

APPLICATION FOR ENVIRONMENTAL RESOURCE PERMIT

TRAIL RIDGE FUEL STATION

FOR

CITY OF JACKSONVILLE

CITY DEV. NO.

SUBMITTED BY



**England-Thimms
& Miller, Inc.**

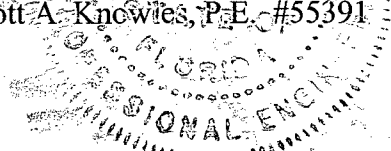
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January 30, 2004

This report was prepared by me
or under my direct supervision.


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England-Thims & Miller, Inc
Trail Ridge Fuel Site

CONTENTS

1) Project Description	1
2) Basis of Design Calculations.....	2-4
3) Predevelopment – Existing Conditions	5-6
25 YR/ 24 HR Storm ICPR Model Output	
Mean Annual Storm ICPR Model Output	
4) Postdevelopment – Basin 1, Pond Routing	7-17
25 YR/ 24 HR Storm ICPR Model Output	
Mean Annual Storm ICPR Model Output	
5) Pre/Post Discharge Analyses	18
6) Pond Permanent Pool Volume.....	18
7) Pond Bleed Down Analysis.....	19-20

ATTACHMENTS

1) ICPR Input Report.....	A1-3
2) Predeveloped Condition	A4
3) Postdeveloped Condition.....	A5
4) Vicinity Map.....	A6
5) Aerial Map.....	A6
6) USGS Quadrangle Map	A7
7) Landuse Map	A8
8) Soils Map.....	A9
9) Drainage System Calculations.....	



PROJECT DESCRIPTION

Trail Ridge Fuel Site

This submittal is an application for an Environmental Resource Permit for the proposed Trail Ridge Landfill fuel station facility. The project site is located at 5110 U.S. Hwy 301 in Baldwin, FL. Construction will include a wet detention pond system, and a 0.23 acre paved fueling area.

Runoff from the proposed fuel station site will be treated with a wet detention pond. The pond is designed to detain the first 2.5 inches of runoff from the impervious area as well as provide attenuation of the increased runoff due to development. The pond is equipped with a 2.75" diameter bleed down orifice set at the normal pool elevation. A 9" wide rectangular weir is situated above the required treatment volume to provide attenuation of the runoff to below the predeveloped condition. The weir will be fitted with a skimmer to prevent oil and floating debris from discharging to the adjacent wetland. The water level in the pond was estimated from the NRCS Soil Survey for Duval County. Based on the soils map, the soil type at the site is Pottsburg fine sand, and the seasonal high water elevation is typically 1'-2' below natural grade. Based on this, a normal water elevation of 100 was used throughout the hydrologic models.

A pre/post discharge analysis has been performed for the 25 year/ 24 hour, and the Mean Annual storm events using the SCS Method in ICPR. Runoff curve numbers for pre- and post-developed conditions were estimated using recommended values from the NRCS Tr-55. Times of concentration were determined using the Velocities for Upland method outlined in the NRCS National Engineering Handbook. Based on the calculations presented, the post-development discharge rates do not exceed the pre-development discharge for any of the modeled design storms.

No wetland impacts are proposed for this development.

MSSW Operation and Maintenance

The stormwater collection and treatment system will be operated and maintained by the City of Jacksonville. Following is a suggested maintenance schedule for the stormwater management system:

<u>Frequency</u>	<u>Task</u>
Weekly	Mow around basins
Weekly	Remove trash from storm structures
Monthly	Inspect outlet control structures and catch basins
Bi-annually	Remove nuisance plants within detention pond

BASIS OF DESIGN CALCULATIONS

Trail Ridge Fuel Site

Pond routing was modeled using the SCS Method in ICPR. Total rainfall values used in the calculations were derived from the FDOT rainfall curves for Zone 4

Required Treatment Volume

Wet detention systems must provide treatment of runoff from the greater of 1" over the project area or 2.5" over the impervious area. The treatment volumes required for each basin are:

Basin 1

Basin Area (ac) 0.48
 Impervious Area 0.23

One inch of runoff = 0.04 ac-ft

2.5 inches times = 0.05 ac-ft
 impervious area

Treatment Volume Required = 0.05 ac-ft

Pond 1

	Stage	Area (ac)	Storage (ac-ft)
Top of Bank	102.00	0.21	0.34
N.W.L.	100.00	0.13	0.00

Weir Elevation = 100.50

Treatment Provided = 0.08 ac-ft

Curve Numbers

The SCS curve numbers used in the calculations were estimated based on the type of use and amount of impervious area in the basin. A predevelopment curve number of 61 (Open space, good condition) was used for the basin. The postdeveloped curve number used for the basin was:

Basin 1

Use	Area (ac)	CN	CN x A
Impervious	0.23	98	22.54
Pond	0.18	100	18.00
Grass	0.07	61	4.27
Total =	0.48		44.81

$$\text{CN} = \frac{44.81}{0.48} = 93$$

Times of Concentration

Times of concentration for the basin were estimated using the Velocities for Upland Method. The longest flow path for the basin was separated into segments based on length of flow and on type of ground cover. The travel times for each segment were then summed to establish the time of concentration:

Predeveloped

Segment #	1
Length (ft)	310
Cover Type	grass
Slope (%)	0.9
Velocity (fps)	0.3
Travel Time (min)	20.67

$$\text{Time of Concentration (min)} = 20.7$$

Basin 1

Segment #	1	2
Length (ft)	150	15
Cover Type	pave	pipe
Slope (%)	1.0	0.5
Velocity (fps)	2.0	1.4
Travel Time (min)	1.25	0.18

Time of Concentration (min)= 1.4
Use 5 min. minimum

PREDEVELOPMENT MODEL OUTPUT

Predeveloped Basin Summary Report

Name:	PRE	PRE
Group:	PRE	PRE
Simulation:	HYD25	HYDMEAN
Node:	PRE	PRE
Type:	SCS	SCS
Unit Hydrograph:	Uh323	Uh323
Peaking Factor:	323.0	323.0
Spec Time Inc(min):	2.67	2.67
Comp Time Inc(min):	2.67	2.67
Rain File:	Scsii-24	Scsii-24
Rain Amount(in):	9.500	4.950
Duration(hrs):	24.00	24.00
Status:	Onsite	Onsite
TC(min):	20.00	20.00
Time Shift(hrs):	0.00	0.00
Area(ac):	0.480	0.480
Vol of Unit Hyd(in):	1.001	1.001
Curve Num:	61.000	61.000
DCIA(%):	0.000	0.000
Time Max(hrs):	12.13	12.13
Flow Max(cfs):	1.746	0.455
Runoff Volume(in):	4.627	1.340
Runoff Volume(ft3):	8061.628	2334.373

POSTDEVELOPMENT MODEL OUTPUT

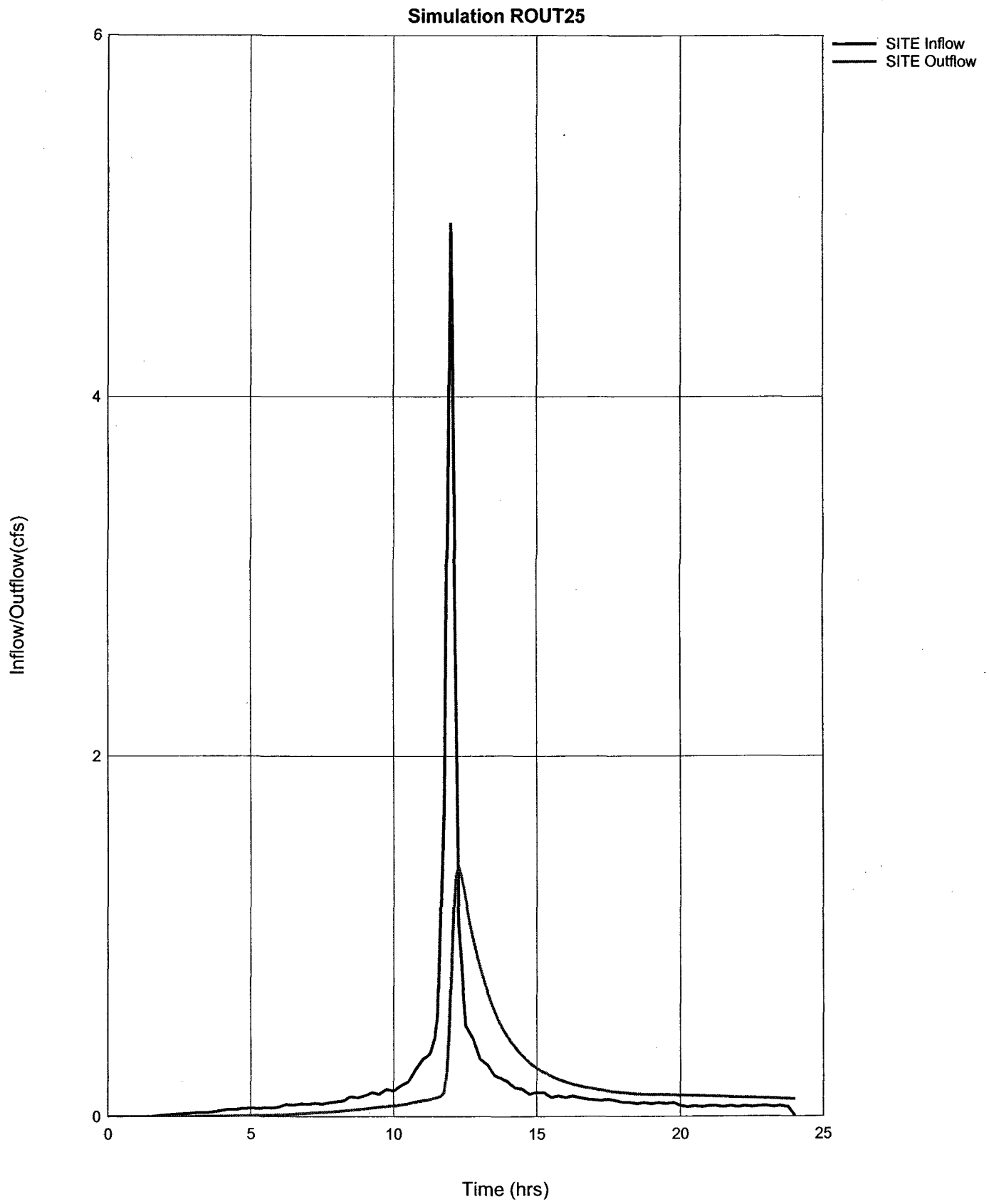
Postdeveloped Basin Summary Report

Name:	SITE	SITE
Group:	POST	POST
Simulation:	HYD25	HYDMEAN
Node:	SITE	SITE
Type:	SCS	SCS
Unit Hydrograph:	Uh323	Uh323
Peaking Factor:	323.0	323.0
Spec Time Inc(min):	0.67	0.67
Comp Time Inc(min):	0.67	0.67
Rain File:	Scsii-24	Scsii-24
Rain Amount(in):	9.500	4.950
Duration(hrs):	24.00	24.00
Status:	Onsite	Onsite
TC(min):	5.00	5.00
Time Shift(hrs):	0.00	0.00
Area(ac):	0.480	0.480
Vol of Unit Hyd(in):	1.000	1.000
Curve Num:	93.000	93.000
DCIA(%):	0.000	0.000
Time Max(hrs):	12.00	12.00
Flow Max(cfs):	4.968	2.496
Runoff Volume(in):	8.657	4.151
Runoff Volume(ft3):	15083.174	7231.978

