



# **STORMWATER TECHNICAL REPORT**

**For:**  
**IN FRANKLIN MORTON**

**North Morton Street  
Mallory Parkway and US 31  
Johnson County, Franklin, Indiana**

**Project #W15-0351**

**Prepared For:  
IN Franklin Morton, LLC  
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Certified By: Andrew T. Miller, P.E.**

**Date:  
17 March 2016**

**Revised:**



Prepared For:  
Stormwater Technical Report  
**IN Franklin Morton, LLC**  
**Franklin, IN**

Project #W15.0351

## TABLE OF CONTENTS

- 1. Project Narrative**
  - a. Existing Conditions
  - b. Proposed Conditions
  - c. Water Quality
  - d. Location Maps
- 2. Pipe Sizing Calculations**
  - a. Basin Map
  - b. Supporting Calculations
  - c. Hydroflow Models
  - d. Inlet Capacity
- 3. Appendix**
  - a. Kroger Drainage Report

# **PROJECT NARRATIVE**

Prepared For:  
Stormwater Technical Report  
**IN Franklin Morton, LLC**  
Franklin, IN  
Project #W15.0351

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## **Project Narrative:**

IN Franklin Morton, LLC is proposing to develop a commercial/retail development on an 8.68± acre tract of undeveloped land located approximately 0.1 miles west of the intersection of Mallory Parkway and US31 being situated north of Mallory Parkway. Refer to **Figure 1.1**.

The proposed development is on a site at a Latitude of N 39° 29' 20" and Longitude W 86° 04' 00", falling within Franklin Township. The site is generally located in the Northeast Quarter of Section 15, Township 12 North, and Range 4 East, Johnson County Indiana.

### **Floodzone:**

Based upon a scaled interpretation of the Flood Insurance Map, Panel 227 of 352, Map No.18081 C0227 E for Johnson County, Indiana, dated August 19, 2014 a majority of subject tract **IS** located within a Special Flood Hazard Area inundated by 100-year flood-Base Flood Elevation or Floodway Area in Zone AE. Refer to **Figure 1.2**.

There is currently a draft FIRM out for review which affects the subject tract. The biggest change is that more of the site is now within Zone AE. Refer to **Figure 1.3**.

### **Stormwater Design:**

The subject tract was included in the Master Drainage plan prepared for the Kroger Site, titled Kroger Store J-979, dated August 26, 2015. Below is the summary from said report.

*The stormwater detention plan for the Kroger site will consist of one (1) Wet Detention Basin system that will store and release the sites stormwater runoff per the City of Franklin Subdivision Control Ordinance. Said basin will be a shared detention basin for the 22.1 acres of undeveloped land located north of Mallory Parkway. The Wet Detention Basin will connect into an existing storm sewer network that runs East to West along the North side of the property and drains into an existing regional detention basin. Said storm sewer will be upsized to handle the additional flow from the site. The ultimate discharge point for the site will be Canary Creek. Water Quality for the Kroger site will be met via the said Wet Detention Basin.*



## Pre-Developed Conditions:

Aerial photography was used to illustrate the current land-use of the subject tract. Currently the subject tract is vacant and contains no structures on the 8.68± acres. The subject tract is adjoined by Commercial development on all sides (Kroger is located south of the proposed development). Refer to **Figure 1.4**.

The subject tract consists of the following soil types: Brookston and Crosby. A soil map has been included with this report. Curve numbers were assigned using existing land use in conjunction with soils mapping from the Natural Resource Conservation (NRCS). An abbreviated NRCS Soils Report can be found in **Section 1**.

Detailed topography from a survey prepared by Banning Engineering, in 2015 was used to determine the Pre-Developed Basin Map. In addition, LIDAR information from ISDP and verification shoots from Weihe Engineers, Inc. were used. The entire subject tract drains to the Canary Creek via storm sewers that run along the perimeter of the property.

In general, the Pre-Developed site drains westerly towards Canary Creek but in general the site is fairly flat. There are existing storm sewers that run along east side of the property which outlets into the Regional Detention Basin located west of Canary Creek Drive and northwest of the subject tract. Below is a summary of the peak discharges from the On-site basin from the Master Drainage Report:

### Release Rates **Basin PRE:**

|                |           |
|----------------|-----------|
| $Q_{2yr} =$    | 2.22 cfs  |
| $Q_{10-yr} =$  | 5.51 cfs  |
| $Q_{25-yr} =$  | 9.17 cfs  |
| $Q_{100-yr} =$ | 16.93 cfs |

### Offsite Drainage:

There are no offsite drainage sheds that affect the proposed development.

## Post-Developed Conditions:

IN Franklin Morton, LLC is proposing to develop a commercial/retail development on an 8.68± acre tract of undeveloped land located at northwest of the intersection between Mallory Parkway and US 31. The on-site site runoff will be conveyed to an existing Wet Detention Basin with an ultimate discharge point into Canary Creek. As stated above, the Wet Detention Basin is a shared Detention basin for the entire 22.1 acres of developed land located north of Mallory Parkway.

It should be noted that due to the site having to be raised above the BFE, some of the perimeter drainage will be allowed to drain off-site to existing storm infrastructure as it currently does today. All proposed impervious area will be routed through the proposed storm sewers except for a small drainage shed on the east side of the parking lot.

The overall drainage patterns for the site will remain constant with the Master Drainage plan thus the post-developed condition will not be re-analyzed with this report. Below is a summary of the post-developed condition from the Master Drainage Report:

### **Release Rates Pond "1":**

|                       |          |
|-----------------------|----------|
| $Q_{2\text{-yr}} =$   | 1.74 cfs |
| $Q_{10\text{-yr}} =$  | 2.11 cfs |
| $Q_{25\text{-yr}} =$  | 3.29 cfs |
| $Q_{100\text{-yr}} =$ | 4.97 cfs |

### **WSE Pond "1"**

|          |             |
|----------|-------------|
| 2-yr =   | 739.52 feet |
| 10-yr =  | 740.76 feet |
| 25-yr =  | 741.28 feet |
| 100-yr = | 741.97 feet |

### ***Wet Detention Basin:***

*The detention basin will have a Normal Pool elevation of 735.5 and a 30' wide emergency overflow weir set at 742.0.*

### **Storm Sewers**

The storm sewer system is designed to convey stormwater at a minimum velocity of 2.5 feet/second through reinforced concrete pipes while maintaining a hydraulic grade line elevation below the top of casting during a 10-year storm event. A runoff coefficient of 0.85 was assumed for all drainage basins. Due to the large amount of impervious area, a time of concentration of 5 min will be assumed for the entire site. Refer to **Section 2** for the pipe and inlet sizing calculations and **Figure 2.1-2.2** for the Pipe Sizing Basin Maps.

## **Water Quality:**

Water Quality has been accounted for via a BMP Wet Detention Basin per the Master Drainage report for Kroger:

*Kroger will use utilize a Wet Detention Basin to meet the Water Quality requirements as described in the Drainage Standards. Said basin is located at the north end of the 22.1 acres of undeveloped land and will provide Water Quality for the entire Kroger site and all future developments.*

*The Post-Developed model was utilized to analyze the Water Quality requirements based on described requirements below:*

- *Said detention system shall detain, for over 24 hours after peak run-off from a 24-hour storm, at least 20% of the run-off from either a 1-1/4 inch storm or 1/2 inch of direct runoff, whichever is greater.*

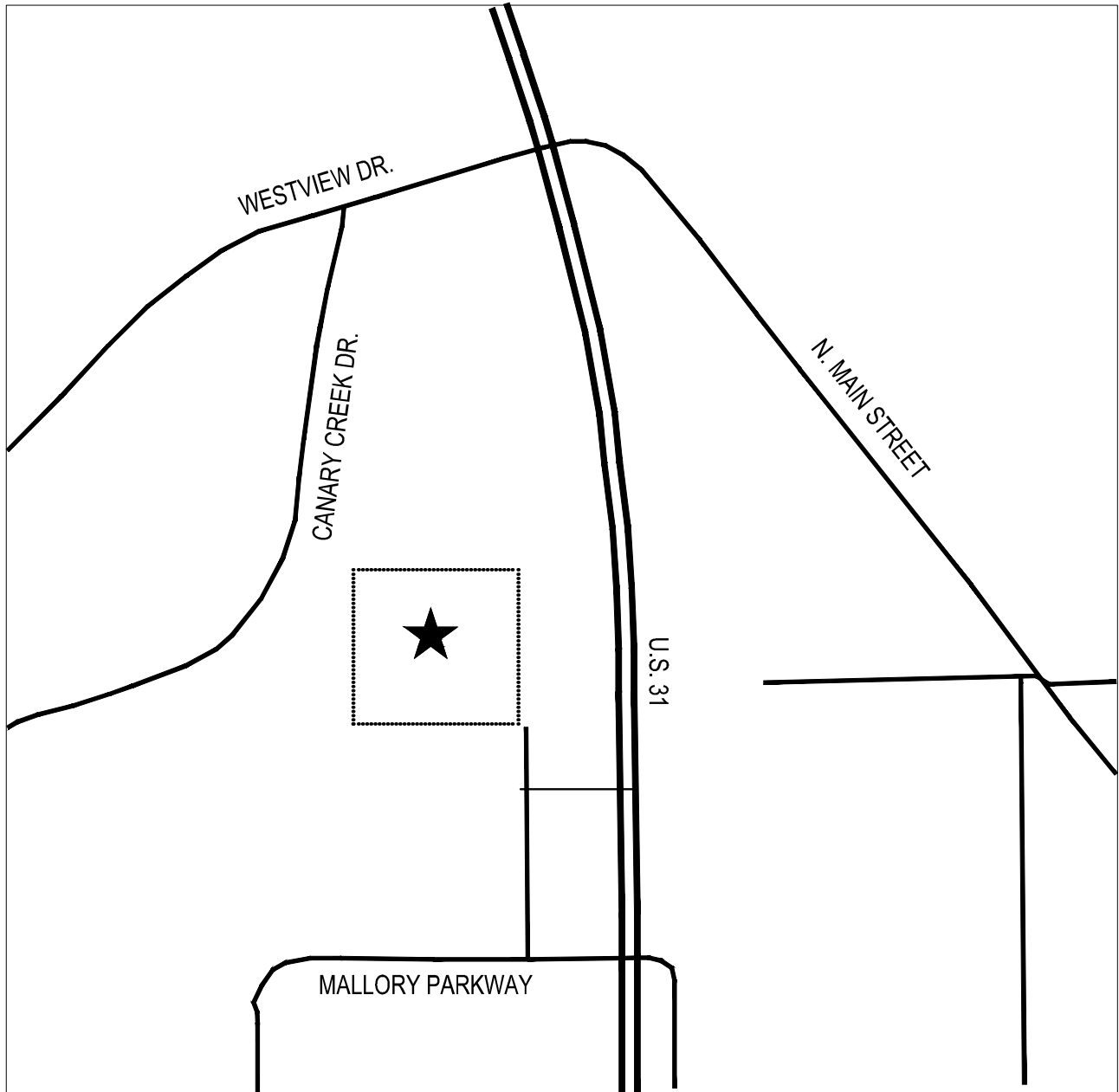
*Volume Based on 1/2 inch of direct runoff:*

- *Area: 22.1 acres (96,2675 square feet)*
- *Volume: 40,110 cubic feet of storage required*

*Volume Based on 1-1/4 inch storm*

- *Total Volume Stored: 42,675 cubic feet*
- *Total Volume at 24 hours from peak: 25,130 cubic feet*
- *It should be noted, that this simulation was ran without a tailwater condition.*

*The controlling parameter will be the 1-1/4 inch storm and said model detention was designed based on said requirement. A 4" orifice has been set in the outlet control structure at an elevation of 735.5 to allow for at least 20% of the run-off to remain for over 24 hours after peak run-off.*



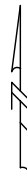
PROJECT LOCATION

KROGER - FRANKLIN, IN

**WEIHE**  
ENGINEERS

10505 N. College Avenue  
Indianapolis, Indiana 46280  
weihe.net  
317 | 846 - 6611

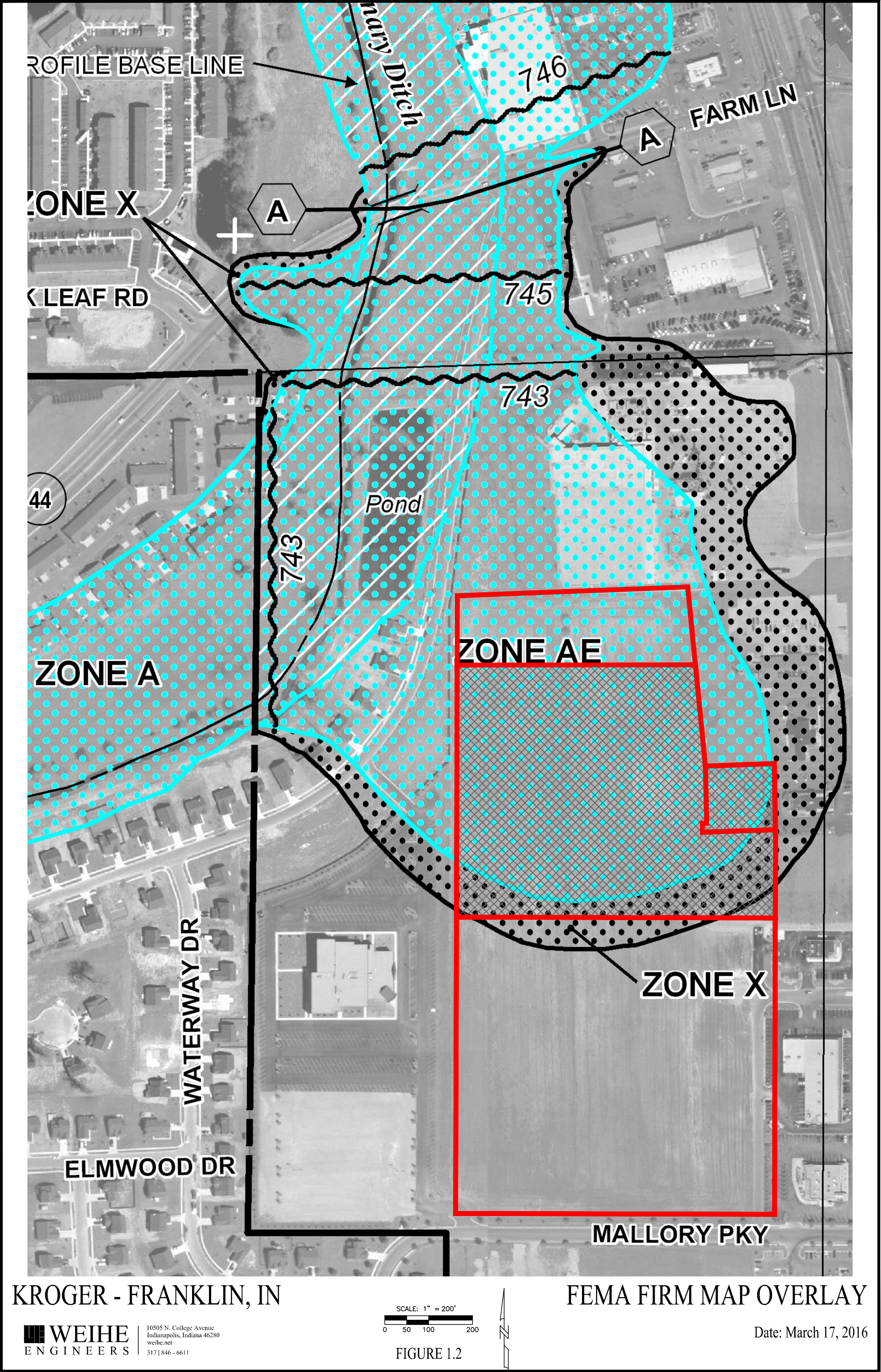
FIGURE 1.1



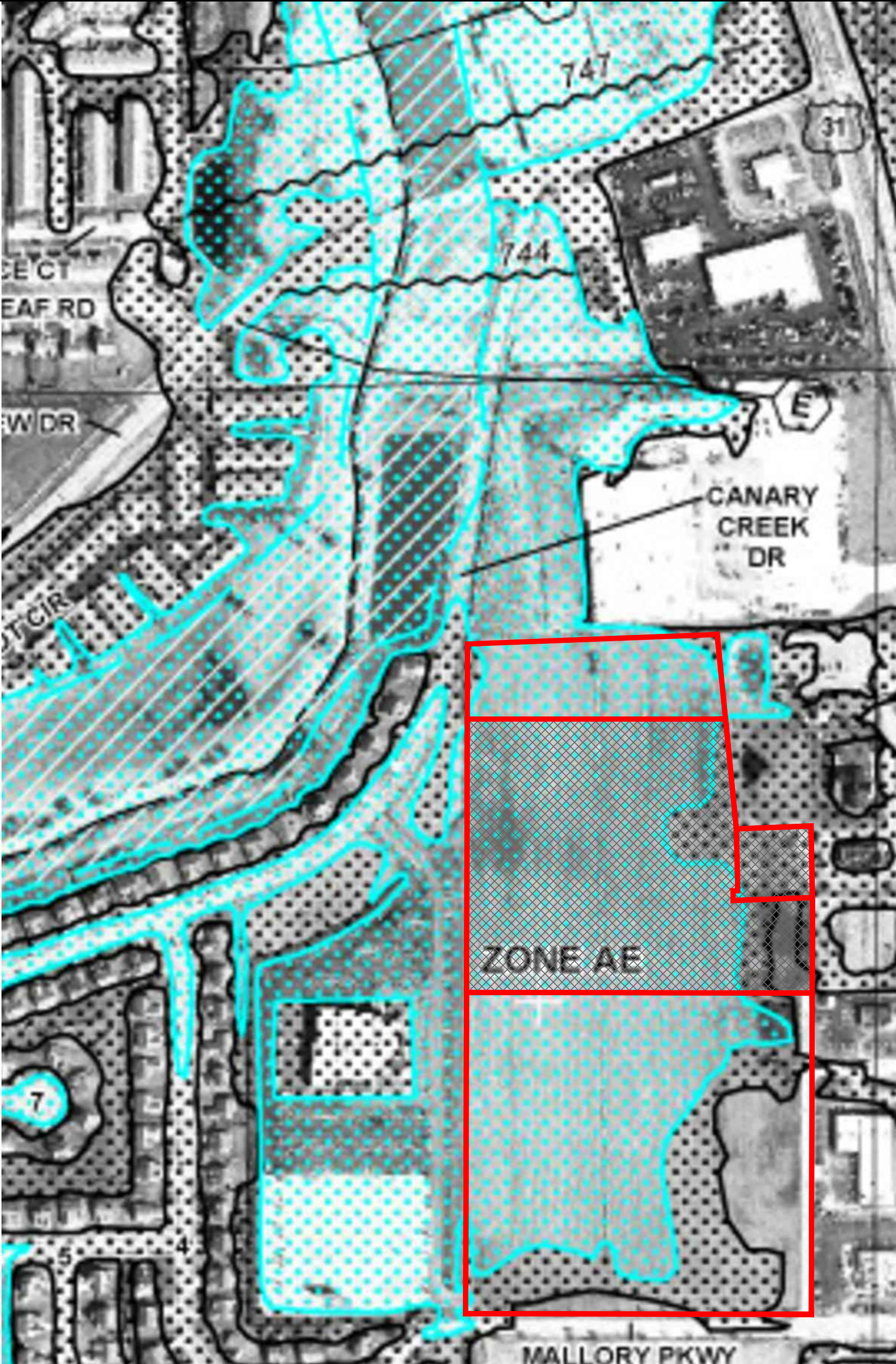
LOCATION MAP

Date: March 17, 2016









KROGER - FRANKLIN, IN

FEMA FIRM MAP OVERLAY  
DRAFT MAP

**WEIHE**  
ENGINEERS

10505 N. College Avenue  
Indianapolis, Indiana 46280  
weihe.net  
317 | 846 - 6611

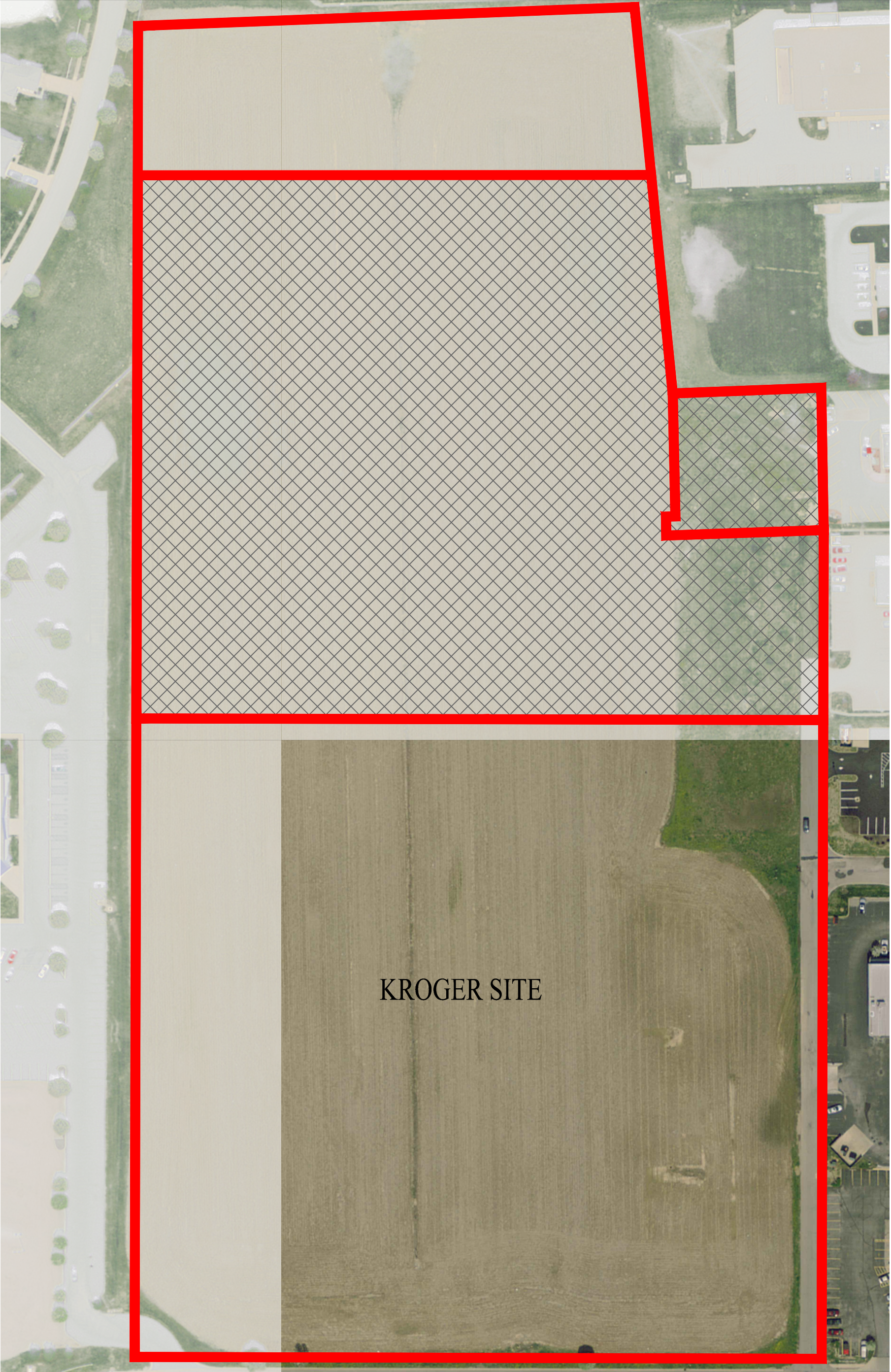
SCALE: 1" = 200'  
0 50 100 200

FIGURE 1.3



Date: March 17, 2016





KROGER - FRANKLIN, IN

EXISTING CONDITIONS MAP



10505 N. College Avenue  
Indianapolis, Indiana 46280  
weihe.net  
317 | 846 - 6611

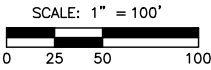


FIGURE 1.4

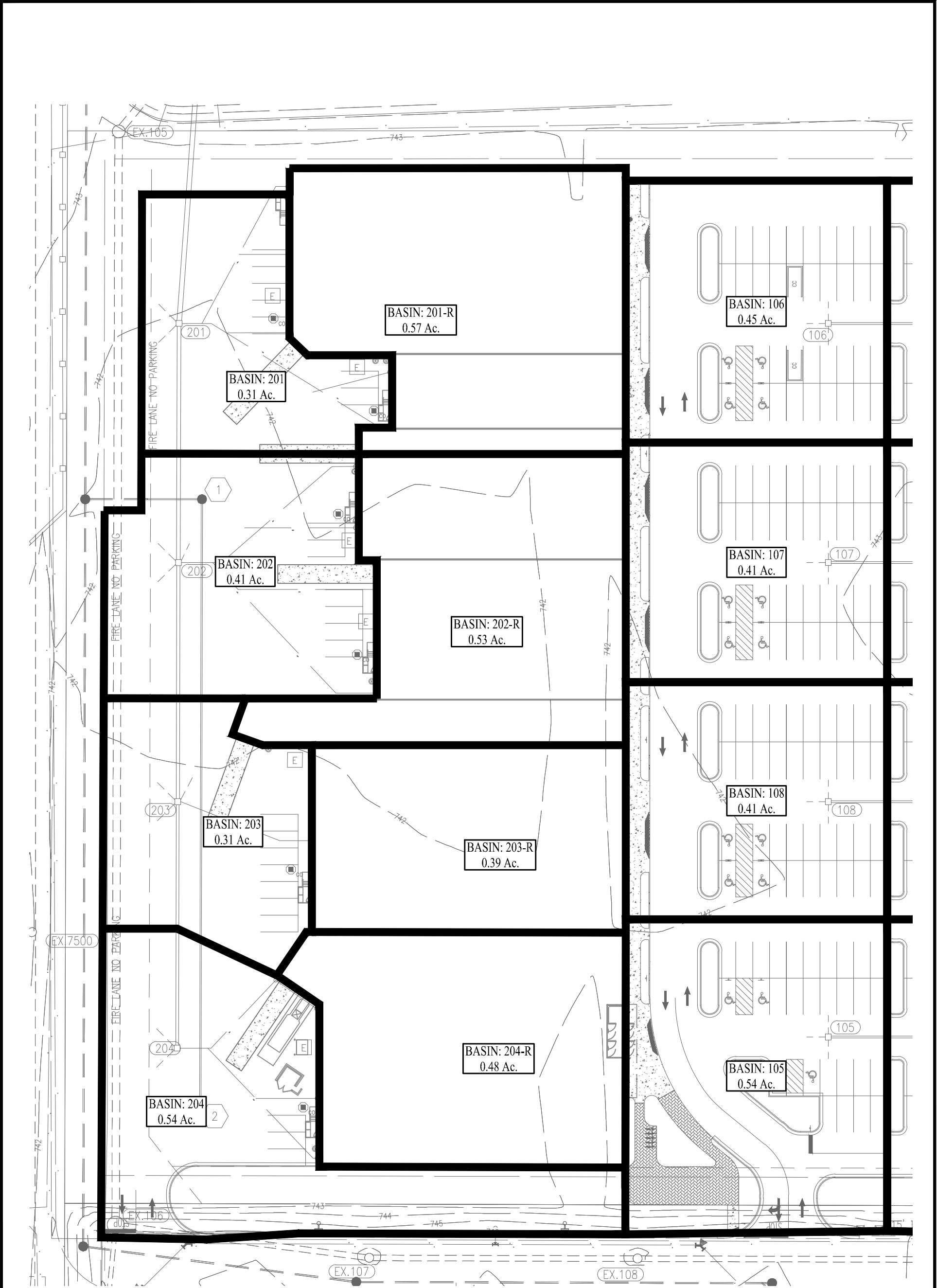


Date: March 17, 2016



# **PIPE SIZING CALCULATIONS**





IN FRANKLIN MORTON



10505 N. College Avenue  
Indianapolis, Indiana 46280  
weihe.net  
317|846-6611

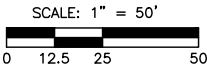
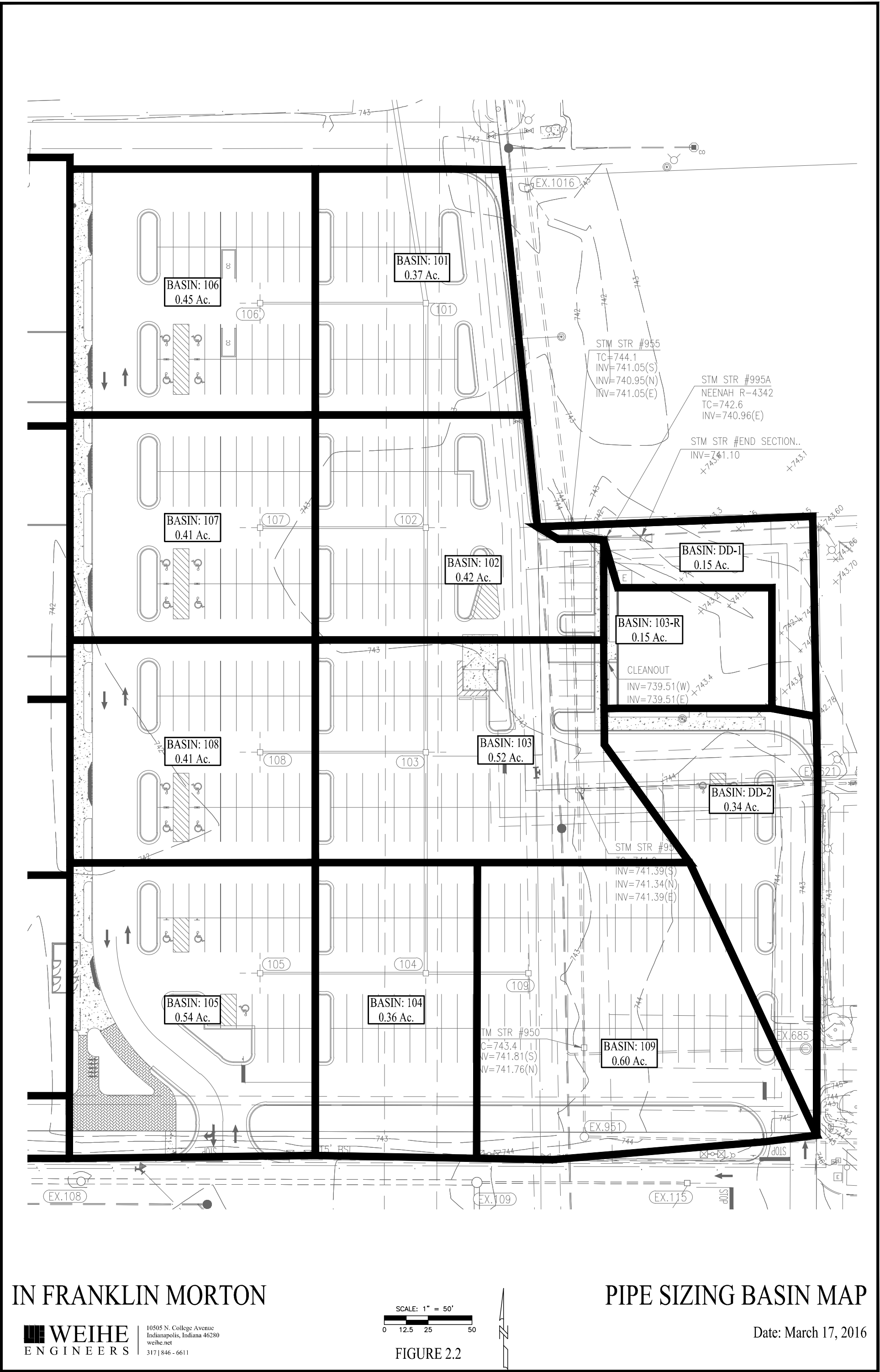


