

**Date** 6/6/2005  
**Last Revised:** 4/15/2015  
**Developer** Gregg Comstock, P.E., New Hampshire Department of Environmental Services

**Purpose** This program calculates pre and post development pollutant loads using the Simple Method.

**Disclaimer** **It is believed that this model functions as intended. However, Applicants using this model should be aware that they do so at their own risk. The NH Department of Environmental Services is not responsible for the use or interpretation of this information, nor for any inaccuracies. If errors are discovered they should be brought to the attention of DES.**

**Instructions** The tabs for data input sheets are shaded blue and are labeled "Pre-Dev\_Sub Area Wksht", "Post-Dev\_Sub Area Wksht", "Input\_LU\_A\_la\_C" and "Input\_BMPs".

In the worksheets, only change values in cells that are shaded **BLUE**.

Use the "**Pre-Dev\_Sub Area Wksht**" and "**Post-Dev\_Sub Area Wksht**" to show how the % Impervious for each sub-area was calculated for pre and post development conditions respectively. Use one row for each land use type and sub -area number. The number of rows for a particular sub-area should be equal to the number of land uses in the sub-area. All rows for a particular sub-area should have the same BMP. If the impervious area is disconnected, or if the BMP is an infiltration BMP designed in accordance with the Alteration of Terrain (AoT) regulations, select "YES" in the column that asks this question. Otherwise, select "NO". The worksheets compute the composite % impervious for each row based on 0% impervious for pervious areas and 100% impervious for impervious areas. The sub-area numbers, and area and % impervious for each land use in a sub-area should then be input in the the "Input\_LU\_A\_la\_C" worksheet described below.

On the "**Input\_LU\_A\_la\_C**" worksheet, input general project information at the top (ie, date, project name, town, etc.). Then input the average annual precipitation in inches per year for the municipality closest to the proposed Activity.

The next few lines are provided to provide pollutant load reductions associated with use of low nutrient fertilizers under post development conditions. If low nutrient fertilizers are to be used input the proposed reduced post development fertilizer application rate in terms of lbs/acre/year. TP fertilizer application rates can be as low as zero since many NH soils have sufficient TP. For TN, the lowest fertilizer application rate is approximately 44 lbs/acre/year (i.e., ~ 1 lb/1000 sf/year) per the UNH Cooperative Extension. If pollutant reductions due low nutrient fertilizers are assumed, enforceable documents (i.e., deed restrictions) are required to help ensure that low nutrient fertilizer will actually be used once the project is operational.

Credit can only be taken for managed turf areas that are to be fertilized annually. This does not include one time fertilizer applications such stabilization of disturbed areas on construction projects. The fertilizer routine assumes that all managed turf area (i.e., lawns) that are fertilized annually use the standard fertilizer application rate shown in the table. These rates are from the Center for Watershed Protection Treatment Model (CWPTM) User's Manual. The routine first calculates the reduction from the standard application rates. Similar to the CWPTM, this reduction is then multiplied by 1) a "Compliance" factor to account for the fact not all citizens will likely comply with the low nutrient fertilizer restrictions and 2) the percent of applied fertilizer which is lost to runoff or infiltration. The final percent fertilizer reduction factor (%FR) is then used to calculate reductions in the TP and TN EMCs for each post development land use in each sub-area in accordance with the following equation.

$$EMC_{FR} = [(100 - \%MTURF) \times EMC_{NFR} + (\%MTURF \times (EMC_{NFR} - \%FR \times (EMC_{NFR} - EMC_{MIN})))] / 100$$

Where  $EMC_{FR}$  =Area Weighted Post Development Fertilizer Reduction EMC (calculated for each land use in each sub-area) ;  $\%MTURF$  = Percent of each land use area in each sub-area that is managed turf that is fertilized annually;  $EMC_{NFR}$  is the EMC for land use prior to any fertilizer reduction and  $EMC_{MIN}$  is the minimum assumed post development EMC.  $EMC_{MIN}$  was set equal to the EMC for the Forest/Rural Open land use.

