Total Water Quality Volume Calculation

$$WQv(acre\text{-}feet) = [(P)(Rv)(A)] /12$$

| Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?........................................................................................ | No |
|---|---|

| Design Point: | West Lake | |
|---|---|---|
| P= | 1.00 | inch |

*Manually enter P, Total Area and Impervious Cover.*

| Breakdown of Subcatchments | | | | | | |
|---|---|---|---|---|---|---|
| Catchment Number | Total Area (Acres) | Impervious Area (Acres) | Percent Impervious % | Rv | WQv (ft³) | Description |
| 1 | 1.00 | 0.10 | 10% | 0.14 | 508 | Infiltration Basin |
| 2 | 1.00 | 0.10 | 10% | 0.14 | 508 | Dry Swale |
| 3 | 1.00 | 0.20 | 20% | 0.23 | 835 | Dry Swale |
| 4 | 1.50 | 0.09 | 6% | 0.10 | 566 | Infiltration Basin |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| Subtotal (1-30) | 4.50 | 0.49 | 11% | 0.15 | 2,418 | Subtotal 1 |
| Total | 4.50 | 0.49 | 11% | 0.15 | 2,418 | Initial WQv |

| Identify Runoff Reduction Techniques By Area | | | |
|---|---|---|---|
| Technique | Total Contributing Area (Acre) | Contributing Impervious Area (Acre) | Notes |
| Conservation of Natural Areas | 3.50 | 0.39 | minimum 10,000 sf |
| Riparian Buffers | 0.00 | 0.00 | maximum contributing length 75 feet to 150 feet |
| Filter Strips | 0.00 | 0.00 | |
| Tree Planting | 0.00 | 0.00 | Up to 100 sf directly connected impervious area may be subtracted per tree |
| Total | 3.50 | 0.39 | |

| Recalculate WQv after application of Area Reduction Techniques | | | | | |
|---|---|---|---|---|---|
| | Total Area (Acres) | Impervious Area (Acres) | Percent Impervious % | Runoff Coefficient Rv | WQv (ft³) |
| "<<Initial WQv" | 4.50 | 0.49 | 11% | 0.15 | 2,418 |
| Subtract Area | -3.50 | -0.39 | | | |
| WQv adjusted after Area Reductions | 1.00 | 0.10 | 10% | 0.14 | 508 |
| Disconnection of Rooftops | | 0.18 | | | |
| Adjusted WQv after Area Reduction and Rooftop Disconnect | 1.00 | -0.08 | -8% | -0.02 | -80 |

Total Water Quality Volume Calculation

$$WQv(acre\text{-}feet) = [(P)(Rv)(A)] /12$$

| WQv reduced by Area Reduction techniques | | | | | 2,497 |
|---|---|---|---|---|---|

Total Water Quality Volume Calculation

$$WQv(acre\text{-}feet) = [(P)(Rv)(A)] /12$$

| 0.06 | af |
|------|----|

| 0.00 | af |
|------|----|

Total Water Quality Volume Calculation

$$WQv(\text{acre-feet}) = [(P)(Rv)(A)] / 12$$

| 0.06 | af |

## Total Water Quality Volume Calculation
$$WQv(acre\text{-}feet) = [(P)(Rv)(A)] /12$$

| Catchment | Total Area (Acres) | Impervious Cover (Acres) | Percent Impervious % | Runoff Coefficient Rv | WQv (ft$^3$) | Description |
|---|---|---|---|---|---|---|
| 1 | 1.00 | 0.10 | 0.10 | 0.14 | 508.20 | Infiltration Basin |
| 2 | 1.00 | 0.10 | 0.10 | 0.14 | 508 | Dry Swale |
| 3 | 1.00 | 0.20 | 0.20 | 0.23 | 834.90 | Dry Swale |
| 4 | 1.50 | 0.09 | 0.06 | 0.10 | 566.28 | Infiltration |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| 20 | | | | | | |
| 21 | | | | | | |
| 22 | | | | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |
| 26 | | | | | | |
| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | |
| 30 | | | | | | |

