INITIAL INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN

EXISTING CCR IMPOUNDMENTS

CCR Rule Section 257.82

ASBURY POWER PLANT

21133 Uphill Lane
Asbury, Missouri 64832

October 17, 2016

SERVICES YOU COUNT ON

EMPIRE DISTRICT ELECTRIC COMPANY

Prepared by:

PALMERTON & PARRISH, INC.

STATE OF MISSOURI
DONALD C. NOWACK JR.
NUMBER
PE-2008019579
10/17/16
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October 17, 2016

Empire District Electric Company
Asbury Power Plant
21133 Uphill Lane
Asbury, Missouri 64832

RE: **Initial Inflow Design Flood Control System Plan** – CCR Rule Section 257.82
Empire District Electric Company – Asbury Power Plant
Asbury, Missouri
PPI Project Number 231518

To Whom It May Concern:

This document presents the **Initial Inflow Design Flood Control System Plan** for the Empire District Electric Company's CCR Impoundment at the Asbury Power Plant. This document has been prepared to meet the requirements of Section 257.82 of the CCR Rule.

In accordance with Section 257.105(g)(4), a copy of this document should be placed in Empire's operating record. In accordance with Section 257.107(g)(4), this document should also be posted to Empire's CCR Compliance website. Notification of the availability of this document should be provided to the State Director, as required in Section 257.106(g)(4).

PALMERTON & PARRISH, INC.
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EMPIRE DISTRICT ELECTRIC COMPANY – ASBURY POWER PLANT

ASBURY, MISSOURI

1.0 INTRODUCTION

This Initial Inflow Design Flood Control System Plan has been prepared according to the U. S. Environmental Protection Agency final rule regarding the disposal of coal combustion residuals from electric utilities (40 CFR Part 257 and 261, also known as the CCR Rule). The CCR Rule Section 257.82 requires the owner or operator of an existing or new CCR surface impoundment or any lateral expansion of a CCR surface impoundment must design, construct, operate, and maintain an inflow design flood control system according to the requirements of this Section.

This plan may be amended at any time provided the revised plan is placed in the facility's operating record as required by Section 257.105(g)(4). This plan must be amended whenever there is a substantial change in conditions or a minimum of every five (5) years.

The Asbury Power Plant maintains one CCR impoundment, the Asbury CCR Impoundment. The Impoundment accepts all CCR wastes generated by the Asbury Power Plant. See Figures 1 and 2 in Appendix I for the Asbury CCR Impoundment location on a topographic map and aerial photograph, respectively.

The Asbury CCR Impoundment is subdivided into three (3) operational Ponds, identified as the Lower Pond, Upper Pond, and South Pond. The Lower Pond, Upper Pond, and South Pond are separated by interior earthen embankments. The Upper Pond is further subdivided by an interior dike into Upper Pond A (North Cell of the Upper Pond) and Upper Pond B (South Cell of the Upper Pond). The Lower Pond is further subdivided by interior dikes into several sections. The sections of the Lower Pond are identified as Sections D through J for the purposes of this Report. See Figure 3 in Appendix I for a diagram showing each section located within the Asbury CCR Impoundment.

The following sections of this report assess the hydrologic and hydraulic capacity requirements for the Asbury CCR Impoundment.

2.0 ANALYSIS OF EXISTING INFLOW DESIGN FLOOD CONTROL SYSTEM

2.1 Hazard Classification and Design Assumptions

The Asbury CCR Impoundment is classified as a significant hazard potential CCR surface impoundment in accordance with Section 257.73(a)(2) of the CCR Rule. In accordance with Section 257.82(a), the inflow design flood control system must adequately manage flow for a 1,000-year flood.

Design assumptions for the hydrologic and hydraulic model include the following:

1. There is virtually no loss of water through the bottom of the impoundment. Additionally, all sections of the Impoundment and drainage areas outside of the impoundment are modeled as impervious (CN = 98), with the exception of Lower Pond Section J, which has a significant amount of area that is not subject to submersion. The area within Lower Pond Section J that is not subject to submersion was assigned a CN number of 78 for meadow in good condition with hydrologic soil group D. These assumptions are considered conservative.

2. Three (3) sections within the Asbury CCR Impoundment normally operate with pools of water. The operating water levels used in the model for the Upper Pond A, Upper Pond B, and Lower Pond Section J are 952.5 feet, 953.6 feet, and 928.8 feet, respectively.

3. Process water entering the Asbury CCR Impoundment comes from three (3) sources: the coal pile sump, bottom ash sluice water discharge, and the Foggy Pond discharge.

   Rainfall infiltrating the coal pile flows into a sump and is pumped into Upper Pond A.

   Water in the Foggy Pond consists of process water and rain that falls within the small drainage area around the Pond. Foggy Pond is pumped into Upper Pond B when it fills during a precipitation event. For the model, all runoff from the Foggy Pond drainage area is pumped into Upper Pond B. In reality, the volume of water discharged from the Foggy Pond is limited by the pump capacity.

   Bottom ash sluice water is pumped into Lower Pond Section G. Under normal operating conditions, makeup water for bottom ash sluice is obtained from Upper Pond B. To be conservative, the model does not account for water removal from Upper Pond B. Based on the bottom ash sluice pumpõs maximum capacity of 1625 gallons per minute and the pumping frequency of 3 hours per day, the 24 hour estimated maximum volume of bottom ash sluice water entering Lower Pond Section G is 0.90 acre-feet.

4. The National Weather Service Precipitation Frequency Data Server was used to determine the 1000 year recurrence interval precipitation estimate for the site. The 1,000 year event for the durations of 6 hours, 12 hours, and 24 hours were evaluated. The 24 hour, 1,000 year recurrence interval precipitation event was determined to be the critical design event that produced the maximum peak discharge for the system. For the 24 hour duration the precipitation depth is estimated at 13.6 inches. A copy of the output from the National Weather Service Precipitation Frequency Data Server is included in Appendix II.

With the exception of rainfall over the drainage areas at the coal pile and around the Foggy Pond, the inflow design flood for the Asbury CCR Impoundment is limited to the direct precipitation that falls within the perimeter of the Impoundment. Runoff pumped from the coal pile sump and the Foggy Pond is discharged into the CCR Impoundment in Upper Pond A and Upper Pond B, respectively.

Figure 3 in Appendix I is a diagram showing each section located within the Asbury CCR Impoundment, the approximate location of the drainage area for each section, and flow routing.

2.2 Hydrologic and Hydraulic Model

The volumes of the individual basins located within the Asbury CCR Impoundment were estimated using a 1-foot topographic map of the impoundment. The topographic map was developed from a comprehensive topographic survey performed in 2012. The topographic survey was updated in 2014, and again in August 2016. The August 2016 topographic survey update included surveying of areas in the Lower Pond where additional CCR had been placed, and surveying of the bottom of the South Pond.

See Figure 3 in Appendix I for a diagram showing each section located within the Asbury CCR Impoundment, the current topographic contours, the approximate location of the drainage area for each section, and flow routing. The following table provides the model input data used for each section.

Table 2.2-1: Asbury CCR Impoundment Model Input Data

Section	Drainage Area (Acres)	Receives Water From	Lowest Elevation on Dike	TR55 CN
Upper Pond A	4.94	Coal Pile Sump	953.8	98
Upper Pond B	14.87	Foggy Pond	954.4	93.42
South Pond (Section C)	12.40	NA	954.2	98
Lower Pond Section D	10.50	Upper Pond A	951.7	98
Lower Pond Section E	7.02	Section D	947.3	98
Lower Pond Section F	3.99	NA	952.8	98
Lower Pond Section G	4.39	Bottom Ash Sluice	946.9	98
Lower Pond Section H	9.51	NA	946.5	98
Lower Pond Section I	12.19	NA	944.4	98
Lower Pond Section J	39.30	Upper Pond B	931.5	86.61
Coal Pile	19.14	NA	NA	98
Foggy Pond	0.89	NA	NA	98

The U.S. Army Corps of Engineers HEC-1 software was used to model the flow of water through the connected sections within the impoundment and to estimate the ponding water level in isolated sections within the impoundment. The HEC-1 model is designed to simulate the surface runoff response of a watershed to precipitation by representing the watershed as an interconnected system of hydrologic and hydraulic components. Rainfall over the Asbury CCR Impoundment was modeled using the SCS Unit

Hydrograph method. The SCS Type II distribution and abstractions from rainfall were estimated using the NRCS Technical Release 55, Urban Hydrology for Small Watersheds. To be conservative, most of the drainage areas in the model were considered virtually impervious (CN = 98). The exception is Lower Pond Section J, which has a significant area that is not subject to submersion. With the exception of pumped flows from the coal pile and the small area around Foggy Pond, the Asbury CCR Impoundment is not subject to stormwater run-on from outside areas.

Seven (7) different HEC-1 models were developed based on the hydraulic connections within the Impoundment, which as summarized below.

1. **Upper Pond A, Lower Pond Section D, and Lower Pond Section E:** The drainage area for Upper Pond A also includes the coal pile drainage area. The initial water level in Upper Pond A is 952.5 feet. Water discharges from Upper Pond A into Lower Pond Section D from three (3) 10-inch pipes. The intake of two of these pipes is set at 952.16 feet and the intake of the third pipe is set at 953.0 feet. Flow through these three pipes was estimated using Manning's equation. Water in Lower Pond Section D discharges to Lower Pond Section E from two (2) 10-inch pipes passing through the separating dike. Flow through these two pipes was estimated using Manning's equation until the pipe inlets became submerged with 2.5 feet of water. With water 2.5 feet or higher over the pipe inlets, flow was estimated using the Hazen Williams equation for flow under pressure. There are no external discharge spillways from Upper Pond A, Lower Section D, or Lower Pond Section E.

2. **South Pond (Section C):** This basin within the Impoundment was modeled independently because it is relatively isolated from the rest of the Impoundment, and primarily receives water through precipitation. There is no external discharge spillway on the perimeter levee embankment of the South Pond (Section C).

3. **Lower Pond Section F:** This basin within the Impoundment was modeled independently because it is relatively isolated from the rest of the Impoundment, and primarily receives water through precipitation. There are no external discharge spillways from Lower Pond Section F.

4. **Lower Pond Section G:** This basin within the Impoundment was modeled independently because it is relatively isolated from the rest of the Impoundment, and primarily receives water through precipitation. There are overflow pipes from Lower Pond Section G to Lower Pond Section J, but the ponding level in Lower Pond Section G does not reach the pipe inverts under the design flood. There is no external discharge spillway from Lower Pond Section G.

5. **Lower Pond Section H:** This basin within the Impoundment was modeled independently because it is relatively isolated from the rest of the Impoundment, and primarily receives water through precipitation. There is no external discharge spillway from Lower Pond Section H.

6. **Lower Pond Section I:** This basin within the Impoundment was modeled independently because it is relatively isolated from the rest of the Impoundment, and primarily receives water through precipitation. There is no external discharge spillway from Lower Pond Section I.

7. **Upper Pond B and Lower Pond Section J:** The drainage area for Upper Pond B also includes the Foggy Pond drainage area. The initial water level in Upper Pond B was modeled as 953.6 feet. Water discharges from Upper Pond B into Lower Pond Section J from one (1) 10-inch pipe. The intake of this pipe is set at approximately 953.0 feet. Flow through this pipe was estimated using Manning's equation.

   The initial water level in Lower Pond Section J is 928.8 feet. Water from Section J is discharged at Outfall #002 through a primary spillway consisting of two (2) 12-inch pipes. The intake of these two (2) pipes is set at approximately 928.8 feet. Flow through these pipes was estimated using Manning's equation.

   Outfall #002 also has an auxiliary spillway consisting of a trapezoidal shaped concrete channel that is 24 feet wide and 1.2 feet from the bottom of the spillway to the top of the berm. The flowline of the auxiliary spillway is at elevation 930.35 feet. Flow over the auxiliary spillway was estimated using the equation for flow over an Ogee spillway.

2.3 Hydrologic and Hydraulic Modeling Results

Table 2.3-1 below summarizes the results of the modeled stormwater flooding event, including the resulting water elevation and freeboard in each basin.

Table 2.3-1: Asbury CCR Impoundment Model Output Data

Section	Result of 1000 Year Rainfall	Computed Water Elevation (ft.)	Freeboard (feet)
Upper Pond A	Flows into Section D	953.45	0.35
Upper Pond B	Flows into Section J	954.14	0.26
South Pond (Section C)	Contains Rainfall	952.39	1.81
Lower Pond Section D	Flows into Section E	951.41	0.29
Lower Pond Section E	Contains Rainfall	946.61	0.69
Lower Pond Section F	Contains Rainfall	950.46	2.34
Lower Pond Section G	Contains Rainfall	941.79[1]	5.11
Lower Pond Section H	Contains Rainfall	941.45	5.05
Lower Pond Section I	Contains Rainfall	939.20	5.2
Lower Pond Section J	Contains Rainfall	929.01	2.49

[1]The computed water elevation for Section G includes 0.90 acre feet of water more than what was calculated in the HEC-1 model. The additional 0.90 acre-feet of water is the maximum daily discharge from pumping of bottom ash sluice water.

Lower Pond Section E, which is the end basin for flows from the coal pile, Upper Pond A, and Lower Pond Section D, contains the design flood with a freeboard of 0.69 feet below the lowest part of the exterior perimeter levee embankment.

South Pond (Section C) and Lower Pond Sections F, G, H, and I are relatively isolated from the other portions of the Impoundment and have sufficient storage volume to contain the precipitation within them without overflowing into an adjacent section. Freeboard in each of these basins is greater than one foot.

Lower Pond Section J, which is the end basin for flows from the Foggy Pond and Upper Pond B, contains the design flood with a freeboard of 2.49 feet below the lowest part of the dike and 1.34 feet below the auxiliary spillway. Note that Lower Pond Section J was modeled with the two (2) outlet pipes open during the storm event.

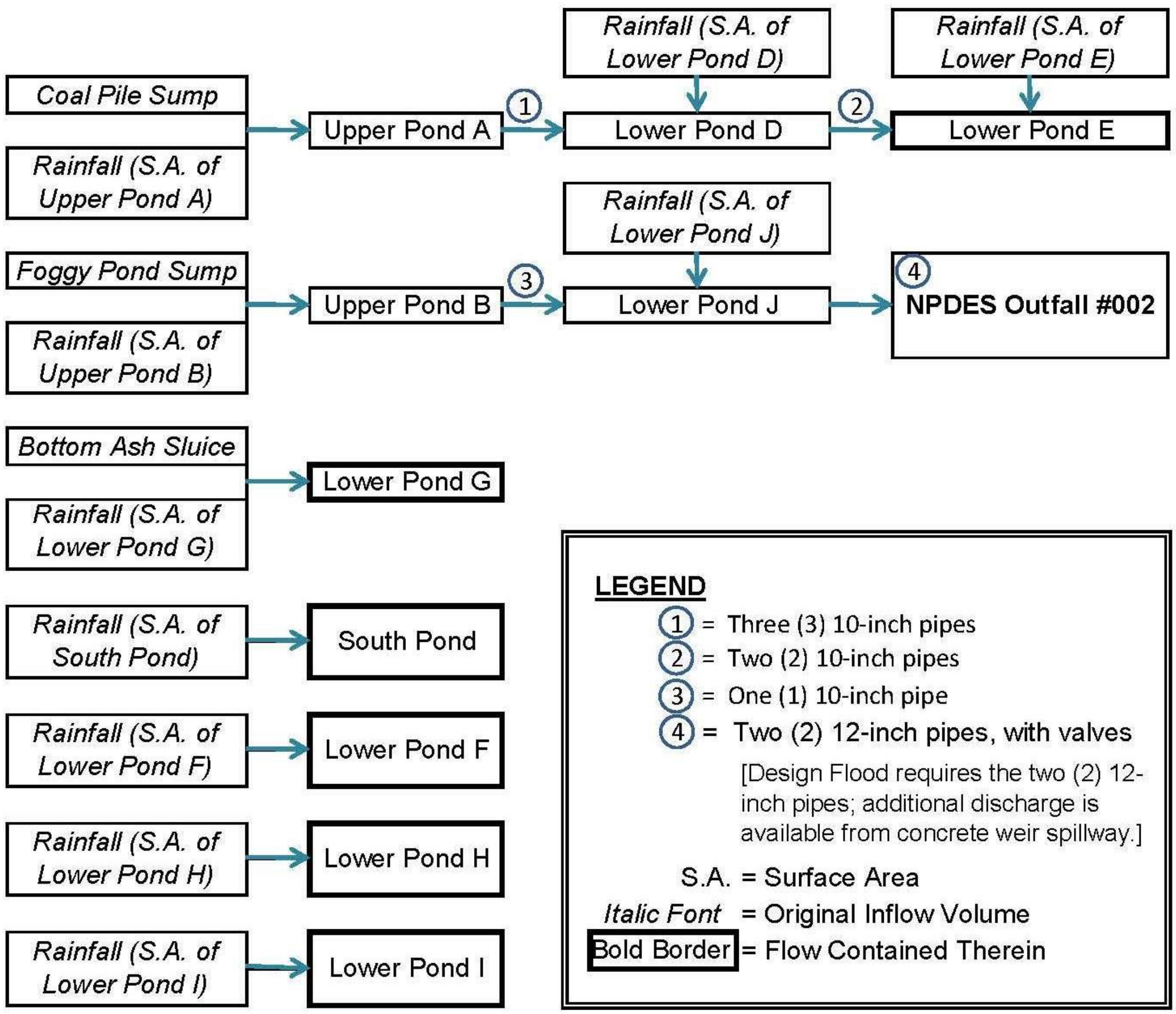
2.4 Conclusions

The Asbury CCR Impoundment is capable of adequately managing the Design Flood under existing conditions. The total capacity of the permitted discharge point, NPDES Outfall #002, exceeds what is necessary during the Design Flood event. In addition to the excess capacity of the spillway at NPDES Outfall #002, there is excess storm water storage capacity in several sections of the Impoundment. Empire has several options available to convey excess storm water by gravity flow or pump excess storm water if necessary.

