## WATER QUALITY COMPUTATIONS

**GOAL:** Water quality for this development would be addressed structurally.

Data:

| | | | |
|---|---|---|---|
| Total Project Site Area (DA-1N) = | = | 4.5290 ac | = 197,283 s.f. |
| $Ai_{ex}$ = Total Existing Impervious Area | = | 0.0000 ac | = 0,000 s.f. |
| Existing Impervious Area which is Anticipated to be Disturbed under development including R/W Improvements | = | 0.0000 ac | = 0,000 s.f. |
| $Ai_{prp.}$ = Impervious Area under Redevelopment | = | 2.2680 ac | 98,794 s.f. |
| Liable Impervious Area for Water Quality | = | 2.2680 ac | = 98,794 s.f. |
| Drainage Area Contributing to the Facility | = | 4.5290 ac | = 197,283 s.f. |

I = percent Impervious Area = ( Ai )/[( A )( 100 ]=
I = percent Impervious Area = ( 2.2680 ac. )/[( 4.5290 ac )( 100 ]= 50.08 %

$R_v$ = Volumetric Runoff Coeff. = ( 0.05 )+[( 0.009 )( I ]=
$R_v$ = Volumetric Runoff Coeff. = ( 0.05 )+[( 0.009 )( 50.08 ]= 0.50 (from design manual, page 2.2)

P = Precipitation Depth = 1.2 in. (From design manual, page 2.3)

## COMPUTE WATER QUALITY VOLUME REQUIRED:

WQv = Water Quality Volume = [( P )( $R_v$ )( A )]/ 12
WQv =Water Quality Volume = [( 1.2 in. )( 0.501 )( 4.5290 ac )]/ 12 = 0.22677 ac ft 9877.88 cf
WQV required as a permanent volume (50% of WQv) = 0.11338 ac ft 4938.94 cf
WQv provided as a permanent volume @ elevation 490.50 =

## WATER QUALITY COMPUTATIONS

**GOAL:** Water quality for this development would be addressed structurally.

Data:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Project Site Area (DA-1O) = | | | | | | | = | 13.7070 ac | = | 597,077 s.f. |
| $Ai_{ex}$ = Total Existing Impervious Area | | | | | | | = | 0.0000 ac | = | 0,000 s.f. |
| Existing Impervious Area which is Anticipated to be Disturbed under development including R/W Improvements | | | | | | | = | 0.0000 ac | = | 0,000 s.f. |
| $Ai_{prp.}$ = Impervious Area under Redevelopment | | | | | | | = | 2.9390 ac | | 128,023 s.f. |
| Liable Impervious Area for Water Quality | | | | | | | = | 2.9390 ac | = | 128,023 s.f. |
| Drainage Area Contributing to the Facility | | | | | | | = | 13.7070 ac | = | 597,077 s.f. |
| I = percent Impervious Area = | ( | Ai | )/[( | A | )( | 100 | ]= | | | |
| I = percent Impervious Area = | ( | 2.9390 ac. | )/[( | 13.7070 ac | )( | 100 | ]= | 21.44 % | | |
| $R_v$ = Volumetric Runoff Coeff. = | ( | 0.05 | )+[( | 0.009 | )( | I | ]= | | | |
| $R_v$ = Volumetric Runoff Coeff. = | ( | 0.05 | )+[( | 0.009 | )( | 21.44 | ]= | 0.24 | (from design manual, page 2.2) | |
| P = Precipitation Depth = | | | | | | | | 1.2 in. | (From design manual, page 2.3) | |

## COMPUTE WATER QUALITY VOLUME REQUIRED:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WQv = Water Quality Volume = | [( | P | )( | $R_v$ | )( | A | )]/ 12 | | | |
| WQv = Water Quality Volume = | [( | 1.2 in. | )( | 0.243 | )( | 13.7070 ac | )]/ 12 | = | 0.33305 ac ft | 14507.44 cf |
| WQv required as a permanent volume (20% of WQv) | | | | | | | | = | 0.06661 ac ft | 2901.49 cf |
| WQv provided as a permanent volume @ elevation 490.30 | | | | | | | | = | | |

## WATER QUALITY COMPUTATIONS

**GOAL:** Water quality for this development would be addressed structurally.

Data:

| | | | |
|---|---|---|---|
| Total Project Site Area (DA-1P) = | = | 29.8500 ac | = 1,300,266 s.f. |
| $Ai_{ex}$ = Total Existing Impervious Area | = | 0.0000 ac | = 0,000 s.f. |
| Existing Impervious Area which is Anticipated to be Disturbed under development including R/W Improvements | = | 0.0000 ac | = 0,000 s.f. |
| $Ai_{prp.}$ = Impervious Area under Redevelopment | = | 8.3830 ac | 365,163 s.f. |
| Liable Impervious Area for Water Quality | = | 8.3830 ac | = 365,163 s.f. |
| Drainage Area Contributing to the Facility | = | 29.8500 ac | = 1,300,266 s.f. |

