## 100 YR STORM

| Present Conditions | | |
|---|---|---|
| Q = CIA | | |
| A = | 5.79 | 0.21 |
| C = | 0.35 | 0.90 |
| Tc = | 20.00 | 10.00 |
| I100 = | 8.30 | 9.80 |
| Q100 = | 16.82 | 1.85 |
| Total = | 18.67 | cfs |

| Bypass Flow | | | |
|---|---|---|---|
| Q = CIA | | | New Acreage |
| A = | 1.57 | 0.66 | 3.77 |
| C = | 0.35 | 0.90 | |
| Tc = | 20.00 | 10.00 | |
| I100 = | 8.30 | 9.80 | |
| Q100 = | 4.56 | 5.82 | |
| Total = | 10.38 | cfs | |

Q100 Allowable = 8.29 cfs

| Future Conditions | | | | |
|---|---|---|---|---|
| Q = CIA | | | | |
| A = | 0.85 | 2.92 | | |
| C = | 0.35 | 0.90 | Cw = | 0.78 |
| Tc = | 20.00 | 10.00 | | |
| I100 = | 8.30 | 9.80 | | |
| Q100 = | 2.47 | 25.75 | | |
| Total = | 28.22 | cfs | | |

| Flow for Storm Durations | | | |
|---|---|---|---|
| Time | I | Cw | Q |
| 10 | 9.80 | 0.78 | 28.67 |
| 15 | 9.00 | 0.78 | 26.33 |
| 20 | 8.30 | 0.78 | 24.28 |
| 30 | 6.90 | 0.78 | 20.19 |
| 40 | 5.80 | 0.78 | 16.97 |
| 50 | 5.00 | 0.78 | 14.63 |
| 60 | 4.50 | 0.78 | 13.16 |
| 70 | 4.00 | 0.78 | 11.70 |
| 80 | 3.70 | 0.78 | 10.82 |
| 90 | 3.50 | 0.78 | 10.24 |
| 100 | 3.40 | 0.78 | 9.95 |
| 110 | 3.20 | 0.78 | 9.36 |

Storage Calculations

| | | | |
|---|---|---|---|
| 10 min | | | |
| Inflow | 17201.94 | Storage = | 12227.88 |
| Outflow | 4974.06 | | |
| 15 min | | | |
| Inflow | 23696.55 | Storage = | 17478.98 |
| Outflow | 6217.575 | | |
| 20 min | | | |
| Inflow | 29137.98 | Storage = | 21676.89 |
| Outflow | 7461.09 | | |
| 30 min | | | |
| Inflow | 36334.71 | Storage = | 26386.59 |
| Outflow | 9948.12 | | |
| 40 min | | | |
| Inflow | 40722.96 | Storage = | 28287.81 |
| Outflow | 12435.15 | | |
| 50 min | | | |
| Inflow | 43882.5 | Storage = | 28960.32 |
| Outflow | 14922.18 | | |
| 60 min | | | |
| Inflow | 47393.1 | Storage = | 29983.89 |
| Outflow | 17409.21 | | |
| 70 min | | | |
| Inflow | 49148.4 | Storage = | 29252.16 |
| Outflow | 19896.24 | | |
| 80 min | | | |
| Inflow | 51956.88 | Storage = | 29573.61 |
| Outflow | 22383.27 | | |
| 90 min | | | |
| Inflow | 55291.95 | Storage = | 30421.65 |
| Outflow | 24870.3 | | |
| 100 min | | | |
| Inflow | 59680.2 | Storage = | 32322.87 |
| Outflow | 27357.33 | | |
| 110 min | | | |
| Inflow | 61786.56 | Storage = | 31942.2 |
| Outflow | 29844.36 | | |

Storage Required = 32322.87 CF

## 25 YR STORM

| Present Conditions | | |
|---|---|---|
| Q = CIA | | |
| A = | 5.79 | 0.21 |
| C = | 0.35 | 0.90 |
| Tc = | 20.00 | 10.00 |
| I25 = | 6.80 | 8.30 |
| Q25 = | 13.78 | 1.57 |
| Total = | 15.35 | cfs |

| Bypass Flow | | | |
|---|---|---|---|
| Q = CIA | | | New Acreage |
| A = | 1.57 | 0.66 | 3.77 |
| C = | 0.35 | 0.90 | |
| Tc = | 20.00 | 10.00 | |
| I25 = | 6.80 | 8.30 | |
| Q25 = | 3.74 | 4.93 | |
| Total = | 8.67 | cfs | |