FIGURE 2.1

PIPE SIZING BASIN MAP

Date: March 17, 2016



## Post Developed Runoff Calculations

|                     |                    |  |  |
|---------------------|--------------------|--|--|
| <b>Project:</b>     | IN Franklin Morton |  |  |
| <b>Date:</b>        | March 16, 2016     |  |  |
| <b>Job No:</b>      | w15-0351           |  |  |
| <b>Checked By:</b>  | ATM                |  |  |
| <b>Prepared By:</b> | ATM                |  |  |

| <b>BASIN:</b>        | <b>100</b> | <b>END SECTION</b> |                |                   |
|----------------------|------------|--------------------|----------------|-------------------|
| Cover type           | Area (SF)  | Area (Ac.)         | C              | Misc. Information |
| Impervious, Pavement | 0          | 0.00               | 0.85           |                   |
| Impervious, Roof     | 0          | 0.00               | 0.90           |                   |
| Pervious, Grass      | 0          | 0.00               | 0.20           |                   |
| <b>TOTAL=</b>        | <b>0</b>   | <b>0.00</b>        | <b>#DIV/0!</b> |                   |

| <b>BASIN:</b>        | <b>101</b>   |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 16115        | 0.37        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>16115</b> | <b>0.37</b> | <b>0.85</b> |                   |

| <b>BASIN:</b>        | <b>102</b>   |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 18295        | 0.42        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>18295</b> | <b>0.42</b> | <b>0.85</b> |                   |

| <b>BASIN:</b>        | <b>103</b>   |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 22650        | 0.52        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>22650</b> | <b>0.52</b> | <b>0.85</b> |                   |

| <b>BASIN:</b>        | <b>104</b>   |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 15680        | 0.36        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>15680</b> | <b>0.36</b> | <b>0.85</b> |                   |

| <b>BASIN:</b>        | <b>105</b>   |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 23525        | 0.54        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>23525</b> | <b>0.54</b> | <b>0.85</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>106</b>   |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 19605        | 0.45        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>19605</b> | <b>0.45</b> | <b>0.85</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>107</b>   |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 17860        | 0.41        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>17860</b> | <b>0.41</b> | <b>0.85</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>108</b>   |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 17860        | 0.41        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>17860</b> | <b>0.41</b> | <b>0.85</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>109</b>   |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 26135        | 0.60        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>26135</b> | <b>0.60</b> | <b>0.85</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>103-R</b> |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 0            | 0.00        | 0.85        |                   |
| Impervious, Roof     | 6535         | 0.15        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>6535</b>  | <b>0.15</b> | <b>0.90</b> |                   |

|                      |            |                    |                |                   |
|----------------------|------------|--------------------|----------------|-------------------|
| <b>BASIN:</b>        | <b>200</b> | <b>END SECTION</b> |                |                   |
| Cover type           | Area (SF)  | Area (Ac.)         | C              | Misc. Information |
| Impervious, Pavement | 0          | 0.00               | 0.85           |                   |
| Impervious, Roof     | 0          | 0.00               | 0.90           |                   |
| Pervious, Grass      | 0          | 0.00               | 0.20           |                   |
| <b>TOTAL=</b>        | <b>0</b>   | <b>0.00</b>        | <b>#DIV/0!</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>201</b>   |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 13500        | 0.31        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>13500</b> | <b>0.31</b> | <b>0.85</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>202</b>   |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 17860        | 0.41        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>17860</b> | <b>0.41</b> | <b>0.85</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>203</b>   |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 13505        | 0.31        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>13505</b> | <b>0.31</b> | <b>0.85</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>204</b>   |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 23525        | 0.54        | 0.85        |                   |
| Impervious, Roof     | 0            | 0.00        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>23525</b> | <b>0.54</b> | <b>0.85</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>201-R</b> |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 0            | 0.00        | 0.85        |                   |
| Impervious, Roof     | 24830        | 0.57        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>24830</b> | <b>0.57</b> | <b>0.90</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>202-R</b> |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 0            | 0.00        | 0.85        |                   |
| Impervious, Roof     | 23090        | 0.53        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>23090</b> | <b>0.53</b> | <b>0.90</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>203-R</b> |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 0            | 0.00        | 0.85        |                   |
| Impervious, Roof     | 16985        | 0.39        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>16985</b> | <b>0.39</b> | <b>0.90</b> |                   |

|                      |              |             |             |                   |
|----------------------|--------------|-------------|-------------|-------------------|
| <b>BASIN:</b>        | <b>204-R</b> |             |             |                   |
| Cover type           | Area (SF)    | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 0            | 0.00        | 0.85        |                   |
| Impervious, Roof     | 20910        | 0.48        | 0.90        |                   |
| Pervious, Grass      | 0            | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>20910</b> | <b>0.48</b> | <b>0.90</b> |                   |

| <b>BASIN:</b>        | <b>201 COMBINED</b> |             |             |                   |
|----------------------|---------------------|-------------|-------------|-------------------|
| Cover type           | Area (SF)           | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 13500               | 0.31        | 0.85        |                   |
| Impervious, Roof     | 24830               | 0.57        | 0.90        |                   |
| Pervious, Grass      | 0                   | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>38330</b>        | <b>0.88</b> | <b>0.88</b> |                   |

| <b>BASIN:</b>        | <b>202 COMBINED</b> |             |             |                   |
|----------------------|---------------------|-------------|-------------|-------------------|
| Cover type           | Area (SF)           | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 17860               | 0.41        | 0.85        |                   |
| Impervious, Roof     | 23090               | 0.53        | 0.90        |                   |
| Pervious, Grass      | 0                   | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>40950</b>        | <b>0.94</b> | <b>0.88</b> |                   |

| <b>BASIN:</b>        | <b>203 COMBINED</b> |             |             |                   |
|----------------------|---------------------|-------------|-------------|-------------------|
| Cover type           | Area (SF)           | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 13505               | 0.31        | 0.85        |                   |
| Impervious, Roof     | 16985               | 0.39        | 0.90        |                   |
| Pervious, Grass      | 0                   | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>30490</b>        | <b>0.70</b> | <b>0.88</b> |                   |

| <b>BASIN:</b>        | <b>204 COMBINED</b> |             |             |                   |
|----------------------|---------------------|-------------|-------------|-------------------|
| Cover type           | Area (SF)           | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 23525               | 0.54        | 0.85        |                   |
| Impervious, Roof     | 20910               | 0.48        | 0.90        |                   |
| Pervious, Grass      | 0                   | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>44435</b>        | <b>1.02</b> | <b>0.87</b> |                   |

| <b>BASIN:</b>        | <b>103 COMBINED</b> |             |             |                   |
|----------------------|---------------------|-------------|-------------|-------------------|
| Cover type           | Area (SF)           | Area (Ac.)  | C           | Misc. Information |
| Impervious, Pavement | 22650               | 0.52        | 0.85        |                   |
| Impervious, Roof     | 6535                | 0.15        | 0.90        |                   |
| Pervious, Grass      | 0                   | 0.00        | 0.20        |                   |
| <b>TOTAL=</b>        | <b>29185</b>        | <b>0.67</b> | <b>0.86</b> |                   |

**Rational Method Flow  
Calculations**

|                     |                    |  |  |
|---------------------|--------------------|--|--|
| <b>Project:</b>     | IN Franklin Morton |  |  |
| <b>Date:</b>        | March 16, 2016     |  |  |
| <b>Job No:</b>      | w15-0351           |  |  |
| <b>Checked By:</b>  | ATM                |  |  |
| <b>Prepared By:</b> | ATM                |  |  |

| Basin | Q, (CFS) | Area (Ac.) | C-Value | Tc (Min.) | Intensity | Franklin IN IDF Curve |                  |
|-------|----------|------------|---------|-----------|-----------|-----------------------|------------------|
| 100   |          |            |         |           |           | <b>Duration</b>       | <b>Intensity</b> |
| 101   | 2.27     | 0.37       | 0.85    | 5.0       | 7.22      | 5                     | 7.22             |
| 102   | 2.58     | 0.42       | 0.85    | 5.0       | 7.22      | 10                    | 5.57             |
| 103   | 3.19     | 0.52       | 0.85    | 5.0       | 7.22      | 15                    | 4.57             |
| 104   | 2.21     | 0.36       | 0.85    | 5.0       | 7.22      | 30                    | 3.17             |
| 105   | 3.31     | 0.54       | 0.85    | 5.0       | 7.22      | 60                    | 2.02             |
| 106   | 2.76     | 0.45       | 0.85    | 5.0       | 7.22      |                       |                  |
| 107   | 2.52     | 0.41       | 0.85    | 5.0       | 7.22      |                       |                  |
| 108   | 2.52     | 0.41       | 0.85    | 5.0       | 7.22      |                       |                  |
| 109   | 3.68     | 0.60       | 0.85    | 5.0       | 7.22      |                       |                  |
| 200   |          |            |         |           |           |                       |                  |
| 201   | 1.90     | 0.31       | 0.85    | 5.0       | 7.22      |                       |                  |
| 202   | 2.52     | 0.41       | 0.85    | 5.0       | 7.22      |                       |                  |
| 203   | 1.90     | 0.31       | 0.85    | 5.0       | 7.22      |                       |                  |
| 204   | 3.31     | 0.54       | 0.85    | 5.0       | 7.22      |                       |                  |

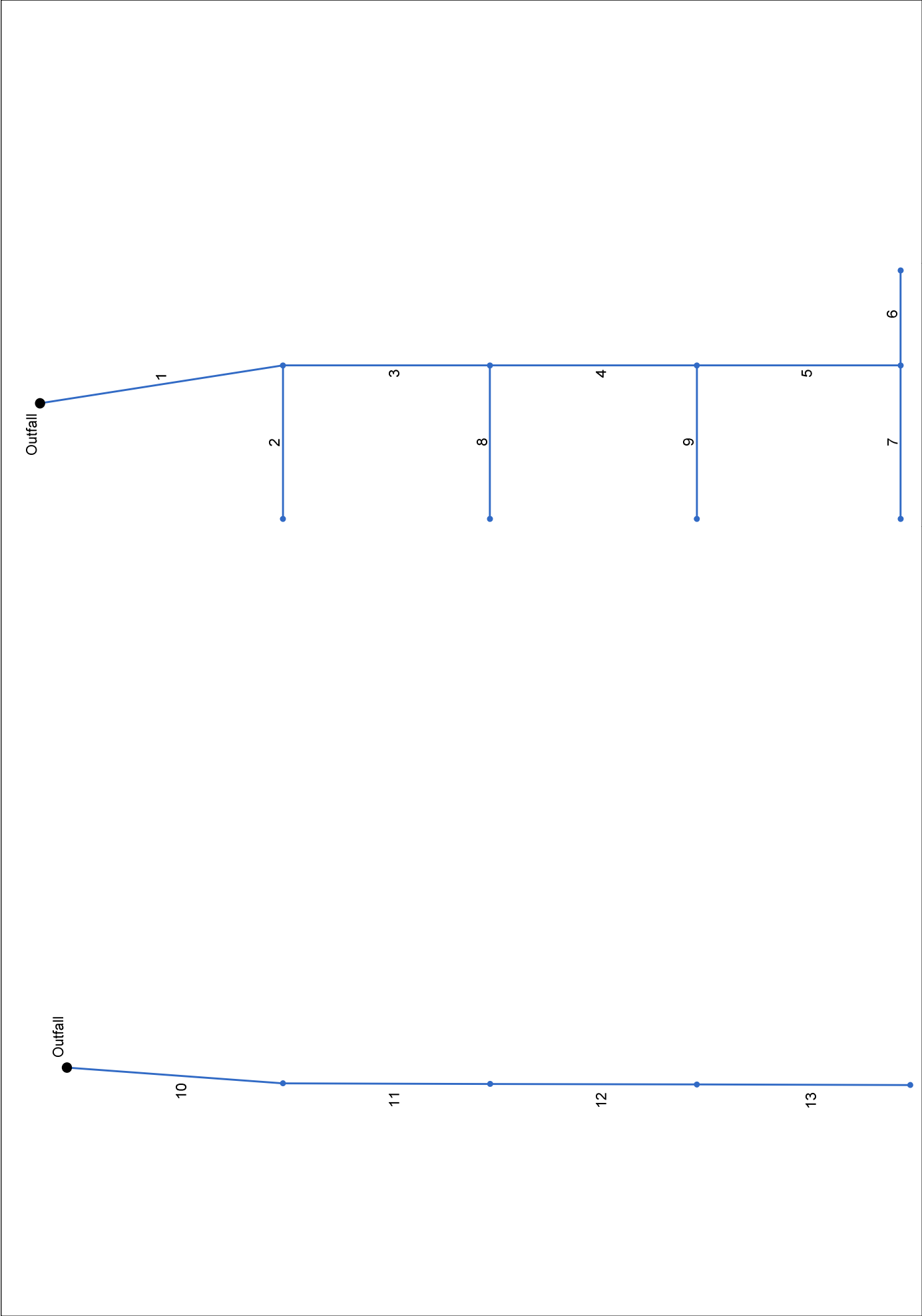
## Inlet Capacity Calculations

|                     |                    |  |  |
|---------------------|--------------------|--|--|
| <b>Project:</b>     | IN Franklin Morton |  |  |
| <b>Date:</b>        | March 16, 2016     |  |  |
| <b>Job No:</b>      | w15-0351           |  |  |
| <b>Checked By:</b>  | ATM                |  |  |
| <b>Prepared By:</b> | ATM                |  |  |

| Type of Casting  |                   | Area (ft <sup>2</sup> ) | Perimeter (ft) | Area (ft <sup>2</sup> ) | Perimeter (ft) |
|------------------|-------------------|-------------------------|----------------|-------------------------|----------------|
| Rolled Curb      | Neenah R-3501     | 1.60                    | 4.60           | 0.80                    | 2.30           |
| Chair Back Combo | Neenah R-3287-10V | 2.10                    | 5.50           | 1.05                    | 2.75           |
| Bee Hive         | Neenah R-4342     | 2.00                    | 6.00           | 1.00                    | 3.00           |
| Square Inlet     | Neenah R-3405     | 1.50                    | 7.90           | 0.75                    | 3.95           |
|                  |                   | 100% Opening            |                | 50% Clogged             |                |

| Inlet # | Q (cfs) | Type of Casting | Depth<br>(Based on weir<br>flow) | Cross Sectional<br>Slope (%) | Gutter Spread<br>(ft) weir* | Clear Lane<br>(Sag Only) | Remarks | Inlet Type |
|---------|---------|-----------------|----------------------------------|------------------------------|-----------------------------|--------------------------|---------|------------|
| 100     |         |                 |                                  |                              |                             |                          |         |            |
| 101     | 2.27    | Neenah R-3405   | 0.31                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 102     | 2.58    | Neenah R-3405   | 0.34                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 103     | 3.19    | Neenah R-3405   | 0.39                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 104     | 2.21    | Neenah R-3405   | 0.30                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 105     | 3.31    | Neenah R-3405   | 0.40                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 106     | 2.76    | Neenah R-3405   | 0.35                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 107     | 2.52    | Neenah R-3405   | 0.33                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 108     | 2.52    | Neenah R-3405   | 0.33                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 109     | 3.68    | Neenah R-3405   | 0.43                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 200     |         |                 |                                  |                              |                             |                          |         |            |
| 201     | 1.90    | Neenah R-3405   | 0.28                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 202     | 2.52    | Neenah R-3405   | 0.33                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 203     | 1.90    | Neenah R-3405   | 0.28                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |
| 204     | 3.31    | Neenah R-3405   | 0.40                             | N/A                          | N/A                         | N/A                      | <9"     | Single     |





|                       |                     |                 |
|-----------------------|---------------------|-----------------|
| Project File: STM.stm | Number of lines: 13 | Date: 3/16/2016 |
|-----------------------|---------------------|-----------------|

# Storm Sewer Inventory Report

| Line No.              | Alignment      |                  |                  |           | Flow Data     |                |                  |                  | Physical Data     |                     |                   |                |            |             |                  |                    | Line ID         |
|-----------------------|----------------|------------------|------------------|-----------|---------------|----------------|------------------|------------------|-------------------|---------------------|-------------------|----------------|------------|-------------|------------------|--------------------|-----------------|
|                       | Dnstr Line No. | Line Length (ft) | Defl angle (deg) | Junc Type | Known Q (cfs) | Drng Area (ac) | Runoff Coeff (C) | Inlet Time (min) | Invert El Dn (ft) | Line Slope (%)      | Invert El Up (ft) | Line Size (in) | Line Shape | N Value (n) | J-Loss Coeff (K) | Inlet/ Rim El (ft) |                 |
| 1                     | End            | 152              | 81               | MH        | 0.00          | 0.37           | 0.85             | 5.0              | 736.50            | 0.38                | 737.08            | 30             | Cir        | 0.013       | 1.00             | 742.95             | 101             |
| 2                     | 1              | 95               | 99               | MH        | 0.00          | 0.45           | 0.85             | 5.0              | 738.00            | 1.01                | 738.95            | 12             | Cir        | 0.013       | 1.00             | 744.20             | 106             |
| 3                     | 1              | 128              | 9                | MH        | 0.00          | 0.42           | 0.85             | 5.0              | 737.08            | 0.30                | 737.46            | 30             | Cir        | 0.013       | 1.00             | 742.95             | 102             |
| 4                     | 3              | 128              | 0                | MH        | 0.00          | 0.67           | 0.86             | 5.0              | 737.46            | 0.45                | 738.04            | 24             | Cir        | 0.013       | 1.00             | 742.95             | 103             |
| 5                     | 4              | 126              | 0                | MH        | 0.00          | 0.36           | 0.85             | 5.0              | 738.04            | 0.33                | 738.45            | 21             | Cir        | 0.013       | 1.00             | 742.95             | 104             |
| 6                     | 5              | 59               | -90              | MH        | 0.00          | 0.60           | 0.85             | 5.0              | 738.55            | 0.97                | 739.12            | 15             | Cir        | 0.013       | 1.00             | 742.75             | 109             |
| 7                     | 5              | 94               | 90               | MH        | 0.00          | 0.54           | 0.85             | 5.0              | 738.55            | 1.01                | 739.50            | 12             | Cir        | 0.013       | 1.00             | 744.20             | 105             |
| 8                     | 3              | 95               | 90               | MH        | 0.00          | 0.41           | 0.85             | 5.0              | 738.50            | 1.01                | 739.45            | 12             | Cir        | 0.013       | 1.00             | 744.20             | 107             |
| 9                     | 4              | 95               | 90               | MH        | 0.00          | 0.41           | 0.85             | 5.0              | 738.17            | 1.01                | 739.12            | 12             | Cir        | 0.013       | 1.00             | 744.20             | 108             |
| 10                    | End            | 134              | 94               | MH        | 0.00          | 0.88           | 0.88             | 5.0              | 736.00            | 0.30                | 736.40            | 30             | Cir        | 0.013       | 0.15             | 742.40             | 201             |
| 11                    | 10             | 128              | -4               | MH        | 0.00          | 0.94           | 0.88             | 5.0              | 736.66            | 0.50                | 737.30            | 24             | Cir        | 0.013       | 0.15             | 742.40             | 202             |
| 12                    | 11             | 128              | 0                | MH        | 0.00          | 0.70           | 0.88             | 5.0              | 737.55            | 0.50                | 738.19            | 21             | Cir        | 0.013       | 0.15             | 742.40             | 203             |
| 13                    | 12             | 132              | 0                | MH        | 0.00          | 1.02           | 0.87             | 5.0              | 738.44            | 0.50                | 739.10            | 18             | Cir        | 0.013       | 1.00             | 742.40             | 204             |
| Project File: STM.stm |                |                  |                  |           |               |                |                  |                  |                   | Number of lines: 13 |                   |                |            |             |                  |                    | Date: 3/16/2016 |

# Storm Sewer Summary Report

| Line No.                                                        | Line ID | Flow rate (cfs) | Line Size (in) | Line shape | Line length (ft) | Invert EL Dn (ft) | Invert EL Up (ft) | Line Slope (%) | HGL Down (ft) | HGL Up (ft) | Minor loss (ft) | HGL Junct (ft) | Dns Line No. | Junction Type       |
|-----------------------------------------------------------------|---------|-----------------|----------------|------------|------------------|-------------------|-------------------|----------------|---------------|-------------|-----------------|----------------|--------------|---------------------|
| 1                                                               | 101     | 23.36           | 30             | Cir        | 152              | 736.50            | 737.08            | 0.381          | 738.14        | 739.06      | 0.49            | 739.55         | End          | Manhole             |
| 2                                                               | 106     | 2.76            | 12             | Cir        | 95               | 738.00            | 738.95            | 1.005          | 739.55*       | 740.12*     | 0.19            | 740.31         | 1            | Manhole             |
| 3                                                               | 102     | 19.39           | 30             | Cir        | 128              | 737.08            | 737.46            | 0.297          | 739.55        | 739.79      | 0.26            | 740.05         | 1            | Manhole             |
| 4                                                               | 103     | 15.04           | 24             | Cir        | 128              | 737.46            | 738.04            | 0.453          | 740.05*       | 740.62*     | 0.36            | 740.97         | 3            | Manhole             |
| 5                                                               | 104     | 9.00            | 21             | Cir        | 126              | 738.04            | 738.45            | 0.325          | 740.97*       | 741.38*     | 0.22            | 741.60         | 4            | Manhole             |
| 6                                                               | 109     | 3.68            | 15             | Cir        | 59               | 738.55            | 739.12            | 0.974          | 741.60*       | 741.79*     | 0.14            | 741.93         | 5            | Manhole             |
| 7                                                               | 105     | 3.31            | 12             | Cir        | 94               | 738.55            | 739.50            | 1.005          | 741.60*       | 742.41*     | 0.28            | 742.69         | 5            | Manhole             |
| 8                                                               | 107     | 2.51            | 12             | Cir        | 95               | 738.50            | 739.45            | 1.005          | 740.05*       | 740.52*     | 0.16            | 740.68         | 3            | Manhole             |
| 9                                                               | 108     | 2.51            | 12             | Cir        | 95               | 738.17            | 739.12            | 1.005          | 740.97*       | 741.44*     | 0.16            | 741.60         | 4            | Manhole             |
| 10                                                              | 201     | 20.57           | 30             | Cir        | 134              | 736.00            | 736.40            | 0.298          | 737.54        | 738.33      | 0.06            | 738.39         | End          | Manhole             |
| 11                                                              | 202     | 15.80           | 24             | Cir        | 128              | 736.66            | 737.30            | 0.500          | 738.39        | 738.95      | 0.08            | 739.02         | 10           | Manhole             |
| 12                                                              | 203     | 10.47           | 21             | Cir        | 128              | 737.55            | 738.19            | 0.500          | 739.02        | 739.54      | 0.06            | 739.61         | 11           | Manhole             |
| 13                                                              | 204     | 6.40            | 18             | Cir        | 132              | 738.44            | 739.10            | 0.500          | 739.61        | 740.15      | 0.36            | 740.52         | 12           | Manhole             |
| Project File: STM.stm                                           |         |                 |                |            |                  |                   |                   |                |               |             |                 |                |              | Run Date: 3/16/2016 |
| Number of lines: 13                                             |         |                 |                |            |                  |                   |                   |                |               |             |                 |                |              |                     |
| NOTES: Return period = 10 Yrs. ; *Surcharged (HGL above crown). |         |                 |                |            |                  |                   |                   |                |               |             |                 |                |              |                     |

## Storm Sewer Tabulation

| Station                                                                                                   |            | Len  | Drng Area |       | Rnoff<br>coeff | Area x C |       | Tc    |      | Rain<br>(l) | Total<br>flow       | Cap<br>full | Vel    | Pipe |                     | Invert Elev |        | HGL Elev |        | Grnd / Rim Elev |        | Line ID |
|-----------------------------------------------------------------------------------------------------------|------------|------|-----------|-------|----------------|----------|-------|-------|------|-------------|---------------------|-------------|--------|------|---------------------|-------------|--------|----------|--------|-----------------|--------|---------|
| Line                                                                                                      | To<br>Line | (ft) | Incr      | Total | (C)            | Incr     | Total | Inlet | Syst | (in/hr)     | (cfs)               | (cfs)       | (ft/s) | Size | Slope               | Dn          | Up     | Dn       | Up     | Dn              | Up     | (ft)    |
| 1                                                                                                         | End        | 152  | 0.37      | 4.23  | 0.85           | 0.31     | 3.60  | 5.0   | 6.9  | 6.5         | 23.36               | 25.33       | 6.21   | 30   | 0.38                | 736.50      | 737.08 | 738.14   | 739.06 | 738.15          | 742.95 | 101     |
| 2                                                                                                         | 1          | 95   | 0.45      | 0.45  | 0.85           | 0.38     | 0.38  | 5.0   | 5.0  | 7.2         | 2.76                | 3.57        | 3.51   | 12   | 1.01                | 738.00      | 738.95 | 739.55   | 740.12 | 742.95          | 744.20 | 106     |
| 3                                                                                                         | 1          | 128  | 0.42      | 3.41  | 0.85           | 0.36     | 2.91  | 5.0   | 6.4  | 6.7         | 19.39               | 22.35       | 4.01   | 30   | 0.30                | 737.08      | 737.46 | 739.55   | 739.79 | 742.95          | 742.95 | 102     |
| 4                                                                                                         | 3          | 128  | 0.67      | 2.58  | 0.86           | 0.58     | 2.20  | 5.0   | 5.9  | 6.8         | 15.04               | 15.22       | 4.79   | 24   | 0.45                | 737.46      | 738.04 | 740.05   | 740.62 | 742.95          | 742.95 | 103     |
| 5                                                                                                         | 4          | 126  | 0.36      | 1.50  | 0.85           | 0.31     | 1.28  | 5.0   | 5.4  | 7.1         | 9.00                | 9.04        | 3.74   | 21   | 0.33                | 738.04      | 738.45 | 740.97   | 741.38 | 742.95          | 742.95 | 104     |
| 6                                                                                                         | 5          | 59   | 0.60      | 0.60  | 0.85           | 0.51     | 0.51  | 5.0   | 5.0  | 7.2         | 3.68                | 6.37        | 3.00   | 15   | 0.97                | 738.55      | 739.12 | 741.60   | 741.79 | 742.95          | 742.75 | 109     |
| 7                                                                                                         | 5          | 94   | 0.54      | 0.54  | 0.85           | 0.46     | 0.46  | 5.0   | 5.0  | 7.2         | 3.31                | 3.57        | 4.21   | 12   | 1.01                | 738.55      | 739.50 | 741.60   | 742.41 | 742.95          | 744.20 | 105     |
| 8                                                                                                         | 3          | 95   | 0.41      | 0.41  | 0.85           | 0.35     | 0.35  | 5.0   | 5.0  | 7.2         | 2.51                | 3.57        | 3.20   | 12   | 1.01                | 738.50      | 739.45 | 740.05   | 740.52 | 742.95          | 744.20 | 107     |
| 9                                                                                                         | 4          | 95   | 0.41      | 0.41  | 0.85           | 0.35     | 0.35  | 5.0   | 5.0  | 7.2         | 2.51                | 3.57        | 3.20   | 12   | 1.01                | 738.17      | 739.12 | 740.97   | 741.44 | 742.95          | 744.20 | 108     |
| 10                                                                                                        | End        | 134  | 0.88      | 3.54  | 0.88           | 0.77     | 3.11  | 5.0   | 6.5  | 6.6         | 20.57               | 22.40       | 5.77   | 30   | 0.30                | 736.00      | 736.40 | 737.54   | 738.33 | 738.88          | 742.40 | 201     |
| 11                                                                                                        | 10         | 128  | 0.94      | 2.66  | 0.88           | 0.83     | 2.33  | 5.0   | 6.1  | 6.8         | 15.80               | 15.99       | 5.59   | 24   | 0.50                | 736.66      | 737.30 | 738.39   | 738.95 | 742.40          | 742.40 | 202     |
| 12                                                                                                        | 11         | 128  | 0.70      | 1.72  | 0.88           | 0.62     | 1.50  | 5.0   | 5.6  | 7.0         | 10.47               | 11.20       | 5.05   | 21   | 0.50                | 737.55      | 738.19 | 739.02   | 739.54 | 742.40          | 742.40 | 203     |
| 13                                                                                                        | 12         | 132  | 1.02      | 1.02  | 0.87           | 0.89     | 0.89  | 5.0   | 5.0  | 7.2         | 6.40                | 7.43        | 4.58   | 18   | 0.50                | 738.44      | 739.10 | 739.61   | 740.15 | 742.40          | 742.40 | 204     |
| Project File: STM.stm                                                                                     |            |      |           |       |                |          |       |       |      |             | Number of lines: 13 |             |        |      | Run Date: 3/16/2016 |             |        |          |        |                 |        |         |
| NOTES:Intensity = 54.67 / (Inlet time + 8.40) ^ 0.78 ; Return period =Yrs. 10 ; c = cir e = ellip b = box |            |      |           |       |                |          |       |       |      |             |                     |             |        |      |                     |             |        |          |        |                 |        |         |

# **APPENDIX**



# **STORMWATER TECHNICAL REPORT**

**For:**

## **Kroger Store J-979**

**Marketplace**

**970 North Morton Street  
Mallory Parkway and US 31  
Johnson County, Franklin, Indiana**

**Project #W14-0460**

**Prepared For:**

**The Kroger Company  
5960 Castleway West Drive  
Indianapolis, Indiana 46256  
317-579-8393**

**Prepared By: Andrew T. Miller, P.E.**

**Checked By: Brad Schoeff**

**Certified By: Andrew T. Miller, P.E.**

**Date:**

**12 February 2015**

**Revised:**

**5 March 2015**

**17 March 2015**

**26 August 2015**

Prepared For:  
Stormwater Technical Report  
**Kroger Store J-979**  
**Franklin, IN**

Project #W14.0460

## TABLE OF CONTENTS

- 1. Project Narrative**
  - a. Existing Conditions
  - b. Proposed Conditions
  - c. Water Quality
  - d. Location Maps
- 2. Pre Developed Calculations**
  - a. Basin Map
  - b. Supporting Calculations
  - c. ICPR Model
- 3. Post Developed Calculations**
  - a. Basin Map
  - b. Supporting Calculations
  - c. ICPR Model
- 4. Pipe Sizing Calculations**
  - a. Basin Map
  - b. Supporting Calculations
  - c. Hydroflow Models
  - d. Inlet Capacity
- 5. Water Quality Calculations**
  - a. Location Map
  - b. Supporting Calculations
- 6. Misc. Pond Calculation and Figures**

# **PROJECT NARRATIVE**



Prepared For:  
Stormwater Technical Report  
**Kroger Store J-979**  
Franklin, IN

Project #W14.0460

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## **Project Narrative:**

The Kroger Company is proposing to develop a Marketplace on an 11.3± acre tract of undeveloped land located approximately 0.1 miles west of the intersection of Mallory Parkway and US31 being situated north of Mallory Parkway. Refer to **Figure 1.1**.

The proposed development is on a site at a Latitude of N 39° 29' 20" and Longitude W 86° 04' 00", falling within Franklin Township. The site is generally located in the Northeast Quarter of Section 15, Township 12 North, and Range 4 East, Johnson County Indiana.

### **Floodzone:**

Based upon a scaled interpretation of the Flood Insurance Map, Panel 227 of 352, Map No.18081 C0227 E for Johnson County, Indiana, dated August 19, 2014 a majority of subject tract **IS** located within a Special Flood Hazard Area inundated by 100-year flood-Base Flood Elevation or Floodway Area in Zone AE. Refer to **Figure 1.2**.

There is currently a draft FIRM out for review which affects the subject tract. The biggest change is that more of the site is now within Zone AE. Refer to **Figure 1.3**.

### **Stormwater Design:**

The stormwater detention plan for the Kroger site will consist of one (1) Wet Detention Basin system that will store and release the sites stormwater runoff per the City of Franklin Subdivision Control Ordinance. Said basin will be a shared detention basin for the 22.1 acres of undeveloped land located north of Mallory Parkway. The Wet Detention Basin will connect into an existing storm sewer network that runs East to West along the North side of the property and drains into an existing regional detention basin. Said storm sewer will be upsized to handle the additional flow from the site. The ultimate discharge point for the site will be Canary Creek. Water Quality for the Kroger site will be met via the said Wet Detention Basin.

Modeling Note: The Pre and Post Developed calculations are for the Master Planned Wet Detention Basin. The Pipe Sizing will only refer to the Kroger storm system only. Future Developments will need to size their own pipes.

## **Pre-Developed Conditions:**

Aerial photography was used to illustrate the current land-use of the subject tract. Currently the subject tract is vacant and contains no structures on the 22.1± acres. The subject tract is adjoined by Commercial development on all sides and Mallory Parkway runs along the south side of the property. Refer to **Figure 1.4**.

The subject tract consists of the following soil types: Brookston and Crosby. A soil map has been included with this report. Curve numbers were assigned using existing land use in conjunction with soils mapping from the Natural Resource Conservation (NRCS). An abbreviated NRCS Soils Report can be found in **Section 1**.

Detailed topography from a survey prepared by Banning Engineering, in 2015 was used to determine the Pre-Developed Basin Map. In addition, LIDAR information from ISDP and verification shoots from Weihe Engineers, Inc. were used. The entire subject tract drains to the Canary Creek via storm sewers that run along the perimeter of the property.

### Master Detention Calculations:

A controlled basin was established per the limits of the proposed improvements. Said basin is 22.1 acres which will be used in the Pre-Developed and Post-Developed calculations. In general, the Pre-Developed site drains westerly towards Canary Creek but in general the site is fairly flat. There are existing storm sewers that run along all sides of the property which all outlet into the Regional Detention Basin located west of Canary Creek Drive and northwest of the subject tract. Below is a summary of the peak discharges from the On-site basin:

### Release Rates **Basin PRE:**

|                       |           |
|-----------------------|-----------|
| $Q_{2\text{yr}} =$    | 2.22 cfs  |
| $Q_{10\text{-yr}} =$  | 5.51 cfs  |
| $Q_{25\text{-yr}} =$  | 9.17 cfs  |
| $Q_{100\text{-yr}} =$ | 16.93 cfs |

### *Allowable Release Rate:*

Per Chapter 6.19 (General Drainage Standards) of the Franklin Subdivision Control Ordinance, the minimum allowable rate based on pre-developed conditions will have the following criteria:

|                                         |          |
|-----------------------------------------|----------|
| $Q_{10\text{post}} = Q_{2\text{pre}}$   | 2.22 cfs |
| $Q_{100\text{post}} = Q_{10\text{pre}}$ | 5.51 cfs |

### *Offsite Drainage:*

There is one (1) offsite drainage basin that will need to be conveyed through the site in the Post-Developed Conditions. A 15" culvert that drains a small portion of the Commercial Development to the East will be connected into the proposed storm sewer.

## Post-Developed Conditions:

Kroger is proposing to develop a Marketplace on 11.3± acre tract of undeveloped land located at northwest of the intersection between Mallory Parkway and US 31. The on-site site runoff will be conveyed to one (1) Wet Detention Basin with an ultimate discharge point into Canary Creek. As stated above, the Wet Detention Basin will be used a shared Detention basin for the entire 22.1 acres of undeveloped land located north of Mallory Parkway.

There will be three (3) drainage sheds used in the Post-Developed modeling. **Basin: ON** is an 11.3 acre basin for the proposed Kroger site. **Basin: Future** is an 8.6 acre basin for the future development. **Basin: Wet Det** is a 2.2 acre basin for the Wet Detention Basin. The proposed detention basin will discharge to the north through a flow-restricting outlet structure (Str.103). From the flow-restricting outlet structure, stormwater will release to the west into an existing storm system located on the north side of property and drain to a regional detention basin located west of Canary Creek Drive. Refer to **Figure 3.1**.

A Curve Number of 95 was used for all post-developed basins in the ICPR modeling. This Curve Number correlates to a Hydrologic Soil Group D for a Commercial development. Due to the large amount of impervious area, a time of concentration of 10 min will be assumed for the entire site. A tailwater of 739.5 was used for the Existing Detention Basin. This elevation was established based on the overflow weir into Canary Creek and being the worst case scenario.