| | Runoff Reduction Volume and Treated volumes | | | | | |
|---|---|---|---|---|---|---|
| | **Runoff Reduction Techiques/Standard SMPs** | | **Total Contributing Area** | **Total Contributing Impervious Area** | **WQv Reduced (RRv)** | **WQv Treated** |
| | | | (acres) | (acres) | cf | cf |
| Area/Volume Reduction | Conservation of Natural Areas | RR-1 | 3.50 | 0.39 | | |
| | Sheetflow to Riparian Buffers/Filter Strips | RR-2 | 0.00 | 0.00 | | |
| | Tree Planting/Tree Pit | RR-3 | 0.00 | 0.00 | | |
| | Disconnection of Rooftop Runoff | RR-4 | | 0.18 | | |
| | Vegetated Swale | RR-5 | 0.00 | 0.00 | 0 | |
| | Rain Garden | RR-6 | 0.00 | 0.00 | 0 | |
| | Stormwater Planter | RR-7 | 0.00 | 0.00 | 0 | |
| | Rain Barrel/Cistern | RR-8 | 0.00 | 0.00 | 0 | |
| | Porous Pavement | RR-9 | 0.00 | 0.00 | 0 | |
| | Green Roof (Intensive & Extensive) | RR-10 | 0.00 | 0.00 | 0 | |
| Standard SMPs w/RRv Capacity | Infiltration Trench | I-1 | 0.00 | 0.00 | 0 | 0 |
| | Infiltration Basin | I-2 | 1.50 | 0.03 | 370 | 0 |
| | Dry Well | I-3 | 0.00 | 0.00 | 0 | 0 |
| | Underground Infiltration System | I-4 | 0.00 | | | |
| | Bioretention & Infiltration Bioretention | F-5 | 0.00 | 0.00 | 0 | 0 |
| | Dry swale | O-1 | 2.00 | 0.18 | 319 | 632 |
| Standard SMPs | Micropool Extended Detention (P-1) | P-1 | | | | |
| | Wet Pond (P-2) | P-2 | | | | |
| | Wet Extended Detention (P-3) | P-3 | | | | |
| | Multiple Pond system (P-4) | P-4 | | | | |
| | Pocket Pond (p-5) | P-5 | | | | |
| | Surface Sand filter (F-1) | F-1 | | | | |
| | Underground Sand filter (F-2) | F-2 | | | | |
| | Perimeter Sand Filter (F-3) | F-3 | | | | |
| | Organic Filter (F-4 | F-4 | | | | |
| | Shallow Wetland (W-1) | W-1 | | | | |
| | Extended Detention Wetland (W-2 | W-2 | | | | |
| | Pond/Wetland System (W-3) | W-3 | | | | |
| | Pocket Wetland (W-4) | W-4 | | | | |
| | Wet Swale (O-2) | O-2 | | | | |
| Totals by Area Reduction | | → | 3.50 | 0.57 | 2497 | |
| Totals by Volume Reduction | | → | 0.00 | 0.00 | 0 | |
| Totals by Standard SMP w/RRV | | → | 3.50 | 0.21 | 689 | 632 |
| Totals by Standard SMP | | → | 0.00 | 0.00 | | 0 |

| Totals ( Area + Volume + all SMPs) → | | 7.00 | 0.78 | 3,187 | 632 |
|---|---|---|---|---|---|
| | Impervious Cover √ | error | | | | |
| | Total Area √ | error | | | | |

# Minimum RRv

| Enter the Soils Data for the site | | |
|---|---|---|
| Soil Group | Acres | S |
| A | | 55% |
| B | | 40% |
| C | 4.50 | 30% |
| D | | 20% |
| Total Area | 4.5 | |
| **Calculate the Minimum RRv** | | |
| S = | **0.30** | |
| Impervious = | 0.49 | *acre* |
| Precipitation | 1 | *in* |
| Rv | 0.95 | |
| **Minimum RRv** | 507 | *ft3* |
| | 0.01 | af |

# NOI QUESTIONS

| # | NOI Question | Reported Value | |
|---|---|---|---|
| | | cf | af |
| 28 | Total Water Quality Volume (WQv) Required | 2418 | 0.056 |
| 30 | Total RRV Provided | 3187 | 0.073 |
| 31 | Is RRv Provided ≥WQv Required? | Yes | |
| 32 | Minimum RRv | 507 | 0.012 |
| 32a | Is RRv Provided ≥ Minimum RRv Required? | Yes | |
| | | | |
| 33a | Total WQv Treated | 632 | 0.015 |
| 34 | Sum of Volume Reduced & Treated | 3819 | 0.088 |
| 34 | Sum of Volume Reduced and Treated | 3819 | 0.088 |
| 35 | Is Sum RRv Provided and WQv Provided ≥WQv Required? | Yes | |

| Apply Peak Flow Attenuation | | | |
|---|---|---|---|
| 36 | Channel Protection | Cpv | |
| 37 | Overbank | Qp | |
| 37 | Extreme Flood Control | Qf | |
| | Are Quantity Control requirements met? | Yes | Plan Completed |

