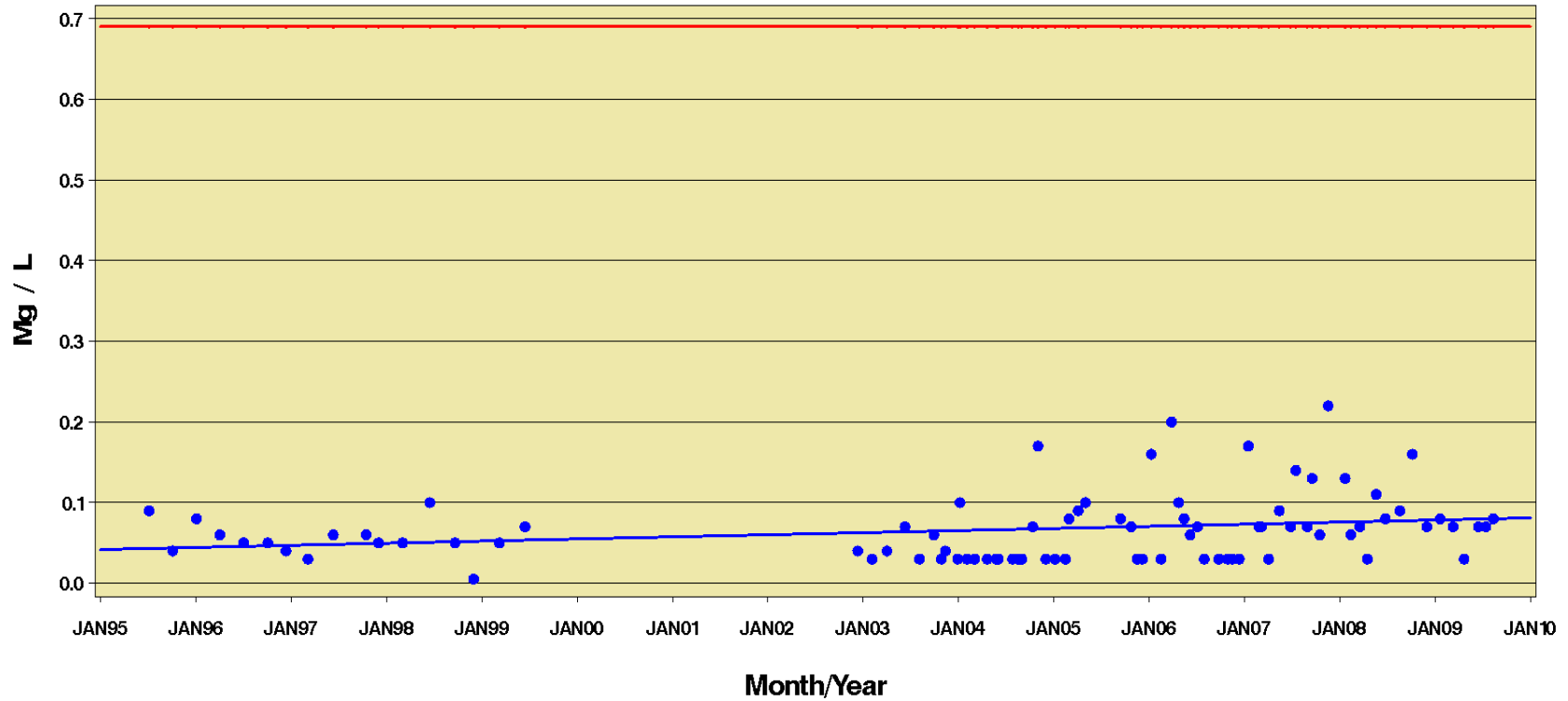
The blue regression line applies to the plot of actual values ; regression statistics are derived from regression of log-transformed data

Red line indicates the applicable 2010 Water Quality Standard

The regression analysis used to identify this water quality trend includes data submitted by the City of Houston Water Quality Control Laboratory for the period 2007 through 2009 that TCEQ has determined to be unsuitable for the Texas Integrated Report and other decision making purposes. The results are included here for illustrative purposes.