Q25 Allowable = 6.68 cfs

| Future Conditions | | | | |
|---|---|---|---|---|
| Q = CIA | | | | |
| A = | 0.85 | 2.92 | | |
| C = | 0.35 | 0.90 | Cw = | 0.78 |
| Tc = | 20.00 | 10.00 | | |
| I25 = | 6.80 | 8.30 | | |
| Q25 = | 2.02 | 21.81 | | |
| Total = | 23.84 | cfs | | |

| Flow for Storm Durations | | | |
|---|---|---|---|
| Time | I | Cw | Q |
| 10 | 8.30 | 0.78 | 24.28 |
| 15 | 7.40 | 0.78 | 21.65 |
| 20 | 6.80 | 0.78 | 19.89 |
| 30 | 5.50 | 0.78 | 16.09 |
| 40 | 4.70 | 0.78 | 13.75 |
| 50 | 4.00 | 0.78 | 11.70 |
| 60 | 3.50 | 0.78 | 10.24 |
| 70 | 3.30 | 0.78 | 9.65 |
| 80 | 3.10 | 0.78 | 9.07 |
| 90 | 2.80 | 0.78 | 8.19 |
| 100 | 2.60 | 0.78 | 7.61 |
| 110 | 2.40 | 0.78 | 7.02 |

Storage Calculations

| | | | |
|---|---|---|---|
| 10 min | | | |
| Inflow | 14568.99 | Storage = | 10559.73 |
| Outflow | 4009.26 | | |
| 15 min | | | |
| Inflow | 19483.83 | Storage = | 14472.26 |
| Outflow | 5011.575 | | |
| 20 min | | | |
| Inflow | 23872.08 | Storage = | 17858.19 |
| Outflow | 6013.89 | | |
| 30 min | | | |
| Inflow | 28962.45 | Storage = | 20943.93 |
| Outflow | 8018.52 | | |
| 40 min | | | |
| Inflow | 32999.64 | Storage = | 22976.49 |
| Outflow | 10023.15 | | |
| 50 min | | | |
| Inflow | 35106 | Storage = | 23078.22 |
| Outflow | 12027.78 | | |
| 60 min | | | |
| Inflow | 36861.3 | Storage = | 22828.89 |
| Outflow | 14032.41 | | |
| 70 min | | | |
| Inflow | 40547.43 | Storage = | 24510.39 |
| Outflow | 16037.04 | | |
| 80 min | | | |
| Inflow | 43531.44 | Storage = | 25489.77 |
| Outflow | 18041.67 | | |
| 90 min | | | |
| Inflow | 44233.56 | Storage = | 24187.26 |
| Outflow | 20046.3 | | |
| 100 min | | | |
| Inflow | 45637.8 | Storage = | 23586.87 |
| Outflow | 22050.93 | | |
| 110 min | | | |
| Inflow | 46339.92 | Storage = | 22284.36 |
| Outflow | 24055.56 | | |

Storage Required = 25489.77 CF

## 10 YR STORM

| Present Conditions | | |
|---|---|---|
| Q = CIA | | |
| A = | 5.79 | 0.21 |
| C = | 0.35 | 0.90 |
| Tc = | 20 | 10 |
| I10 = | 5.90 | 7.10 |
| Q10 = | 11.96 | 1.34 |
| Total = | 13.30 | cfs |

| Bypass Flow | | | |
|---|---|---|---|
| Q = CIA | | | New Acreage |
| A = | 1.57 | 0.66 | 3.77 |
| C = | 0.35 | 0.90 | |
| Tc = | 20 | 10 | |
| I10 = | 5.90 | 7.10 | |
| Q10 = | 3.24 | 4.22 | |
| Total = | 7.46 | cfs | |

Q10 Allowable = 5.84 cfs

| Future Conditions | | | | |
|---|---|---|---|---|
| Q = CIA | | | | |
| A = | 0.85 | 2.92 | | |
| C = | 0.35 | 0.90 | Cw = | 0.78 |
| Tc = | 20 | 10 | | |
| I10 = | 5.90 | 7.10 | | |
| Q10 = | 1.76 | 18.66 | | |
| Total = | 20.41 | cfs | | |

| Flow for Storm Durations | | | |
|---|---|---|---|
| Time | I | Cw | Q |
| 10 | 7.10 | 0.78 | 20.77 |
| 15 | 6.50 | 0.78 | 19.02 |
| 20 | 5.90 | 0.78 | 17.26 |
| 30 | 4.90 | 0.78 | 14.33 |
| 40 | 4.00 | 0.78 | 11.70 |
| 50 | 3.40 | 0.78 | 9.95 |
| 60 | 3.00 | 0.78 | 8.78 |
| 70 | 2.80 | 0.78 | 8.19 |
| 80 | 2.60 | 0.78 | 7.61 |
| 90 | 2.40 | 0.78 | 7.02 |
| 100 | 2.20 | 0.78 | 6.44 |
| 110 | 2.00 | 0.78 | 5.85 |

