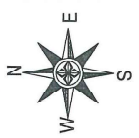


**TABLE 6-8  
SEWERSHED 9 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER**

	Quantity	Unit Price	Unit	Total
<b>5-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (12-inches)	1,300	\$ 64.87	/LF	\$ 110,329.07
2.Manholes	7	\$ 2,500.00	/EACH	\$ 17,500.00
3.Rock Removal 5%	96	\$ 100.00	/CY	\$ 9,600.00
4.Pavement Restoration	606	\$ 100.00	/TON	\$ 60,630.56
5.Traffic Protection	26	\$ 960.00	/DAY	\$ 24,960.00
6.New Service Connection	34	\$ 4,000.00	/EACH	\$ 136,000.00
7.Pump Station Construction	0	\$ -	/LS	\$ -
8.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 359,019.63
9.Mobilization/Demobilization (10%)			\$	\$ 36,000.00
10.Utility Coordination (5%)			\$	\$ 18,000.00
11.Engineering/Design/Permitting/Construction Admin (10 %)			\$	\$ 36,000.00
12.Contingency (20%)			\$	\$ 90,000.00
			<b>SEWERSHED TOTAL</b>	<b>\$ 540,000.00</b>



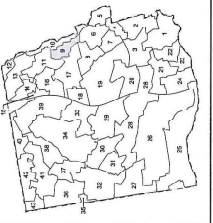
PARÉ CORPORATION  
ENGINEERS - SCIENTISTS - PLANNERS  
8 BACKSTONE VALLEY PLACE  
LINCOLN, RI 02883  
401.334-4100



TOWN OF JOHNSTON FACILITIES PLAN  
SEWER IMPROVEMENTS  
GEORGE WATERMAN RD., NEWMAN & GREENVILLE AVE

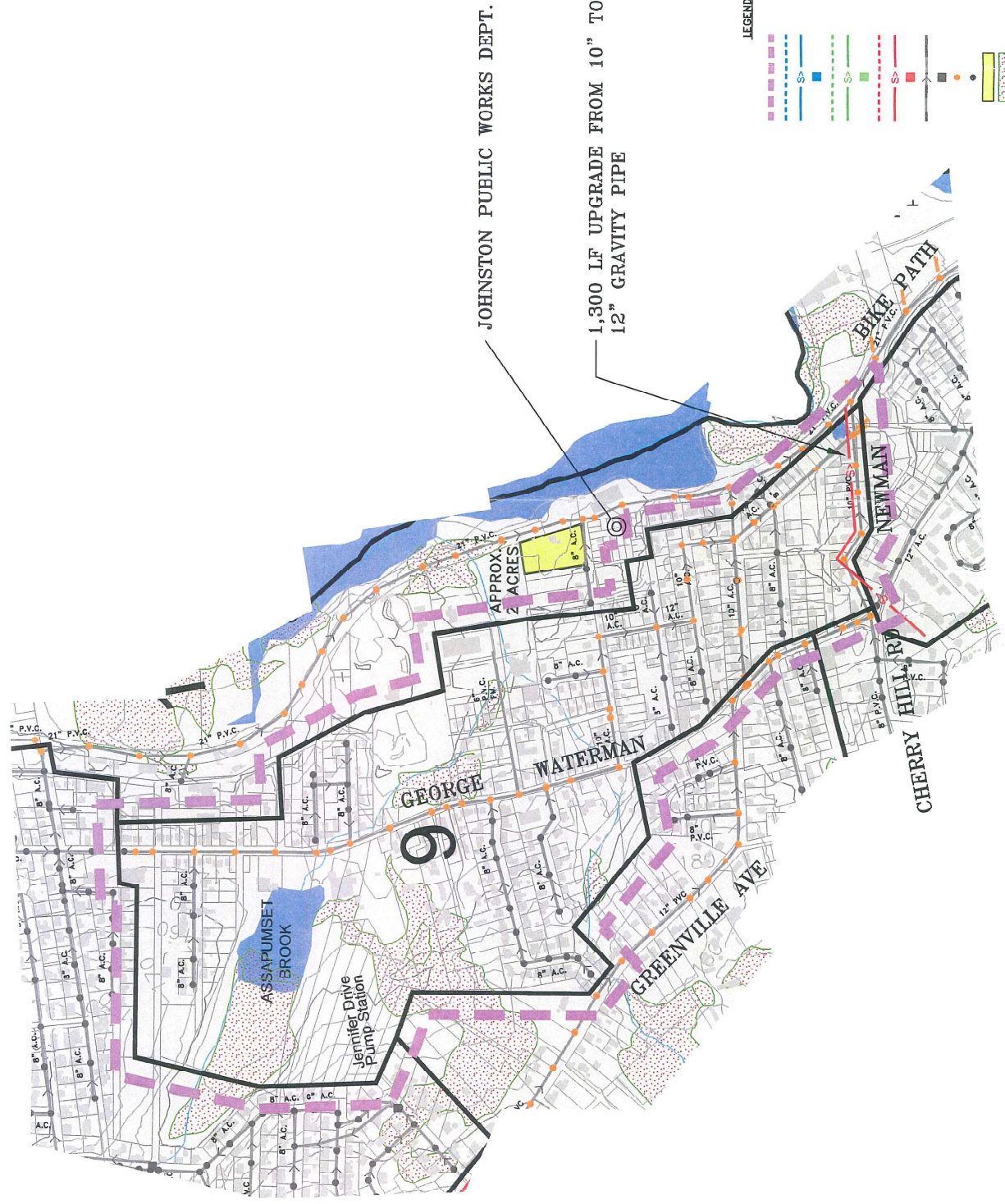
SCALE: 1" = 600'  
FIGURE:

6-7



JOHNSTON PUBLIC WORKS DEPT.