## Peach Creek

Station: 11336 Segment: 1011 Parameter: Total Phosphorus  
2010 Nutrient Screening Level: 0.69 Mg / L  
Assessment Unit: 1011\_02



Trends are considered significant if the p-value is  $< 0.10$

Trend is significant at  $p = 0.0317$  R-Square= 0.0544 T-Value= 2.1850 Number of Samples= 85

The blue regression line applies to the plot of actual values ; regression statistics are derived from regression of log-transformed data

Red line indicates the applicable 2010 Nutrient Screening Level

The regression analysis used to identify this water quality trend includes data submitted by the City of Houston Water Quality Control Laboratory for the period 2007 through 2009 that TCEQ has determined to be unsuitable for the Texas Integrated Report and other decision making purposes. The results are included here for illustrative purposes.

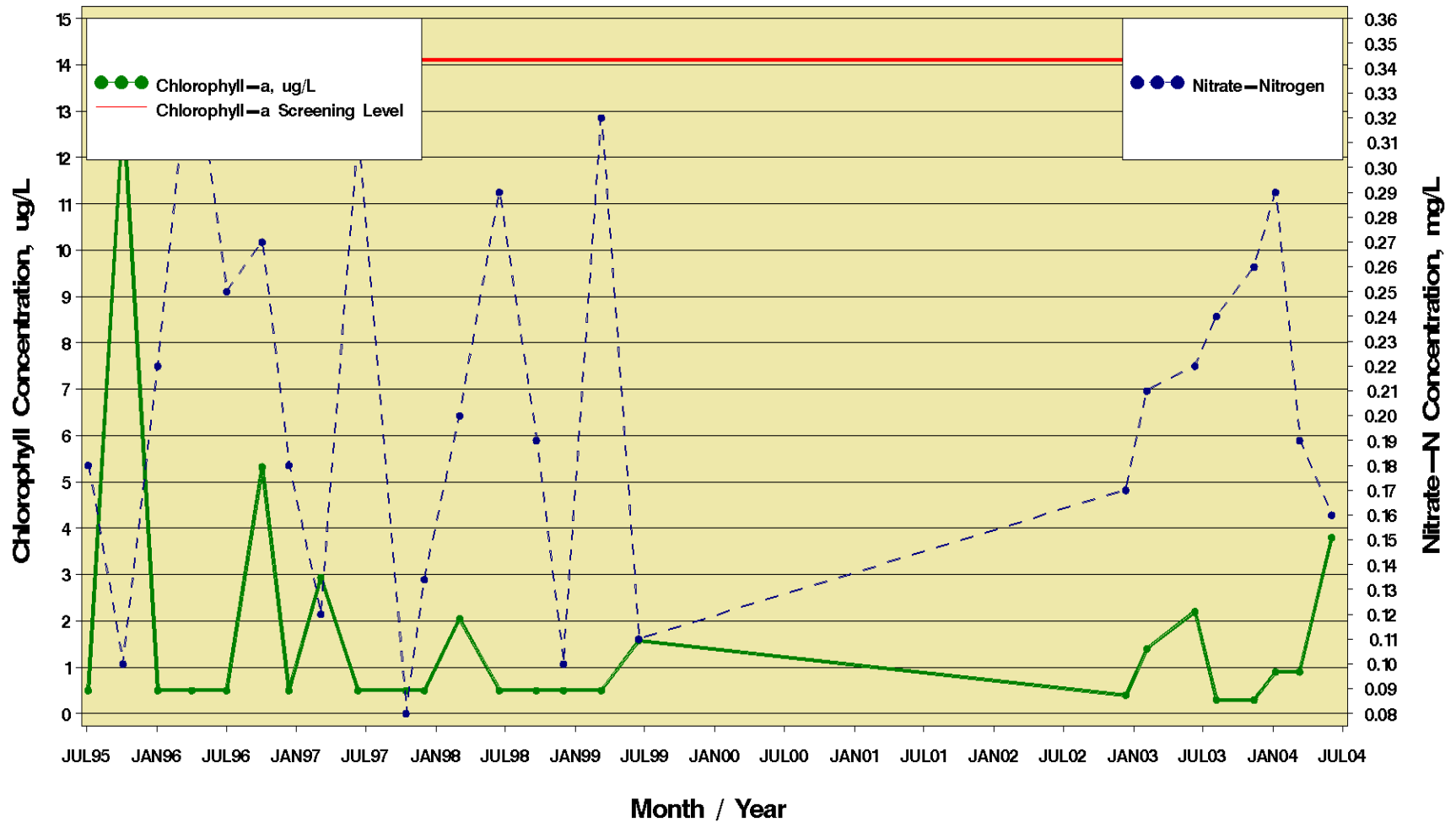
# Chlorophyll-a and Nitrate-Nitrogen Trends