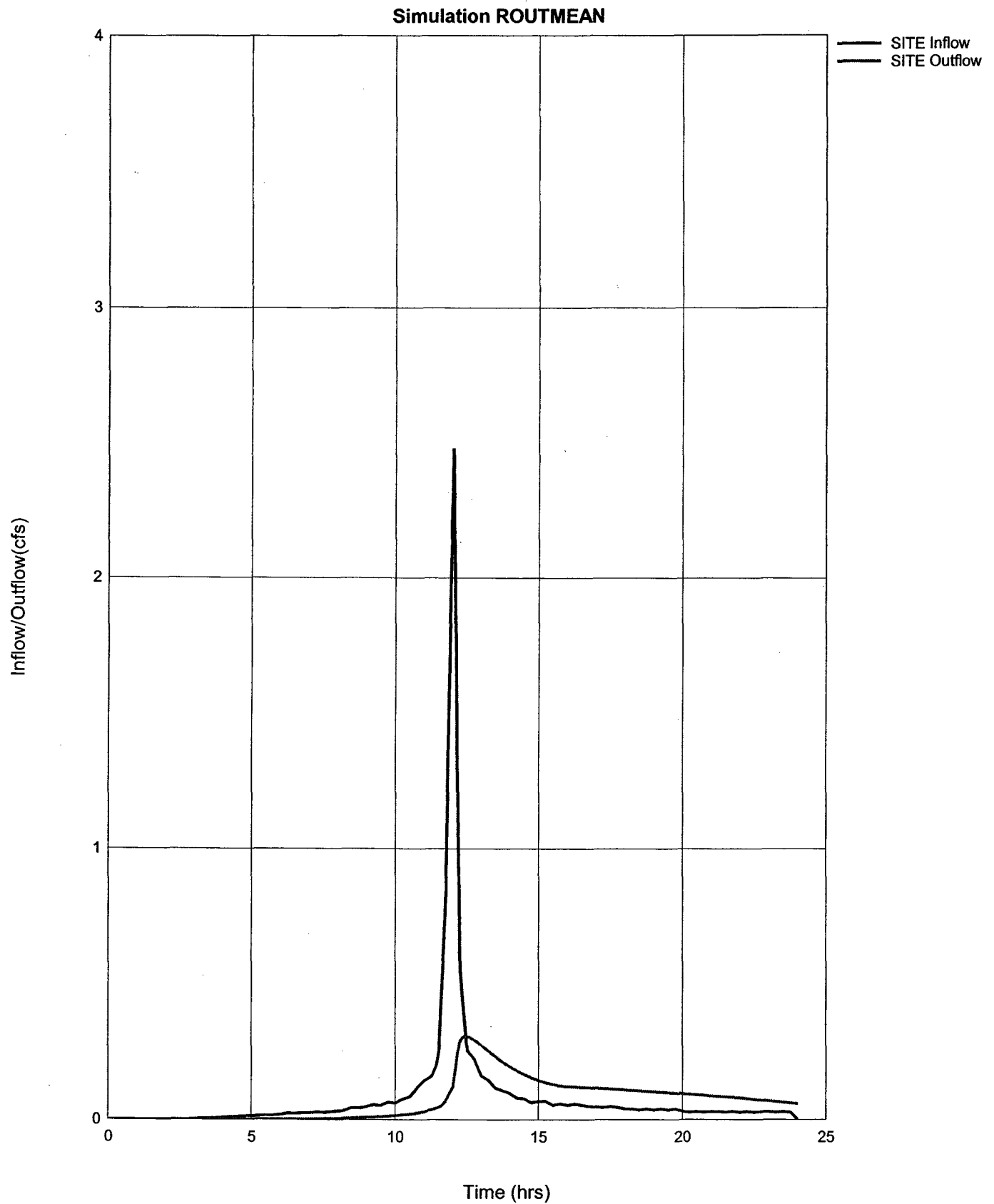
Postdeveloped Node Min/Max Report

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Max Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
OUT	POST	ROUT25	0.00	99.600	100.500	0.0000	0	12.23	1.389	0.00	0.000
SITE	POST	ROUT25	12.23	101.126	102.000	0.0050	7625	12.00	4.964	12.23	1.389
OUT	POST	ROUTMEAN	0.00	99.600	100.500	0.0000	0	12.46	0.309	0.00	0.000
SITE	POST	ROUTMEAN	12.46	100.666	102.000	0.0050	6823	12.00	2.485	12.46	0.309

Postdeveloped 25 year Storm Inflow/Outflow Graph



Postdeveloped Mean Annual Storm Inflow/Outflow Graph



Postdeveloped 25 year Time Series Report

Simulation	Node	Group	Time hrs	Stage ft	Warning Stage ft	Surface Area ft2	Total Inflow cfs	Total Outflow cfs	Total Vol In af	Total Vol Out af
ROUT25	SITE	POST	0.00	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUT25	SITE	POST	0.26	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUT25	SITE	POST	0.50	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUT25	SITE	POST	0.77	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUT25	SITE	POST	1.02	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUT25	SITE	POST	1.27	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUT25	SITE	POST	1.52	100.000	102.000	5663	0.001	0.000	0.0	0.0
ROUT25	SITE	POST	1.77	100.000	102.000	5663	0.004	0.000	0.0	0.0
ROUT25	SITE	POST	2.02	100.001	102.000	5665	0.008	0.000	0.0	0.0
ROUT25	SITE	POST	2.27	100.003	102.000	5668	0.010	0.000	0.0	0.0
ROUT25	SITE	POST	2.52	100.005	102.000	5671	0.014	0.000	0.0	0.0
ROUT25	SITE	POST	2.77	100.007	102.000	5675	0.016	0.000	0.0	0.0
ROUT25	SITE	POST	3.02	100.010	102.000	5680	0.019	0.000	0.0	0.0
ROUT25	SITE	POST	3.27	100.013	102.000	5686	0.022	0.000	0.0	0.0
ROUT25	SITE	POST	3.52	100.016	102.000	5691	0.022	0.000	0.0	0.0
ROUT25	SITE	POST	3.77	100.020	102.000	5698	0.026	0.001	0.0	0.0
ROUT25	SITE	POST	4.02	100.025	102.000	5706	0.033	0.001	0.0	0.0
ROUT25	SITE	POST	4.27	100.030	102.000	5715	0.039	0.001	0.0	0.0
ROUT25	SITE	POST	4.52	100.036	102.000	5726	0.039	0.002	0.0	0.0
ROUT25	SITE	POST	4.77	100.042	102.000	5736	0.044	0.003	0.0	0.0
ROUT25	SITE	POST	5.02	100.049	102.000	5748	0.046	0.004	0.0	0.0
ROUT25	SITE	POST	5.27	100.055	102.000	5759	0.044	0.005	0.0	0.0
ROUT25	SITE	POST	5.52	100.062	102.000	5770	0.049	0.006	0.0	0.0
ROUT25	SITE	POST	5.77	100.068	102.000	5781	0.047	0.007	0.0	0.0
ROUT25	SITE	POST	6.02	100.075	102.000	5793	0.053	0.009	0.0	0.0
ROUT25	SITE	POST	6.27	100.082	102.000	5806	0.067	0.011	0.0	0.0
ROUT25	SITE	POST	6.52	100.091	102.000	5821	0.064	0.013	0.0	0.0
ROUT25	SITE	POST	6.77	100.099	102.000	5835	0.071	0.015	0.0	0.0
ROUT25	SITE	POST	7.02	100.107	102.000	5849	0.067	0.018	0.0	0.0
ROUT25	SITE	POST	7.27	100.115	102.000	5863	0.073	0.020	0.0	0.0
ROUT25	SITE	POST	7.52	100.122	102.000	5876	0.069	0.023	0.0	0.0
ROUT25	SITE	POST	7.77	100.130	102.000	5889	0.076	0.025	0.0	0.0
ROUT25	SITE	POST	8.02	100.138	102.000	5903	0.078	0.028	0.0	0.0
ROUT25	SITE	POST	8.27	100.146	102.000	5917	0.087	0.031	0.0	0.0
ROUT25	SITE	POST	8.52	100.154	102.000	5922	0.095	0.032	0.0	0.0
ROUT25	SITE	POST	8.77	100.162	102.000	5928	0.103	0.033	0.0	0.0
ROUT25	SITE	POST	9.02	100.170	102.000	5934	0.110	0.035	0.0	0.0
ROUT25	SITE	POST	9.27	100.178	102.000	5941	0.107	0.036	0.0	0.0
ROUT25	SITE	POST	9.52	100.186	102.000	5947	0.105	0.038	0.0	0.0
ROUT25	SITE	POST	9.77	100.194	102.000	5953	0.104	0.039	0.0	0.0
ROUT25	SITE	POST	10.02	100.202	102.000	5958	0.108	0.040	0.0	0.0
ROUT25	SITE	POST	10.27	100.210	102.000	5964	0.111	0.041	0.0	0.0
ROUT25	SITE	POST	10.52	100.218	102.000	5971	0.115	0.043	0.0	0.0
ROUT25	SITE	POST	10.77	100.226	102.000	5977	0.121	0.044	0.0	0.0
ROUT25	SITE	POST	11.02	100.234	102.000	5984	0.127	0.046	0.0	0.0
ROUT25	SITE	POST	11.27	100.242	102.000	5991	0.131	0.047	0.0	0.0
ROUT25	SITE	POST	11.52	100.250	102.000	5998	0.128	0.049	0.0	0.0
ROUT25	SITE	POST	11.77	100.258	102.000	6005	0.125	0.050	0.0	0.0
ROUT25	SITE	POST	12.02	100.266	102.000	6011	0.124	0.052	0.0	0.0
ROUT25	SITE	POST	12.27	100.274	102.000	6018	0.134	0.053	0.0	0.0
ROUT25	SITE	POST	12.52	100.282	102.000	6025	0.143	0.054	0.0	0.0
ROUT25	SITE	POST	12.77	100.290	102.000	6033	0.150	0.056	0.0	0.0
ROUT25	SITE	POST	13.02	100.298	102.000	6041	0.146	0.057	0.0	0.0
ROUT25	SITE	POST	13.27	100.306	102.000	6049	0.143	0.058	0.0	0.0
ROUT25	SITE	POST	13.52	100.314	102.000	6056	0.142	0.059	0.0	0.0
ROUT25	SITE	POST	13.77	100.322	102.000	6064	0.152	0.060	0.0	0.0
ROUT25	SITE	POST	14.02	100.330	102.000	6072	0.162	0.062	0.0	0.0
ROUT25	SITE	POST	14.27	100.338	102.000	6081	0.172	0.064	0.0	0.0