I = percent Impervious Area = ( Ai )/[( A )( 100 ]=
I = percent Impervious Area = ( 8.3830 ac. )/[( 29.8500 ac )( 100 ]= 28.08 %

$R_v$ = Volumetric Runoff Coeff. = ( 0.05 )+[( 0.009 )( I ]=
$R_v$ = Volumetric Runoff Coeff. = ( 0.05 )+[( 0.009 )( 28.08 ]= 0.30 (from design manual, page 2.2)

P = Precipitation Depth = 1.2 in. (From design manual, page 2.3)

## COMPUTE WATER QUALITY VOLUME REQUIRED:

WQv = Water Quality Volume = [( P )( $R_v$ )( A )]/ 12
WQv = Water Quality Volume = [( 1.2 in. )( 0.303 )( 29.8500 ac )]/ 12 = 0.90372 ac ft 39366.04 cf
WQv required as a permanent volume (20% of WQv) = 0.45186 ac ft 19683.02 cf
WQv provided as apermanent volume @ elevation 527.50 =

## WATER QUALITY COMPUTATIONS

**GOAL:** Water quality for this development would be addressed structurally.

Data:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Project Site Area (DA-1R) = | | | | | | | | = | 6.4790 ac | = | 282,225 s.f. |
| $Ai_{ex}$ = Total Existing Impervious Area | | | | | | | | = | 0.0000 ac | = | 0,000 s.f. |
| Existing Impervious Area which is Anticipated to be Disturbed under development including R/W Improvements | | | | | | | | = | 0.0000 ac | = | 0,000 s.f. |
| $Ai_{prp.}$ = Impervious Area under Redevelopment | | | | | | | | = | 1.0590 ac | | 46,130 s.f. |
| Liable Impervious Area for Water Quality | | | | | | | | = | 1.0590 ac | = | 46,130 s.f. |
| Drainage Area Contributing to the Facility | | | | | | | | = | 6.4790 ac | = | 282,225 s.f. |
| I = percent Impervious Area = | ( | Ai | )/[( | A | )( | 100 | ]= | | | | |
| I = percent Impervious Area = | ( | 1.0590 ac. | )/[( | 6.4790 ac | )( | 100 | ]= | 16.35 % | | | |
| $R_v$ = Volumetric Runoff Coeff. = | ( | 0.05 | )+[( | 0.009 | )( | I | ]= | | | | |
| $R_v$ = Volumetric Runoff Coeff. = | ( | 0.05 | )+[( | 0.009 | )( | 16.35 | ]= | 0.20 | (from design manual, page 2.2) | | |
| P = Precipitation Depth = | | | | | | | | 1.2 in. | (From design manual, page 2.3) | | |

## COMPUTE WATER QUALITY VOLUME REQUIRED:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WQv = Water Quality Volume = | [( | P | )( | $R_v$ | )( | A | )]/ 12 | | | |
| WQv = Water Quality Volume = | [( | 1.2 in. | )( | 0.197 | )( | 6.4790 ac | )]/ 12 | = | 0.12771 ac ft | 5562.83 cf |
| WQv required as a permanent volume (20% of WQv) | | | | | | | | = | 0.02554 ac ft | 1112.57 cf |
| WQv provided as a permanent volume @ elevation 664.50 | | | | | | | | | | |

## WATER QUALITY COMPUTATIONS

**GOAL:** Water quality for this development would be addressed structurally.

Data:

| | | | | | |
|---|---|---|---|---|---|
| Total Project Site Area (DA-1S) = | | | = | 5.3810 ac | = 234,396 s.f. |
| $Ai_{ex}$ = Total Existing Impervious Area | | | = | 0.0000 ac | = 0,000 s.f. |
| Existing Impervious Area which is Anticipated to be Disturbed under development including R/W Improvements | | | = | 0.0000 ac | = 0,000 s.f. |
| $Ai_{prp}$ = Impervious Area under Redevelopment | | | = | 1.3020 ac | 56,715 s.f. |
| Liable Impervious Area for Water Quality | | | = | 1.3020 ac | = 56,715 s.f. |
| Drainage Area Contributing to the Facility | | | = | 5.3810 ac | = 234,396 s.f. |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| I = percent Impervious Area = | ( | Ai | )/[( | A | )( | 100 | ]= | | |
| I = percent Impervious Area = | ( | 1.3020 ac. | )/[( | 5.3810 ac | )( | 100 | ]= | 24.20 % | |
| $R_v$ = Volumetric Runoff Coeff. = | ( | 0.05 | )+[( | 0.009 | )( | I | ]= | | |
| $R_v$ = Volumetric Runoff Coeff. = | ( | 0.05 | )+[( | 0.009 | )( | 24.20 | ]= | 0.27 | (from design manual, page 2.2) |
| P = Precipitation Depth = | | | | | | | | 1.2 in. | (From design manual, page 2.3) |

