DWELL AT MAITLAND

CITY OF MAITLAND, FLORIDA

DRAINAGE CALCULATIONS

PREPARED FOR:

THE KLEIN COMPANY

1735 MARKET STREET, SUITE 4010
PHILADELPHIA, PA 19103

PREPARED BY:

KCG KELLY, COLLINS & GENTRY, INC.
ENGINEERING / PLANNING

1700 NORTH ORANGE AVENUE, SUITE 400
ORLANDO, FLORIDA 32804
P: (407) 898-7858 F: (407) 898-1488

GARTH R. RITTER
CIVIL DISCIPLINE ONLY
CERTIFICATION OR AUTHORIZATION
NUMBER 00007350
No. 79364
STATE OF FLORIDA
PROFESSIONAL ENGINEER

GARTH R. RITTER, P.E.
FLORIDA REGISTRATION 79364

DATE:

December 10th, 2015

Table of Contents

TABLE OF CONTENTS 2
I. DRAINAGE NARRATIVE 3
APPENDIX A – AREA MAPS 4
1. *Vicinity Map* 4
2. *Quadrangle Map* 4
3. *Aerial Map* 4
APPENDIX B – FLOOD MAPS 5
1. *FEMA Flood Insurance Rate Map (FIRM)* 5
APPENDIX C – SOILS 6
1. *USDA Soils Map* 6
2. *USDA Table 15 – Soils and Water Features* 6
APPENDIX D – STORM SEWER DESIGN 7
1. *Hydraflow Storm Sewers Analysis* 7
A. *Nodal Diagram* 7
B. *Storm Sewer Tabulation* 7
C. *Line Profiles* 7

I. Drainage Narrative

Developer:	The Klein Company
Project Name:	**Dwell at Maitland**
Location:	NEC of Summit Park Rd and Maitland Summit Blvd, in City of Maitland, FL
Legal Description:	See Boundary Survey
Existing Use:	Vacant Parcel
Proposed Use:	Multi-Family Residential

Project Description

The proposed project includes the construction of Phase 2 of the Maitland Lofts, a 3.27 acre, 81 unit multi-family apartment complex, with associated parking and drainage infrastructure. The project is located on the Northeast Corner of Maitland Summit Blvd, and Summit Park Rd. in Maitland, Florida.

ERP Criteria

This project is being submitted as a minor modification under St. Johns River Water Management District permit #4-095-0234M5. There are no proposed wetland or flood plain impacts associated with this project.

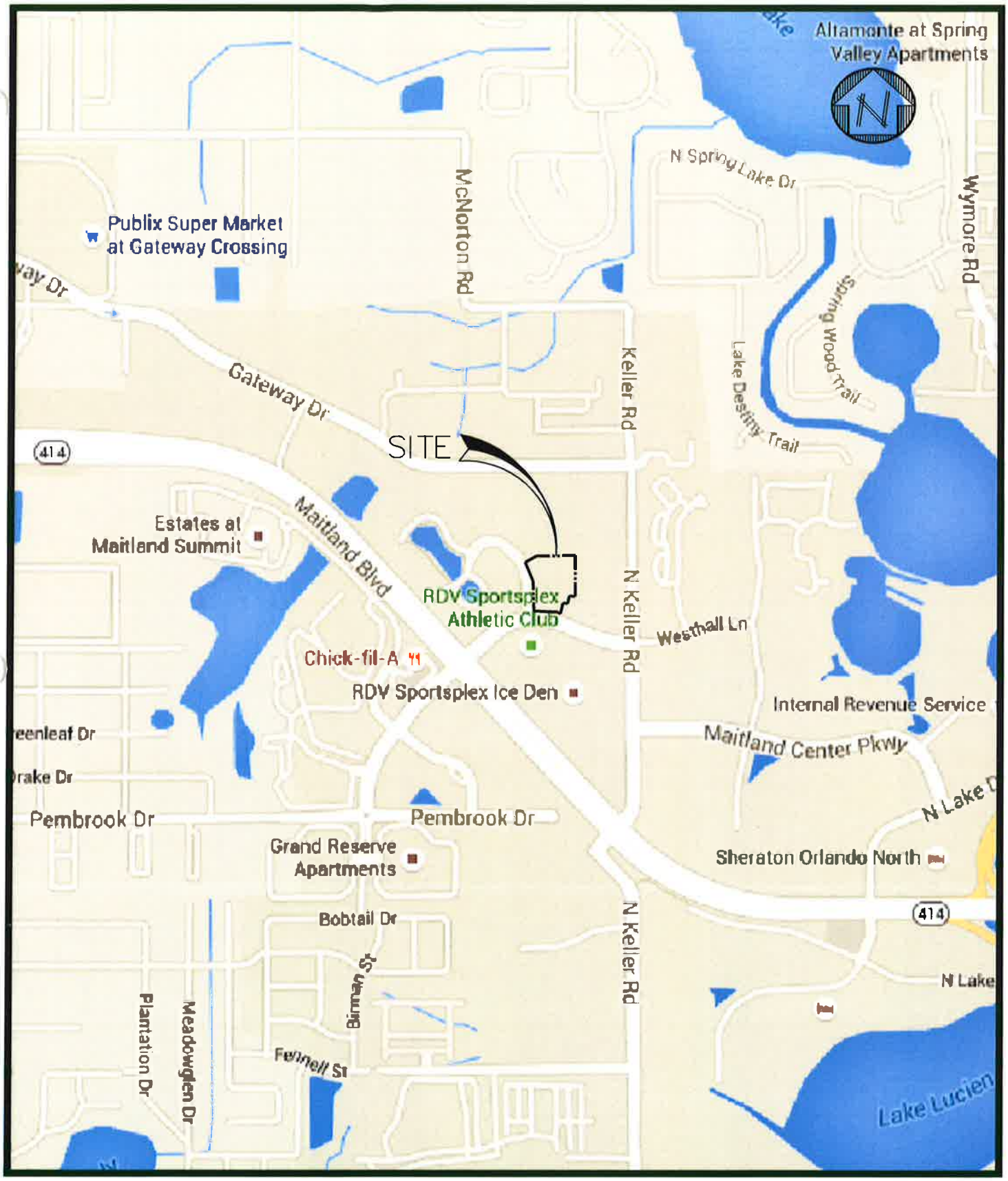
Drainage Methodology

Permitted Capacity. The development of this project will occur in Lot 8 of the Master Development of Maitland Summit Phase 2. Maitland Summit Phase 2 (Permit # 4-095-0234M5) included the construction of a surface water management system designed and approved by St. Johns River Water Management District to develop Lot 8 up to 80% impervious. The proposed impervious area of Dwell at Maitland is 70%, and is under the permitted capacity of the Maitland Summit Phase 2 permit.