3.0 INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN

The Empire District Electric Company's Inflow Design Flood Control Plan for the Asbury CCR Impoundment is summarized in the flow chart below. Under typical operating conditions, the Design Flood event is discharged through the two (2) 12-inch outlet pipes in Section J of the Lower Pond, at NPDES Discharge #002.

INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN



3.1 Contingency Planning

The two (2) 12-inch outlet pipes are regularly observed by Empire staff to verify their functionality. In the event of unanticipated conditions, such as obstruction of one or more of these discharge pipes, or a storm event that exceeds the Design Flood event, Empire can make several different operational adjustments for routing of additional storm water. Some of these operational adjustments are summarized in the list below.

As previously stated, the Asbury CCR Impoundment passes the Design Flood event under normal operating conditions. The options listed below are presented for contingency planning purposes only and are not explicitly incorporated into the Inflow Design Flood Control System Plan.

1. Additional storm water flow capacity is available from the auxiliary concrete spillway at NPDES Outfall #002, in Lower Pond Section J.

2. Additional storm water storage is available in the South Pond (Section C). Water can be conveyed to the South Pond from Upper Pond B by opening of one or both of the two (2) 12-inch pipes with valves between Upper Pond B and the South Pond.

3. The bottom ash sluice pumps can be utilized to pump water from Upper Pond B to Section G of the Lower Pond.

4.0 CCR RULE SECTION 257.82(c)(5) – CERTIFICATION

The undersigned Professional Engineer certifies that the Inflow Design Flood Control System Plan meets the requirements of 40 CFR 257.82.

State of Missouri Professional Engineering License Number: 2008019579

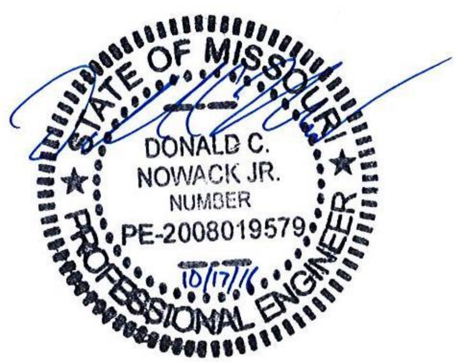
State of Missouri Professional Engineering License Number: 2008019579

Name: Donald C. Nowack, P.E.

Signature:

Date: October 17, 2016

Seal:



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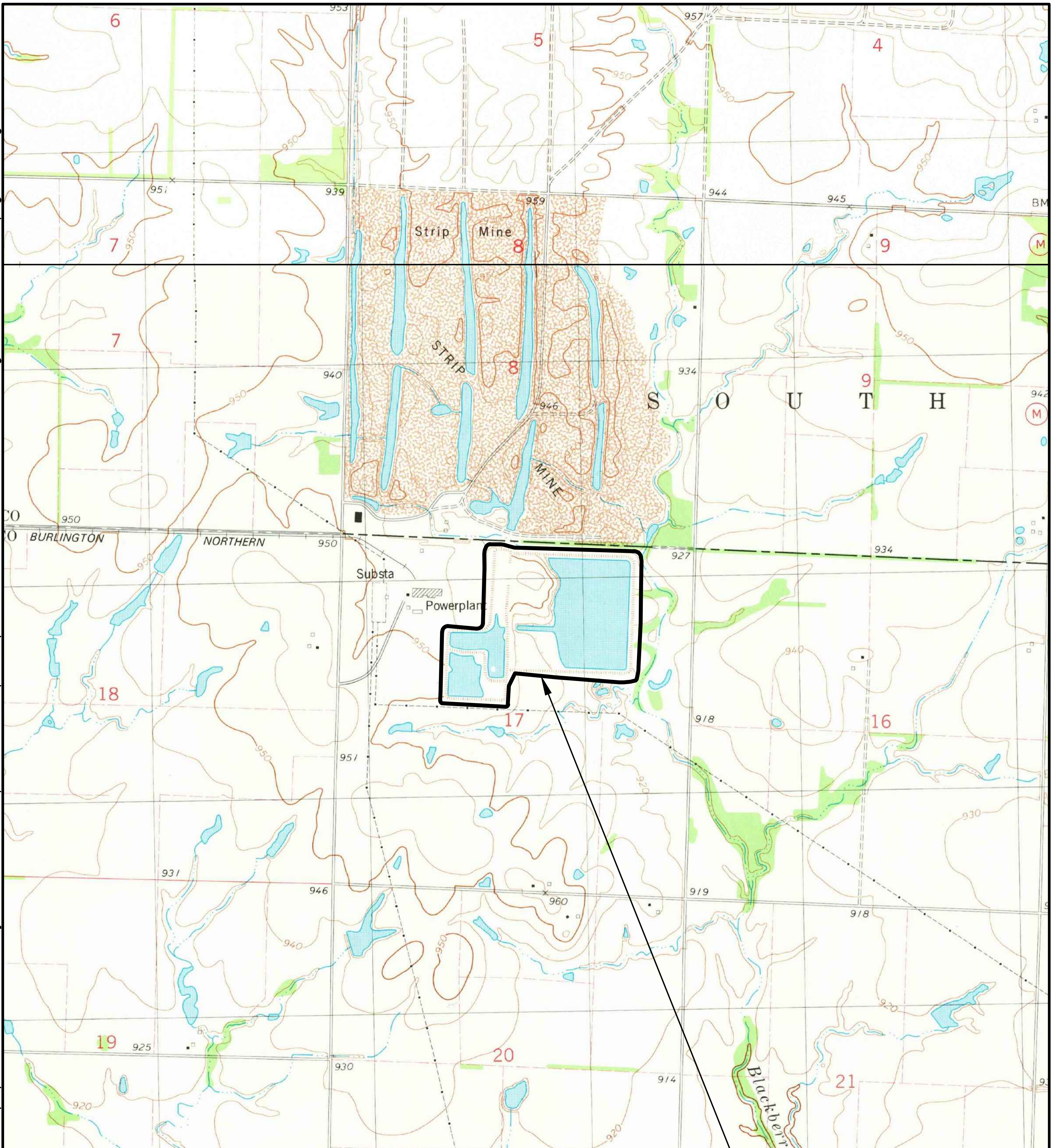
APPENDIX I

FIGURES



USGS Asbury 7.5 Minute Topographic Quadrangle, 1981
USGS Mindenmines 7.5 Minute Topographic Quadrangle, 1981

SCALE
1"=2000'

Project: Asbury Power Plant, 21133 Uphill Lane, Asbury, MO
Client: Empire District Electric Company

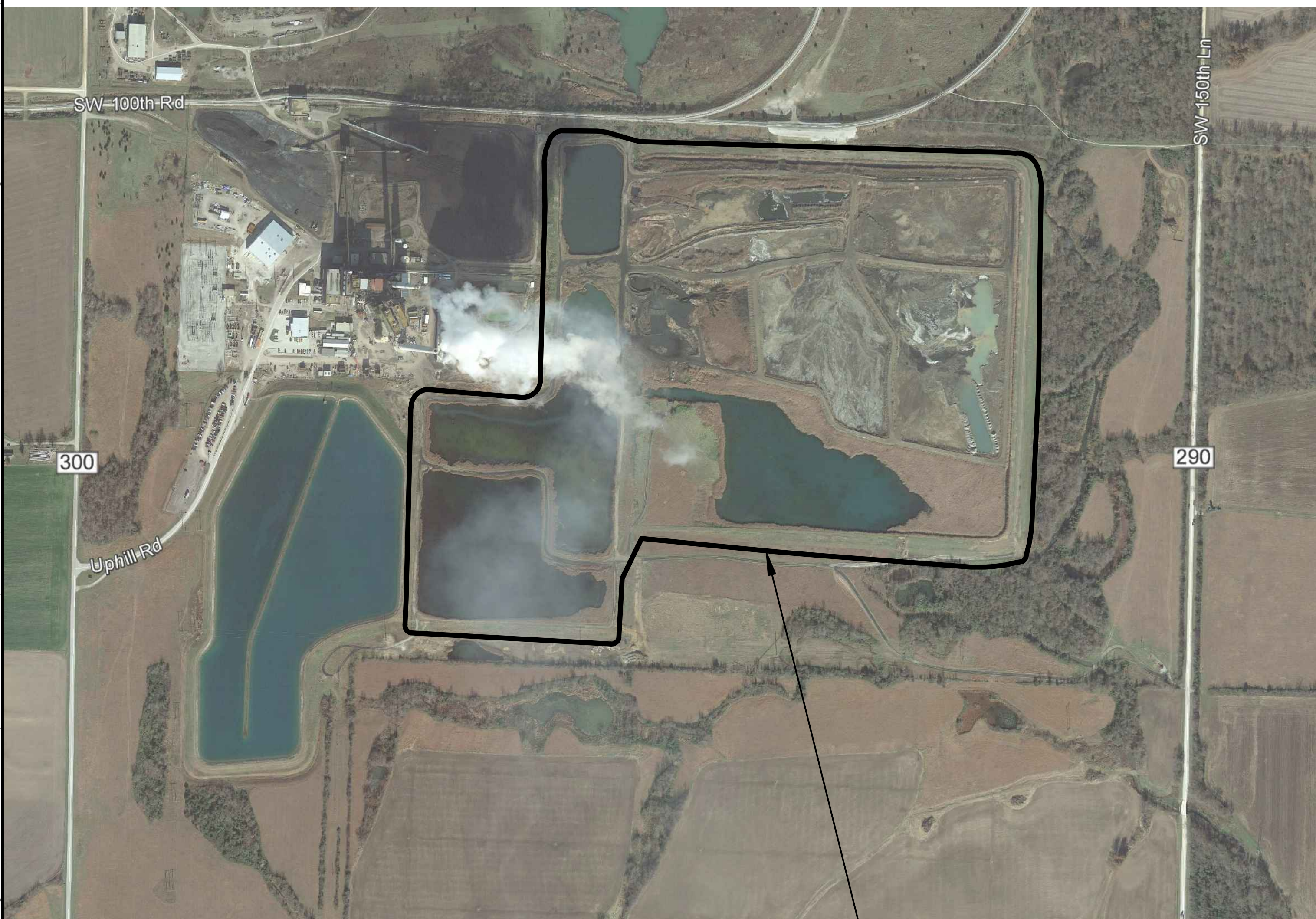
Site Location on Topographic Map

DATE: October 17, 2016 | Project Number: 231518

PALMERTON & PARRISH, INC.
GEOTECHNICAL AND MATERIALS ENGINEERS/MATERIALS TESTING LABORATORIES/ENVIRONMENTAL SERVICES

FIGURE 1

S:_MASTER PROJECT FILE\2015\E\EDE-231518-Asbury CCR Rule Compliance-Sub\2016\2016-10-17 - Initial Inflow Design Flood Control\Figures.dwg



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1"=800'

Project: Asbury Power Plant, 21133 Uphill Lane, Asbury, MO
Client: Empire District Electric Company

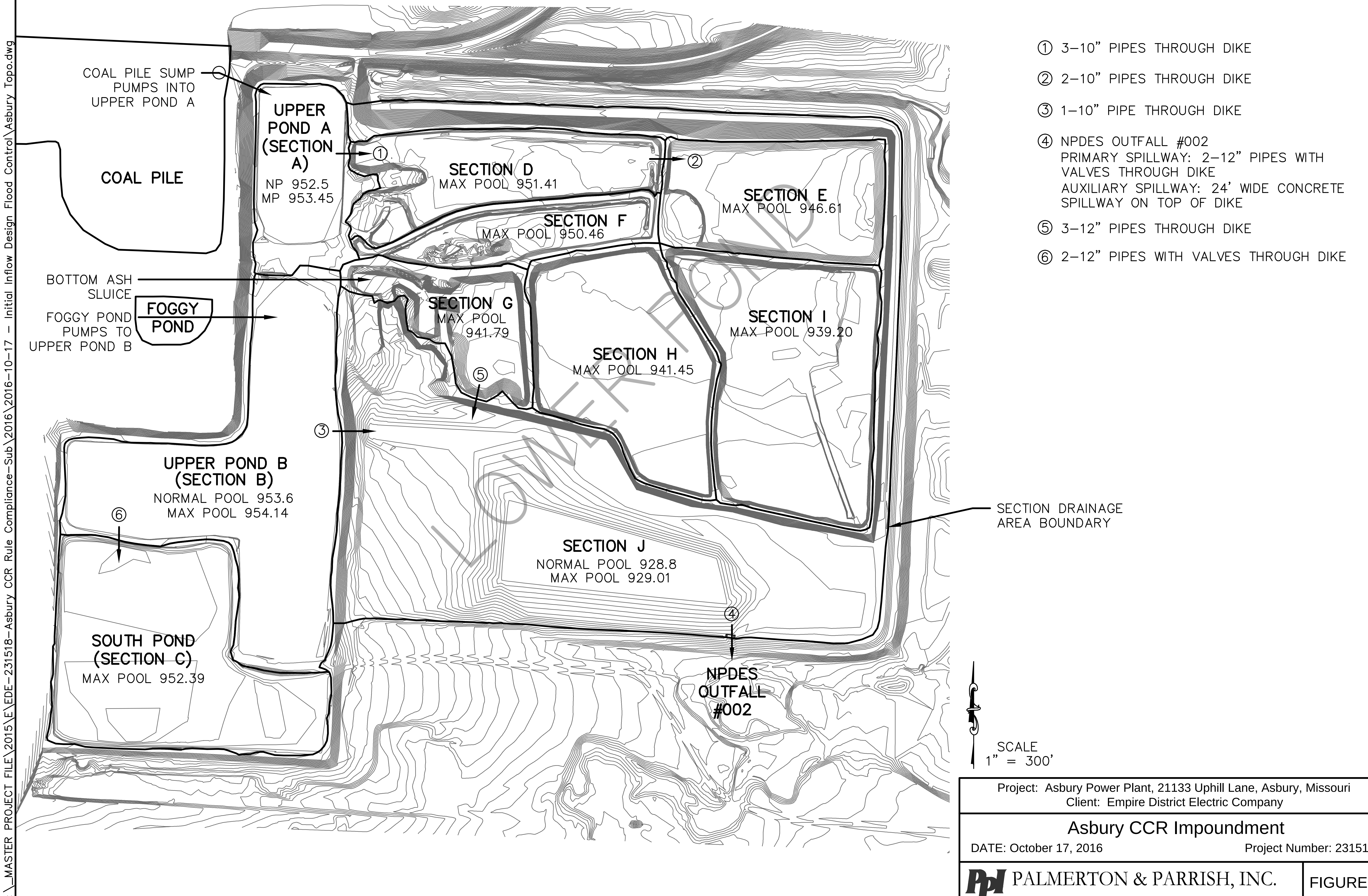
Site Location on 2013 Aerial Photograph

DATE: October 17, 2016 Project Number: 231518

PALMERTON & PARRISH, INC.
GEOTECHNICAL AND MATERIALS ENGINEERS/MATERIALS TESTING LABORATORIES/ENVIRONMENTAL SERVICES

FIGURE 2

S:_MASTER PROJECT FILE\2015\E\EDE-231518-Asbury CCR Rule Compliance-Sub\2016\2016-10-17 - Initial Inflow Design Flood Control\Figures.dwg



Project: Asbury Power Plant, 21133 Uphill Lane, Asbury, Missouri
Client: Empire District Electric Company

Asbury CCR Impoundment

DATE: October 17, 2016 Project Number: 231518

PPI PALMERTON & PARRISH, INC.
GEOTECHNICAL AND MATERIALS ENGINEERS / MATERIALS TESTING LABORATORIES / ENVIRONMENTAL SERVICES