83.45%

# Conservation of Natural Areas

| Design Point: | West Lake |
|---|---|

| Enter Site Data For Drainage Area to be Treated by Practice | | | | | | | |
|---|---|---|---|---|---|---|---|
| Catchment Number | Total Area (Acres) | Impervious Area (Acres) | Percent Impervious % | Rv | WQv $(ft^3)$ | Precipitation (in) | Description |
| 4 | 1.50 | 0.09 | 0.06 | 0.10 | 566.28 | 1.00 | Infiltration Basin |

| Design Elements | | |
|---|---|---|
| Is Contiguous Area ≥ 10,000 ft2? | Yes | |
| Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers? | Yes | |
| Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area? | No | |
| Does the easement specify how the natural area vegetation will be managed and boundaries will be marked? | Yes | |
| Does the conservation area receive runoff from other contributing areas? | Yes | Design as Buffer |
| Does Conservation Area drain to a Design Point? | Yes | |
| Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area? | No | |

| Are All Criteria in Section 5.3.1 Met? | Yes |
|---|---|

| Area Reduction Adjustments | | |
|---|---|---|
| Subtract | 1.50 | Acres from Total Area |
| Subtract | 0.09 | Acres from Total Impervious Area |

# Conservation of Natural Areas

| Design Point: | West Lake |
|---|---|

| | Enter Site Data For Drainage Area to be Treated by Practice | | | | | | |
|---|---|---|---|---|---|---|---|
| Catchment Number | Total Area (Acres) | Impervious Area (Acres) | Percent Impervious % | Rv | WQv (ft³) | Precipitation (in) | Description |
| 3 | 1.00 | 0.20 | 0.20 | 0.23 | 834.90 | 1.00 | Dry Swale |

| Design Elements | | |
|---|---|---|
| Is Contiguous Area ≥ 10,000 ft2? | Yes | |
| Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers? | Yes | |
| Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area? | No | |
| Does the easement specify how the natural area vegetation will be managed and boundaries will be marked? | Yes | |
| Does the conservation area receive runoff from other contributing areas? | Yes | Design as Buffer |
| Does Conservation Area drain to a Design Point? | Yes | |
| Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area? | No | |

| Are All Criteria in Section 5.3.1 Met? | Yes |
|---|---|

| Area Reduction Adjustments | | |
|---|---|---|
| Subtract | 1.00 | Acres from Total Area |
| Subtract | 0.20 | Acres from Total Impervious Area |

# Conservation of Natural Areas

| Design Point: | West Lake | | | | | | |
|---|---|---|---|---|---|---|---|
| **Enter Site Data For Drainage Area to be Treated by Practice** | | | | | | | |
| Catchment Number | Total Area (Acres) | Impervious Area (Acres) | Percent Impervious % | Rv | WQv (ft³) | Precipitation (in) | Description |
| 2 | 1.00 | 0.10 | 0.10 | 0.14 | 508.20 | 1.00 | Dry Swale |

| **Design Elements** | | |
|---|---|---|
| Is Contiguous Area ≥ 10,000 ft2? | Yes | |
| Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers? | Yes | |
| Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area? | No | |
| Does the easement specify how the natural area vegetation will be managed and boundaries will be marked? | Yes | |
| Does the conservation area receive runoff from other contributing areas? | Yes | Design as Buffer |
| Does Conservation Area drain to a Design Point? | Yes | |
| Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area? | No | |

| Are All Criteria in Section 5.3.1 Met? | Yes | | |
|---|---|---|---|
| **Area Reduction Adjustments** | | | |
| Subtract | 1.00 | Acres from Total Area | |
| Subtract | 0.10 | Acres from Total Impervious Area | |