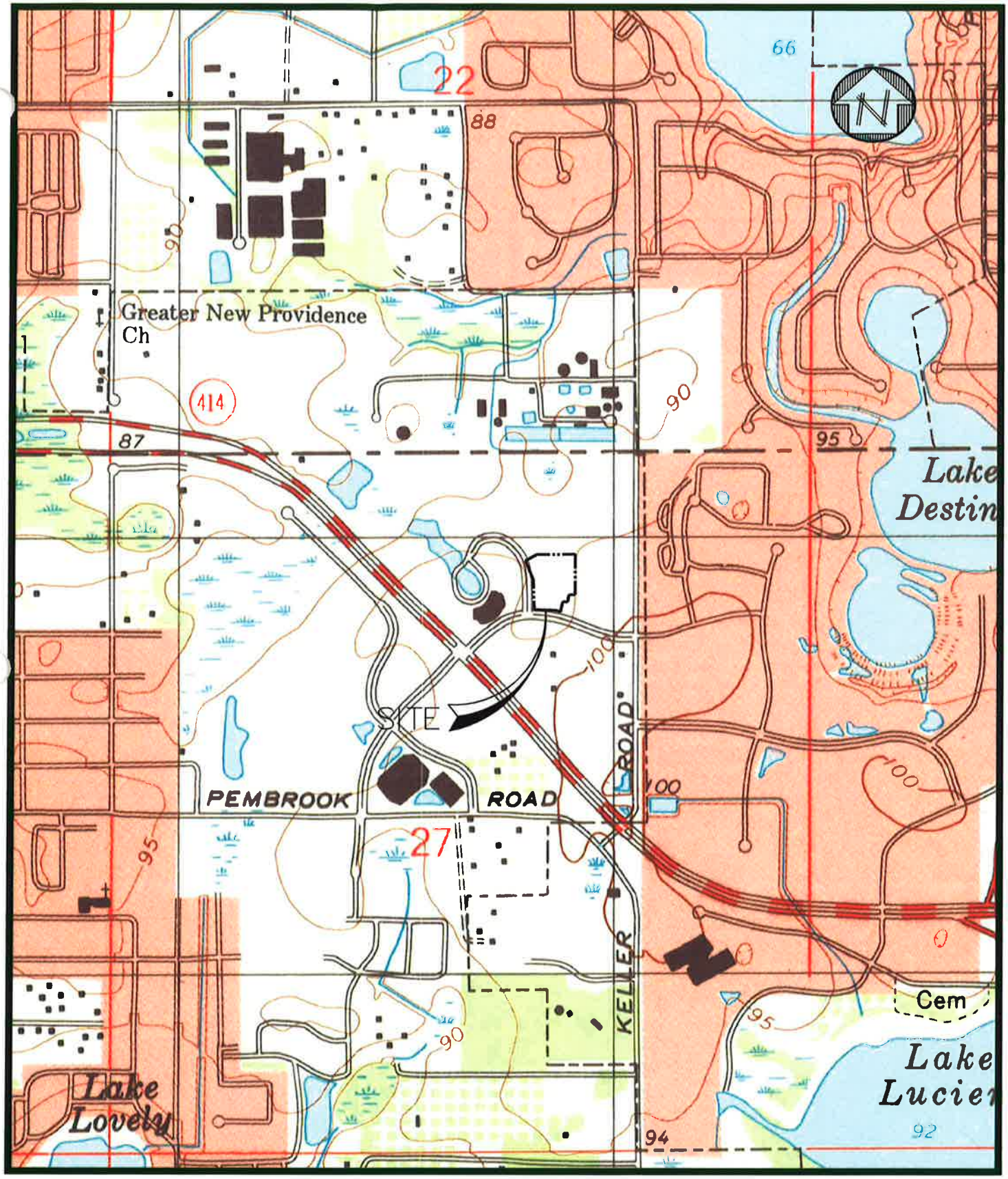
Storm Sewer Design. A hydraulic analysis was performed using the Hydraflow Storm Sewers program, and is included in Appendix D.

APPENDIX A – Area Maps

1. Vicinity Map
2. Quadrangle Map
3. Aerial Map



KELLY, COLLINS & GENTRY, INC.	Scale: 1"=1000'	**DWELL AT MAITLAND**
	Date: 11/04/2015	
	S: 27 T: 21 R: 29	
	Job # :1109.000	Exhibit: VICINITY MAP
ENGINEERING / PLANNING	Drawn by: BMR	Source: GOOGLE MAPS
	Appvd. by: GRR	Area: ORANGE COUNTY , FL — 1 of 1

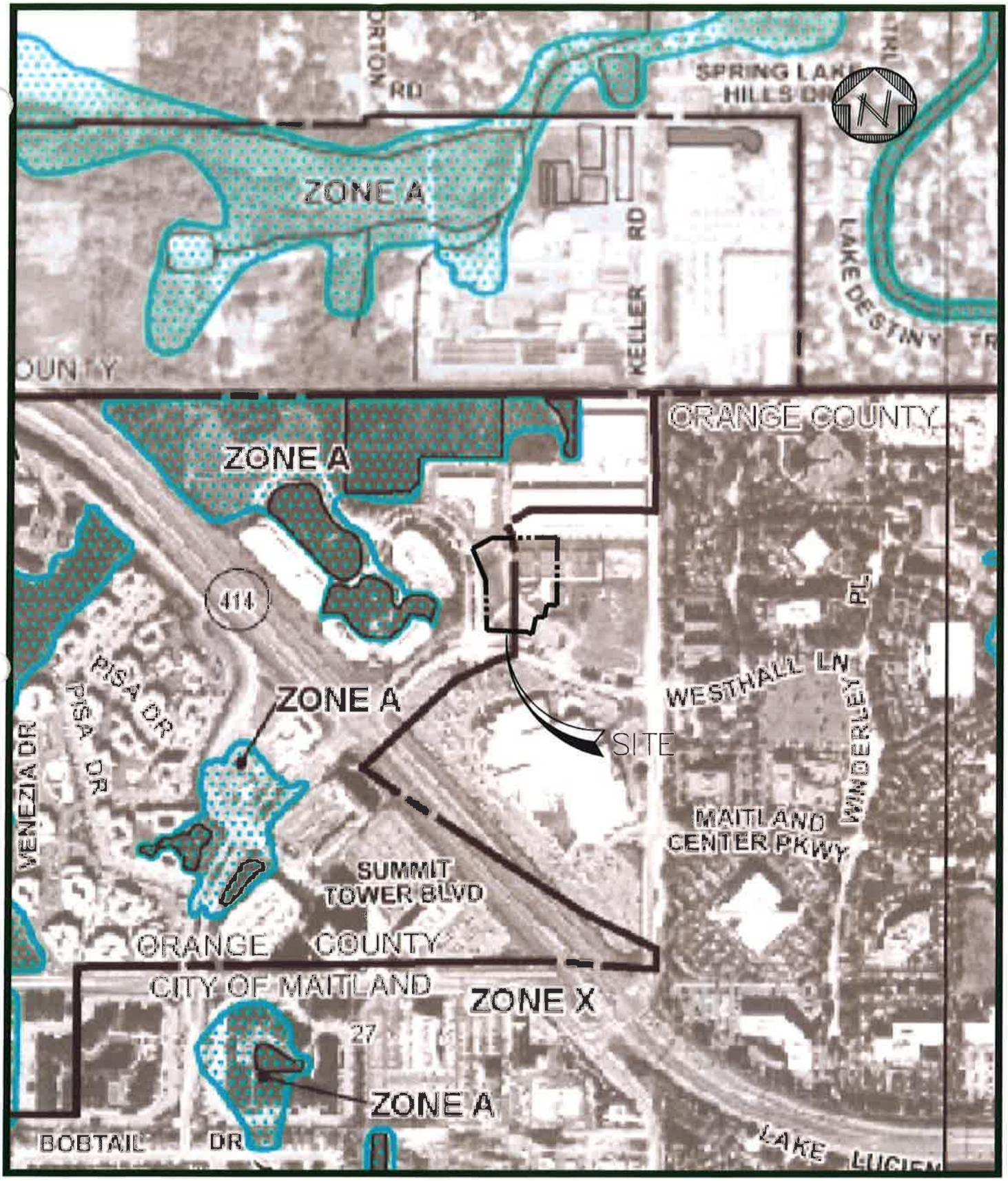


KELLY, COLLINS & GENTRY, INC. ENGINEERING / PLANNING	Scale: 1"=1000' Date: 11/04/2015 S: 27 T: 21 R: 29 Job # :1109.000 Drawn by: BMR Appvd. by: GRR	**DWELL AT MAITLAND** Exhibit: TOPOGRAPHIC MAP Source: USGS Area: ORANGE COUNTY , FL 1 of 1