The relevant ICPR input and output can be found in Section 3. The following table summarizes the computed 2-year, 10-year, 25-year, and 100-year peak/elevations run-off rates for the 24-hour event.

| <b><u>Release Rates Pond “1”:</u></b> |          | <b><u>WSE Pond “1”</u></b> |             |
|---------------------------------------|----------|----------------------------|-------------|
| Q <sub>2yr</sub> =                    | 1.74 cfs | 2-yr =                     | 739.52 feet |
| Q <sub>10-yr</sub> =                  | 2.11 cfs | 10-yr =                    | 740.76 feet |
| Q <sub>25-yr</sub> =                  | 3.29 cfs | 25-yr =                    | 741.28 feet |
| Q <sub>100-yr</sub> =                 | 4.97 cfs | 100-yr =                   | 741.97 feet |

### **Wet Detention Basin:**

The detention basin will have a Normal Pool elevation of 735.5 and a 30' wide emergency overflow weir set at 742.0.

It should be noted that due to the site having to be raised above the BFE, some of the perimeter drainage will be allowed to drain off-site to existing storm infrastructure as it currently does today. Except for a small portion of the access drives, all proposed impervious area will be routed through the proposed storm sewers.

### **Storm Sewers**

The storm sewer system is designed to convey stormwater at a minimum velocity of 2.5 feet/second through reinforced concrete pipes while maintaining a hydraulic grade line elevation below the top of casting during a 10-year storm event. A runoff coefficient of 0.85 was assumed for all drainage basins. Due to the large amount of impervious area, a time of concentration of 5 min will be assumed for the entire site. Refer to **Section 4** for the pipe and inlet sizing calculations and **Figure 4.1-4.2** for the Pipe Sizing Basin Maps.

It should be noted that the roof drains were sized assuming a runoff coefficient of 0.90 and a time of concentration of 5 min. A 10" drain at 1% has a capacity of 2.4 cfs and an 8" drain at 1.5% has a capacity of 1.6 cfs. The largest acreage draining to 10" drain is 0.26 acres (1.7 cfs) and the largest acreage draining to an 8" drain is 0.25 acres (1.6 cfs).

## **Water Quality:**

Kroger will use utilize a Wet Detention Basin to meet the Water Quality requirements as described in the Drainage Standards. Said basin is located at the north end of the 22.1 acres of undeveloped land and will provide Water Quality for the entire Kroger site and all future developments.

The Post-Developed model was utilized to analyze the Water Quality requirements based on described requirements below:

- Said detention system shall detain, for over 24 hours after peak run-off from a 24-hour storm, at least 20% of the run-off from either a 1-1/4 inch storm or 1/2 inch of direct runoff, whichever is greater.

Volume Based on 1/2 inch of direct runoff:

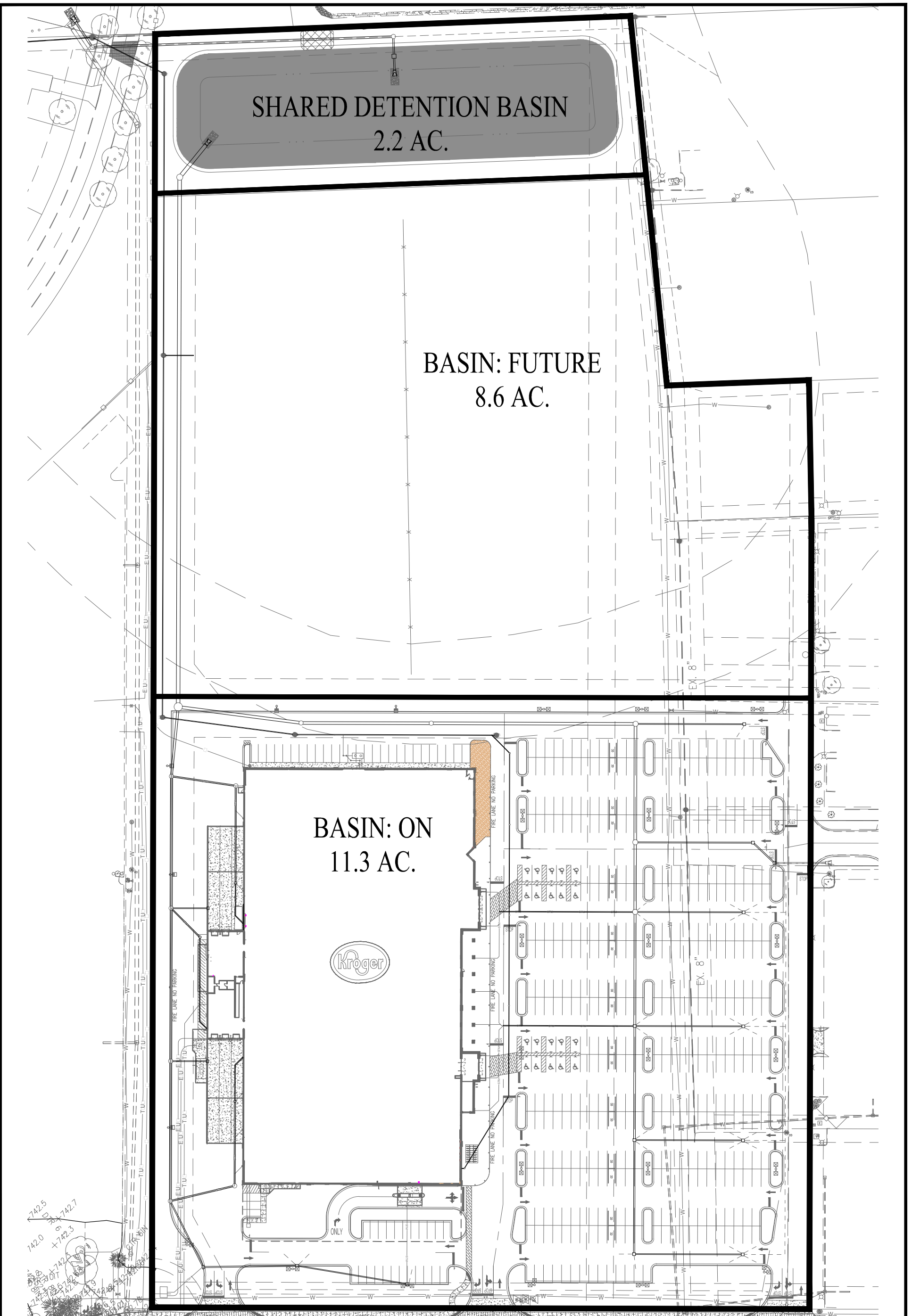
- Area: 22.1 acres (96,2675 square feet)
- Volume: 40,110 cubic feet of storage required

Volume Based on 1-1/4 inch storm

- Total Volume Stored: 42,675 cubic feet
- Total Volume at 24 hours from peak: 25,130 cubic feet
- It should be noted, that this simulation was ran without a tailwater condition.

The controlling parameter will be the 1-1/4 inch storm and said model detention was designed based on said requirement. A 4" orifice has been set in the outlet control structure at an elevation of 735.5 to allow for at least 20% of the run-off to remain for over 24 hours after peak run-off.

# **POST-DEVELOPED CALCULATIONS**



## KROGER - FRANKLIN, IN



10505 N. College Avenue  
Indianapolis, Indiana 46280  
weihe.net  
317 | 846 - 6611

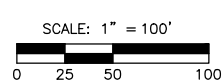


FIGURE 3.1

## POST DEVELOPED BASIN MAP

Date: August 26, 2015

## Post Developed Runoff Calculations

|                     |                       |  |  |
|---------------------|-----------------------|--|--|
| <b>Project:</b>     | Kroger - Franklin, IN |  |  |
| <b>Date:</b>        | March 18, 2015        |  |  |
| <b>Job No:</b>      | W14-0460              |  |  |
| <b>Checked By:</b>  | atm                   |  |  |
| <b>Prepared By:</b> | atm                   |  |  |

|               |                         |           |           |            |                   |
|---------------|-------------------------|-----------|-----------|------------|-------------------|
| <b>BASIN:</b> | <b>ON</b>               |           |           |            |                   |
| Soil Group    | Cover type              | CN        | Area (SF) | Area (Ac.) | Misc. Information |
|               | Commerical and Business | 95        | 490050    | 11.25      |                   |
|               |                         |           |           |            |                   |
|               |                         |           |           |            |                   |
|               |                         |           |           |            |                   |
|               | <b>TOTAL=</b>           | <b>95</b> | 490050    | 11.25      |                   |

|               |                         |           |           |            |                   |
|---------------|-------------------------|-----------|-----------|------------|-------------------|
| <b>BASIN:</b> | <b>FUTURE</b>           |           |           |            |                   |
| Soil Group    | Cover type              | CN        | Area (SF) | Area (Ac.) | Misc. Information |
|               | Commerical and Business | 95        | 374616    | 8.60       |                   |
|               |                         |           |           |            |                   |
|               |                         |           |           |            |                   |
|               |                         |           |           |            |                   |
|               | <b>TOTAL=</b>           | <b>95</b> | 374616    | 8.60       |                   |

|               |                        |           |           |            |                   |
|---------------|------------------------|-----------|-----------|------------|-------------------|
| <b>BASIN:</b> | <b>DET BASIN</b>       |           |           |            |                   |
| Soil Group    | Cover type             | CN        | Area (SF) | Area (Ac.) | Misc. Information |
|               | Impervious Area, Water | 98        | 32455     | 0.75       |                   |
| D             | Urban Area, Open Space | 80        | 63165     | 1.45       |                   |
|               |                        |           |           |            |                   |
|               |                        |           |           |            |                   |
|               | <b>TOTAL=</b>          | <b>86</b> | 95620     | 2.20       |                   |



Nodes

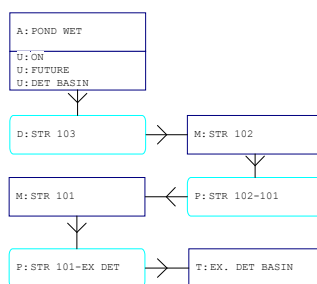
A Stage/Area  
 V Stage/Volume  
 T Time/Stage  
 M Manhole

Basins

O Overland Flow  
 U SCS Unit CN  
 S SBUH CN  
 Y SCS Unit GA  
 Z SBUH GA

Links

P Pipe  
 W Weir  
 C Channel  
 D Drop Structure  
 B Bridge  
 R Rating Curve  
 H Breach  
 E Percolation  
 F Filter  
 X Exfil Trench



=====

Basins

=====

Name: DET BASIN                      Node: POND WET                      Status: Onsite  
Group: BASE                            Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484                      Peaking Factor: 484.0  
Rainfall File:                              Storm Duration(hrs): 0.00  
Rainfall Amount(in): 0.000                      Time of Conc(min): 10.00  
Area(ac): 2.200                              Time Shift(hrs): 0.00  
Curve Number: 86.00                      Max Allowable Q(cfs): 999999.000  
DCIA(%): 0.00

-----

Name: FUTURE                              Node: POND WET                      Status: Onsite  
Group: BASE                            Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484                      Peaking Factor: 484.0  
Rainfall File:                              Storm Duration(hrs): 0.00  
Rainfall Amount(in): 0.000                      Time of Conc(min): 15.00  
Area(ac): 8.600                              Time Shift(hrs): 0.00  
Curve Number: 95.00                      Max Allowable Q(cfs): 999999.000  
DCIA(%): 0.00

-----

Name: ON                                      Node: POND WET                      Status: Onsite  
Group: BASE                            Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484                      Peaking Factor: 484.0  
Rainfall File:                              Storm Duration(hrs): 0.00  
Rainfall Amount(in): 0.000                      Time of Conc(min): 15.00  
Area(ac): 11.300                              Time Shift(hrs): 0.00  
Curve Number: 95.00                      Max Allowable Q(cfs): 999999.000  
DCIA(%): 0.00

=====

Nodes

=====

Name: EX. DET BASIN                      Base Flow(cfs): 0.000                      Init Stage(ft): 734.500  
Group: BASE                              Warn Stage(ft): 743.500  
Type: Time/Stage

| Time(hrs) | Stage(ft) |
|-----------|-----------|
| 0.00      | 734.000   |
| 12.00     | 739.500   |
| 24.00     | 734.000   |

-----

Name: POND WET                              Base Flow(cfs): 0.000                      Init Stage(ft): 735.500  
Group: BASE                              Warn Stage(ft): 742.000  
Type: Stage/Area

| Stage(ft) | Area(ac) |
|-----------|----------|
| 735.500   | 0.7500   |
| 742.000   | 1.4000   |

-----

Name: STR 101                              Base Flow(cfs): 0.000                      Init Stage(ft): 734.600  
Group: BASE                              Plunge Factor: 1.00                      Warn Stage(ft): 744.090  
Type: Manhole, Flat Floor

| Stage(ft) | Area(ac) |
|-----------|----------|
| 734.600   | 0.0002   |
| 744.090   | 0.0002   |

```

-----
Name: STR 102          Base Flow(cfs): 0.000          Init Stage(ft): 735.290
Group: BASE           Plunge Factor: 1.00             Warn Stage(ft): 743.380
Type: Manhole, Flat Floor

```

```

-----
Stage(ft)      Area(ac)
-----
735.290        0.0002
743.380        0.0002

```

==== Pipes =====

```

Name: STR 101-EX DET    From Node: STR 101          Length(ft): 33.00
Group: BASE             To Node: EX. DET BASIN          Count: 1
                        Friction Equation: Automatic
                        Solution Algorithm: Most Restrictive
                        Flow: Both
UPSTREAM                DOWNSTREAM
Geometry: Circular      Circular
Span(in): 24.00         24.00
Rise(in): 24.00         24.00
Invert(ft): 734.600     734.500
Manning's N: 0.012000   0.012000
Top Clip(in): 0.000     0.000
Bot Clip(in): 0.000     0.000
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Stabilizer Option: None

```

Upstream FHWA Inlet Edge Description:  
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:  
Circular Concrete: Square edge w/ headwall

```

-----
Name: STR 102-101      From Node: STR 102          Length(ft): 333.00
Group: BASE            To Node: STR 101          Count: 1
                        Friction Equation: Automatic
                        Solution Algorithm: Most Restrictive
                        Flow: Both
UPSTREAM                DOWNSTREAM
Geometry: Circular      Circular
Span(in): 24.00         24.00
Rise(in): 24.00         24.00
Invert(ft): 735.290     734.600
Manning's N: 0.012000   0.012000
Top Clip(in): 0.000     0.000
Bot Clip(in): 0.000     0.000
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Stabilizer Option: None

```

Upstream FHWA Inlet Edge Description:  
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:  
Circular Concrete: Square edge w/ headwall

==== Drop Structures =====

```

Name: STR 103          From Node: POND WET          Length(ft): 38.00
Group: BASE            To Node: STR 102          Count: 1
                        Friction Equation: Automatic
                        Solution Algorithm: Most Restrictive
                        Flow: Both
UPSTREAM                DOWNSTREAM
Geometry: Circular      Circular
Span(in): 21.00         21.00
Rise(in): 21.00         21.00
Invert(ft): 735.500     735.290
Manning's N: 0.012000   0.012000
Top Clip(in): 0.000     0.000
Bot Clip(in): 0.000     0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 1.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Solution Incs: 10

```

Upstream FHWA Inlet Edge Description:  
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:

Circular Concrete: Square edge w/ headwall

\*\*\* Weir 1 of 3 for Drop Structure STR 103 \*\*\*

|                       |                           |
|-----------------------|---------------------------|
| Count: 1              | Bottom Clip(in): 0.000    |
| Type: Vertical: Mavis | Top Clip(in): 0.000       |
| Flow: Both            | Weir Disc Coef: 3.200     |
| Geometry: Circular    | Orifice Disc Coef: 0.600  |
| Span(in): 5.00        | Invert(ft): 737.100       |
| Rise(in): 5.00        | Control Elev(ft): 737.100 |

TABLE

\*\*\* Weir 2 of 3 for Drop Structure STR 103 \*\*\*

|                       |                           |
|-----------------------|---------------------------|
| Count: 1              | Bottom Clip(in): 0.000    |
| Type: Vertical: Mavis | Top Clip(in): 0.000       |
| Flow: Both            | Weir Disc Coef: 3.200     |
| Geometry: Circular    | Orifice Disc Coef: 0.600  |
| Span(in): 4.00        | Invert(ft): 735.500       |
| Rise(in): 4.00        | Control Elev(ft): 735.500 |

TABLE

\*\*\* Weir 3 of 3 for Drop Structure STR 103 \*\*\*

|                       |                           |
|-----------------------|---------------------------|
| Count: 1              | Bottom Clip(in): 0.000    |
| Type: Vertical: Mavis | Top Clip(in): 0.000       |
| Flow: Both            | Weir Disc Coef: 3.200     |
| Geometry: Rectangular | Orifice Disc Coef: 0.600  |
| Span(in): 12.00       | Invert(ft): 740.800       |
| Rise(in): 7.00        | Control Elev(ft): 740.800 |

TABLE

==== Hydrology Simulations =====

Name: 100Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-12H.R32  
Override Defaults: Yes  
Storm Duration(hrs): 12.00  
Rainfall File: Huff II - 50%  
Rainfall Amount(in): 5.36

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

Name: 100Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-1H.R32  
Override Defaults: Yes  
Storm Duration(hrs): 1.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.01

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

Name: 100Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-24H.R32  
Override Defaults: Yes  
Storm Duration(hrs): 24.00  
Rainfall File: Huff III - 50%  
Rainfall Amount(in): 5.87

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

Name: 100Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-2H.R32  
Override Defaults: Yes

---

Storm Duration(hrs): 2.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.65

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 100Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-3H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 3.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.93

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 100Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-6H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 6.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 4.76

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 10Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-12H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 12.00  
Rainfall File: Huff II - 50%  
Rainfall Amount(in): 3.52

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 10Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-1H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 1.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.02

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 10Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-24H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 24.00  
Rainfall File: Huff III - 50%  
Rainfall Amount(in): 4.08

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 10Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-2H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 2.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.38

---

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 10Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-3H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 3.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.53

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 10Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-6H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 6.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.03

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 25Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-12H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 12.00  
Rainfall File: Huff II - 50%  
Rainfall Amount(in): 4.21

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 25Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-1H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 1.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.40

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 25Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-24H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 24.00  
Rainfall File: Huff III - 50%  
Rainfall Amount(in): 4.77

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 25Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-2H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 2.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.85

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

---

Name: 25Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-3H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 3.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.05

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 25Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-6H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 6.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.66

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 2Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-12H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 12.00  
Rainfall File: Huff II - 50%  
Rainfall Amount(in): 2.44

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 2Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-1H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 1.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.39

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 2Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-24H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 24.00  
Rainfall File: Huff III - 50%  
Rainfall Amount(in): 2.91

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 2Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-2H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 2.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.63

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 2Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-3H.R32

---

Override Defaults: Yes  
Storm Duration(hrs): 3.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.72

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 2Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-6H.R32

Override Defaults: Yes  
Storm Duration(hrs): 6.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.05

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: WQ-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-12H.R32

Override Defaults: Yes  
Storm Duration(hrs): 12.00  
Rainfall File: Huff II - 50%  
Rainfall Amount(in): 1.25

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: WQ-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-1H.R32

Override Defaults: Yes  
Storm Duration(hrs): 1.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.25

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: WQ-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-24H.R32

Override Defaults: Yes  
Storm Duration(hrs): 24.00  
Rainfall File: Huff III - 50%  
Rainfall Amount(in): 1.25

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 50.000    | 5.00           |

---

Name: WQ-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-2H.R32

Override Defaults: Yes  
Storm Duration(hrs): 2.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.25

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: WQ-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-3H.R32

Override Defaults: Yes  
Storm Duration(hrs): 3.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.25



---

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: WQ-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-6H.R32

Override Defaults: Yes  
Storm Duration(hrs): 6.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.25

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

==== Routing Simulations =====

Name: 100Y-12H                      Hydrology Sim: 100Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-12H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 30.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

Name: 100Y-1H                      Hydrology Sim: 100Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-1H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

Name: 100Y-24H                      Hydrology Sim: 100Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-24H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 30.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

-----  
Name: 100Y-2H                      Hydrology Sim: 100Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-2H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

-----  
Name: 100Y-3H                      Hydrology Sim: 100Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-3H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

-----  
Name: 100Y-6H                      Hydrology Sim: 100Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-6H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

Name: 10Y-12H                      Hydrology Sim: 10Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-12H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 30.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

Name: 10Y-1H                      Hydrology Sim: 10Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-1H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

Name: 10Y-24H                      Hydrology Sim: 10Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-24H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 30.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

Name: 10Y-2H                      Hydrology Sim: 10Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-2H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000

---

|                            |                              |
|----------------------------|------------------------------|
| Start Time(hrs): 0.000     | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000 | Max Calc Time(sec): 100.0000 |
| Boundary Stages:           | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 12.000    | 10.000         |

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

|                                                                                                                |                       |
|----------------------------------------------------------------------------------------------------------------|-----------------------|
| Name: 10Y-3H                                                                                                   | Hydrology Sim: 10Y-3H |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-3H.I32 |                       |

|                 |             |           |
|-----------------|-------------|-----------|
| Execute: Yes    | Restart: No | Patch: No |
| Alternative: No |             |           |

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 12.000    | 10.000         |

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

|                                                                                                                |                       |
|----------------------------------------------------------------------------------------------------------------|-----------------------|
| Name: 10Y-6H                                                                                                   | Hydrology Sim: 10Y-6H |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-6H.I32 |                       |

|                 |             |           |
|-----------------|-------------|-----------|
| Execute: Yes    | Restart: No | Patch: No |
| Alternative: No |             |           |

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 12.000    | 10.000         |

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

|                                                                                                                 |                        |
|-----------------------------------------------------------------------------------------------------------------|------------------------|
| Name: 25Y-12H                                                                                                   | Hydrology Sim: 25Y-12H |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-12H.I32 |                        |

|                 |             |           |
|-----------------|-------------|-----------|
| Execute: Yes    | Restart: No | Patch: No |
| Alternative: No |             |           |

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 30.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 30.000    | 10.000         |

---

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

Name: 25Y-1H                      Hydrology Sim: 25Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-1H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 12.000    | 10.000         |

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

Name: 25Y-24H                      Hydrology Sim: 25Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-24H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 30.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 30.000    | 10.000         |

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

Name: 25Y-2H                      Hydrology Sim: 25Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-2H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 12.000    | 10.000         |

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

Name: 25Y-3H                      Hydrology Sim: 25Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-3H.I32

Execute: Yes                      Restart: No                      Patch: No

---

Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: 25Y-6H                      Hydrology Sim: 25Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-6H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: 2Y-12H                      Hydrology Sim: 2Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-12H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 30.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: 2Y-1H                      Hydrology Sim: 2Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-1H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

---

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

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|                                                                                                                |                              |           |
|----------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| Name: 2Y-24H                                                                                                   | Hydrology Sim: 2Y-24H        |           |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-24H.I32 |                              |           |
| Execute: Yes                                                                                                   | Restart: No                  | Patch: No |
| Alternative: No                                                                                                |                              |           |
| Max Delta Z(ft): 1.00                                                                                          | Delta Z Factor: 0.10000      |           |
| Time Step Optimizer: 10.000                                                                                    |                              |           |
| Start Time(hrs): 0.000                                                                                         | End Time(hrs): 30.00         |           |
| Min Calc Time(sec): 1.0000                                                                                     | Max Calc Time(sec): 100.0000 |           |
| Boundary Stages:                                                                                               | Boundary Flows:              |           |

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| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

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|                                                                                                               |                              |           |
|---------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| Name: 2Y-2H                                                                                                   | Hydrology Sim: 2Y-2H         |           |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-2H.I32 |                              |           |
| Execute: Yes                                                                                                  | Restart: No                  | Patch: No |
| Alternative: No                                                                                               |                              |           |
| Max Delta Z(ft): 1.00                                                                                         | Delta Z Factor: 0.10000      |           |
| Time Step Optimizer: 10.000                                                                                   |                              |           |
| Start Time(hrs): 0.000                                                                                        | End Time(hrs): 12.00         |           |
| Min Calc Time(sec): 1.0000                                                                                    | Max Calc Time(sec): 100.0000 |           |
| Boundary Stages:                                                                                              | Boundary Flows:              |           |

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---

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

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|                                                                                                               |                              |           |
|---------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| Name: 2Y-3H                                                                                                   | Hydrology Sim: 2Y-3H         |           |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-3H.I32 |                              |           |
| Execute: Yes                                                                                                  | Restart: No                  | Patch: No |
| Alternative: No                                                                                               |                              |           |
| Max Delta Z(ft): 1.00                                                                                         | Delta Z Factor: 0.10000      |           |
| Time Step Optimizer: 10.000                                                                                   |                              |           |
| Start Time(hrs): 0.000                                                                                        | End Time(hrs): 12.00         |           |
| Min Calc Time(sec): 1.0000                                                                                    | Max Calc Time(sec): 100.0000 |           |
| Boundary Stages:                                                                                              | Boundary Flows:              |           |

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---

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

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---

Name: 2Y-6H                      Hydrology Sim: 2Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-6H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

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Name: WQ-12H                      Hydrology Sim: WQ-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-12H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 30.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: WQ-1H                      Hydrology Sim: WQ-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-1H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: WQ-24H                      Hydrology Sim: WQ-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-24H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 50.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000



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Boundary Stages:

Boundary Flows:

Time(hrs)      Print Inc(min)  
-----  
50.000          10.000  
  
Group          Run  
-----  
BASE          Yes

-----  
Name: WQ-2H                      Hydrology Sim: WQ-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-2H.I32

Execute: Yes              Restart: No              Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                  Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

Time(hrs)      Print Inc(min)  
-----  
12.000          10.000  
  
Group          Run  
-----  
BASE          Yes

-----  
Name: WQ-3H                      Hydrology Sim: WQ-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-3H.I32

Execute: Yes              Restart: No              Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                  Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

Time(hrs)      Print Inc(min)  
-----  
12.000          10.000  
  
Group          Run  
-----  
BASE          Yes

-----  
Name: WQ-6H                      Hydrology Sim: WQ-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-6H.I32

Execute: Yes              Restart: No              Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                  Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

Time(hrs)      Print Inc(min)  
-----  
12.000          10.000  
  
Group          Run  
-----

---

BASE                      Yes

=====  
==== Boundary Conditions =====  
=====

Name:                      Node: STR 102                      Type: Flow

| Time (hrs) | Flow (cfs) |
|------------|------------|
| 0.000      | 0.000      |
| 12.000     | 3.520      |
| 30.000     | 0.000      |

| Simulation | Basin     | Group | Time Max<br>hrs | Flow Max<br>cfs | Volume<br>in | Volume<br>ft3 |
|------------|-----------|-------|-----------------|-----------------|--------------|---------------|
| 100Y-12H   | DET BASIN | BASE  | 4.82            | 1.962           | 3.799        | 30340.236     |
| 100Y-1H    | DET BASIN | BASE  | 0.31            | 6.986           | 1.669        | 13327.054     |
| 100Y-24H   | DET BASIN | BASE  | 15.60           | 1.277           | 4.280        | 34181.843     |
| 100Y-2H    | DET BASIN | BASE  | 0.42            | 5.183           | 2.229        | 17797.860     |
| 100Y-3H    | DET BASIN | BASE  | 0.38            | 4.314           | 2.480        | 19802.562     |
| 100Y-6H    | DET BASIN | BASE  | 0.64            | 3.549           | 3.239        | 25869.028     |
| 10Y-12H    | DET BASIN | BASE  | 4.84            | 1.105           | 2.113        | 16876.121     |
| 10Y-1H     | DET BASIN | BASE  | 0.33            | 3.462           | 0.863        | 6891.971      |
| 10Y-24H    | DET BASIN | BASE  | 15.60           | 0.825           | 2.615        | 20886.137     |
| 10Y-2H     | DET BASIN | BASE  | 0.51            | 2.583           | 1.145        | 9141.140      |
| 10Y-3H     | DET BASIN | BASE  | 0.67            | 1.940           | 1.266        | 10112.780     |
| 10Y-6H     | DET BASIN | BASE  | 0.64            | 1.553           | 1.686        | 13463.934     |
| 25Y-12H    | DET BASIN | BASE  | 4.82            | 1.424           | 2.734        | 21830.466     |
| 25Y-1H     | DET BASIN | BASE  | 0.31            | 4.757           | 1.161        | 9269.640      |
| 25Y-24H    | DET BASIN | BASE  | 15.60           | 1.000           | 3.249        | 25942.863     |
| 25Y-2H     | DET BASIN | BASE  | 0.49            | 3.493           | 1.533        | 12239.859     |
| 25Y-3H     | DET BASIN | BASE  | 0.40            | 2.648           | 1.703        | 13601.022     |
| 25Y-6H     | DET BASIN | BASE  | 0.64            | 2.248           | 2.238        | 17869.013     |
| 2Y-12H     | DET BASIN | BASE  | 5.40            | 0.645           | 1.193        | 9527.635      |
| 2Y-1H      | DET BASIN | BASE  | 0.36            | 1.602           | 0.420        | 3356.141      |
| 2Y-24H     | DET BASIN | BASE  | 15.60           | 0.528           | 1.583        | 12645.777     |
| 2Y-2H      | DET BASIN | BASE  | 0.56            | 1.268           | 0.579        | 4627.701      |
| 2Y-3H      | DET BASIN | BASE  | 0.78            | 0.970           | 0.642        | 5130.843      |
| 2Y-6H      | DET BASIN | BASE  | 1.51            | 0.684           | 0.886        | 7074.300      |
| 100Y-12H   | FUTURE    | BASE  | 4.80            | 8.977           | 4.770        | 148907.944    |
| 100Y-1H    | FUTURE    | BASE  | 0.30            | 39.257          | 2.456        | 76667.040     |
| 100Y-24H   | FUTURE    | BASE  | 15.60           | 5.428           | 5.275        | 164685.798    |
| 100Y-2H    | FUTURE    | BASE  | 0.37            | 31.248          | 3.082        | 96224.112     |
| 100Y-3H    | FUTURE    | BASE  | 0.40            | 26.371          | 3.358        | 104816.936    |
| 100Y-6H    | FUTURE    | BASE  | 0.63            | 19.924          | 4.176        | 130375.219    |
| 10Y-12H    | FUTURE    | BASE  | 4.83            | 5.702           | 2.955        | 92241.181     |
| 10Y-1H     | FUTURE    | BASE  | 0.33            | 23.316          | 1.500        | 46823.423     |
| 10Y-24H    | FUTURE    | BASE  | 15.60           | 3.723           | 3.505        | 109426.594    |
| 10Y-2H     | FUTURE    | BASE  | 0.37            | 17.701          | 1.845        | 57592.156     |
| 10Y-3H     | FUTURE    | BASE  | 0.43            | 14.553          | 1.990        | 62111.871     |
| 10Y-6H     | FUTURE    | BASE  | 0.67            | 11.320          | 2.475        | 77275.977     |
| 25Y-12H    | FUTURE    | BASE  | 4.83            | 6.936           | 3.633        | 113426.268    |
| 25Y-1H     | FUTURE    | BASE  | 0.30            | 29.271          | 1.864        | 58193.822     |
| 25Y-24H    | FUTURE    | BASE  | 15.60           | 4.382           | 4.186        | 130683.034    |
| 25Y-2H     | FUTURE    | BASE  | 0.37            | 22.670          | 2.300        | 71801.966     |
| 25Y-3H     | FUTURE    | BASE  | 0.40            | 18.821          | 2.495        | 77885.082     |
| 25Y-6H     | FUTURE    | BASE  | 0.67            | 14.449          | 3.092        | 96530.676     |
| 2Y-12H     | FUTURE    | BASE  | 4.83            | 3.752           | 1.903        | 59398.070     |
| 2Y-1H      | FUTURE    | BASE  | 0.33            | 13.739          | 0.910        | 28413.119     |
| 2Y-24H     | FUTURE    | BASE  | 15.60           | 2.598           | 2.358        | 73624.541     |
| 2Y-2H      | FUTURE    | BASE  | 0.43            | 10.240          | 1.132        | 35337.419     |
| 2Y-3H      | FUTURE    | BASE  | 0.47            | 8.141           | 1.216        | 37966.283     |
| 2Y-6H      | FUTURE    | BASE  | 0.67            | 6.518           | 1.528        | 47715.757     |
| 100Y-12H   | ON        | BASE  | 4.80            | 11.796          | 4.770        | 195658.113    |
| 100Y-1H    | ON        | BASE  | 0.30            | 51.582          | 2.456        | 100736.925    |
| 100Y-24H   | ON        | BASE  | 15.60           | 7.133           | 5.275        | 216389.479    |
| 100Y-2H    | ON        | BASE  | 0.37            | 41.059          | 3.082        | 126434.008    |
| 100Y-3H    | ON        | BASE  | 0.40            | 34.650          | 3.358        | 137724.579    |
| 100Y-6H    | ON        | BASE  | 0.63            | 26.179          | 4.176        | 171306.974    |
| 10Y-12H    | ON        | BASE  | 4.83            | 7.493           | 2.955        | 121200.621    |
| 10Y-1H     | ON        | BASE  | 0.33            | 30.636          | 1.500        | 61523.800     |
| 10Y-24H    | ON        | BASE  | 15.60           | 4.892           | 3.505        | 143781.455    |
| 10Y-2H     | ON        | BASE  | 0.37            | 23.258          | 1.845        | 75673.415     |
| 10Y-3H     | ON        | BASE  | 0.43            | 19.122          | 1.990        | 81612.109     |
| 10Y-6H     | ON        | BASE  | 0.67            | 14.875          | 2.475        | 101537.040    |
| 25Y-12H    | ON        | BASE  | 4.83            | 9.114           | 3.633        | 149036.841    |
| 25Y-1H     | ON        | BASE  | 0.30            | 38.461          | 1.864        | 76463.975     |
| 25Y-24H    | ON        | BASE  | 15.60           | 5.758           | 4.186        | 171711.429    |
| 25Y-2H     | ON        | BASE  | 0.37            | 29.788          | 2.300        | 94344.444     |
| 25Y-3H     | ON        | BASE  | 0.40            | 24.730          | 2.495        | 102337.376    |
| 25Y-6H     | ON        | BASE  | 0.67            | 18.986          | 3.092        | 126836.819    |
| 2Y-12H     | ON        | BASE  | 4.83            | 4.930           | 1.903        | 78046.301     |
| 2Y-1H      | ON        | BASE  | 0.33            | 18.053          | 0.910        | 37333.516     |
| 2Y-24H     | ON        | BASE  | 15.60           | 3.414           | 2.358        | 96739.222     |
| 2Y-2H      | ON        | BASE  | 0.43            | 13.455          | 1.132        | 46431.726     |
| 2Y-3H      | ON        | BASE  | 0.47            | 10.696          | 1.216        | 49885.930     |
| 2Y-6H      | ON        | BASE  | 0.67            | 8.564           | 1.528        | 62696.285     |