FIGURE 3

APPENDIX II

PRECIPITATION TABLE & PIPE FLOW CALCULATIONS

NOAA Atlas 14, Volume 8, Version 2
Location name: Asbury, Missouri, USA*
Latitude: 37.3608°, Longitude: -94.5889°
Elevation: 941.17 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.415** (0.326-0.517)	**0.476** (0.374-0.594)	**0.575** (0.451-0.720)	**0.657** (0.513-0.824)	**0.767** (0.582-0.981)	**0.850** (0.634-1.10)	**0.932** (0.678-1.23)	**1.01** (0.715-1.36)	**1.12** (0.767-1.54)	**1.20** (0.806-1.67)
10-min	**0.607** (0.478-0.758)	**0.697** (0.548-0.870)	**0.843** (0.661-1.05)	**0.961** (0.751-1.21)	**1.12** (0.852-1.44)	**1.25** (0.929-1.61)	**1.36** (0.993-1.80)	**1.49** (1.05-2.00)	**1.64** (1.12-2.25)	**1.76** (1.18-2.45)
15-min	**0.741** (0.583-0.924)	**0.850** (0.669-1.06)	**1.03** (0.806-1.28)	**1.17** (0.916-1.47)	**1.37** (1.04-1.75)	**1.52** (1.13-1.96)	**1.67** (1.21-2.19)	**1.81** (1.28-2.44)	**2.00** (1.37-2.75)	**2.15** (1.44-2.99)
30-min	**1.08** (0.854-1.35)	**1.25** (0.987-1.57)	**1.53** (1.20-1.91)	**1.75** (1.36-2.19)	**2.04** (1.55-2.61)	**2.26** (1.69-2.92)	**2.48** (1.80-3.26)	**2.69** (1.90-3.62)	**2.97** (2.02-4.07)	**3.17** (2.12-4.41)
60-min	**1.45** (1.14-1.81)	**1.68** (1.32-2.10)	**2.05** (1.61-2.57)	**2.37** (1.85-2.97)	**2.80** (2.13-3.60)	**3.14** (2.35-4.08)	**3.49** (2.54-4.61)	**3.84** (2.71-5.18)	**4.32** (2.95-5.94)	**4.68** (3.14-6.52)
2-hr	**1.82** (1.45-2.25)	**2.10** (1.67-2.60)	**2.58** (2.04-3.19)	**2.98** (2.35-3.71)	**3.56** (2.75-4.55)	**4.02** (3.04-5.19)	**4.50** (3.31-5.91)	**4.99** (3.56-6.70)	**5.67** (3.91-7.76)	**6.19** (4.18-8.57)
3-hr	**2.06** (1.65-2.53)	**2.37** (1.90-2.92)	**2.92** (2.33-3.59)	**3.40** (2.69-4.20)	**4.09** (3.18-5.23)	**4.67** (3.55-6.01)	**5.26** (3.90-6.91)	**5.90** (4.23-7.91)	**6.79** (4.71-9.28)	**7.49** (5.08-10.3)
6-hr	**2.48** (2.01-3.02)	**2.86** (2.31-3.48)	**3.53** (2.85-4.31)	**4.14** (3.32-5.07)	**5.05** (3.98-6.42)	**5.81** (4.47-7.44)	**6.62** (4.96-8.64)	**7.49** (5.42-9.98)	**8.72** (6.11-11.9)	**9.71** (6.63-13.3)
12-hr	**2.92** (2.39-3.52)	**3.38** (2.76-4.08)	**4.20** (3.42-5.07)	**4.93** (4.00-5.98)	**6.04** (4.81-7.61)	**6.96** (5.42-8.85)	**7.95** (6.01-10.3)	**9.01** (6.58-11.9)	**10.5** (7.43-14.2)	**11.7** (8.07-16.0)
24-hr	**3.39** (2.80-4.04)	**3.94** (3.25-4.70)	**4.90** (4.04-5.86)	**5.77** (4.73-6.92)	**7.06** (5.67-8.81)	**8.13** (6.39-10.2)	**9.28** (7.07-11.9)	**10.5** (7.73-13.8)	**12.2** (8.70-16.4)	**13.6** (9.44-18.4)
2-day	**3.89** (3.25-4.59)	**4.53** (3.78-5.35)	**5.64** (4.70-6.68)	**6.64** (5.50-7.89)	**8.13** (6.59-10.0)	**9.36** (7.42-11.7)	**10.7** (8.20-13.6)	**12.1** (8.94-15.7)	**14.0** (10.0-18.7)	**15.6** (10.9-21.0)
3-day	**4.22** (3.55-4.95)	**4.90** (4.12-5.76)	**6.11** (5.12-7.19)	**7.19** (5.99-8.49)	**8.80** (7.18-10.8)	**10.1** (8.07-12.6)	**11.5** (8.93-14.6)	**13.1** (9.73-16.9)	**15.2** (10.9-20.2)	**16.9** (11.8-22.6)
4-day	**4.50** (3.80-5.26)	**5.22** (4.41-6.11)	**6.49** (5.46-7.61)	**7.63** (6.39-8.98)	**9.32** (7.63-11.4)	**10.7** (8.57-13.2)	**12.2** (9.47-15.4)	**13.8** (10.3-17.8)	**16.0** (11.6-21.2)	**17.8** (12.5-23.8)
7-day	**5.30** (4.52-6.14)	**6.10** (5.20-7.08)	**7.50** (6.37-8.72)	**8.73** (7.38-10.2)	**10.5** (8.70-12.8)	**12.0** (9.70-14.7)	**13.6** (10.6-17.0)	**15.3** (11.5-19.6)	**17.6** (12.8-23.1)	**19.4** (13.7-25.8)
10-day	**6.04** (5.18-6.97)	**6.92** (5.93-7.99)	**8.43** (7.20-9.74)	**9.74** (8.27-11.3)	**11.6** (9.63-14.0)	**13.2** (10.6-16.0)	**14.8** (11.6-18.4)	**16.4** (12.4-21.0)	**18.8** (13.7-24.5)	**20.6** (14.6-27.2)
20-day	**8.21** (7.13-9.37)	**9.34** (8.09-10.7)	**11.2** (9.65-12.8)	**12.7** (10.9-14.6)	**14.8** (12.4-17.5)	**16.5** (13.4-19.8)	**18.2** (14.3-22.3)	**19.9** (15.1-25.0)	**22.1** (16.2-28.6)	**23.8** (17.0-31.3)
30-day	**10.0** (8.74-11.3)	**11.3** (9.89-12.9)	**13.5** (11.7-15.3)	**15.2** (13.2-17.4)	**17.6** (14.7-20.6)	**19.3** (15.8-23.0)	**21.1** (16.7-25.6)	**22.8** (17.4-28.5)	**25.0** (18.4-32.2)	**26.7** (19.1-34.9)
45-day	**12.2** (10.8-13.8)	**13.8** (12.2-15.6)	**16.4** (14.3-18.5)	**18.4** (16.0-20.9)	**21.0** (17.6-24.4)	**23.0** (18.9-27.1)	**24.8** (19.8-30.0)	**26.7** (20.4-33.1)	**28.9** (21.3-36.9)	**30.5** (22.0-39.8)
60-day	**14.1** (12.5-15.8)	**15.9** (14.1-17.9)	**18.8** (16.5-21.2)	**21.1** (18.4-23.8)	**24.0** (20.2-27.7)	**26.1** (21.5-30.6)	**28.1** (22.4-33.8)	**30.0** (23.0-37.1)	**32.3** (23.9-41.1)	**34.0** (24.5-44.1)

[1] 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.

Please refer to NOAA Atlas 14 document for more information.

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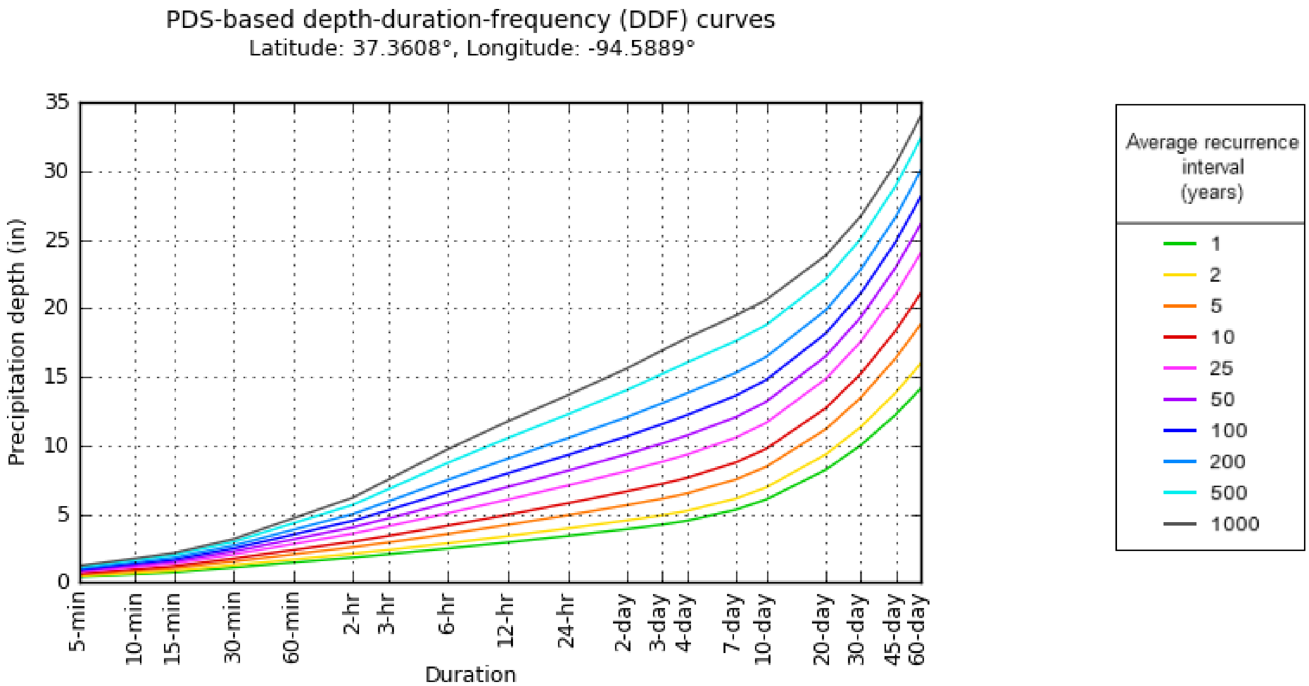
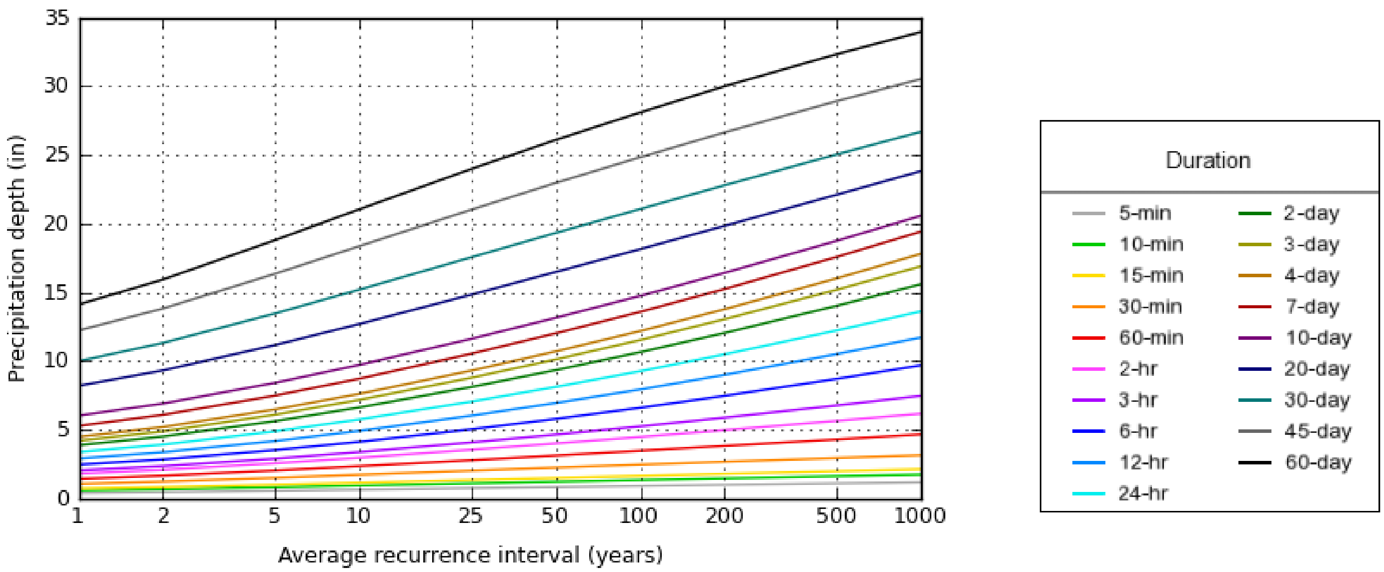
PF graphical





NOAA Atlas 14, Volume 8, Version 2 Created (GMT): Tue Oct 4 18:55:21 2016

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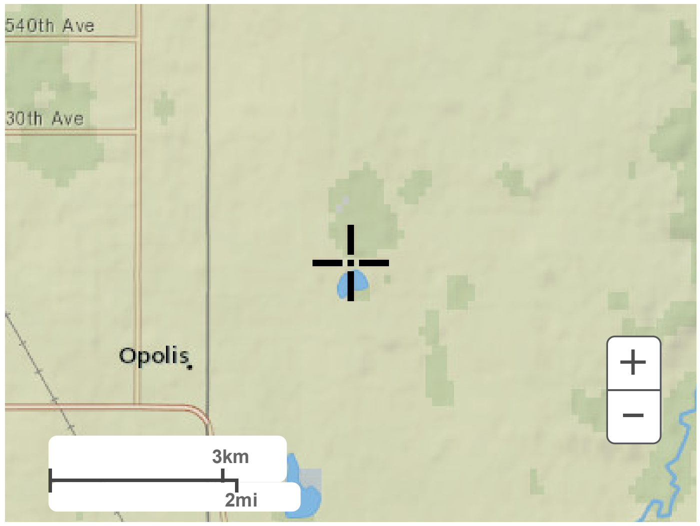
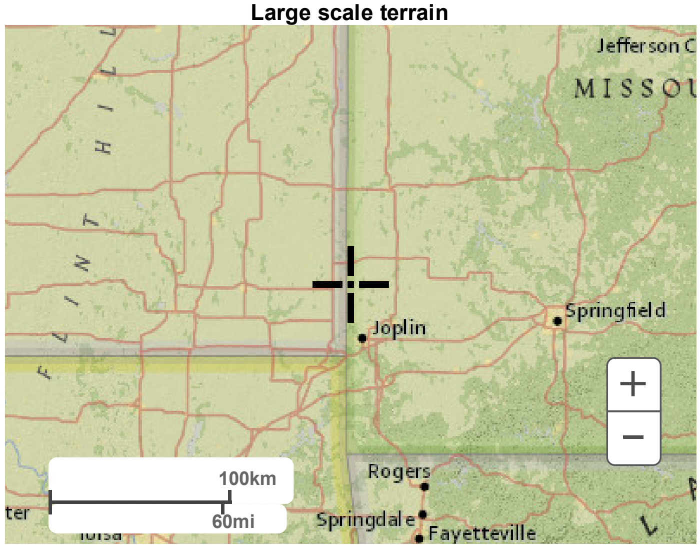
Maps & aerials

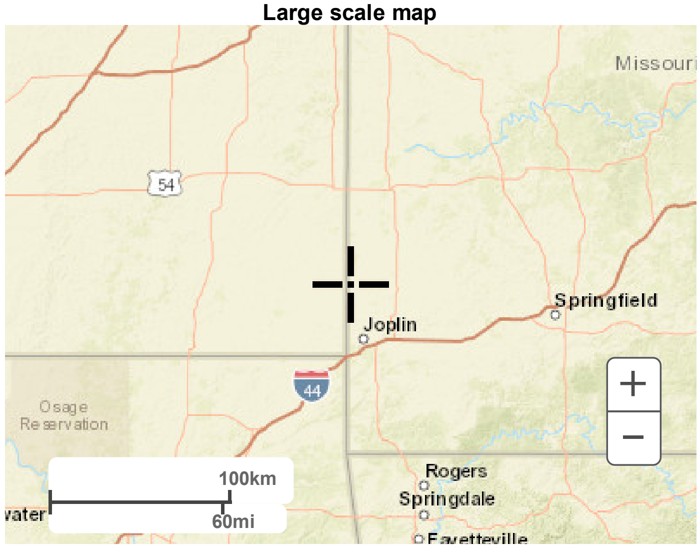
Small scale terrain



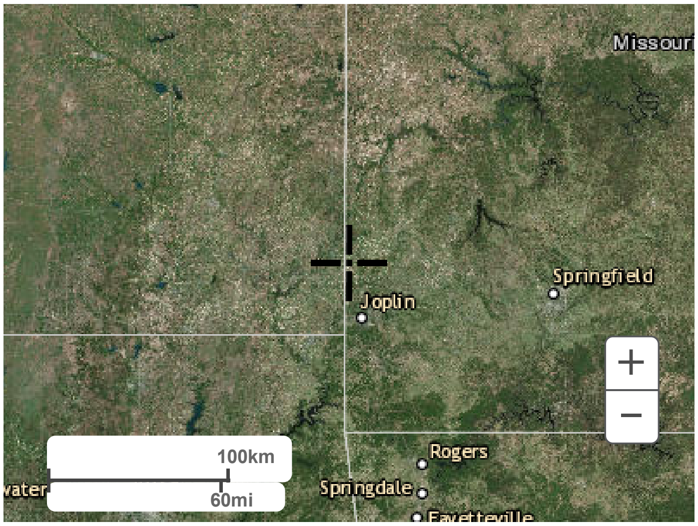
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Manning's Equation $V = (Cf/n) R^{0.67} S^{0.5}$

$Q = VA$

V = Velocity (ft/sec) **Cf** = Conversion factor **S** = Slope
Q = Flow (cu ft/sec) **n** = Pipe roughness cooefficient
R = Hydraulic Radius (ft) = Area (A) / Wetted Perimeter (P)

Upper Pond A to Section D

Q	5.82	cfs
V	10.68	fps
Pipe Dia	10	in
	0.83	ft
n	0.012	PVC
Cf	1.49	
A	0.55	sq ft
P	2.62	ft
S	0.06	
R	0.21	ft

Section D to Section E

Q	4.76	cfs
V	8.72	fps
Pipe Dia	10	in
	0.83	ft
n	0.012	PVC
Cf	1.49	
A	0.55	sq ft
P	2.62	ft
S	0.04	
R	0.21	ft

Section G to Lower Pond J

Q	11.21	cfs
V	14.27	fps
Pipe Dia	12	in
	1	ft
n	0.012	PVC
Cf	1.49	
A	0.79	sq ft
P	3.14	ft
S	0.084	
R	0.25	ft

Upper Pond B to Lower Pond J

Q	3.36	cfs
V	6.17	fps
Pipe Dia	10	in
	0.83	ft
n	0.012	PVC
Cf	1.49	
A	0.55	sq ft
P	2.62	ft
S	0.02	
R	0.21	ft

Outlet - Outfall 002

Q	5.47	cfs
V	6.97	fps
Pipe Dia	12	in
	1	ft
n	0.012	PVC
Cf	1.49	
A	0.79	sq ft
P	3.14	ft
S	0.02	
R	0.25	ft

Hazen Williams Equation for Flow $Q = 0.285\ C\ (D^{2.63})(S^{0.54})$

Q = Flow (cu ft/sec)
C = Hazen Williams Friction Coefficient (140 for PVC)
D = Pipe Diameter (ft)
S = Hydraulic Grade Line Slope = Water Height/Pipe Length (50')

Pressure flow from 10" pipe between Section D and Section E.