KELLY, COLLINS & GENTRY, INC.	Scale: 1"=1000'	**DWELL AT MAITLAND**
	Date: 11/04/2015	
	S: 27 T: 21 R: 29	
ENGINEERING / PLANNING	Job # :1109.000	Exhibit: AERIAL MAP
	Drawn by: BMR	Source: GOOGLE MAPS
	Appvd. by: GRR	Area: ORANGE COUNTY , FL 1 of 1

APPENDIX B – Flood Maps

1. FEMA Flood Insurance Rate Map (FIRM)



KELLY, COLLINS & GENTRY, INC.	Scale: 1"=600'	**DWELL AT MAITLAND**
	Date: 11/04/2015	
	S: 27 T: 21 R: 29	
ENGINEERING / PLANNING	Job # :1109.000	Exhibit: FLOOD INSURANCE RATE PLAN
	Drawn by: BMR	Source: FEMA
	Appvd. by: GRR	Area: ORANGE COUNTY , FL 1 of 3

PANEL 0145F

FIRM

FLOOD INSURANCE RATE MAP

SEMINOLE COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 145 OF 330

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALTAMONTE SPRINGS, CITY OF	120290	0145	F
SEMINOLE COUNTY	120289	0145	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
12117C0145F

MAP REVISED
SEPTEMBER 28, 2007

Federal Emergency Management Agency

PANEL 0145F

FIRM

FLOOD INSURANCE RATE MAP

ORANGE COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 145 OF 750

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MAITLAND, CITY OF	120184	0145	F
ORANGE COUNTY	120179	0145	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
12095C0145F

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

KELLY, COLLINS & GENTRY, INC.	Scale: NTS	***DWELL AT MAITLAND***
ENGINEERING / PLANNING	Date: 11/04/2015	
	S: 27 T: 21 R: 29	
	Job # :1109.000	Exhibit: FLOOD INSURANCE RATE PLAN
	Drawn by: BMR	Source: FEMA
	Appvd. by: GRR	Area: ORANGE COUNTY , FL 2 of 3

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A — Cross section line

23 — 23 — Transect line

97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

4275000mE — 1000-meter Universal Transverse Mercator grid ticks, zone 17

6000000 FT — 5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE = 901), Transverse Mercator projection

DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
APRIL 17, 1995

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A — Cross section line

23 — 23 — Transect line

97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

4275000mE — 1000-meter Universal Transverse Mercator grid ticks, zone 17

6000000 FT — 5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE = 901), Transverse Mercator projection

DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
DECEMBER 8, 2000

KELLY, COLLINS & GENTRY, INC.	Scale: NTS	**DWELL AT MAITLAND**
ENGINEERING / PLANNING	Date: 11/04/2015	
	S: 27 T: 21 R: 29	
	Job # :1109.000	Exhibit: FLOOD INSURANCE RATE PLAN
	Drawn by: BMR	Source: FEMA
	Appvd. by: GRR	Area: ORANGE COUNTY , FL 3 of 3

APPENDIX C – Soils

1. USDA Soils Map
2. USDA Table 15 – Soils and Water Features

KELLY, COLLINS & GENTRY, INC.	Scale: 1"=1000'	***DWELL AT MAITLAND***	
	Date: 11/04/2015		
	S: 27 T: 21 R: 29		
	Job # :1109.000	Exhibit: SOILS MAP	
ENGINEERING / PLANNING	Drawn by: BMR	Source: USDA	
	Appvd. by: GRR	Area: ORANGE COUNTY , FL	1 of 4

Orange County, Florida (FL095)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Basinger fine sand, depressional, 0 to 1 percent slopes	0.7	11.1%
44	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	4.9	79.2%
46	Tavares fine sand, 0 to 5 percent slopes	0.6	9.6%
Totals for Area of Interest		**6.2**	**100.0%**

TABLE 15.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
1. Arents.											
2---------- Archbold	A	None-------	---	---	3.5-6.0	Apparent	Jun-Nov	---	---	Low------	Moderate.
3*---------- Basinger	D	None-------	---	---	+2-1.0	Apparent	Jun-Feb	---	---	High-----	Moderate.
4, 5---------- Candler	A	None-------	---	---	>6.0	---	---	---	---	Low------	High.
6:											
Candler-------	A	None-------	---	---	>6.0	---	---	---	---	Low------	High.
Apopka--------	A	None-------	---	---	>6.0	---	---	---	---	Moderate	High.
7, 8:											
Candler-------	A	None-------	---	---	>6.0	---	---	---	---	Low------	High.
Urban land.											
9*---------- Canova	B/D	None-------	---	---	+2-0	Apparent	Jan-Dec	3-6	8-12	High-----	Low.
10---------- Chobee	B/D	Frequent---	Brief to very long.	Jun-Feb	0-1.0	Apparent	Jun-Feb	---	---	Moderate	Low.
11:											
Floridana-----	D	Frequent---	Very long.	Jul-Sep	0-1.0	Apparent	Jun-Feb	---	---	Moderate	Low.
Chobee--------	B/D	Frequent---	Brief to very long.	Jun-Feb	0-1.0	Apparent	Jun-Feb	---	---	Moderate	Low.
12:											
Emeralda------	D	Frequent---	Long---	Jun-Feb	0-1.0	Apparent	Jun-Feb	---	---	High-----	Low.
Holopaw-------	D	Frequent---	Very long.	Jun-Feb	0-1.0	Apparent	Jun-Feb	---	---	High-----	High.
13---------- Felda	B/D	None-------	---	---	0-1.0	Apparent	Jul-Mar	---	---	High-----	Moderate.
14---------- Felda	B/D	Occasional	Brief	Jul-Feb	0-1.0	Apparent	Jul-Mar	---	---	High-----	Moderate.
15---------- Felda	B/D	Frequent---	Very long.	Jul-Feb	0-1.0	Apparent	Jul-Mar	---	---	High-----	Moderate.
16---------- Floridana	D	Frequent---	Very long.	Jul-Oct	0-1.0	Apparent	Jun-Feb	---	---	Moderate	Low.

