Wake County Stormwater Hybrid Tool Directions

For additional submittal and design guidance, please see Wake County's SW Manual

The Wake County Stormwater Hybrid Tool is required for all stormwater submittals in Wake County jurisdiction. Engineer will input all data requested that is highlighted inblue. Engineer may follow provided links to view calculations used in this tool. Calculations for peak flow, runoff, time of concentration, etc. are for individual drainage areas. Engineer should complete a worksheet for each drainage area within a project area.

| | Complete <u>all inputs</u> on the SITE DATA worksheet. SITE DATA worksheet should be submitted with preliminary plan submittals and modified and submitted for construction plan submittals. |
|---|--|
| 1 | Residential Stormwater Details should be completed for all residential submittal. |
| | Stormwater Narrative should describe the site conditions in pre- and post-development conditions including a description of site improvements and proposed stormwater BMPs. |
| | Complete DA worksheets. Most of the site data is inputted by the engineer on the DA worksheets. A Links/Comments column provides details regarding individual inputs. Engineers may also enter comments in this column as needed. |
| 2 | DA Worksheets will calculate pre and post runoff, time of concentration, peak flow, and volume of runoff per drainage area. Inputs on these sheets will also be used to calculate the site composite curve numbers for pre and post development, Target Curve Number (TCN), and nitrogen and phosphorus loading calculations. |
| | Offsite values should be included when there is offsite drainage onto the site to ensure that the peak flow is an accurate value. Otherwise, peak flow represents only the sit peak flow. Offsite drainage is not used in Target Curve Number or nutrient loading calculations. |
| | SITE SUMMARY worksheet summarizes the pre and post runoff, Tc, and peak flow per drainage area based on inputs from DA worksheets. This worksheet denotes the volume required for management per drainage area based on high density requirements. |
| | TCN and composite curve numbers for pre and post development are also calculated and summarized. If the TCN is exceeded, this worksheet will calculate total volume to be managed for the entire site based on TCN requirements. |
| 3 | Nitrogen and Phosphorus Loading: Nitrogen and Phosphorus Loading Rates for the site are calculated based on the land use acreages imputed on DA worksheets. This worksheet calculates the total amount of nitrogen and phosphorus for pre and post development. Nitrogen and phosphorus totals will be used on following BMP worksheets. |
| | Disconnected Impervious - This area will be used to provide an adjusted post development composite curve number (CN _{adjusted}) to allow a credit for the use of disconnected impervious. Site plans should clearly indicate areas of disconnected impervious. |
| | Note: There is only one engineer input on this sheet and all exeedances from DA worksheets will be flagged inred. |
| | DA BMP worksheets require engineer to input proposed BMP information. BMPs are categorized by sub-basins within the drainage area. Engineer should input BMP device name, type, and volume provided. BMP requirements are automatically imported from previous inputs. |
| | Engineer should input land uses by sub-basin. Off-site drainage to the BMP should be included to ensure that the water quality volume required is calculated correctly. |
| 4 | BMPs are required in each DA where post-development peak flow is higher than pre-development peak flow by 10%. Note that there is no 10% for projects within the Falls and Jordan Lake Watersheds. |
| | DA BMP worksheets will ensure that proposed BMPs meet requirements for peak flow, TCN, and for Nitrogen and Phosphorus. |
| | Engineer must input post-BMP discharge. |
| | BMP SUMMARY worksheet summarizes the pre and post BMP runoff, and peak flow per drainage area based on inputs from DA BMP worksheets. |
| 5 | Nitrogen and Phosphorus Loading: calculated based on the inputs on DA BMP worksheets. |
| | Note: There are no engineer inputs on this sheet and all exeedances from DA BMP worksheets will be flagged inred. |

TOOL DIRECTIONS Page 1



SITE DATA

| | Project Information |
|---|--|
| Project Name: | Broadmoor |
| Permit No (if known): | |
| Applicant: | WithersRavenel |
| Applicant Contact Name: | Brandon Miller |
| Applicant Contact Number: | 919-535-5200 |
| Contact Email: | bmiller@withersravenel.com |
| Last Modified Date: | Wednesday, April 10, 2024 |
| | Site Data: |
| River Basin: | Neuse |
| Regulatory Watershed: | N/A |
| Physiographic/Geologic Region: | Piedmont |
| Type of Development (Select from Dropdown menu): | Residential |
| Zoning: | Residential Highway |
| Total Site Area (Ac): | 103.63 |
| Existing Lake/Pond Area (Ac): | |
| Proposed Disturbed Area (Ac): | |
| Proposed Impervious Surface Area from DA Sheets (acre): | 21.84 |
| Percent Built Upon Area (BUA): | 21% |
| Is the proposed project a site expansion? | No |
| Number of Drainage Areas on Site (Points of Analysis): | 4 |
| Annual Rainfall (in): | 45.41 |
| One-year, 24-hour rainfall (in): | 3.00 |
| Two-year, 24-hour rainfall (in): | 3.60 |
| Proposed Reside | ential Stormwater Details (if applicable): |
| Site Square Footage: | 4,514,071 |
| Total Acreage in Lots: | |
| Lot Square Footage: | |
| Number of Lots: | 225 |
| Average Lot Size (SF): | 5,062 |
| Proposed Impervious Surface Area from DA sheets (SF): | 951,466 |
| Proposed Impervious Surface Area Devoted to Lots (SF): | 664,231 |
| Total Impervious Surface Area Devoted to Roads (SF): | 249,824 |
| Other Impervious Surface Area (SF): | 835,278 |
| | |

SITE DATA Page 2

| Stormwater Narrative (limit to 1,200 characters - attach additional pages with submittal if necessary): | |
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Page 3

Project Name:

Broadmoor



DRAINAGE AREA 1 STORMWATER PRE-POST CALCULATIONS

| LAND USE & SITE DATA | | | Р | RE-DEVE | LOPME | NT | | | | | PC | ST-DEV | ELOPME | | | |
|--------------------------------------|------|---------|-------|---------|-------|---------|-------|---------|------|---------|-------|---------|--------|---------|-------|---------|
| Drainage Area (Acres)= | | | | 125 | i.91 | | | | | | | 122 | 2.43 | | | |
| Site Acreage within Drainage= | | | | 103 | 3.66 | | | | | | | 100 |).18 | | | |
| One-year, 24-hour rainfall (in)= | | | | | | | | 3. | 00 | | | | | | | |
| Land Use (acres) by Soil Group: | AS | Soils | вя | Soils | c s | oils | DS | oils | AS | Soils | вя | Soils | cs | oils | D S | Soils |
| Commercial | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Parking lot | | | | | | | | | | | | | | | | |
| Roof | | | | | | | | | | | | | | | | |
| Open/Landscaped | | | | | | | | | | | | | | | | |
| Industrial | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Parking lot | | i | | 1 | | i | | | | 1 | | i | | 1 | | 1 |
| Roof | | į | | | | | | | | | | | | | | İ |
| Open/Landscaped | | | | | | | | | | | | | | | | |
| Transportation | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| High Density (interstate, main) | | 1 | | | | | | | | | | | | | | |
| High Density (Grassed Right-of-ways) | | | | | | | | | | | | | | | | |
| Low Density (secondary, feeder) | | 1 | | ! | | ! | | | | | | ! | | ! | | ! |
| Low Density (Grassed Right-of-ways) | | | | | | | | | | | | | | | | |
| Rural | | | | | | | | | | | | | | | | |
| Rural (Grassed Right-of-ways) | | 1 | | | | | | | | | | | | | | |
| Sidewalk | | | | | | | | | | | | | | | | |
| Misc. Pervious | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Managed pervious (Open Space) | | i | 42.63 | 17.47 | 8.38 | 0.04 | 15.87 | 2.58 | | | 14.65 | 17.45 | 6.52 | 0.03 | 10.48 | 3.89 |
| Unmanaged (pasture) | | | | | | | | | | | | | | | | |
| Woods (not on lots) | | İ | 2.52 | 0.23 | 1.78 | | 8.01 | 1.31 | | | 2.16 | 0.03 | 1.78 | | 5.62 | |
| Residential | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Roadway | | į | | 0.18 | | | | | | | 4.26 | 0.40 | 0.50 | | 0.94 | |
| Grassed Right-of-ways | | | | | | | | | | | | | | | | |
| Driveway | | 1 | | 1 | | 1 | | | | | 1.40 | 1 | 0.07 | 1 | 0.45 | 1 |
| Parking lot | | - | | | | | | | | | 0.17 | | | | 0.66 | |
| Roof | | | 0.07 | 0.30 | | | | 0.15 | | | 5.70 | 0.30 | 0.26 | | 1.96 | 0.15 |
| Sidewalk (Includes Patios) | | | | | | | | | | | 3.72 | 0.00 | 0.30 | 0.00 | 0.93 | 0.00 |
| Lawn | | | | | | | | | | | 10.34 | | 0.61 | | 2.37 | |
| Managed pervious (Open Space) | | | | | | | | | | | | | | | | |
| Woods (on lots) | | i | | i | | i | | | | | | i | | i | | |
| Land Taken up by BMP | | i | | i | | i | | | | | | i | | i | | |
| JURISDICTIONAL LANDS | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Natural wetland | | İ | 0.00 | | 0.93 | | 20.64 | | | | 0.00 | | 0.91 | | 20.59 | |
| Riparian buffer (Zone 1 only) | | | | | | | | | | | | | | | | |
| Open water | | į | 0.02 | | | | 2.83 | | | | 0.02 | | | | 2.83 | |
| Totals (Ac)= | 0.00 | 0.00 | 45.23 | 18.17 | 11.08 | 0.04 | 47.34 | 4.04 | 0.00 | 0.00 | 42.41 | 18.18 | 10.95 | 0.03 | 46.82 | 4.04 |