Postdeveloped 25 year Time Series Report

Simulation	Node	Group	Time hrs	Stage ft	Warning Stage ft	Surface Area ft2	Total Inflow cfs	Total Outflow cfs	Total Vol In af	Total Vol Out af
ROUT25	SITE	POST	10.35	100.245	102.000	6090	0.178	0.067	0.0	0.0
ROUT25	SITE	POST	10.43	100.251	102.000	6100	0.184	0.069	0.0	0.0
ROUT25	SITE	POST	10.52	100.257	102.000	6110	0.193	0.072	0.0	0.0
ROUT25	SITE	POST	10.60	100.263	102.000	6121	0.217	0.074	0.0	0.0
ROUT25	SITE	POST	10.68	100.271	102.000	6134	0.240	0.078	0.1	0.0
ROUT25	SITE	POST	10.77	100.279	102.000	6149	0.262	0.081	0.1	0.0
ROUT25	SITE	POST	10.85	100.288	102.000	6165	0.282	0.083	0.1	0.0
ROUT25	SITE	POST	10.93	100.298	102.000	6183	0.301	0.085	0.1	0.0
ROUT25	SITE	POST	11.02	100.309	102.000	6202	0.318	0.088	0.1	0.0
ROUT25	SITE	POST	11.10	100.321	102.000	6221	0.326	0.090	0.1	0.0
ROUT25	SITE	POST	11.18	100.332	102.000	6242	0.335	0.093	0.1	0.0
ROUT25	SITE	POST	11.27	100.344	102.000	6262	0.350	0.095	0.1	0.0
ROUT25	SITE	POST	11.35	100.357	102.000	6285	0.392	0.098	0.1	0.0
ROUT25	SITE	POST	11.43	100.372	102.000	6311	0.434	0.101	0.1	0.0
ROUT25	SITE	POST	11.52	100.389	102.000	6341	0.547	0.104	0.1	0.0
ROUT25	SITE	POST	11.59	100.416	102.000	6387	0.910	0.109	0.1	0.0
ROUT25	SITE	POST	11.67	100.460	102.000	6465	1.299	0.117	0.1	0.0
ROUT25	SITE	POST	11.75	100.523	102.000	6574	1.729	0.135	0.1	0.0
ROUT25	SITE	POST	11.84	100.616	102.000	6736	2.814	0.236	0.1	0.0
ROUT25	SITE	POST	11.92	100.744	102.000	6958	3.873	0.446	0.1	0.0
ROUT25	SITE	POST	12.00	100.905	102.000	7239	4.964	0.795	0.2	0.0
ROUT25	SITE	POST	12.09	101.043	102.000	7480	3.643	1.151	0.2	0.0
ROUT25	SITE	POST	12.17	101.111	102.000	7599	2.372	1.345	0.2	0.0
ROUT25	SITE	POST	12.25	101.125	102.000	7622	1.077	1.384	0.2	0.1
ROUT25	SITE	POST	12.34	101.109	102.000	7595	0.880	1.339	0.2	0.1
ROUT25	SITE	POST	12.42	101.088	102.000	7558	0.681	1.277	0.2	0.1
ROUT25	SITE	POST	12.51	101.061	102.000	7511	0.498	1.201	0.2	0.1
ROUT25	SITE	POST	12.58	101.036	102.000	7467	0.479	1.132	0.2	0.1
ROUT25	SITE	POST	12.67	101.010	102.000	7422	0.458	1.061	0.3	0.1
ROUT25	SITE	POST	12.76	100.985	102.000	7379	0.435	0.996	0.3	0.1
ROUT25	SITE	POST	12.84	100.962	102.000	7339	0.394	0.936	0.3	0.1
ROUT25	SITE	POST	12.92	100.942	102.000	7305	0.358	0.886	0.3	0.1
ROUT25	SITE	POST	13.00	100.920	102.000	7266	0.317	0.832	0.3	0.1
ROUT25	SITE	POST	13.09	100.899	102.000	7229	0.307	0.781	0.3	0.1
ROUT25	SITE	POST	13.17	100.880	102.000	7195	0.296	0.735	0.3	0.1
ROUT25	SITE	POST	13.26	100.862	102.000	7165	0.285	0.694	0.3	0.1
ROUT25	SITE	POST	13.34	100.846	102.000	7137	0.266	0.658	0.3	0.1
ROUT25	SITE	POST	13.43	100.828	102.000	7105	0.245	0.618	0.3	0.1
ROUT25	SITE	POST	13.51	100.813	102.000	7079	0.227	0.586	0.3	0.2
ROUT25	SITE	POST	13.59	100.799	102.000	7054	0.222	0.556	0.3	0.2
ROUT25	SITE	POST	13.67	100.785	102.000	7031	0.216	0.528	0.3	0.2
ROUT25	SITE	POST	13.75	100.772	102.000	7009	0.210	0.502	0.3	0.2
ROUT25	SITE	POST	13.84	100.760	102.000	6987	0.204	0.478	0.3	0.2
ROUT25	SITE	POST	13.92	100.749	102.000	6967	0.197	0.456	0.3	0.2
ROUT25	SITE	POST	14.00	100.738	102.000	6948	0.191	0.435	0.3	0.2
ROUT25	SITE	POST	14.09	100.727	102.000	6930	0.179	0.416	0.3	0.2
ROUT25	SITE	POST	14.17	100.717	102.000	6913	0.168	0.397	0.3	0.2
ROUT25	SITE	POST	14.25	100.707	102.000	6895	0.157	0.380	0.3	0.2
ROUT25	SITE	POST	14.34	100.698	102.000	6879	0.156	0.363	0.3	0.2
ROUT25	SITE	POST	14.42	100.689	102.000	6864	0.154	0.348	0.3	0.2
ROUT25	SITE	POST	14.50	100.681	102.000	6849	0.152	0.334	0.3	0.2
ROUT25	SITE	POST	14.59	100.673	102.000	6836	0.142	0.321	0.3	0.2
ROUT25	SITE	POST	14.67	100.665	102.000	6822	0.132	0.308	0.3	0.2
ROUT25	SITE	POST	14.75	100.658	102.000	6808	0.123	0.296	0.3	0.2
ROUT25	SITE	POST	14.84	100.650	102.000	6796	0.126	0.285	0.3	0.2
ROUT25	SITE	POST	14.92	100.643	102.000	6784	0.129	0.275	0.3	0.2
ROUT25	SITE	POST	15.00	100.637	102.000	6773	0.132	0.266	0.3	0.2
ROUT25	SITE	POST	15.09	100.632	102.000	6763	0.132	0.257	0.3	0.2

Postdeveloped 25 year Time Series Report

Simulation	Node	Group	Time hrs	Stage ft	Warning Stage ft	Surface Area ft2	Total Inflow cfs	Total Outflow cfs	Total Vol In af	Total Vol Out af
ROUT25	SITE	POST	15.17	100.626	102.000	6754	0.133	0.249	0.3	0.2
ROUT25	SITE	POST	15.25	100.621	102.000	6745	0.132	0.242	0.3	0.2
ROUT25	SITE	POST	15.34	100.616	102.000	6736	0.123	0.236	0.3	0.2
ROUT25	SITE	POST	15.42	100.611	102.000	6728	0.114	0.229	0.3	0.2
ROUT25	SITE	POST	15.50	100.606	102.000	6718	0.105	0.222	0.3	0.2
ROUT25	SITE	POST	15.59	100.601	102.000	6710	0.108	0.215	0.3	0.2
ROUT25	SITE	POST	15.67	100.596	102.000	6702	0.111	0.209	0.3	0.2
ROUT25	SITE	POST	15.75	100.592	102.000	6694	0.113	0.204	0.3	0.2
ROUT25	SITE	POST	15.84	100.588	102.000	6687	0.110	0.199	0.3	0.2
ROUT25	SITE	POST	15.92	100.584	102.000	6680	0.107	0.194	0.3	0.2
ROUT25	SITE	POST	16.00	100.580	102.000	6674	0.104	0.190	0.3	0.2
ROUT25	SITE	POST	16.25	100.570	102.000	6656	0.113	0.178	0.3	0.2
ROUT25	SITE	POST	16.50	100.561	102.000	6641	0.104	0.169	0.3	0.2
ROUT25	SITE	POST	16.75	100.552	102.000	6625	0.096	0.160	0.3	0.2
ROUT25	SITE	POST	17.00	100.544	102.000	6611	0.095	0.152	0.3	0.2
ROUT25	SITE	POST	17.25	100.536	102.000	6597	0.087	0.145	0.3	0.2
ROUT25	SITE	POST	17.50	100.529	102.000	6585	0.095	0.140	0.3	0.2
ROUT25	SITE	POST	17.75	100.523	102.000	6574	0.087	0.135	0.3	0.2
ROUT25	SITE	POST	18.00	100.516	102.000	6562	0.077	0.130	0.3	0.2
ROUT25	SITE	POST	18.25	100.509	102.000	6549	0.076	0.127	0.3	0.2
ROUT25	SITE	POST	18.50	100.501	102.000	6537	0.070	0.124	0.3	0.3
ROUT25	SITE	POST	18.75	100.495	102.000	6525	0.076	0.122	0.3	0.3
ROUT25	SITE	POST	19.00	100.488	102.000	6513	0.070	0.121	0.3	0.3
ROUT25	SITE	POST	19.25	100.481	102.000	6501	0.076	0.120	0.3	0.3
ROUT25	SITE	POST	19.50	100.475	102.000	6490	0.070	0.119	0.3	0.3
ROUT25	SITE	POST	19.75	100.468	102.000	6479	0.075	0.118	0.3	0.3
ROUT25	SITE	POST	20.00	100.461	102.000	6466	0.058	0.117	0.3	0.3
ROUT25	SITE	POST	20.25	100.453	102.000	6452	0.052	0.115	0.3	0.3
ROUT25	SITE	POST	20.50	100.444	102.000	6437	0.057	0.114	0.3	0.3
ROUT25	SITE	POST	20.75	100.436	102.000	6423	0.052	0.113	0.3	0.3
ROUT25	SITE	POST	21.00	100.428	102.000	6409	0.057	0.111	0.3	0.3
ROUT25	SITE	POST	21.25	100.421	102.000	6395	0.057	0.110	0.3	0.3
ROUT25	SITE	POST	21.50	100.413	102.000	6382	0.052	0.108	0.3	0.3
ROUT25	SITE	POST	21.75	100.405	102.000	6369	0.057	0.107	0.3	0.3
ROUT25	SITE	POST	22.00	100.398	102.000	6356	0.052	0.106	0.3	0.3
ROUT25	SITE	POST	22.25	100.391	102.000	6344	0.057	0.104	0.3	0.3
ROUT25	SITE	POST	22.50	100.384	102.000	6332	0.052	0.103	0.3	0.3
ROUT25	SITE	POST	22.75	100.377	102.000	6320	0.057	0.102	0.3	0.3
ROUT25	SITE	POST	23.00	100.371	102.000	6309	0.057	0.100	0.3	0.3
ROUT25	SITE	POST	23.25	100.364	102.000	6298	0.052	0.099	0.3	0.3
ROUT25	SITE	POST	23.50	100.358	102.000	6287	0.057	0.098	0.3	0.3
ROUT25	SITE	POST	23.75	100.352	102.000	6276	0.052	0.097	0.3	0.3
ROUT25	SITE	POST	24.00	100.344	102.000	6263	0.000	0.095	0.3	0.3
ROUT25	SITE	POST	24.01	100.344	102.000	6263	0.000	0.095	0.3	0.3