KELLY, COLLINS & GENTRY, INC.	Scale: NTS	DWELL AT MAITLAND	
	Date: 11/04/2015		
	S: 27 T: 21 R: 29		
ENGINEERING / PLANNING	Job # :1109.000	Exhibit: SOILS MAP	
	Drawn by: BMR	Source: USDA	
	Appvd. by: GRR	Area: ORANGE COUNTY , FL	3 of 4

TABLE 15.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
35: Pomello------- Urban land.	C	None--------	---	---	2.0-3.5	Apparent	Jul-Nov	---	---	Low-------	High.
36---------- Pompano	B/D	None--------	---	---	0-1.0	Apparent	Jun-Nov	---	---	High------	Moderate.
37---------- St. Johns	B/D	None--------	---	---	0-1.0	Apparent	Jun-Apr	---	---	High------	High.
38---------- St. Lucie	A	None--------	---	---	>6.0	---	---	---	---	Low-------	Moderate.
39: St. Lucie----- Urban land.	A	None--------	---	---	>6.0	---	---	---	---	Low-------	Moderate.
40*---------- Samsula	B/D	None--------	---	---	+2-1.0	Apparent	Jan-Dec	16-20	30-36	High------	High.
41: Samsula*------	B/D	None--------	---	---	+2-1.0	Apparent	Jan-Dec	16-20	30-36	High------	High.
Hontoon*------	B/D	None--------	---	---	+2-1.0	Apparent	Jan-Dec	16-24	>52	High------	High.
Basinger*-----	D	None--------	---	---	+2-1.0	Apparent	Jun-Feb	---	---	High------	Moderate.
42*---------- Sanibel	B/D	None--------	---	---	+1-1.0	Apparent	Jun-Feb	3-5	5-15	High------	Low.
43---------- Seffner	C	None--------	---	---	1.5-3.5	Apparent	Jun-Nov	---	---	Low-------	Moderate.
44---------- Smyrna	B/D	None--------	---	---	0-1.0	Apparent	Jul-Oct	---	---	High------	High.
45: Smyrna-------- Urban land.	B/D	None--------	---	---	0-1.0	Apparent	Jul-Oct	---	---	High------	High.
46---------- Tavares	A	None--------	---	---	3.5-6.0	Apparent	Jun-Dec	---	---	Low-------	High.
47: Tavares-------	A	None--------	---	---	3.5-6.0	Apparent	Jun-Dec	---	---	Low-------	High.
Millhopper-----	A	None--------	---	---	3.5-6.0	Perched	Aug-Feb	---	---	Low-------	Moderate.
48: Tavares------- Urban land.	A	None--------	---	---	3.5-6.0	Apparent	Jun-Dec	---	---	Low-------	High.
49*---------- Terra Ceia	B/D	None--------	---	---	+1-1.0	Apparent	Jan-Dec	16-20	50-60	Moderate	Moderate.
50* Urban land.											

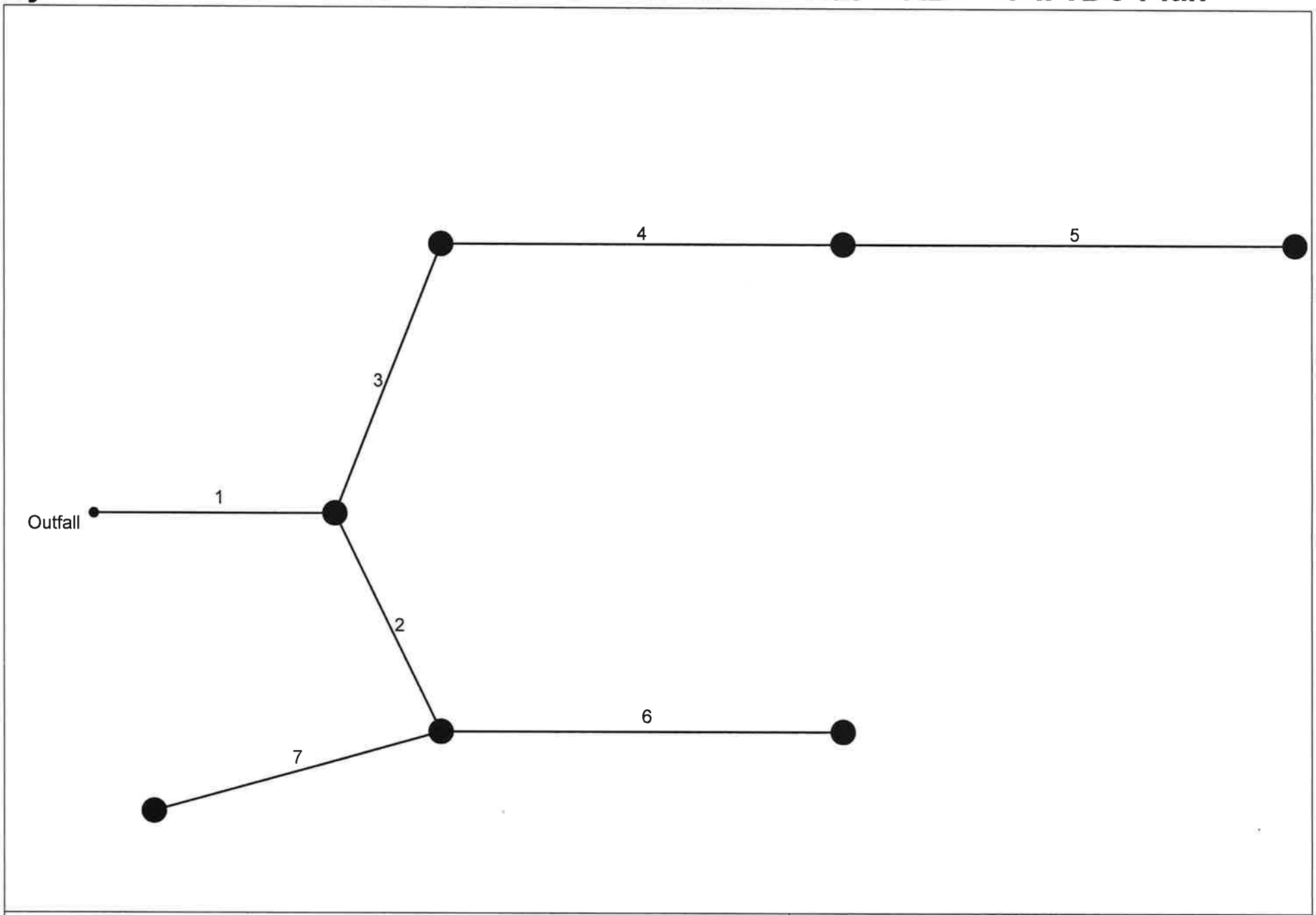
See footnote at end of table.

KELLY, COLLINS & GENTRY, INC. ENGINEERING / PLANNING	Scale: NTS Date: 11/04/2015 S: 27 T: 21 R: 29 Job # :1109.000 Drawn by: BMR Appvd. by: GRR	**DWELL AT MAITLAND** Exhibit: SOILS MAP Source: USDA Area: ORANGE COUNTY , FL

APPENDIX D – Storm Sewer Design

1. Hydraflow Storm Sewers Analysis
    a. Nodal Diagram
    b. Storm Sewer Tabulation
    c. Line Profiles

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: dwell maitland.stm	Number of lines: 7	Date: 12/10/2015