DA1 Page 4

| SITE FLOW | PRE | -DEVELOPMENT T _c | POST-DEVELOPMENT Tc | | | | | |
|---|---------------------------------|---|---------------------------------------|--|--|--|--|--|
| Sheet Flow | | | | | | | | |
| Length (ft)= | | 100.00 | | | | | | |
| Slope (ft/ft)= | | 0.03 | | | | | | |
| Surface Cover: | | Grass | | | | | | |
| n-value= | | 0.24 | | | | | | |
| T _t (hrs)= | | 0.21 | 0.00 | | | | | |
| Shallow Flow | | | | | | | | |
| Length (ft)= | | 860.00 | | | | | | |
| Slope (ft/ft)= | | 0.02 | | | | | | |
| Surface Cover: | | Unpaved | | | | | | |
| Average Velocity (ft/sec)= | | 2.45 | 0.00 | | | | | |
| T _t (hrs)= | | 0.10 | 0.00 | | | | | |
| Channel Flow 1 | | | | | | | | |
| Length (ft)= | | 1706.00 | | | | | | |
| Slope (ft/ft)= | | 0.01 | | | | | | |
| Cross Sectional Flow Area (ft²)= | | 13.00 | | | | | | |
| Wetted Perimeter (ft)= | | 16.33 | | | | | | |
| Channel Lining: | | Grass | | | | | | |
| n-value= | | 0.04 | | | | | | |
| Hydraulic Radius (ft)= | | 0.80 | 0.00 | | | | | |
| Average Velocity (ft/sec)= | | 3.47 | 0.00 | | | | | |
| T _t (hrs)= | | 0.14 | 0.00 | | | | | |
| Tc (hrs)= | | 0.44 | 0.08 | | | | | |
| RESULTS | PR | E-DEVELOPMENT | POST-DEVELOPMENT | | | | | |
| Site Impervious Surface Area (Ac) = | | 0.07 | 21.31 | | | | | |
| Lot Impervious Surface Area (Ac) = | | 0.07 | 14.79 | | | | | |
| 1-year, 24-hour storm (Peak Flow) | | | | | | | | |
| Volume of runoff (ft ³) = | | 276,287 | 445,629 | | | | | |
| Volume change (ft³) = | | 16 | 69,341 | | | | | |
| Runoff (inches) = Q*= | | 0.6045 | 1.0028 | | | | | |
| Peak Discharge (cfs)= Q= | | 56.0813 | 196.6039 | | | | | |
| Composite Curve Number (DA)= | | 67 | 73 | | | | | |
| Composite Curve Number (Site only)= | | 68 | 75 | | | | | |
| DISCONNECTED IMPERVIOUS - Credit given on | ly to residential development w | ith drainage area with less than 30% impervious | s | | | | | |
| Percent Disconnected Impervious Credit (Residenti | ial Only) = | | | | | | | |
| Disconnected impervious area (Ac) = | | 0.00 | | | | | | |
| Drainage Area CN _{adjusted} = | | 73 | | | | | | |
| Site Only CN _{adjusted} = | | | 75 | | | | | |
| | | Doot development work flow average | ne development peak flow for this DAI | | | | | |

Post-development peak flow exceeds pre-development peak flow for this DA!

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Project Name:

Broadmoor



DRAINAGE AREA 2 STORMWATER PRE-POST CALCULATIONS

| LAND USE & SITE DATA | | PRE-DEVELOPMENT POST-DEVELOPMENT | | | | | | | | | | | | | | |
|--------------------------------------|------|----------------------------------|------|----------|------|----------|------|----------|------|--------------|------|--|------|--|------|--|
| Drainage Area (Acres)= | | | | 4.0 | 00 | | | | | | | 4. | 01 | | | |
| Site Acreage within Drainage= | | | | 1.3 | 36 | | | | | | | 1. | 39 | | | |
| One-year, 24-hour rainfall (in)= | | | | | | | | 3.0 | 00 | | | | | | | |
| Land Use (acres) by Soil Group: | AS | Soils | В | Soils | C S | ioils | DS | Soils | AS | Soils | В | Soils | C S | oils | D S | Soils |
| Commercial | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Parking lot | | | | | | | | | | | | | | | | |
| Roof | | | | | | | | | | | | | | | | |
| Open/Landscaped | | | | | | | | | | | | <u> </u> | | <u> </u> | | <u> </u> |
| Industrial | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Parking lot | | | | | | | | | | - | | - | | - | | |
| Roof | | | | | | | | | | | | | | | | |
| Open/Landscaped | | | | | | | | | | | | | | | | |
| Transportation | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| High Density (interstate, main) | 0.10 | Chono | 0.10 | Onone | O.LO | Onone | 0.10 | Cilono | 0.10 | Onone | 0.10 | Cilcito | Oito | Cilono | Oito | - Cilono |
| High Density (Grassed Right-of-ways) | | | | | | | | | | | | | | | | 1 |
| Low Density (secondary, feeder) | | 1 | | | | | | | | | | 1 | | 1 | | i |
| Low Density (Grassed Right-of-ways) | | 1 | | | | | | | | | | | | 1 | | |
| Rural | | 1 | | | | | | | | | | | | | | i |
| Rural (Grassed Right-of-ways) | | 1 | | | | | | | | | | | | | | |
| Sidewalk | | İ | | <u> </u> | | <u> </u> | | ! | | | | i | | | | i |
| Misc. Pervious | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Managed pervious (Open Space) | Oito | Onoice | 0.69 | 0.87 | 0.67 | 1.39 | Oile | Onone | Oito | Ollone | 0.68 | 0.69 | 0.52 | 1.30 | Oito | Onone |
| Unmanaged (pasture) | | 1 | 0.00 | 0.01 | 0.01 | 1.00 | | | | | 0.00 | 0.00 | 0.02 | 1.00 | | <u> </u> |
| Woods (not on lots) | | | | | | | | | | | | <u> </u> | | | | |
| Residential | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Roadway | Oito | Onoite | Oito | 0.13 | Oite | 0.16 | Oito | Onone | Oito | Ollono | 0.04 | 0.30 | Oito | 0.23 | Oito | Onone |
| Grassed Right-of-ways | | | | 0.10 | | 0.10 | | | | | 0.04 | 0.00 | | 0.20 | | ! |
| Driveway | | | | | | | | | | | 0.00 | | 0.01 | | | |
| Parking lot | | 1 | | 1 | | 1 | | 1 | | | 0.00 | 1 | 0.01 | 1 | | 1 |
| Roof | | | 0.00 | 0.08 | | 0.02 | | <u> </u> | | | 0.00 | 0.08 | 0.03 | 0.02 | | <u> </u> |
| Sidewalk (Includes Patios) | | | 0.00 | 0.00 | | 0.02 | | | | | 0.06 | 0.00 | 0.04 | 0.02 | | |
| Lawn | | <u>:</u> I | | : | | : | | : | | <u>:</u> | 0.00 | <u>:</u> | 0.02 | <u>:</u> | | <u>:</u> I |
| Managed pervious (Open Space) | | | | ! | | ! | | ! | | | 0.00 | | 0.02 | | | 1 |
| Woods (on lots) | | | | | | | | | | | | | | İ | | |
| Land Taken up by BMP | | | | 1 | | 1 | | | | | | | | | | † |
| JURISDICTIONAL LANDS | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Natural wetland | Oito | Onoite | Oito | Onone | Oilo | Onone | Oito | Onone | Oilo | Onone | Oito | Onone | Oilo | Onone | Oilo | Choice |
| Riparian buffer (Zone 1 only) | | - | | | | | | | | | | <u> </u> | | <u> </u> | | |
| Open water | | 1 | | | | | | | | + | | 1 | | 1 | | 1 |
| , | | 0.00 | | | | | | | | | | | | 4.50 | | |
| Totals (Ac)= | 0.00 | 0.00 | 0.69 | 1.08 | 0.67 | 1.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.78 | 1.07 | 0.60 | 1.56 | 0.00 | 0.00 |

