

Trash Guard, Inc.

Gainsborough Drive Debris Removal

The calculations below are based on data collected from one catch basin in Raleigh, NC over 6 2/3 years with a Trash Guard installed. We removed 6,000 lbs of sediment averaging 900 lbs per year. Samples were taken at each cleaning and sent to a lab to be analyzed. The amount of nitrogen removed averaged 6.62 lbs from lbs of sediment removed. The amount of phosphorus removed averaged 0.74 lbs from lbs of sediment removed.

This catch basin is located in a typical urban/suburban residential neighborhood. This particular section of the subdivision has 70 catch basins and 50 of them have the same watershed and drainage area as the one used. The neighborhood has significant amounts of vegetation and all yards are landscaped. The neighborhood has typical residential auto and truck traffic and very little litter. The catch basin has approximately 2 acres drainage area and drains to the bottom of a hill and empties into the same creek all catch basins in this subdivision empties into.

When the debris weight removed was estimated at 1,000 lbs 11/03/09 & 06/08/12 the estimate was based on the actual height of debris in the catch basin when it was manually removed 12/15/08 & 02/18/11.

Installed	Cleaned	Lbs Removed	Lbs Per Yr	Months	Raleigh RDU Rainfall
09/16/05	10/17/05	150	2005 297	2.5	2005 38"
	11/28/05	147	2006 764	12	2006 54"
	02/07/06	140	2007 506	12	2007 36" Average Annual
	06/30/06	239	2008 1,400	12	2008 51" Rainfall for Raleigh
	11/06/06	251	2009 1,000	12	2009 41" 46"
	11/29/06	134	2010 0	12	2010 37"
	09/07/07	340	2011 1,033	12	2011 43"
	12/07/07	166	2012 1,000	6	2012 17" Thru 6/30
	12/15/08	1,400	6,000		
	11/03/09	1,000	Cleaned by City – Weight Estimated from Experience		
	02/18/11	1,033			
		5,000			
	06/08/12	1,000	Cleaned by City – Weight Estimated from Experience		
		6,000			

6 2/3 Yrs 900 Lbs Average Weight Annually

	TOC	Nitrogen	Phosphorus
Averaged Samples 2005 – 2007	N/A	8.30 lbs	0.92 lbs
Samples from Cleaning 11/03/09	134.19 lbs	6.90 lbs	0.75 lbs
Samples from Cleaning 02/18/11	144.40 lbs	6.14 lbs	0.75 lbs
Samples from Cleaning 06/08/12	105.33 lbs	5.12 lbs	0.54 lbs
Totals	383.92 lbs	26.46 lbs	2.96 lbs
Averages	127.97 lbs	6.62 lbs	0.74 lbs

Neighborhood Estimated Annual Removal

Total Debris Estimated Annually Using Above Data	900 X 50	45,000 lbs
Total Organic Carbons Estimated Annually	128 X 50	6,400 lbs
Total Phosphorus Estimated Annually	0.74 X 50	37 lbs
Total Nitrogen Estimated Annually	6.62 X 50	331 lbs

Originally all samples were converted from PPM (Parts per Million) to LBS/Ton
 $\text{PPM} \times 0.002 = \text{Lbs/Ton}$

Here we are converting PPM (Parts per Million) to Lbs removed
 $\text{PPM} \times 0.001 = \text{Lbs Removed}$

Samples averaged from 2005 through 2007

	Sample 1	Sample 2	Sample 3	Lbs/Ton Average	Removed
Nitrogen				10.6	1,567 lb
Phosphorus				1.17	8.30
TOC				N/A	0.92

Samples from cleaning 11/3/09

	Sample 1	Sample 2	Sample 3	Lbs/Ton Average	Removed
Nitrogen	10.8	8.26	22.06	13.7	1,000 lbs
Phosphorus	1.56	1.23	1.71	1.50	6.9
TOC	211.02	150.00	444.11	268.38	0.75

Samples from cleaning 2/18/11

	Sample 1	Sample 2	Sample 3	Lbs/Ton Average	Removed
Nitrogen	11.25	12.5		11.88	1,033 lbs
Phosphorus	1.50	1.40		1.45	6.14
TOC	269.6	307.9		288.8	0.75

Samples from cleaning 6/8/12

	Sample 1	Sample 2	Sample 3	Lbs/Ton Average	Removed
Nitrogen	14.98	8.22	7.53	10.24	1,000 lbs
Phosphorus	1.61	0.75	0.85	1.07	5.12
TOC	321.90	158.68	151.39	210.65	0.54

Averages for all samples

	05 - 07	11/3/09	2/18/11	6/8/12	Average
Nitrogen	8.30	6.9	6.14	5.12	6.62
Phosphorus	0.92	0.75	0.75	0.54	0.74
TOC	N/A	134.19	144.40	105.33	127.97

Other nutrients & regulated metals removed

	05 - 07	11/3/09	2/18/11	6/8/12	Average
Potassium	0.82	0.72	1.3	0.53	0.84
Zinc	0.01	0.12	0.1	0.09	0.08
Copper	0.04	0.04	0.03	0.03	0.04
Nickel	0.01	0.01	0.005	N/A	0.008
Lead	0.02	0.03	0.005	0.01	0.02
Cadmium	0.002	0.001	0.0005	0.001	0.001