For any land use, the  $EMC_{FR}$  was not allowed to be less than the  $EMC_{MIN}$  unless the  $EMC_{NFR}$  was already less in which the minimum  $EMC_{FR}$  was set equal to the  $EMC_{NFR}$ . Finally  $EMC_{FR}$  were only calculated for land uses that are likely to have managed turf that is fertilized annually. Land uses excluded from fertilizer reduction calculations included roofs, forest/rural and water/wetlands since they are not expected to include any managed turf.

Then, based on the "Pre-Dev Sub Area Wksht", input the sub-area number, the Point of Analysis (PoA) number and then the area and % impervious (i.e., the impervious fraction Ia) for each land use in that sub-area for pre development conditions. Then do the same for the post development condition using the information from the "Post-Dev Sub Area Wksht". The worksheet allows up to 25 different subareas for pre and post development conditions.

On the "**Input BMPs**" worksheet, input the BMP description for each subarea under pre and post development condition. Also input the overall removal efficiency for each pollutant of concern. If any subarea has BMPs in series with different removal efficiencies, input the highest removal efficiency for each pollutant of concern.

Once all input is complete, check the "**Overall Summary**" worksheet (the tab shaded red) for a summary of total pre and post development loading results. **Sub-Area Summary** worksheets for each pollutant are also provided. These can be copied and pasted into a new worksheet and used to create other summaries as needed (such as a summary of loads at each Point of Analysis).

See the guidance document for additional information.



Condition	Point of Analysis (PoA) Number	Sub-Area Number	Area Description	Land Use	BMP	Is the Impervious Area Disconnected in accordance with Chapter 6, Volume 1 of the NH Stormwater Manual or is the BMP an Infiltration BMP designed in accordance with Alteration of Terrain regulations (Env-Wq 1500)?	Pervious Undisturbed (i.e. forest, meadow, etc.)	Pervious Disturbed (i.e. lawn or other area that will be fertilized annually)	Pervious Pavement that filters and infiltrates all stormwater (no underdrains)	Pervious Disturbed Other	Description of Pervious Disturbed Other	Pervious Total	Pervious Pavement that filters but does not infiltrate all stormwater (has underdrains)	Impervious Roof	Impervious Road	Impervious Parking and Drives	Impervious Sidewalks	Impervious Surface Water	Impervious Other	Description of Impervious Other	Impervious Total (Prior to Disconnection or Infiltration BMP Credit)	Total Area	Composite % Impervious (without disconnection or Infiltration credit)	Composite % Impervious (with disconnection or Infiltration credit)	
							Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
Post-Development	Post-A	Post-A	Post-Dev Watershed Map Area A	Forest/Rural Open	Detention Basin 1	NO	9.39	0.00	0.00	1.08	grassed open area, no fertilizer	10.47	0.00	0.00	0.24	0.00	0.00	0.00	0.00		0.24	10.71	2.24%	2.24%	
Post-Development	Post-B	Post-B	Post-Dev Watershed Map Area B	Forest/Rural Open	Detention Basin 1	NO	0.00	0.00	0.27	0.11	grassed open area, no fertilizer	0.38	0.00	0.00	0.03	0.00	0.00	0.00	0.00		0.03	0.41	7.32%	7.32%	
Post-Development	Post-C	Post-C	Post-Dev Watershed Map Area C	Forest/Rural Open		YES	0.00	0.00	0.00	0.21	grassed open area, no fertilizer	0.21	0.00	0.00	0.31	0.00	0.00	0.00	0.00		0.31	0.52	59.62%	0.00%	
Post-Development	Post-D	Post-D	Post-Dev Watershed Map Area D	Forest/Rural Open		NO	0.00	0.00	0.00	0.07	grassed open area, no fertilizer	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.07	0.00%	0.00%	
Post-Development	Post-E	Post-E	Post-Dev Watershed Map Area E	Forest/Rural Open		NO	9.12	0.00	0.00	0.34	grassed open area, no fertilizer	9.46	0.00	0.00	0.05	0.00	0.00	0.00	0.00		0.05	9.51	0.53%	0.53%	
Post-Development	Post-F	Post-F	Post-Dev Watershed Map Area F	Forest/Rural Open		YES	10.33	0.00	0.00	0.11		10.44	0.00	0.00	0.06	0.00	0.00	0.00	0.00		0.06	10.50	0.57%	0.00%	
Post-Development	Post-G	Post-G	Post-Dev Watershed Map Area G	Forest/Rural Open	Detention Basin 1	NO	0.00	0.00	0.00	0.11		0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00		0.17	0.28	60.71%	60.71%
Post-Development						NO	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			
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development						NO	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		
Post-Development																									

