

**STORMWATER POLLUTANT REMOVAL CHAPTER 3**

**WORKSHEET 3.02 - SITUATION TWO**

Compile existing site-specific data and determine existing site imperviousness (I<sub>EXIST</sub>). For the purposes of these calculations, site area (A<sub>SITE</sub>) is defined as the entire parcel. A<sub>EXIST</sub> represents the actual amount of existing impervious cover on the site.

A <sub>SITE</sub>	=	5.4	acres
A <sub>EXIST</sub> structures	=	--	acres
parking lot	=	--	acres
roadway	=	0.6	acres
other	=	--	acres
Total A <sub>EXIST</sub>	=	0.6	acres

I<sub>EXIST</sub> = (Total A<sub>EXIST</sub> ÷ A<sub>SITE</sub>) x 100  
 I<sub>EXIST</sub> = **11** % (expressed in whole numbers)

Compile post-development site-specific data and determine post-development site imperviousness (I<sub>POST</sub>). For the purposes of these calculations, site area (A<sub>SITE</sub>) is defined as the entire parcel. A<sub>POST</sub> represents the actual amount of impervious cover on the site once the proposed development is complete.

A <sub>SITE</sub>	=	5.4	acres
A <sub>POST</sub> structures	=	0.1	acres
parking lot	=	--	acres
roadway	=	1.0	acres
other	=	--	acres
Total A <sub>POST</sub>	=	1.1	acres

I<sub>POST</sub> = (Total A<sub>POST</sub> ÷ A<sub>SITE</sub>) x 100  
 I<sub>POST</sub> = **21** % (expressed in whole numbers)

If I<sub>EXIST</sub> ≤ 16% and I<sub>POST</sub> > 16%, proceed to calculation of pollutant loadings. Otherwise, refer to Section 3.4 of the Manual for correct development situation determination.

**HENRICO COUNTY ENVIRONMENTAL PROGRAM MANUAL WORKSHEET 3.02 - 1**

**STORMWATER POLLUTANT REMOVAL CHAPTER 3**

Calculate the pre and post-development pollutant loadings for the site using the Simple Method.

$L = P \times P_J \times [0.05 + (0.09 \times I)] \times C \times A \times 2.72 / 12$

- Where:
- P<sub>J</sub> = unitless rainfall correction factor
  - P = 0.9 for all of Tidewater, Virginia annual rainfall depth in inches
  - C = 43 for the Richmond Metropolitan Area flow weighted mean concentration of total phosphorus
  - I<sub>WATERSHED</sub> = 0.26 mg/l for the entire County average land cover condition of the Bay watershed
  - I<sub>WATERSHED</sub> = 16 percent

Calculate the pre-development load (L<sub>PRE</sub>):

L<sub>PRE</sub> = [0.05 + (0.009 x I<sub>WATERSHED</sub>)] x 2.28 x A<sub>SITE</sub>  
 = [0.05 + (0.009 x 16)] x 2.28 x 5.4  
 L<sub>PRE</sub> = 2.4 pounds per year

Calculate the post-development load (L<sub>POST</sub>):

L<sub>POST</sub> = [0.05 + (0.009 x I<sub>POST</sub>)] x 2.28 x A<sub>SITE</sub>  
 = [0.05 + (0.009 x 21)] x 2.28 x 5.4  
 L<sub>POST</sub> = 3.0 pounds per year

Calculate the pollutant removal requirement (RR):

RR = L<sub>POST</sub> - L<sub>PRE</sub>  
 = 3.0 - 2.4  
 = 0.6 pounds per year

**HENRICO COUNTY ENVIRONMENTAL PROGRAM MANUAL WORKSHEET 3.02 - 2**

**HENRICO COUNTY ENVIRONMENTAL COMPLIANCE MANUAL**

**WORKSHEET 14.09 - PROGRAM IMPLEMENTATION**

<b>PROJECT NAME</b>	RIC Dominion Energy Access Road	<input type="checkbox"/> Subdivision <input type="checkbox"/> POD N/A
<b>PROJECT DESCRIPTION</b>	Construction of access roads to future Dominion Energy developments.	<input type="checkbox"/> Tax Parcel GPIN #824-712-5473

<b>WATERSHED (circle one)</b>	<b>JAMES RIVER</b>	<b>CHICKAHOMINY RIVER</b>
<b>SUB-WATERSHED</b>	White Oak Swamp	

STREAM PRESENT ON-SITE?	PARCEL SIZE (acres)	PRE-DEVELOPMENT IMPERVIOUS COVER (%)	POST-DEVELOPMENT IMPERVIOUS COVER (%)	POLLUTANT REMOVAL REQUIREMENT
YES/ NO	2298	31%	31%	N/A - SEE BMP TABLE BELOW