DA2 Page 6

| SITE FLOW | PR | E-DEVELOPMENT T _c | POST-DEVELOPMENT Tc |
|---|---------------------------------|--|---------------------|
| Sheet Flow | | · · · · · · · · · · · · · · · · · · · | |
| Length (ft)= | | | |
| Slope (ft/ft)= | | | |
| Surface Cover: | | | |
| n-value= | | | |
| T _t (hrs)= | | 0.00 | 0.00 |
| Shallow Flow | | | |
| Length (ft)= | | | |
| Slope (ft/ft)= | | | |
| Surface Cover: | | | |
| Average Velocity (ft/sec)= | | 0.00 | 0.00 |
| T _t (hrs)= | | 0.00 | 0.00 |
| Channel Flow 1 | | | |
| Length (ft)= | | | |
| Slope (ft/ft)= | | | |
| Cross Sectional Flow Area (ft²)= | | | |
| Wetted Perimeter (ft)= | | | |
| Channel Lining: | | | |
| n-value= | | | |
| Hydraulic Radius (ft)= | | 0.00 | 0.00 |
| Average Velocity (ft/sec)= | | 0.00 | 0.00 |
| T _t (hrs)= | | 0.00 | 0.00 |
| Tc (hrs)= | | 0.45 | 0.45 |
| RESULTS | PI | RE-DEVELOPMENT | POST-DEVELOPMENT |
| Site Impervious Surface Area (Ac) = | | 0.00 | 0.17 |
| Lot Impervious Surface Area (Ac) = | | 0.00 | 0.14 |
| 1-year, 24-hour storm (Peak Flow) | | | |
| Volume of runoff (ft ³) = | | 12,367 | 15,624 |
| Volume change (ft³) = | | 3 | 257 |
| Runoff (inches) = Q*= | | 0.8513 | 1.0722 |
| Peak Discharge (cfs)= Q= | | 2.5868 | 3.3478 |
| Composite Curve Number (DA)= | | 71 | 74 |
| Composite Curve Number (Site only)= | | 67 | 71 |
| DISCONNECTED IMPERVIOUS - Credit given on | ly to residential development v | with drainage area with less than 30% impervious | |
| Percent Disconnected Impervious Credit (Residenti | al Only) = | | |
| Disconnected impervious area (Ac) = | | | 0.00 |
| Drainage Area CN _{adjusted} = | | | 74 |
| Site Only CN _{adjusted} = | | | 71 |

Post-development peak flow exceeds pre-development peak flow for this DA!

DA2 Page 7

Project Name:

Broadmoor



DRAINAGE AREA 3 STORMWATER PRE-POST CALCULATIONS

| LAND USE & SITE DATA | | PRE-DEVELOPMENT | | | | | | | | POST-DEVELOPMENT | | | | | | | | |
|--------------------------------------|------------------------|-----------------|---------|---------|---------|---------|---------|---------|---------|------------------|------|--------------|---------|--------------|------|---------|--|--|
| Drainage Area (Acres)= | 4.01 4.01 1.36 1.49 | | | | | | | | | | | | | | | | | |
| Site Acreage within Drainage= | | | | 1. | 36 | | | | | | | 1. | 49 | | | | | |
| One-year, 24-hour rainfall (in)= | | | | | | | | 3. | | | | | | | | | | |
| Land Use (acres) by Soil Group: | AS | Soils | B Soils | | C Soils | | D Soils | | A Soils | | вя | Soils | C Soils | | DS | Soils | | |
| Commercial | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| Parking lot | | | | | | | | | | | | | | | | | | |
| Roof | | | | | | | | | | | | | | | | | | |
| Open/Landscaped | | | | | | | | | | | | | | | | | | |
| Industrial | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| Parking lot | | | | | | | | | | | | | | | | | | |
| Roof | | | | | | | | | | | | | | | | | | |
| Open/Landscaped | | ! | | | | | | ! | | | | ! | | ! | | | | |
| Transportation | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| High Density (interstate, main) | | İ | | İ | | İ | | ļ | | İ | | İ | | İ | | | | |
| High Density (Grassed Right-of-ways) | | İ | | | | İ | | İ | | | | İ | | İ | | | | |
| Low Density (secondary, feeder) | | | | | | | | İ | | | | İ | | | | İ | | |
| Low Density (Grassed Right-of-ways) | | İ | | | | | | İ | | | | İ | | İ | | i | | |
| Rural | | | | | | | | i | | | | | | | | i | | |
| Rural (Grassed Right-of-ways) | | | | İ | | İ | | i | | İ | | | | | | i | | |
| Sidewalk | | | | | | | | | | | | | | | | i | | |
| Misc. Pervious | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| Managed pervious (Open Space) | | | 0.69 | 0.87 | 0.67 | 1.39 | | Ì | | | 0.68 | 0.69 | 0.52 | 1.30 | | ĺ | | |
| Unmanaged (pasture) | | | | | | | | | | | | | | | | | | |
| Woods (not on lots) | | | | | | | | | | | | | | | | | | |
| Residential | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| Roadway | | | | 0.13 | | 0.16 | | | | | 0.04 | 0.30 | | 0.23 | | | | |
| Grassed Right-of-ways | | | | | | | | | | | | | | | | | | |
| Driveway | | | | | | | | | | | 0.00 | | 0.01 | | | | | |
| Parking lot | | | | | | | | | | | | | | | | | | |
| Roof | | ! | 0.00 | 0.08 | | 0.02 | | | | | 0.08 | ! | 0.05 | ! | | ! | | |
| Sidewalk (Includes Patios) | | | | | | | | İ | | | 0.06 | | 0.04 | | | İ | | |
| Lawn | | | | | | | | | | | 0.00 | | 0.02 | | | ! | | |
| Managed pervious (Open Space) | | İ | | İ | | İ | | ļ | | İ | | İ | | İ | | ļ | | |
| Woods (on lots) | | | | | | | | | | | | | | | | į | | |
| Land Taken up by BMP | | | | | | | | | | | | İ | | | | ! | | |
| JURISDICTIONAL LANDS | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| Natural wetland | | | | | | | | | | | | | | | | | | |
| Riparian buffer (Zone 1 only) | | | | i | | i | | i | | i | | i | | | | i | | |
| Open water | | | | | | | | | | | | | | | | | | |
| Totals (Ac)= | 0.00 | 0.00 | 0.69 | 1.08 | 0.67 | 1.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.86 | 0.99 | 0.63 | 1.53 | 0.00 | 0.00 | | |
| () | | | ı | i | | i | | | | | | 1 | I | 1 | | | | |