Segment: 1011

Watershed: Peach Creek

Station: 11336

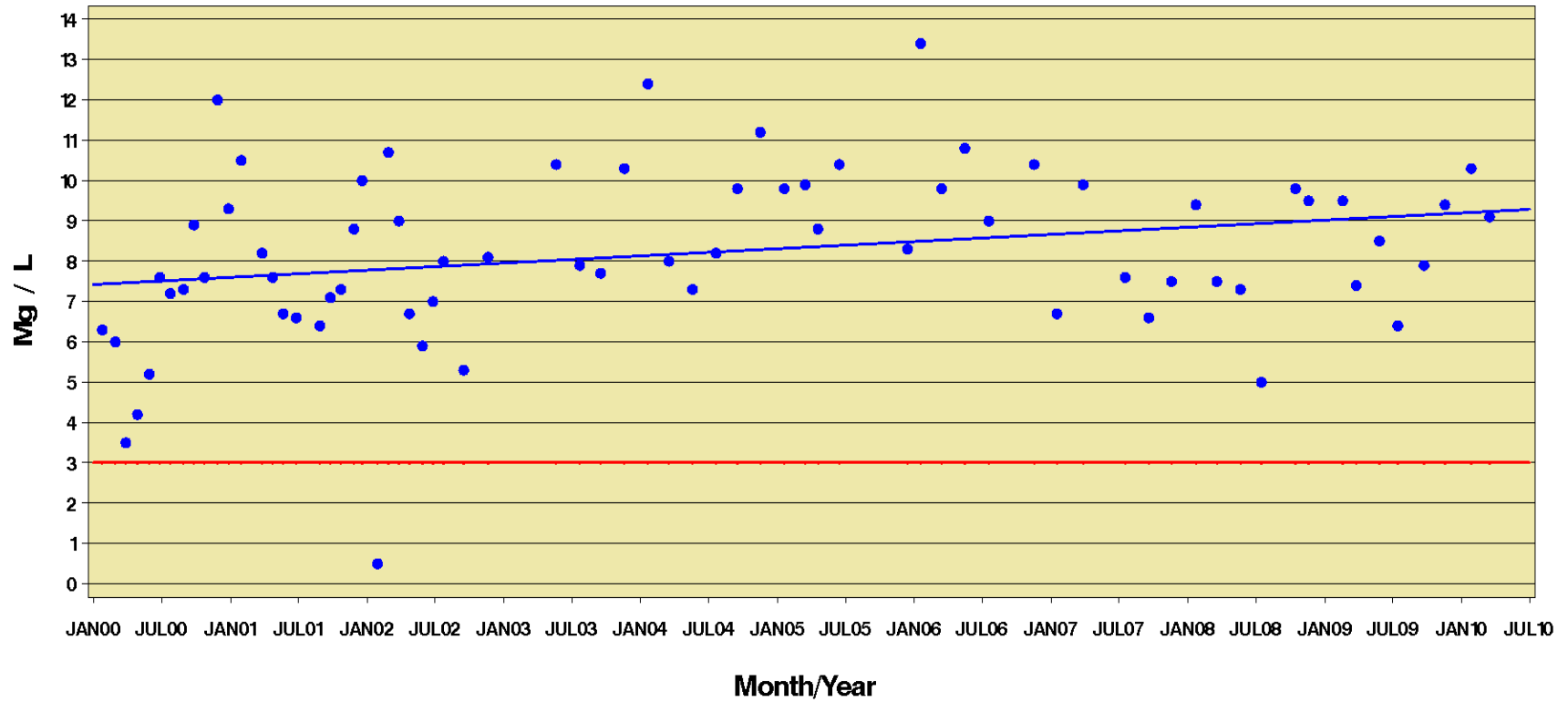
Assessment Unit: 1011\_02





## Peach Creek

Station: 16625 Segment: 1011 Parameter: Dissolved Oxygen  
2010 Water Quality Standard: 3.0 Mg / L  
Assessment Unit: 1011\_01



Trends are considered significant if the p-value is < 0.10

Trend is significant at p=0.0471 R-Square= 0.0567 T-Value= 2.0220 Number of Samples= 70

The blue regression line applies to the plot of actual values ; regression statistics are derived from regression of log-transformed data

Red line indicates the applicable 2010 Water Quality Standard