Postdeveloped Mean Annual Storm Time Series Report

Simulation	Node	Group	Time hrs	Stage ft	Warning Stage ft	Surface Area ft2	Total Inflow cfs	Total Outflow cfs	Total Vol In Vol In af	Total Vol Out Vol Out af
ROUTMEAN	SITE	POST	0.00	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	0.26	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	0.50	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	0.77	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	1.02	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	1.27	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	1.52	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	1.77	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	2.02	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	2.27	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	2.52	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	2.77	100.000	102.000	5663	0.000	0.000	0.0	0.0
ROUTMEAN	SITE	POST	3.02	100.000	102.000	5663	0.001	0.000	0.0	0.0
ROUTMEAN	SITE	POST	3.27	100.000	102.000	5664	0.002	0.000	0.0	0.0
ROUTMEAN	SITE	POST	3.52	100.001	102.000	5664	0.003	0.000	0.0	0.0
ROUTMEAN	SITE	POST	3.77	100.001	102.000	5665	0.004	0.000	0.0	0.0
ROUTMEAN	SITE	POST	4.02	100.002	102.000	5667	0.007	0.000	0.0	0.0
ROUTMEAN	SITE	POST	4.27	100.004	102.000	5669	0.009	0.000	0.0	0.0
ROUTMEAN	SITE	POST	4.52	100.005	102.000	5672	0.009	0.000	0.0	0.0
ROUTMEAN	SITE	POST	4.77	100.007	102.000	5674	0.011	0.000	0.0	0.0
ROUTMEAN	SITE	POST	5.02	100.009	102.000	5678	0.013	0.000	0.0	0.0
ROUTMEAN	SITE	POST	5.27	100.011	102.000	5681	0.013	0.000	0.0	0.0
ROUTMEAN	SITE	POST	5.52	100.013	102.000	5685	0.015	0.000	0.0	0.0
ROUTMEAN	SITE	POST	5.77	100.015	102.000	5689	0.015	0.000	0.0	0.0
ROUTMEAN	SITE	POST	6.02	100.017	102.000	5693	0.017	0.000	0.0	0.0
ROUTMEAN	SITE	POST	6.27	100.021	102.000	5699	0.022	0.001	0.0	0.0
ROUTMEAN	SITE	POST	6.52	100.024	102.000	5704	0.022	0.001	0.0	0.0
ROUTMEAN	SITE	POST	6.77	100.027	102.000	5710	0.025	0.001	0.0	0.0
ROUTMEAN	SITE	POST	7.02	100.031	102.000	5717	0.024	0.001	0.0	0.0
ROUTMEAN	SITE	POST	7.27	100.035	102.000	5723	0.027	0.002	0.0	0.0
ROUTMEAN	SITE	POST	7.52	100.038	102.000	5730	0.026	0.002	0.0	0.0
ROUTMEAN	SITE	POST	7.77	100.042	102.000	5737	0.029	0.003	0.0	0.0
ROUTMEAN	SITE	POST	8.02	100.046	102.000	5744	0.030	0.003	0.0	0.0
ROUTMEAN	SITE	POST	8.27	100.051	102.000	5751	0.034	0.004	0.0	0.0
ROUTMEAN	SITE	POST	8.52	100.053	102.000	5754	0.038	0.004	0.0	0.0
ROUTMEAN	SITE	POST	8.77	100.054	102.000	5757	0.041	0.005	0.0	0.0
ROUTMEAN	SITE	POST	9.02	100.056	102.000	5761	0.044	0.005	0.0	0.0
ROUTMEAN	SITE	POST	9.27	100.058	102.000	5764	0.043	0.005	0.0	0.0
ROUTMEAN	SITE	POST	9.52	100.060	102.000	5768	0.042	0.006	0.0	0.0
ROUTMEAN	SITE	POST	9.77	100.062	102.000	5771	0.042	0.006	0.0	0.0
ROUTMEAN	SITE	POST	10.02	100.064	102.000	5774	0.044	0.007	0.0	0.0
ROUTMEAN	SITE	POST	10.27	100.066	102.000	5778	0.045	0.007	0.0	0.0
ROUTMEAN	SITE	POST	10.52	100.068	102.000	5781	0.047	0.007	0.0	0.0
ROUTMEAN	SITE	POST	10.77	100.070	102.000	5785	0.050	0.008	0.0	0.0
ROUTMEAN	SITE	POST	11.02	100.072	102.000	5789	0.053	0.008	0.0	0.0
ROUTMEAN	SITE	POST	11.27	100.075	102.000	5793	0.055	0.009	0.0	0.0
ROUTMEAN	SITE	POST	11.52	100.077	102.000	5797	0.054	0.009	0.0	0.0
ROUTMEAN	SITE	POST	11.77	100.079	102.000	5801	0.052	0.010	0.0	0.0
ROUTMEAN	SITE	POST	12.02	100.081	102.000	5805	0.052	0.011	0.0	0.0
ROUTMEAN	SITE	POST	12.27	100.084	102.000	5809	0.057	0.011	0.0	0.0
ROUTMEAN	SITE	POST	12.52	100.086	102.000	5813	0.061	0.012	0.0	0.0
ROUTMEAN	SITE	POST	12.77	100.089	102.000	5817	0.064	0.012	0.0	0.0
ROUTMEAN	SITE	POST	13.02	100.091	102.000	5822	0.063	0.013	0.0	0.0
ROUTMEAN	SITE	POST	13.27	100.094	102.000	5826	0.062	0.014	0.0	0.0
ROUTMEAN	SITE	POST	13.52	100.096	102.000	5831	0.062	0.015	0.0	0.0
ROUTMEAN	SITE	POST	13.77	100.099	102.000	5835	0.066	0.015	0.0	0.0
ROUTMEAN	SITE	POST	14.02	100.102	102.000	5840	0.071	0.016	0.0	0.0
ROUTMEAN	SITE	POST	14.27	100.105	102.000	5845	0.075	0.017	0.0	0.0