Date (MM/DD/YYYY):	1/4/2017
Project Name:	Transition Station #1
Town/City:	Pittsburg, Coos County
Impacted Surface Waters:	Upper Connecticut River
Applicant:	Northern Pass Transmission, LLC.
DES File #:	

Average Annual Precipitation P	40.20	inches	<b>ONLY INPUT VALUES IN BLUE SHADED CELLS</b>
Fraction of Annual Runoff events that produce runoff	0.90	(usually 0.9)	

**Credit for Using Low Nutrient Fertilizer:** If there are managed turf areas under post development conditions that are to be fertilized annually, reductions in post development nutrient (TP and TN) loadings can be realized by providing enforceable documents (i.e., deed restrictions) requiring land owners to use low nutrient fertilizer. To get low nutrient fertilizer pollutant reductions input the proposed reduced fertilizer application rates for post development development for TP and TN in the table below. Low nutrient fertilizers must have application rates less than the standard fertilizer application rate shown in the table. Then input the percent of each land use in each post development sub-area that is managed turf that is fertilized annually.

Fertilizer Reduction Calculator	
TP	TN
15.0	150.0
0.0	44.0
100.0%	70.7%
50%	50%
10%	10%
5.0%	3.5%
0.11	1.74

← Used to reduce EMCs for Post TP and Post TN for each land use in each Sub Area depending on percent of area that is managed turf that is fertilized annually

STANDARD FERTILIZER APPLICATION RATE (lbs/acre/year)  
**PROPOSED REDUCED FERTILIZER APPLICATION RATES FOR POST-DEVELOPMENT (lbs/acre/year)**  
 INITIAL PERCENT REDUCTION  
 PERCENT OF CITIZENS THAT WILL COMPLY WITH REDUCED APPLICATION RATES  
 PERCENT OF APPLIED FERTILIZER THAT IS LOST TO RUNOFF OR PERCOLATION  
**FINAL PERCENT FERTILIZER REDUCTION WITH COMPLIANCE AND RUNOFF RATES APPLIED (%FR)**  
 MINIMUM ASSUMED EMC = EMC<sub>MIN</sub> (mg/L)

PRE-DEVELOPMENT CONDITIONS			POST-DEVELOPMENT CONDITIONS		
	Area	Impervious Area	Area	Impervious Area	Area Fertilized Annually
Total Area (All Sub-Areas) (acres)	31.99	0.11	32.00	0.49	0.00

Insert information for 1st sub-area below					
Sub_Area_ID	Pre-A		Sub_Area_ID	Post-A	
Point of Analysis (PoA) Number	Pre-A		Point of Analysis (PoA) Number	Post-A	
Total Area for Sub-Area (acres)	31.99	0.11	Total Area in Sub-Area (acres)	10.71	0.24 0.00