|                               |               |               |              |              |
|-------------------------------|---------------|---------------|--------------|--------------|
| Name: DET BASIN               | FUTURE        | ON            | DET BASIN    | FUTURE       |
| Group: BASE                   | BASE          | BASE          | BASE         | BASE         |
| Simulation: 100Y-12H          | 100Y-12H      | 100Y-12H      | 100Y-1H      | 100Y-1H      |
| Node: POND WET                | POND WET      | POND WET      | POND WET     | POND WET     |
| Type: SCS                     | SCS           | SCS           | SCS          | SCS          |
| Unit Hydrograph: Uh484        | Uh484         | Uh484         | Uh484        | Uh484        |
| Peaking Factor: 484.0         | 484.0         | 484.0         | 484.0        | 484.0        |
| Spec Time Inc(min): 1.33      | 2.00          | 2.00          | 1.33         | 2.00         |
| Comp Time Inc(min): 1.33      | 2.00          | 2.00          | 1.33         | 2.00         |
| Rain File: Huff II - 50%      | Huff II - 50% | Huff II - 50% | Huff I - 50% | Huff I - 50% |
| Rain Amount(in): 5.360        | 5.360         | 5.360         | 3.010        | 3.010        |
| Duration(hrs): 12.00          | 12.00         | 12.00         | 1.00         | 1.00         |
| Status: Onsite                | Onsite        | Onsite        | Onsite       | Onsite       |
| TC(min): 10.00                | 15.00         | 15.00         | 10.00        | 15.00        |
| Time Shift(hrs): 0.00         | 0.00          | 0.00          | 0.00         | 0.00         |
| Area(ac): 2.200               | 8.600         | 11.300        | 2.200        | 8.600        |
| Vol of Unit Hyd(in): 1.001    | 1.000         | 1.000         | 1.001        | 1.000        |
| Curve Num: 86.000             | 95.000        | 95.000        | 86.000       | 95.000       |
| DCIA(%): 0.000                | 0.000         | 0.000         | 0.000        | 0.000        |
| Time Max(hrs): 4.82           | 4.80          | 4.80          | 0.31         | 0.30         |
| Flow Max(cfs): 1.962          | 8.977         | 11.796        | 6.986        | 39.257       |
| Runoff Volume(in): 3.799      | 4.770         | 4.770         | 1.669        | 2.456        |
| Runoff Volume(ft3): 30340.236 | 148907.944    | 195658.113    | 13327.054    | 76667.040    |

|                                |                |                |                |              |
|--------------------------------|----------------|----------------|----------------|--------------|
| Name: ON                       | DET BASIN      | FUTURE         | ON             | DET BASIN    |
| Group: BASE                    | BASE           | BASE           | BASE           | BASE         |
| Simulation: 100Y-1H            | 100Y-24H       | 100Y-24H       | 100Y-24H       | 100Y-2H      |
| Node: POND WET                 | POND WET       | POND WET       | POND WET       | POND WET     |
| Type: SCS                      | SCS            | SCS            | SCS            | SCS          |
| Unit Hydrograph: Uh484         | Uh484          | Uh484          | Uh484          | Uh484        |
| Peaking Factor: 484.0          | 484.0          | 484.0          | 484.0          | 484.0        |
| Spec Time Inc(min): 2.00       | 1.33           | 2.00           | 2.00           | 1.33         |
| Comp Time Inc(min): 2.00       | 1.33           | 2.00           | 2.00           | 1.33         |
| Rain File: Huff I - 50%        | Huff III - 50% | Huff III - 50% | Huff III - 50% | Huff I - 50% |
| Rain Amount(in): 3.010         | 5.870          | 5.870          | 5.870          | 3.650        |
| Duration(hrs): 1.00            | 24.00          | 24.00          | 24.00          | 2.00         |
| Status: Onsite                 | Onsite         | Onsite         | Onsite         | Onsite       |
| TC(min): 15.00                 | 10.00          | 15.00          | 15.00          | 10.00        |
| Time Shift(hrs): 0.00          | 0.00           | 0.00           | 0.00           | 0.00         |
| Area(ac): 11.300               | 2.200          | 8.600          | 11.300         | 2.200        |
| Vol of Unit Hyd(in): 1.000     | 1.001          | 1.000          | 1.000          | 1.001        |
| Curve Num: 95.000              | 86.000         | 95.000         | 95.000         | 86.000       |
| DCIA(%): 0.000                 | 0.000          | 0.000          | 0.000          | 0.000        |
| Time Max(hrs): 0.30            | 15.60          | 15.60          | 15.60          | 0.42         |
| Flow Max(cfs): 51.582          | 1.277          | 5.428          | 7.133          | 5.183        |
| Runoff Volume(in): 2.456       | 4.280          | 5.275          | 5.275          | 2.229        |
| Runoff Volume(ft3): 100736.925 | 34181.843      | 164685.798     | 216389.479     | 17797.860    |

|                               |              |              |              |              |
|-------------------------------|--------------|--------------|--------------|--------------|
| Name: FUTURE                  | ON           | DET BASIN    | FUTURE       | ON           |
| Group: BASE                   | BASE         | BASE         | BASE         | BASE         |
| Simulation: 100Y-2H           | 100Y-2H      | 100Y-3H      | 100Y-3H      | 100Y-3H      |
| Node: POND WET                | POND WET     | POND WET     | POND WET     | POND WET     |
| Type: SCS                     | SCS          | SCS          | SCS          | SCS          |
| Unit Hydrograph: Uh484        | Uh484        | Uh484        | Uh484        | Uh484        |
| Peaking Factor: 484.0         | 484.0        | 484.0        | 484.0        | 484.0        |
| Spec Time Inc(min): 2.00      | 2.00         | 1.33         | 2.00         | 2.00         |
| Comp Time Inc(min): 2.00      | 2.00         | 1.33         | 2.00         | 2.00         |
| Rain File: Huff I - 50%       | Huff I - 50% | Huff I - 50% | Huff I - 50% | Huff I - 50% |
| Rain Amount(in): 3.650        | 3.650        | 3.930        | 3.930        | 3.930        |
| Duration(hrs): 2.00           | 2.00         | 3.00         | 3.00         | 3.00         |
| Status: Onsite                | Onsite       | Onsite       | Onsite       | Onsite       |
| TC(min): 15.00                | 15.00        | 10.00        | 15.00        | 15.00        |
| Time Shift(hrs): 0.00         | 0.00         | 0.00         | 0.00         | 0.00         |
| Area(ac): 8.600               | 11.300       | 2.200        | 8.600        | 11.300       |
| Vol of Unit Hyd(in): 1.000    | 1.000        | 1.001        | 1.000        | 1.000        |
| Curve Num: 95.000             | 95.000       | 86.000       | 95.000       | 95.000       |
| DCIA(%): 0.000                | 0.000        | 0.000        | 0.000        | 0.000        |
| Time Max(hrs): 0.37           | 0.37         | 0.38         | 0.40         | 0.40         |
| Flow Max(cfs): 31.248         | 41.059       | 4.314        | 26.371       | 34.650       |
| Runoff Volume(in): 3.082      | 3.082        | 2.480        | 3.358        | 3.358        |
| Runoff Volume(ft3): 96224.112 | 126434.008   | 19802.562    | 104816.936   | 137724.579   |

|                        |          |          |           |          |
|------------------------|----------|----------|-----------|----------|
| Name: DET BASIN        | FUTURE   | ON       | DET BASIN | FUTURE   |
| Group: BASE            | BASE     | BASE     | BASE      | BASE     |
| Simulation: 100Y-6H    | 100Y-6H  | 100Y-6H  | 10Y-12H   | 10Y-12H  |
| Node: POND WET         | POND WET | POND WET | POND WET  | POND WET |
| Type: SCS              | SCS      | SCS      | SCS       | SCS      |
| Unit Hydrograph: Uh484 | Uh484    | Uh484    | Uh484     | Uh484    |
| Peaking Factor: 484.0  | 484.0    | 484.0    | 484.0     | 484.0    |

|                                |                |              |               |                |
|--------------------------------|----------------|--------------|---------------|----------------|
| Spec Time Inc(min): 1.33       | 2.00           | 2.00         | 1.33          | 2.00           |
| Comp Time Inc(min): 1.33       | 2.00           | 2.00         | 1.33          | 2.00           |
| Rain File: Huff I - 50%        | Huff I - 50%   | Huff I - 50% | Huff II - 50% | Huff II - 50%  |
| Rain Amount(in): 4.760         | 4.760          | 4.760        | 3.520         | 3.520          |
| Duration(hrs): 6.00            | 6.00           | 6.00         | 12.00         | 12.00          |
| Status: Onsite                 | Onsite         | Onsite       | Onsite        | Onsite         |
| TC(min): 10.00                 | 15.00          | 15.00        | 10.00         | 15.00          |
| Time Shift(hrs): 0.00          | 0.00           | 0.00         | 0.00          | 0.00           |
| Area(ac): 2.200                | 8.600          | 11.300       | 2.200         | 8.600          |
| Vol of Unit Hyd(in): 1.001     | 1.000          | 1.000        | 1.001         | 1.000          |
| Curve Num: 86.000              | 95.000         | 95.000       | 86.000        | 95.000         |
| DCIA(%): 0.000                 | 0.000          | 0.000        | 0.000         | 0.000          |
| Time Max(hrs): 0.64            | 0.63           | 0.63         | 4.84          | 4.83           |
| Flow Max(cfs): 3.549           | 19.924         | 26.179       | 1.105         | 5.702          |
| Runoff Volume(in): 3.239       | 4.176          | 4.176        | 2.113         | 2.955          |
| Runoff Volume(ft3): 25869.028  | 130375.219     | 171306.974   | 16876.121     | 92241.181      |
| Name: ON                       | DET BASIN      | FUTURE       | ON            | DET BASIN      |
| Group: BASE                    | BASE           | BASE         | BASE          | BASE           |
| Simulation: 10Y-12H            | 10Y-1H         | 10Y-1H       | 10Y-1H        | 10Y-24H        |
| Node: POND WET                 | POND WET       | POND WET     | POND WET      | POND WET       |
| Type: SCS                      | SCS            | SCS          | SCS           | SCS            |
| Unit Hydrograph: Uh484         | Uh484          | Uh484        | Uh484         | Uh484          |
| Peaking Factor: 484.0          | 484.0          | 484.0        | 484.0         | 484.0          |
| Spec Time Inc(min): 2.00       | 1.33           | 2.00         | 2.00          | 1.33           |
| Comp Time Inc(min): 2.00       | 1.33           | 2.00         | 2.00          | 1.33           |
| Rain File: Huff II - 50%       | Huff I - 50%   | Huff I - 50% | Huff I - 50%  | Huff III - 50% |
| Rain Amount(in): 3.520         | 2.020          | 2.020        | 2.020         | 4.080          |
| Duration(hrs): 12.00           | 1.00           | 1.00         | 1.00          | 24.00          |
| Status: Onsite                 | Onsite         | Onsite       | Onsite        | Onsite         |
| TC(min): 15.00                 | 10.00          | 15.00        | 15.00         | 10.00          |
| Time Shift(hrs): 0.00          | 0.00           | 0.00         | 0.00          | 0.00           |
| Area(ac): 11.300               | 2.200          | 8.600        | 11.300        | 2.200          |
| Vol of Unit Hyd(in): 1.000     | 1.001          | 1.000        | 1.000         | 1.001          |
| Curve Num: 95.000              | 86.000         | 95.000       | 95.000        | 86.000         |
| DCIA(%): 0.000                 | 0.000          | 0.000        | 0.000         | 0.000          |
| Time Max(hrs): 4.83            | 0.33           | 0.33         | 0.33          | 15.60          |
| Flow Max(cfs): 7.493           | 3.462          | 23.316       | 30.636        | 0.825          |
| Runoff Volume(in): 2.955       | 0.863          | 1.500        | 1.500         | 2.615          |
| Runoff Volume(ft3): 121200.621 | 6891.971       | 46823.423    | 61523.800     | 20886.137      |
| Name: FUTURE                   | ON             | DET BASIN    | FUTURE        | ON             |
| Group: BASE                    | BASE           | BASE         | BASE          | BASE           |
| Simulation: 10Y-24H            | 10Y-24H        | 10Y-2H       | 10Y-2H        | 10Y-2H         |
| Node: POND WET                 | POND WET       | POND WET     | POND WET      | POND WET       |
| Type: SCS                      | SCS            | SCS          | SCS           | SCS            |
| Unit Hydrograph: Uh484         | Uh484          | Uh484        | Uh484         | Uh484          |
| Peaking Factor: 484.0          | 484.0          | 484.0        | 484.0         | 484.0          |
| Spec Time Inc(min): 2.00       | 2.00           | 1.33         | 2.00          | 2.00           |
| Comp Time Inc(min): 2.00       | 2.00           | 1.33         | 2.00          | 2.00           |
| Rain File: Huff III - 50%      | Huff III - 50% | Huff I - 50% | Huff I - 50%  | Huff I - 50%   |
| Rain Amount(in): 4.080         | 4.080          | 2.380        | 2.380         | 2.380          |
| Duration(hrs): 24.00           | 24.00          | 2.00         | 2.00          | 2.00           |
| Status: Onsite                 | Onsite         | Onsite       | Onsite        | Onsite         |
| TC(min): 15.00                 | 15.00          | 10.00        | 15.00         | 15.00          |
| Time Shift(hrs): 0.00          | 0.00           | 0.00         | 0.00          | 0.00           |
| Area(ac): 8.600                | 11.300         | 2.200        | 8.600         | 11.300         |
| Vol of Unit Hyd(in): 1.000     | 1.000          | 1.001        | 1.000         | 1.000          |
| Curve Num: 95.000              | 95.000         | 86.000       | 95.000        | 95.000         |
| DCIA(%): 0.000                 | 0.000          | 0.000        | 0.000         | 0.000          |
| Time Max(hrs): 15.60           | 15.60          | 0.51         | 0.37          | 0.37           |
| Flow Max(cfs): 3.723           | 4.892          | 2.583        | 17.701        | 23.258         |
| Runoff Volume(in): 3.505       | 3.505          | 1.145        | 1.845         | 1.845          |
| Runoff Volume(ft3): 109426.594 | 143781.455     | 9141.140     | 57592.156     | 75673.415      |
| Name: DET BASIN                | FUTURE         | ON           | DET BASIN     | FUTURE         |
| Group: BASE                    | BASE           | BASE         | BASE          | BASE           |
| Simulation: 10Y-3H             | 10Y-3H         | 10Y-3H       | 10Y-6H        | 10Y-6H         |
| Node: POND WET                 | POND WET       | POND WET     | POND WET      | POND WET       |
| Type: SCS                      | SCS            | SCS          | SCS           | SCS            |
| Unit Hydrograph: Uh484         | Uh484          | Uh484        | Uh484         | Uh484          |
| Peaking Factor: 484.0          | 484.0          | 484.0        | 484.0         | 484.0          |
| Spec Time Inc(min): 1.33       | 2.00           | 2.00         | 1.33          | 2.00           |
| Comp Time Inc(min): 1.33       | 2.00           | 2.00         | 1.33          | 2.00           |
| Rain File: Huff I - 50%        | Huff I - 50%   | Huff I - 50% | Huff I - 50%  | Huff I - 50%   |
| Rain Amount(in): 2.530         | 2.530          | 2.530        | 3.030         | 3.030          |
| Duration(hrs): 3.00            | 3.00           | 3.00         | 6.00          | 6.00           |
| Status: Onsite                 | Onsite         | Onsite       | Onsite        | Onsite         |
| TC(min): 10.00                 | 15.00          | 15.00        | 10.00         | 15.00          |

|                                |               |                |                |                |
|--------------------------------|---------------|----------------|----------------|----------------|
| Time Shift(hrs): 0.00          | 0.00          | 0.00           | 0.00           | 0.00           |
| Area(ac): 2.200                | 8.600         | 11.300         | 2.200          | 8.600          |
| Vol of Unit Hyd(in): 1.001     | 1.000         | 1.000          | 1.001          | 1.000          |
| Curve Num: 86.000              | 95.000        | 95.000         | 86.000         | 95.000         |
| DCIA(%): 0.000                 | 0.000         | 0.000          | 0.000          | 0.000          |
| Time Max(hrs): 0.67            | 0.43          | 0.43           | 0.64           | 0.67           |
| Flow Max(cfs): 1.940           | 14.553        | 19.122         | 1.553          | 11.320         |
| Runoff Volume(in): 1.266       | 1.990         | 1.990          | 1.686          | 2.475          |
| Runoff Volume(ft3): 10112.780  | 62111.871     | 81612.109      | 13463.934      | 77275.977      |
| Name: ON                       | DET BASIN     | FUTURE         | ON             | DET BASIN      |
| Group: BASE                    | BASE          | BASE           | BASE           | BASE           |
| Simulation: 10Y-6H             | 25Y-12H       | 25Y-12H        | 25Y-12H        | 25Y-1H         |
| Node: POND WET                 | POND WET      | POND WET       | POND WET       | POND WET       |
| Type: SCS                      | SCS           | SCS            | SCS            | SCS            |
| Unit Hydrograph: Uh484         | Uh484         | Uh484          | Uh484          | Uh484          |
| Peaking Factor: 484.0          | 484.0         | 484.0          | 484.0          | 484.0          |
| Spec Time Inc(min): 2.00       | 1.33          | 2.00           | 2.00           | 1.33           |
| Comp Time Inc(min): 2.00       | 1.33          | 2.00           | 2.00           | 1.33           |
| Rain File: Huff I - 50%        | Huff II - 50% | Huff II - 50%  | Huff II - 50%  | Huff I - 50%   |
| Rain Amount(in): 3.030         | 4.210         | 4.210          | 4.210          | 2.400          |
| Duration(hrs): 6.00            | 12.00         | 12.00          | 12.00          | 1.00           |
| Status: Onsite                 | Onsite        | Onsite         | Onsite         | Onsite         |
| TC(min): 15.00                 | 10.00         | 15.00          | 15.00          | 10.00          |
| Time Shift(hrs): 0.00          | 0.00          | 0.00           | 0.00           | 0.00           |
| Area(ac): 11.300               | 2.200         | 8.600          | 11.300         | 2.200          |
| Vol of Unit Hyd(in): 1.000     | 1.001         | 1.000          | 1.000          | 1.001          |
| Curve Num: 95.000              | 86.000        | 95.000         | 95.000         | 86.000         |
| DCIA(%): 0.000                 | 0.000         | 0.000          | 0.000          | 0.000          |
| Time Max(hrs): 0.67            | 4.82          | 4.83           | 4.83           | 0.31           |
| Flow Max(cfs): 14.875          | 1.424         | 6.936          | 9.114          | 4.757          |
| Runoff Volume(in): 2.475       | 2.734         | 3.633          | 3.633          | 1.161          |
| Runoff Volume(ft3): 101537.040 | 21830.466     | 113426.268     | 149036.841     | 9269.640       |
| Name: FUTURE                   | ON            | DET BASIN      | FUTURE         | ON             |
| Group: BASE                    | BASE          | BASE           | BASE           | BASE           |
| Simulation: 25Y-1H             | 25Y-1H        | 25Y-24H        | 25Y-24H        | 25Y-24H        |
| Node: POND WET                 | POND WET      | POND WET       | POND WET       | POND WET       |
| Type: SCS                      | SCS           | SCS            | SCS            | SCS            |
| Unit Hydrograph: Uh484         | Uh484         | Uh484          | Uh484          | Uh484          |
| Peaking Factor: 484.0          | 484.0         | 484.0          | 484.0          | 484.0          |
| Spec Time Inc(min): 2.00       | 2.00          | 1.33           | 2.00           | 2.00           |
| Comp Time Inc(min): 2.00       | 2.00          | 1.33           | 2.00           | 2.00           |
| Rain File: Huff I - 50%        | Huff I - 50%  | Huff III - 50% | Huff III - 50% | Huff III - 50% |
| Rain Amount(in): 2.400         | 2.400         | 4.770          | 4.770          | 4.770          |
| Duration(hrs): 1.00            | 1.00          | 24.00          | 24.00          | 24.00          |
| Status: Onsite                 | Onsite        | Onsite         | Onsite         | Onsite         |
| TC(min): 15.00                 | 15.00         | 10.00          | 15.00          | 15.00          |
| Time Shift(hrs): 0.00          | 0.00          | 0.00           | 0.00           | 0.00           |
| Area(ac): 8.600                | 11.300        | 2.200          | 8.600          | 11.300         |
| Vol of Unit Hyd(in): 1.000     | 1.000         | 1.001          | 1.000          | 1.000          |
| Curve Num: 95.000              | 95.000        | 86.000         | 95.000         | 95.000         |
| DCIA(%): 0.000                 | 0.000         | 0.000          | 0.000          | 0.000          |
| Time Max(hrs): 0.30            | 0.30          | 15.60          | 15.60          | 15.60          |
| Flow Max(cfs): 29.271          | 38.461        | 1.000          | 4.382          | 5.758          |
| Runoff Volume(in): 1.864       | 1.864         | 3.249          | 4.186          | 4.186          |
| Runoff Volume(ft3): 58193.822  | 76463.975     | 25942.863      | 130683.034     | 171711.429     |
| Name: DET BASIN                | FUTURE        | ON             | DET BASIN      | FUTURE         |
| Group: BASE                    | BASE          | BASE           | BASE           | BASE           |
| Simulation: 25Y-2H             | 25Y-2H        | 25Y-2H         | 25Y-3H         | 25Y-3H         |
| Node: POND WET                 | POND WET      | POND WET       | POND WET       | POND WET       |
| Type: SCS                      | SCS           | SCS            | SCS            | SCS            |
| Unit Hydrograph: Uh484         | Uh484         | Uh484          | Uh484          | Uh484          |
| Peaking Factor: 484.0          | 484.0         | 484.0          | 484.0          | 484.0          |
| Spec Time Inc(min): 1.33       | 2.00          | 2.00           | 1.33           | 2.00           |
| Comp Time Inc(min): 1.33       | 2.00          | 2.00           | 1.33           | 2.00           |
| Rain File: Huff I - 50%        | Huff I - 50%  | Huff I - 50%   | Huff I - 50%   | Huff I - 50%   |
| Rain Amount(in): 2.850         | 2.850         | 2.850          | 3.050          | 3.050          |
| Duration(hrs): 2.00            | 2.00          | 2.00           | 3.00           | 3.00           |
| Status: Onsite                 | Onsite        | Onsite         | Onsite         | Onsite         |
| TC(min): 10.00                 | 15.00         | 15.00          | 10.00          | 15.00          |
| Time Shift(hrs): 0.00          | 0.00          | 0.00           | 0.00           | 0.00           |
| Area(ac): 2.200                | 8.600         | 11.300         | 2.200          | 8.600          |
| Vol of Unit Hyd(in): 1.001     | 1.000         | 1.000          | 1.001          | 1.000          |
| Curve Num: 86.000              | 95.000        | 95.000         | 86.000         | 95.000         |
| DCIA(%): 0.000                 | 0.000         | 0.000          | 0.000          | 0.000          |
| Time Max(hrs): 0.49            | 0.37          | 0.37           | 0.40           | 0.40           |
| Flow Max(cfs): 3.493           | 22.670        | 29.788         | 2.648          | 18.821         |

|                                |                |                |              |               |
|--------------------------------|----------------|----------------|--------------|---------------|
| Runoff Volume(in): 1.533       | 2.300          | 2.300          | 1.703        | 2.495         |
| Runoff Volume(ft3): 12239.859  | 71801.966      | 94344.444      | 13601.022    | 77885.082     |
| Name: ON                       | DET BASIN      | FUTURE         | ON           | DET BASIN     |
| Group: BASE                    | BASE           | BASE           | BASE         | BASE          |
| Simulation: 25Y-3H             | 25Y-6H         | 25Y-6H         | 25Y-6H       | 2Y-12H        |
| Node: POND WET                 | POND WET       | POND WET       | POND WET     | POND WET      |
| Type: SCS                      | SCS            | SCS            | SCS          | SCS           |
| Unit Hydrograph: Uh484         | Uh484          | Uh484          | Uh484        | Uh484         |
| Peaking Factor: 484.0          | 484.0          | 484.0          | 484.0        | 484.0         |
| Spec Time Inc(min): 2.00       | 1.33           | 2.00           | 2.00         | 1.33          |
| Comp Time Inc(min): 2.00       | 1.33           | 2.00           | 2.00         | 1.33          |
| Rain File: Huff I - 50%        | Huff I - 50%   | Huff I - 50%   | Huff I - 50% | Huff II - 50% |
| Rain Amount(in): 3.050         | 3.660          | 3.660          | 3.660        | 2.440         |
| Duration(hrs): 3.00            | 6.00           | 6.00           | 6.00         | 12.00         |
| Status: Onsite                 | Onsite         | Onsite         | Onsite       | Onsite        |
| TC(min): 15.00                 | 10.00          | 15.00          | 15.00        | 10.00         |
| Time Shift(hrs): 0.00          | 0.00           | 0.00           | 0.00         | 0.00          |
| Area(ac): 11.300               | 2.200          | 8.600          | 11.300       | 2.200         |
| Vol of Unit Hyd(in): 1.000     | 1.001          | 1.000          | 1.000        | 1.001         |
| Curve Num: 95.000              | 86.000         | 95.000         | 95.000       | 86.000        |
| DCIA(%): 0.000                 | 0.000          | 0.000          | 0.000        | 0.000         |
| Time Max(hrs): 0.40            | 0.64           | 0.67           | 0.67         | 5.40          |
| Flow Max(cfs): 24.730          | 2.248          | 14.449         | 18.986       | 0.645         |
| Runoff Volume(in): 2.495       | 2.238          | 3.092          | 3.092        | 1.193         |
| Runoff Volume(ft3): 102337.376 | 17869.013      | 96530.676      | 126836.819   | 9527.635      |
| Name: FUTURE                   | ON             | DET BASIN      | FUTURE       | ON            |
| Group: BASE                    | BASE           | BASE           | BASE         | BASE          |
| Simulation: 2Y-12H             | 2Y-12H         | 2Y-1H          | 2Y-1H        | 2Y-1H         |
| Node: POND WET                 | POND WET       | POND WET       | POND WET     | POND WET      |
| Type: SCS                      | SCS            | SCS            | SCS          | SCS           |
| Unit Hydrograph: Uh484         | Uh484          | Uh484          | Uh484        | Uh484         |
| Peaking Factor: 484.0          | 484.0          | 484.0          | 484.0        | 484.0         |
| Spec Time Inc(min): 2.00       | 2.00           | 1.33           | 2.00         | 2.00          |
| Comp Time Inc(min): 2.00       | 2.00           | 1.33           | 2.00         | 2.00          |
| Rain File: Huff II - 50%       | Huff II - 50%  | Huff I - 50%   | Huff I - 50% | Huff I - 50%  |
| Rain Amount(in): 2.440         | 2.440          | 1.390          | 1.390        | 1.390         |
| Duration(hrs): 12.00           | 12.00          | 1.00           | 1.00         | 1.00          |
| Status: Onsite                 | Onsite         | Onsite         | Onsite       | Onsite        |
| TC(min): 15.00                 | 15.00          | 10.00          | 15.00        | 15.00         |
| Time Shift(hrs): 0.00          | 0.00           | 0.00           | 0.00         | 0.00          |
| Area(ac): 8.600                | 11.300         | 2.200          | 8.600        | 11.300        |
| Vol of Unit Hyd(in): 1.000     | 1.000          | 1.001          | 1.000        | 1.000         |
| Curve Num: 95.000              | 95.000         | 86.000         | 95.000       | 95.000        |
| DCIA(%): 0.000                 | 0.000          | 0.000          | 0.000        | 0.000         |
| Time Max(hrs): 4.83            | 4.83           | 0.36           | 0.33         | 0.33          |
| Flow Max(cfs): 3.752           | 4.930          | 1.602          | 13.739       | 18.053        |
| Runoff Volume(in): 1.903       | 1.903          | 0.420          | 0.910        | 0.910         |
| Runoff Volume(ft3): 59398.070  | 78046.301      | 3356.141       | 28413.119    | 37333.516     |
| Name: DET BASIN                | FUTURE         | ON             | DET BASIN    | FUTURE        |
| Group: BASE                    | BASE           | BASE           | BASE         | BASE          |
| Simulation: 2Y-24H             | 2Y-24H         | 2Y-24H         | 2Y-2H        | 2Y-2H         |
| Node: POND WET                 | POND WET       | POND WET       | POND WET     | POND WET      |
| Type: SCS                      | SCS            | SCS            | SCS          | SCS           |
| Unit Hydrograph: Uh484         | Uh484          | Uh484          | Uh484        | Uh484         |
| Peaking Factor: 484.0          | 484.0          | 484.0          | 484.0        | 484.0         |
| Spec Time Inc(min): 1.33       | 2.00           | 2.00           | 1.33         | 2.00          |
| Comp Time Inc(min): 1.33       | 2.00           | 2.00           | 1.33         | 2.00          |
| Rain File: Huff III - 50%      | Huff III - 50% | Huff III - 50% | Huff I - 50% | Huff I - 50%  |
| Rain Amount(in): 2.910         | 2.910          | 2.910          | 1.630        | 1.630         |
| Duration(hrs): 24.00           | 24.00          | 24.00          | 2.00         | 2.00          |
| Status: Onsite                 | Onsite         | Onsite         | Onsite       | Onsite        |
| TC(min): 10.00                 | 15.00          | 15.00          | 10.00        | 15.00         |
| Time Shift(hrs): 0.00          | 0.00           | 0.00           | 0.00         | 0.00          |
| Area(ac): 2.200                | 8.600          | 11.300         | 2.200        | 8.600         |
| Vol of Unit Hyd(in): 1.001     | 1.000          | 1.000          | 1.001        | 1.000         |
| Curve Num: 86.000              | 95.000         | 95.000         | 86.000       | 95.000        |
| DCIA(%): 0.000                 | 0.000          | 0.000          | 0.000        | 0.000         |
| Time Max(hrs): 15.60           | 15.60          | 15.60          | 0.56         | 0.43          |
| Flow Max(cfs): 0.528           | 2.598          | 3.414          | 1.268        | 10.240        |
| Runoff Volume(in): 1.583       | 2.358          | 2.358          | 0.579        | 1.132         |
| Runoff Volume(ft3): 12645.777  | 73624.541      | 96739.222      | 4627.701     | 35337.419     |
| Name: ON                       | DET BASIN      | FUTURE         | ON           | DET BASIN     |
| Group: BASE                    | BASE           | BASE           | BASE         | BASE          |
| Simulation: 2Y-2H              | 2Y-3H          | 2Y-3H          | 2Y-3H        | 2Y-6H         |

|                               |              |              |              |              |
|-------------------------------|--------------|--------------|--------------|--------------|
| Node: POND WET                | POND WET     | POND WET     | POND WET     | POND WET     |
| Type: SCS                     | SCS          | SCS          | SCS          | SCS          |
| Unit Hydrograph: Uh484        | Uh484        | Uh484        | Uh484        | Uh484        |
| Peaking Factor: 484.0         | 484.0        | 484.0        | 484.0        | 484.0        |
| Spec Time Inc(min): 2.00      | 1.33         | 2.00         | 2.00         | 1.33         |
| Comp Time Inc(min): 2.00      | 1.33         | 2.00         | 2.00         | 1.33         |
| Rain File: Huff I - 50%       | Huff I - 50% | Huff I - 50% | Huff I - 50% | Huff I - 50% |
| Rain Amount(in): 1.630        | 1.720        | 1.720        | 1.720        | 2.050        |
| Duration(hrs): 2.00           | 3.00         | 3.00         | 3.00         | 6.00         |
| Status: Onsite                | Onsite       | Onsite       | Onsite       | Onsite       |
| TC(min): 15.00                | 10.00        | 15.00        | 15.00        | 10.00        |
| Time Shift(hrs): 0.00         | 0.00         | 0.00         | 0.00         | 0.00         |
| Area(ac): 11.300              | 2.200        | 8.600        | 11.300       | 2.200        |
| Vol of Unit Hyd(in): 1.000    | 1.001        | 1.000        | 1.000        | 1.001        |
| Curve Num: 95.000             | 86.000       | 95.000       | 95.000       | 86.000       |
| DCIA(%): 0.000                | 0.000        | 0.000        | 0.000        | 0.000        |
| Time Max(hrs): 0.43           | 0.78         | 0.47         | 0.47         | 1.51         |
| Flow Max(cfs): 13.455         | 0.970        | 8.141        | 10.696       | 0.684        |
| Runoff Volume(in): 1.132      | 0.642        | 1.216        | 1.216        | 0.886        |
| Runoff Volume(ft3): 46431.726 | 5130.843     | 37966.283    | 49885.930    | 7074.300     |