Postdeveloped Mean Annual Storm Time Series Report

Simulation	Node	Group	Time hrs	Stage ft	Warning Stage ft	Surface Area ft2	Total Inflow cfs	Total Outflow cfs	Total Vol In af	Total Vol Out af
ROUTMEAN	SITE	POST	10.35	100.108	102.000	5850	0.078	0.018	0.0	0.0
ROUTMEAN	SITE	POST	10.43	100.111	102.000	5856	0.081	0.019	0.0	0.0
ROUTMEAN	SITE	POST	10.52	100.114	102.000	5861	0.086	0.020	0.0	0.0
ROUTMEAN	SITE	POST	10.60	100.118	102.000	5868	0.097	0.021	0.0	0.0
ROUTMEAN	SITE	POST	10.68	100.122	102.000	5875	0.108	0.022	0.0	0.0
ROUTMEAN	SITE	POST	10.77	100.126	102.000	5883	0.118	0.024	0.0	0.0
ROUTMEAN	SITE	POST	10.85	100.131	102.000	5892	0.128	0.026	0.0	0.0
ROUTMEAN	SITE	POST	10.93	100.137	102.000	5901	0.137	0.028	0.0	0.0
ROUTMEAN	SITE	POST	11.02	100.142	102.000	5911	0.145	0.030	0.0	0.0
ROUTMEAN	SITE	POST	11.10	100.148	102.000	5921	0.150	0.032	0.0	0.0
ROUTMEAN	SITE	POST	11.18	100.154	102.000	5932	0.154	0.034	0.0	0.0
ROUTMEAN	SITE	POST	11.27	100.161	102.000	5943	0.162	0.037	0.0	0.0
ROUTMEAN	SITE	POST	11.35	100.167	102.000	5954	0.183	0.039	0.0	0.0
ROUTMEAN	SITE	POST	11.43	100.175	102.000	5968	0.203	0.042	0.0	0.0
ROUTMEAN	SITE	POST	11.52	100.184	102.000	5983	0.258	0.045	0.0	0.0
ROUTMEAN	SITE	POST	11.60	100.199	102.000	6010	0.455	0.051	0.0	0.0
ROUTMEAN	SITE	POST	11.68	100.222	102.000	6049	0.636	0.058	0.0	0.0
ROUTMEAN	SITE	POST	11.76	100.253	102.000	6104	0.852	0.070	0.0	0.0
ROUTMEAN	SITE	POST	11.84	100.303	102.000	6190	1.395	0.086	0.0	0.0
ROUTMEAN	SITE	POST	11.92	100.378	102.000	6322	1.955	0.102	0.0	0.0
ROUTMEAN	SITE	POST	12.00	100.476	102.000	6493	2.480	0.119	0.1	0.0
ROUTMEAN	SITE	POST	12.09	100.569	102.000	6654	1.827	0.177	0.1	0.0
ROUTMEAN	SITE	POST	12.17	100.626	102.000	6753	1.188	0.249	0.1	0.0
ROUTMEAN	SITE	POST	12.25	100.652	102.000	6799	0.548	0.288	0.1	0.0
ROUTMEAN	SITE	POST	12.34	100.661	102.000	6815	0.449	0.302	0.1	0.0
ROUTMEAN	SITE	POST	12.42	100.665	102.000	6822	0.350	0.308	0.1	0.0
ROUTMEAN	SITE	POST	12.50	100.665	102.000	6821	0.255	0.308	0.1	0.0
ROUTMEAN	SITE	POST	12.59	100.662	102.000	6817	0.243	0.304	0.1	0.0
ROUTMEAN	SITE	POST	12.67	100.659	102.000	6812	0.233	0.299	0.1	0.0
ROUTMEAN	SITE	POST	12.75	100.657	102.000	6807	0.224	0.295	0.1	0.0
ROUTMEAN	SITE	POST	12.83	100.653	102.000	6801	0.203	0.290	0.1	0.0
ROUTMEAN	SITE	POST	12.92	100.649	102.000	6794	0.183	0.283	0.1	0.0
ROUTMEAN	SITE	POST	13.00	100.644	102.000	6785	0.162	0.276	0.1	0.0
ROUTMEAN	SITE	POST	13.08	100.639	102.000	6777	0.157	0.268	0.1	0.0
ROUTMEAN	SITE	POST	13.17	100.634	102.000	6768	0.152	0.261	0.1	0.0
ROUTMEAN	SITE	POST	13.25	100.630	102.000	6760	0.146	0.254	0.1	0.0
ROUTMEAN	SITE	POST	13.33	100.625	102.000	6751	0.136	0.247	0.1	0.0
ROUTMEAN	SITE	POST	13.42	100.620	102.000	6742	0.126	0.240	0.1	0.0
ROUTMEAN	SITE	POST	13.50	100.614	102.000	6733	0.117	0.233	0.1	0.0
ROUTMEAN	SITE	POST	13.58	100.609	102.000	6724	0.113	0.226	0.1	0.0
ROUTMEAN	SITE	POST	13.67	100.604	102.000	6716	0.110	0.220	0.1	0.0
ROUTMEAN	SITE	POST	13.75	100.600	102.000	6707	0.107	0.214	0.1	0.0
ROUTMEAN	SITE	POST	13.83	100.595	102.000	6699	0.104	0.208	0.1	0.0
ROUTMEAN	SITE	POST	13.92	100.590	102.000	6691	0.101	0.202	0.1	0.0
ROUTMEAN	SITE	POST	14.00	100.586	102.000	6683	0.098	0.196	0.1	0.0
ROUTMEAN	SITE	POST	14.08	100.581	102.000	6676	0.092	0.191	0.1	0.1
ROUTMEAN	SITE	POST	14.17	100.577	102.000	6668	0.086	0.186	0.1	0.1
ROUTMEAN	SITE	POST	14.25	100.572	102.000	6660	0.081	0.181	0.1	0.1
ROUTMEAN	SITE	POST	14.33	100.568	102.000	6652	0.080	0.176	0.1	0.1
ROUTMEAN	SITE	POST	14.42	100.564	102.000	6645	0.079	0.171	0.1	0.1
ROUTMEAN	SITE	POST	14.50	100.559	102.000	6638	0.078	0.167	0.1	0.1
ROUTMEAN	SITE	POST	14.58	100.555	102.000	6630	0.073	0.163	0.1	0.1
ROUTMEAN	SITE	POST	14.67	100.551	102.000	6623	0.068	0.159	0.1	0.1
ROUTMEAN	SITE	POST	14.75	100.547	102.000	6616	0.063	0.155	0.1	0.1
ROUTMEAN	SITE	POST	14.83	100.543	102.000	6609	0.065	0.151	0.1	0.1
ROUTMEAN	SITE	POST	14.92	100.539	102.000	6602	0.066	0.148	0.1	0.1
ROUTMEAN	SITE	POST	15.00	100.536	102.000	6596	0.068	0.145	0.1	0.1
ROUTMEAN	SITE	POST	15.08	100.532	102.000	6590	0.068	0.142	0.1	0.1

Postdeveloped Mean Annual Storm Time Series Report

Simulation	Node	Group	Time hrs	Stage ft	Warning ft	Surface Area ft2	Total Inflow cfs	Total Outflow cfs	Total Vol In af	Total Vol Out af	Total af
ROUTMEAN	SITE	POST	15.17	100.529	102.000	6584	0.068	0.139	0.1	0.1	0.1
ROUTMEAN	SITE	POST	15.25	100.526	102.000	6579	0.068	0.137	0.1	0.1	0.1
ROUTMEAN	SITE	POST	15.33	100.522	102.000	6573	0.063	0.135	0.1	0.1	0.1
ROUTMEAN	SITE	POST	15.42	100.519	102.000	6567	0.059	0.133	0.1	0.1	0.1
ROUTMEAN	SITE	POST	15.50	100.516	102.000	6561	0.054	0.130	0.1	0.1	0.1
ROUTMEAN	SITE	POST	15.58	100.512	102.000	6555	0.055	0.128	0.1	0.1	0.1
ROUTMEAN	SITE	POST	15.67	100.509	102.000	6550	0.057	0.127	0.1	0.1	0.1
ROUTMEAN	SITE	POST	15.75	100.506	102.000	6544	0.058	0.125	0.1	0.1	0.1
ROUTMEAN	SITE	POST	15.83	100.503	102.000	6539	0.057	0.124	0.1	0.1	0.1
ROUTMEAN	SITE	POST	15.92	100.500	102.000	6533	0.055	0.123	0.1	0.1	0.1
ROUTMEAN	SITE	POST	16.00	100.496	102.000	6528	0.054	0.123	0.1	0.1	0.1
ROUTMEAN	SITE	POST	16.25	100.487	102.000	6512	0.058	0.121	0.1	0.1	0.1
ROUTMEAN	SITE	POST	16.50	100.478	102.000	6496	0.054	0.120	0.1	0.1	0.1
ROUTMEAN	SITE	POST	16.75	100.469	102.000	6480	0.049	0.118	0.1	0.1	0.1
ROUTMEAN	SITE	POST	17.00	100.459	102.000	6463	0.049	0.117	0.1	0.1	0.1
ROUTMEAN	SITE	POST	17.25	100.450	102.000	6447	0.045	0.115	0.1	0.1	0.1
ROUTMEAN	SITE	POST	17.50	100.440	102.000	6430	0.049	0.113	0.1	0.1	0.1
ROUTMEAN	SITE	POST	17.75	100.431	102.000	6414	0.045	0.112	0.2	0.1	0.1
ROUTMEAN	SITE	POST	18.00	100.421	102.000	6397	0.039	0.110	0.2	0.1	0.1
ROUTMEAN	SITE	POST	18.25	100.412	102.000	6380	0.039	0.108	0.2	0.1	0.1
ROUTMEAN	SITE	POST	18.50	100.402	102.000	6363	0.036	0.106	0.2	0.1	0.1
ROUTMEAN	SITE	POST	18.75	100.392	102.000	6346	0.039	0.105	0.2	0.1	0.1
ROUTMEAN	SITE	POST	19.00	100.383	102.000	6330	0.036	0.103	0.2	0.1	0.1
ROUTMEAN	SITE	POST	19.25	100.374	102.000	6314	0.039	0.101	0.2	0.1	0.1
ROUTMEAN	SITE	POST	19.50	100.365	102.000	6298	0.036	0.099	0.2	0.1	0.1
ROUTMEAN	SITE	POST	19.75	100.356	102.000	6283	0.039	0.097	0.2	0.1	0.1
ROUTMEAN	SITE	POST	20.00	100.347	102.000	6267	0.030	0.096	0.2	0.1	0.1
ROUTMEAN	SITE	POST	20.25	100.337	102.000	6251	0.027	0.094	0.2	0.1	0.1
ROUTMEAN	SITE	POST	20.50	100.328	102.000	6234	0.029	0.092	0.2	0.1	0.1
ROUTMEAN	SITE	POST	20.75	100.319	102.000	6219	0.027	0.090	0.2	0.1	0.1
ROUTMEAN	SITE	POST	21.00	100.310	102.000	6203	0.029	0.088	0.2	0.1	0.1
ROUTMEAN	SITE	POST	21.25	100.302	102.000	6189	0.029	0.086	0.2	0.1	0.1
ROUTMEAN	SITE	POST	21.50	100.293	102.000	6174	0.027	0.084	0.2	0.1	0.1
ROUTMEAN	SITE	POST	21.75	100.285	102.000	6160	0.029	0.082	0.2	0.1	0.1
ROUTMEAN	SITE	POST	22.00	100.278	102.000	6147	0.027	0.080	0.2	0.1	0.1
ROUTMEAN	SITE	POST	22.25	100.270	102.000	6134	0.029	0.077	0.2	0.1	0.1
ROUTMEAN	SITE	POST	22.50	100.263	102.000	6121	0.027	0.074	0.2	0.1	0.1
ROUTMEAN	SITE	POST	22.75	100.257	102.000	6110	0.029	0.072	0.2	0.1	0.1
ROUTMEAN	SITE	POST	23.00	100.251	102.000	6099	0.029	0.069	0.2	0.1	0.1
ROUTMEAN	SITE	POST	23.25	100.245	102.000	6089	0.027	0.066	0.2	0.1	0.1
ROUTMEAN	SITE	POST	23.50	100.239	102.000	6080	0.029	0.064	0.2	0.1	0.1
ROUTMEAN	SITE	POST	23.75	100.234	102.000	6071	0.027	0.062	0.2	0.1	0.1
ROUTMEAN	SITE	POST	24.00	100.228	102.000	6061	0.000	0.060	0.2	0.1	0.1
ROUTMEAN	SITE	POST	24.01	100.228	102.000	6061	0.000	0.060	0.2	0.1	0.1

PRE/POST DISCHARGE ANALYSIS

Trail Ridge Fuel Site

Following is the Pre/Post Analysis for the Trail Ridge Fuel Site. Results for the 25 yr/24 hr and Mean Annual storm events are shown.

Predeveloped Basin

25 Year Storm

$$Q_{25\text{pre}} = \underline{1.76} \text{ cfs}$$

Mean Annual

$$Q_{\text{mean-pre}} = \underline{0.46} \text{ cfs}$$

Postdeveloped Basin

25 Year Storm

$$Q_{25} = \underline{1.39} \text{ cfs}$$

Mean Annual

$$Q_{\text{mean}} = \underline{0.31} \text{ cfs}$$

The postdevelopment discharges do not exceed predevelopment discharges. Therefore, required attenuation of the stormwater runoff has been met.