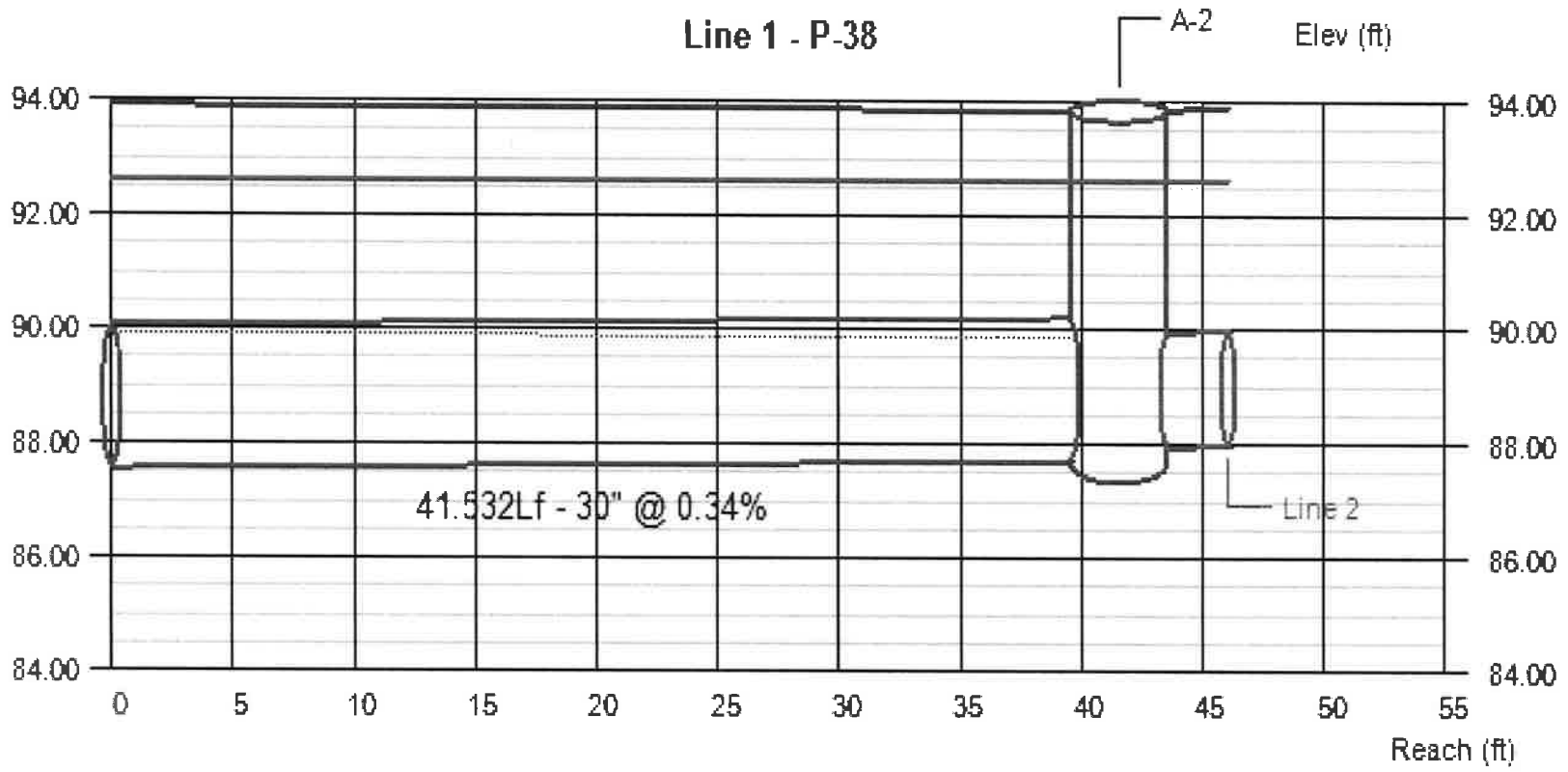
Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
7	2	52.276	0.15	0.15	0.85	0.13	0.13	10.0	10.0	6.0	0.77	5.99	0.44	18	0.33	88.11	88.28	92.65	92.66	94.96	94.00	P3 (6)
6	2	69.340	0.32	0.32	0.85	0.27	0.27	10.0	10.0	6.0	1.64	6.05	0.93	18	0.33	88.11	88.34	92.65	92.67	94.96	94.40	P3 (8)
5	4	78.000	0.26	0.26	0.85	0.22	0.22	10.0	10.0	6.0	1.34	6.06	0.76	18	0.33	88.84	89.10	92.67	92.68	93.91	94.49	P-41
4	3	69.340	0.10	0.36	0.85	0.09	0.31	10.0	11.7	5.7	1.75	10.48	0.99	18	1.00	88.15	88.84	92.64	92.66	93.55	93.91	P-40
3	1	61.000	0.10	0.46	0.85	0.09	0.39	10.0	12.8	5.5	2.16	12.95	0.69	24	0.33	87.95	88.15	92.63	92.64	93.84	93.55	P-39
2	1	50.632	0.16	0.63	0.85	0.14	0.54	10.0	12.0	5.7	3.04	12.71	0.97	24	0.32	87.95	88.11	92.63	92.64	93.84	94.96	P3 (5)
1	End	41.532	0.00	1.09	0.00	0.00	0.93	10.0	14.2	5.3	4.93	23.81	1.00	30	0.34	87.56	87.70	92.61	92.62	93.91	93.84	P-38

Project File: dwell maitland.stm | Number of lines: 7 | Run Date: 12/10/2015

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83 ; Return period =Yrs. 10 ; c = cir e = ellip b = box