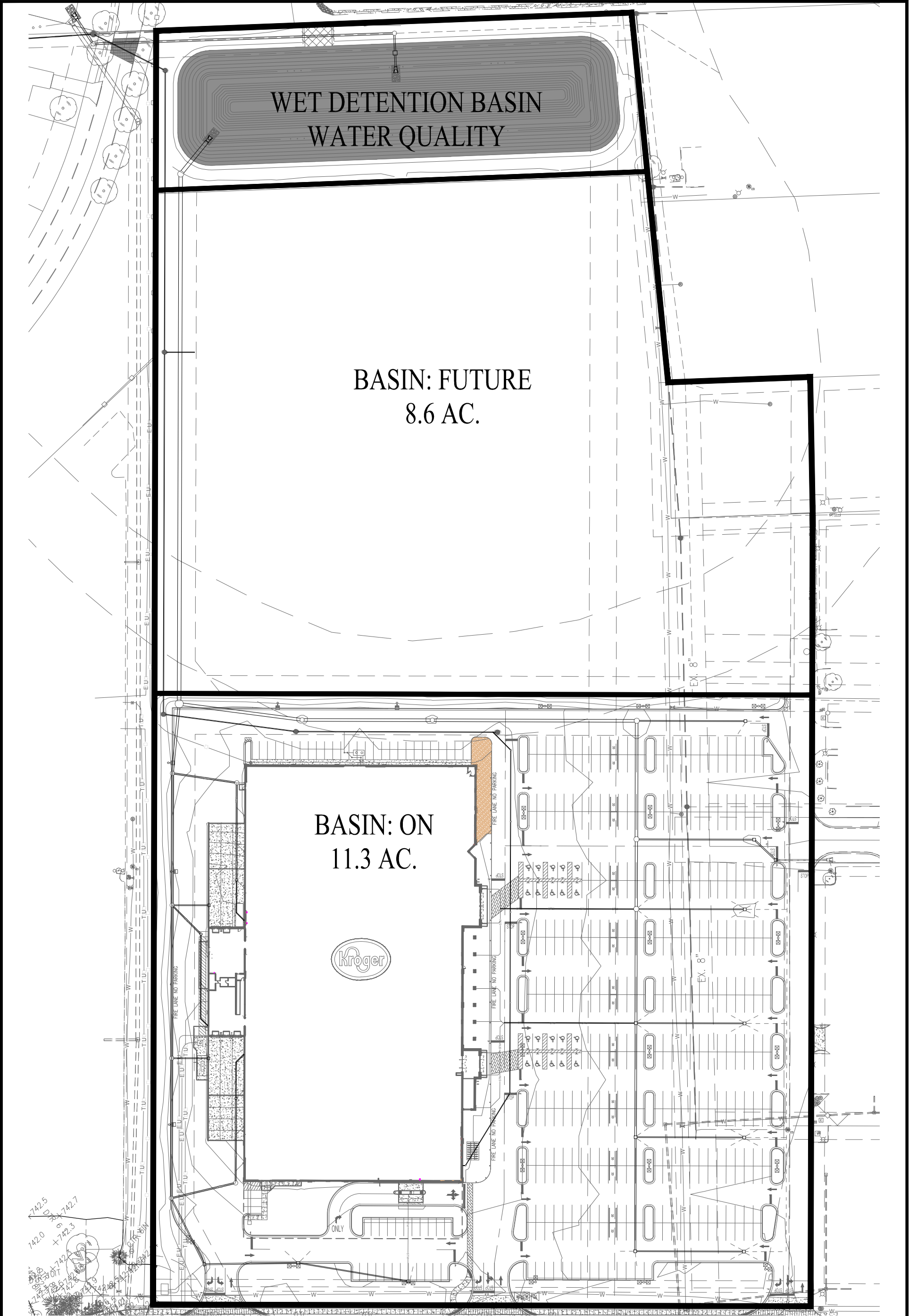
|                               |              |
|-------------------------------|--------------|
| Name: FUTURE                  | ON           |
| Group: BASE                   | BASE         |
| Simulation: 2Y-6H             | 2Y-6H        |
| Node: POND WET                | POND WET     |
| Type: SCS                     | SCS          |
| Unit Hydrograph: Uh484        | Uh484        |
| Peaking Factor: 484.0         | 484.0        |
| Spec Time Inc(min): 2.00      | 2.00         |
| Comp Time Inc(min): 2.00      | 2.00         |
| Rain File: Huff I - 50%       | Huff I - 50% |
| Rain Amount(in): 2.050        | 2.050        |
| Duration(hrs): 6.00           | 6.00         |
| Status: Onsite                | Onsite       |
| TC(min): 15.00                | 15.00        |
| Time Shift(hrs): 0.00         | 0.00         |
| Area(ac): 8.600               | 11.300       |
| Vol of Unit Hyd(in): 1.000    | 1.000        |
| Curve Num: 95.000             | 95.000       |
| DCIA(%): 0.000                | 0.000        |
| Time Max(hrs): 0.67           | 0.67         |
| Flow Max(cfs): 6.518          | 8.564        |
| Runoff Volume(in): 1.528      | 1.528        |
| Runoff Volume(ft3): 47715.757 | 62696.285    |



| Name          | Simulation | Max<br>Stage<br>ft | Warning<br>Stage<br>ft | Max<br>Delta<br>Stage<br>ft | Max Surf<br>Area<br>ft2 | Max<br>Inflow<br>cfs | Max<br>Outflow<br>cfs |
|---------------|------------|--------------------|------------------------|-----------------------------|-------------------------|----------------------|-----------------------|
| EX. DET BASIN | 100Y-12H   | 739.500            | 743.500                | -0.5000                     | 2                       | 9.596                | 0.000                 |
| EX. DET BASIN | 100Y-1H    | 739.500            | 743.500                | -0.5000                     | 2                       | 7.357                | 0.000                 |
| EX. DET BASIN | 100Y-24H   | 739.500            | 743.500                | -0.5000                     | 2                       | 8.773                | 0.000                 |
| EX. DET BASIN | 100Y-2H    | 739.500            | 743.500                | -0.5000                     | 2                       | 8.618                | 0.000                 |
| EX. DET BASIN | 100Y-3H    | 739.500            | 743.500                | -0.5000                     | 2                       | 7.277                | 0.000                 |
| EX. DET BASIN | 100Y-6H    | 739.500            | 743.500                | -0.5000                     | 2                       | 8.602                | 0.000                 |
| EX. DET BASIN | 10Y-12H    | 739.500            | 743.500                | -0.5000                     | 2                       | 7.973                | 0.000                 |
| EX. DET BASIN | 10Y-1H     | 739.500            | 743.500                | -0.5000                     | 2                       | 5.888                | 0.000                 |
| EX. DET BASIN | 10Y-24H    | 739.500            | 743.500                | -0.5000                     | 2                       | 6.976                | 0.000                 |
| EX. DET BASIN | 10Y-2H     | 739.500            | 743.500                | -0.5000                     | 2                       | 6.117                | 0.000                 |
| EX. DET BASIN | 10Y-3H     | 739.500            | 743.500                | -0.5000                     | 2                       | 6.158                | 0.000                 |
| EX. DET BASIN | 10Y-6H     | 739.500            | 743.500                | -0.5000                     | 2                       | 6.486                | 0.000                 |
| EX. DET BASIN | 25Y-12H    | 739.500            | 743.500                | -0.5000                     | 2                       | 9.039                | 0.000                 |
| EX. DET BASIN | 25Y-1H     | 739.500            | 743.500                | -0.5000                     | 2                       | 6.179                | 0.000                 |
| EX. DET BASIN | 25Y-24H    | 739.500            | 743.500                | -0.5000                     | 2                       | 10.146               | 0.000                 |
| EX. DET BASIN | 25Y-2H     | 739.500            | 743.500                | -0.5000                     | 2                       | 6.810                | 0.000                 |
| EX. DET BASIN | 25Y-3H     | 739.500            | 743.500                | -0.5000                     | 2                       | 7.637                | 0.000                 |
| EX. DET BASIN | 25Y-6H     | 739.500            | 743.500                | -0.5000                     | 2                       | 8.798                | 0.000                 |
| EX. DET BASIN | 2Y-12H     | 739.500            | 743.500                | -0.5000                     | 2                       | 6.368                | 0.000                 |
| EX. DET BASIN | 2Y-1H      | 739.500            | 743.500                | -0.5000                     | 2                       | 1.614                | 0.000                 |
| EX. DET BASIN | 2Y-24H     | 739.500            | 743.500                | -0.5000                     | 2                       | 7.607                | 0.000                 |
| EX. DET BASIN | 2Y-2H      | 739.500            | 743.500                | -0.5000                     | 2                       | 5.600                | 0.000                 |
| EX. DET BASIN | 2Y-3H      | 739.500            | 743.500                | -0.5000                     | 2                       | 3.216                | 0.000                 |
| EX. DET BASIN | 2Y-6H      | 739.500            | 743.500                | -0.5000                     | 2                       | 5.950                | 0.000                 |
| POND WET      | 100Y-12H   | 741.657            | 742.000                | 0.0158                      | 59490                   | 22.731               | 4.009                 |
| POND WET      | 100Y-1H    | 739.873            | 742.000                | 0.0989                      | 51719                   | 96.592               | 1.854                 |
| POND WET      | 100Y-24H   | 741.973            | 742.000                | -0.0064                     | 60866                   | 13.837               | 4.969                 |
| POND WET      | 100Y-2H    | 740.682            | 742.000                | 0.0987                      | 55244                   | 77.186               | 2.087                 |
| POND WET      | 100Y-3H    | 740.956            | 742.000                | 0.0980                      | 56436                   | 64.714               | 2.352                 |
| POND WET      | 100Y-6H    | 741.491            | 742.000                | 0.0987                      | 58768                   | 49.316               | 3.975                 |
| POND WET      | 10Y-12H    | 740.041            | 742.000                | 0.0089                      | 52451                   | 14.300               | 1.665                 |
| POND WET      | 10Y-1H     | 738.360            | 742.000                | 0.0973                      | 45127                   | 57.099               | 1.309                 |
| POND WET      | 10Y-24H    | 740.759            | 742.000                | -0.0038                     | 55578                   | 9.439                | 2.107                 |
| POND WET      | 10Y-2H     | 738.852            | 742.000                | 0.0751                      | 47272                   | 42.985               | 1.509                 |
| POND WET      | 10Y-3H     | 739.001            | 742.000                | 0.0623                      | 47921                   | 35.312               | 1.564                 |
| POND WET      | 10Y-6H     | 739.468            | 742.000                | 0.0592                      | 49954                   | 27.473               | 1.656                 |
| POND WET      | 25Y-12H    | 740.851            | 742.000                | 0.0115                      | 55979                   | 17.473               | 1.896                 |
| POND WET      | 25Y-1H     | 738.957            | 742.000                | 0.0962                      | 47731                   | 72.033               | 1.548                 |
| POND WET      | 25Y-24H    | 741.283            | 742.000                | -0.0045                     | 57860                   | 11.139               | 3.289                 |
| POND WET      | 25Y-2H     | 739.554            | 742.000                | 0.0955                      | 50327                   | 54.899               | 1.753                 |
| POND WET      | 25Y-3H     | 739.754            | 742.000                | 0.0794                      | 51201                   | 46.159               | 1.817                 |
| POND WET      | 25Y-6H     | 740.310            | 742.000                | 0.0741                      | 53623                   | 35.389               | 1.920                 |
| POND WET      | 2Y-12H     | 738.948            | 742.000                | 0.0057                      | 47690                   | 9.302                | 1.326                 |
| POND WET      | 2Y-1H      | 737.560            | 742.000                | 0.0594                      | 41643                   | 33.102               | 0.617                 |
| POND WET      | 2Y-24H     | 739.519            | 742.000                | -0.0034                     | 50176                   | 6.539                | 1.739                 |
| POND WET      | 2Y-2H      | 737.761            | 742.000                | 0.0556                      | 42520                   | 24.756               | 0.954                 |
| POND WET      | 2Y-3H      | 737.846            | 742.000                | 0.0510                      | 42890                   | 19.360               | 1.014                 |
| POND WET      | 2Y-6H      | 738.190            | 742.000                | 0.0438                      | 44388                   | 15.654               | 1.094                 |
| STR 101       | 100Y-12H   | 739.560            | 744.090                | 0.0999                      | 131                     | 5.818                | 9.596                 |
| STR 101       | 100Y-1H    | 739.541            | 744.090                | 0.0979                      | 131                     | 4.312                | 7.357                 |
| STR 101       | 100Y-24H   | 739.455            | 744.090                | -0.0998                     | 131                     | 6.648                | 8.773                 |
| STR 101       | 100Y-2H    | 739.563            | 744.090                | -0.0977                     | 131                     | 4.757                | 8.618                 |
| STR 101       | 100Y-3H    | 739.567            | 744.090                | 0.0979                      | 131                     | 4.817                | 7.277                 |
| STR 101       | 100Y-6H    | 739.574            | 744.090                | -0.0995                     | 131                     | 5.903                | 8.602                 |
| STR 101       | 10Y-12H    | 739.566            | 744.090                | 0.0976                      | 131                     | 4.528                | 7.973                 |
| STR 101       | 10Y-1H     | 739.532            | 744.090                | -0.0781                     | 131                     | 3.960                | 5.888                 |
| STR 101       | 10Y-24H    | 739.533            | 744.090                | -0.0990                     | 131                     | 5.333                | 6.976                 |
| STR 101       | 10Y-2H     | 739.452            | 744.090                | -0.0944                     | 131                     | 4.218                | 6.117                 |
| STR 101       | 10Y-3H     | 739.537            | 744.090                | 0.0919                      | 131                     | 4.243                | 6.158                 |
| STR 101       | 10Y-6H     | 739.456            | 744.090                | -0.0885                     | 131                     | 4.405                | 6.486                 |
| STR 101       | 25Y-12H    | 739.574            | 744.090                | -0.0994                     | 131                     | 4.790                | 9.039                 |
| STR 101       | 25Y-1H     | 739.451            | 744.090                | -0.0937                     | 131                     | 4.218                | 6.179                 |
| STR 101       | 25Y-24H    | 739.537            | 744.090                | -0.0997                     | 131                     | 5.655                | 10.146                |
| STR 101       | 25Y-2H     | 739.540            | 744.090                | -0.0921                     | 131                     | 4.426                | 6.810                 |
| STR 101       | 25Y-3H     | 739.542            | 744.090                | 0.0949                      | 131                     | 4.362                | 7.637                 |
| STR 101       | 25Y-6H     | 739.564            | 744.090                | 0.0997                      | 131                     | 4.878                | 8.798                 |
| STR 101       | 2Y-12H     | 739.454            | 744.090                | 0.0957                      | 131                     | 4.320                | 6.368                 |
| STR 101       | 2Y-1H      | 739.491            | 744.090                | -0.0948                     | 131                     | 3.343                | 1.614                 |
| STR 101       | 2Y-24H     | 739.538            | 744.090                | -0.0956                     | 131                     | 4.218                | 7.607                 |
| STR 101       | 2Y-2H      | 739.532            | 744.090                | -0.0979                     | 131                     | 0.954                | 5.600                 |
| STR 101       | 2Y-3H      | 739.492            | 744.090                | -0.0989                     | 131                     | 3.765                | 3.216                 |
| STR 101       | 2Y-6H      | 739.452            | 744.090                | -0.0766                     | 131                     | 4.095                | 5.950                 |
| STR 102       | 100Y-12H   | 739.659            | 743.380                | 0.0840                      | 130                     | 4.009                | 5.818                 |
| STR 102       | 100Y-1H    | 739.449            | 743.380                | 0.0362                      | 130                     | 1.854                | 4.312                 |
| STR 102       | 100Y-24H   | 739.482            | 743.380                | 0.0820                      | 130                     | 4.969                | 6.648                 |
| STR 102       | 100Y-2H    | 739.510            | 743.380                | -0.0583                     | 130                     | 2.087                | 4.757                 |

| Name    | Simulation | Max<br>Stage<br>ft | Warning<br>Stage<br>ft | Max<br>Delta<br>Stage<br>ft | Max Surf<br>Area<br>ft2 | Max<br>Inflow<br>cfs | Max<br>Outflow<br>cfs |
|---------|------------|--------------------|------------------------|-----------------------------|-------------------------|----------------------|-----------------------|
| STR 102 | 100Y-3H    | 739.525            | 743.380                | 0.0650                      | 130                     | 2.352                | 4.817                 |
| STR 102 | 100Y-6H    | 739.552            | 743.380                | 0.0780                      | 130                     | 3.975                | 5.903                 |
| STR 102 | 10Y-12H    | 739.529            | 743.380                | 0.0473                      | 130                     | 1.665                | 4.528                 |
| STR 102 | 10Y-1H     | 739.479            | 743.380                | 0.0391                      | 130                     | 1.309                | 3.960                 |
| STR 102 | 10Y-24H    | 739.477            | 743.380                | 0.0599                      | 130                     | 2.107                | 5.333                 |
| STR 102 | 10Y-2H     | 739.464            | 743.380                | 0.0328                      | 130                     | 1.509                | 4.218                 |
| STR 102 | 10Y-3H     | 739.439            | 743.380                | -0.0362                     | 130                     | 1.564                | 4.243                 |
| STR 102 | 10Y-6H     | 739.486            | 743.380                | 0.0355                      | 130                     | 1.656                | 4.405                 |
| STR 102 | 25Y-12H    | 739.557            | 743.380                | -0.0583                     | 130                     | 1.896                | 4.790                 |
| STR 102 | 25Y-1H     | 739.466            | 743.380                | 0.0445                      | 130                     | 1.548                | 4.218                 |
| STR 102 | 25Y-24H    | 739.438            | 743.380                | 0.0791                      | 130                     | 3.289                | 5.655                 |
| STR 102 | 25Y-2H     | 739.445            | 743.380                | 0.0388                      | 130                     | 1.753                | 4.426                 |
| STR 102 | 25Y-3H     | 739.452            | 743.380                | 0.0432                      | 130                     | 1.817                | 4.362                 |
| STR 102 | 25Y-6H     | 739.518            | 743.380                | -0.0588                     | 130                     | 1.920                | 4.878                 |
| STR 102 | 2Y-12H     | 739.479            | 743.380                | -0.0363                     | 130                     | 1.326                | 4.320                 |
| STR 102 | 2Y-1H      | 739.479            | 743.380                | 0.0290                      | 130                     | 0.617                | 3.343                 |
| STR 102 | 2Y-24H     | 739.476            | 743.380                | -0.0363                     | 130                     | 1.739                | 4.218                 |
| STR 102 | 2Y-2H      | 739.477            | 743.380                | 0.0293                      | 130                     | 0.954                | 0.954                 |
| STR 102 | 2Y-3H      | 739.483            | 743.380                | -0.0264                     | 130                     | 1.014                | 3.765                 |
| STR 102 | 2Y-6H      | 739.460            | 743.380                | -0.0269                     | 130                     | 1.094                | 4.095                 |

# **WATER QUALITY CALCULATIONS**



KROGER - FRANKLIN, IN

WATER QUALITY BASIN MAP



10505 N. College Avenue  
Indianapolis, Indiana 46280  
weihe.net  
317 | 846 - 6611

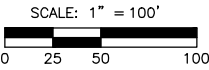


FIGURE 5.1

Date: August 26, 2015

## WQ Stage Storage Calculations

|                     |                       |  |
|---------------------|-----------------------|--|
| <b>Project:</b>     | Kroger - Franklin, IN |  |
| <b>Date:</b>        | March 17, 2015        |  |
| <b>Job No:</b>      | W14-0460              |  |
| <b>Checked By:</b>  | atm                   |  |
| <b>Prepared By:</b> | atm                   |  |

| <u>Elevation</u> | <u>Area (sf)</u> | <u>Area (ac)</u> | <u>Volume (cf)</u> | <u>Volume (ac-ft)</u> |
|------------------|------------------|------------------|--------------------|-----------------------|
| 735.5            | 32,455           | 0.745            | 0                  | 0                     |
| 736.0            | 34,465           | 0.791            | 16,730             | 0.384                 |
| 737.0            | 38,570           | 0.885            | 53,248             | 1.222                 |
| 738.0            | 42,775           | 0.982            | 93,920             | 2.156                 |
| 739.0            | 47,080           | 1.081            | 138,848            | 3.188                 |
| 740.0            | 51,480           | 1.182            | 188,128            | 4.319                 |
| 741.0            | 55,985           | 1.285            | 241,860            | 5.552                 |
| 742.0            | 60,595           | 1.391            | 300,150            | 6.890                 |

Peak Storage  
24-Hours after Peak

|                   |               |             |
|-------------------|---------------|-------------|
| <b>Volume at:</b> | <b>736.74</b> | <b>0.98</b> |
| <b>Volume at:</b> | <b>736.23</b> | <b>0.58</b> |

Nodes

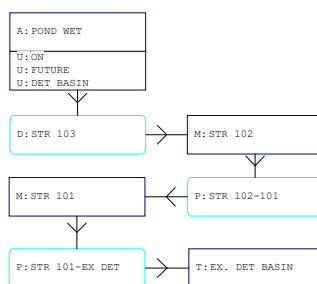
A Stage/Area  
 V Stage/Volume  
 T Time/Stage  
 M Manhole

Basins

O Overland Flow  
 U SCS Unit CN  
 S SBUH CN  
 Y SCS Unit GA  
 Z SBUH GA

Links

P Pipe  
 W Weir  
 C Channel  
 D Drop Structure  
 B Bridge  
 R Rating Curve  
 H Breach  
 E Percolation  
 F Filter  
 X Exfil Trench



=====

Basins

=====

Name: DET BASIN                      Node: POND WET                      Status: Onsite  
Group: BASE                              Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484                      Peaking Factor: 484.0  
Rainfall File:                              Storm Duration(hrs): 0.00  
Rainfall Amount(in): 0.000                      Time of Conc(min): 10.00  
Area(ac): 2.200                              Time Shift(hrs): 0.00  
Curve Number: 86.00                      Max Allowable Q(cfs): 999999.000  
DCIA(%): 0.00

-----

Name: FUTURE                              Node: POND WET                      Status: Onsite  
Group: BASE                              Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484                      Peaking Factor: 484.0  
Rainfall File:                              Storm Duration(hrs): 0.00  
Rainfall Amount(in): 0.000                      Time of Conc(min): 15.00  
Area(ac): 8.600                              Time Shift(hrs): 0.00  
Curve Number: 95.00                      Max Allowable Q(cfs): 999999.000  
DCIA(%): 0.00

-----

Name: ON                                      Node: POND WET                      Status: Onsite  
Group: BASE                              Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484                      Peaking Factor: 484.0  
Rainfall File:                              Storm Duration(hrs): 0.00  
Rainfall Amount(in): 0.000                      Time of Conc(min): 15.00  
Area(ac): 11.300                              Time Shift(hrs): 0.00  
Curve Number: 95.00                      Max Allowable Q(cfs): 999999.000  
DCIA(%): 0.00

=====

Nodes

=====

Name: EX. DET BASIN                      Base Flow(cfs): 0.000                      Init Stage(ft): 734.500  
Group: BASE                                      Warn Stage(ft): 743.500  
Type: Time/Stage

| Time(hrs) | Stage(ft) |
|-----------|-----------|
| 0.00      | 734.000   |
| 12.00     | 734.000   |
| 24.00     | 734.000   |

-----

Name: POND WET                              Base Flow(cfs): 0.000                      Init Stage(ft): 735.500  
Group: BASE                                      Warn Stage(ft): 742.000  
Type: Stage/Area

| Stage(ft) | Area(ac) |
|-----------|----------|
| 735.500   | 0.7500   |
| 742.000   | 1.4000   |

-----

Name: STR 101                              Base Flow(cfs): 0.000                      Init Stage(ft): 734.600  
Group: BASE                                      Plunge Factor: 1.00                      Warn Stage(ft): 744.090  
Type: Manhole, Flat Floor

| Stage(ft) | Area(ac) |
|-----------|----------|
| 734.600   | 0.0002   |
| 744.090   | 0.0002   |

```

-----
Name: STR 102          Base Flow(cfs): 0.000          Init Stage(ft): 735.290
Group: BASE           Plunge Factor: 1.00             Warn Stage(ft): 743.380
Type: Manhole, Flat Floor

```

```

-----
Stage(ft)      Area(ac)
-----
735.290        0.0002
743.380        0.0002

```

==== Pipes =====

```

Name: STR 101-EX DET    From Node: STR 101          Length(ft): 33.00
Group: BASE             To Node: EX. DET BASIN          Count: 1
                        Friction Equation: Automatic
                        Solution Algorithm: Most Restrictive
                        Flow: Both
UPSTREAM                DOWNSTREAM
Geometry: Circular      Circular
Span(in): 24.00         24.00
Rise(in): 24.00         24.00
Invert(ft): 734.600     734.500
Manning's N: 0.012000   0.012000
Top Clip(in): 0.000     0.000
Bot Clip(in): 0.000     0.000
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Stabilizer Option: None

```

Upstream FHWA Inlet Edge Description:  
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:  
Circular Concrete: Square edge w/ headwall

```

-----
Name: STR 102-101       From Node: STR 102          Length(ft): 333.00
Group: BASE             To Node: STR 101          Count: 1
                        Friction Equation: Automatic
                        Solution Algorithm: Most Restrictive
                        Flow: Both
UPSTREAM                DOWNSTREAM
Geometry: Circular      Circular
Span(in): 24.00         24.00
Rise(in): 24.00         24.00
Invert(ft): 735.290     734.600
Manning's N: 0.012000   0.012000
Top Clip(in): 0.000     0.000
Bot Clip(in): 0.000     0.000
Entrance Loss Coef: 0.00
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Stabilizer Option: None

```

Upstream FHWA Inlet Edge Description:  
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:  
Circular Concrete: Square edge w/ headwall

==== Drop Structures =====

```

Name: STR 103           From Node: POND WET          Length(ft): 38.00
Group: BASE             To Node: STR 102          Count: 1
                        Friction Equation: Automatic
                        Solution Algorithm: Most Restrictive
                        Flow: Both
UPSTREAM                DOWNSTREAM
Geometry: Circular      Circular
Span(in): 21.00         21.00
Rise(in): 21.00         21.00
Invert(ft): 735.500     735.290
Manning's N: 0.012000   0.012000
Top Clip(in): 0.000     0.000
Bot Clip(in): 0.000     0.000
Entrance Loss Coef: 0.000
Exit Loss Coef: 1.000
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Solution Incs: 10

```

Upstream FHWA Inlet Edge Description:  
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:



Circular Concrete: Square edge w/ headwall

\*\*\* Weir 1 of 3 for Drop Structure STR 103 \*\*\*

|                       |                           |
|-----------------------|---------------------------|
| Count: 1              | Bottom Clip(in): 0.000    |
| Type: Vertical: Mavis | Top Clip(in): 0.000       |
| Flow: Both            | Weir Disc Coef: 3.200     |
| Geometry: Circular    | Orifice Disc Coef: 0.600  |
| Span(in): 5.00        | Invert(ft): 737.100       |
| Rise(in): 5.00        | Control Elev(ft): 737.100 |

TABLE

\*\*\* Weir 2 of 3 for Drop Structure STR 103 \*\*\*

|                       |                           |
|-----------------------|---------------------------|
| Count: 1              | Bottom Clip(in): 0.000    |
| Type: Vertical: Mavis | Top Clip(in): 0.000       |
| Flow: Both            | Weir Disc Coef: 3.200     |
| Geometry: Circular    | Orifice Disc Coef: 0.600  |
| Span(in): 4.00        | Invert(ft): 735.500       |
| Rise(in): 4.00        | Control Elev(ft): 735.500 |

TABLE

\*\*\* Weir 3 of 3 for Drop Structure STR 103 \*\*\*

|                       |                           |
|-----------------------|---------------------------|
| Count: 1              | Bottom Clip(in): 0.000    |
| Type: Vertical: Mavis | Top Clip(in): 0.000       |
| Flow: Both            | Weir Disc Coef: 3.200     |
| Geometry: Rectangular | Orifice Disc Coef: 0.600  |
| Span(in): 12.00       | Invert(ft): 740.800       |
| Rise(in): 7.00        | Control Elev(ft): 740.800 |

TABLE

==== Hydrology Simulations =====

Name: 100Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-12H.R32  
Override Defaults: Yes  
Storm Duration(hrs): 12.00  
Rainfall File: Huff II - 50%  
Rainfall Amount(in): 5.36

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

Name: 100Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-1H.R32  
Override Defaults: Yes  
Storm Duration(hrs): 1.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.01

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

Name: 100Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-24H.R32  
Override Defaults: Yes  
Storm Duration(hrs): 24.00  
Rainfall File: Huff III - 50%  
Rainfall Amount(in): 5.87

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

Name: 100Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-2H.R32  
Override Defaults: Yes

---

Storm Duration(hrs): 2.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.65

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 100Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-3H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 3.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.93

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 100Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-6H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 6.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 4.76

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 10Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-12H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 12.00  
Rainfall File: Huff II - 50%  
Rainfall Amount(in): 3.52

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 10Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-1H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 1.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.02

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 10Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-24H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 24.00  
Rainfall File: Huff III - 50%  
Rainfall Amount(in): 4.08

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 10Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-2H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 2.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.38

---

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 10Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-3H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 3.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.53

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 10Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-6H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 6.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.03

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 25Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-12H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 12.00  
Rainfall File: Huff II - 50%  
Rainfall Amount(in): 4.21

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 25Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-1H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 1.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.40

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 25Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-24H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 24.00  
Rainfall File: Huff III - 50%  
Rainfall Amount(in): 4.77

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 25Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-2H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 2.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.85

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

---

Name: 25Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-3H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 3.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.05

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 25Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-6H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 6.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 3.66

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 2Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-12H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 12.00  
Rainfall File: Huff II - 50%  
Rainfall Amount(in): 2.44

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 2Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-1H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 1.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.39

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 2Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-24H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 24.00  
Rainfall File: Huff III - 50%  
Rainfall Amount(in): 2.91

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: 2Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-2H.R32  
  
Override Defaults: Yes  
Storm Duration(hrs): 2.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.63

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 2Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-3H.R32

---

Override Defaults: Yes  
Storm Duration(hrs): 3.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.72

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: 2Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-6H.R32

Override Defaults: Yes  
Storm Duration(hrs): 6.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 2.05

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 5.00           |

---

Name: WQ-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-12H.R32

Override Defaults: Yes  
Storm Duration(hrs): 12.00  
Rainfall File: Huff II - 50%  
Rainfall Amount(in): 1.25

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: WQ-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-1H.R32

Override Defaults: Yes  
Storm Duration(hrs): 1.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.25

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: WQ-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-24H.R32

Override Defaults: Yes  
Storm Duration(hrs): 24.00  
Rainfall File: Huff III - 50%  
Rainfall Amount(in): 1.25

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 50.000    | 5.00           |

---

Name: WQ-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-2H.R32

Override Defaults: Yes  
Storm Duration(hrs): 2.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.25

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: WQ-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-3H.R32

Override Defaults: Yes  
Storm Duration(hrs): 3.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.25

---

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

---

Name: WQ-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-6H.R32

Override Defaults: Yes  
Storm Duration(hrs): 6.00  
Rainfall File: Huff I - 50%  
Rainfall Amount(in): 1.25

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 5.00           |

==== Routing Simulations =====

Name: 100Y-12H                      Hydrology Sim: 100Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-12H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 30.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

Name: 100Y-1H                      Hydrology Sim: 100Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-1H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

Name: 100Y-24H                      Hydrology Sim: 100Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-24H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 30.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |
| Group     | Run            |
| -----     | -----          |
| BASE      | Yes            |

-----  
Name: 100Y-2H                      Hydrology Sim: 100Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-2H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| -----     | -----          |
| BASE      | Yes            |

-----  
Name: 100Y-3H                      Hydrology Sim: 100Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-3H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| -----     | -----          |
| BASE      | Yes            |

-----  
Name: 100Y-6H                      Hydrology Sim: 100Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\100Y-6H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| -----     | -----          |
| BASE      | Yes            |

---

-----  
Name: 10Y-12H                      Hydrology Sim: 10Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-12H.I32  
  
Execute: No                      Restart: No                      Patch: No  
Alternative: No  
  
Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 30.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

-----  
Name: 10Y-1H                      Hydrology Sim: 10Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-1H.I32  
  
Execute: No                      Restart: No                      Patch: No  
Alternative: No  
  
Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

-----  
Name: 10Y-24H                      Hydrology Sim: 10Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-24H.I32  
  
Execute: No                      Restart: No                      Patch: No  
Alternative: No  
  
Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 30.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

-----  
Name: 10Y-2H                      Hydrology Sim: 10Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-2H.I32  
  
Execute: No                      Restart: No                      Patch: No  
Alternative: No  
  
Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000



---

|                            |                              |
|----------------------------|------------------------------|
| Start Time(hrs): 0.000     | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000 | Max Calc Time(sec): 100.0000 |
| Boundary Stages:           | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 12.000    | 10.000         |
| Group     | Run            |
| -----     | -----          |
| BASE      | Yes            |

---

|                                                                                                                |                              |           |
|----------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| Name: 10Y-3H                                                                                                   | Hydrology Sim: 10Y-3H        |           |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-3H.I32 |                              |           |
| Execute: No                                                                                                    | Restart: No                  | Patch: No |
| Alternative: No                                                                                                |                              |           |
| Max Delta Z(ft): 1.00                                                                                          | Delta Z Factor: 0.10000      |           |
| Time Step Optimizer: 10.000                                                                                    |                              |           |
| Start Time(hrs): 0.000                                                                                         | End Time(hrs): 12.00         |           |
| Min Calc Time(sec): 1.0000                                                                                     | Max Calc Time(sec): 100.0000 |           |
| Boundary Stages:                                                                                               | Boundary Flows:              |           |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 12.000    | 10.000         |
| Group     | Run            |
| -----     | -----          |
| BASE      | Yes            |

---

|                                                                                                                |                              |           |
|----------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| Name: 10Y-6H                                                                                                   | Hydrology Sim: 10Y-6H        |           |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\10Y-6H.I32 |                              |           |
| Execute: No                                                                                                    | Restart: No                  | Patch: No |
| Alternative: No                                                                                                |                              |           |
| Max Delta Z(ft): 1.00                                                                                          | Delta Z Factor: 0.10000      |           |
| Time Step Optimizer: 10.000                                                                                    |                              |           |
| Start Time(hrs): 0.000                                                                                         | End Time(hrs): 12.00         |           |
| Min Calc Time(sec): 1.0000                                                                                     | Max Calc Time(sec): 100.0000 |           |
| Boundary Stages:                                                                                               | Boundary Flows:              |           |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 12.000    | 10.000         |
| Group     | Run            |
| -----     | -----          |
| BASE      | Yes            |

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|                                                                                                                 |                              |           |
|-----------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| Name: 25Y-12H                                                                                                   | Hydrology Sim: 25Y-12H       |           |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-12H.I32 |                              |           |
| Execute: No                                                                                                     | Restart: No                  | Patch: No |
| Alternative: No                                                                                                 |                              |           |
| Max Delta Z(ft): 1.00                                                                                           | Delta Z Factor: 0.10000      |           |
| Time Step Optimizer: 10.000                                                                                     |                              |           |
| Start Time(hrs): 0.000                                                                                          | End Time(hrs): 30.00         |           |
| Min Calc Time(sec): 1.0000                                                                                      | Max Calc Time(sec): 100.0000 |           |
| Boundary Stages:                                                                                                | Boundary Flows:              |           |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 30.000    | 10.000         |