DA3 Page 8

| SITE FLOW | PRE-DEVELOPMENT T _c | POST-DEVELOPMENT Tc | | | | | | |
|--|---|--|--|--|--|--|--|--|
| Sheet Flow | | | | | | | | |
| Length (ft)= | | | | | | | | |
| Slope (ft/ft)= | | | | | | | | |
| Surface Cover: | | | | | | | | |
| n-value= | | | | | | | | |
| T _t (hrs)= | 0.00 | 0.00 | | | | | | |
| Shallow Flow | | | | | | | | |
| Length (ft)= | | | | | | | | |
| Slope (ft/ft)= | | | | | | | | |
| Surface Cover: | | | | | | | | |
| Average Velocity (ft/sec)= | 0.00 | 0.00 | | | | | | |
| T _t (hrs)= | 0.00 | 0.00 | | | | | | |
| Channel Flow 1 | | | | | | | | |
| Length (ft)= | | | | | | | | |
| Slope (ft/ft)= | | | | | | | | |
| Cross Sectional Flow Area (ft ²)= | | | | | | | | |
| Wetted Perimeter (ft)= | | | | | | | | |
| Channel Lining: | | | | | | | | |
| n-value= | | | | | | | | |
| Hydraulic Radius (ft)= | 0.00 | 0.00 | | | | | | |
| Average Velocity (ft/sec)= | 0.00 | 0.00 | | | | | | |
| T_t (hrs)= | 0.00 | 0.00 | | | | | | |
| Tc (hrs)= | 0.24 | 0.24 | | | | | | |
| RESULTS | PRE-DEVELOPMENT | POST-DEVELOPMENT | | | | | | |
| Site Impervious Surface Area (Ac) = | 0.00 | 0.27 | | | | | | |
| Lot Impervious Surface Area (Ac) = | 0.00 | 0.24 | | | | | | |
| 1-year, 24-hour storm (Peak Flow) | | | | | | | | |
| Volume of runoff (ft ³) = | 12,376 | 15,586 | | | | | | |
| Volume change (ft³) = | 3 | 3,210 | | | | | | |
| Runoff (inches) = Q*= | 0.8502 | 1.0703 | | | | | | |
| Peak Discharge (cfs)= Q= | 3.5757 | 4.5440 | | | | | | |
| Composite Curve Number (DA)= | 71 | 74 | | | | | | |
| Composite Curve Number (Site only)= | 67 | 72 | | | | | | |
| DISCONNECTED IMPERVIOUS - Credit given only | y to residential development with drainage area with less than 30% impervious | | | | | | | |
| Percent Disconnected Impervious Credit (Residentia | l Only) = | | | | | | | |
| Disconnected impervious area (Ac) = | | 0.00 | | | | | | |
| Drainage Area CN _{adjusted} = | | 74 | | | | | | |
| Site Only CN _{adjusted} = | | 72 | | | | | | |
| | Post development neak flow exceeds | a pro dovolonment neak flow for this DAI | | | | | | |

Post-development peak flow exceeds pre-development peak flow for this DA!

DA3 Page 9

Project Name:

Broadmoor



<u>DRAINAGE AREA 4</u> <u>STORMWATER PRE-POST CALCULATIONS</u>

| | | PRE-DEVELOPMENT | | | | | | | | POST-DEVELOPMENT | | | | | | | | |
|--------------------------------------|------|-----------------|------|--|------|--|------|--|------|--|------|---------|------|--------------|------|---------|--|--|
| Drainage Area (Acres)= | | | | 2.5 | 51 | | | | | | | 2. | 55 | | | | | |
| Site Acreage within Drainage= | | | | 0.9 | 54 | | | | | | | 0. | 58 | | | | | |
| One-year, 24-hour rainfall (in)= | | | | | | | | 3.0 | 00 | | | | | | | | | |
| Land Use (acres) by Soil Group: | AS | Soils | В | Soils | C S | ioils | DS | Soils | | Soils | В | Soils | C S | oils | DS | Soils | | |
| Commercial | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| Parking lot | | | | | | | | | | | | | | | | 1 | | |
| Roof | | | | | | | | | | | | | | | | | | |
| Open/Landscaped | | | | | | | | | | | | 1 | | | | ! | | |
| Industrial | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| Parking lot | | | | | | | | | | | | | | | | | | |
| Roof | | | | | | | | | | | | | | | | | | |
| Open/Landscaped | | | | | | | | | | | | | | | | | | |
| Transportation | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| High Density (interstate, main) | | İ | | Ì | | Ì | | Ì | | Ì | | Ì | | i | | İ | | |
| High Density (Grassed Right-of-ways) | | 1 | | İ | | İ | | İ | | İ | | İ | | 1 | | 1 | | |
| Low Density (secondary, feeder) | | i | | | | | | | | | | † | | | | † | | |
| Low Density (Grassed Right-of-ways) | | | | | | | | | | | | | | | | i | | |
| Rural | | İ | | Ì | | Ì | | Ì | | Ì | | ļ | | | | İ | | |
| Rural (Grassed Right-of-ways) | | İ | | | | | | İ | | | | İ | | | | İ | | |
| Sidewalk | | † | | † | | † | | | | † | | † | | | | † | | |
| Misc. Pervious | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| Managed pervious (Open Space) | | <u> </u> | 0.54 | 1.60 | | | | | | | 0.45 | 1.09 | | | | | | |
| Unmanaged (pasture) | | | | | | | | | | | | | | | | 1 | | |
| Woods (not on lots) | | | | | | | | | | | | | | | | | | |
| Residential | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| Roadway | | | | 0.32 | | | | | | | | 0.73 | | | | | | |
| Grassed Right-of-ways | | İ | | | | | | | | | | | | | | | | |
| Driveway | | Ì | | | | | | | | | 0.00 | | | | | | | |
| Parking lot | | i | | | | | | | | | | | | | | İ | | |
| Roof | | | | 0.05 | | | | | | | 0.03 | 0.05 | | | | | | |
| Sidewalk (Includes Patios) | | İ | | | | | | | | | 0.06 | 0.10 | | | | | | |
| Lawn | | İ | | į i | | į i | | į i | | į i | 0.04 | İ | | İ | | İ | | |
| Managed pervious (Open Space) | | | | | | | | ļ | | | | į | | | | | | |
| Woods (on lots) | | - | | | | | | | | | | | | | | | | |
| Land Taken up by BMP | | 1 | | | | | | | | | | | | | | | | |
| JURISDICTIONAL LANDS | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | | |
| Natural wetland | | | | | | | | | | | | | | | | | | |
| Riparian buffer (Zone 1 only) | | | | | | | | | | | | | | | | | | |
| Open water | | | | | | | | | | | | | | | | | | |
| Totals (Ac)= | 0.00 | 0.00 | 0.54 | 1.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.58 | 1.97 | 0.00 | 0.00 | 0.00 | 0.00 | | |