# Conservation of Natural Areas

| Design Point: | West Lake | | | | | | |
|---|---|---|---|---|---|---|---|
| **Enter Site Data For Drainage Area to be Treated by Practice** | | | | | | | |
| Catchment Number | Total Area (Acres) | Impervious Area (Acres) | Percent Impervious % | Rv | WQv $(ft^3)$ | Precipitation (in) | Description |
| | | | | | | | |

| **Design Elements** | | |
|---|---|---|
| Is Contiguous Area ≥ 10,000 ft2? | | |
| Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers? | | |
| Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area? | | |
| Does the easement specify how the natural area vegetation will be managed and boundaries will be marked? | | |
| Does the conservation area receive runoff from other contributing areas? | | |
| Does Conservation Area drain to a Design Point? | | |
| Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area? | | |

| Are All Criteria in Section 5.3.1 Met? | | |
|---|---|---|
| **Area Reduction Adjustments** | | |
| Subtract | 0.00 | Acres from Total Area |
| Subtract | 0.00 | Acres from Total Impervious Area |

# Conservation of Natural Areas

|  |  |
|---|---|
| Total Subtracted from Total Area | 3.50 |
| Total Subtracted from Total Impervious Area | 0.39 |

# Conservation of Natural Areas

# Disconnection of Roof Tops

| Design Point: | West Lake | | |
|---|---|---|---|

| Enter Site Data For Drainage Area to be Treated by Practice | | | |
|---|---|---|---|
| Catchment Number | Impervious Area To Be Disconnected (Acres) | | Description |
| 1 | 0.06 | | Disconnection of Rooftops |

| Design Elements | | | |
|---|---|---|---|
| Is another area based practice applied to this area? | No | | |
| Soil Type | C | | |
| Has an evaluation by licensed or certified professional determined if soil enhancement & spreading device needed to provide sheet flowover grass surfaces? | Yes | Y/N | required for C or D soils. |
| Hotspot Area? | No | | |
| Length of flow path from Impervious Surfaces | 75 | ft | 75 feet maximum |
| Distance of downspouts from impervious areas | 50 | ft | >10 feet |
| Contributing Area of Rooftop to Downspout | 500 | sf | *Okay* |
| Contributing Area of Rooftop | 500 | sf | 500 sf maximum.  Up to 2000 sf with suitable flow dispersion technique |
| Method of flow dispersion | multiple DS | | required If area to downspout >500 sf |
| Flow length thru vegetated channel, swale or filter | 500 | ft | vegetated area must be equal to or greater than the length of contributing impervious area |
| Slope of vegetated area receiving flow | 5 | % | Average slope ≤5% |
| Will overflow occur to undesignated Areas? | No | | |
| Are All Criteria in Section 5.3.5  met? | Yes | | |

| Area Reduction Adjustments | | | |
|---|---|---|---|
| Subtract | 0.06 | Acres from the Total Impervious Area of Sub-catchment Number | 1 |

# Disconnection of Roof Tops

| Design Point: | West Lake | | | |
|---|---|---|---|---|
| **Enter Site Data For Drainage Area to be Treated by Practice** | | | | |
| **Catchment Number** | **Impervious Area To Be Disconnected** *(Acres)* | | | **Description** |
| 2 | 0.06 | | | Disconnection of Rooftops |
| **Design Elements** | | | | |
| Is another area based practice applied to this area? | No | | | |
| Soil Type | C | | | |
| Has an evaluation by licensed or certified professional determined if soil enhancement & spreading device needed to provide sheet flowover grass surfaces? | Yes | Y/N | required for C or D soils. | |
| Hotspot Area? | | | | |
| Length of flow path from Impervious Surfaces | 75 | ft | 75 feet maximum | |
| Distance of downspouts from impervious areas | 50 | ft | >10 feet | |
| Contributing Area of Rooftop to Downspout | 500 | sf | *Okay* | |
| Contributing Area of Rooftop | 2000 | sf | 500 sf maximum. Up to 2000 sf with suitable flow dispersion technique | |
| Method of flow dispersion | multiple DS | | required If area to downspout >500 sf | |
| Flow length thru vegetated channel, swale or filter | 150 | ft | vegetated area must be equal to or greater than the length of contributing impervious area | |
| Slope of vegetated area receiving flow | 5 | % | Average slope ≤5% | |
| Will overflow occur to undesignated Areas? | Yes | | | |
| **Are All Criteria in Section 5.3.5 met?** | Yes | | | |
| **Area Reduction Adjustments** | | | | |
| Subtract | 0.06 | *Acres from the Total Impervious Area of Sub-catchment Number* | | 2 |