---

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

Name: 25Y-1H                      Hydrology Sim: 25Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-1H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 12.000    | 10.000         |

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

Name: 25Y-24H                      Hydrology Sim: 25Y-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-24H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 30.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 30.000    | 10.000         |

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

Name: 25Y-2H                      Hydrology Sim: 25Y-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-2H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

|           |                |
|-----------|----------------|
| Time(hrs) | Print Inc(min) |
| -----     | -----          |
| 12.000    | 10.000         |

|       |       |
|-------|-------|
| Group | Run   |
| ----- | ----- |
| BASE  | Yes   |

---

Name: 25Y-3H                      Hydrology Sim: 25Y-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-3H.I32

Execute: No                      Restart: No                      Patch: No

---

Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: 25Y-6H                      Hydrology Sim: 25Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\25Y-6H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: 2Y-12H                      Hydrology Sim: 2Y-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-12H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 30.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: 2Y-1H                      Hydrology Sim: 2Y-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-1H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

|                             |                              |
|-----------------------------|------------------------------|
| Max Delta Z(ft): 1.00       | Delta Z Factor: 0.10000      |
| Time Step Optimizer: 10.000 |                              |
| Start Time(hrs): 0.000      | End Time(hrs): 12.00         |
| Min Calc Time(sec): 1.0000  | Max Calc Time(sec): 100.0000 |
| Boundary Stages:            | Boundary Flows:              |

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| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

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|                                                                                                                |                              |           |
|----------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| Name: 2Y-24H                                                                                                   | Hydrology Sim: 2Y-24H        |           |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-24H.I32 |                              |           |
| Execute: No                                                                                                    | Restart: No                  | Patch: No |
| Alternative: No                                                                                                |                              |           |
| Max Delta Z(ft): 1.00                                                                                          | Delta Z Factor: 0.10000      |           |
| Time Step Optimizer: 10.000                                                                                    |                              |           |
| Start Time(hrs): 0.000                                                                                         | End Time(hrs): 30.00         |           |
| Min Calc Time(sec): 1.0000                                                                                     | Max Calc Time(sec): 100.0000 |           |
| Boundary Stages:                                                                                               | Boundary Flows:              |           |

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| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

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|                                                                                                               |                              |           |
|---------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| Name: 2Y-2H                                                                                                   | Hydrology Sim: 2Y-2H         |           |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-2H.I32 |                              |           |
| Execute: No                                                                                                   | Restart: No                  | Patch: No |
| Alternative: No                                                                                               |                              |           |
| Max Delta Z(ft): 1.00                                                                                         | Delta Z Factor: 0.10000      |           |
| Time Step Optimizer: 10.000                                                                                   |                              |           |
| Start Time(hrs): 0.000                                                                                        | End Time(hrs): 12.00         |           |
| Min Calc Time(sec): 1.0000                                                                                    | Max Calc Time(sec): 100.0000 |           |
| Boundary Stages:                                                                                              | Boundary Flows:              |           |

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| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

---

---

|                                                                                                               |                              |           |
|---------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| Name: 2Y-3H                                                                                                   | Hydrology Sim: 2Y-3H         |           |
| Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-3H.I32 |                              |           |
| Execute: No                                                                                                   | Restart: No                  | Patch: No |
| Alternative: No                                                                                               |                              |           |
| Max Delta Z(ft): 1.00                                                                                         | Delta Z Factor: 0.10000      |           |
| Time Step Optimizer: 10.000                                                                                   |                              |           |
| Start Time(hrs): 0.000                                                                                        | End Time(hrs): 12.00         |           |
| Min Calc Time(sec): 1.0000                                                                                    | Max Calc Time(sec): 100.0000 |           |
| Boundary Stages:                                                                                              | Boundary Flows:              |           |

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| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |

---

| Group | Run |
|-------|-----|
| BASE  | Yes |

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---

Name: 2Y-6H                      Hydrology Sim: 2Y-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\2Y-6H.I32

Execute: No                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: WQ-12H                      Hydrology Sim: WQ-12H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-12H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 30.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 30.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: WQ-1H                      Hydrology Sim: WQ-1H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-1H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

| Time(hrs) | Print Inc(min) |
|-----------|----------------|
| 12.000    | 10.000         |
| Group     | Run            |
| BASE      | Yes            |

---

Name: WQ-24H                      Hydrology Sim: WQ-24H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-24H.I32

Execute: Yes                      Restart: No                      Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 50.00  
Min Calc Time(sec): 1.0000                      Max Calc Time(sec): 100.0000

---

Boundary Stages:

Boundary Flows:

Time(hrs)      Print Inc(min)  
-----  
50.000          10.000  
  
Group          Run  
-----  
BASE          Yes

-----  
Name: WQ-2H                      Hydrology Sim: WQ-2H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-2H.I32

Execute: Yes              Restart: No              Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                  Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

Time(hrs)      Print Inc(min)  
-----  
12.000          10.000  
  
Group          Run  
-----  
BASE          Yes

-----  
Name: WQ-3H                      Hydrology Sim: WQ-3H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-3H.I32

Execute: Yes              Restart: No              Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                  Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

Time(hrs)      Print Inc(min)  
-----  
12.000          10.000  
  
Group          Run  
-----  
BASE          Yes

-----  
Name: WQ-6H                      Hydrology Sim: WQ-6H  
Filename: H:\2014\W140460\Engineering\design\site design\drainage\pond modeling\icpr\Johnson County\WQ-6H.I32

Execute: Yes              Restart: No              Patch: No  
Alternative: No

Max Delta Z(ft): 1.00                      Delta Z Factor: 0.10000  
Time Step Optimizer: 10.000  
Start Time(hrs): 0.000                      End Time(hrs): 12.00  
Min Calc Time(sec): 1.0000                  Max Calc Time(sec): 100.0000  
Boundary Stages:                      Boundary Flows:

Time(hrs)      Print Inc(min)  
-----  
12.000          10.000  
  
Group          Run  
-----

---

BASE                      Yes

=====  
==== Boundary Conditions =====  
=====

Name:                      Node: STR 102                      Type: Flow

| Time (hrs) | Flow (cfs) |
|------------|------------|
| 0.000      | 0.000      |
| 12.000     | 3.520      |
| 30.000     | 0.000      |

| Simulation | Basin     | Group | Time Max<br>hrs | Flow Max<br>cfs | Volume<br>in | Volume<br>ft3 |
|------------|-----------|-------|-----------------|-----------------|--------------|---------------|
| WQ-12H     | DET BASIN | BASE  | 5.42            | 0.187           | 0.334        | 2670.199      |
| WQ-1H      | DET BASIN | BASE  | 0.38            | 1.251           | 0.334        | 2670.199      |
| WQ-24H     | DET BASIN | BASE  | 15.60           | 0.129           | 0.334        | 2670.169      |
| WQ-2H      | DET BASIN | BASE  | 0.58            | 0.701           | 0.334        | 2670.199      |
| WQ-3H      | DET BASIN | BASE  | 0.80            | 0.489           | 0.334        | 2670.199      |
| WQ-6H      | DET BASIN | BASE  | 1.53            | 0.256           | 0.334        | 2670.199      |
| WQ-12H     | FUTURE    | BASE  | 4.87            | 1.585           | 0.783        | 24447.961     |
| WQ-1H      | FUTURE    | BASE  | 0.37            | 11.688          | 0.783        | 24447.961     |
| WQ-24H     | FUTURE    | BASE  | 15.60           | 0.971           | 0.783        | 24447.785     |
| WQ-2H      | FUTURE    | BASE  | 0.50            | 6.901           | 0.783        | 24447.961     |
| WQ-3H      | FUTURE    | BASE  | 0.50            | 4.803           | 0.783        | 24447.961     |
| WQ-6H      | FUTURE    | BASE  | 0.70            | 2.871           | 0.783        | 24447.961     |
| WQ-12H     | ON        | BASE  | 4.87            | 2.083           | 0.783        | 32123.483     |
| WQ-1H      | ON        | BASE  | 0.37            | 15.358          | 0.783        | 32123.483     |
| WQ-24H     | ON        | BASE  | 15.60           | 1.276           | 0.783        | 32123.253     |
| WQ-2H      | ON        | BASE  | 0.50            | 9.067           | 0.783        | 32123.483     |
| WQ-3H      | ON        | BASE  | 0.50            | 6.311           | 0.783        | 32123.483     |
| WQ-6H      | ON        | BASE  | 0.70            | 3.773           | 0.783        | 32123.483     |



|                              |               |               |              |              |
|------------------------------|---------------|---------------|--------------|--------------|
| Name: DET BASIN              | FUTURE        | ON            | DET BASIN    | FUTURE       |
| Group: BASE                  | BASE          | BASE          | BASE         | BASE         |
| Simulation: WQ-12H           | WQ-12H        | WQ-12H        | WQ-1H        | WQ-1H        |
| Node: POND WET               | POND WET      | POND WET      | POND WET     | POND WET     |
| Type: SCS                    | SCS           | SCS           | SCS          | SCS          |
| Unit Hydrograph: Uh484       | Uh484         | Uh484         | Uh484        | Uh484        |
| Peaking Factor: 484.0        | 484.0         | 484.0         | 484.0        | 484.0        |
| Spec Time Inc(min): 1.33     | 2.00          | 2.00          | 1.33         | 2.00         |
| Comp Time Inc(min): 1.33     | 2.00          | 2.00          | 1.33         | 2.00         |
| Rain File: Huff II - 50%     | Huff II - 50% | Huff II - 50% | Huff I - 50% | Huff I - 50% |
| Rain Amount(in): 1.250       | 1.250         | 1.250         | 1.250        | 1.250        |
| Duration(hrs): 12.00         | 12.00         | 12.00         | 1.00         | 1.00         |
| Status: Onsite               | Onsite        | Onsite        | Onsite       | Onsite       |
| TC(min): 10.00               | 15.00         | 15.00         | 10.00        | 15.00        |
| Time Shift(hrs): 0.00        | 0.00          | 0.00          | 0.00         | 0.00         |
| Area(ac): 2.200              | 8.600         | 11.300        | 2.200        | 8.600        |
| Vol of Unit Hyd(in): 1.001   | 1.000         | 1.000         | 1.001        | 1.000        |
| Curve Num: 86.000            | 95.000        | 95.000        | 86.000       | 95.000       |
| DCIA(%): 0.000               | 0.000         | 0.000         | 0.000        | 0.000        |
| Time Max(hrs): 5.42          | 4.87          | 4.87          | 0.38         | 0.37         |
| Flow Max(cfs): 0.187         | 1.585         | 2.083         | 1.251        | 11.688       |
| Runoff Volume(in): 0.334     | 0.783         | 0.783         | 0.334        | 0.783        |
| Runoff Volume(ft3): 2670.199 | 24447.961     | 32123.483     | 2670.199     | 24447.961    |

|                               |                |                |                |              |
|-------------------------------|----------------|----------------|----------------|--------------|
| Name: ON                      | DET BASIN      | FUTURE         | ON             | DET BASIN    |
| Group: BASE                   | BASE           | BASE           | BASE           | BASE         |
| Simulation: WQ-1H             | WQ-24H         | WQ-24H         | WQ-24H         | WQ-2H        |
| Node: POND WET                | POND WET       | POND WET       | POND WET       | POND WET     |
| Type: SCS                     | SCS            | SCS            | SCS            | SCS          |
| Unit Hydrograph: Uh484        | Uh484          | Uh484          | Uh484          | Uh484        |
| Peaking Factor: 484.0         | 484.0          | 484.0          | 484.0          | 484.0        |
| Spec Time Inc(min): 2.00      | 1.33           | 2.00           | 2.00           | 1.33         |
| Comp Time Inc(min): 2.00      | 1.33           | 2.00           | 2.00           | 1.33         |
| Rain File: Huff I - 50%       | Huff III - 50% | Huff III - 50% | Huff III - 50% | Huff I - 50% |
| Rain Amount(in): 1.250        | 1.250          | 1.250          | 1.250          | 1.250        |
| Duration(hrs): 1.00           | 24.00          | 24.00          | 24.00          | 2.00         |
| Status: Onsite                | Onsite         | Onsite         | Onsite         | Onsite       |
| TC(min): 15.00                | 15.00          | 15.00          | 15.00          | 10.00        |
| Time Shift(hrs): 0.00         | 0.00           | 0.00           | 0.00           | 0.00         |
| Area(ac): 11.300              | 2.200          | 8.600          | 11.300         | 2.200        |
| Vol of Unit Hyd(in): 1.000    | 1.001          | 1.000          | 1.000          | 1.001        |
| Curve Num: 95.000             | 86.000         | 95.000         | 95.000         | 86.000       |
| DCIA(%): 0.000                | 0.000          | 0.000          | 0.000          | 0.000        |
| Time Max(hrs): 0.37           | 15.60          | 15.60          | 15.60          | 0.58         |
| Flow Max(cfs): 15.358         | 0.129          | 0.971          | 1.276          | 0.701        |
| Runoff Volume(in): 0.783      | 0.334          | 0.783          | 0.783          | 0.334        |
| Runoff Volume(ft3): 32123.483 | 2670.169       | 24447.785      | 32123.253      | 2670.199     |

|                               |              |              |              |              |
|-------------------------------|--------------|--------------|--------------|--------------|
| Name: FUTURE                  | ON           | DET BASIN    | FUTURE       | ON           |
| Group: BASE                   | BASE         | BASE         | BASE         | BASE         |
| Simulation: WQ-2H             | WQ-2H        | WQ-3H        | WQ-3H        | WQ-3H        |
| Node: POND WET                | POND WET     | POND WET     | POND WET     | POND WET     |
| Type: SCS                     | SCS          | SCS          | SCS          | SCS          |
| Unit Hydrograph: Uh484        | Uh484        | Uh484        | Uh484        | Uh484        |
| Peaking Factor: 484.0         | 484.0        | 484.0        | 484.0        | 484.0        |
| Spec Time Inc(min): 2.00      | 2.00         | 1.33         | 2.00         | 2.00         |
| Comp Time Inc(min): 2.00      | 2.00         | 1.33         | 2.00         | 2.00         |
| Rain File: Huff I - 50%       | Huff I - 50% | Huff I - 50% | Huff I - 50% | Huff I - 50% |
| Rain Amount(in): 1.250        | 1.250        | 1.250        | 1.250        | 1.250        |
| Duration(hrs): 2.00           | 2.00         | 3.00         | 3.00         | 3.00         |
| Status: Onsite                | Onsite       | Onsite       | Onsite       | Onsite       |
| TC(min): 15.00                | 15.00        | 10.00        | 15.00        | 15.00        |
| Time Shift(hrs): 0.00         | 0.00         | 0.00         | 0.00         | 0.00         |
| Area(ac): 8.600               | 11.300       | 2.200        | 8.600        | 11.300       |
| Vol of Unit Hyd(in): 1.000    | 1.000        | 1.001        | 1.000        | 1.000        |
| Curve Num: 95.000             | 95.000       | 86.000       | 95.000       | 95.000       |
| DCIA(%): 0.000                | 0.000        | 0.000        | 0.000        | 0.000        |
| Time Max(hrs): 0.50           | 0.50         | 0.80         | 0.50         | 0.50         |
| Flow Max(cfs): 6.901          | 9.067        | 0.489        | 4.803        | 6.311        |
| Runoff Volume(in): 0.783      | 0.783        | 0.334        | 0.783        | 0.783        |
| Runoff Volume(ft3): 24447.961 | 32123.483    | 2670.199     | 24447.961    | 32123.483    |

|                        |          |          |
|------------------------|----------|----------|
| Name: DET BASIN        | FUTURE   | ON       |
| Group: BASE            | BASE     | BASE     |
| Simulation: WQ-6H      | WQ-6H    | WQ-6H    |
| Node: POND WET         | POND WET | POND WET |
| Type: SCS              | SCS      | SCS      |
| Unit Hydrograph: Uh484 | Uh484    | Uh484    |
| Peaking Factor: 484.0  | 484.0    | 484.0    |

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|                              |              |              |
|------------------------------|--------------|--------------|
| Spec Time Inc(min): 1.33     | 2.00         | 2.00         |
| Comp Time Inc(min): 1.33     | 2.00         | 2.00         |
| Rain File: Huff I - 50%      | Huff I - 50% | Huff I - 50% |
| Rain Amount(in): 1.250       | 1.250        | 1.250        |
| Duration(hrs): 6.00          | 6.00         | 6.00         |
| Status: Onsite               | Onsite       | Onsite       |
| TC(min): 10.00               | 15.00        | 15.00        |
| Time Shift(hrs): 0.00        | 0.00         | 0.00         |
| Area(ac): 2.200              | 8.600        | 11.300       |
| Vol of Unit Hyd(in): 1.001   | 1.000        | 1.000        |
| Curve Num: 86.000            | 95.000       | 95.000       |
| DCIA(%): 0.000               | 0.000        | 0.000        |
| Time Max(hrs): 1.53          | 0.70         | 0.70         |
| Flow Max(cfs): 0.256         | 2.871        | 3.773        |
| Runoff Volume(in): 0.334     | 0.783        | 0.783        |
| Runoff Volume(ft3): 2670.199 | 24447.961    | 32123.483    |

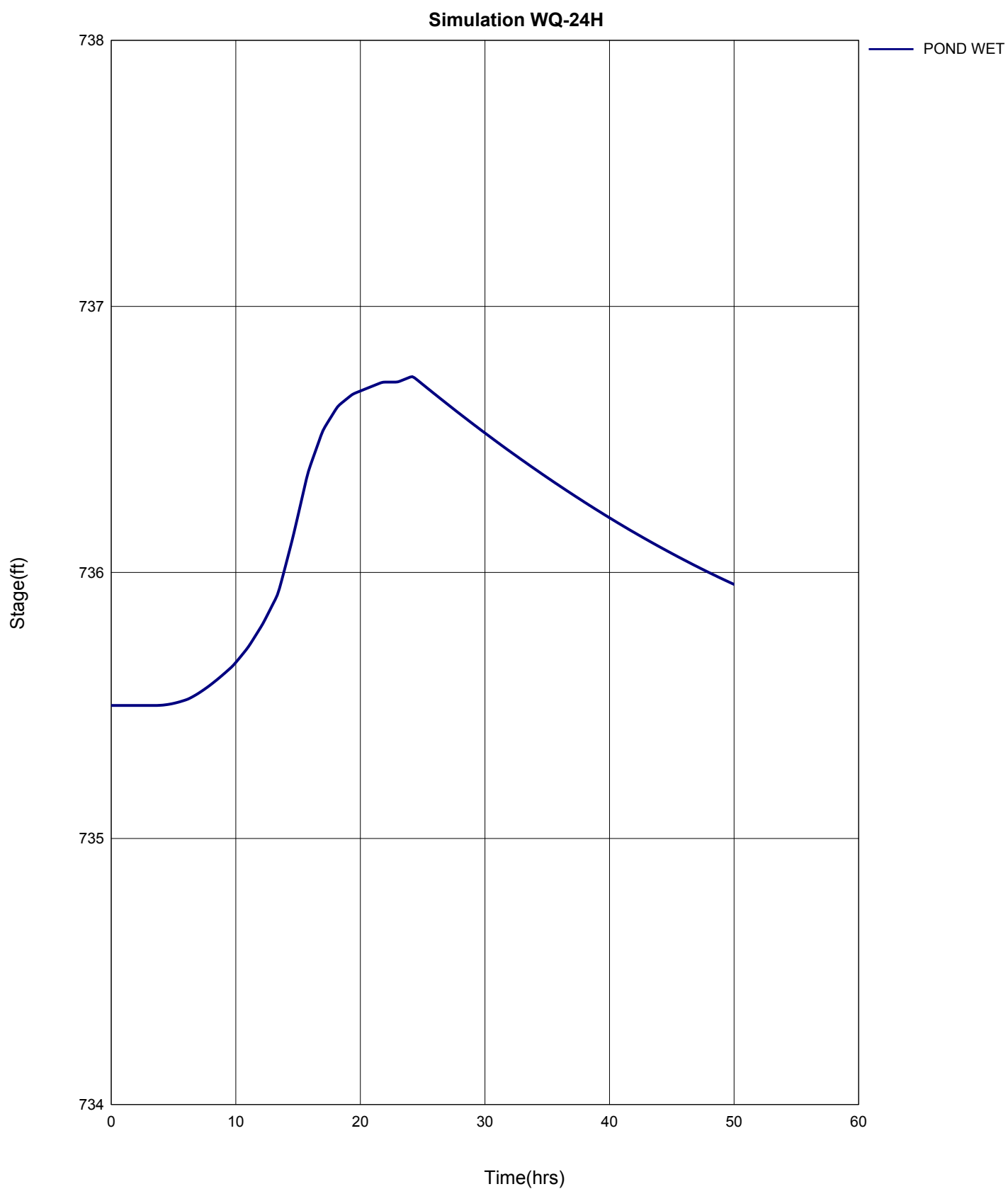
| Name          | Simulation | Max<br>Stage<br>ft | Warning<br>Stage<br>ft | Max Delta<br>Stage<br>ft | Max Surf<br>Area<br>ft2 | Max<br>Inflow<br>cfs | Max<br>Outflow<br>cfs |
|---------------|------------|--------------------|------------------------|--------------------------|-------------------------|----------------------|-----------------------|
| EX. DET BASIN | WQ-12H     | 734.000            | 743.500                | -0.5000                  | 2                       | 0.430                | 0.000                 |
| EX. DET BASIN | WQ-1H      | 734.000            | 743.500                | -0.5000                  | 2                       | 0.473                | 0.000                 |
| EX. DET BASIN | WQ-24H     | 734.000            | 743.500                | -0.5000                  | 2                       | 0.407                | 0.000                 |
| EX. DET BASIN | WQ-2H      | 734.000            | 743.500                | -0.5000                  | 2                       | 0.468                | 0.000                 |
| EX. DET BASIN | WQ-3H      | 734.000            | 743.500                | -0.5000                  | 2                       | 0.462                | 0.000                 |
| EX. DET BASIN | WQ-6H      | 734.000            | 743.500                | -0.5000                  | 2                       | 0.447                | 0.000                 |
| POND WET      | WQ-12H     | 736.859            | 742.000                | 0.0103                   | 38588                   | 3.816                | 0.430                 |
| POND WET      | WQ-1H      | 737.093            | 742.000                | 0.0593                   | 39610                   | 28.025               | 0.473                 |
| POND WET      | WQ-24H     | 736.736            | 742.000                | 0.0057                   | 38054                   | 2.374                | 0.406                 |
| POND WET      | WQ-2H      | 737.064            | 742.000                | 0.0438                   | 39483                   | 16.616               | 0.468                 |
| POND WET      | WQ-3H      | 737.035            | 742.000                | 0.0325                   | 39356                   | 11.451               | 0.462                 |
| POND WET      | WQ-6H      | 736.947            | 742.000                | 0.0195                   | 38974                   | 6.635                | 0.447                 |
| STR 101       | WQ-12H     | 734.918            | 744.090                | 0.0050                   | 367                     | 0.430                | 0.430                 |
| STR 101       | WQ-1H      | 734.935            | 744.090                | 0.0321                   | 372                     | 0.473                | 0.473                 |
| STR 101       | WQ-24H     | 734.908            | 744.090                | 0.0015                   | 364                     | 0.407                | 0.407                 |
| STR 101       | WQ-2H      | 734.933            | 744.090                | 0.0268                   | 372                     | 0.467                | 0.468                 |
| STR 101       | WQ-3H      | 734.931            | 744.090                | 0.0245                   | 371                     | 0.463                | 0.462                 |
| STR 101       | WQ-6H      | 734.925            | 744.090                | 0.0169                   | 369                     | 0.447                | 0.447                 |
| STR 102       | WQ-12H     | 735.605            | 743.380                | 0.0050                   | 352                     | 0.430                | 0.430                 |
| STR 102       | WQ-1H      | 735.620            | 743.380                | 0.0257                   | 356                     | 0.473                | 0.473                 |
| STR 102       | WQ-24H     | 735.596            | 743.380                | 0.0015                   | 349                     | 0.406                | 0.407                 |
| STR 102       | WQ-2H      | 735.618            | 743.380                | 0.0221                   | 356                     | 0.468                | 0.467                 |
| STR 102       | WQ-3H      | 735.617            | 743.380                | 0.0173                   | 355                     | 0.462                | 0.463                 |
| STR 102       | WQ-6H      | 735.611            | 743.380                | 0.0129                   | 353                     | 0.447                | 0.447                 |

| Simulation | Node     | Group | Time<br>hrs | Stage<br>ft | Warning<br>Stage<br>ft | Surface<br>Area<br>ft2 | Total<br>Inflow<br>cfs | Total<br>Outflow<br>cfs | Total<br>Vol In<br>af | Total<br>Vol Out<br>af |
|------------|----------|-------|-------------|-------------|------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|
| WQ-24H     | POND WET | BASE  | 0.00        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 0.17        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 0.35        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 0.50        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 0.67        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 0.83        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 1.00        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 1.17        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 1.33        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 1.50        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 1.67        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 1.83        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 2.00        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 2.17        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 2.33        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 2.50        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 2.67        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 2.83        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 3.00        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 3.17        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 3.33        | 735.500     | 742.000                | 32670                  | 0.000                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 3.50        | 735.500     | 742.000                | 32670                  | 0.001                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 3.67        | 735.500     | 742.000                | 32670                  | 0.008                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 3.83        | 735.500     | 742.000                | 32671                  | 0.020                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 4.00        | 735.501     | 742.000                | 32674                  | 0.031                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 4.17        | 735.501     | 742.000                | 32676                  | 0.042                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 4.33        | 735.502     | 742.000                | 32680                  | 0.053                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 4.50        | 735.503     | 742.000                | 32685                  | 0.064                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 4.67        | 735.505     | 742.000                | 32691                  | 0.074                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 4.83        | 735.506     | 742.000                | 32697                  | 0.085                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 5.00        | 735.508     | 742.000                | 32704                  | 0.094                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 5.17        | 735.510     | 742.000                | 32712                  | 0.104                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 5.33        | 735.512     | 742.000                | 32721                  | 0.113                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 5.50        | 735.514     | 742.000                | 32730                  | 0.122                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 5.67        | 735.516     | 742.000                | 32740                  | 0.131                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 5.83        | 735.519     | 742.000                | 32751                  | 0.140                  | 0.000                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 6.00        | 735.521     | 742.000                | 32762                  | 0.148                  | 0.001                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 6.17        | 735.524     | 742.000                | 32775                  | 0.181                  | 0.001                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 6.33        | 735.528     | 742.000                | 32791                  | 0.217                  | 0.001                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 6.50        | 735.532     | 742.000                | 32809                  | 0.235                  | 0.002                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 6.67        | 735.536     | 742.000                | 32828                  | 0.249                  | 0.002                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 6.83        | 735.541     | 742.000                | 32848                  | 0.261                  | 0.003                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 7.00        | 735.546     | 742.000                | 32869                  | 0.274                  | 0.004                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 7.17        | 735.551     | 742.000                | 32891                  | 0.286                  | 0.004                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 7.33        | 735.556     | 742.000                | 32914                  | 0.297                  | 0.005                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 7.50        | 735.561     | 742.000                | 32938                  | 0.308                  | 0.006                   | 0.0                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 7.67        | 735.567     | 742.000                | 32962                  | 0.319                  | 0.008                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 7.83        | 735.573     | 742.000                | 32987                  | 0.330                  | 0.009                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 8.00        | 735.579     | 742.000                | 33013                  | 0.340                  | 0.010                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 8.17        | 735.585     | 742.000                | 33039                  | 0.350                  | 0.012                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 8.33        | 735.591     | 742.000                | 33066                  | 0.360                  | 0.014                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 8.50        | 735.597     | 742.000                | 33094                  | 0.369                  | 0.016                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 8.67        | 735.604     | 742.000                | 33122                  | 0.378                  | 0.018                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 8.83        | 735.610     | 742.000                | 33151                  | 0.387                  | 0.020                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 9.00        | 735.617     | 742.000                | 33180                  | 0.395                  | 0.022                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 9.17        | 735.624     | 742.000                | 33209                  | 0.404                  | 0.025                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 9.33        | 735.631     | 742.000                | 33239                  | 0.412                  | 0.028                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 9.50        | 735.638     | 742.000                | 33270                  | 0.420                  | 0.030                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 9.67        | 735.645     | 742.000                | 33301                  | 0.435                  | 0.033                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 9.83        | 735.653     | 742.000                | 33335                  | 0.515                  | 0.037                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 10.00       | 735.662     | 742.000                | 33374                  | 0.553                  | 0.041                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 10.17       | 735.671     | 742.000                | 33415                  | 0.570                  | 0.045                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 10.33       | 735.680     | 742.000                | 33456                  | 0.582                  | 0.050                   | 0.1                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 10.50       | 735.690     | 742.000                | 33498                  | 0.593                  | 0.055                   | 0.2                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 10.67       | 735.700     | 742.000                | 33540                  | 0.604                  | 0.060                   | 0.2                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 10.83       | 735.710     | 742.000                | 33583                  | 0.617                  | 0.065                   | 0.2                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 11.00       | 735.720     | 742.000                | 33628                  | 0.701                  | 0.071                   | 0.2                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 11.17       | 735.732     | 742.000                | 33680                  | 0.756                  | 0.078                   | 0.2                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 11.33       | 735.744     | 742.000                | 33733                  | 0.777                  | 0.085                   | 0.2                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 11.50       | 735.756     | 742.000                | 33787                  | 0.792                  | 0.092                   | 0.2                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 11.67       | 735.769     | 742.000                | 33841                  | 0.805                  | 0.099                   | 0.2                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 11.83       | 735.781     | 742.000                | 33896                  | 0.817                  | 0.106                   | 0.2                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 12.00       | 735.794     | 742.000                | 33951                  | 0.830                  | 0.113                   | 0.2                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 12.17       | 735.807     | 742.000                | 34008                  | 0.907                  | 0.120                   | 0.3                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 12.33       | 735.822     | 742.000                | 34072                  | 0.982                  | 0.126                   | 0.3                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 12.50       | 735.837     | 742.000                | 34138                  | 1.008                  | 0.133                   | 0.3                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 12.67       | 735.852     | 742.000                | 34205                  | 1.025                  | 0.147                   | 0.3                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 12.83       | 735.868     | 742.000                | 34272                  | 1.039                  | 0.160                   | 0.3                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 13.00       | 735.883     | 742.000                | 34339                  | 1.052                  | 0.174                   | 0.3                   | 0.0                    |