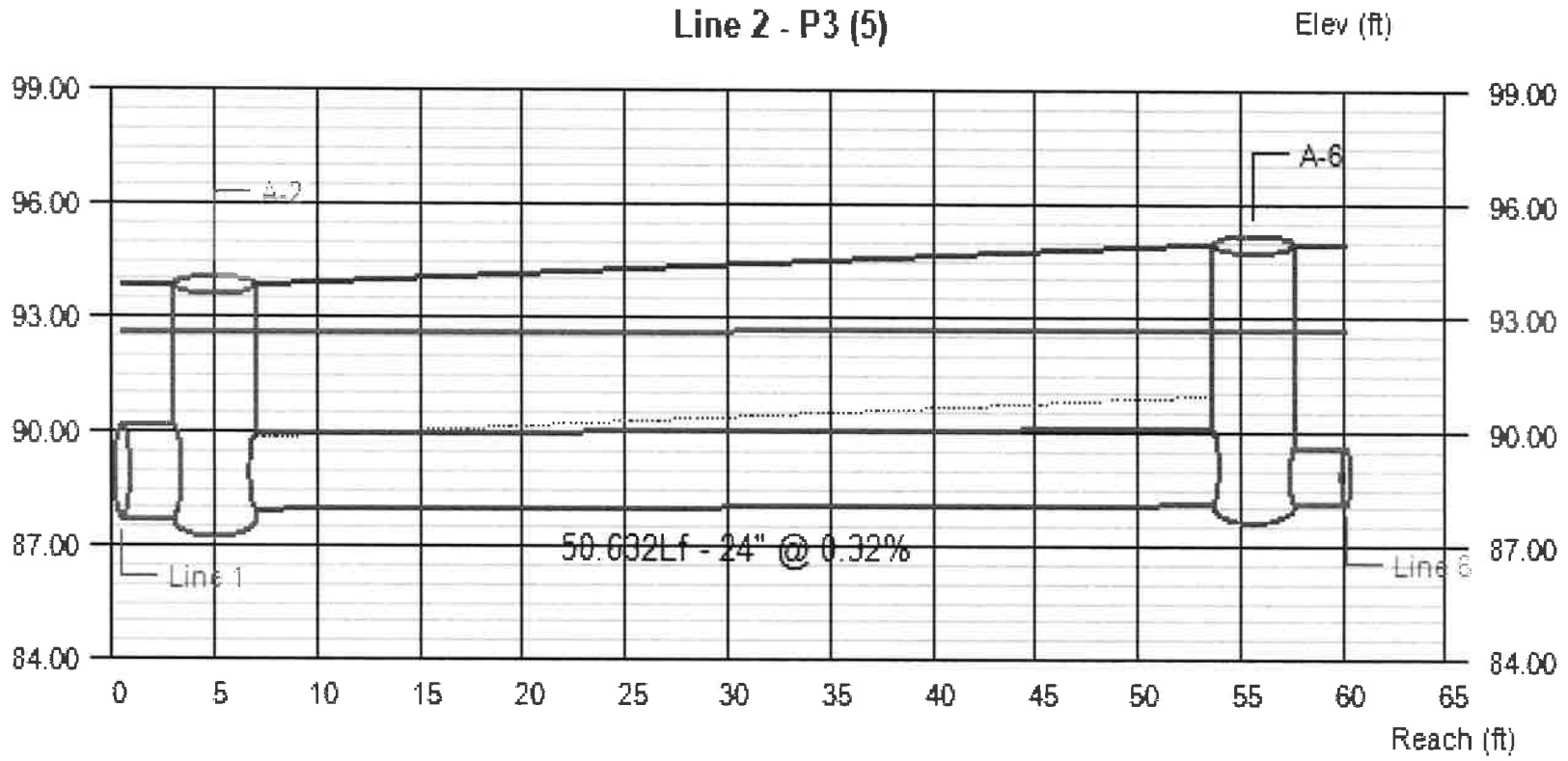
Line rofile (Line 1) - P-38



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
1	4.93	87.56	87.70	2.50	2.50	4.93	92.61	92.62	92.63	1.00	1.00	3.85	3.64

Project File: | No. Lines: 7 | Run Date: 12/10/2015

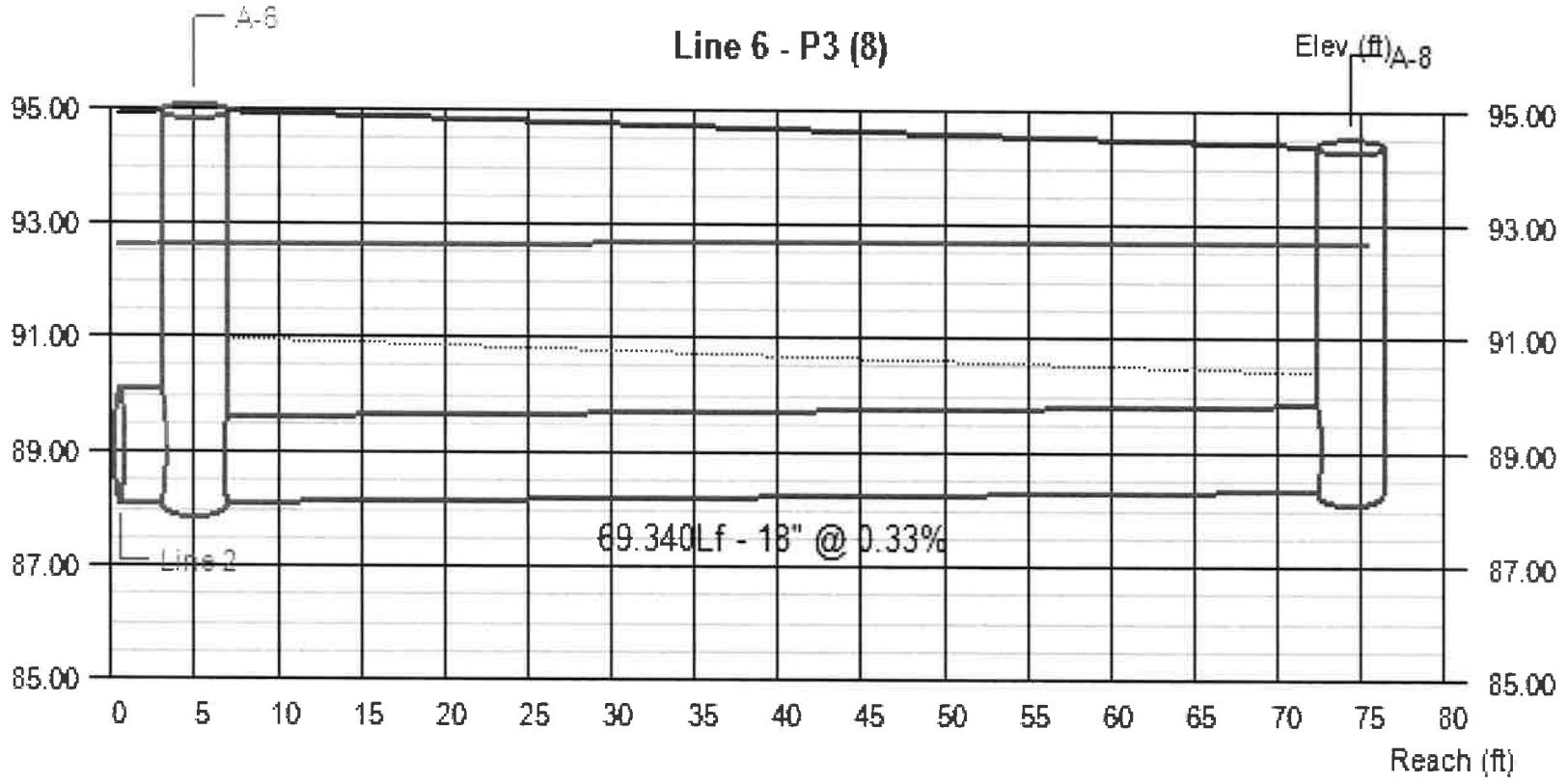
Line rofile (Line 2) - P3 (5)



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
2	3.04	87.95	88.11	2.00	2.00	4.54	92.63	92.64	92.65	0.97	0.97	3.89	4.85