DA4 Page 10

| SITE FLOW | PRE- | DEVELOPMENT T _c | POST-DEVELOPMENT Tc | | | | | |
|--|----------------------------------|---|---------------------|--|--|--|--|--|
| Sheet Flow | | | | | | | | |
| Length (ft)= | | | | | | | | |
| Slope (ft/ft)= | | | | | | | | |
| Surface Cover: | | | | | | | | |
| n-value= | | | | | | | | |
| T _t (hrs)= | | 0.00 | 0.00 | | | | | |
| Shallow Flow | | | | | | | | |
| Length (ft)= | | | | | | | | |
| Slope (ft/ft)= | | | | | | | | |
| Surface Cover: | | | | | | | | |
| Average Velocity (ft/sec)= | | 0.00 | 0.00 | | | | | |
| T _t (hrs)= | | 0.00 | 0.00 | | | | | |
| Channel Flow 1 | | | | | | | | |
| Length (ft)= | | | | | | | | |
| Slope (ft/ft)= | | | | | | | | |
| Cross Sectional Flow Area (ft²)= | | | | | | | | |
| Wetted Perimeter (ft)= | | | | | | | | |
| Channel Lining: | | | | | | | | |
| n-value= | | | | | | | | |
| Hydraulic Radius (ft)= | | 0.00 | 0.00 | | | | | |
| Average Velocity (ft/sec)= | | 0.00 | 0.00 | | | | | |
| T _t (hrs)= | | 0.00 | 0.00 | | | | | |
| Tc (hrs)= | | 0.19 | 0.19 | | | | | |
| RESULTS | PRE | -DEVELOPMENT | POST-DEVELOPMENT | | | | | |
| Site Impervious Surface Area (Ac) = | | 0.00 | 0.09 | | | | | |
| Lot Impervious Surface Area (Ac) = | | 0.00 | 0.09 | | | | | |
| 1-year, 24-hour storm (Peak Flow) | | | | | | | | |
| Volume of runoff (ft ³) = | | 6,564 | 11,868 | | | | | |
| Volume change (ft³) = | | 5 | 305 | | | | | |
| Runoff (inches) = Q*= | | 0.7216 | 1.2840 | | | | | |
| Peak Discharge (cfs)= Q= | | 1.9202 | 3.8988 | | | | | |
| Composite Curve Number (DA)= | | 66 | 75 | | | | | |
| Composite Curve Number (Site only)= | | 61 | 67 | | | | | |
| DISCONNECTED IMPERVIOUS - Credit given onl | y to residential development wit | h drainage area with less than 30% impervious | | | | | | |
| Percent Disconnected Impervious Credit (Residentia | al Only) = | | | | | | | |
| Disconnected impervious area (Ac) = | | 0.00 | | | | | | |
| D : 4 OH | | | | | | | | |
| Drainage Area CN _{adjusted} = | | | 75 | | | | | |

Post-development peak flow exceeds pre-development peak flow for this DA!

DA4 Page 11



Project Name: Broadmoor

DA SITE SUMMARY STORMWATER PRE-POST CALCULATIONS

| SITE SUMMARY | | | | | | | |
|---|---------|--------|-------------|-----------|-----------|----------|--|
| DRAINAGE AREA SUMMARIES | | | | | | | |
| DRAINAGE AREA: | DA1 | DA2 | DA3 | DA4 | DA5 | DA6 | |
| Pre-Development (1-year, 24-hour storm) | | | | | | | |
| Runoff (in)=Q* = | 0.604 | 0.851 | 0.850 | 0.722 | | | |
| Peak Flow (cfs)=Q _{post} = | 56.081 | 2.587 | 3.576 | 1.920 | | | |
| Post-Development (1-year, 24-hour storm) | • | | | | | | |
| Proposed Impervious Surface (acre) = | 21.31 | 0.17 | 0.27 | 0.09 | | | |
| Runoff (in)=Q* = | 1.003 | 1.072 | 1.070 | 1.284 | | | |
| Peak Flow (cfs)=Q _{post} = | 196.604 | 3.348 | 4.544 | 3.899 | | | |
| TARGET CURVE NUMBER (TCN) - Residential Only | | | | | | | |
| SITE \SOIL COMPOSITION | I | | | | | | |
| HYDROLOGIC SOIL GROUP | Site | e Area | 9 | <u>%</u> | Targe | et CN | |
| А | (| 0.00 | 0 | % | <u>4</u> | <u>3</u> | |
| В | 4 | 4.62 | 43 | 3% | <u>6</u> | <u>3</u> | |
| С | 1 | 2.19 | 12 | 2% | <u>76</u> | | |
| D | 4 | 6.82 | 5% | <u>81</u> | | | |
| Total Site Area (acres) = | | | 103. | 63 | | | |
| Zoning = | : | F | Residential | Highway | | | |
| Target Curve Number (TCN) = | | | 73 | | | | |
| % Impervious = | 21% | | | | | | |
| Post Development CN _{adjusted} = | 75 | | | | | | |
| Required Volume to be Managed (TCN)= ft ³ = | 38,563 | | | | | | |
| SITE NITROGEN AND PHOSPHORUS LOADING | | | | | | | |
| Nitrogen and Phosphorus Targets (Based on Regulatory Watershed) | | | | | | | |
| Target Nitrogen Load (lb/ac/yr)= | | | 3.6 | 3 | | | |
| Target Phosphorus Load (Falls and Jordan Lakes Only) (lb/ac/yr)= | | | N/A | A | | | |
| % N Loading Reduction Option for Expansions (Falls and Jordan Lakes Only) = | | | N/A | 4 | | | |
| % Loading Reduction Nitrogen Target (Falls and Jordan Lakes Only) (lb/ac/yr)= | | | N/A | 4 | | | |
| % P Loading Reduction Option for Expansions (Falls and Jordan Lakes Only) = | | | N/A | 4 | | | |
| % Loading Reduction Phosphorus Target (Falls and Jordan Lakes Only) (lb/ac/yr)= | | | N/A | 4 | | | |
| Pre Development Nitrogen and Phosphorus Load | | | | | | | |
| Total Nitrogen (lb/ac/yr)= | | | 1.3 | 1 | | | |
| Total Phosphorus (lb/ac/yr)= | | | N/A | 4 | | | |
| Post Development Nitrogen and Phosphorus Load | | | | | | | |
| Total Nitrogen (lb/ac/yr)= | | | 3.6 | 5 | | | |
| Total Phosphorus (lb/ac/yr)= | | | N/A | A | | | |

SITE SUMMARY Page 16

WAKE COUNTY

Project Name:

Broadmoor

DRAINAGE AREA 1 BMP CALCULATIONS

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS DA1 Site Acreage= 100.18 DA1 Off-Site Acreage= 22.25 Total Required Storage Volume for Site 38,563 TCN Requirement (ft3)= Note: Supporting information/details Enter % volume reduction in Will site use underground water harvesting? should be submitted to demonstrate decimal form water usage. ENTER AREA TREATED BY BMP Sub-DA1(a) Sub-DA1(b) Sub-DA1(c) Sub-DA1(d) Sub-DA1(e) Land Use (acres) (Ac) (Ac) (Ac) (Ac) (Ac) Off-site Site Off-site Off-site Site Site Off-site Off-site Commercial Site Site Parking lot Roof Open/Landscaped Site Site Off-site Off-site Off-site Off-site Off-site ndustrial Site Site Site Parking lot Roof Open/Landscaped Site Off-site Off-site Off-site Site Off-site Off-site Transportation High Density (interstate, main) High Density (Grassed Right-of-ways) Low Density (secondary, feeder) Low Density (Grassed Right-of-ways) Rural Rural (Grassed Right-of-ways) Sidewalk Misc. Pervious Site Off-site Site Off-site Site Off-site Site Off-site Off-site 1.32 2.37 0.32 5.26 1.00 3.56 6.39 Managed pervious Unmanaged (pasture) Woods (not on lots) 0.76 1.14 0.03 0.00 Site Off-site Off-site Site Off-site Off-site Residential Off-site Site Site Site Roadway 1.17 2.38 0.22 1.48 0.17 0.67 Grassed Right-of-ways 0.48 0.59 0.38 0.27 Driveway Parking lot 0.69 Roof 2.38 0.00 3.62 0.08 2.68 1.42 Sidewalk 0.84 1.87 1.29 0.54 Lawn 1.43 5.10 3.82 1.28 Managed pervious Woods (on lots) and Taken up by BMP JURISDICTIONAL LANDS Site Off-site Site Offsite Site Offsite Site Offsite Offsite Natural wetland 0.00 0.00 0.00 Riparian buffer (Zone 1 only) Totals (Ac)= 9.07 0.32 18.82 1.31 14.35 6.59 6.54 0.00 0.00 0.00 Sub-DA1(a) BMP(s) Water Provided Total Total Inflow N Outflow Outflow Total Inflow P Total Quality Outflow Outflow Volume Inflow P Device Type N EMC P EMC Device Name (As Shown on Plan) **EMC** Inflow N EMC Volume Ν Ρ Manageo (lb/ac/vr) (mg/L) (lb/ac/yr) (mg/L) (mg/L) (mg/L) (c.f.) (lb/ac/yr (lb/ac/yr) (c.f.) SCM #1 Wet Detention Pond 1.31 8.09 0.43 2.67 1.04 0.15 22,493 19,888 Outflow Total Nitrogen (lb/ac/yr)= Outflow Total Phosphorus (lb/ac/yr)= 0.83 5.80 Sub-DA1(b) BMP(s)