Water Height	S	Q	Water Elev
2.5	0.05	4.895	951
3.5	0.07	5.870	952

PALMERTON & PARRISH, INC.

APPENDIX III

HEC-1 OUTPUT

APPENDIX III-1

HEC-1 OUTPUT

UPPER POND A, SECTION D, & SECTION E

```
1****************************************                        ***************************************
 *                                      *                        *                                     *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                        *   U.S. ARMY CORPS OF ENGINEERS      *
 *            JUN   1998                *                        *   HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                        *        609 SECOND STREET            *
 *                                      *                        *     DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   12OCT16  TIME  10:12:46  *                        *          (916) 756-1104             *
 *                                      *                        *                                     *
 ****************************************                        ***************************************


                    X     X  XXXXXXX   XXXXX          X
                    X     X  X        X     X        XX
                    X     X  X        X               X
                    XXXXXXX  XXXX     X       XXXXX   X
                    X     X  X        X               X
                    X     X  X        X     X         X
                    X     X  XXXXXXX   XXXXX         XXX


          THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

          THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
          THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
          NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
          DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
          KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


1                                      HEC-1 INPUT                                             PAGE  1

       LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          1        ID   ************************************************************************
          2        ID   PROJECT NAME:           EDE ASBURY
          3        ID   CONSULTANT:             PALMERTON & PARRISH, INC.
          4        ID   PROJECT NUMBER:         231518
          5        ID   DESIGN ENGINEER:        DONALD C. NOWACK, P.E.
          6        ID   FILE NAME:              ADE.TXT
          7        ID   DATE:                   OCTOBER 17, 2016
```



```
          8        ID   RETURN FREQUENCY:       1000-YEAR, 24 HR
          9        ID   ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
         10        ID   SCENARIO:               UPPER POND A FLOWING INTO SECTIONS D AND E
         11        ID   *************************************************************************
                   * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                   *              NUMBER OF 1 MIN INTERVALS USED FOR CALCULATION
                   * ***No OF INTERVALS*1-060  2-120  3-180  6-360  12-720 18-1080  24-1440
         12        IT      1                  1440
                   * *************************************************************************
                   *              NUMBER OF MIN IN EACH TIME INTERVAL
                   * ***MIN IN INTERVAL***1hr-3  2hr-6  3hr-9  6hr-18  12hr-36  18-54  24-72
         13        IN     72
         14        IO      4       0
                   *DIAGRAM
                   *        1000-YR
         15        JR    PREC   13.60
                   * *************************************************************************
                   *  STORM DISTRIBUTION:     SCS TYPE II
                   *  STORM DURATION:         24 HOUR
                   * *************************************************************************
                   * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

         16        KK     UPA
         17        KM     COAL PILE AND UPPER POND A
         18        PB    1.00
                   * DRAINAGE AREA:   24.08 ACRES = 0.0376  SQ. MI.
         19        BA  0.0376
                   * RAINFALL DISTRIBUTION
         20        PC  0.0000  0.0010  0.0020  0.0030  0.0041  0.0051  0.0062  0.0072  0.0083  0.0094
         21        PC  0.0105  0.0116  0.0127  0.0138  0.0150  0.0161  0.0173  0.0184  0.0196  0.0208
         22        PC  0.0220  0.0232  0.0244  0.0257  0.0269  0.0281  0.0294  0.0306  0.0319  0.0332
         23        PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
         24        PC  0.0480  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
         25        PC  0.0630  0.0646  0.0662  0.0679  0.0696  0.0712  0.0730  0.0747  0.0764  0.0782
         26        PC  0.0800  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931  0.0950  0.0970
         27        PC  0.0990  0.1010  0.1030  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
         28        PC  0.1200  0.1222  0.1246  0.1270  0.1296  0.1322  0.1350  0.1379  0.1408  0.1438
         29        PC  0.1470  0.1502  0.1534  0.1566  0.1598  0.1630  0.1663  0.1697  0.1733  0.1771
         30        PC  0.1810  0.1851  0.1895  0.1941  0.1989  0.2040  0.2094  0.2152  0.2214  0.2280
         31        PC  0.2350  0.2427  0.2513  0.2609  0.2715  0.2830  0.3068  0.3544  0.4308  0.5679
         32        PC  0.6630  0.6820  0.6986  0.7130  0.7252  0.7350  0.7434  0.7514  0.7588  0.7656
         33        PC  0.7720  0.7780  0.7835  0.7890  0.7942  0.7990  0.8036  0.8080  0.8122  0.8162
         34        PC  0.8200  0.8237  0.8273  0.8308  0.8342  0.8375  0.8409  0.8442  0.8474  0.8505
         35        PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
         36        PC  0.8800  0.8823  0.8845  0.8868  0.8890  0.8912  0.8934  0.8955  0.8976  0.8997
```



```
         37        PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9173  0.9192
         38        PC  0.9210  0.9228  0.9245  0.9263  0.9280  0.9297  0.9313  0.9330  0.9346  0.9362
         39        PC  0.9377  0.9393  0.9408  0.9423  0.9438  0.9452  0.9466  0.9480  0.9493  0.9507
1                                      HEC-1 INPUT                                             PAGE  2

       LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

         40        PC  0.9520  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597  0.9610  0.9622  0.9635
         41        PC  0.9647  0.9660  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
         42        PC  0.9770  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
         43        PC  0.9887  0.9899  0.9910  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
         44        PC  1.0000
                   * SCS CURVE NUMBER: 98.00
         45        LS           98.00
                   * TIME OF CONCENTRATION: 0.0833 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
         46        UD  0.0500

         47        KK     UPA
         48        KM     UPPER POND A
         49        RS       1    ELEV  0953.0
         50        SA  3.4086  3.5908
         51        SE   953.0   954.0
         52        SQ  11.640   17.460
         53        SE   953.0   954.0
                   * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

         54        KK    SECD
         55        KM    SECTION D
         56        PB    1.00
                   * DRAINAGE AREA:   6.52 ACRES = 0.0102  SQ. MI.
         57        BA  0.0102
                   * SCS CURVE NUMBER: 98.00
         58        LS           98.00
                   * TIME OF CONCENTRATION: 0.0833 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
         59        UD  0.0500
                   * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

         60        KK    COMB                                                        KK
         61        KM     COMBINATION OF SUB BASINS                                  KM
         62        HC       2                                                        HC
                   * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

         63        KK   BASND
         64        KM   BASIN IN SECTION D
         65        RS       1    ELEV  0947.0
```



```
         66        SA  0.7216  1.9397  4.2220  4.7966  5.0074  5.1685
         67        SE   947.0   948.0   949.0   950.0   951.0   952.0
         68        SQ  0.0000  0.0000    9.50    9.52    9.79   11.74
         69        SE   947.0   948.0   949.0   950.0   951.0   952.0
                   * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

         70        KK    SECE
         71        KM    SECTION E
         72        PB    1.00
                   * DRAINAGE AREA:   7.02 ACRES = 0.0110  SQ. MI.
         73        BA  0.0110
                   * SCS CURVE NUMBER: 98.00
         74        LS           98.00
                   * TIME OF CONCENTRATION: 0.0833 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
         75        UD  0.0500
                   * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
1                                      HEC-1 INPUT                                             PAGE  3

       LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


         76        KK    COMB                                                        KK
         77        KM     COMBINATION OF SUB BASINS                                  KM
         78        HC       2                                                        HC
                   * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

         79        KK   BASNE
         80        KM   BASIN IN SECTION E
         81        RS       1    ELEV  0939.0
         82        SA  0.0936  0.3554  0.8310  2.1810  4.4409  5.2631  5.4799  5.6485  5.8193  5.9915
         83        SE   939.0   940.0   941.0   942.0   943.0   944.0   945.0   946.0   947.0   948.0
         84        SQ  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
         85        SE   939.0   940.0   941.0   942.0   943.0   944.0   945.0   946.0   947.0   948.0
                   * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                   * *************************************************************************
         86        ZZ
1
              SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    16        UPA
               V
```

```
             V
   47       UPA
             .
             .
   54        .        SECD
             .           .
             .           .
   60       COMB...........
             V
             V
   63      BASND
             .
             .
   70        .        SECE
             .           .
             .           .
   76       COMB...........
             V
             V
   79      BASNE

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************           ****************************************
 *                                       *           *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *           *   U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN  1998                *           *   HYDROLOGIC ENGINEERING CENTER      *
 *           VERSION 4.1                 *           *         609 SECOND STREET            *
 *                                       *           *      DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   12OCT16  TIME  10:12:46   *           *          (916) 756-1104              *
 *                                       *           *                                      *
 *****************************************           ****************************************


                    ****************************************************************************
                    PROJECT NAME:           EDE ASBURY
                    CONSULTANT:             PALMERTON & PARRISH, INC.
                    PROJECT NUMBER:         231518
                    DESIGN ENGINEER:        DONALD C. NOWACK, P.E.
                    FILE NAME:              ADE.TXT
                    DATE:                   OCTOBER 17, 2016
                    RETURN FREQUENCY:       1000-YEAR, 24 HR
                    ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
```



```
                    SCENARIO:              UPPER POND A FLOWING INTO SECTIONS D AND E
                    ****************************************************************************

  14 IO         OUTPUT CONTROL VARIABLES
                      IPRNT          4  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN          1  MINUTES IN COMPUTATION INTERVAL
                      IDATE     1    0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ       1440  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE     1    0  ENDING DATE
                     NDTIME       2359  ENDING TIME
                      ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .02 HOURS
                       TOTAL TIME BASE   23.98 HOURS

        ENGLISH UNITS
             DRAINAGE AREA         SQUARE MILES
             PRECIPITATION DEPTH   INCHES
             LENGTH, ELEVATION     FEET
             FLOW                  CUBIC FEET PER SECOND
             STORAGE VOLUME        ACRE-FEET
             SURFACE AREA          ACRES
             TEMPERATURE           DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                      NPLAN          1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                  13.60


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  16 KK     *      UPA   *
            *            *
```



```
            **************
                     COAL PILE AND UPPER POND A

  13 IN         TIME DATA FOR INPUT TIME SERIES
                      JXMIN         72  TIME INTERVAL IN MINUTES
                     JXDATE     1    0  STARTING DATE
                     JXTIME          0  STARTING TIME

              SUBBASIN RUNOFF DATA

  19 BA         SUBBASIN CHARACTERISTICS
                      TAREA        .04  SUBBASIN AREA

                PRECIPITATION DATA

  19 PB               STORM       1.00  BASIN TOTAL PRECIPITATION

  19 PI           INCREMENTAL PRECIPITATION PATTERN
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                       .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
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45 LS      SCS LOSS RATE
               STRTL       .04  INITIAL ABSTRACTION
              CRVNBR     98.00  CURVE NUMBER
               RTIMP       .00  PERCENT IMPERVIOUS AREA

46 UD      SCS DIMENSIONLESS UNITGRAPH
                TLAG       .05  LAG

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                              UNIT HYDROGRAPH
                         17 END-OF-PERIOD ORDINATES
     55.    189.    301.    301.    234.    140.     87.     56.     35.     22.
     14.      9.      5.      3.      2.      1.      0.
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47 KK      *     UPA    *
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                     UPPER POND A

              HYDROGRAPH ROUTING DATA

49 RS          STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       ELEV  TYPE OF INITIAL CONDITION
                   RSVRIC     953.00  INITIAL CONDITION
                        X        .00  WORKING R AND D COEFFICIENT

50 SA                AREA        3.4       3.6

51 SE           ELEVATION     953.00    954.00

52 SQ           DISCHARGE        12.       17.

53 SE           ELEVATION     953.00    954.00

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                                    COMPUTED STORAGE-ELEVATION DATA

           STORAGE        .00      3.50
         ELEVATION     953.00    954.00

                                    COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE        .00      3.50
           OUTFLOW      11.64     17.46
         ELEVATION     953.00    954.00


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54 KK      *    SECD    *
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                  SECTION D

              SUBBASIN RUNOFF DATA

57 BA          SUBBASIN CHARACTERISTICS
                   TAREA       .01  SUBBASIN AREA

               PRECIPITATION DATA

56 PB              STORM      1.00  BASIN TOTAL PRECIPITATION

19 PI              INCREMENTAL PRECIPITATION PATTERN
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 58 LS       SCS LOSS RATE
                  STRTL         .04  INITIAL ABSTRACTION
                 CRVNBR       98.00  CURVE NUMBER
                  RTIMP         .00  PERCENT IMPERVIOUS AREA

 59 UD       SCS DIMENSIONLESS UNITGRAPH
                   TLAG         .05  LAG

                                       ***

                                  UNIT HYDROGRAPH
                              17 END-OF-PERIOD ORDINATES
          15.     51.     82.     82.     64.     38.     24.     15.     10.      6.
           4.      2.      1.      1.      1.      0.      0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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             *            *
 60 KK       *    COMB    *                                                  KK
             *            *
             **************
                   COMBINATION OF SUB BASINS                                       KM

 62 HC           HYDROGRAPH COMBINATION
                      ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                      ***


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


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             *            *
 63 KK       *   BASND    *
             *            *
             **************
                BASIN IN SECTION D

           HYDROGRAPH ROUTING DATA

 65 RS       STORAGE ROUTING
                  NSTPS          1  NUMBER OF SUBREACHES
                   ITYP       ELEV  TYPE OF INITIAL CONDITION
                 RSVRIC     947.00  INITIAL CONDITION
                      X        .00  WORKING R AND D COEFFICIENT

 66 SA             AREA         .7       1.9       4.2       4.8       5.0       5.2

 67 SE        ELEVATION     947.00    948.00    949.00    950.00    951.00    952.00

 68 SQ        DISCHARGE         0.        0.       10.       10.       10.       12.

 69 SE        ELEVATION     947.00    948.00    949.00    950.00    951.00    952.00

                                                      ***

                                     COMPUTED STORAGE-ELEVATION DATA
```

```
          STORAGE        .00      1.28      4.29      8.80     13.70     18.78
        ELEVATION     947.00    948.00    949.00    950.00    951.00    952.00

                                     COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE        .00      1.28      4.29      8.80     13.70     18.78
          OUTFLOW        .00       .00      9.50      9.52      9.79     11.74
        ELEVATION     947.00    948.00    949.00    950.00    951.00    952.00


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
   70 KK  *      SECE  *
          *            *
          **************
                        SECTION E

             SUBBASIN RUNOFF DATA

   73 BA       SUBBASIN CHARACTERISTICS
                     TAREA        .01  SUBBASIN AREA

               PRECIPITATION DATA

   72 PB             STORM       1.00  BASIN TOTAL PRECIPITATION

   19 PI         INCREMENTAL PRECIPITATION PATTERN
                   .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
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   74 LS         SCS LOSS RATE
                    STRTL        .04  INITIAL ABSTRACTION
                   CRVNBR      98.00  CURVE NUMBER
                    RTIMP        .00  PERCENT IMPERVIOUS AREA
```

```
  75 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                                            ***

                                                                      UNIT HYDROGRAPH
                                                                 17 END-OF-PERIOD ORDINATES
              16.        55.        88.        88.        69.        41.        26.        17.        10.         6.
               4.         3.         2.         1.         1.         0.         0.


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  76 KK     *     COMB   *                                                              KK
            *            *
            **************
                        COMBINATION OF SUB BASINS                                             KM

  78 HC          HYDROGRAPH COMBINATION
                       ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                            ***


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  79 KK     *    BASNE   *
            *            *
            **************
                        BASIN IN SECTION E

             HYDROGRAPH ROUTING DATA

  81 RS          STORAGE ROUTING
                       NSTPS            1  NUMBER OF SUBREACHES
                        ITYP         ELEV  TYPE OF INITIAL CONDITION
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                        RSVRIC       939.00  INITIAL CONDITION
                             X          .00 WORKING R AND D COEFFICIENT

  82 SA                   AREA          .1        .4        .8       2.2       4.4       5.3       5.5       5.6       5.8       6.0


  83 SE              ELEVATION      939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00    947.00    948.00


  84 SQ              DISCHARGE          0.        0.        0.        0.        0.        0.        0.        0.        0.        0.


  85 SE              ELEVATION      939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00    947.00    948.00

                                                                            ***

                                                    COMPUTED STORAGE-ELEVATION DATA

             STORAGE         .00       .21       .79      2.24      5.48     10.33     15.70     21.27     27.00     32.90
           ELEVATION      939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00    947.00    948.00


                                                COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

             STORAGE         .00       .21       .79      2.24      5.48     10.33     15.70     21.27     27.00     32.90
             OUTFLOW         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
           ELEVATION      939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00    947.00    948.00

1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                TIME TO PEAK IN HOURS


                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION         STATION     AREA    PLAN             RATIO 1
                                                          13.60

 HYDROGRAPH AT
                     UPA        .04     1    FLOW         15.
                                             TIME       21.22

 ROUTED TO
```



```
                     UPA        .04     1    FLOW         14.
                                             TIME       23.98

                                        ** PEAK STAGES IN FEET **
                                        1    STAGE     953.45
                                             TIME       23.98

 HYDROGRAPH AT
                    SECD        .01     1    FLOW          4.
                                             TIME       18.27

  2 COMBINED AT
                    COMB        .05     1    FLOW         18.
                                             TIME       23.98

 ROUTED TO
                   BASND        .05     1    FLOW         11.
                                             TIME       23.98

                                        ** PEAK STAGES IN FEET **
                                        1    STAGE     951.41
                                             TIME       23.98

 HYDROGRAPH AT
                    SECE        .01     1    FLOW          4.
                                             TIME       18.27

  2 COMBINED AT
                    COMB        .06     1    FLOW         15.
                                             TIME       23.98

 ROUTED TO
                   BASNE        .06     1    FLOW          0.
                                             TIME         .00

                                        ** PEAK STAGES IN FEET **
                                        1    STAGE     946.61
                                             TIME       23.98


 *** NORMAL END OF HEC-1 ***
```