Storage Calculations

| | | | |
|---|---|---|---|
| 10 min | | | |
| Inflow | 12462.63 | Storage = | 8959.35 |
| Outflow | 3503.28 | | |
| 15 min | | | |
| Inflow | 17114.18 | Storage = | 12735.08 |
| Outflow | 4379.1 | | |
| 20 min | | | |
| Inflow | 20712.54 | Storage = | 15457.62 |
| Outflow | 5254.92 | | |
| 30 min | | | |
| Inflow | 25802.91 | Storage = | 18796.35 |
| Outflow | 7006.56 | | |
| 40 min | | | |
| Inflow | 28084.8 | Storage = | 19326.6 |
| Outflow | 8758.2 | | |
| 50 min | | | |
| Inflow | 29840.1 | Storage = | 19330.26 |
| Outflow | 10509.84 | | |
| 60 min | | | |
| Inflow | 31595.4 | Storage = | 19333.92 |
| Outflow | 12261.48 | | |
| 70 min | | | |
| Inflow | 34403.88 | Storage = | 20390.76 |
| Outflow | 14013.12 | | |
| 80 min | | | |
| Inflow | 36510.24 | Storage = | 20745.48 |
| Outflow | 15764.76 | | |
| 90 min | | | |
| Inflow | 37914.48 | Storage = | 20398.08 |
| Outflow | 17516.4 | | |
| 100 min | | | |
| Inflow | 38616.6 | Storage = | 19348.56 |
| Outflow | 19268.04 | | |
| 110 min | | | |
| Inflow | 38616.6 | Storage = | 17596.92 |
| Outflow | 21019.68 | | |

Storage Required = 20745.48 CF

## 5 YR STORM

| Present Conditions | | |
|---|---|---|
| Q = CIA | | |
| A = | 5.79 | 0.21 |
| C = | 0.35 | 0.90 |
| Tc = | 20 | 10 |
| I5 = | 4.90 | 6.10 |
| Q5 = | 9.93 | 1.15 |
| Total = | 11.08 | cfs |

| Bypass Flow | | | |
|---|---|---|---|
| Q = CIA | | | New Acreage |
| A = | 1.57 | 0.66 | 3.77 |
| C = | 0.35 | 0.90 | |
| Tc = | 20 | 10 | |
| I5 = | 4.90 | 6.10 | |
| Q5 = | 2.69 | 3.62 | |
| Total = | 6.32 | cfs | |

Q5 Allowable = 4.77 cfs

| Future Conditions | | | | |
|---|---|---|---|---|
| Q = CIA | | | | |
| A = | 0.85 | 2.92 | | |
| C = | 0.35 | 0.90 | Cw = | 0.78 |
| Tc = | 20 | 10 | | |
| I5 = | 4.90 | 6.10 | | |
| Q5 = | 1.46 | 16.03 | | |
| Total = | 17.49 | cfs | | |

| Flow for Storm Durations | | | |
|---|---|---|---|
| Time | I | Cw | Q |
| 10 | 6.10 | 0.78 | 17.85 |
| 15 | 5.60 | 0.78 | 16.38 |
| 20 | 4.90 | 0.78 | 14.33 |
| 30 | 4.00 | 0.78 | 11.70 |
| 40 | 3.40 | 0.78 | 9.95 |
| 50 | 2.90 | 0.78 | 8.48 |
| 60 | 2.60 | 0.78 | 7.61 |
| 70 | 2.40 | 0.78 | 7.02 |
| 80 | 2.20 | 0.78 | 6.44 |
| 90 | 2.10 | 0.78 | 6.14 |
| 100 | 1.90 | 0.78 | 5.56 |
| 110 | 1.70 | 0.78 | 4.97 |

Storage Calculations

| | | | |
|---|---|---|---|
| 10 min | | | |
| Inflow | 10707.33 | Storage = | 7847.25 |
| Outflow | 2860.08 | | |
| 15 min | | | |
| Inflow | 14744.52 | Storage = | 11169.42 |
| Outflow | 3575.1 | | |
| 20 min | | | |
| Inflow | 17201.94 | Storage = | 12911.82 |
| Outflow | 4290.12 | | |
| 30 min | | | |
| Inflow | 21063.6 | Storage = | 15343.44 |
| Outflow | 5720.16 | | |
| 40 min | | | |
| Inflow | 23872.08 | Storage = | 16721.88 |
| Outflow | 7150.2 | | |
| 50 min | | | |
| Inflow | 25451.85 | Storage = | 16871.61 |
| Outflow | 8580.24 | | |
| 60 min | | | |
| Inflow | 27382.68 | Storage = | 17372.4 |
| Outflow | 10010.28 | | |
| 70 min | | | |
| Inflow | 29489.04 | Storage = | 18048.72 |
| Outflow | 11440.32 | | |
| 80 min | | | |
| Inflow | 30893.28 | Storage = | 18022.92 |
| Outflow | 12870.36 | | |
| 90 min | | | |
| Inflow | 33175.17 | Storage = | 18874.77 |
| Outflow | 14300.4 | | |
| 100 min | | | |
| Inflow | 33350.7 | Storage = | 17620.26 |
| Outflow | 15730.44 | | |
| 110 min | | | |
| Inflow | 32824.11 | Storage = | 15663.63 |
| Outflow | 17160.48 | | |

Storage Required = 18874.77 CF

RECORD DRAWING

| Revision | Date | Description |
|---|---|---|
| | | |

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12/5/2019

STATE OF TEXAS
CAMERON A. SLOWN
106317
LICENSED
PROFESSIONAL ENGINEER

| Drawn By: | Checked By: |
|---|---|
| F.C. CUNY | F.C. CUNY |
| Date: 09/18 | Project No.: -- |

Sheet Title:
Detention Pond Calculations

| Scale: | Sheet No.: |
|---|---|
| 1"=40' | 10B of 11 |