| If Sub-DA1(b) is connected to upstream sub- | basin(s), select all contributir | ıg sub-bas | sin(s from | | | | | | | | | |
|--|--|--------------------------------------|---------------------------|--------------------------------------|---------------------------|---------------------------------|----------------------------|-------------------------------------|----------------------------|-------------------------------------|---|--|
| dropdown menus): Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) | |
| SCM #2 | Wet Detention Pond | | 1.35 | 6.32 | 0.50 | 2.32 | 1.05 | 4.40 | 0.16 | 0.65 | 34,092 | |
| SCIVI #2 | | 32,271 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Outfl | I ow Total Nitrogen (lb/ac/yr)= | 4. | 40 | | | Outflow | / Total Ph | osphorus | (lb/ac/yr)= | 0 | .65 | |
| Sub-DA1 (c) BMP(s) | | | | | | | | | | | | |
| If Sub-DA1(c) is connected to upstream sub- | basin(s), select all contributin | ıg sub-bas | in(s): | | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) | |
| SCM #3 | Wet Detention Pond | | 1.34 | 5.74 | 0.48 | 2.06 | 1.05 | 4.02 | 0.15 | 0.59 | 26,403 | |
| 36m #6 | | 23,399 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Outfl | ow Total Nitrogen (lb/ac/yr)= | 4. | 02 | | | Outflow | / Total Ph | osphorus | (lb/ac/yr)= | 0 | 0.59 | |
| Sub-DA1 (d) BMP(s) | | | | | | | | | | | | |
| If Sub-DA1(d) is connected to upstream sub- | basin(s), select all contributir | ıg sub-bas | sin(s): | | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) | |
| SCM #4 | Wet Detention Pond | | 1.34 | 6.19 | 0.45 | 2.08 | 1.05 | 4.33 | 0.15 | 0.62 | 14,448 | |
| OOW #4 | | 10,632 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Outfl | ow Total Nitrogen (lb/ac/yr)= | 4. | 33 | Outflow Total Phosphorus (lb/ac/yr)= | | | | 0.62 | | | | |
| Sub-DA1 (e) BMP(s) | | | | | | | | | | l | | |
| If Sub-DA1(e) is connected to upstream sub- | basin(s), select all contributir | ng sub-bas | sin(s): | | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Outfl | ow Total Nitrogen (lb/ac/yr)= | | | | | Outflow | / Total Ph | osphorus | (lb/ac/yr)= | | | |
| | | DA1 BN | IP SUMI | MARY | | | | | | | | |
| | Total Volume Treated (c.f.)= | | | | | 97 | 436 | | | | | |
| DA1 Outfl | ow Total Nitrogen (lb/ac/yr)= | | | | | 4. | .33 | | | | | |
| DA1 Outflow Total Phosphorus (lb/ac/yr)= | | | | | | 0. | .62 | | | | | |
| 1-year, 24-hour storm | | | | | | | | | | | | |
| Pre Development Pe | eak Discharge (cfs)= Q _{1-year} = | -year = 56.08 | | | | | | | | | | |
| Post BMP Peak Discharge (cfs)= Q _{1-year} = | | | | | | 35 | 5.04 | | | | | |

DA1_BMPs Page 18

WAKE COUNTY

| Project Name: | Broadmoor |
|---------------|-----------|
| | |

DRAINAGE AREA 2 BMP CALCULATIONS

| DRAINAGE AREA 2 - BMP DEVICES | AND ADJUSTMENTS | | | | | | | | | | | |
|---|-------------------------------|--------------------------------------|---------------------------|---------------------------------|--|---------------------------------|---|-------------------------------------|--|-------------------------------------|---|--|
| DA2 Site Acreage= | | | | | 1.39 | | | | | | | |
| DA2 Off-Site Acreage= | | | | | 2.63 | | | | | | | |
| Total Required Storage Volume for Site | | | | | 00.500 | | | | | | | |
| TCN Requirement (ft ³)= | | | | | 38,563 | 3 | | | | | | |
| Will site use underground water harvesting? | | Enter % | volume re deci | duction in mal form= | | | | should be | Note: Supporting information/details should be submitted to demonstrate water usage. | | | |
| ENTER AREA TREATED BY BMP | | | | | | | | • | | | | |
| Land Use (acres |) | | DA2(a) Ac) | | 0A2(b) ac) | I | 0A2(c) ac) | | DA2(d) Ac) | | DA2(e) Ac) | |
| Commercial | | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | |
| Parking lot | | | | | | | | | | | | |
| Roof | | | | | ļ | | ! | | | | | |
| Open/Landscaped | | | | | | | | | | | | |
| Industrial | | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | |
| Parking lot | | | | | | | | | | | | |
| Roof | | | i İ | | <u> </u> | | | | i | | | |
| Open/Landscaped | | | i | | <u> </u> | | <u>'</u> | | i | | i | |
| Transportation | | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | |
| High Density (interstate, main) | | Oito | On one | Oilo | On one | Oito | OII OILO | Oito | On one | Oito | On one | |
| High Density (Grassed Right-of-ways) | | | | | | | | | | | | |
| Low Density (Secondary, feeder) | | | ! | | ! | | ! ! | | | | ! | |
| Low Density (Grassed Right-of-ways) | | | | | | | <u> </u> | | | | | |
| Rural | | | <u> </u> | | <u> </u> | | <u> </u> | | | | ! | |
| Rural (Grassed Right-of-ways) | | | | | | | | | | | | |
| Sidewalk | | | į | | | | ļ | | | | | |
| Misc. Pervious | | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | |
| | | 6.26 | On one | Oilo | On one | Oito | On one | Oito | On one | Oito | On one | |
| Managed pervious | | 0.20 | <u>:</u> | | ! | | : | | i | | ! | |
| Unmanaged (pasture) Woods (not on lots) | | | <u> </u> | | | | <u> </u> | | | | <u> </u> | |
| Residential | | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | |
| | | | OII-SILE | Sile | OII-SILE | Sile | OII-SILE | Sile | OII-Site | Site | OII-SILE | |
| Roadway | | 2.60 | <u> </u> | | ! | | ! | | | | ! | |
| Grassed Right-of-ways | | 0.50 | | | | | ! | | - | | | |
| Driveway | | 0.56 | <u> </u> | | <u> </u> | | <u> </u> | | - | | <u> </u> | |
| Parking lot Roof | | 3.70 | <u> </u> | | <u> </u> | | <u> </u> | | | | <u> </u> | |
| Sidewalk | | 1.35 | ļ | | | | <u> </u> | | | | <u> </u> | |
| Lawn | | 5.65 | i | | | | i | | | | <u> </u> | |
| Managed pervious | | 3.03 | <u>.</u> ! | | ! ! | | ! ! | | | | ! ! | |
| Woods (on lots) | | | i I | | i | | i I | | i | | İ | |
| Land Taken up by BMP | | | | | | | i | | | | | |
| JURISDICTIONAL LANDS | | Site | Off-site | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite | |
| Natural wetland | | 0.00 | | | | | | | | | | |
| Riparian buffer (Zone 1 only) | | | | | | | | | | | | |
| | Totals (Ac)= | 20.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Sub-DA2(a) BMP(s) | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) | |
| | | | 1.36 | 5.83 | 0.45 | 1.95 | | | | | | |
| | | | | 0.00 | 3.40 | | | - | 1 | | | |
| | | 30,471 | | | | | | | <u> </u> | | | |
| | | | | | | | | | | | | |
| Outfl | ow Total Nitrogen (lb/ac/yr)= | Fotal Nitrogen (lh/ac/yr)= | | | | Outflow | / Total Ph | osphorus | (lb/ac/yr)= | | | |
| | | | | | | Janov | J.u. 1 11 | _55110103 | (, ao, yi j= | | | |
| Sub-DA2(b) BMP(s) | | | | | | | | | | | | |