| Simulation | Node     | Group | Time<br>hrs | Stage<br>ft | Warning<br>Stage<br>ft | Surface<br>Area<br>ft2 | Total<br>Inflow<br>cfs | Total<br>Outflow<br>cfs | Total<br>Vol In<br>af | Total<br>Vol Out<br>af |
|------------|----------|-------|-------------|-------------|------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|
| WQ-24H     | POND WET | BASE  | 13.17       | 735.899     | 742.000                | 34406                  | 1.065                  | 0.187                   | 0.3                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 13.33       | 735.915     | 742.000                | 34479                  | 1.322                  | 0.193                   | 0.4                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 13.50       | 735.939     | 742.000                | 34583                  | 1.766                  | 0.201                   | 0.4                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 13.67       | 735.967     | 742.000                | 34706                  | 1.889                  | 0.210                   | 0.4                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 13.83       | 735.997     | 742.000                | 34834                  | 1.938                  | 0.220                   | 0.4                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 14.00       | 736.026     | 742.000                | 34963                  | 1.969                  | 0.231                   | 0.5                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 14.17       | 736.056     | 742.000                | 35094                  | 1.997                  | 0.240                   | 0.5                   | 0.0                    |
| WQ-24H     | POND WET | BASE  | 14.33       | 736.087     | 742.000                | 35225                  | 2.023                  | 0.249                   | 0.5                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 14.50       | 736.117     | 742.000                | 35358                  | 2.079                  | 0.258                   | 0.5                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 14.67       | 736.149     | 742.000                | 35497                  | 2.212                  | 0.267                   | 0.6                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 14.83       | 736.182     | 742.000                | 35642                  | 2.266                  | 0.278                   | 0.6                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 15.00       | 736.216     | 742.000                | 35788                  | 2.296                  | 0.287                   | 0.6                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 15.17       | 736.250     | 742.000                | 35935                  | 2.320                  | 0.296                   | 0.7                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 15.33       | 736.283     | 742.000                | 36083                  | 2.343                  | 0.304                   | 0.7                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 15.50       | 736.317     | 742.000                | 36231                  | 2.364                  | 0.313                   | 0.7                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 15.67       | 736.351     | 742.000                | 36378                  | 2.332                  | 0.321                   | 0.8                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 15.83       | 736.380     | 742.000                | 36505                  | 1.868                  | 0.328                   | 0.8                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 16.00       | 736.404     | 742.000                | 36608                  | 1.710                  | 0.334                   | 0.8                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 16.17       | 736.426     | 742.000                | 36705                  | 1.686                  | 0.339                   | 0.8                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 16.33       | 736.448     | 742.000                | 36801                  | 1.689                  | 0.344                   | 0.9                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 16.50       | 736.470     | 742.000                | 36896                  | 1.697                  | 0.349                   | 0.9                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 16.67       | 736.492     | 742.000                | 36992                  | 1.705                  | 0.354                   | 0.9                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 16.83       | 736.514     | 742.000                | 37087                  | 1.702                  | 0.360                   | 0.9                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 17.00       | 736.533     | 742.000                | 37171                  | 1.370                  | 0.364                   | 0.9                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 17.17       | 736.548     | 742.000                | 37234                  | 1.191                  | 0.367                   | 1.0                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 17.33       | 736.561     | 742.000                | 37291                  | 1.159                  | 0.370                   | 1.0                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 17.50       | 736.573     | 742.000                | 37346                  | 1.156                  | 0.373                   | 1.0                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 17.67       | 736.586     | 742.000                | 37400                  | 1.159                  | 0.375                   | 1.0                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 17.83       | 736.598     | 742.000                | 37455                  | 1.162                  | 0.378                   | 1.0                   | 0.1                    |
| WQ-24H     | POND WET | BASE  | 18.00       | 736.611     | 742.000                | 37510                  | 1.164                  | 0.381                   | 1.0                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 18.17       | 736.622     | 742.000                | 37559                  | 0.983                  | 0.383                   | 1.1                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 18.33       | 736.630     | 742.000                | 37594                  | 0.819                  | 0.385                   | 1.1                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 18.50       | 736.637     | 742.000                | 37623                  | 0.788                  | 0.386                   | 1.1                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 18.67       | 736.643     | 742.000                | 37651                  | 0.782                  | 0.388                   | 1.1                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 18.83       | 736.650     | 742.000                | 37678                  | 0.783                  | 0.389                   | 1.1                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 19.00       | 736.656     | 742.000                | 37706                  | 0.784                  | 0.390                   | 1.1                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 19.17       | 736.662     | 742.000                | 37733                  | 0.785                  | 0.392                   | 1.1                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 19.33       | 736.668     | 742.000                | 37759                  | 0.723                  | 0.393                   | 1.1                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 19.50       | 736.672     | 742.000                | 37777                  | 0.619                  | 0.394                   | 1.1                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 19.67       | 736.676     | 742.000                | 37792                  | 0.596                  | 0.394                   | 1.2                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 19.83       | 736.679     | 742.000                | 37806                  | 0.592                  | 0.395                   | 1.2                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 20.00       | 736.682     | 742.000                | 37819                  | 0.593                  | 0.396                   | 1.2                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 20.17       | 736.685     | 742.000                | 37833                  | 0.593                  | 0.396                   | 1.2                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 20.33       | 736.688     | 742.000                | 37847                  | 0.594                  | 0.397                   | 1.2                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 20.50       | 736.692     | 742.000                | 37860                  | 0.594                  | 0.398                   | 1.2                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 20.67       | 736.695     | 742.000                | 37874                  | 0.595                  | 0.398                   | 1.2                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 20.83       | 736.698     | 742.000                | 37887                  | 0.596                  | 0.399                   | 1.2                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 21.00       | 736.701     | 742.000                | 37901                  | 0.596                  | 0.399                   | 1.2                   | 0.2                    |
| WQ-24H     | POND WET | BASE  | 21.17       | 736.704     | 742.000                | 37915                  | 0.597                  | 0.400                   | 1.2                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 21.33       | 736.707     | 742.000                | 37928                  | 0.597                  | 0.401                   | 1.2                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 21.50       | 736.710     | 742.000                | 37942                  | 0.598                  | 0.401                   | 1.2                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 21.67       | 736.713     | 742.000                | 37955                  | 0.584                  | 0.402                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 21.83       | 736.715     | 742.000                | 37963                  | 0.455                  | 0.402                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 22.00       | 736.716     | 742.000                | 37965                  | 0.410                  | 0.402                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 22.17       | 736.716     | 742.000                | 37965                  | 0.401                  | 0.402                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 22.33       | 736.716     | 742.000                | 37965                  | 0.400                  | 0.402                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 22.50       | 736.715     | 742.000                | 37965                  | 0.400                  | 0.402                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 22.67       | 736.715     | 742.000                | 37964                  | 0.401                  | 0.402                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 22.83       | 736.715     | 742.000                | 37964                  | 0.405                  | 0.402                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 23.00       | 736.716     | 742.000                | 37968                  | 0.523                  | 0.403                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 23.17       | 736.719     | 742.000                | 37979                  | 0.588                  | 0.403                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 23.33       | 736.722     | 742.000                | 37992                  | 0.600                  | 0.404                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 23.50       | 736.725     | 742.000                | 38006                  | 0.603                  | 0.404                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 23.67       | 736.728     | 742.000                | 38020                  | 0.604                  | 0.405                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 23.83       | 736.731     | 742.000                | 38033                  | 0.604                  | 0.406                   | 1.3                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 24.00       | 736.734     | 742.000                | 38047                  | 0.604                  | 0.406                   | 1.4                   | 0.3                    |
| WQ-24H     | POND WET | BASE  | 24.17       | 736.736     | 742.000                | 38053                  | 0.317                  | 0.406                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 24.33       | 736.732     | 742.000                | 38036                  | 0.061                  | 0.406                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 24.50       | 736.726     | 742.000                | 38011                  | 0.010                  | 0.405                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 24.67       | 736.720     | 742.000                | 37983                  | 0.001                  | 0.403                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 24.83       | 736.713     | 742.000                | 37956                  | 0.000                  | 0.402                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 25.00       | 736.707     | 742.000                | 37928                  | 0.000                  | 0.401                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 25.17       | 736.701     | 742.000                | 37900                  | 0.000                  | 0.399                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 25.33       | 736.694     | 742.000                | 37873                  | 0.000                  | 0.398                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 25.50       | 736.688     | 742.000                | 37845                  | 0.000                  | 0.397                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 25.67       | 736.682     | 742.000                | 37818                  | 0.000                  | 0.396                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 25.83       | 736.676     | 742.000                | 37791                  | 0.000                  | 0.394                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 26.00       | 736.669     | 742.000                | 37763                  | 0.000                  | 0.393                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 26.17       | 736.663     | 742.000                | 37736                  | 0.000                  | 0.392                   | 1.4                   | 0.4                    |

| Simulation | Node     | Group | Time<br>hrs | Stage<br>ft | Warning<br>Stage<br>ft | Surface<br>Area<br>ft2 | Total<br>Inflow<br>cfs | Total<br>Outflow<br>cfs | Total<br>Vol In<br>af | Total<br>Vol Out<br>af |
|------------|----------|-------|-------------|-------------|------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|
| WQ-24H     | POND WET | BASE  | 26.33       | 736.657     | 742.000                | 37709                  | 0.000                  | 0.390                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 26.50       | 736.651     | 742.000                | 37682                  | 0.000                  | 0.389                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 26.67       | 736.644     | 742.000                | 37655                  | 0.000                  | 0.388                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 26.83       | 736.638     | 742.000                | 37628                  | 0.000                  | 0.386                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 27.00       | 736.632     | 742.000                | 37602                  | 0.000                  | 0.385                   | 1.4                   | 0.4                    |
| WQ-24H     | POND WET | BASE  | 27.17       | 736.626     | 742.000                | 37575                  | 0.000                  | 0.384                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 27.33       | 736.620     | 742.000                | 37548                  | 0.000                  | 0.383                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 27.50       | 736.614     | 742.000                | 37522                  | 0.000                  | 0.381                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 27.67       | 736.608     | 742.000                | 37495                  | 0.000                  | 0.380                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 27.83       | 736.602     | 742.000                | 37469                  | 0.000                  | 0.379                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 28.00       | 736.596     | 742.000                | 37442                  | 0.000                  | 0.377                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 28.17       | 736.589     | 742.000                | 37416                  | 0.000                  | 0.376                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 28.33       | 736.583     | 742.000                | 37390                  | 0.000                  | 0.375                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 28.50       | 736.577     | 742.000                | 37363                  | 0.000                  | 0.374                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 28.67       | 736.571     | 742.000                | 37337                  | 0.000                  | 0.372                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 28.83       | 736.565     | 742.000                | 37311                  | 0.000                  | 0.371                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 29.00       | 736.560     | 742.000                | 37285                  | 0.000                  | 0.370                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 29.17       | 736.554     | 742.000                | 37259                  | 0.000                  | 0.369                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 29.33       | 736.548     | 742.000                | 37234                  | 0.000                  | 0.367                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 29.50       | 736.542     | 742.000                | 37208                  | 0.000                  | 0.366                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 29.67       | 736.536     | 742.000                | 37182                  | 0.000                  | 0.365                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 29.83       | 736.530     | 742.000                | 37157                  | 0.000                  | 0.363                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 30.00       | 736.524     | 742.000                | 37131                  | 0.000                  | 0.362                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 30.17       | 736.518     | 742.000                | 37106                  | 0.000                  | 0.361                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 30.33       | 736.512     | 742.000                | 37080                  | 0.000                  | 0.360                   | 1.4                   | 0.5                    |
| WQ-24H     | POND WET | BASE  | 30.50       | 736.507     | 742.000                | 37055                  | 0.000                  | 0.358                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 30.67       | 736.501     | 742.000                | 37030                  | 0.000                  | 0.357                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 30.83       | 736.495     | 742.000                | 37005                  | 0.000                  | 0.354                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 31.00       | 736.489     | 742.000                | 36980                  | 0.000                  | 0.353                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 31.17       | 736.484     | 742.000                | 36955                  | 0.000                  | 0.352                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 31.33       | 736.478     | 742.000                | 36930                  | 0.000                  | 0.350                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 31.50       | 736.472     | 742.000                | 36905                  | 0.000                  | 0.349                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 31.67       | 736.467     | 742.000                | 36880                  | 0.000                  | 0.348                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 31.83       | 736.461     | 742.000                | 36856                  | 0.000                  | 0.347                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 32.00       | 736.455     | 742.000                | 36831                  | 0.000                  | 0.345                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 32.17       | 736.450     | 742.000                | 36807                  | 0.000                  | 0.344                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 32.33       | 736.444     | 742.000                | 36782                  | 0.000                  | 0.343                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 32.50       | 736.438     | 742.000                | 36758                  | 0.000                  | 0.342                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 32.67       | 736.433     | 742.000                | 36734                  | 0.000                  | 0.340                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 32.83       | 736.427     | 742.000                | 36710                  | 0.000                  | 0.339                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 33.00       | 736.422     | 742.000                | 36685                  | 0.000                  | 0.338                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 33.17       | 736.416     | 742.000                | 36661                  | 0.000                  | 0.336                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 33.33       | 736.411     | 742.000                | 36637                  | 0.000                  | 0.335                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 33.50       | 736.405     | 742.000                | 36614                  | 0.000                  | 0.334                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 33.67       | 736.400     | 742.000                | 36590                  | 0.000                  | 0.333                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 33.83       | 736.394     | 742.000                | 36566                  | 0.000                  | 0.331                   | 1.4                   | 0.6                    |
| WQ-24H     | POND WET | BASE  | 34.00       | 736.389     | 742.000                | 36542                  | 0.000                  | 0.330                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 34.17       | 736.384     | 742.000                | 36519                  | 0.000                  | 0.329                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 34.33       | 736.378     | 742.000                | 36495                  | 0.000                  | 0.328                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 34.50       | 736.373     | 742.000                | 36472                  | 0.000                  | 0.326                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 34.67       | 736.367     | 742.000                | 36449                  | 0.000                  | 0.325                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 34.83       | 736.362     | 742.000                | 36425                  | 0.000                  | 0.324                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 35.00       | 736.357     | 742.000                | 36402                  | 0.000                  | 0.322                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 35.17       | 736.351     | 742.000                | 36379                  | 0.000                  | 0.321                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 35.33       | 736.346     | 742.000                | 36356                  | 0.000                  | 0.320                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 35.50       | 736.341     | 742.000                | 36333                  | 0.000                  | 0.319                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 35.67       | 736.336     | 742.000                | 36310                  | 0.000                  | 0.317                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 35.83       | 736.330     | 742.000                | 36287                  | 0.000                  | 0.316                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 36.00       | 736.325     | 742.000                | 36265                  | 0.000                  | 0.315                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 36.17       | 736.320     | 742.000                | 36242                  | 0.000                  | 0.314                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 36.33       | 736.315     | 742.000                | 36219                  | 0.000                  | 0.312                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 36.50       | 736.310     | 742.000                | 36197                  | 0.000                  | 0.311                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 36.67       | 736.305     | 742.000                | 36174                  | 0.000                  | 0.310                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 36.83       | 736.299     | 742.000                | 36152                  | 0.000                  | 0.308                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 37.00       | 736.294     | 742.000                | 36130                  | 0.000                  | 0.307                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 37.17       | 736.289     | 742.000                | 36108                  | 0.000                  | 0.306                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 37.33       | 736.284     | 742.000                | 36086                  | 0.000                  | 0.305                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 37.50       | 736.279     | 742.000                | 36064                  | 0.000                  | 0.303                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 37.67       | 736.274     | 742.000                | 36042                  | 0.000                  | 0.302                   | 1.4                   | 0.7                    |
| WQ-24H     | POND WET | BASE  | 37.83       | 736.269     | 742.000                | 36020                  | 0.000                  | 0.301                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 38.00       | 736.264     | 742.000                | 35998                  | 0.000                  | 0.299                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 38.17       | 736.259     | 742.000                | 35976                  | 0.000                  | 0.298                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 38.33       | 736.254     | 742.000                | 35955                  | 0.000                  | 0.297                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 38.50       | 736.249     | 742.000                | 35933                  | 0.000                  | 0.296                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 38.67       | 736.244     | 742.000                | 35912                  | 0.000                  | 0.294                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 38.83       | 736.239     | 742.000                | 35890                  | 0.000                  | 0.293                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 39.00       | 736.234     | 742.000                | 35869                  | 0.000                  | 0.292                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 39.17       | 736.229     | 742.000                | 35848                  | 0.000                  | 0.290                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 39.33       | 736.225     | 742.000                | 35827                  | 0.000                  | 0.289                   | 1.4                   | 0.8                    |

| Simulation | Node     | Group | Time<br>hrs | Stage<br>ft | Warning<br>Stage<br>ft | Surface<br>Area<br>ft2 | Total<br>Inflow<br>cfs | Total<br>Outflow<br>cfs | Total<br>Vol In<br>af | Total<br>Vol Out<br>af |
|------------|----------|-------|-------------|-------------|------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|
| WQ-24H     | POND WET | BASE  | 39.50       | 736.220     | 742.000                | 35805                  | 0.000                  | 0.288                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 39.67       | 736.215     | 742.000                | 35785                  | 0.000                  | 0.287                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 39.83       | 736.210     | 742.000                | 35764                  | 0.000                  | 0.285                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 40.00       | 736.205     | 742.000                | 35743                  | 0.000                  | 0.284                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 40.17       | 736.201     | 742.000                | 35722                  | 0.000                  | 0.283                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 40.33       | 736.196     | 742.000                | 35701                  | 0.000                  | 0.282                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 40.50       | 736.191     | 742.000                | 35681                  | 0.000                  | 0.280                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 40.67       | 736.186     | 742.000                | 35660                  | 0.000                  | 0.279                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 40.83       | 736.182     | 742.000                | 35640                  | 0.000                  | 0.278                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 41.00       | 736.177     | 742.000                | 35620                  | 0.000                  | 0.275                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 41.17       | 736.173     | 742.000                | 35600                  | 0.000                  | 0.273                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 41.33       | 736.168     | 742.000                | 35579                  | 0.000                  | 0.272                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 41.50       | 736.163     | 742.000                | 35560                  | 0.000                  | 0.271                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 41.67       | 736.159     | 742.000                | 35540                  | 0.000                  | 0.270                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 41.83       | 736.154     | 742.000                | 35520                  | 0.000                  | 0.268                   | 1.4                   | 0.8                    |
| WQ-24H     | POND WET | BASE  | 42.00       | 736.150     | 742.000                | 35500                  | 0.000                  | 0.267                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 42.17       | 736.145     | 742.000                | 35481                  | 0.000                  | 0.266                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 42.33       | 736.141     | 742.000                | 35461                  | 0.000                  | 0.265                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 42.50       | 736.136     | 742.000                | 35441                  | 0.000                  | 0.263                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 42.67       | 736.132     | 742.000                | 35422                  | 0.000                  | 0.262                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 42.83       | 736.127     | 742.000                | 35403                  | 0.000                  | 0.261                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 43.00       | 736.123     | 742.000                | 35384                  | 0.000                  | 0.260                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 43.17       | 736.119     | 742.000                | 35364                  | 0.000                  | 0.258                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 43.33       | 736.114     | 742.000                | 35345                  | 0.000                  | 0.257                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 43.50       | 736.110     | 742.000                | 35326                  | 0.000                  | 0.256                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 43.67       | 736.105     | 742.000                | 35307                  | 0.000                  | 0.255                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 43.83       | 736.101     | 742.000                | 35289                  | 0.000                  | 0.254                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 44.00       | 736.097     | 742.000                | 35270                  | 0.000                  | 0.252                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 44.17       | 736.093     | 742.000                | 35251                  | 0.000                  | 0.251                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 44.33       | 736.088     | 742.000                | 35233                  | 0.000                  | 0.250                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 44.50       | 736.084     | 742.000                | 35214                  | 0.000                  | 0.249                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 44.67       | 736.080     | 742.000                | 35196                  | 0.000                  | 0.247                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 44.83       | 736.076     | 742.000                | 35177                  | 0.000                  | 0.246                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 45.00       | 736.071     | 742.000                | 35159                  | 0.000                  | 0.245                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 45.17       | 736.067     | 742.000                | 35141                  | 0.000                  | 0.244                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 45.33       | 736.063     | 742.000                | 35123                  | 0.000                  | 0.242                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 45.50       | 736.059     | 742.000                | 35105                  | 0.000                  | 0.241                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 45.67       | 736.055     | 742.000                | 35087                  | 0.000                  | 0.240                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 45.83       | 736.051     | 742.000                | 35069                  | 0.000                  | 0.239                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 46.00       | 736.047     | 742.000                | 35051                  | 0.000                  | 0.238                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 46.17       | 736.043     | 742.000                | 35034                  | 0.000                  | 0.236                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 46.33       | 736.039     | 742.000                | 35016                  | 0.000                  | 0.235                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 46.50       | 736.035     | 742.000                | 34999                  | 0.000                  | 0.234                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 46.67       | 736.031     | 742.000                | 34981                  | 0.000                  | 0.233                   | 1.4                   | 0.9                    |
| WQ-24H     | POND WET | BASE  | 46.83       | 736.027     | 742.000                | 34964                  | 0.000                  | 0.231                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 47.00       | 736.023     | 742.000                | 34947                  | 0.000                  | 0.230                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 47.17       | 736.019     | 742.000                | 34929                  | 0.000                  | 0.229                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 47.33       | 736.015     | 742.000                | 34912                  | 0.000                  | 0.228                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 47.50       | 736.011     | 742.000                | 34895                  | 0.000                  | 0.226                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 47.67       | 736.007     | 742.000                | 34878                  | 0.000                  | 0.225                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 47.83       | 736.003     | 742.000                | 34862                  | 0.000                  | 0.224                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 48.00       | 735.999     | 742.000                | 34845                  | 0.000                  | 0.220                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 48.17       | 735.996     | 742.000                | 34829                  | 0.000                  | 0.219                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 48.33       | 735.992     | 742.000                | 34812                  | 0.000                  | 0.218                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 48.50       | 735.988     | 742.000                | 34796                  | 0.000                  | 0.217                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 48.67       | 735.984     | 742.000                | 34780                  | 0.000                  | 0.216                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 48.83       | 735.981     | 742.000                | 34763                  | 0.000                  | 0.214                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 49.00       | 735.977     | 742.000                | 34747                  | 0.000                  | 0.213                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 49.17       | 735.973     | 742.000                | 34731                  | 0.000                  | 0.212                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 49.33       | 735.970     | 742.000                | 34715                  | 0.000                  | 0.211                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 49.50       | 735.966     | 742.000                | 34699                  | 0.000                  | 0.210                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 49.67       | 735.962     | 742.000                | 34684                  | 0.000                  | 0.209                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 49.83       | 735.959     | 742.000                | 34668                  | 0.000                  | 0.207                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 50.00       | 735.955     | 742.000                | 34652                  | 0.000                  | 0.206                   | 1.4                   | 1.0                    |
| WQ-24H     | POND WET | BASE  | 50.01       | 735.955     | 742.000                | 34652                  | 0.000                  | 0.206                   | 1.4                   | 1.0                    |





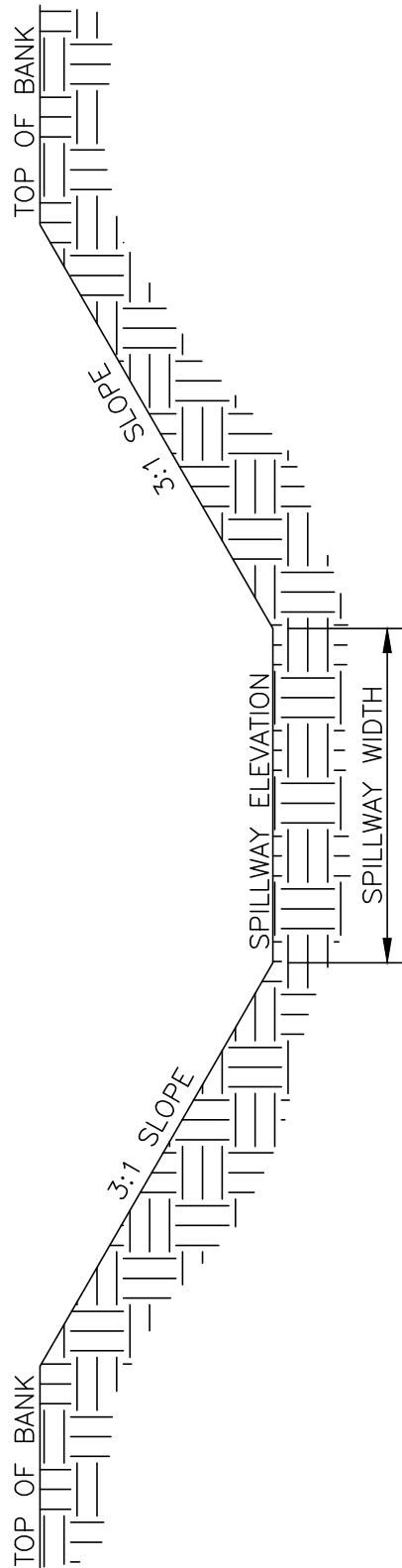
## **MISC. POND CALCULATIONS AND DETAILS**



# Emergency Overflow Calculations

|                     |                       |  |  |
|---------------------|-----------------------|--|--|
| <b>Project:</b>     | Kroger - Franklin, IN |  |  |
| <b>Date:</b>        | March 17, 2015        |  |  |
| <b>Job No:</b>      | W14-0460              |  |  |
| <b>Checked By:</b>  | atm                   |  |  |
| <b>Prepared By:</b> | atm                   |  |  |

|            |                                                          |     |     |
|------------|----------------------------------------------------------|-----|-----|
| POND 1 A-A | Peak Inflow                                              | 97  | cfs |
|            | Peak Inflow (125%)                                       | 121 | cfs |
|            |                                                          |     |     |
|            | Cw (Coefficient of Weir)                                 | 0.8 |     |
|            | h (Flow depth over Weir)                                 | 1   | ft  |
|            |                                                          |     |     |
|            | Width of Weir                                            | 28  | ft  |
|            | $L = Q100 * 1.25 / (2/3 * Cw * \sqrt{2*32.2} * h^{3/2})$ |     |     |



| LAKE<br>DESIGNATION: | TOP OF BANK | 100YR  | SPILLWAY | SPILLWAY |
|----------------------|-------------|--------|----------|----------|
|                      | ELEV.:      | ELEV.: | ELEV.:   | WIDTH:   |
| 'POND 1'             | 843.50      | 841.97 | 842.00   | 30'      |



**WEIHE**  
ENGINEERS

10505 N. College Avenue  
Indianapolis, Indiana 46280  
weihe.net  
317 | 846 - 6611

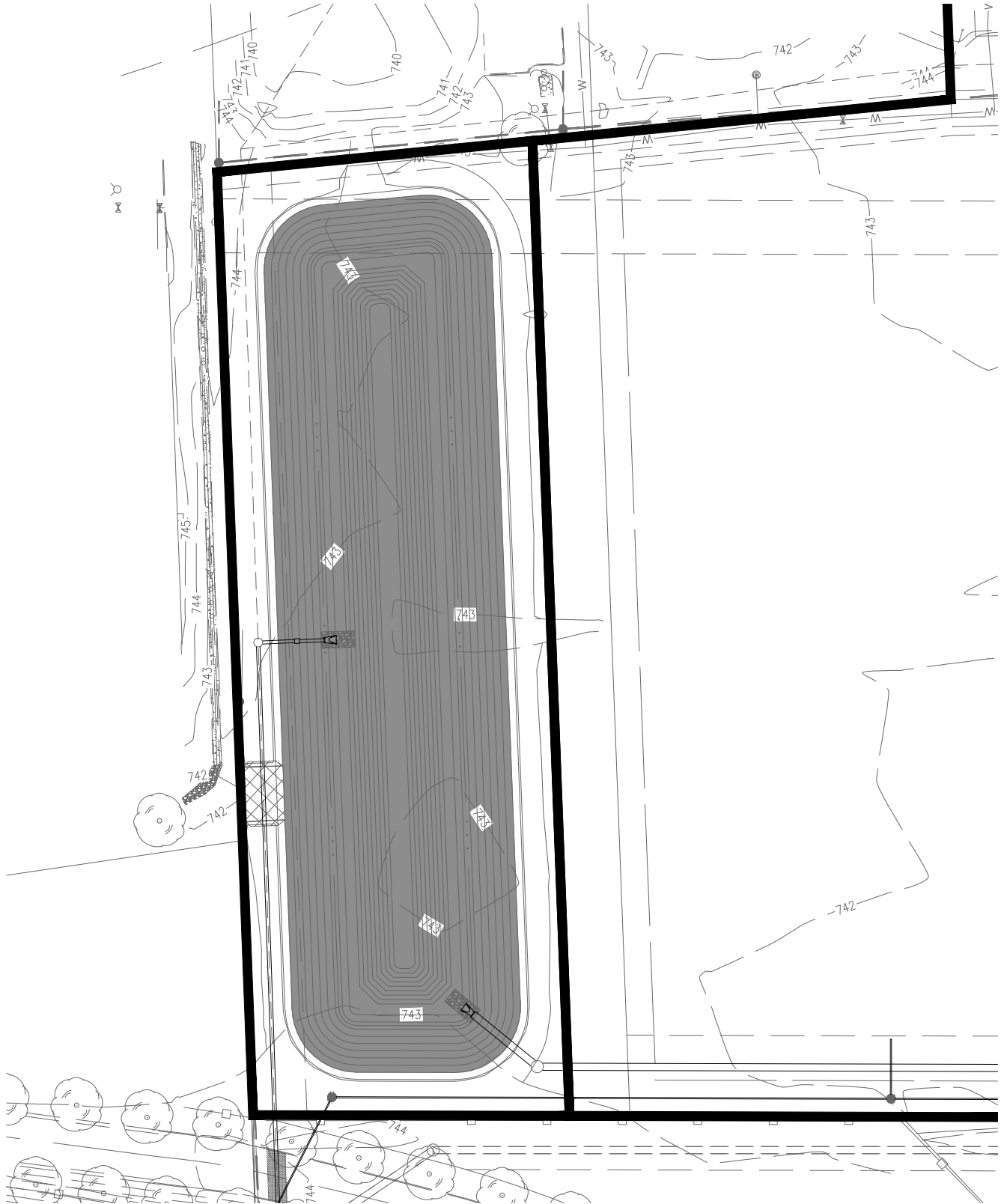
EMERGENC SPILLWA  
T PICAL SECTION

## Stage Storage Calculations

|                     |                       |  |
|---------------------|-----------------------|--|
| <b>Project:</b>     | Kroger - Franklin, IN |  |
| <b>Date:</b>        | March 17, 2015        |  |
| <b>Job No:</b>      | W14-0460              |  |
| <b>Checked By:</b>  | atm                   |  |
| <b>Prepared By:</b> | atm                   |  |

| <u>Elevation</u> | <u>Area (sf)</u> | <u>Area (ac)</u> | <u>Volume (cf)</u> | <u>Volume (ac-ft)</u> |
|------------------|------------------|------------------|--------------------|-----------------------|
| 735.5            | 32,455           | 0.745            | 0                  | 0                     |
| 736.0            | 34,465           | 0.791            | 16,730             | 0.384                 |
| 737.0            | 38,570           | 0.885            | 53,248             | 1.222                 |
| 738.0            | 42,775           | 0.982            | 93,920             | 2.156                 |
| 739.0            | 47,080           | 1.081            | 138,848            | 3.188                 |
| 740.0            | 51,480           | 1.182            | 188,128            | 4.319                 |
| 741.0            | 55,985           | 1.285            | 241,860            | 5.552                 |
| 742.0            | 60,595           | 1.391            | 300,150            | 6.890                 |

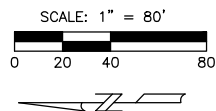
|                   |               |             |
|-------------------|---------------|-------------|
| <b>Volume at:</b> | <b>741.97</b> | <b>6.85</b> |
|-------------------|---------------|-------------|



KROGER - FRANKLIN, IN

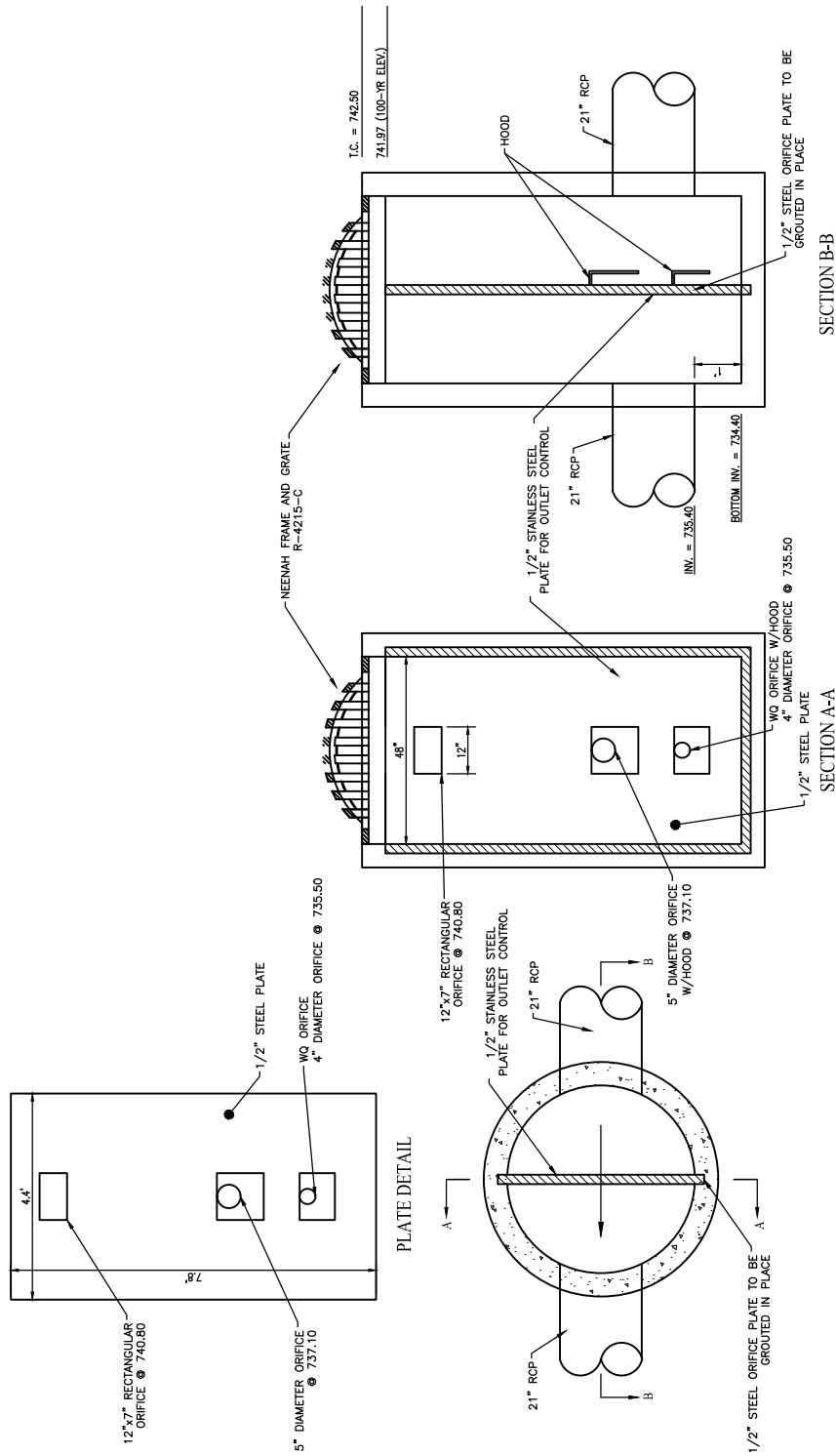
**WEIHE**  
ENGINEERS

10505 N. College Avenue  
Indianapolis, Indiana 46280  
weihe.net  
317 | 846 - 6611



DETENTION EXHIBIT

Date: March 17, 2015



**RESTRICTOR PLATE INSTALLATION DETAIL**  
**OUTLET SPECIAL STRUCTURE POND "1"**  
 (NO SCALE)

OUTLET DETAIL

## NOAA Atlas 14, Volume 2, Version 3 FRANKLIN

Station ID: 12-3095

Location name: Franklin, Indiana, US\*

Latitude: 39.5167°, Longitude: -86.0667°

Elevation:

Elevation (station metadata): 771 ft\*

\* source: Google Maps



## POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M. Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps & aeriels](#)