## COMPUTE WATER QUALITY VOLUME REQUIRED:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WQv = Water Quality Volume = | [( | P | )( | $R_v$ | )( | A | )]/ 12 | | |
| WQv = Water Quality Volume = | [( | 1.2 in. | )( | 0.268 | )( | 5.3810 ac | )]/ 12 | = 0.14409 ac ft | 6276.34 cf |
| WQV required as a permanent volume (20% of WQv) | | | | | | | | = 0.02882 ac ft | 1255.27 cf |
| WQv provided as a permanent volume @ elevation 658.30 | | | | | | | | = | |

# Stormwater Pond/Wetland Operation, Maintenance and Management Construction Inspection Checklist

Project: _____

Location: _____

Site Status: _____

Date: _____

Time: _____

Inspector: _____

| Maintenance Item | Satisfactory/ Unsatisfactory | Comments |
|---|---|---|
| 1. Embankment and emergency spillway (Annual, After Major Storms) | | |
| 1. Vegetation and ground cover adequate | | |
| 2. Embankment erosion | | |
| 3. Animal burrows | | |
| 4. Unauthorized planting | | |
| 5. Cracking, bulging, or sliding of dam | | |
| a. Upstream face | | |
| b. Downstream face | | |
| c. At or beyond toe | | |
| downstream | | |
| upstream | | |
| d. Emergency spillway | | |
| 6. Pond, tow & chimney drains clear and functioning | | |
| 7. Seeps/leaks on downstream face | | |
| 8. Slope protection or riprap failure | | |
| 9. Vertical/horizontal alignment of top of dam "As-built" | | |

| Construction Sequence | Satisfactory/ Unsatisfactory | Comments |
|---|---|---|
| 10. Emergency spillway clear of obstructions and debris | | |
| 11. Other (specify) | | |
| **2. Riser and principal spillway (Annual)** | | |
| Type: Reinforced concrete _____<br>Corrugated Pipe _____<br>Masonry _____<br>1. Low flow orifice obstruction | | |
| 2. Low flow trash rack.<br>a. Debris removal necessary | | |
| b. Corrosion control | | |
| 3. Weir trash rack maintenance<br>a. Debris removal necessary | | |
| b. Corrosion control | | |
| 4. Excessive sediment accumulation inside riser | | |
| 5. Concrete/masonry condition riser and barrels<br>a. cracks or displacement | | |
| b. Minor spalling (<1") | | |
| c. Major spalling (rebars exposed) | | |
| d. Joint failure | | |
| e. Water tightness | | |
| 6. Metal pipe condition | | |
| 7. Control Valve<br>a. Operation/exercised | | |
| b. Chained and locked | | |
| 8. Pond drain valve<br>a. Operation/exercised | | |
| b. Chained and locked | | |
| c. Outfall channels functioning | | |
| 10. Other (specify) | | |

| Construction Sequence | Satisfactory/ Unsatisfactory | Comments |
|---|---|---|
| **3. Permanent Pool (Wet Ponds)** **(Monthly)** | | |
| 1. Undesirable vegetative growth | | |
| 2. Floating or floatable debris removal required | | |
| 3. Visible pollution | | |
| 4. Shoreline problem | | |
| 5. Other (specify) | | |
| **4. Sediment Forebays** | | |
| 1. Sedimentation noted | | |
| 2. Sediment cleanout when depth <50% design depth | | |
| **5. Dry Ponds** | | |
| 1. Vegetation adequate | | |
| 2. Undesirable vegetative growth | | |
| 3. Undesirable woody growth | | |
| 4. Low flow channels clear of obstructions | | |
| 5. Standing water or wet spots | | |
| 6. Sediment and/or trash accumulation | | |
| 7. Other (specify) | | |
| **6. Condition of Outfalls** **(Annual, After Major Storms)** | | |
| 1. Riprap failures | | |
| 2. Slope erosion | | |
| 3. Storm drain pipes | | |
| 4. Endwalls/Headwalls | | |
| 5. Other (specify) | | |
| 7. Other **(Monthly)** | | |
| 1. Encroachment on ponds, wetland or easement area | | |

| Construction Sequence | Satisfactory/ Unsatisfactory | Comments |
|---|---|---|
| 2. Complaints from residents | | |
| 3. Aesthetic<br>a. Grass growing required | | |
| b. Graffiti removal needed | | |
| c. Other (specify) | | |
| 4. Conditions of maintenance access routes | | |
| 5. Signs of hydrocarbon build-up | | |
| 6. Any public hazards (specify) | | |
| **8. Wetland Vegetation (Annual)** | | |
| 1. Vegetation healthy and growing<br>Wetland marinating 50% surface area coverage of Wetland plants after the second growing season.<br>(If unsatisfactory, reinforcement plantings needed) | | |
| 2. Dominant wetland plants:<br>Survival of desired wetland plant species<br>Distribution according to landscaping plan? | | |
| 3. Evidence of invasive species | | |
| 4. Maintenance of adequate water depths for desired wetland plant species | | |
| 5. Harvesting of emergent plantings needed | | |
| 6. Have sediment accumulations reduced pool volume significantly or are plants "choked" with sediment | | |
| 7. Eutrophication level of the wetland. | | |
| 8. Other (specify) | | |

**Comments:**