# Disconnection of Roof Tops

| Design Point: | West Lake | | | |
|---|---|---|---|---|
| **Enter Site Data For Drainage Area to be Treated by Practice** | | | | |
| **Catchment Number** | **Impervious Area To Be Disconnected (Acres)** | | | **Description** |
| 3 | 0.06 | | | Disconnection of Rooftops |
| **Design Elements** | | | | |
| Is another area based practice applied to this area? | No | | | |
| Soil Type | C | | | |
| Has an evaluation by licensed or certified professional determined if soil enhancement & spreading device needed to provide sheet flowover grass surfaces? | Yes | Y/N | required for C or D soils. | |
| Hotspot Area? | No | | | |
| Length of flow path from Impervious Surfaces | 75 | ft | 75 feet maximum | |
| Distance of downspouts from impervious areas | 50 | ft | >10 feet | |
| Contributing Area of Rooftop to Downspout | 500 | sf | *Okay* | |
| Contributing Area of Rooftop | 2000 | sf | 500 sf maximum. Up to 2000 sf with suitable flow dispersion technique | |
| Method of flow dispersion | multiple DS | | required If area to downspout >500 sf | |
| Flow length thru vegetated channel, swale or filter | 200 | ft | vegetated area must be equal to or greater than the length of contributing impervious area | |
| Slope of vegetated area receiving flow | 5 | % | Average slope ≤5% | |
| Will overflow occur to undesignated Areas? | No | | | |
| **Are All Criteria in Section 5.3.5 met?** | Yes | | | |
| **Area Reduction Adjustments** | | | | |

# Disconnection of Roof Tops

| | | | Acres from the Total Impervious Area of Sub-catchment Number | |
|---|---|---|---|---|
| | Subtract | 0.06 | | 3 |

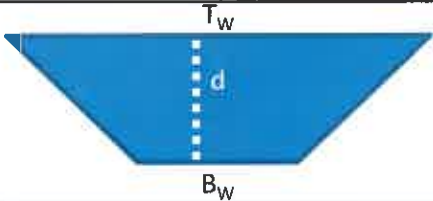| Design Point: | West Lake | | | |
|---|---|---|---|---|
| **Enter Site Data For Drainage Area to be Treated by Practice** | | | | |
| Catchment Number | Impervious Area To Be Disconnected (Acres) | | | Description |
| 4 | 0.06 | | | Disconnection of Rooftops |
| **Design Elements** | | | | |
| Is another area based practice applied to this area? | No | | | |
| Soil Type | C | | | |
| Has an evaluation by licensed or certified professional determined if soil enhancement & spreading device needed to provide sheet flowover grass surfaces? | Yes | Y/N | required for C or D soils. | |
| Hotspot Area? | No | | | |
| Length of flow path from Impervious Surfaces | 75 | ft | 75 feet maximum | |
| Distance of downspouts from impervious areas | 50 | ft | >10 feet | |
| Contributing Area of Rooftop to Downspout | 500 | sf | *Okay* | |
| Contributing Area of Rooftop | 2000 | sf | 500 sf maximum.  Up to 2000 sf with suitable flow dispersion technique | |
| Method of flow dispersion | multiple DS | | required If area to downspout >500 sf | |
| Flow length thru vegetated channel, swale or filter | 200 | ft | ~~vegetated area must be equal to or greater~~ than the length of contributing impervious ~~area~~ | |
| Slope of vegetated area receiving flow | 5 | % | Average slope ≤5% | |
| Will overflow occur to undesignated Areas? | No | | | |

## Disconnection of Roof Tops

| Are All Criteria in Section 5.3.5 met? | Yes | | |
|---|---|---|---|
| **Area Reduction Adjustments** | | | |
| | *Subtract* | 0.06 | *Acres from the Total Impervious Area of Sub-catchment Number* | 4 |
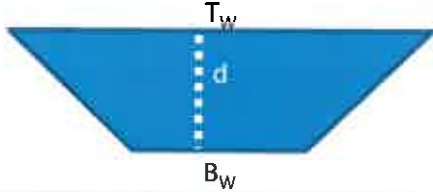
# Dry Swale Worksheet

| Design Point: | West Lake | |
|---|---|---|

| Enter Site Data For Drainage Area to be Treated by Practice | | | | | | | |
|---|---|---|---|---|---|---|---|
| Catchment Number | Total Area (Acres) | Impervious Area (Acres) | Percent Impervious % | Rv | WQv (ft$^3$) | Precipitation (in) | Description |
| 2 | 1.00 | 0.10 | 0.10 | 0.14 | 508.20 | 1.00 | Dry Swale |
| Enter Impervious Area Reduced by Disconnection of Rooftops | | 0.06 | 4% | 0.09 | 312 | <<WQv after adjusting for Disconnected Rooftops | |

| Pretreatment Provided | | | Pretreatment Technique | |
|---|---|---|---|---|
| Pretreatment (10% of WQv) | | 31 | ft$^3$ | |