Project File: | No. Lines: 7 | Run Date: 12/10/2015

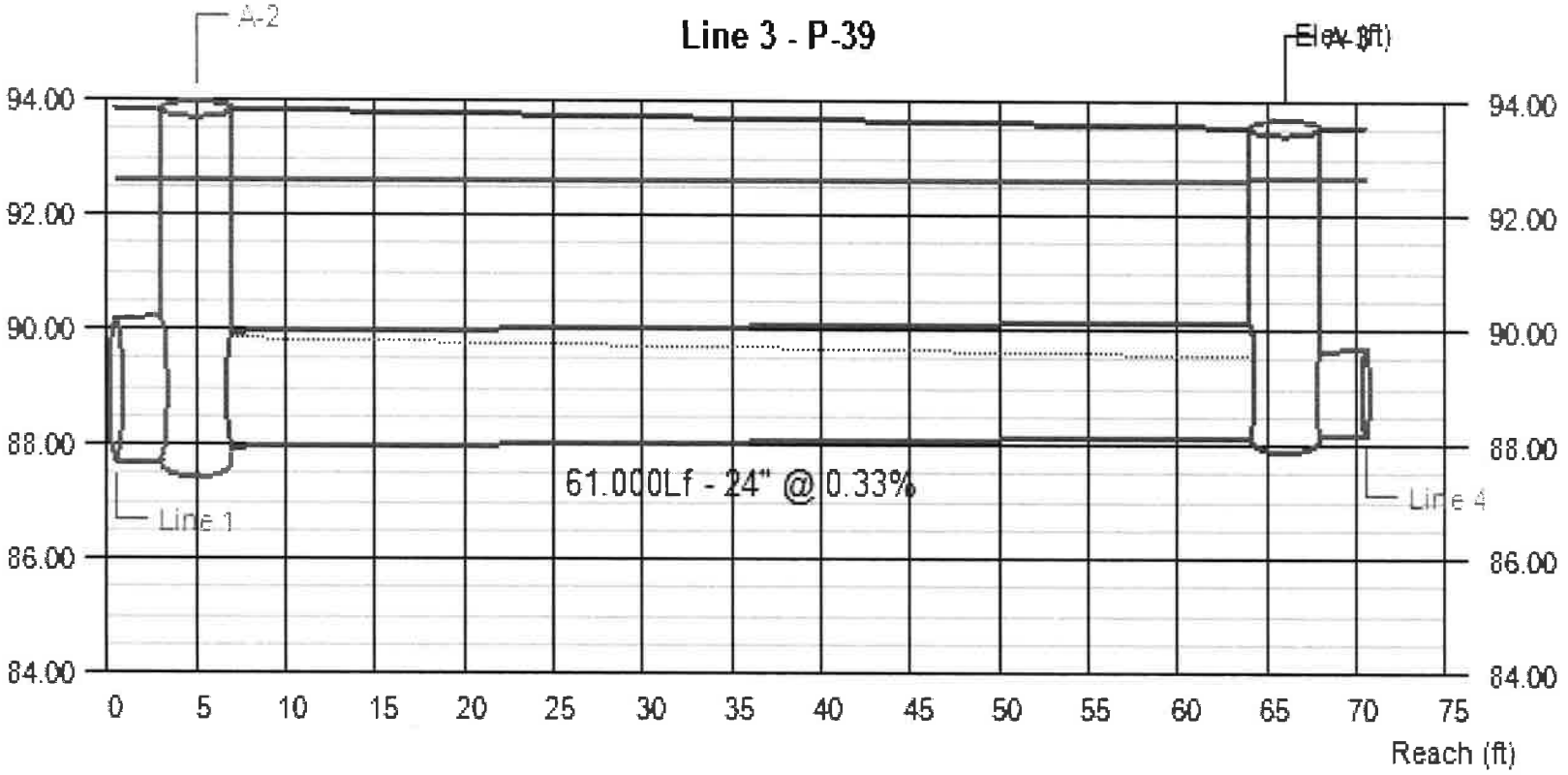
Line Profile (Line 6) - P3 (8)



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
6	1.64	88.11	88.34	1.50	1.50	4.35	92.65	92.67	92.69	0.93	0.93	5.35	4.56

Project File: | No. Lines: 7 | Run Date: 12/10/2015

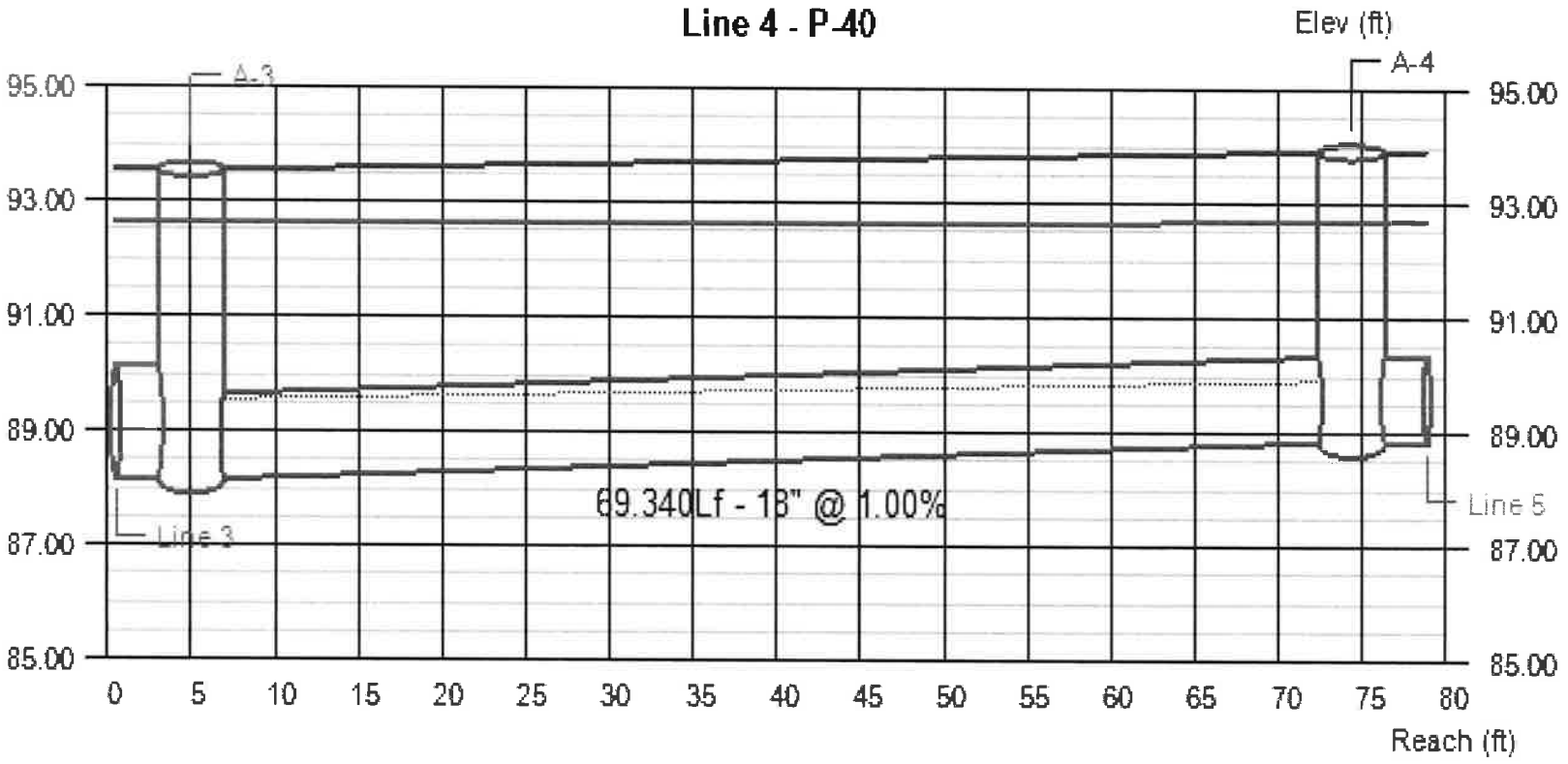
Line Profile (Line 3) - P-39



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
3	2.16	87.95	88.15	2.00	2.00	4.49	92.63	92.64	92.64	0.69	0.69	3.89	3.40