PALMERTON & PARRISH, INC.

APPENDIX III-2

HEC-1 OUTPUT

LOWER POND C

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1*****************************************                       ***************************************
 *                                       *                       *                                     *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                       *   U.S. ARMY CORPS OF ENGINEERS      *
 *             JUN  1998                 *                       *   HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                 *                       *         609 SECOND STREET           *
 *                                       *                       *      DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05OCT16  TIME  15:36:58   *                       *          (916) 756-1104             *
 *                                       *                       *                                     *
 *****************************************                       ***************************************


                         X     X  XXXXXXX   XXXXX          X
                         X     X  X        X     X        XX
                         X     X  X        X               X
                         XXXXXXX  XXXX     X       XXXXX   X
                         X     X  X        X               X
                         X     X  X        X     X         X
                         X     X  XXXXXXX   XXXXX         XXX


           THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

           THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
           THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
           NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
           DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
           KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


1                                              HEC-1 INPUT                                              PAGE  1

           LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              1          ID   ************************************************************************
              2          ID   PROJECT NAME:           EDE ASBURY
              3          ID   CONSULTANT:             PALMERTON & PARRISH, INC.
              4          ID   PROJECT NUMBER:         231518
              5          ID   DESIGN ENGINEER:        DONALD C. NOWACK, P.E.
              6          ID   FILE NAME:              C.TXT
```



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              7          ID   DATE:                   OCTOBER 17, 2016
              8          ID   RETURN FREQUENCY:       1000-YEAR, 24 HR
              9          ID   ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
             10          ID   SCENARIO:               AREA C
             11          ID   ************************************************************************
                         * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                         *                NUMBER OF 1 MIN INTERVALS USED FOR CALCULATION
                         * ***No OF INTERVALS*1-060  2-120  3-180  6-360  12-720 18-1080  24-1440
             12          IT      1                    1440
                         * ************************************************************************
                         *                NUMBER OF MIN IN EACH TIME INTERVAL
                         * ***MIN IN INTERVAL***1hr-3  2hr-6  3hr-9  6hr-18  12hr-36  18-54  24-72
             13          IN      72
             14          IO       4       0
                         *DIAGRAM
                         *        1000-YR
             15          JR    PREC    13.60
                         * ************************************************************************
                         *  STORM DISTRIBUTION:     SCS TYPE II
                         *  STORM DURATION:         24 HOUR
                         * ************************************************************************
                         * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

             16          KK   SUBAC
             17          KM      SUB AREA C
             18          PB    1.00
                         * DRAINAGE AREA:   12.40 ACRES = 0.0194  SQ. MI.
             19          BA  0.0194
                         * RAINFALL DISTRIBUTION
             20          PC  0.0000  0.0010  0.0020  0.0030  0.0041  0.0051  0.0062  0.0072  0.0083  0.0094
             21          PC  0.0105  0.0116  0.0127  0.0138  0.0150  0.0161  0.0173  0.0184  0.0196  0.0208
             22          PC  0.0220  0.0232  0.0244  0.0257  0.0269  0.0281  0.0294  0.0306  0.0319  0.0332
             23          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
             24          PC  0.0480  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
             25          PC  0.0630  0.0646  0.0662  0.0679  0.0696  0.0712  0.0730  0.0747  0.0764  0.0782
             26          PC  0.0800  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931  0.0950  0.0970
             27          PC  0.0990  0.1010  0.1030  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
             28          PC  0.1200  0.1222  0.1246  0.1270  0.1296  0.1322  0.1350  0.1379  0.1408  0.1438
             29          PC  0.1470  0.1502  0.1534  0.1566  0.1598  0.1630  0.1663  0.1697  0.1733  0.1771
             30          PC  0.1810  0.1851  0.1895  0.1941  0.1989  0.2040  0.2094  0.2152  0.2214  0.2280
             31          PC  0.2350  0.2427  0.2513  0.2609  0.2715  0.2830  0.3068  0.3544  0.4308  0.5679
             32          PC  0.6630  0.6820  0.6986  0.7130  0.7252  0.7350  0.7434  0.7514  0.7588  0.7656
             33          PC  0.7720  0.7780  0.7835  0.7890  0.7942  0.7990  0.8036  0.8080  0.8122  0.8162
             34          PC  0.8200  0.8237  0.8273  0.8308  0.8342  0.8375  0.8409  0.8442  0.8474  0.8505
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             35          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
             36          PC  0.8800  0.8823  0.8845  0.8868  0.8890  0.8912  0.8934  0.8955  0.8976  0.8997
             37          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9173  0.9192
             38          PC  0.9210  0.9228  0.9245  0.9263  0.9280  0.9297  0.9313  0.9330  0.9346  0.9362
             39          PC  0.9377  0.9393  0.9408  0.9423  0.9438  0.9452  0.9466  0.9480  0.9493  0.9507
1                                              HEC-1 INPUT                                              PAGE  2

           LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

             40          PC  0.9520  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597  0.9610  0.9622  0.9635
             41          PC  0.9647  0.9660  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
             42          PC  0.9770  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
             43          PC  0.9887  0.9899  0.9910  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
             44          PC  1.0000
                         * SCS CURVE NUMBER: 98.00
             45          LS           98.00
                         * TIME OF CONCENTRATION: 0.0833 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
             46          UD  0.0500

             47          KK   BASNC
             48          KM   BASIN C
             49          RS       1    ELEV   950.0
             50          SA  0.5564  5.4486  9.2805  10.598  11.433  11.769
             51          SE   950.0  0951.0   952.0   953.0   954.0   955.0
             52          SQ  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
             53          SE   950.0  0951.0   952.0   953.0   954.0   955.0
                         * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                         * ************************************************************************

             54          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   16       SUBAC
                V
                V
   47       BASNC

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************                       ***************************************
 *                                       *                       *                                     *
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 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                       *   U.S. ARMY CORPS OF ENGINEERS      *
 *             JUN  1998                 *                       *   HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                 *                       *         609 SECOND STREET           *
 *                                       *                       *      DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05OCT16  TIME  15:36:58   *                       *          (916) 756-1104             *
 *                                       *                       *                                     *
 *****************************************                       ***************************************


                          ************************************************************************
                          PROJECT NAME:           EDE ASBURY
                          CONSULTANT:             PALMERTON & PARRISH, INC.
                          PROJECT NUMBER:         231518
                          DESIGN ENGINEER:        DONALD C. NOWACK, P.E.
                          FILE NAME:              C.TXT
                          DATE:                   OCTOBER 17, 2016
                          RETURN FREQUENCY:       1000-YEAR, 24 HR
                          ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
                          SCENARIO:               AREA C
                          ************************************************************************

 14 IO          OUTPUT CONTROL VARIABLES
                      IPRNT          4  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT           HYDROGRAPH TIME DATA
                       NMIN          1  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ       1440  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      1    0  ENDING DATE
                     NDTIME       2359  ENDING TIME
                      ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .02 HOURS
                      TOTAL TIME BASE   23.98 HOURS

         ENGLISH UNITS
              DRAINAGE AREA         SQUARE MILES
              PRECIPITATION DEPTH   INCHES
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              LENGTH, ELEVATION     FEET
              FLOW                  CUBIC FEET PER SECOND
              STORAGE VOLUME        ACRE-FEET
              SURFACE AREA          ACRES
              TEMPERATURE           DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                  13.60


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 16 KK      *    SUBAC   *
            *            *
            **************
                           SUB AREA C

 13 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN          72  TIME INTERVAL IN MINUTES
                     JXDATE      1    0  STARTING DATE
                     JXTIME           0  STARTING TIME

              SUBBASIN RUNOFF DATA

 19 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                PRECIPITATION DATA

 19 PB                STORM        1.00  BASIN TOTAL PRECIPITATION

 19 PI            INCREMENTAL PRECIPITATION PATTERN
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  45 LS          SCS LOSS RATE
                       STRTL         .04  INITIAL ABSTRACTION
                      CRVNBR       98.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  46 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                             ***

                                                        UNIT HYDROGRAPH
                                                   17 END-OF-PERIOD ORDINATES
              28.       97.      155.      155.      121.       72.       45.       29.       18.       11.
               7.        4.        3.        2.        1.        1.        0.


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            *************
            *           *
  47 KK     *    BASNC  *
            *           *
            *************
                         BASIN C

             HYDROGRAPH ROUTING DATA

  49 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
                        ITYP        ELEV  TYPE OF INITIAL CONDITION
                      RSVRIC      950.00  INITIAL CONDITION
                           X         .00 WORKING R AND D COEFFICIENT
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  50 SA             AREA          .6       5.4       9.3      10.6      11.4      11.8

  51 SE        ELEVATION      950.00    951.00    952.00    953.00    954.00    955.00

  52 SQ        DISCHARGE          0.        0.        0.        0.        0.        0.

  53 SE        ELEVATION      950.00    951.00    952.00    953.00    954.00    955.00

                                                                       ***

                                                    COMPUTED STORAGE-ELEVATION DATA

           STORAGE       .00      2.58      9.86     19.79     30.81     42.41
         ELEVATION    950.00    951.00    952.00    953.00    954.00    955.00

                                                COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE       .00      2.58      9.86     19.79     30.81     42.41
           OUTFLOW       .00       .00       .00       .00       .00       .00
         ELEVATION    950.00    951.00    952.00    953.00    954.00    955.00
1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                  TIME TO PEAK IN HOURS


                                                           RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN           RATIO 1
                                                      13.60

 HYDROGRAPH AT
                   SUBAC       .02      1   FLOW          8.
                                            TIME       21.87

 ROUTED TO
                   BASNC       .02      1   FLOW          0.
                                            TIME         .00

                                        ** PEAK STAGES IN FEET **
                                        1   STAGE     952.39
                                            TIME       23.98
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 *** NORMAL END OF HEC-1 ***
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PALMERTON & PARRISH, INC.

APPENDIX III-3

HEC-1 OUTPUT

SECTION F

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1*****************************************                          ***************************************
 *                                       *                          *                                     *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                          *   U.S. ARMY CORPS OF ENGINEERS      *
 *             JUN  1998                 *                          *   HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                 *                          *       609 SECOND STREET             *
 *                                       *                          *     DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   11OCT16  TIME  14:18:37   *                          *         (916) 756-1104              *
 *                                       *                          *                                     *
 *****************************************                          ***************************************


                     X     X  XXXXXXX   XXXXX          X
                     X     X  X        X     X        XX
                     X     X  X        X               X
                     XXXXXXX  XXXX     X       XXXXX   X
                     X     X  X        X               X
                     X     X  X        X     X         X
                     X     X  XXXXXXX   XXXXX         XXX


          THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

          THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
          THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
          NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
          DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
          KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


1                                         HEC-1 INPUT                                         PAGE  1

          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

            1           ID   *************************************************************************
            2           ID   PROJECT NAME:          EDE ASBURY
            3           ID   CONSULTANT:            PALMERTON & PARRISH, INC.
            4           ID   PROJECT NUMBER:        231518
            5           ID   DESIGN ENGINEER:       DONALD C. NOWACK, P.E.
            6           ID   FILE NAME:             F.TXT
```



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            7           ID   DATE:                  OCTOBER 17, 2016
            8           ID   RETURN FREQUENCY:      1000-YEAR, 24 HR
            9           ID   ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
           10           ID   SCENARIO:              SECTION F
           11           ID   *************************************************************************
                        * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                        *               NUMBER OF 1 MIN INTERVALS USED FOR CALCULATION
                        * ***No OF INTERVALS*1-060  2-120  3-180  6-360  12-720 18-1080  24-1440
           12           IT     1                  1440
                        * ************************************************************************
                        *               NUMBER OF MIN IN EACH TIME INTERVAL
                        * ***MIN IN INTERVAL***1hr-3  2hr-6  3hr-9  6hr-18  12hr-36  18-54  24-72
           13           IN     72
           14           IO      4       0
                        *DIAGRAM
                        *        1000-YR
           15           JR    PREC   13.60
                        * ************************************************************************
                        *  STORM DISTRIBUTION:     SCS TYPE II
                        *  STORM DURATION:         24 HOUR
                        * ************************************************************************
                        * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

           16           KK    SECF
           17           KM      SECTION F
           18           PB    1.00
                        * DRAINAGE AREA:   3.99 ACRES = 0.0062  SQ. MI.
           19           BA  0.0062
                        * RAINFALL DISTRIBUTION
           20           PC  0.0000  0.0010  0.0020  0.0030  0.0041  0.0051  0.0062  0.0072  0.0083  0.0094
           21           PC  0.0105  0.0116  0.0127  0.0138  0.0150  0.0161  0.0173  0.0184  0.0196  0.0208
           22           PC  0.0220  0.0232  0.0244  0.0257  0.0269  0.0281  0.0294  0.0306  0.0319  0.0332
           23           PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
           24           PC  0.0480  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
           25           PC  0.0630  0.0646  0.0662  0.0679  0.0696  0.0712  0.0730  0.0747  0.0764  0.0782
           26           PC  0.0800  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931  0.0950  0.0970
           27           PC  0.0990  0.1010  0.1030  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
           28           PC  0.1200  0.1222  0.1246  0.1270  0.1296  0.1322  0.1350  0.1379  0.1408  0.1438
           29           PC  0.1470  0.1502  0.1534  0.1566  0.1598  0.1630  0.1663  0.1697  0.1733  0.1771
           30           PC  0.1810  0.1851  0.1895  0.1941  0.1989  0.2040  0.2094  0.2152  0.2214  0.2280
           31           PC  0.2350  0.2427  0.2513  0.2609  0.2715  0.2830  0.3068  0.3544  0.4308  0.5679
           32           PC  0.6630  0.6820  0.6986  0.7130  0.7252  0.7350  0.7434  0.7514  0.7588  0.7656
           33           PC  0.7720  0.7780  0.7835  0.7890  0.7942  0.7990  0.8036  0.8080  0.8122  0.8162
           34           PC  0.8200  0.8237  0.8273  0.8308  0.8342  0.8375  0.8409  0.8442  0.8474  0.8505
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           35           PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
           36           PC  0.8800  0.8823  0.8845  0.8868  0.8890  0.8912  0.8934  0.8955  0.8976  0.8997
           37           PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9173  0.9192
           38           PC  0.9210  0.9228  0.9245  0.9263  0.9280  0.9297  0.9313  0.9330  0.9346  0.9362
           39           PC  0.9377  0.9393  0.9408  0.9423  0.9438  0.9452  0.9466  0.9480  0.9493  0.9507
1                                         HEC-1 INPUT                                         PAGE  2