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| If Sub-DA2(b) is connected to upstream sub-b | pasin(s), select all contributin | ıg sub-bas | in(s from | | | | | | | | |
|--|---|--------------------------------------|---------------------------|--------------------------------------|---------------------------|---------------------------------|----------------------------|-------------------------------------|----------------------------|-------------------------------------|---|
| dropdown menus): Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outflo | ow Total Nitrogen (lb/ac/yr)= | | | Outflow Total Phosphorus (lb/ac/yr)= | | | | | | | |
| Sub-DA2 (c) BMP(s) | | | | | | | | | | , | |
| If Sub-DA2(c) is connected to upstream sub-b | pasin(s), select all contributin | g sub-bas | in(s): | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outflow Total Nitrogen (lb/ac/yr)= | | | | | | Outflow | Total Ph | osphorus (| (lb/ac/yr)= | | |
| Sub-DA2 (d) BMP(s) | | | | | | | | | | | |
| If Sub-DA2(d) is connected to upstream sub-b | pasin(s), select all contributin | g sub-bas | in(s): | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outfle | ow Total Nitrogen (lb/ac/yr)= | | | | | Outflow | Total Ph | osphorus (| (lb/ac/vr)= | | |
| Sub-DA2 (e) BMP(s) | ow rotal ratiogen (ib/do/yr) | | | | | Cullon | | - Coprior do 1 | (Ibraoryi) | | |
| If Sub-DA2(e) is connected to upstream sub-t | pasin(s) select all contribution | ia eub bae | in(e): | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC | Total Inflow N (lb/ac/yr) | | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outflo | ow Total Nitrogen (lb/ac/yr)= | | | | | Outflow | / Total Ph | osphorus (| (lb/ac/yr)= | | |
| | | DA2 BN | IP SUMI | MARY | | | | | | <u> </u> | |
| | | rd (c.f.)= 0 | | | | | | | | | |
| | Total Volume Treated (c.f.)= | | | | | | 0 | | | | |
| | Total Volume Treated (c.f.)= ow Total Nitrogen (lb/ac/yr)= | | | | | 1 | 0 | | | | |
| DA2 Outflo | | | | | | | 0 | | | | |
| DA2 Outflo | ow Total Nitrogen (lb/ac/yr)= | | | | | | 0 | | | | |
| DA2 Outflow Tayear, 24-hour storm | ow Total Nitrogen (lb/ac/yr)= | | | | | | 59 | | | | |

DA2_BMPs Page 20

WAKE COUNTY NORTH CAROLINA

| roject Name: | Broadmoor |
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| | |

DRAINAGE AREA 3 BMP CALCULATIONS

DRAINAGE AREA 3 - BMP DEVICES AND ADJUSTMENTS DA3 Site Acreage= 1.49 DA3 Off-Site Acreage= 2.52 Total Required Storage Volume for Site 38,563 TCN Requirement (ft3)= Note: Supporting information/details Enter % volume reduction in Will site use underground water harvesting? should be submitted to demonstrate decimal form water usage. ENTER AREA TREATED BY BMP Sub-DA3(a) Sub-DA3(b) Sub-DA3(c) Sub-DA3(d) Sub-DA3(e) Land Use (acres) (Ac) (Ac) (Ac) (Ac) (Ac) Off-site Off-site Site Off-site Site Site Off-site Off-site Commercial Site Site Parking lot Roof Open/Landscaped Site Site Off-site Off-site Off-site Off-site Off-site ndustrial Site Site Site Parking lot Roof Open/Landscaped Site Off-site Off-site Off-site Site Off-site Off-site Transportation High Density (interstate, main) High Density (Grassed Right-of-ways) Low Density (secondary, feeder) Low Density (Grassed Right-of-ways) Rural Rural (Grassed Right-of-ways) Sidewalk Misc. Pervious Site Off-site Site Off-site Site Off-site Site Off-site Off-site 6.35 Managed pervious Unmanaged (pasture) Woods (not on lots) 1.14 0.03 Site Off-site Off-site Site Off-site Off-site Residential Off-site Site Site Site Roadway 1.65 Grassed Right-of-ways 0.34 Driveway Parking lot Roof 2.66 Sidewalk 0.91 Lawn 7.86 Managed pervious Woods (on lots) and Taken up by BMP JURISDICTIONAL LANDS Site Off-site Site Offsite Site Offsite Site Offsite Offsite Natural wetland Riparian buffer (Zone 1 only) Totals (Ac)= 14.56 6.38 0.00 0.00 0.00 0.00 0.00 0.00 0.00 Sub-DA3(a) BMP(s) Water Provided Total Total Inflow N Outflow Outflow Total Inflow P Total Quality Outflow Outflow Volume Inflow P N EMC P EMC Device Name (As Shown on Plan) Device Type **EMC** Inflow N EMC Volume Ν Ρ Manageo (lb/ac/yr) (mg/L) (lb/ac/yr) (mg/L) (mg/L) (mg/L) (c.f.) (lb/ac/yr (lb/ac/yr) (c.f.) 1.32 5.35 1.77 21,965 Outflow Total Nitrogen (lb/ac/yr)= Outflow Total Phosphorus (lb/ac/yr)= Sub-DA3(b) BMP(s)

| If Sub-DA3(b) is connected to upstream sub- | basin(s), select all contributir | ıg sub-bas | in(s from | | | | | | | | |
|--|--|--------------------------------------|---------------------------|--------------------------------------|---------------------------|---------------------------------|----------------------------|-------------------------------------|----------------------------|-------------------------------------|---|
| dropdown menus): Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outfl | Outflow Total Nitrogen (lb/ac/yr)= | | • | Outflow Total Phosphorus (lb/ac/yr)= | | | | | | | |
| Sub-DA3 (c) BMP(s) | | | | | | | | | | | |
| If Sub-DA3(c) is connected to upstream sub-l | pasin(s), select all contributin | ıg sub-bas | in(s): | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outflow Total Nitrogen (lb/ac/yr)= | | | | | | Outflow | / Total Ph | osphorus (| lb/ac/yr)= | | |
| Sub-DA3 (d) BMP(s) | | I. | | <u> </u> | | | | | | | |
| If Sub-DA3(d) is connected to upstream sub- | basin(s), select all contributin | ıg sub-bas | sin(s): | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outfl | ow Total Nitrogen (lb/ac/yr)= | | | | | Outflow | / Total Ph | osphorus (| lh/ac/vr)= | | |
| Sub-DA3 (e) BMP(s) | ow rotal ritingen (ib/do/yr) | | | | | Cullon | | - Coprior do 1 | ibraoryt) | | |
| If Sub-DA3(e) is connected to upstream sub- | hasin(s) select all contributin | a sub bas | in(e): | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC | Total Inflow N (lb/ac/yr) | | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outfl | I ow Total Nitrogen (lb/ac/yr)= | | <u>I</u> | | 1 | Outflow | / Total Ph | osphorus (| lb/ac/yr)= | | |
| | | DA3 BN | IP SUMI | MARY | | | | | | | |
| | Total Volume Treated (c.f.)= | | | | | | | | | | |
| | ow Total Nitrogen (lb/ac/yr)= | | | | | | | | | | |
| | Total Phosphorus (lb/ac/yr)= | | | | | | | | | | |
| 1-year, 24-hour storm | | | | | | | | | | | |
| - | eak Discharge (cfs)= Q _{1-year} = | | | | | | | | | | |
| | eak Discharge (cfs)= Q _{1-year} = | | | | | | | | | | |
| | J . , . , cai | | | | | | | | | | |