POND PERMANENT POOL VOLUME

To meet the design requirements for a wet detention pond, the pond must be designed to maintain a permanent pool for 21 days during the wet season. The permanent pool volume required is:

$$\begin{aligned} \text{Permanent pool volume required} &= \frac{(\text{Area ac})(\text{Runoff Coeff.})(30 \text{ in})(21 \text{ days})}{(153 \text{ days})(12 \text{ in/ft})} \\ &= \underline{0.14 \text{ ac-ft}} \end{aligned}$$

	Stage	Area (ac)	Storage (ac-ft)
N.W.L.	100.00	0.13	0.28
Bot of Pond	96.00	0.01	0.00

$$\text{The pond volume below N.W.L.} = 0.28 \text{ ac-ft}$$

Therefore adequate storage is provided

POND BLEED-DOWN ANALYSIS

Trail Ridge Fuel Site

Outflow from the pond will be routed through a circular orifice and a rectangular weir. The orifice will serve as the bleed down device for the pond and will discharge at the normal water level. The rectangular weir will discharge above the required treatment volume and will attenuate runoff from the system to below the predeveloped discharge rate. Discharge from the orifice was estimated using the orifice flow equation:

$$q = aC\sqrt{2gh}$$

where: a = Flow area of orifice (ft²)

C = Orifice coefficient

g = Gravity constant (ft/s²)

h = Head above orifice center (ft)

The pond was modeled to determine the estimated times for ½ and for the full treatment volume to recover. The results of the model are on the following page.

ENGLAND, THIMS & MILLER, INC.

PROJECT: Trail Ridge Fuel Station

DATE 12/19/2003
ETM No. 03-154

Pond Bleed Down Analysis

	Area (sq ft)	Area (ac)	Vol (cu ft)	Vol (ac-ft)
Treatment EI	100.50 5,205	0.12	2,389	0.055
NWL EI	100.00 4,350	0.10	0	0
Reqd Treatmnt	2,087 cu ft			

1/2 Volume 1,044 cu ft
1/2 V EI 100.28
Full V EI 100.06

Orifice D 2.75 in
Orifice A 0.0412 sq ft

1/2 Recover 2.1 hr
Full Recover 4.9 hr

Stage	Storage (cu ft)	Qout (cfs)	Δt (hr)	t total (hr)
100.50	2,389	0.16	0.00	0.00
100.45	2,150	0.15	0.44	0.44
100.40	1,911	0.14	0.46	0.89
100.35	1,672	0.14	0.48	1.37
100.30	1,433	0.13	0.51	1.88
100.25	1,194	0.12	0.54	2.41
100.20	956	0.11	0.58	2.99
100.15	717	0.10	0.62	3.61
100.10	478	0.09	0.69	4.30
100.05	239	0.08	0.77	5.08
100.00	0	0.07	0.91	5.98

$$Q = A \times C \times \sqrt{2gh}$$

ATTACHMENTS

ICPR Input Report

==== Basins =====

Name: PRE Node: PRE Status: Onsite
Group: PRE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsii-24 Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.500 Time of Conc(min): 20.00
Area(ac): 0.480 Time Shift(hrs): 0.00
Curve Number: 61.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Predeveloped Condition

Name: SITE Node: SITE Status: Onsite
Group: POST Type: SCS Unit Hydrograph

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsii-24 Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.500 Time of Conc(min): 5.00
Area(ac): 0.480 Time Shift(hrs): 0.00
Curve Number: 93.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Postdeveloped Condition

==== Nodes =====

Name: OUT Base Flow(cfs): 0.000 Init Stage(ft): 99.600
Group: POST Warn Stage(ft): 100.500
Type: Time/Stage

Discharge

Time(hrs)	Stage(ft)
0.00	99.600
24.00	99.600

Name: SITE Base Flow(cfs): 0.000 Init Stage(ft): 100.000
Group: POST Warn Stage(ft): 102.000
Type: Stage/Area

Site Pond

Stage(ft)	Area(ac)
100.000	0.1300
102.000	0.2100

==== Weirs =====

Name: ORIFICE From Node: SITE
Group: POST To Node: OUT
Flow: Both Count: 1
Type: Vertical: Mavis Geometry: Circular

Span(in): 2.75
Rise(in): 2.75
Invert(ft): 100.000
Control Elevation(ft): 100.000

TABLE

Bottom Clip(in): 0.000
Top Clip(in): 0.000
Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600

Bleed Down Orifice

Name: WEIR From Node: SITE
Group: POST To Node: OUT
Flow: Both Count: 1
Type: Vertical: Mavis Geometry: Rectangular

ICPR Input Report

Span(in): 9.00
Rise(in): 24.00
Invert(ft): 100.500
Control Elevation(ft): 100.500

TABLE

Bottom Clip(in): 0.000
Top Clip(in): 0.000
Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600

Weir

==== Hydrology Simulations =====

Name: HYD25
Filename: G:\03-154\Admin\Calcs\ICPR\Output\Hyd25.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsii-24
Rainfall Amount(in): 9.50

Time(hrs)	Print Inc(min)
24.000	15.00

Name: HYDMEAN
Filename: G:\03-154\Admin\Calcs\ICPR\Output\Hydmean.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsii-24
Rainfall Amount(in): 4.95

Time(hrs)	Print Inc(min)
24.000	15.00

==== Routing Simulations =====

Name: ROUT25 Hydrology Sim: HYD25
Filename: G:\03-154\Admin\Calcs\ICPR\Output\ROUT25.I32

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

Max Delta Z(ft): 1.00	Delta Z Factor: 0.00500
Time Step Optimizer: 10.000	
Start Time(hrs): 0.000	End Time(hrs): 24.00
Min Calc Time(sec): 0.5000	Max Calc Time(sec): 60.0000
Boundary Stages:	Boundary Flows:

25 year, 24 hour design storm routing

Time(hrs)	Print Inc(min)
8.000	15.000
16.000	5.000
24.000	15.000

Group	Run
POST	Yes

Name: ROUTMEAN Hydrology Sim: HYDMEAN
Filename: G:\03-154\Admin\Calcs\ICPR\Output\ROUTMEAN.I32

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

Max Delta Z(ft): 1.00	Delta Z Factor: 0.00500
Time Step Optimizer: 10.000	
Start Time(hrs): 0.000	End Time(hrs): 24.00
Min Calc Time(sec): 0.5000	Max Calc Time(sec): 60.0000
Boundary Stages:	Boundary Flows:

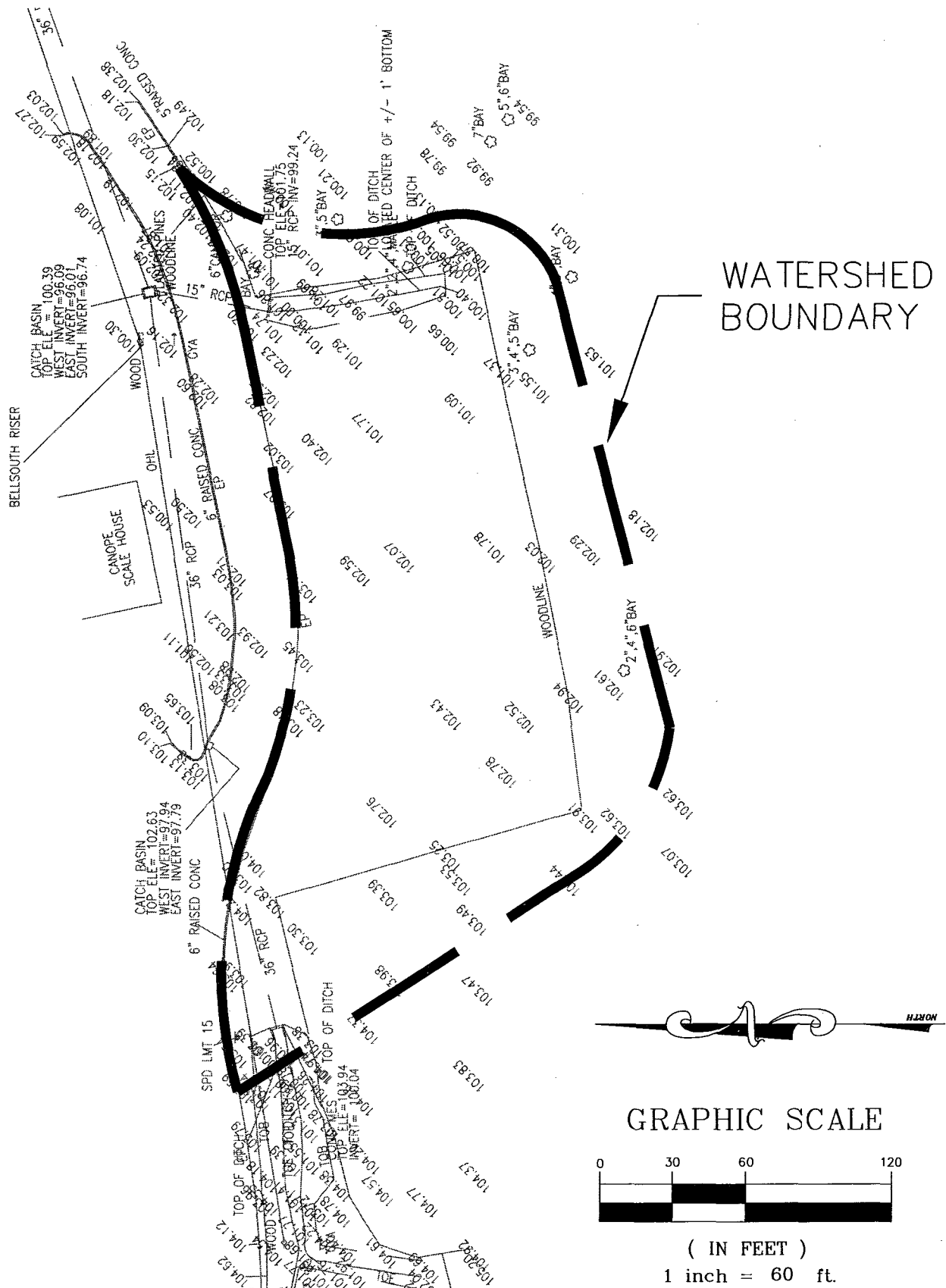
Mean Annual design storm routing

ICPR Input Report

Time (hrs)	Print Inc (min)
8.000	15.000
16.000	5.000
24.000	15.000

Group	Run
POST	Yes

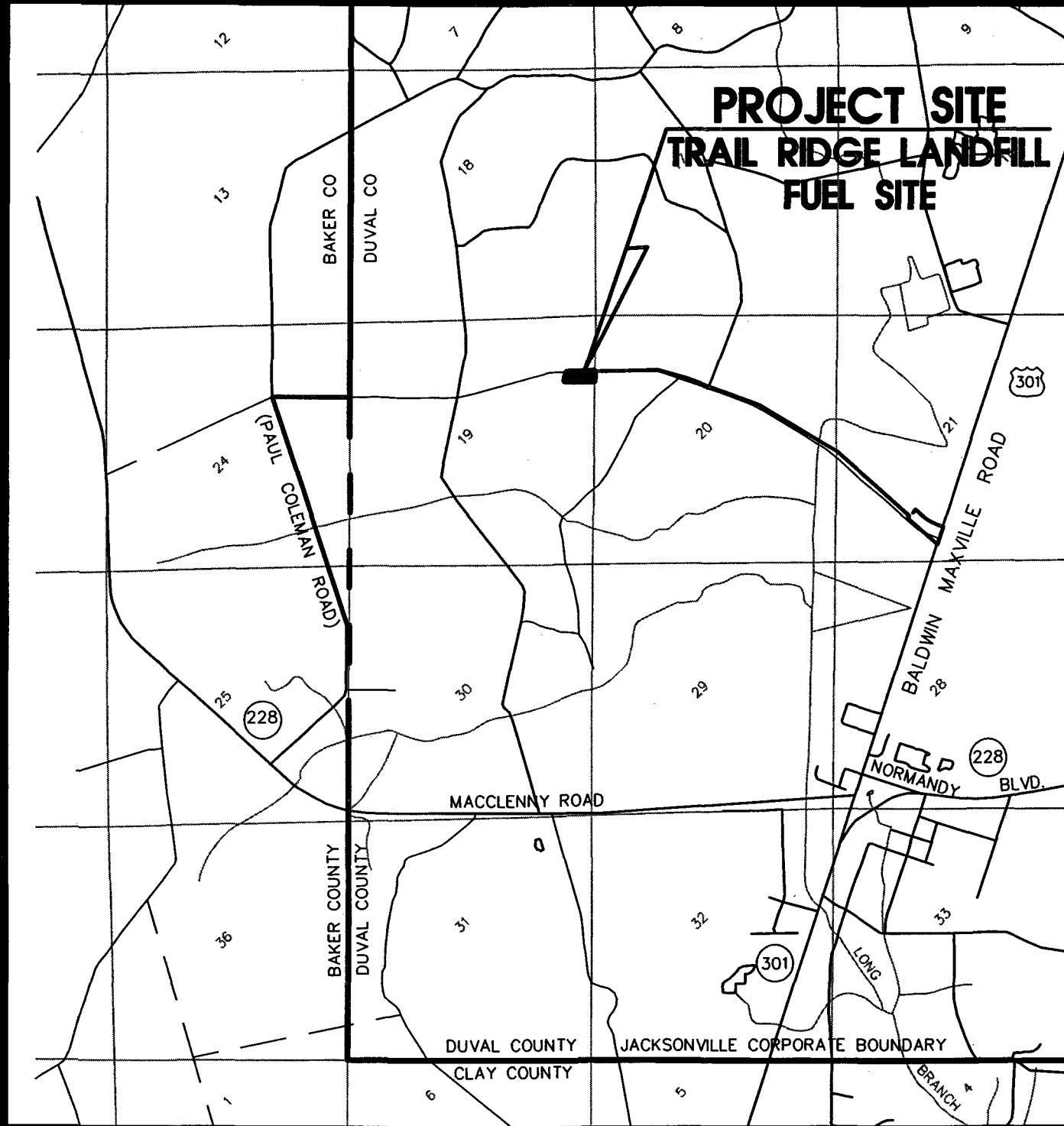
=====
==== Boundary Conditions =====
=====



**England-Thimms
& Miller, Inc.**
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SURVEYORS - LANDSCAPE ARCHITECTS
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Jacksonville, Florida 32258
Certificate of Authorization No.: 2584
Phone No. (904) 642-8990
Fax No. (904) 646-9485

**PRE DEVELOPMENT
CONDITION**
**TRAIL RIDGE FUEL SITE
FOR
CITY OF JACKSONVILLE**

ETM NO. E03-154
DATE: JAN., 2004
DRAWN BY: R.A.E.
DRAWING NO.



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VICINITY MAP

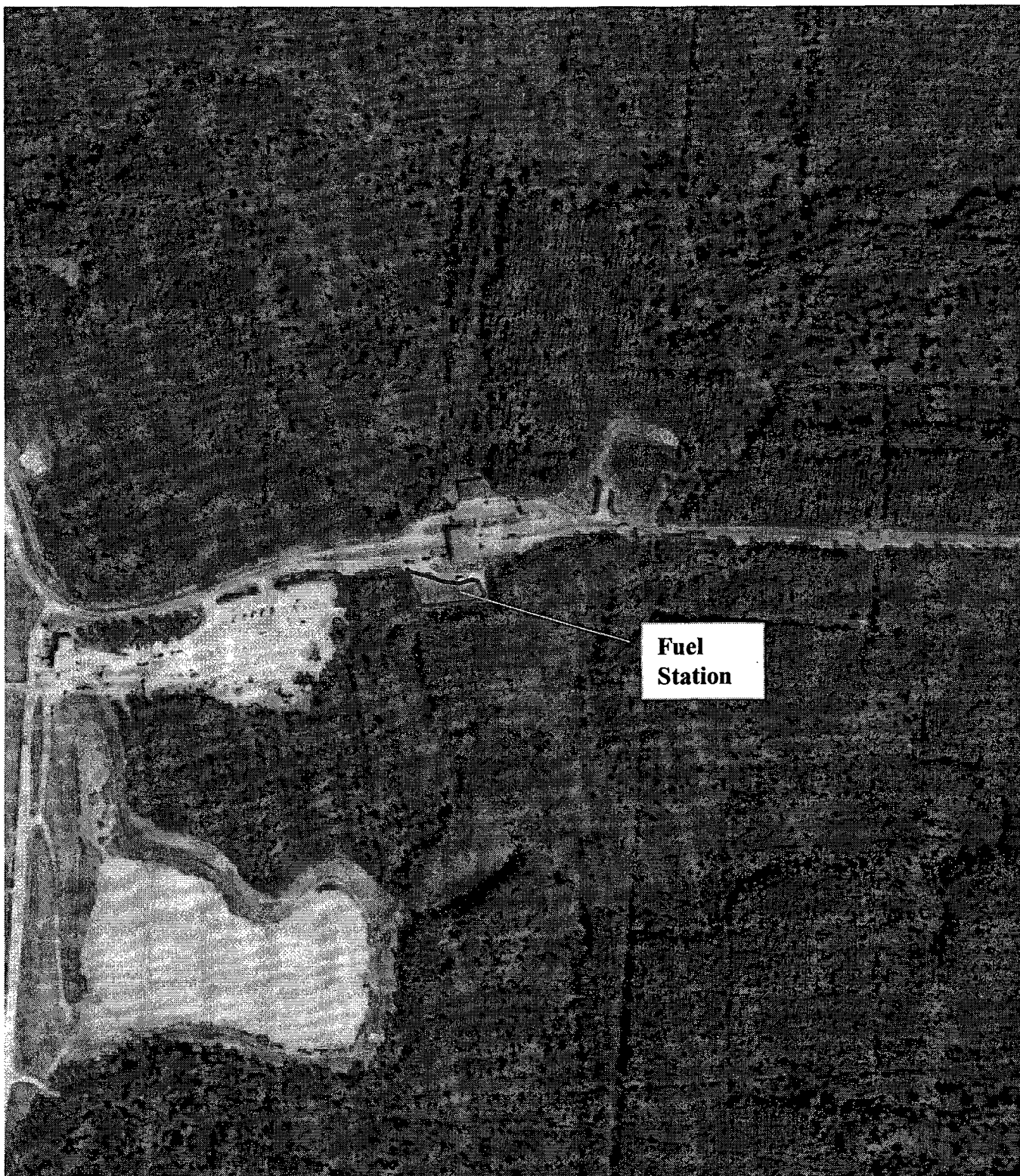
TRAIL RIDGE FUEL SITE
FOR
CITY OF JACKSONVILLE

ETM NO. E03-154

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DRAWING NO.



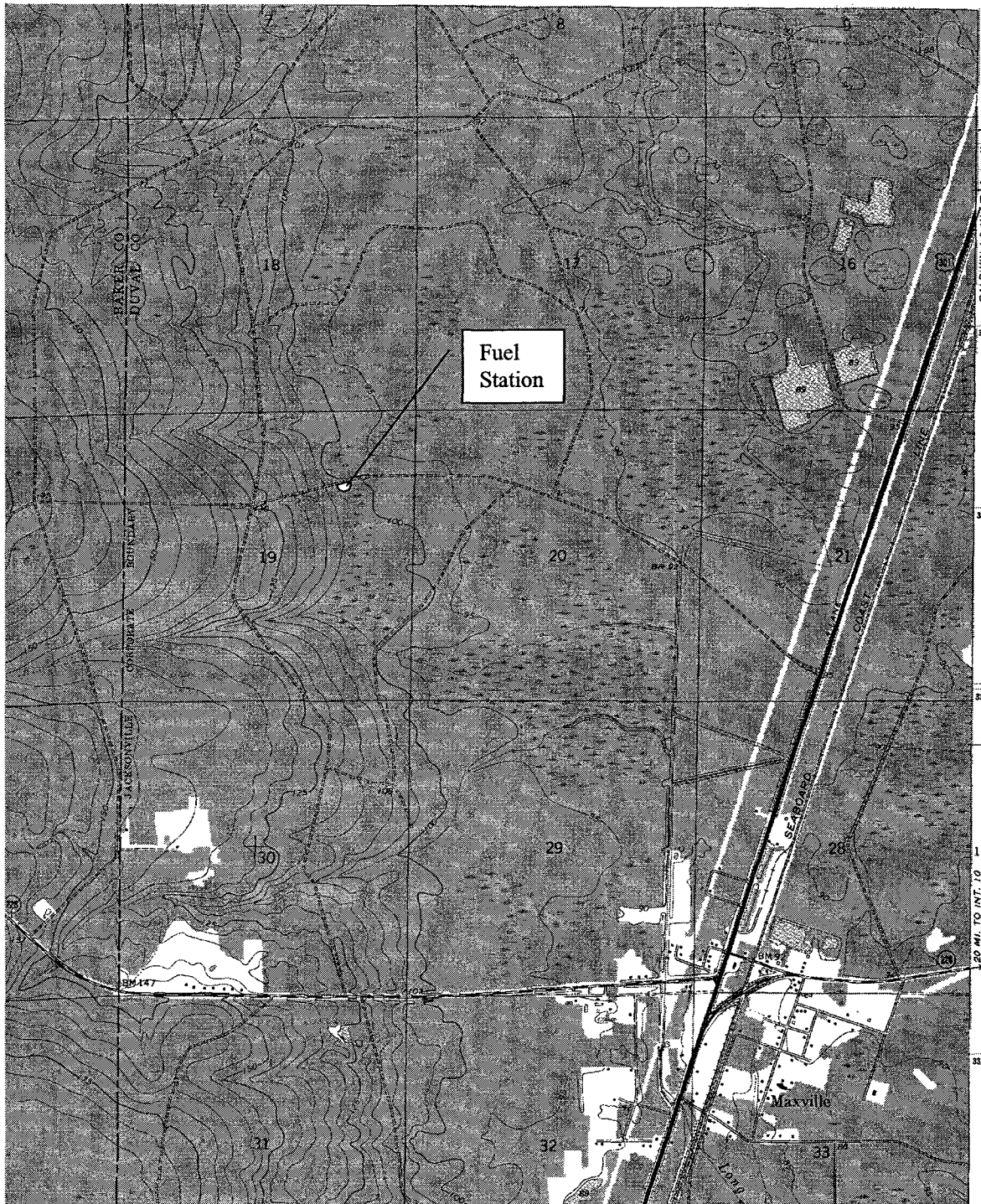
Fuel
Station

Scale: 1" = 400'