          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

           40           PC  0.9520  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597  0.9610  0.9622  0.9635
           41           PC  0.9647  0.9660  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
           42           PC  0.9770  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
           43           PC  0.9887  0.9899  0.9910  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
           44           PC  1.0000
                        * SCS CURVE NUMBER: 98.00
           45           LS            98.00
                        * TIME OF CONCENTRATION: 0.0833 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
           46           UD  0.0500

           47           KK   BASNF
           48           KM   BASIN SECTION F
           49           RS       1     ELEV   946.0
           50           SA  0.0814  0.3307  0.6452  1.5414  1.8699  2.3758  3.1287  3.3812
           51           SE   946.0  0947.0   948.0   949.0   950.0   951.0   952.0   953.0
           52           SQ  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
           53           SE   946.0  0947.0   948.0   949.0   950.0   951.0   952.0   953.0
                        * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                        * ************************************************************************
           54           ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   16        SECF
               V
               V
   47       BASNF

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************                          ***************************************
 *                                       *                          *                                     *
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 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                          *   U.S. ARMY CORPS OF ENGINEERS      *
 *             JUN  1998                 *                          *   HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                 *                          *       609 SECOND STREET             *
 *                                       *                          *     DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   11OCT16  TIME  14:18:37   *                          *         (916) 756-1104              *
 *                                       *                          *                                     *
 *****************************************                          ***************************************



                        *************************************************************************
                        PROJECT NAME:          EDE ASBURY
                        CONSULTANT:            PALMERTON & PARRISH, INC.
                        PROJECT NUMBER:        231518
                        DESIGN ENGINEER:       DONALD C. NOWACK, P.E.
                        FILE NAME:             F.TXT
                        DATE:                  OCTOBER 17, 2016
                        RETURN FREQUENCY:      1000-YEAR, 24 HR
                        ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
                        SCENARIO:              SECTION F
                        *************************************************************************

  14 IO         OUTPUT CONTROL VARIABLES
                      IPRNT          4  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN          1  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ       1440  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      1    0  ENDING DATE
                     NDTIME       2359  ENDING TIME
                      ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .02 HOURS
                      TOTAL TIME BASE   23.98 HOURS

        ENGLISH UNITS
             DRAINAGE AREA         SQUARE MILES
             PRECIPITATION DEPTH   INCHES
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             LENGTH, ELEVATION     FEET
             FLOW                  CUBIC FEET PER SECOND
             STORAGE VOLUME        ACRE-FEET
             SURFACE AREA          ACRES
             TEMPERATURE           DEGREES FAHRENHEIT

    JP         MULTI-PLAN OPTION
                     NPLAN           1  NUMBER OF PLANS

    JR         MULTI-RATIO OPTION
                   RATIOS OF PRECIPITATION
                 13.60


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
  16 KK   *     SECF   *
          *            *
          **************
                           SECTION F

  13 IN        TIME DATA FOR INPUT TIME SERIES
                     JXMIN          72  TIME INTERVAL IN MINUTES
                    JXDATE      1    0  STARTING DATE
                    JXTIME           0  STARTING TIME

             SUBBASIN RUNOFF DATA

  19 BA        SUBBASIN CHARACTERISTICS
                     TAREA         .01  SUBBASIN AREA

               PRECIPITATION DATA

  19 PB              STORM        1.00  BASIN TOTAL PRECIPITATION

  19 PI          INCREMENTAL PRECIPITATION PATTERN
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  45 LS         SCS LOSS RATE
                      STRTL         .04  INITIAL ABSTRACTION
                     CRVNBR       98.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  46 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .05  LAG

                                                      ***

                                                  UNIT HYDROGRAPH
                                             17 END-OF-PERIOD ORDINATES
                9.       31.       50.       50.       39.       23.       14.        9.        6.        4.
                2.        1.        1.        1.        0.        0.        0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           **************
           *            *
  47 KK    *    BASNF   *
           *            *
           **************
                       BASIN SECTION F

             HYDROGRAPH ROUTING DATA

  49 RS         STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC      946.00  INITIAL CONDITION
                          X         .00  WORKING R AND D COEFFICIENT
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```
   50 SA             AREA          .1        .3        .6       1.5       1.9       2.4       3.1       3.4

   51 SE        ELEVATION      946.00    947.00    948.00    949.00    950.00    951.00    952.00    953.00

   52 SQ        DISCHARGE          0.        0.        0.        0.        0.        0.        0.        0.

   53 SE        ELEVATION      946.00    947.00    948.00    949.00    950.00    951.00    952.00    953.00

                                                            ***

                                              COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00        .19        .67       1.73       3.44       5.55       8.30      11.55
        ELEVATION     946.00     947.00     948.00     949.00     950.00     951.00     952.00     953.00

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE        .00        .19        .67       1.73       3.44       5.55       8.30      11.55
          OUTFLOW        .00        .00        .00        .00        .00        .00        .00        .00
        ELEVATION     946.00     947.00     948.00     949.00     950.00     951.00     952.00     953.00
1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                   FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                   TIME TO PEAK IN HOURS


                                                            RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN            RATIO 1
                                                       13.60

 HYDROGRAPH AT
                    SECF       .01      1  FLOW           2.
                                           TIME        18.37

 ROUTED TO
                   BASNF       .01      1  FLOW           0.
                                           TIME          .00

                                       ** PEAK STAGES IN FEET **
                                       1   STAGE      950.46
                                           TIME        23.98
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*** NORMAL END OF HEC-1 ***
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PALMERTON & PARRISH, INC.

APPENDIX III-4

HEC-1 OUTPUT

SECTION G

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1****************************************                    **************************************
 *                                      *                    *                                    *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *   U.S. ARMY CORPS OF ENGINEERS     *
 *              JUN   1998              *                    *   HYDROLOGIC ENGINEERING CENTER    *
 *           VERSION 4.1                *                    *        609 SECOND STREET           *
 *                                      *                    *      DAVIS, CALIFORNIA 95616       *
 *  RUN DATE   11OCT16  TIME  14:18:47  *                    *          (916) 756-1104            *
 *                                      *                    *                                    *
 ****************************************                    **************************************


                    X     X  XXXXXXX   XXXXX           X
                    X     X  X        X     X         XX
                    X     X  X        X                X
                    XXXXXXX  XXXX     X        XXXXX   X
                    X     X  X        X                X
                    X     X  X        X     X          X
                    X     X  XXXXXXX   XXXXX          XXX


          THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

          THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
          THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
          NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
          DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
          KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1                                      HEC-1 INPUT                                          PAGE  1

         LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

           1           ID   *************************************************************************
           2           ID   PROJECT NAME:           EDE ASBURY
           3           ID   CONSULTANT:             PALMERTON & PARRISH, INC.
           4           ID   PROJECT NUMBER:         231518
           5           ID   DESIGN ENGINEER:        DONALD C. NOWACK, P.E.
           6           ID   FILE NAME:              G.TXT
```



```
           7           ID   DATE:                   OCTOBER 17, 2016
           8           ID   RETURN FREQUENCY:       1000-YEAR, 24 HR
           9           ID   ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
          10           ID   SCENARIO:               SECTION G
          11           ID   *************************************************************************
                       * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                       *                NUMBER OF 1 MIN INTERVALS USED FOR CALCULATION
                       * ***No OF INTERVALS*1-060  2-120  3-180  6-360  12-720 18-1080  24-1440
          12           IT      1                     1440
                       * ************************************************************************
                       *                NUMBER OF MIN IN EACH TIME INTERVAL
                       * ***MIN IN INTERVAL***1hr-3  2hr-6  3hr-9  6hr-18  12hr-36  18-54  24-72
          13           IN      72
          14           IO       4       0
                       *DIAGRAM
                       *        1000-YR
          15           JR    PREC    13.60
                       * ************************************************************************
                       *  STORM DISTRIBUTION:     SCS TYPE II
                       *  STORM DURATION:         24 HOUR
                       * ************************************************************************
                       * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

          16           KK    SECG
          17           KM      SECTION G
          18           PB    1.00
                       * DRAINAGE AREA:   4.39 ACRES = 0.0069  SQ. MI.
          19           BA  0.0069
                       * RAINFALL DISTRIBUTION
          20           PC  0.0000  0.0010  0.0020  0.0030  0.0041  0.0051  0.0062  0.0072  0.0083  0.0094
          21           PC  0.0105  0.0116  0.0127  0.0138  0.0150  0.0161  0.0173  0.0184  0.0196  0.0208
          22           PC  0.0220  0.0232  0.0244  0.0257  0.0269  0.0281  0.0294  0.0306  0.0319  0.0332
          23           PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
          24           PC  0.0480  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
          25           PC  0.0630  0.0646  0.0662  0.0679  0.0696  0.0712  0.0730  0.0747  0.0764  0.0782
          26           PC  0.0800  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931  0.0950  0.0970
          27           PC  0.0990  0.1010  0.1030  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
          28           PC  0.1200  0.1222  0.1246  0.1270  0.1296  0.1322  0.1350  0.1379  0.1408  0.1438
          29           PC  0.1470  0.1502  0.1534  0.1566  0.1598  0.1630  0.1663  0.1697  0.1733  0.1771
          30           PC  0.1810  0.1851  0.1895  0.1941  0.1989  0.2040  0.2094  0.2152  0.2214  0.2280
          31           PC  0.2350  0.2427  0.2513  0.2609  0.2715  0.2830  0.3068  0.3544  0.4308  0.5679
          32           PC  0.6630  0.6820  0.6986  0.7130  0.7252  0.7350  0.7434  0.7514  0.7588  0.7656
          33           PC  0.7720  0.7780  0.7835  0.7890  0.7942  0.7990  0.8036  0.8080  0.8122  0.8162
          34           PC  0.8200  0.8237  0.8273  0.8308  0.8342  0.8375  0.8409  0.8442  0.8474  0.8505
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          35           PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
          36           PC  0.8800  0.8823  0.8845  0.8868  0.8890  0.8912  0.8934  0.8955  0.8976  0.8997
          37           PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9173  0.9192
          38           PC  0.9210  0.9228  0.9245  0.9263  0.9280  0.9297  0.9313  0.9330  0.9346  0.9362
          39           PC  0.9377  0.9393  0.9408  0.9423  0.9438  0.9452  0.9466  0.9480  0.9493  0.9507
1                                      HEC-1 INPUT                                          PAGE  2

         LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          40           PC  0.9520  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597  0.9610  0.9622  0.9635
          41           PC  0.9647  0.9660  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
          42           PC  0.9770  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
          43           PC  0.9887  0.9899  0.9910  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
          44           PC  1.0000
                       * SCS CURVE NUMBER: 98.00
          45           LS           98.00
                       * TIME OF CONCENTRATION: 0.0833 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
          46           UD  0.0500

          47           KK   BASNG
          48           KM     BASIN SECTION G
          49           RS       1    ELEV   937.0
          50           SA  0.0631  0.6902  1.2727  1.5650  1.7619  1.8770  2.1662  2.3247  2.4937  2.6722
          51           SE   937.0   938.0   939.0   940.0   941.0   942.0   943.0   944.0   945.0   946.0
          52           SQ  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
          53           SE   937.0   938.0   939.0   940.0   941.0   942.0   943.0   944.0   945.0   946.0
                       * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                       * ************************************************************************
          54           ZZ
1
              SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   16         SECG
                 V
                 V
   47        BASNG

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                    **************************************
 *                                      *                    *                                    *
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 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *   U.S. ARMY CORPS OF ENGINEERS     *
 *              JUN   1998              *                    *   HYDROLOGIC ENGINEERING CENTER    *
 *           VERSION 4.1                *                    *        609 SECOND STREET           *
 *                                      *                    *      DAVIS, CALIFORNIA 95616       *
 *  RUN DATE   11OCT16  TIME  14:18:47  *                    *          (916) 756-1104            *
 *                                      *                    *                                    *
 ****************************************                    **************************************


                         *************************************************************************
                         PROJECT NAME:           EDE ASBURY
                         CONSULTANT:             PALMERTON & PARRISH, INC.
                         PROJECT NUMBER:         231518
                         DESIGN ENGINEER:        DONALD C. NOWACK, P.E.
                         FILE NAME:              G.TXT
                         DATE:                   OCTOBER 17, 2016
                         RETURN FREQUENCY:       1000-YEAR, 24 HR
                         ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
                         SCENARIO:               SECTION G
                         *************************************************************************

  14 IO         OUTPUT CONTROL VARIABLES
                      IPRNT          4  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT         HYDROGRAPH TIME DATA
                       NMIN          1  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ       1440  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      1    0  ENDING DATE
                     NDTIME       2359  ENDING TIME
                      ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .02 HOURS
                       TOTAL TIME BASE   23.98 HOURS

       ENGLISH UNITS
            DRAINAGE AREA         SQUARE MILES
            PRECIPITATION DEPTH   INCHES
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               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT

     JP          MULTI-PLAN OPTION
                       NPLAN           1  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                   13.60


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
   16 KK    *     SECG   *
            *            *
            **************
                           SECTION G

   13 IN         TIME DATA FOR INPUT TIME SERIES
                       JXMIN         72  TIME INTERVAL IN MINUTES
                      JXDATE      1   0  STARTING DATE
                      JXTIME          0  STARTING TIME

               SUBBASIN RUNOFF DATA

   19 BA         SUBBASIN CHARACTERISTICS
                       TAREA        .01  SUBBASIN AREA

                 PRECIPITATION DATA

   19 PB               STORM       1.00  BASIN TOTAL PRECIPITATION

   19 PI           INCREMENTAL PRECIPITATION PATTERN
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  45 LS        SCS LOSS RATE
                     STRTL         .04  INITIAL ABSTRACTION
                    CRVNBR       98.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

  46 UD        SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .05  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                     17 END-OF-PERIOD ORDINATES
            10.        35.        55.        55.        43.        26.        16.        10.         6.         4.
             3.         2.         1.         1.         0.         0.         0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
  47 KK   *    BASNG   *
          *            *
          **************
                       BASIN SECTION G

             HYDROGRAPH ROUTING DATA

  49 RS        STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC      937.00  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT
```



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  50 SA             AREA          .1        .7       1.3       1.6       1.8       1.9       2.2       2.3       2.5       2.7

  51 SE        ELEVATION      937.00    938.00    939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00

  52 SQ        DISCHARGE          0.        0.        0.        0.        0.        0.        0.        0.        0.        0.

  53 SE        ELEVATION      937.00    938.00    939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00

                                                                ***

                                                   COMPUTED STORAGE-ELEVATION DATA

           STORAGE        .00       .32      1.29      2.70      4.37      6.19      8.21     10.45     12.86     15.44
         ELEVATION     937.00    938.00    939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00

                                               COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE        .00       .32      1.29      2.70      4.37      6.19      8.21     10.45     12.86     15.44
           OUTFLOW        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
         ELEVATION     937.00    938.00    939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00

1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                TIME TO PEAK IN HOURS

                                                         RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN           RATIO 1
                                                      13.60

 HYDROGRAPH AT
                   SECG       .01       1   FLOW          3.
                                            TIME       18.27

 ROUTED TO
                  BASNG       .01       1   FLOW          0.
                                            TIME         .00
```



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                                    ** PEAK STAGES IN FEET **
                                    1   STAGE      941.29
                                        TIME        23.98