Land Use	Area	la	Land Use	Total Area for each Land Use	la	Percent of Area that is managed turf (i.e., fertilized annually)	Post-TP EMC	Post-TN EMC
	(acres)	(% Impervious)		(acres)	(% Impervious)	%	mg/L	mg/L
<b>From HWG</b>			<b>From HWG</b>					
Residential Roof	0.00	0.00%	Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
<b>From CDM</b>			<b>From CDM</b>					
Agriculture and Pasture	0.00	0.00%	Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	31.99	0.34%	Forest/Rural Open	10.71	2.24%	0.0%	0.11	1.74
Highway	0.00	0.00%	Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 2nd sub-area below

Sub_Area_ID		
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	0.00	0.00

Sub_Area_ID	Post-B		
Point of Analysis (PoA) Number	Post-B		
Total Area in Sub-Area (acres)	0.41	0.03	0.00

Land Use	Area (acres)	Ia (% Impervious)
<b>From HWG</b>		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
<b>From CDM</b>		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.00	0.00%
Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Land Use	Area (acres)	Ia (% Impervious)	Percent of Area that is managed turf (i.e., fertilized annually) %	Post-TP EMC mg/L	Post-TN EMC mg/L
<b>From HWG</b>					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
<b>From CDM</b>					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.41	7.32%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 3rd sub-area below

Sub_Area_ID		
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	0.00	0.00

Sub_Area_ID	Post-C		
Point of Analysis (PoA) Number	Post-C		
Total Area in Sub-Area (acres)	0.52	0.00	0.00

Land Use	Area (acres)	Ia (% Impervious)
<b>From HWG</b>		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
<b>From CDM</b>		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.00	0.00%
Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Land Use	Area (acres)	Ia (% Impervious)	Percent of Area that is managed turf (i.e., fertilized annually) %	Post-TP EMC mg/L	Post-TN EMC mg/L
<b>From HWG</b>					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
<b>From CDM</b>					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.52	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 4th sub-area below

Sub_Area_ID		
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	0.00	0.00

Sub_Area_ID	Post-D		
Point of Analysis (PoA) Number	Post-D		
Total Area in Sub-Area (acres)	0.07	0.00	0.00

Land Use	Area (acres)	Ia (% Impervious)
<b>From HWG</b>		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
<b>From CDM</b>		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.00	0.00%
Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Land Use	Area (acres)	Ia (% Impervious)	Percent of Area that is managed turf (i.e., fertilized annually) %	Post-TP EMC mg/L	Post-TN EMC mg/L
<b>From HWG</b>					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
<b>From CDM</b>					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.07	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 5th sub-area below

Sub_Area_ID		
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	0.00	0.00

Sub_Area_ID	Post-E		
Point of Analysis (PoA) Number	Post-E		
Total Area in Sub-Area (acres)	9.51	0.05	0.00

Land Use	Area (acres)	Ia (% Impervious)
<b>From HWG</b>		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
<b>From CDM</b>		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.00	0.00%
Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Land Use	Area (acres)	Ia (% Impervious)	Percent of Area that is managed turf (i.e., fertilized annually) %	Post-TP EMC mg/L	Post-TN EMC mg/L
<b>From HWG</b>					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
<b>From CDM</b>					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	9.51	0.53%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 6th sub-area below

Sub_Area_ID		
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	0.00	0.00

Sub_Area_ID	Post-F		
Point of Analysis (PoA) Number	Post-F		
Total Area in Sub-Area (acres)	10.50	0.00	0.00

Land Use	Area (acres)	Ia (% Impervious)
<b>From HWG</b>		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
<b>From CDM</b>		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.00	0.00%
Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Land Use	Area (acres)	Ia (% Impervious)	Percent of Area that is managed turf (i.e., fertilized annually) %	Post-TP EMC mg/L	Post-TN EMC mg/L
<b>From HWG</b>					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
<b>From CDM</b>					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	10.50	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 7th sub-area below

Sub_Area_ID		
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	0.00	0.00

Sub_Area_ID	Post-G		
Point of Analysis (PoA) Number	Post-G		
Total Area in Sub-Area (acres)	0.28	0.17	0.00