 **England-Thimms
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Trail Ridge Fuel Station
Aerial Photo
March 15, 2002



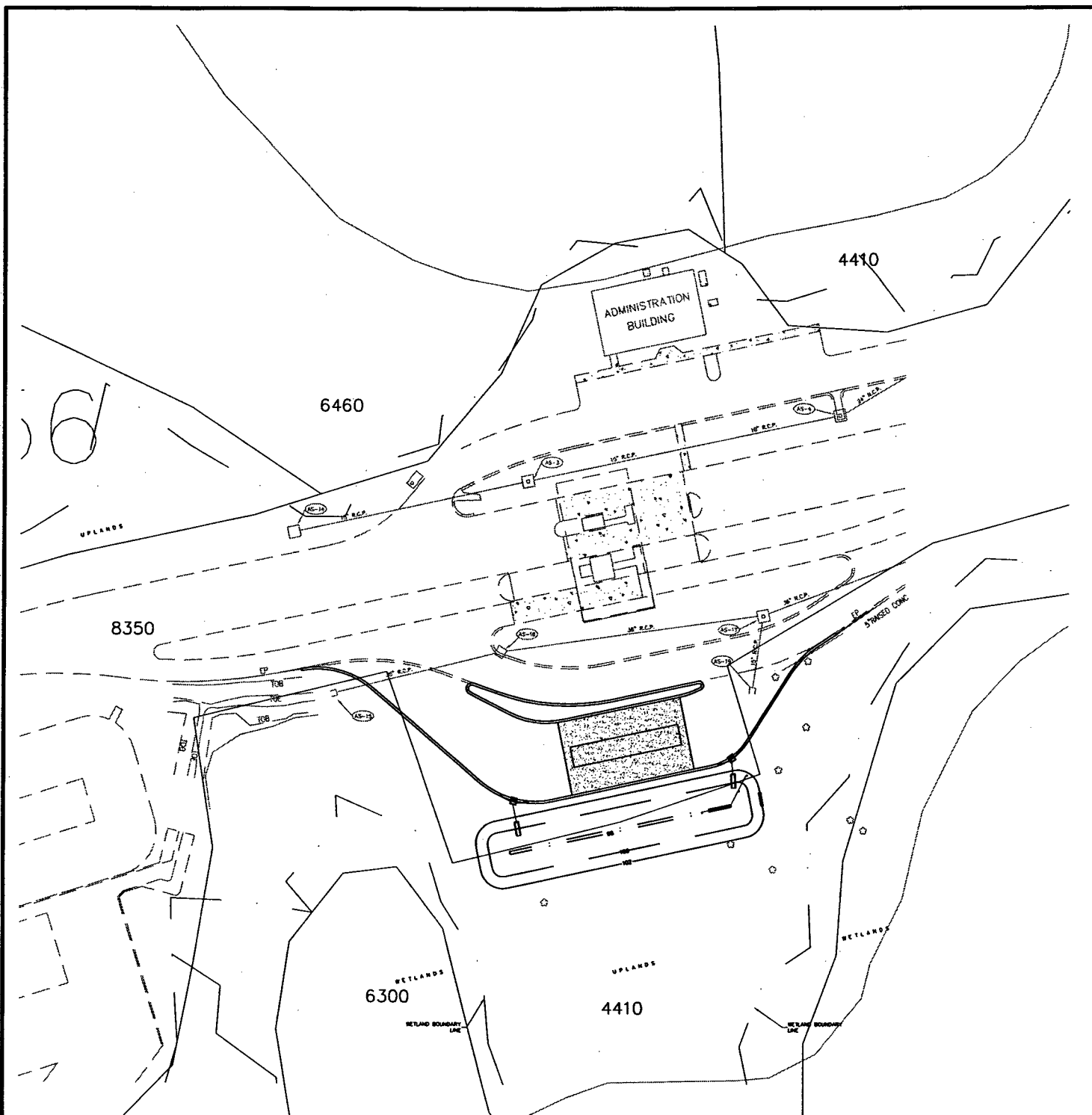


Scale: 1" = 3000'

Trail Ridge Fuel Station
USGS Quadrangle Map

Maxville, FL Quad





4410 - CONIFEROUS FOREST
 6300 - WETLAND
 6460 - WETLAND
 8350 - SOLID WASTE DISPOSAL

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LANDUSE MAP

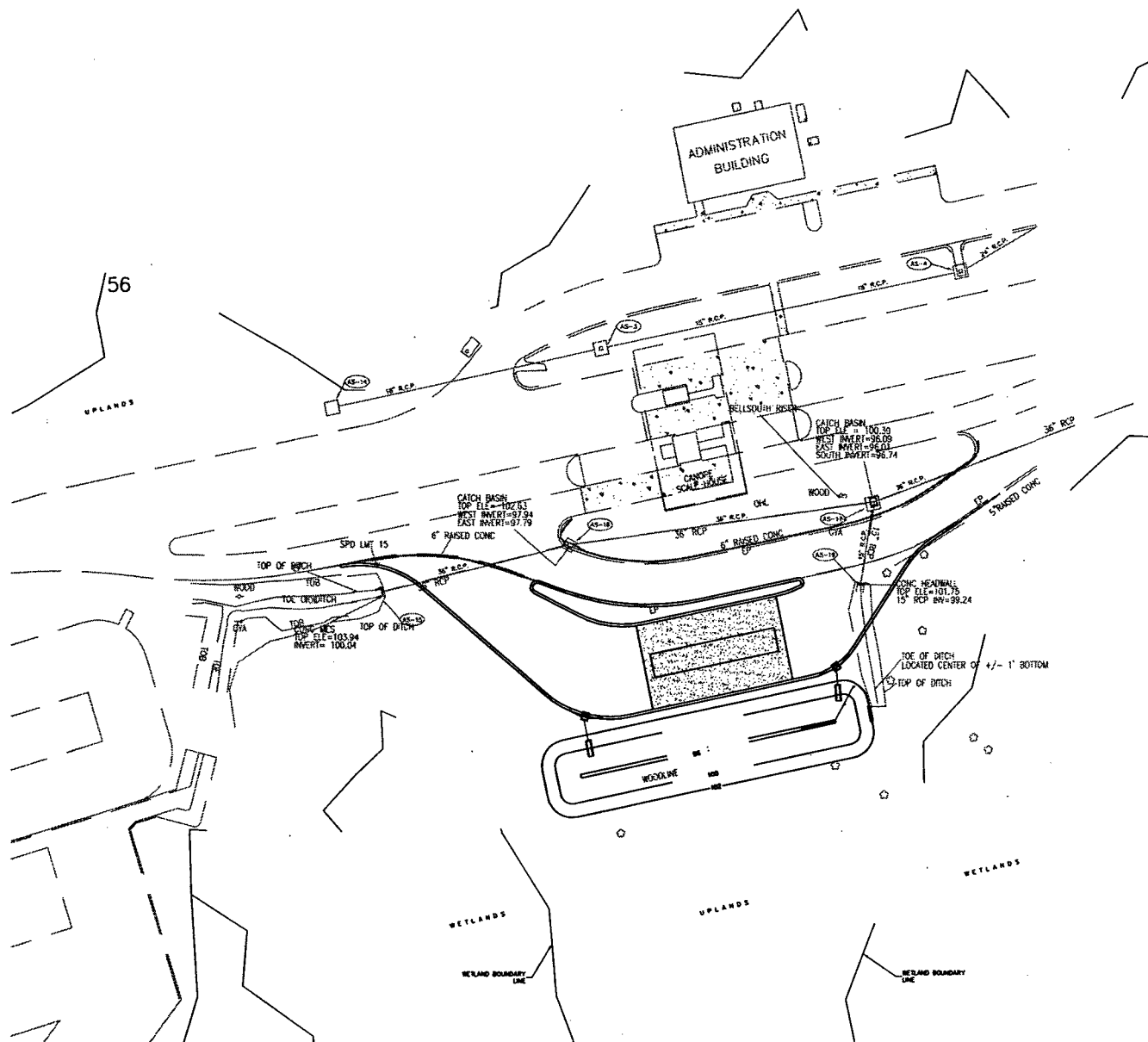
TRAIL RIDGE FUEL SITE
 FOR
 CITY OF JACKSONVILLE

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DATE: JAN., 2004

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56 = POTTSBURG FINE SAND

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SOILS MAP

TRAIL RIDGE FUEL SITE
 FOR
 CITY OF JACKSONVILLE

ETM NO. E03-154

DATE: JAN., 2004

DRAWN BY: R.A.E.

DRAWING NO.

DRAINAGE CALCULATIONS
 Trail Ridge Fuel Site

PROJECT Trail Ridge Fuel Site
 PROJECT # 03-154
 DATE 1/19/04
 PAGE 1 OF 1

Up Struct	Type of Struct	Down Struct	Length (Ft)	Type of Line	Drainage Area (Ac)				Tc (min.)	Time Accum (min.)	i	Total (CA)	Top or Grate Elev.	Elev. of			Pipe Diam (in.)	n	Slope (%)	Vel. (fps)	Q (cfs)	Head Loss		Remarks
					Incr.	C=A	C= 0.3	C= 0.7	C= 0.95	Sum				Up End	Dn End	Fall						Entrance Losses	Bend Losses	

S-1	DWCB Single Inlet	S-2	24	RCP	0.24	0.23	0.23	5.00	0.08	5.08	7.27	0.23	102.25	100.02	100.00	0.02	15	0.013	0.07%	1.35	1.66	0.014	K= 0.5
					0.00	0.00	98.25						98.05	0.000	K= 0								
					0.00	0.00	97.00						96.80	0.014									
S-2	MES																	0.83%	4.81	5.90	0.014		

S-3	DWCB Single Inlet	S-4	20	RCP	0.14	0.13	0.13	5.00	0.06	5.06	7.27	0.13	102.40	100.00	0.00	15	0.013	0.02%	0.79	0.97	0.005	K= 0.5		
					0.00	0.00	98.25						98.05	0.000	K= 0									
					0.00	0.00	97.00						96.80	0.20	1.00%			5.26	6.46	0.005				
S-4	MES																							