Project File: | No. Lines: 7 | Run Date: 12/10/2015

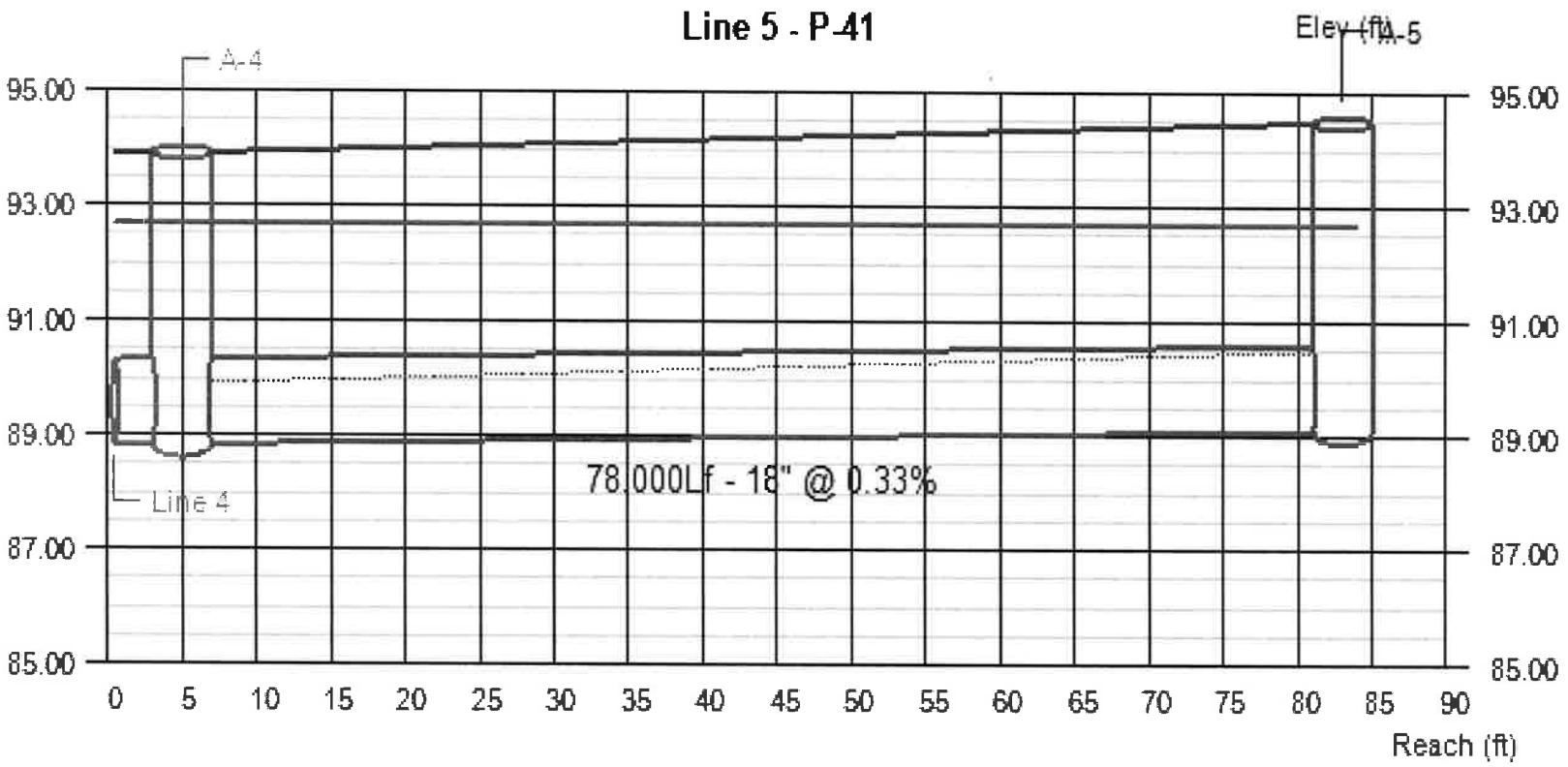
Line rofile (Line 4) - P-40



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
4	1.75	88.15	88.84	1.50	1.50	3.83	92.64	92.66	92.67	0.99	0.99	3.90	3.57

Project File: | No. Lines: 7 | Run Date: 12/10/2015

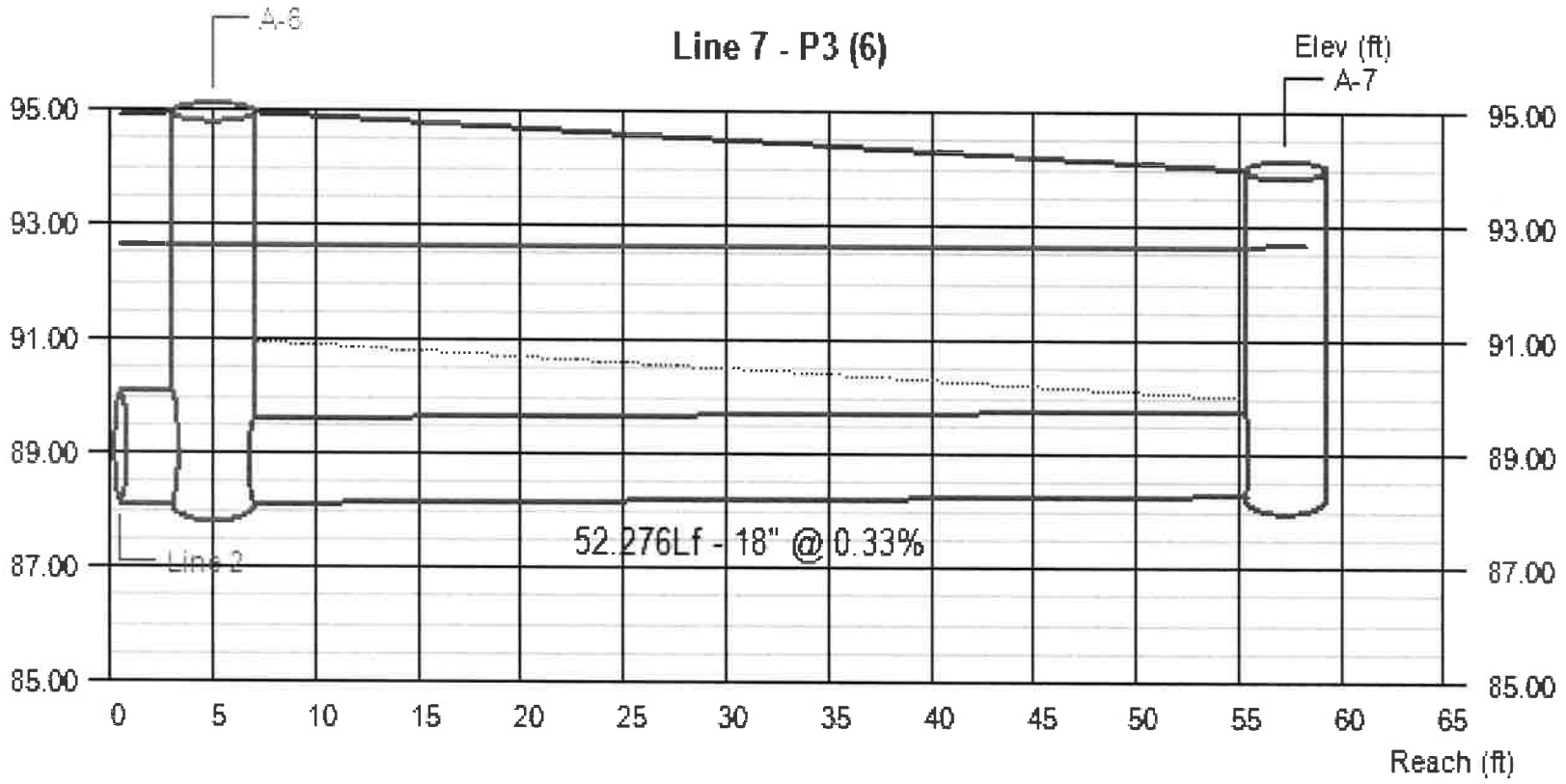
Line Profile (Line 5) - P-41



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
5	1.34	88.84	89.10	1.50	1.50	3.59	92.67	92.68	92.69	0.76	0.76	3.57	3.89

Project File: | No. Lines: 7 | Run Date: 12/10/2015

Line rofile (Line 7) - P3 (6)



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
7	0.77	88.11	88.28	1.50	1.50	4.38	92.65	92.66	92.66	0.44	0.44	5.35	4.22

Project File: | No. Lines: 7 | Run Date: 12/10/2015