Land Use	Area (acres)	Ia (% Impervious)
<b>From HWG</b>		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
<b>From CDM</b>		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.00	0.00%
Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Land Use	Area (acres)	Ia (% Impervious)	Percent of Area that is managed turf (i.e., fertilized annually) %	Post-TP EMC mg/L	Post-TN EMC mg/L
<b>From HWG</b>					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
<b>From CDM</b>					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.28	60.71%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38





TS1 Simple Method\_01042017  
OVERALL SUMMARY

1/26/2017

Date (MM/DD/YYYY): 1/4/2017  
 Project Name: Transition Station #1  
 Town/City: Pittsburg, Coos County  
 Impacted Surface Waters: Upper Connecticut River  
 Applicant: Northern Pass Transmission, LLC.  
 DES File #:

TOTAL PRE -DEVELOPMENT (PRE-DEV) AREA (ACRES) =	31.99
TOTAL PRE-DEV EFFECTIVE IMPERVIOUS AREA (ACRES) =	0.11
TOTAL PRE-DEV PERCENT EFFECTIVE IMPERVIOUS (%) =	0.3%
TOTAL POST DEVELOPMENT (POST-DEV) AREA (ACRES) =	32.00
TOTAL POST-DEV EFFECTIVE IMPERVIOUS AREA (ACRES) =	0.49
TOTAL POST-DEV PERCENT EFFECTIVE IMPERVIOUS (%) =	1.5%
TOTAL POST-DEV AREA THAT IS FERTILIZED ANNUALLY (ACRES) =	0.00
TOTAL POST-DEV PERCENT OF AREA THAT IS FERTILIZED ANNUALLY (%) =	0.0%

	TSS (LBS/YR)	TP (LBS/YR)	TN (LBS/YR)
PRE DEVELOPMENT LOADS (NO BMPS)	708.3	1.5	24.2
PRE DEVELOPMENT LOADS (WITH BMPS)	708.3	1.5	24.2
PRE DEVELOPMENT LOAD REDUCTION DUE TO BMPS	0.0	0.0	0.0
PROPOSED PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	NA	5.0%	3.5%
POST DEVELOPMENT LOADS (NO BMPS)	851.1	1.8	29.0
POST DEVELOPMENT LOADS (WITH BMPS)	528.9	1.2	21.5
POST DEVELOPMENT LOAD REDUCTION DUE TO BMPS	322.3	0.6	7.6
POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE)	-179.4	-0.3	-2.7
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-25.3%	-18.5%	-11.1%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	16.8%	16.8%	16.8%







TS1 Simple Method\_01042017  
TP SUB\_AREA SUMMARY

1/26/2017

Date (MM/DD/YYYY): 1/4/2017  
Project Name: Transition Station #1  
Town/City: Pittsburg, Coos County  
Impacted Surface Waters: Upper Connecticut River  
Applicant: Northern Pass Transmission, LLC.  
DES File #:

POST-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
POST	Post-A	Post-A	10.71	0.24	0.00	TP	5.0%	Detention Basin 1 (Wet Extended Detention Pond)	0.7	0.2	0.5	68.0%
POST	Post-B	Post-B	0.41	0.03	0.00	TP	5.0%	Detention Basin 1 (Wet Extended Detention Pond)	0.0	0.0	0.0	68.0%
POST	Post-C	Post-C	0.52	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	Post-D	Post-D	0.07	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	Post-E	Post-E	9.51	0.05	0.00	TP	5.0%		0.5	0.5	0.0	0.0%
POST	Post-F	Post-F	10.50	0.00	0.00	TP	5.0%		0.5	0.5	0.0	0.0%
POST	Post-G	Post-G	0.28	0.17	0.00	TP	5.0%	Detention Basin 1 (Wet Extended Detention Pond)	0.2	0.0	0.1	68.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
		TOTAL	32.00	0.49	0.00			TOTAL	1.8	1.2	0.6	32.2%