## PF tabular

| PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) <sup>1</sup> |                                     |                        |                        |                        |                        |                        |                        |                       |                      |                      |
|----------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|----------------------|----------------------|
| Duration                                                                                                 | Average recurrence interval (years) |                        |                        |                        |                        |                        |                        |                       |                      |                      |
|                                                                                                          | 1                                   | 2                      | 5                      | 10                     | 25                     | 50                     | 100                    | 200                   | 500                  | 1000                 |
| 5-min                                                                                                    | 0.373<br>(0.333-0.422)              | 0.444<br>(0.396-0.502) | 0.532<br>(0.472-0.601) | 0.602<br>(0.533-0.679) | 0.693<br>(0.609-0.782) | 0.764<br>(0.666-0.864) | 0.833<br>(0.720-0.945) | 0.906<br>(0.775-1.03) | 1.00<br>(0.844-1.15) | 1.08<br>(0.892-1.24) |
| 10-min                                                                                                   | 0.580<br>(0.517-0.656)              | 0.694<br>(0.618-0.783) | 0.827<br>(0.734-0.934) | 0.929<br>(0.822-1.05)  | 1.06<br>(0.931-1.20)   | 1.16<br>(1.01-1.31)    | 1.25<br>(1.08-1.42)    | 1.35<br>(1.16-1.54)   | 1.48<br>(1.24-1.69)  | 1.57<br>(1.30-1.81)  |
| 15-min                                                                                                   | 0.711<br>(0.634-0.804)              | 0.848<br>(0.755-0.958) | 1.02<br>(0.902-1.15)   | 1.14<br>(1.01-1.29)    | 1.31<br>(1.15-1.48)    | 1.43<br>(1.25-1.62)    | 1.56<br>(1.35-1.77)    | 1.68<br>(1.44-1.92)   | 1.84<br>(1.55-2.11)  | 1.96<br>(1.62-2.26)  |
| 30-min                                                                                                   | 0.940<br>(0.839-1.06)               | 1.14<br>(1.01-1.28)    | 1.39<br>(1.24-1.57)    | 1.59<br>(1.41-1.79)    | 1.85<br>(1.62-2.09)    | 2.05<br>(1.79-2.32)    | 2.25<br>(1.94-2.55)    | 2.46<br>(2.10-2.80)   | 2.73<br>(2.29-3.13)  | 2.94<br>(2.43-3.39)  |
| 60-min                                                                                                   | 1.15<br>(1.02-1.30)                 | 1.39<br>(1.24-1.57)    | 1.75<br>(1.55-1.97)    | 2.02<br>(1.79-2.28)    | 2.40<br>(2.11-2.71)    | 2.70<br>(2.35-3.05)    | 3.01<br>(2.60-3.41)    | 3.33<br>(2.85-3.80)   | 3.77<br>(3.17-4.33)  | 4.12<br>(3.42-4.76)  |
| 2-hr                                                                                                     | 1.34<br>(1.20-1.52)                 | 1.63<br>(1.45-1.84)    | 2.04<br>(1.82-2.32)    | 2.38<br>(2.10-2.69)    | 2.85<br>(2.50-3.22)    | 3.23<br>(2.82-3.65)    | 3.65<br>(3.13-4.12)    | 4.08<br>(3.45-4.61)   | 4.68<br>(3.89-5.33)  | 5.17<br>(4.23-5.94)  |
| 3-hr                                                                                                     | 1.42<br>(1.27-1.62)                 | 1.72<br>(1.53-1.95)    | 2.17<br>(1.93-2.46)    | 2.53<br>(2.24-2.86)    | 3.05<br>(2.67-3.44)    | 3.48<br>(3.01-3.93)    | 3.93<br>(3.37-4.46)    | 4.42<br>(3.73-5.02)   | 5.11<br>(4.21-5.85)  | 5.68<br>(4.59-6.54)  |
| 6-hr                                                                                                     | 1.70<br>(1.51-1.94)                 | 2.05<br>(1.82-2.35)    | 2.59<br>(2.29-2.95)    | 3.03<br>(2.67-3.45)    | 3.66<br>(3.19-4.16)    | 4.19<br>(3.62-4.75)    | 4.76<br>(4.05-5.40)    | 5.37<br>(4.50-6.12)   | 6.25<br>(5.11-7.14)  | 6.98<br>(5.59-8.02)  |
| 12-hr                                                                                                    | 2.03<br>(1.82-2.30)                 | 2.44<br>(2.19-2.77)    | 3.04<br>(2.71-3.44)    | 3.52<br>(3.14-3.98)    | 4.21<br>(3.71-4.73)    | 4.77<br>(4.17-5.35)    | 5.36<br>(4.63-6.02)    | 5.98<br>(5.09-6.74)   | 6.86<br>(5.72-7.78)  | 7.56<br>(6.21-8.64)  |
| 24-hr                                                                                                    | 2.43<br>(2.24-2.65)                 | 2.91<br>(2.68-3.18)    | 3.57<br>(3.28-3.89)    | 4.08<br>(3.74-4.45)    | 4.77<br>(4.36-5.20)    | 5.32<br>(4.84-5.81)    | 5.87<br>(5.32-6.42)    | 6.44<br>(5.80-7.05)   | 7.21<br>(6.44-7.92)  | 7.80<br>(6.92-8.73)  |
| 2-day                                                                                                    | 2.84<br>(2.63-3.08)                 | 3.41<br>(3.15-3.69)    | 4.15<br>(3.83-4.50)    | 4.73<br>(4.36-5.12)    | 5.51<br>(5.05-5.97)    | 6.12<br>(5.59-6.64)    | 6.74<br>(6.12-7.32)    | 7.37<br>(6.66-8.02)   | 8.21<br>(7.35-8.96)  | 8.86<br>(7.88-9.71)  |
| 3-day                                                                                                    | 3.05<br>(2.84-3.28)                 | 3.64<br>(3.39-3.92)    | 4.42<br>(4.11-4.75)    | 5.02<br>(4.66-5.39)    | 5.82<br>(5.38-6.26)    | 6.45<br>(5.95-6.94)    | 7.09<br>(6.51-7.63)    | 7.73<br>(7.07-8.33)   | 8.59<br>(7.80-9.28)  | 9.25<br>(8.36-10.0)  |
| 4-day                                                                                                    | 3.26<br>(3.05-3.48)                 | 3.88<br>(3.63-4.15)    | 4.68<br>(4.38-5.00)    | 5.30<br>(4.95-5.66)    | 6.13<br>(5.72-6.54)    | 6.78<br>(6.31-7.23)    | 7.44<br>(6.90-7.93)    | 8.10<br>(7.48-8.64)   | 8.98<br>(8.26-9.59)  | 9.65<br>(8.83-10.3)  |
| 7-day                                                                                                    | 3.86<br>(3.60-4.14)                 | 4.58<br>(4.28-4.92)    | 5.50<br>(5.13-5.89)    | 6.23<br>(5.80-6.67)    | 7.21<br>(6.70-7.71)    | 7.99<br>(7.40-8.54)    | 8.78<br>(8.11-9.38)    | 9.58<br>(8.81-10.2)   | 10.7<br>(9.76-11.4)  | 11.5<br>(10.5-12.3)  |
| 10-day                                                                                                   | 4.40<br>(4.12-4.71)                 | 5.22<br>(4.90-5.59)    | 6.25<br>(5.85-6.68)    | 7.06<br>(6.60-7.54)    | 8.16<br>(7.61-8.70)    | 9.02<br>(8.39-9.61)    | 9.89<br>(9.18-10.5)    | 10.8<br>(9.96-11.5)   | 12.0<br>(11.0-12.8)  | 12.9<br>(11.8-13.8)  |
| 20-day                                                                                                   | 6.03<br>(5.68-6.42)                 | 7.14<br>(6.72-7.60)    | 8.42<br>(7.92-8.96)    | 9.41<br>(8.84-10.0)    | 10.7<br>(10.1-11.4)    | 11.7<br>(11.0-12.5)    | 12.8<br>(11.9-13.5)    | 13.7<br>(12.8-14.6)   | 15.0<br>(13.9-16.0)  | 16.0<br>(14.8-17.0)  |
| 30-day                                                                                                   | 7.43<br>(7.00-7.87)                 | 8.74<br>(8.24-9.27)    | 10.2<br>(9.58-10.8)    | 11.3<br>(10.6-11.9)    | 12.7<br>(11.9-13.5)    | 13.8<br>(13.0-14.6)    | 14.9<br>(13.9-15.8)    | 15.9<br>(14.9-16.9)   | 17.3<br>(16.1-18.4)  | 18.3<br>(16.9-19.5)  |
| 45-day                                                                                                   | 9.42<br>(8.87-9.98)                 | 11.1<br>(10.4-11.7)    | 12.8<br>(12.0-13.5)    | 14.0<br>(13.2-14.9)    | 15.7<br>(14.7-16.6)    | 17.0<br>(15.9-17.9)    | 18.2<br>(17.0-19.2)    | 19.3<br>(18.0-20.4)   | 20.8<br>(19.3-22.0)  | 21.8<br>(20.2-23.2)  |
| 60-day                                                                                                   | 11.3<br>(10.6-11.9)                 | 13.2<br>(12.4-14.0)    | 15.1<br>(14.2-16.0)    | 16.6<br>(15.6-17.6)    | 18.5<br>(17.4-19.6)    | 19.9<br>(18.7-21.1)    | 21.3<br>(19.9-22.6)    | 22.6<br>(21.1-24.0)   | 24.2<br>(22.6-25.7)  | 25.4<br>(23.7-27.1)  |

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

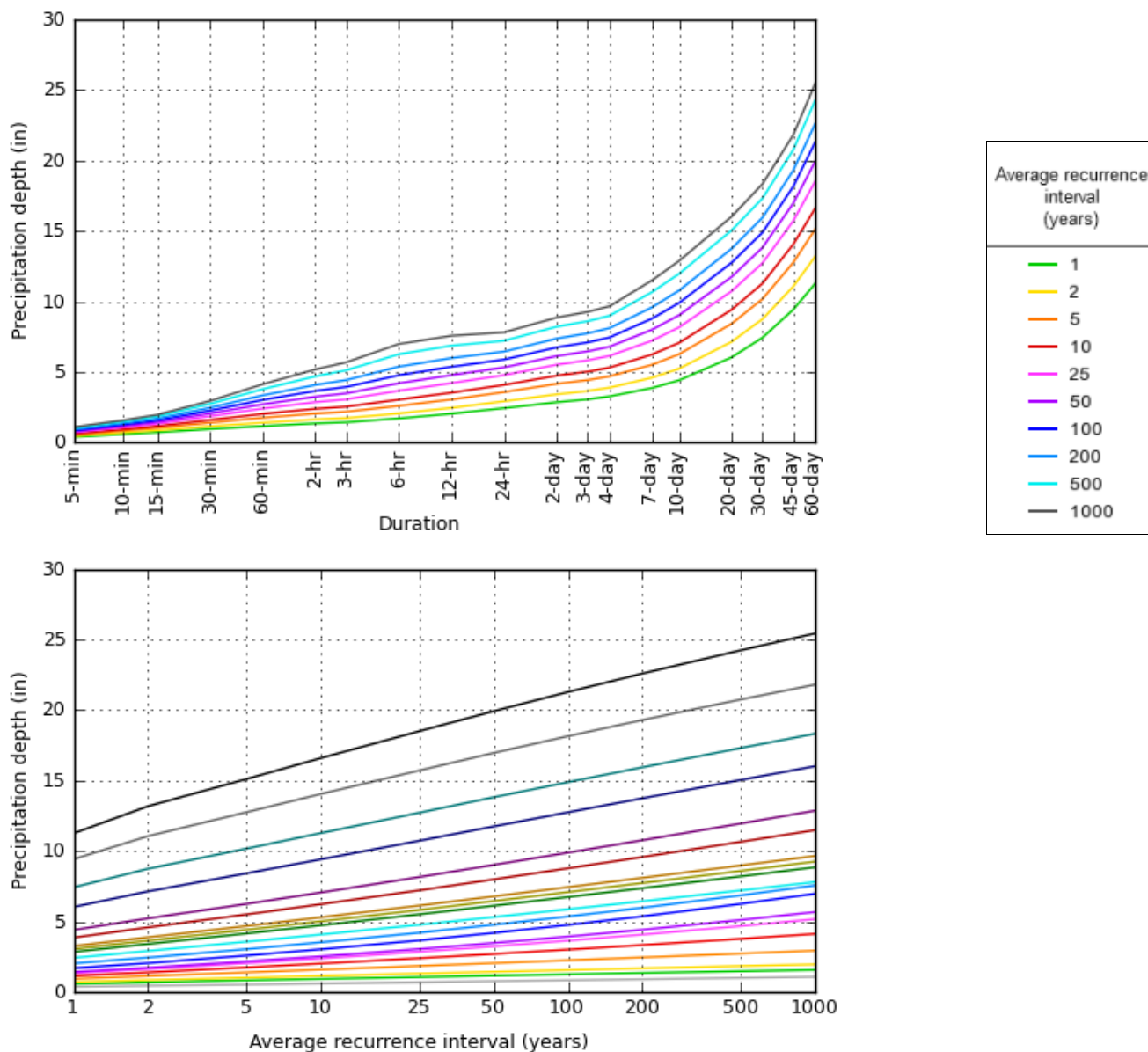
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[Back to Top](#)

# PF graphical

## PDS-based depth-duration-frequency (DDF) curves

Latitude: 39.5167°, Longitude: -86.0667°



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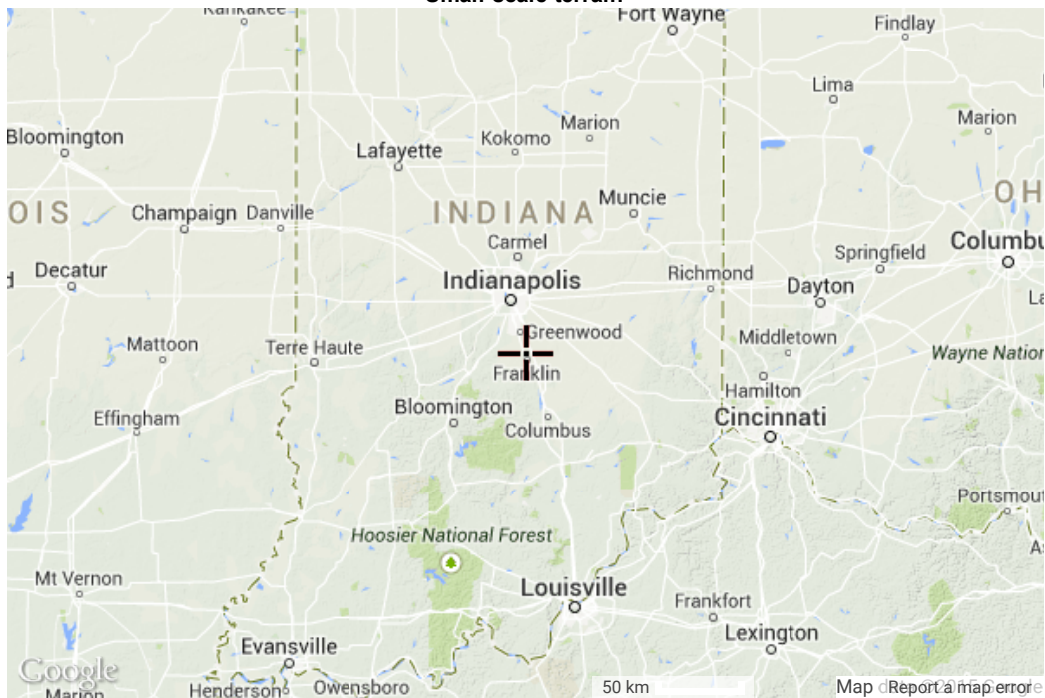
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| 30-min   | 7-day  |
| 60-min   | 10-day |
| 2-hr     | 20-day |
| 3-hr     | 30-day |
| 6-hr     | 45-day |
| 12-hr    | 60-day |
| 24-hr    |        |



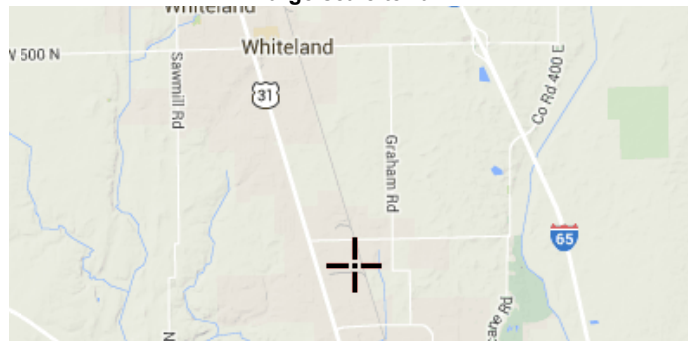
[Back to Top](#)

## Maps & aerals

### Small scale terrain



### Large scale terrain



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**NOAA Atlas 14, Volume 2, Version 3**  
**Location name: Franklin, Indiana, US\***  
**Latitude: 39.5167°, Longitude: -86.0667°**  
**Elevation: 766 ft\***  
 \* source: Google Maps



## POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

### PF tabular

| PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) <sup>1</sup> |                                     |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Duration                                                                                                      | Average recurrence interval (years) |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|                                                                                                               | 1                                   | 2                      | 5                      | 10                     | 25                     | 50                     | 100                    | 200                    | 500                    | 1000                   |
| 5-min                                                                                                         | 4.48<br>(4.00-5.06)                 | 5.33<br>(4.75-6.02)    | 6.38<br>(5.66-7.21)    | 7.22<br>(6.40-8.15)    | 8.32<br>(7.31-9.38)    | 9.17<br>(7.99-10.4)    | 10.0<br>(8.64-11.3)    | 10.9<br>(9.30-12.4)    | 12.0<br>(10.1-13.8)    | 12.9<br>(10.7-14.9)    |
| 10-min                                                                                                        | 3.48<br>(3.10-3.94)                 | 4.16<br>(3.71-4.70)    | 4.96<br>(4.40-5.60)    | 5.57<br>(4.93-6.28)    | 6.35<br>(5.59-7.18)    | 6.95<br>(6.06-7.86)    | 7.52<br>(6.50-8.54)    | 8.12<br>(6.95-9.25)    | 8.86<br>(7.45-10.2)    | 9.40<br>(7.79-10.9)    |
| 15-min                                                                                                        | 2.84<br>(2.54-3.22)                 | 3.39<br>(3.02-3.83)    | 4.06<br>(3.61-4.59)    | 4.57<br>(4.04-5.16)    | 5.24<br>(4.60-5.91)    | 5.73<br>(5.00-6.49)    | 6.23<br>(5.38-7.07)    | 6.73<br>(5.76-7.67)    | 7.37<br>(6.20-8.45)    | 7.83<br>(6.50-9.05)    |
| 30-min                                                                                                        | 1.88<br>(1.68-2.13)                 | 2.27<br>(2.02-2.56)    | 2.78<br>(2.47-3.14)    | 3.17<br>(2.81-3.58)    | 3.70<br>(3.25-4.17)    | 4.10<br>(3.57-4.64)    | 4.50<br>(3.89-5.10)    | 4.91<br>(4.20-5.60)    | 5.46<br>(4.59-6.26)    | 5.87<br>(4.87-6.78)    |
| 60-min                                                                                                        | 1.15<br>(1.02-1.30)                 | 1.39<br>(1.24-1.57)    | 1.75<br>(1.55-1.97)    | 2.02<br>(1.79-2.28)    | 2.40<br>(2.11-2.71)    | 2.70<br>(2.35-3.05)    | 3.01<br>(2.60-3.41)    | 3.33<br>(2.85-3.80)    | 3.77<br>(3.17-4.33)    | 4.12<br>(3.42-4.76)    |
| 2-hr                                                                                                          | 0.671<br>(0.599-0.761)              | 0.812<br>(0.724-0.922) | 1.02<br>(0.908-1.16)   | 1.19<br>(1.05-1.34)    | 1.43<br>(1.25-1.61)    | 1.62<br>(1.41-1.83)    | 1.82<br>(1.57-2.06)    | 2.04<br>(1.73-2.31)    | 2.34<br>(1.95-2.67)    | 2.59<br>(2.11-2.97)    |
| 3-hr                                                                                                          | 0.474<br>(0.423-0.538)              | 0.573<br>(0.510-0.650) | 0.722<br>(0.642-0.820) | 0.843<br>(0.746-0.954) | 1.01<br>(0.888-1.15)   | 1.16<br>(1.00-1.31)    | 1.31<br>(1.12-1.48)    | 1.47<br>(1.24-1.67)    | 1.70<br>(1.40-1.95)    | 1.89<br>(1.53-2.18)    |
| 6-hr                                                                                                          | 0.283<br>(0.252-0.324)              | 0.342<br>(0.304-0.392) | 0.432<br>(0.383-0.493) | 0.506<br>(0.446-0.575) | 0.611<br>(0.533-0.695) | 0.700<br>(0.604-0.794) | 0.795<br>(0.677-0.902) | 0.897<br>(0.751-1.02)  | 1.04<br>(0.854-1.19)   | 1.17<br>(0.933-1.34)   |
| 12-hr                                                                                                         | 0.169<br>(0.151-0.191)              | 0.203<br>(0.182-0.229) | 0.252<br>(0.225-0.285) | 0.293<br>(0.260-0.330) | 0.349<br>(0.308-0.392) | 0.396<br>(0.346-0.444) | 0.445<br>(0.384-0.500) | 0.496<br>(0.422-0.559) | 0.569<br>(0.475-0.646) | 0.628<br>(0.515-0.717) |
| 24-hr                                                                                                         | 0.101<br>(0.093-0.110)              | 0.121<br>(0.112-0.132) | 0.149<br>(0.137-0.162) | 0.170<br>(0.156-0.185) | 0.199<br>(0.182-0.217) | 0.222<br>(0.202-0.242) | 0.245<br>(0.222-0.268) | 0.268<br>(0.242-0.294) | 0.300<br>(0.268-0.330) | 0.325<br>(0.288-0.364) |
| 2-day                                                                                                         | 0.059<br>(0.055-0.064)              | 0.071<br>(0.066-0.077) | 0.087<br>(0.080-0.094) | 0.099<br>(0.091-0.107) | 0.115<br>(0.105-0.124) | 0.128<br>(0.116-0.138) | 0.140<br>(0.128-0.152) | 0.153<br>(0.139-0.167) | 0.171<br>(0.153-0.187) | 0.184<br>(0.164-0.202) |
| 3-day                                                                                                         | 0.042<br>(0.039-0.046)              | 0.051<br>(0.047-0.054) | 0.061<br>(0.057-0.066) | 0.070<br>(0.065-0.075) | 0.081<br>(0.075-0.087) | 0.090<br>(0.083-0.096) | 0.098<br>(0.090-0.106) | 0.107<br>(0.098-0.116) | 0.119<br>(0.108-0.129) | 0.129<br>(0.116-0.139) |
| 4-day                                                                                                         | 0.034<br>(0.032-0.036)              | 0.040<br>(0.038-0.043) | 0.049<br>(0.046-0.052) | 0.055<br>(0.052-0.059) | 0.064<br>(0.060-0.068) | 0.071<br>(0.066-0.075) | 0.078<br>(0.072-0.083) | 0.084<br>(0.078-0.090) | 0.094<br>(0.086-0.100) | 0.101<br>(0.092-0.108) |
| 7-day                                                                                                         | 0.023<br>(0.021-0.025)              | 0.027<br>(0.025-0.029) | 0.033<br>(0.031-0.035) | 0.037<br>(0.035-0.040) | 0.043<br>(0.040-0.046) | 0.048<br>(0.044-0.051) | 0.052<br>(0.048-0.056) | 0.057<br>(0.052-0.061) | 0.063<br>(0.058-0.068) | 0.068<br>(0.062-0.073) |
| 10-day                                                                                                        | 0.018<br>(0.017-0.020)              | 0.022<br>(0.020-0.023) | 0.026<br>(0.024-0.028) | 0.029<br>(0.028-0.031) | 0.034<br>(0.032-0.036) | 0.038<br>(0.035-0.040) | 0.041<br>(0.038-0.044) | 0.045<br>(0.042-0.048) | 0.050<br>(0.046-0.053) | 0.054<br>(0.049-0.057) |
| 20-day                                                                                                        | 0.013<br>(0.012-0.013)              | 0.015<br>(0.014-0.016) | 0.018<br>(0.016-0.019) | 0.020<br>(0.018-0.021) | 0.022<br>(0.021-0.024) | 0.024<br>(0.023-0.026) | 0.027<br>(0.025-0.028) | 0.029<br>(0.027-0.030) | 0.031<br>(0.029-0.033) | 0.033<br>(0.031-0.036) |
| 30-day                                                                                                        | 0.010<br>(0.010-0.011)              | 0.012<br>(0.011-0.013) | 0.014<br>(0.013-0.015) | 0.016<br>(0.015-0.017) | 0.018<br>(0.017-0.019) | 0.019<br>(0.018-0.020) | 0.021<br>(0.019-0.022) | 0.022<br>(0.021-0.023) | 0.024<br>(0.022-0.026) | 0.025<br>(0.024-0.027) |
| 45-day                                                                                                        | 0.009<br>(0.008-0.009)              | 0.010<br>(0.010-0.011) | 0.012<br>(0.011-0.013) | 0.013<br>(0.012-0.014) | 0.015<br>(0.014-0.015) | 0.016<br>(0.015-0.017) | 0.017<br>(0.016-0.018) | 0.018<br>(0.017-0.019) | 0.019<br>(0.018-0.020) | 0.020<br>(0.019-0.021) |
| 60-day                                                                                                        | 0.008<br>(0.007-0.008)              | 0.009<br>(0.009-0.010) | 0.010<br>(0.010-0.011) | 0.012<br>(0.011-0.012) | 0.013<br>(0.012-0.014) | 0.014<br>(0.013-0.015) | 0.015<br>(0.014-0.016) | 0.016<br>(0.015-0.017) | 0.017<br>(0.016-0.018) | 0.018<br>(0.016-0.019) |

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

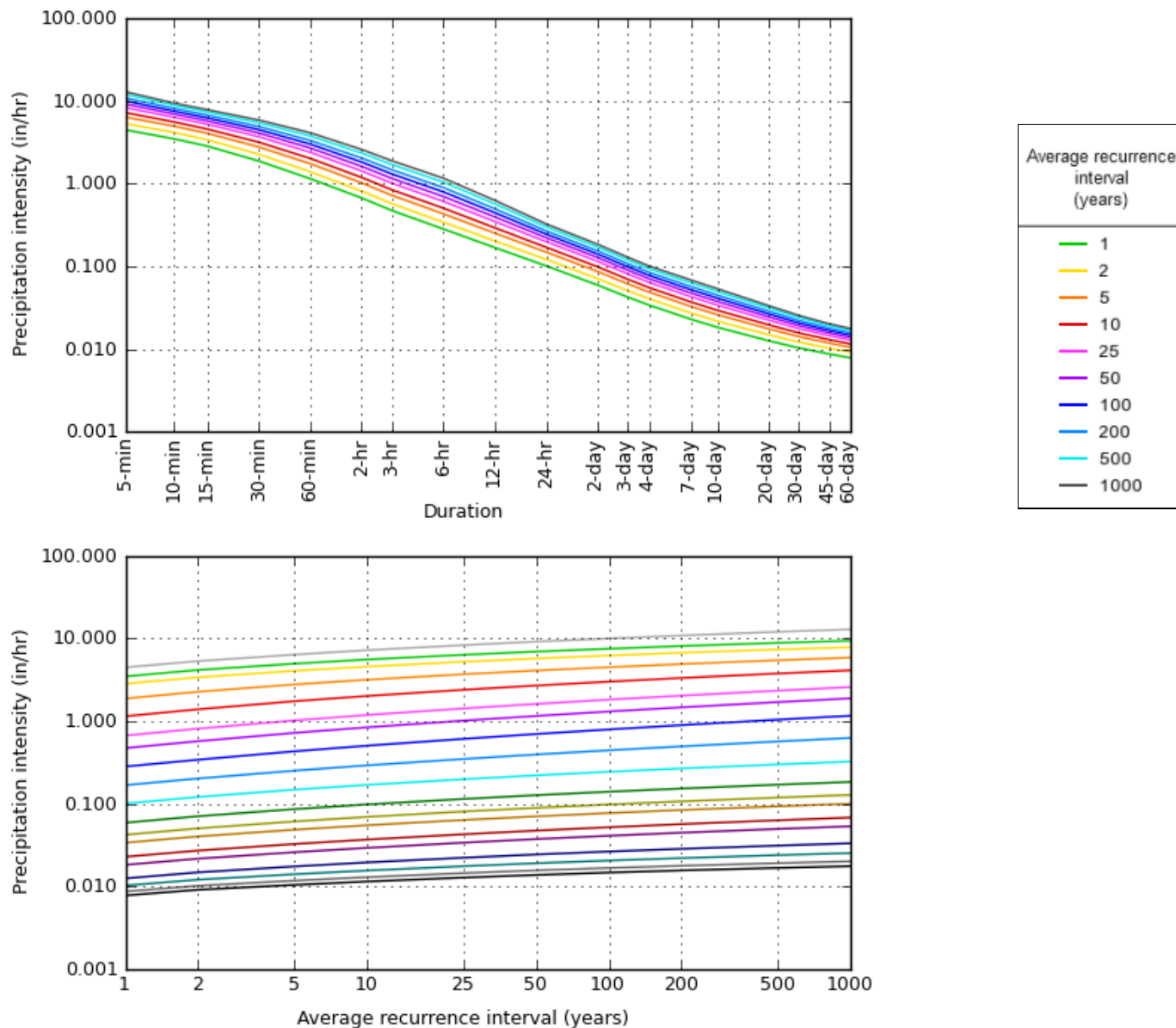
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[Back to Top](#)

### PF graphical

## PDS-based intensity-duration-frequency (IDF) curves

Latitude: 39.5167°, Longitude: -86.0667°



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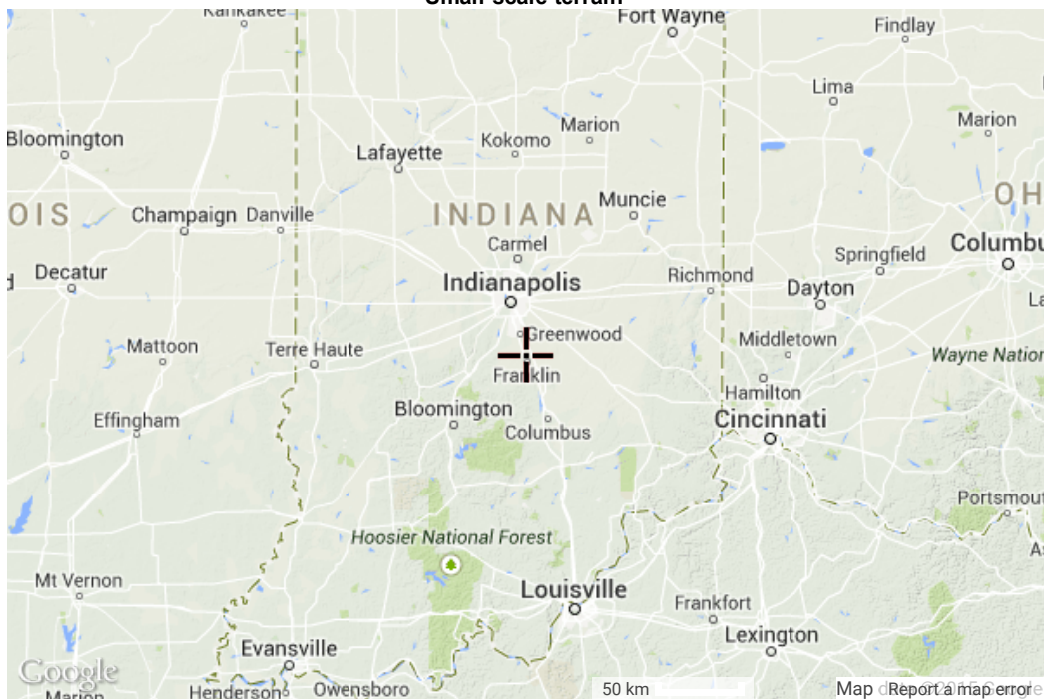
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| 60-min   | 10-day |
| 2-hr     | 20-day |
| 3-hr     | 30-day |
| 6-hr     | 45-day |
| 12-hr    | 60-day |
| 24-hr    |        |

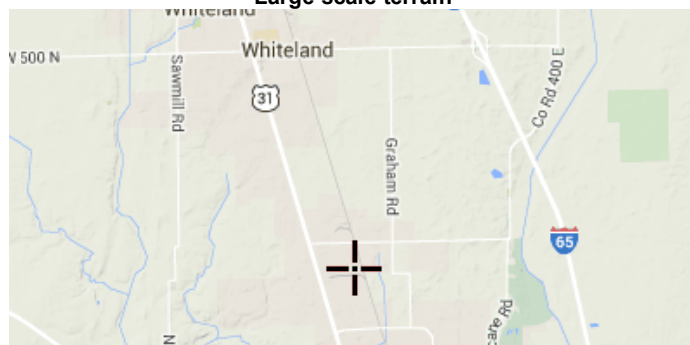
[Back to Top](#)

## Maps & aerals

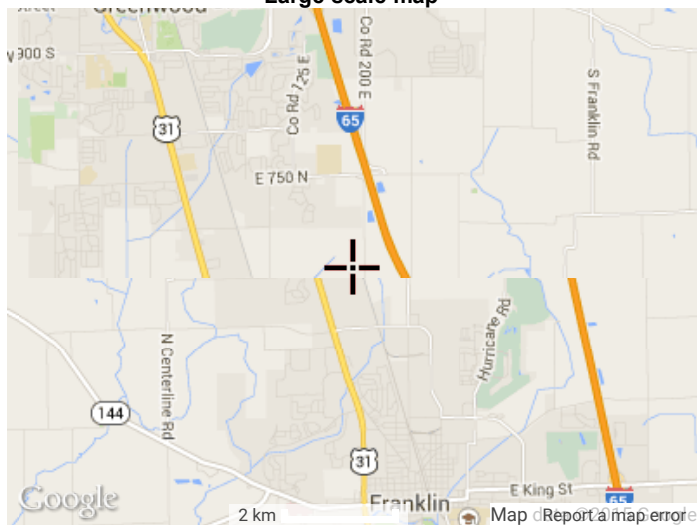
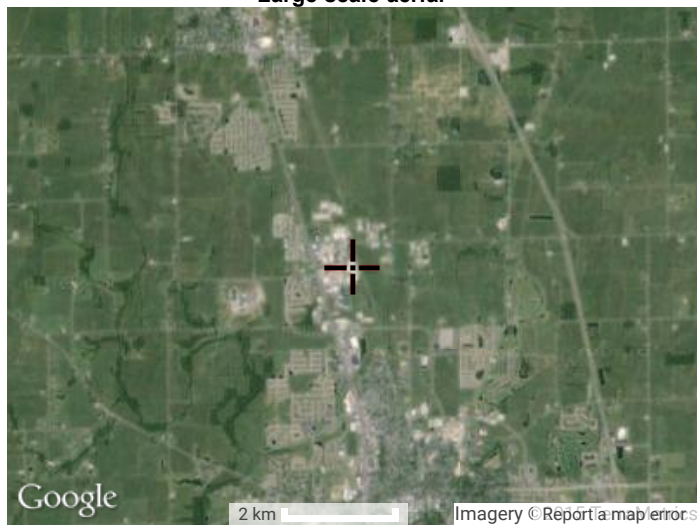
### Small scale terrain



### Large scale terrain





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