 *** NORMAL END OF HEC-1 ***
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PALMERTON & PARRISH, INC.

APPENDIX III-5

HEC-1 OUTPUT

SECTION H

```
1****************************************                              ****************************************
 *                                      *                              *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                              *   U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN   1998              *                              *   HYDROLOGIC ENGINEERING CENTER      *
 *            VERSION 4.1               *                              *         609 SECOND STREET            *
 *                                      *                              *      DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   11OCT16  TIME  14:18:58  *                              *          (916) 756-1104              *
 *                                      *                              *                                      *
 ****************************************                              ****************************************


                          X     X  XXXXXXX   XXXXX         X
                          X     X  X        X     X       XX
                          X     X  X        X              X
                          XXXXXXX  XXXX     X       XXXXX  X
                          X     X  X        X              X
                          X     X  X        X     X        X
                          X     X  XXXXXXX   XXXXX        XXX


         THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

         THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
         THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
         NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
         DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
         KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


1                                          HEC-1 INPUT                                          PAGE  1

          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

            1           ID   ***************************************************************************
            2           ID   PROJECT NAME:          EDE ASBURY
            3           ID   CONSULTANT:            PALMERTON & PARRISH, INC.
            4           ID   PROJECT NUMBER:        231518
            5           ID   DESIGN ENGINEER:       DONALD C. NOWACK, P.E.
            6           ID   FILE NAME:             H.TXT
```



```
            7           ID   DATE:                  OCTOBER 17, 2016
            8           ID   RETURN FREQUENCY:      1000-YEAR, 24 HR
            9           ID   ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
           10           ID   SCENARIO:              SECTION H
           11           ID   ***************************************************************************
                        * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                        *                NUMBER OF 1 MIN INTERVALS USED FOR CALCULATION
                        * ***No OF INTERVALS*1-060  2-120  3-180  6-360  12-720 18-1080  24-1440
           12           IT     1                    1440
                        * **************************************************************************
                        *                NUMBER OF MIN IN EACH TIME INTERVAL
                        * ***MIN IN INTERVAL***1hr-3  2hr-6  3hr-9  6hr-18  12hr-36  18-54  24-72
           13           IN     72
           14           IO      4       0
                        *DIAGRAM
                        *         1000-YR
           15           JR    PREC    13.60
                        * **************************************************************************
                        *  STORM DISTRIBUTION:     SCS TYPE II
                        *  STORM DURATION:        24 HOUR
                        * **************************************************************************
                        * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

           16           KK    SECH
           17           KM      SECTION H
           18           PB    1.00
                        * DRAINAGE AREA:   9.51 ACRES = 0.0149  SQ. MI.
           19           BA  0.0149
                        * RAINFALL DISTRIBUTION
           20           PC  0.0000  0.0010  0.0020  0.0030  0.0041  0.0051  0.0062  0.0072  0.0083  0.0094
           21           PC  0.0105  0.0116  0.0127  0.0138  0.0150  0.0161  0.0173  0.0184  0.0196  0.0208
           22           PC  0.0220  0.0232  0.0244  0.0257  0.0269  0.0281  0.0294  0.0306  0.0319  0.0332
           23           PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
           24           PC  0.0480  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
           25           PC  0.0630  0.0646  0.0662  0.0679  0.0696  0.0712  0.0730  0.0747  0.0764  0.0782
           26           PC  0.0800  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931  0.0950  0.0970
           27           PC  0.0990  0.1010  0.1030  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
           28           PC  0.1200  0.1222  0.1246  0.1270  0.1296  0.1322  0.1350  0.1379  0.1408  0.1438
           29           PC  0.1470  0.1502  0.1534  0.1566  0.1598  0.1630  0.1663  0.1697  0.1733  0.1771
           30           PC  0.1810  0.1851  0.1895  0.1941  0.1989  0.2040  0.2094  0.2152  0.2214  0.2280
           31           PC  0.2350  0.2427  0.2513  0.2609  0.2715  0.2830  0.3068  0.3544  0.4308  0.5679
           32           PC  0.6630  0.6820  0.6986  0.7130  0.7252  0.7350  0.7434  0.7514  0.7588  0.7656
           33           PC  0.7720  0.7780  0.7835  0.7890  0.7942  0.7990  0.8036  0.8080  0.8122  0.8162
           34           PC  0.8200  0.8237  0.8273  0.8308  0.8342  0.8375  0.8409  0.8442  0.8474  0.8505
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           35           PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
           36           PC  0.8800  0.8823  0.8845  0.8868  0.8890  0.8912  0.8934  0.8955  0.8976  0.8997
           37           PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9173  0.9192
           38           PC  0.9210  0.9228  0.9245  0.9263  0.9280  0.9297  0.9313  0.9330  0.9346  0.9362
           39           PC  0.9377  0.9393  0.9408  0.9423  0.9438  0.9452  0.9466  0.9480  0.9493  0.9507
1                                          HEC-1 INPUT                                          PAGE  2

          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

           40           PC  0.9520  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597  0.9610  0.9622  0.9635
           41           PC  0.9647  0.9660  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
           42           PC  0.9770  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
           43           PC  0.9887  0.9899  0.9910  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
           44           PC  1.0000
                        * SCS CURVE NUMBER: 98.00
           45           LS          98.00
                        * TIME OF CONCENTRATION: 0.0833 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
           46           UD  0.0500

           47           KK   BASNH
           48           KM     BASIN SECTION H
           49           RS       1    ELEV   939.0
           50           SA  0.8156  3.4858  7.0104  8.2156  8.3012  8.3870  8.4735  8.5607  8.6486
           51           SE   939.0  0940.0   941.0   942.0   943.0   944.0   945.0   946.0   947.0
           52           SQ  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
           53           SE   939.0  0940.0   941.0   942.0   943.0   944.0   945.0   946.0   947.0
                        * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                        * **************************************************************************
           54           ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   16         SECH
                 V
                 V
   47        BASNH

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                              ****************************************
 *                                      *                              *                                      *
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 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                              *   U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN   1998              *                              *   HYDROLOGIC ENGINEERING CENTER      *
 *            VERSION 4.1               *                              *         609 SECOND STREET            *
 *                                      *                              *      DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   11OCT16  TIME  14:18:58  *                              *          (916) 756-1104              *
 *                                      *                              *                                      *
 ****************************************                              ****************************************


                        ***************************************************************************
                        PROJECT NAME:          EDE ASBURY
                        CONSULTANT:            PALMERTON & PARRISH, INC.
                        PROJECT NUMBER:        231518
                        DESIGN ENGINEER:       DONALD C. NOWACK, P.E.
                        FILE NAME:             H.TXT
                        DATE:                  OCTOBER 17, 2016
                        RETURN FREQUENCY:      1000-YEAR, 24 HR
                        ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
                        SCENARIO:              SECTION H
                        ***************************************************************************

  14 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          4  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT           HYDROGRAPH TIME DATA
                        NMIN          1  MINUTES IN COMPUTATION INTERVAL
                       IDATE     1    0  STARTING DATE
                       ITIME       0000  STARTING TIME
                          NQ       1440  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE     1    0  ENDING DATE
                      NDTIME       2359  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL     .02 HOURS
                      TOTAL TIME BASE   23.98 HOURS

        ENGLISH UNITS
             DRAINAGE AREA         SQUARE MILES
             PRECIPITATION DEPTH   INCHES
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              LENGTH, ELEVATION     FEET
              FLOW                  CUBIC FEET PER SECOND
              STORAGE VOLUME        ACRE-FEET
              SURFACE AREA          ACRES
              TEMPERATURE           DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                  13.60


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


           **************
           *            *
  16 KK    *     SECH   *
           *            *
           **************
                            SECTION H

  13 IN         TIME DATA FOR INPUT TIME SERIES
                      JXMIN          72  TIME INTERVAL IN MINUTES
                     JXDATE      1    0  STARTING DATE
                     JXTIME           0  STARTING TIME

              SUBBASIN RUNOFF DATA

  19 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

  19 PB               STORM        1.00  BASIN TOTAL PRECIPITATION

  19 PI           INCREMENTAL PRECIPITATION PATTERN
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  45 LS          SCS LOSS RATE
                      STRTL         .04  INITIAL ABSTRACTION
                     CRVNBR       98.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  46 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .05  LAG

                                                              ***

                                                         UNIT HYDROGRAPH
                                                    17 END-OF-PERIOD ORDINATES
              22.       75.      119.      119.       93.       56.       35.       22.       14.        9.
               5.        3.        2.        1.        1.        1.        0.


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  47 KK     *    BASNH   *
            *            *
            **************
                                BASIN SECTION H

                HYDROGRAPH ROUTING DATA

  49 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC      939.00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT
```



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  50 SA             AREA          .8       3.5       7.0       8.2       8.3       8.4       8.5       8.6       8.6

  51 SE        ELEVATION      939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00    947.00

  52 SQ        DISCHARGE          0.        0.        0.        0.        0.        0.        0.        0.        0.

  53 SE        ELEVATION      939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00    947.00

                                                                      ***

                                                  COMPUTED STORAGE-ELEVATION DATA

            STORAGE        .00      2.00      7.14     14.75     23.01     31.35     39.78     48.30     56.90
          ELEVATION     939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00    947.00

                                              COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE        .00      2.00      7.14     14.75     23.01     31.35     39.78     48.30     56.90
            OUTFLOW        .00       .00       .00       .00       .00       .00       .00       .00       .00
          ELEVATION     939.00    940.00    941.00    942.00    943.00    944.00    945.00    946.00    947.00
1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                  TIME TO PEAK IN HOURS


                                                           RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN             RATIO 1
                                                       13.60

 HYDROGRAPH AT
                    SECH       .01      1   FLOW          6.
                                            TIME       23.52

 ROUTED TO
                   BASNH       .01      1   FLOW          0.
                                            TIME         .00

                                       ** PEAK STAGES IN FEET **
                                        1   STAGE     941.45
                                            TIME       23.98
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 *** NORMAL END OF HEC-1 ***
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PALMERTON & PARRISH, INC.

APPENDIX III-6

HEC-1 OUTPUT

SECTION I

```
1*****************************************                                     ***************************************
 *                                       *                                     *                                     *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                     *   U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN  1998                *                                     *   HYDROLOGIC ENGINEERING CENTER     *
 *          VERSION 4.1                  *                                     *        609 SECOND STREET            *
 *                                       *                                     *      DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   11OCT16  TIME  14:19:08   *                                     *          (916) 756-1104             *
 *                                       *                                     *                                     *
 *****************************************                                     ***************************************



                                          X     X  XXXXXXX   XXXXX           X
                                          X     X  X        X     X         XX
                                          X     X  X        X                X
                                          XXXXXXX  XXXX     X        XXXXX   X
                                          X     X  X        X                X
                                          X     X  X        X     X          X
                                          X     X  XXXXXXX   XXXXX          XXX



          THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

          THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
          THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
          NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
          DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
          KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


1                                                       HEC-1 INPUT                                                 PAGE  1

         LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

           1           ID   ***********************************************************************
           2           ID   PROJECT NAME:            EDE ASBURY
           3           ID   CONSULTANT:              PALMERTON & PARRISH, INC.
           4           ID   PROJECT NUMBER:          231518
           5           ID   DESIGN ENGINEER:         DONALD C. NOWACK, P.E.
           6           ID   FILE NAME:               I.TXT
```



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           7           ID   DATE:                    OCTOBER 17, 2016
           8           ID   RETURN FREQUENCY:        1000-YEAR, 24 HR
           9           ID   ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
          10           ID   SCENARIO:                SECTION I
          11           ID   ***********************************************************************
                       * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                       *               NUMBER OF 1 MIN INTERVALS USED FOR CALCULATION
                       * ***No OF INTERVALS*1-060  2-120  3-180  6-360  12-720 18-1080  24-1440
          12           IT      1              1440
                       * ***********************************************************************
                       *               NUMBER OF MIN IN EACH TIME INTERVAL
                       * ***MIN IN INTERVAL***1hr-3  2hr-6  3hr-9  6hr-18  12hr-36  18-54  24-72
          13           IN      72
          14           IO      4       0
                       *DIAGRAM
                       *         1000-YR
          15           JR    PREC    13.60
                       * ***********************************************************************
                       *  STORM DISTRIBUTION:     SCS TYPE II
                       *  STORM DURATION:         24 HOUR
                       * ***********************************************************************
                       * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

          16           KK    SECI
          17           KM      SECTION I
          18           PB    1.00
                       * DRAINAGE AREA:   12.19 ACRES = 0.0191  SQ. MI.
          19           BA  0.0191
                       * RAINFALL DISTRIBUTION
          20           PC  0.0000  0.0010  0.0020  0.0030  0.0041  0.0051  0.0062  0.0072  0.0083  0.0094
          21           PC  0.0105  0.0116  0.0127  0.0138  0.0150  0.0161  0.0173  0.0184  0.0196  0.0208
          22           PC  0.0220  0.0232  0.0244  0.0257  0.0269  0.0281  0.0294  0.0306  0.0319  0.0332
          23           PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
          24           PC  0.0480  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
          25           PC  0.0630  0.0646  0.0662  0.0679  0.0696  0.0712  0.0730  0.0747  0.0764  0.0782
          26           PC  0.0800  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931  0.0950  0.0970
          27           PC  0.0990  0.1010  0.1030  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
          28           PC  0.1200  0.1222  0.1246  0.1270  0.1296  0.1322  0.1350  0.1379  0.1408  0.1438
          29           PC  0.1470  0.1502  0.1534  0.1566  0.1598  0.1630  0.1663  0.1697  0.1733  0.1771
          30           PC  0.1810  0.1851  0.1895  0.1941  0.1989  0.2040  0.2094  0.2152  0.2214  0.2280
          31           PC  0.2350  0.2427  0.2513  0.2609  0.2715  0.2830  0.3068  0.3544  0.4308  0.5679
          32           PC  0.6630  0.6820  0.6986  0.7130  0.7252  0.7350  0.7434  0.7514  0.7588  0.7656
          33           PC  0.7720  0.7780  0.7835  0.7890  0.7942  0.7990  0.8036  0.8080  0.8122  0.8162
          34           PC  0.8200  0.8237  0.8273  0.8308  0.8342  0.8375  0.8409  0.8442  0.8474  0.8505
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          35           PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
          36           PC  0.8800  0.8823  0.8845  0.8868  0.8890  0.8912  0.8934  0.8955  0.8976  0.8997
          37           PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9173  0.9192
          38           PC  0.9210  0.9228  0.9245  0.9263  0.9280  0.9297  0.9313  0.9330  0.9346  0.9362
          39           PC  0.9377  0.9393  0.9408  0.9423  0.9438  0.9452  0.9466  0.9480  0.9493  0.9507
1                                                       HEC-1 INPUT                                                 PAGE  2

         LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          40           PC  0.9520  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597  0.9610  0.9622  0.9635
          41           PC  0.9647  0.9660  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
          42           PC  0.9770  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
          43           PC  0.9887  0.9899  0.9910  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
          44           PC  1.0000
                       * SCS CURVE NUMBER: 98.00
          45           LS           98.00
                       * TIME OF CONCENTRATION: 0.0833 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
          46           UD  0.0500

          47           KK   BASNI
          48           KM   BASIN SECTION I
          49           RS       1    ELEV   936.0
          50           SA  0.5474  3.1525  4.3224  8.4727  10.639  10.773  10.925  11.052  11.178  11.306
          51           SE   936.0  0937.0   938.0   939.0   940.0   941.0   942.0   943.0   944.0   945.0
          52           SQ  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
          53           SE   936.0  0937.0   938.0   939.0   940.0   941.0   942.0   943.0   944.0   945.0
                       * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
                       * ***********************************************************************
          54           ZZ
1
             SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   16         SECI
               V
               V
   47        BASNI

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************                                     ***************************************
 *                                       *                                     *                                     *
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 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                     *   U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN  1998                *                                     *   HYDROLOGIC ENGINEERING CENTER     *
 *          VERSION 4.1                  *                                     *        609 SECOND STREET            *
 *                                       *                                     *      DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   11OCT16  TIME  14:19:08   *                                     *          (916) 756-1104             *
 *                                       *                                     *                                     *
 *****************************************                                     ***************************************



                           ***************************************************************************
                           PROJECT NAME:            EDE ASBURY
                           CONSULTANT:              PALMERTON & PARRISH, INC.
                           PROJECT NUMBER:          231518
                           DESIGN ENGINEER:         DONALD C. NOWACK, P.E.
                           FILE NAME:               I.TXT
                           DATE:                    OCTOBER 17, 2016
                           RETURN FREQUENCY:        1000-YEAR, 24 HR
                           ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
                           SCENARIO:                SECTION I
                           ***************************************************************************

  14 IO         OUTPUT CONTROL VARIABLES
                      IPRNT          4  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN          1  MINUTES IN COMPUTATION INTERVAL
                      IDATE     1    0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ       1440  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE     1    0  ENDING DATE
                     NDTIME       2359  ENDING TIME
                      ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .02 HOURS
                       TOTAL TIME BASE   23.98 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
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               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT

     JP          MULTI-PLAN OPTION
                       NPLAN           1  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                   13.60


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  16 KK     *     SECI   *
            *            *
            **************
                              SECTION I

  13 IN          TIME DATA FOR INPUT TIME SERIES
                       JXMIN          72  TIME INTERVAL IN MINUTES
                      JXDATE      1    0  STARTING DATE
                      JXTIME           0  STARTING TIME

               SUBBASIN RUNOFF DATA

  19 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  19 PB                STORM        1.00  BASIN TOTAL PRECIPITATION

  19 PI            INCREMENTAL PRECIPITATION PATTERN
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 45 LS          SCS LOSS RATE
                      STRTL         .04  INITIAL ABSTRACTION
                     CRVNBR       98.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 46 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .05  LAG

                                                           ***

                                                     UNIT HYDROGRAPH
                                                17 END-OF-PERIOD ORDINATES
             28.        96.       153.       153.       119.        71.        44.        29.        18.        11.
              7.         4.         3.         2.         1.         1.         0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
 47 KK    *    BASNI   *
          *            *
          **************
                        BASIN SECTION I

            HYDROGRAPH ROUTING DATA

 49 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC      936.00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT
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  50 SA           AREA          .5       3.2       4.3       8.5      10.6      10.8      10.9      11.1      11.2      11.3

  51 SE      ELEVATION      936.00    937.00    938.00    939.00    940.00    941.00    942.00    943.00    944.00    945.00

  52 SQ      DISCHARGE          0.        0.        0.        0.        0.        0.        0.        0.        0.        0.