DA3_BMPs Page 22

WAKE COUNTY

| Project Name: | Broadmoor |
|---------------|-----------|
| | |

DRAINAGE AREA 4 BMP CALCULATIONS

| DRAINAGE AREA 4 - BMP DEVICES | AND ADJUSTMENTS | | | | | | | | | | |
|--|-------------------------------|--------------------------------------|---------------------------|---------------------------------|--|---------------------------------|----------------------------|-------------------------------------|----------------------------|-------------------------------------|---|
| DA4 Site Acreage= | | | | | 0.58 | | | | | | |
| DA4 Off-Site Acreage= | | | | | 1.97 | | | | | | |
| Total Required Storage Volume for Site TCN Requirement (ft³)= | | | | | 38,563 | | | | | | |
| Will site use underground water harvesting? | | Enter % | volume re decii | duction in | | | | | submitted | formation/o | |
| ENTER AREA TREATED BY BMP | | | | | | | | | | | |
| Land Use (acres) | | | DA4(a) | | ib-DA4(b) Sub-DA4(c) Sub-DA4 (Ac) (Ac) (Ac) | | | (d) Sub-DA4(e) (Ac) | | | |
| Commercial | | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site |
| Parking lot | | | | | | | | | | | |
| Roof | | | | | | | | | | | |
| Open/Landscaped | | | | | | | | | | | |
| Industrial | | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site |
| Parking lot | | | | | | | | | | | |
| Roof | | | İ | | | | | | | | |
| Open/Landscaped | | | i | | | | | | | | |
| Transportation | | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site |
| High Density (interstate, main) | | | | | | | | | | | |
| High Density (Grassed Right-of-ways) | | | i | | | | | | | | |
| Low Density (secondary, feeder) | | | | | | | | | | | |
| Low Density (Grassed Right-of-ways) | | | | | | | | | | | |
| Rural | | | | | | | | | | | |
| Rural (Grassed Right-of-ways) | | | | | | | | | | | |
| Sidewalk | | | ! | | | | | | | | |
| Misc. Pervious | | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site |
| Managed pervious | | | | | | | | | | | |
| Unmanaged (pasture) | | | | | | | | | | | |
| Woods (not on lots) | | 0.00 | ! | | | | | | | | |
| Residential | | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site | Site | Off-site |
| Roadway | | 0.67 | İ | | | | | | | | |
| Grassed Right-of-ways | | | <u> </u> | | | | | | | | |
| Driveway | | 0.28 | <u> </u> | | | | | | | | |
| Parking lot | | | <u> </u> | | | | | | | | |
| Roof | | 1.42 | ļ | | | | | | | | |
| Sidewalk | | 0.37 | ! | | | | | | | | |
| Lawn | | 3.80 | | | | | | | | | |
| Managed pervious | | | | | | | | | | | |
| Woods (on lots) | | | | | | | | | | | |
| Land Taken up by BMP JURISDICTIONAL LANDS | | Site | Off-site | Site | Offsite | Site | Offsite | Site | Offsite | Site | Offsite |
| Natural wetland | | 0.00 | Oll-site | Site | Olisite | Site | Olisite | Site | Olisite | Site | Olisite |
| Riparian buffer (Zone 1 only) | | 0.00 | <u> </u> | | | | | | | | |
| rapanan baner (2010 1 only) | Totals (Ac)= | 6.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sub-DA4(a) BMP(s) | | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | l | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | 1.31 | 5.74 | 0.40 | 1.78 | | | | | |
| | | 10,147 | | | | | | | | | |
| | | | | | | | | | | | |
| Outflo | ow Total Nitrogen (lb/ac/yr)= | | | | | Outflov | / Total Ph | osphorus (| (lb/ac/yr)= | | |
| Sub-DA4(b) BMP(s) | | | | | | | | | | | |

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| If Sub-DA4(b) is connected to upstream sub- | pasin(s), select all contributing | g sub-bas | in(s from | | | | | | | | |
|--|--|--------------------------------------|---------------------------|---------------------------------|---------------------------|---------------------------------|----------------------------|-------------------------------------|----------------------------|-------------------------------------|---|
| dropdown menus): Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outfl | ow Total Nitrogen (lb/ac/yr)= | | | | | Outflow | Total Ph | osphorus (| lb/ac/yr)= | | |
| Sub-DA4 (c) BMP(s) | | | | | | | | | | | |
| If Sub-DA4(c) is connected to upstream sub-l | pasin(s), select all contributin | g sub-bas | in(s): | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outfl | | | | | Outflow | Total Ph | osphorus (| lb/ac/yr)= | | | |
| Sub-DA4 (d) BMP(s) | | | | | | | | | | | |
| If Sub-DA4(d) is connected to upstream sub- | pasin(s), select all contributin | ıg sub-bas | in(s): | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | Inflow P EMC (mg/L) | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Outfl | ow Total Nitrogen (lb/ac/yr)= | | | | | Outflow | Total Ph | osphorus (| lb/ac/yr)= | | |
| Sub-DA4 (e) BMP(s) | | | | | | | | | | | |
| If Sub-DA4(e) is connected to upstream sub- | pasin(s), select all contributin | ıg sub-bas | in(s): | | | | | | | | |
| Device Name (As Shown on Plan) | Device Type | Water Quality Volume (c.f.) | Inflow N EMC (mg/L) | Total Inflow N (lb/ac/yr) | | Total Inflow P (lb/ac/yr) | Outflow N EMC (mg/L) | Total Outflow N (lb/ac/yr) | Outflow P EMC (mg/L) | Total Outflow P (lb/ac/yr) | Provided Volume Managed (c.f.) |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | <u> </u> | | | | | | | | |
| Outfl | ow Total Nitrogen (lb/ac/yr)= | | | | | Outflow | Total Ph | osphorus (| lb/ac/yr)= | | |
| | | DA4 BM | IP SUMI | JARY | | | | | | | |
| | Total Volume Treated (c.f.)= | | | | | | 0 | | | | |
| DA4 Outfl | ow Total Nitrogen (lb/ac/yr)= | | | | | | | | | | |
| DA4 Outflow | Total Phosphorus (lb/ac/yr)= | | | | | | | | | | |
| 1-year, 24-hour storm | | | | | | | | | | | |
| Pre Development Pe | eak Discharge (cfs)= Q _{1-year} = | -year= 1.92 | | | | | | | | | |
| Post BMP Pe | eak Discharge (cfs)= Q _{1-year} = | = | | | | | | | | | |

DA4_BMPs Page 24



| Project Name: | Broadmoor |
|---------------|-----------|
| | |

DA SITE SUMMARY BMP CALCULATIONS

| ВМР | SUMMA | ARY | | | | | | | | |
|--|--|-----------|-----------|------|--|--|--|--|--|--|
| DRAINAGE AREA SUMMARIES | | | | | | | | | | |
| DRAINAGE AREA: | DA1 DA2 DA3 DA4 DA5 DA | | | | | | | | | |
| Post-Developme | Post-Development (1-year, 24-hour storm) | | | | | | | | | |
| Peak Flow (cfs)=Q _{1-year} = | 196.60 | 3.35 | 4.54 | 3.90 | | | | | | |
| Post-Development with BMPs (1-year, 24-hour storm) | | | | | | | | | | |
| % Impervious = | | | 21 | 1% | | | | | | |
| Volume Managed (CF)= | | | 97, | 436 | | | | | | |
| Post BMP Peak Discharge (cfs)= Q _{1-year} = | 35.04 | | | | | | | | | |
| Have Target Curve Number Requirements been met? | | | YI | ES | | | | | | |
| Pre Development Ni | trogen and | d Phospho | rus Load | | | | | | | |
| Total Nitrogen (lb/ac/yr)= | | | 1. | 31 | | | | | | |
| Total Phosphorus (lb/ac/yr)= | | | N | /A | | | | | | |
| Post Development N | itrogen an | d Phospho | orus Load | | | | | | | |
| Total Nitrogen (lb/ac/yr)= | | | 3. | 65 | | | | | | |
| Total Phosphorus (lb/ac/yr)= | | | N | /A | | | | | | |
| Post-BMF | Nitrogen | Loading | | | | | | | | |
| Outflow Total Nitrogen (lb/ac/yr)= | | | 0. | 41 | | | | | | |
| Outflow Total Phosphorus (lb/ac/yr)= | | | -0. | .27 | | | | | | |
| Has site met the Target? | YES | | | | | | | | | |
| Has site met requirements for offsetting? | | | YI | ES | | | | | | |