## Calculate Available Storage Capacity

| | | | |
|---|---|---|---|
| Bottom Width | 2 | ft | Design with a bottom width no greater than eight feet to avoid potential gullying and channel braiding, but no less than two feet |
| Side Slope (X:1) | 2 | Okay | Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope |
| Longitudinal Slope | 3% | Okay | Maximum longitudinal slope shall be 4% |
| Flow Depth | 1.5 | ft | Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv) |
| Top Width | 8 | ft | T$_W$ |
| Area | 7.50 | sf | d |
| Minimum Length | 37 | ft | |
| Actual Length | 100 | ft | B$_W$ |
| End Point Depth check | 1.50 | Okay | A maximum depth of 18" at the end point of the channel (for storage of the WQv) |
| Storage Capacity | 781 | ft$^3$ | |
| Soil Group (HSG) | | C | |

## Runoff Reduction

| | | | |
|---|---|---|---|
| Is the Dry Swale contributing flow to another practice? | | No | Select Practice |
| RRv | 156 | ft$^3$ | Runoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv |
| Volume Treated | 156 | ft$^3$ | This is the difference between the WQv calculated and the runoff reduction achieved in the swale |
| Volume Directed | 0 | ft$^3$ | This volume is directed another practice |
| Volume v | Okay | | Check to be sure that channel is long enough to store WQv |

# Dry Swale Worksheet

| Design Point: | West Lake |
|---|---|

| Enter Site Data For Drainage Area to be Treated by Practice | | | | | | |
|---|---|---|---|---|---|---|
| Catchment Number | Total Area (Acres) | Impervious Area (Acres) | Percent Impervious % | Rv | WQv (ft$^3$) | Precipitation (in) | Description |
| 3 | 1.00 | 0.20 | 0.20 | 0.23 | 834.90 | 1.00 | Dry Swale |

| Enter Impervious Area Reduced by Disconnection of Rooftops | 0.06 | 14% | 0.18 | 639 | <<WQv after adjusting for Disconnected Rooftops |
|---|---|---|---|---|---|

| Pretreatment Provided | | | Pretreatment Technique | |
|---|---|---|---|---|
| Pretreatment (10% of WQv) | 64 | ft$^3$ | | |

| Calculate Available Storage Capacity | | | | |
|---|---|---|---|

| Bottom Width | 2 | ft | Design with a bottom width no greater than eight feet to avoid potential gullying and channel braiding, but no less than two feet |
|---|---|---|---|
| Side Slope (X:1) | 2 | Okay | Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope |
| Longitudinal Slope | 3% | Okay | Maximum longitudinal slope shall be 4% |
| Flow Depth | 1.5 | ft | Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv) |
| Top Width | 8 | ft | |
| Area | 7.50 | sf | |
| Minimum Length | 77 | ft | |
| Actual Length | 100 | ft | |
| End Point Depth check | 1.50 | Okay | A maximum depth of 18" at the end point of the channel (for storage of the WQv) |
| Storage Capacity | 814 | ft$^3$ | |
| Soil Group (HSG) | | C | |

| Runoff Reduction | | | | |
|---|---|---|---|

| Is the Dry Swale contributing flow to another practice? | No | Select Practice | |
|---|---|---|---|
| RRv | 163 | ft$^3$ | Runoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv |
| Volume Treated | 476 | ft$^3$ | This is the difference between the WQv calculated and the runoff reduction achieved in the swale |
| Volume Directed | 0 | ft$^3$ | This volume is directed another practice |

# Dry Swale Worksheet

| Volume Treated | | $ft^3$ | This is the difference between the WQv calculated and the runoff reduction achieved in the swale |
|---|---|---|---|
| Volume Directed | | $ft^3$ | This volume is directed another practice |
| Volume v | *Okay* | | Check to be sure that channel is long enough to store WQv |

| | |
|---:|:---|
| Total RRV | 319.02 |
| Total Area | 2.00 |
| Total Impervious Area | 0.18 |
| Total Volume Treated | 632.04 |
| Rooftop Disconnect Impervious Area Total | 0.12 |