WATERSHED MANAGEMENT AREA (circle one)	APPLICABLE REQUIREMENTS				
	DESIGNATE STREAM PROTECTION AREAS	PROVIDE FORESTED STREAM PROTECTION AREAS	PROVIDE ENERGY DISSIPATORS AT OUTFALLS THAT DISCHARGE TO STREAM PROTECTION AREAS	ADDRESS POLLUTANT REMOVAL REQUIREMENT WITH A BMP	ADDRESS POLLUTANT REMOVAL REQUIREMENT WITH A FUND CONTRIBUTION
WATERSHED PRESERVATION AREA					
<b>WATERSHED ENHANCEMENT AREA</b>				X	
WATERSHED RESTORATION AREA					
URBAN MANAGEMENT AREA					

<b>Submitted by:</b>	Kevin O'Meara, P.E.	<b>Date:</b>	06/28/2018
<b>Approved by:</b>		<b>Date:</b>	

**TECHNICAL CRITERIA FOR GRANDFATHERED AND PREVIOUSLY PERMITTED PROJECTS URBAN MANAGEMENT AREA OPT IN - 1**

NOTE: THE SITUATIONAL WORKSHEETS SHOWN ABOVE ARE FOR INFORMATION ONLY. THEY REPRESENT THE PORTION OF THE 2,298 OVERALL PARCEL SIZE THAT IS AFFECTED BY THIS PROJECT. THE REMOVAL RATE OF 0.6 POUNDS PER YEAR DOES NOT TECHNICALLY APPLY, AS POLLUTANT REMOVAL IS ADDRESSED BY ACREAGE OF IMPERVIOUS AREA ABSORBED BY THE REGIONAL BMP ON THE EAST SIDE OF BEULAH ROAD AS DETAILED IN THE TABLE BELOW.

**EXISTING BMP CAPACITY TABLE RICHMOND INTERNATIONAL AIRPORT**

Project	Pre-Project Impervious Area	Post Project Impervious Area	Project Impervious Area (Net)	Cumulative Post 1990 Impervious Area (Ac.)	BMP Impervious Area Capacity Remaining (Ac.)	Date
Eubank Road Parking Lot (Economy Parking Lot 'A')			9.80	71.8	136.2	December 1, 1999
Concourse 'B' Expansion (Building & Concourse)			6.10	77.9	130.1	October 1, 2000
Taxiway 'U' South			11.70	89.6	118.4	October 1, 2000
Taxiway 'A' South			8.25	97.9	110.2	July 1, 2001
Terminal Building Expansion			1.24	99.1	108.9	May 1, 2005
Cellular Parking Lot - North	0.00	1.00	1.00	100.1	107.9	April 1, 2008
I-64/Route 895 Connector	5.00	7.00	2.00	102.1	105.9	May 1, 2007
North Parking Garage Expansion	5.45	8.30	2.85	104.9	103.1	May 1, 2008
Economy 'B' Parking Lot Expansion	10.30	16.60	6.30	111.2	96.8	2009
Runway 2-20 Rehabilitation (Remove Old Concrete Shoulder)			(0.88)	110.4	97.6	March 1, 2009
Commercial Lane Expansion - South			0.15	110.5	97.5	April 23, 2010
Eastside General Aviation Expansion			(1.19)	109.3	98.7	November 15, 2010
Concourse A Apron Expansion			4.62	113.9	94.1	July 17, 2011
Compressed Natural Gas Station #1	0.54	0.51	(0.03)	113.9	94.1	November 22, 2011
Eastside Hangar Building 1 & 2	0.43	0.92	0.49	114.4	93.6	February 10, 2012
Runway 16/34 Rehabilitation			(5.81)	108.6	99.4	July 3, 2012
South Perimeter Road and Fence/Security Improvements			4.10	112.7	95.3	March 5, 2013
Relocate Taxiway M			1.41	114.1	93.9	August 24, 2014
Snow Removal Equipment Building			3.20	117.3	90.7	December 31, 2014
East Side Roadway & Utilities	3.80	10.10	6.30	123.6	84.4	February 7, 2014
East Side Clearing and Grubbing	16.60	3.60	(13.00)	110.6	97.4	June 1, 2015
Avis Site Demolition	1.30	0.00	(1.30)	109.3	98.7	January 8, 2016
Reconstruct Taxiways E & L			0.00	109.3	98.7	February 12, 2016
West Perimeter Road Realignment			0.70	110.0	98.0	May 16, 2016
RIA Storage Building	0.70	3.10	2.40	112.4	95.6	December 2, 2016
Ethyl Hangar Demolition	1.15	0.03	(1.12)	111.3	96.7	March 31, 2017
Dominion Energy Access Road	0.60	1.10	0.50	111.8	96.2	May 11, 2018

Updated: May 11, 2018



YOUR VISION ACHIEVED THROUGH OURS.	REVISION DESCRIPTION
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**TIMMONS GROUP** Technology Infrastructure Residential Site Development

**EAST RAMP 3 ACCESS ROAD**  
HENRICO COUNTY - VIRGINIA

**STORMWATER QUALITY COMPLIANCE CALCULATIONS**

JOB NO. 40930.001  
SHEET NO. 02H(12)

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