  53 SE      ELEVATION      936.00    937.00    938.00    939.00    940.00    941.00    942.00    943.00    944.00    945.00

                                                             ***

                                            COMPUTED STORAGE-ELEVATION DATA

            STORAGE        .00      1.67      5.39     11.68     21.21     31.92     42.77     53.75     64.87     76.11
          ELEVATION     936.00    937.00    938.00    939.00    940.00    941.00    942.00    943.00    944.00    945.00

                                        COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE        .00      1.67      5.39     11.68     21.21     31.92     42.77     53.75     64.87     76.11
            OUTFLOW        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
          ELEVATION     936.00    937.00    938.00    939.00    940.00    941.00    942.00    943.00    944.00    945.00

1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                TIME TO PEAK IN HOURS

                                                         RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN           RATIO 1
                                                      13.60

 HYDROGRAPH AT
                   SECI       .02      1   FLOW          8.
                                           TIME      21.87

 ROUTED TO
                  BASNI       .02      1   FLOW          0.
                                           TIME         .00
```



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                                    ** PEAK STAGES IN FEET **
                                    1   STAGE      939.20
                                        TIME        23.98


 *** NORMAL END OF HEC-1 ***
```

APPENDIX III-7

HEC-1 OUTPUT

UPPER POND B & LOWER POND J

```
1***************************************                                    ***************************************
 *                                     *                                    *                                     *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                  *   U.S. ARMY CORPS OF ENGINEERS      *
 *             JUN   1998              *                                    *   HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1               *                                    *         609 SECOND STREET           *
 *                                     *                                    *      DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   12OCT16  TIME  10:02:50  *                                   *          (916) 756-1104             *
 *                                     *                                    *                                     *
 ***************************************                                    ***************************************


                              X     X  XXXXXXX   XXXXX          X
                              X     X  X        X     X        XX
                              X     X  X        X               X
                              XXXXXXX  XXXX     X       XXXXX   X
                              X     X  X        X               X
                              X     X  X        X     X         X
                              X     X  XXXXXXX   XXXXX         XXX


         THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

         THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
         THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
         NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
         DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
         KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1                                       HEC-1 INPUT                                       PAGE  1

     LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

        1      ID   ************************************************************************
        2      ID   PROJECT NAME:           EDE ASBURY
        3      ID   CONSULTANT:             PALMERTON & PARRISH, INC.
        4      ID   PROJECT NUMBER:         231518
        5      ID   DESIGN ENGINEER:        DONALD C. NOWACK, P.E.
        6      ID   FILE NAME:              J.TXT
```



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        7      ID   DATE:                   OCTOBER 17, 2016
        8      ID   RETURN FREQUENCY:       1000-YEAR, 24 HR
        9      ID   ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
       10      ID   SCENARIO:               UPPER POND B AND LOWER POND J
       11      ID   ************************************************************************
               * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
               *               NUMBER OF 1 MIN INTERVALS USED FOR CALCULATION
               * ***No OF INTERVALS*1-060  2-120  3-180  6-360  12-720 18-1080  24-1440
       12      IT      1                 1440
               * ************************************************************************
               *               NUMBER OF MIN IN EACH TIME INTERVAL
               * ***MIN IN INTERVAL***1hr-3  2hr-6  3hr-9  6hr-18  12hr-36  18-54  24-72
       13      IN     72
       14      IO      4       0
               *DIAGRAM
               *        1000-YR
       15      JR    PREC    13.60
               * ************************************************************************
               *  STORM DISTRIBUTION:     SCS TYPE II
               *  STORM DURATION:         24 HOUR
               * ************************************************************************
               * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

       16      KK    SECB
       17      KM      UPPER POND B
       18      PB    1.00
               * DRAINAGE AREA:   14.87 ACRES = 0.0232  SQ. MI.
       19      BA  0.0232
               * RAINFALL DISTRIBUTION
       20      PC  0.0000  0.0010  0.0020  0.0030  0.0041  0.0051  0.0062  0.0072  0.0083  0.0094
       21      PC  0.0105  0.0116  0.0127  0.0138  0.0150  0.0161  0.0173  0.0184  0.0196  0.0208
       22      PC  0.0220  0.0232  0.0244  0.0257  0.0269  0.0281  0.0294  0.0306  0.0319  0.0332
       23      PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
       24      PC  0.0480  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
       25      PC  0.0630  0.0646  0.0662  0.0679  0.0696  0.0712  0.0730  0.0747  0.0764  0.0782
       26      PC  0.0800  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931  0.0950  0.0970
       27      PC  0.0990  0.1010  0.1030  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
       28      PC  0.1200  0.1222  0.1246  0.1270  0.1296  0.1322  0.1350  0.1379  0.1408  0.1438
       29      PC  0.1470  0.1502  0.1534  0.1566  0.1598  0.1630  0.1663  0.1697  0.1733  0.1771
       30      PC  0.1810  0.1851  0.1895  0.1941  0.1989  0.2040  0.2094  0.2152  0.2214  0.2280
       31      PC  0.2350  0.2427  0.2513  0.2609  0.2715  0.2830  0.3068  0.3544  0.4308  0.5679
       32      PC  0.6630  0.6820  0.6986  0.7130  0.7252  0.7350  0.7434  0.7514  0.7588  0.7656
       33      PC  0.7720  0.7780  0.7835  0.7890  0.7942  0.7990  0.8036  0.8080  0.8122  0.8162
       34      PC  0.8200  0.8237  0.8273  0.8308  0.8342  0.8375  0.8409  0.8442  0.8474  0.8505
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       35      PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
       36      PC  0.8800  0.8823  0.8845  0.8868  0.8890  0.8912  0.8934  0.8955  0.8976  0.8997
       37      PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9173  0.9192
       38      PC  0.9210  0.9228  0.9245  0.9263  0.9280  0.9297  0.9313  0.9330  0.9346  0.9362
       39      PC  0.9377  0.9393  0.9408  0.9423  0.9438  0.9452  0.9466  0.9480  0.9493  0.9507
1                                       HEC-1 INPUT                                       PAGE  2

     LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

       40      PC  0.9520  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597  0.9610  0.9622  0.9635
       41      PC  0.9647  0.9660  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
       42      PC  0.9770  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
       43      PC  0.9887  0.9899  0.9910  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
       44      PC  1.0000
               * SCS CURVE NUMBER: 98.00
       45      LS          98.00
               * TIME OF CONCENTRATION: 0.0833 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
       46      UD  0.0500
               * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

       47      KK   FPOND
       48      KM         FOGGY POND DA
       49      PB    1.00
               * DRAINAGE AREA:   0.89 ACRES = 0.0005  SQ. MI.
       50      BA  0.0005
               * SCS CURVE NUMBER: 93.42
       51      LS          93.42
               * TIME OF CONCENTRATION: 0.2330 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
       52      UD  0.0500
               * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

       53      KK    COMB                                                            KK
       54      KM      COMBINATION OF SUB BASINS                                     KM
       55      HC       2                                                            HC
               * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

       56      KK   BASNB
       57      KM   BASIN UPPER POND B
       58      RS       1    ELEV   927.0
       59      SA  11.513  13.361  14.116
       60      SE   953.6   954.0   955.0
       61      SQ  0.0000  6.7200  6.7200
       62      SE   953.6   954.0   955.0
               * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
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       63      KK    SECJ
       64      KM        LOWER POND J DA
       65      PB    1.00
               * DRAINAGE AREA:   39.30 ACRES = 0.0614  SQ. MI.
       66      BA  0.0614
               * SCS CURVE NUMBER: 82.31
       67      LS          82.31
               * TIME OF CONCENTRATION: 0.2330 HR (LAG TIME = 0.6 * Tc = 0.0500 HR)
               * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10

       68      KK    COMB                                                            KK
       69      KM      COMBINATION OF SUB BASINS                                     KM
       70      HC       2                                                            HC
               * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
1                                       HEC-1 INPUT                                       PAGE  3

     LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


       71      KK   BASNJ
       72      KM   BASIN LOWER POND J
       73      RS       1    ELEV   927.0
       74      SA  9.3025  9.5541  13.442  17.103
       75      SE   928.8   929.0   930.0   931.0
       76      SQ  0.0000   6.700  10.940  60.240
       77      SE   928.8   929.0   930.0   931.0
               * .....1.......2.......3.......4.......5.......6.......7.......8.......9......10
               * ************************************************************************
       78      ZZ
1
           SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   16        SECB
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               .
   47          .       FPOND
               .           .
               .           .
   53        COMB...........
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              V
              V
  56       BASNB
              .
              .
  63          .         SECJ
              .            .
              .            .
  68        COMB............
              V
              V
  71       BASNJ

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                      ****************************************
 *                                       *                                      *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                      *   U.S. ARMY CORPS OF ENGINEERS       *
 *             JUN  1998                 *                                      *   HYDROLOGIC ENGINEERING CENTER      *
 *           VERSION 4.1                 *                                      *        609 SECOND STREET             *
 *                                       *                                      *      DAVIS, CALIFORNIA 95616         *
 * RUN DATE  12OCT16  TIME  10:02:50     *                                      *          (916) 756-1104              *
 *                                       *                                      *                                      *
 ****************************************                                      ****************************************



                           ***************************************************************************
                           PROJECT NAME:           EDE ASBURY
                           CONSULTANT:             PALMERTON & PARRISH, INC.
                           PROJECT NUMBER:         231518
                           DESIGN ENGINEER:        DONALD C. NOWACK, P.E.
                           FILE NAME:              J.TXT
                           DATE:                   OCTOBER 17, 2016
                           RETURN FREQUENCY:       1000-YEAR, 24 HR
                           ABSTRACTION TECHNIQUE:  SCS CURVE NUMBER
                           SCENARIO:               UPPER POND B AND LOWER POND J
                           ***************************************************************************

  14 IO         OUTPUT CONTROL VARIABLES
                      IPRNT          4  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE
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    IT          HYDROGRAPH TIME DATA
                      NMIN          1  MINUTES IN COMPUTATION INTERVAL
                     IDATE     1    0  STARTING DATE
                     ITIME       0000  STARTING TIME
                        NQ       1440  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE     1    0  ENDING DATE
                    NDTIME       2359  ENDING TIME
                    ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL     .02 HOURS
                      TOTAL TIME BASE   23.98 HOURS

         ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                     NPLAN          1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                  13.60

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          *************
          *           *
  16 KK   *     SECB  *
          *           *
          *************
                            UPPER POND B

  13 IN         TIME DATA FOR INPUT TIME SERIES
                     JXMIN         72  TIME INTERVAL IN MINUTES
                    JXDATE     1    0  STARTING DATE
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                    JXTIME          0  STARTING TIME

               SUBBASIN RUNOFF DATA

  19 BA         SUBBASIN CHARACTERISTICS
                      TAREA        .02  SUBBASIN AREA

                PRECIPITATION DATA

  19 PB               STORM       1.00  BASIN TOTAL PRECIPITATION

  19 PI           INCREMENTAL PRECIPITATION PATTERN
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45 LS         SCS LOSS RATE
                 STRTL         .04  INITIAL ABSTRACTION
                CRVNBR       98.00  CURVE NUMBER
                 RTIMP         .00  PERCENT IMPERVIOUS AREA

46 UD         SCS DIMENSIONLESS UNITGRAPH
                  TLAG         .05  LAG

                                          ***

                                      UNIT HYDROGRAPH
                                 17 END-OF-PERIOD ORDINATES
          34.      116.      185.      185.      144.       87.       54.       35.       22.       14.
           9.        5.        3.        2.        1.        1.        0.

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           *            *
47 KK      *    FPOND   *
           *            *
           **************
                          FOGGY POND DA

              SUBBASIN RUNOFF DATA

50 BA           SUBBASIN CHARACTERISTICS
                      TAREA         .00  SUBBASIN AREA

                PRECIPITATION DATA

49 PB                 STORM        1.00  BASIN TOTAL PRECIPITATION

19 PI                   INCREMENTAL PRECIPITATION PATTERN
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51 LS        SCS LOSS RATE
                STRTL        .14  INITIAL ABSTRACTION
               CRVNBR      93.42  CURVE NUMBER
                RTIMP        .00  PERCENT IMPERVIOUS AREA

52 UD        SCS DIMENSIONLESS UNITGRAPH
                 TLAG        .05  LAG

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                               UNIT HYDROGRAPH
                           17 END-OF-PERIOD ORDINATES
      1.      3.      4.      4.      3.      2.      1.      1.      0.      0.
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      0.      0.      0.      0.      0.      0.      0.

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        *            *
53 KK   *    COMB    *                                            KK
        *            *
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                  COMBINATION OF SUB BASINS                           KM

55 HC        HYDROGRAPH COMBINATION
                ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

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        *            *
56 KK   *   BASNB    *
        *            *
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                BASIN UPPER POND B

          HYDROGRAPH ROUTING DATA

58 RS        STORAGE ROUTING
                NSTPS          1  NUMBER OF SUBREACHES
                 ITYP       ELEV  TYPE OF INITIAL CONDITION
               RSVRIC     927.00  INITIAL CONDITION
                    X        .00  WORKING R AND D COEFFICIENT

59 SA             AREA      11.5      13.4      14.1

60 SE        ELEVATION    953.60    954.00    955.00

61 SQ        DISCHARGE        0.        7.        7.
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62 SE        ELEVATION    953.60    954.00    955.00

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                              COMPUTED STORAGE-ELEVATION DATA

       STORAGE       .00      4.97     18.71
     ELEVATION    953.60    954.00    955.00

                              COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

       STORAGE       .00      4.97     18.71
       OUTFLOW       .00      6.72      6.72
     ELEVATION    953.60    954.00    955.00


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63 KK   *    SECJ    *
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                LOWER POND J DA

          SUBBASIN RUNOFF DATA

66 BA        SUBBASIN CHARACTERISTICS
                TAREA        .06  SUBBASIN AREA

          PRECIPITATION DATA

65 PB           STORM       1.00  BASIN TOTAL PRECIPITATION

19 PI          INCREMENTAL PRECIPITATION PATTERN
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 67 LS         SCS LOSS RATE
                    STRTL         .43  INITIAL ABSTRACTION
                   CRVNBR       82.31  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

 52 UI         INPUT UNITGRAPH,  17 ORDINATES,  VOLUME =  .01
                       .7      2.5      4.0      4.0      3.1      1.9      1.2       .8       .5       .3
                       .2       .1       .1       .0       .0       .0       .0

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          **************
          *            *
 68 KK    *     COMB   *                                       KK
          *            *
          **************
                       COMBINATION OF SUB BASINS                     KM

 70 HC         HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                   ***


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


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          *            *
 71 KK    *    BASNJ   *
          *            *
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            **************
                          BASIN LOWER POND J

               HYDROGRAPH ROUTING DATA

   73 RS         STORAGE ROUTING
                       NSTPS          1  NUMBER OF SUBREACHES
                        ITYP       ELEV  TYPE OF INITIAL CONDITION
                      RSVRIC     927.00  INITIAL CONDITION
                           X        .00 WORKING R AND D COEFFICIENT

   74 SA              AREA         9.3       9.6      13.4      17.1

   75 SE         ELEVATION      928.80    929.00    930.00    931.00

   76 SQ         DISCHARGE          0.        7.       11.       60.

   77 SE         ELEVATION      928.80    929.00    930.00    931.00
                                                                 ***

                                                     COMPUTED STORAGE-ELEVATION DATA

            STORAGE        .00      1.89     13.33     28.56
          ELEVATION     928.80    929.00    930.00    931.00

                                                 COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE        .00      1.89     13.33     28.56
            OUTFLOW        .00      6.70     10.94     60.24
          ELEVATION     928.80    929.00    930.00    931.00
1

               PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                 FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                 TIME TO PEAK IN HOURS


                                                          RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN           RATIO 1
                                                      13.60

 HYDROGRAPH AT
                   SECB       .02     1   FLOW           9.
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                                          TIME        20.68

 HYDROGRAPH AT
                  FPOND       .00     1   FLOW           0.
                                          TIME        15.83

  2 COMBINED AT
                   COMB       .02     1   FLOW           9.
                                          TIME        23.28

 ROUTED TO
                  BASNB       .02     1   FLOW           7.
                                          TIME        14.70

                                     ** PEAK STAGES IN FEET **
                                      1   STAGE      954.14
                                          TIME        23.98

 HYDROGRAPH AT
                   SECJ       .06     1   FLOW           0.
                                          TIME        22.30

  2 COMBINED AT
                   COMB       .09     1   FLOW           7.
                                          TIME        22.30

 ROUTED TO
                  BASNJ       .09     1   FLOW           7.
                                          TIME        23.87

                                     ** PEAK STAGES IN FEET **
                                      1   STAGE      929.01
                                          TIME        23.95


 *** NORMAL END OF HEC-1 ***
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