# Infiltration Basin Worksheet

| Design Point: | West Lake |
|---|---|

## Enter Site Data For Drainage Area to be Treated by Practice

| Catchment Number | Total Area (Acres) | Impervious Area (Acres) | Percent Impervious % | Rv | WQv (ft³) | Precipitation (in) | Description |
|---|---|---|---|---|---|---|---|
| 4 | 1.50 | 0.09 | 0.06 | 0.10 | 566.28 | 1.00 | Infiltration Basin |
| Enter Impervious Area Reduced by Disconnection of Rooftops | | 0.06 | 2% | 0.07 | 370 | <<WQv after adjusting for Disconnected Rooftops | |
| Enter the portion of the WQV that is not reduced for all practices routed to this practice. | | | | | 0 | ft³ | |

## Pretreatment Techniques to Prevent Clogging

| Infiltration Rate | | 1.00 | in/hour | Okay |
|---|---|---|---|---|
| Pretreatment Sizing | | 25 | % WQv | 25% minimum; 50% if >2 in/hr 100% if >5in/hour |
| Pretreatment Required Volume | | 93 | ft³ | |
| Pretreatment Provided | | 500 | ft³ | |
| Pretreatment Techniques utilized | | Grass Channel | | |

## Size An Infiltration Basin

| Design Volume | 370 | ft³ | WQv |
|---|---|---|---|
| Basal Area Required | 185 | ft² | Infiltration practices shall be designed to exfiltrate the entire WQv through the floor of each practice. |
| Basal Area Provided | 760 | ft² | |
| Design Depth | 2.00 | ft | |
| Volume Provided | 1,520 | ft³ | Storage Volume provided in infiltration basin area (not including pretreatment. |

## Determine Runoff Reduction

| RRv | 370 | ft³ | 90% of the storage provided in the basin or WQv whichever is smaller |
|---|---|---|---|
| Volume Treated | 0 | ft³ | This is the portion of the WQv that is not reduced/infiltrated |
| Sizing √ | OK | | The infiltration basin must provide storage equal to or greater than the WQv of the contributing area. |

# Infiltration Basin Worksheet

| Design Point: | West Lake |
|---|---|

### Enter Site Data For Drainage Area to be Treated by Practice

| Catchment Number | Total Area (Acres) | Impervious Area (Acres) | Percent Impervious % | Rv | WQv ($ft^3$) | Precipitation (in) | Description |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Enter Impervious Area Reduced by Disconnection of Rooftops | | | | | | <<WQv after adjusting for Disconnected Rooftops | |
|---|---|---|---|---|---|---|---|
| Enter the portion of the WQv that is not reduced for all practices routed to this practice. | | | | | 0 | $ft^3$ | |

**Drainage Area exceeds the maximum allowable unless soil infiltration rate exceeds 5 in/hr**

### Pretreatment Techniques to Prevent Clogging

| Infiltration Rate | | | in/hour | |
|---|---|---|---|---|
| Pretreatment Sizing | | | % WQv | 25% minimum; 50% if >2 in/hr 100% if >5in/hour |
| Pretreatment Required Volume | | | $ft^3$ | |
| Pretreatment Provided | | | $ft^3$ | |
| Pretreatment Techniques utilized | | Grass Channel | | |

### Size An Infiltration Basin

| Design Volume | 0 | $ft^3$ | WQv |
|---|---|---|---|
| Basal Area Required | 0 | $ft^2$ | Infiltration practices shall be designed to exfiltrate the entire WQv through the floor of each practice. |
| Basal Area Provided | | $ft^2$ | |
| Design Depth | | ft | |
| Volume Provided | 0 | $ft^3$ | Storage Volume provided in infiltration basin area (not including pretreatment. |

### Determine Runoff Reduction

| RRv | 0 | $ft^3$ | 90% of the storage provided in the basin or WQv whichever is smaller |
|---|---|---|---|
| Volume Treated | | $ft^3$ | This is the portion of the WQv that is not reduced/infiltrated |
| Sizing √ | OK | | The infiltration basin must provide storage equal to or greater than the WQv of the contributing area. |

# Infiltration Basin Worksheet

|                                           |        |
|-------------------------------------------|--------|
| Total RRV                                 | 370.26 |
| Total Area                                | 1.50   |
| Total Impervious Area                     | 0.03   |
| Total Volume Treated                      | 0.00   |
| Rooftop Disconnect Impervious Area Total  | 0.06   |