1,300 LF UPGRADE FROM 10" TO 12" GRAVITY PIPE



LEGEND

- SEWERED LAYOUT DELINEATION
- 10-20 YR. FORCEMAIN SEWER PIPE
- 10-20 YR. GRAVITY SEWER PIPE
- 10-20 YR. LIFT STATION
- 5-10 YR. FORCEMAIN SEWER PIPE
- 5-10 YR. GRAVITY SEWER PIPE
- 5-10 YR. LIFT STATION
- 0-5 YR. FORCEMAIN SEWER PIPE
- 0-5 YR. GRAVITY SEWER PIPE
- 0-5 YR. LIFT STATION
- EXISTING SEWER PIPE
- EXISTING LIFT STATION
- EXISTING HCB MANHOLE
- EXISTING JOHNSTON MANHOLE
- 5-YR. HORIZON DEVELOPMENT
- C.I.S. DELINEATED WETLANDS
- EXISTING SEWER SERVICED AREAS

### 6.1.8 Sewershed No.13

Sewershed 13 is located south of the town line of Johnston and Smithfield. It includes areas east and west of Putnam Pike, north and south of Pine Hill Drive, and residents fronting on Anglewood Avenue. Sewer services the majority of the southeast section, along with several large areas within the northwest of the sewershed.

The topography of Sewershed 13 is steeply sloped north to south and west to east. The highest and lowest ground surface elevations in the sewershed are 320 feet and 107 feet, respectively. The majority of potential for development exists along the Anglewood Avenue corridor. Currently, approximately 142-acres of the overall 368-acre sewershed is currently served by sanitary sewers. The existing sewer includes Town-owned and NBC-owned 8-inch pipes that range in material make of PVC and asbestos cement, with one stretch of pressurized pipe from Foxtail Drive Pump Station to serve residents on Foxtail Drive. All of the sewers within this sewershed drain to the existing 18-inch primary branch of the JNI along the Woonasquatucket River at the Riverside Avenue connection.

The sewershed is comprised of mixed uses; include approximately 61 residential dwelling units and 18 commercial and/or industrial units. The build-out of vacant parcels within this sewershed identified the potential for an additional 44,000 square feet of commercial development in the area of Spa Street (B-2 Zone) projected within the 5 – 10 Year Planning Horizon. Constraints to future development include the presence of streams, RI DEM regulated wetlands, and bedrock/slope considerations. These existing constraints may limit the potential for additional residential development to 22 units (R-40 Zone) during the 5 – 10 Year Planning Horizon. Improvements to the current sewer infrastructure would include a small 8-inch pipe extension from the existing 8-inch PVC pipe in Putnam Pike to provide conveyance of sanitary flows to the residents further upstream off of the Pike and off of Anglewood Avenue, which accounts for roughly 30 percent of the land within the sewershed.

The proposed improvement includes an 8,600 linear foot increase of 8-inch gravity sewer as illustrated in Figure 6-8. Extensions to the existing sewer to accommodate the build-out of four vacant parcels (22 residential dwellings and 1 commercial) are projected to occur within the 5 – 10 Year Planning Horizon. Also as a result extending sewers within this sewershed, a total of 77

residential dwellings and 14 businesses (B-1/B-2) will be serviced within the Planning Horizon. Costs associated with these improvements are shown in Table 6-9 below.

<b>TABLE 6-9 SEWERSHED 13 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER</b>				
	<u>Quantity</u>	<u>Unit Price</u>	<u>Unit</u>	<u>Total</u>
<b>10-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	8,600	\$ 70.50	/LF	\$ 778,264.96
b. Force Main Installation	0	\$ -	/LF	\$ -
2.Manholes	43	\$ 2,500.00	/EACH	\$ 107,500.00
3.Rock Removal 5%	637	\$ 100.00	/CY	\$ 63,700.00
4.Pavement Restoration				
a. Town owned Road	3,358	\$ 100.00	/TON	\$ 335,800.00
b. State owned Road	1,118	\$ 100.00	/TON	\$ 111,805.56
5.Traffic Protection	172	\$ 960.00	/DAY	\$ 165,120.00
6.New Service Connection	119	\$ 4,000.00	/EACH	\$ 476,000.00
7.Pump Station Construction	0	\$ -	/LS	\$ -
8.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 2,038,190.52
9.Mobilization/Demobilization (10%)			\$	204,000.00
10.Utility Coordination (5%)			\$	102,000.00
11.Engineering/Design/Permitting/Construction Admin (10 %)			\$	204,000.00
12.Contingency (20%)			\$	510,000.00
			<b>SEWERSHED TOTAL</b>	<b>\$ 3,100,000.00</b>





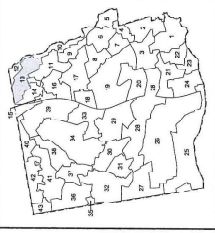
PARC CORPORATION  
 ENGINEERS - SCIENTISTS - PLANNERS  
 8 BLACKSTONE VALLEY PLACE  
 LINCOLN, RI 02865  
 401-334-4100



TOWN OF JOHNSTON FACILITIES PLAN  
 SEWER IMPROVEMENTS  
 PUTNAM PIKE, PINE HILL RD & ANGLEWOOD AVE

SCALE: 1" = 800'  
 FIGURE:

6-8



TOWN OF N. PROVIDENCE

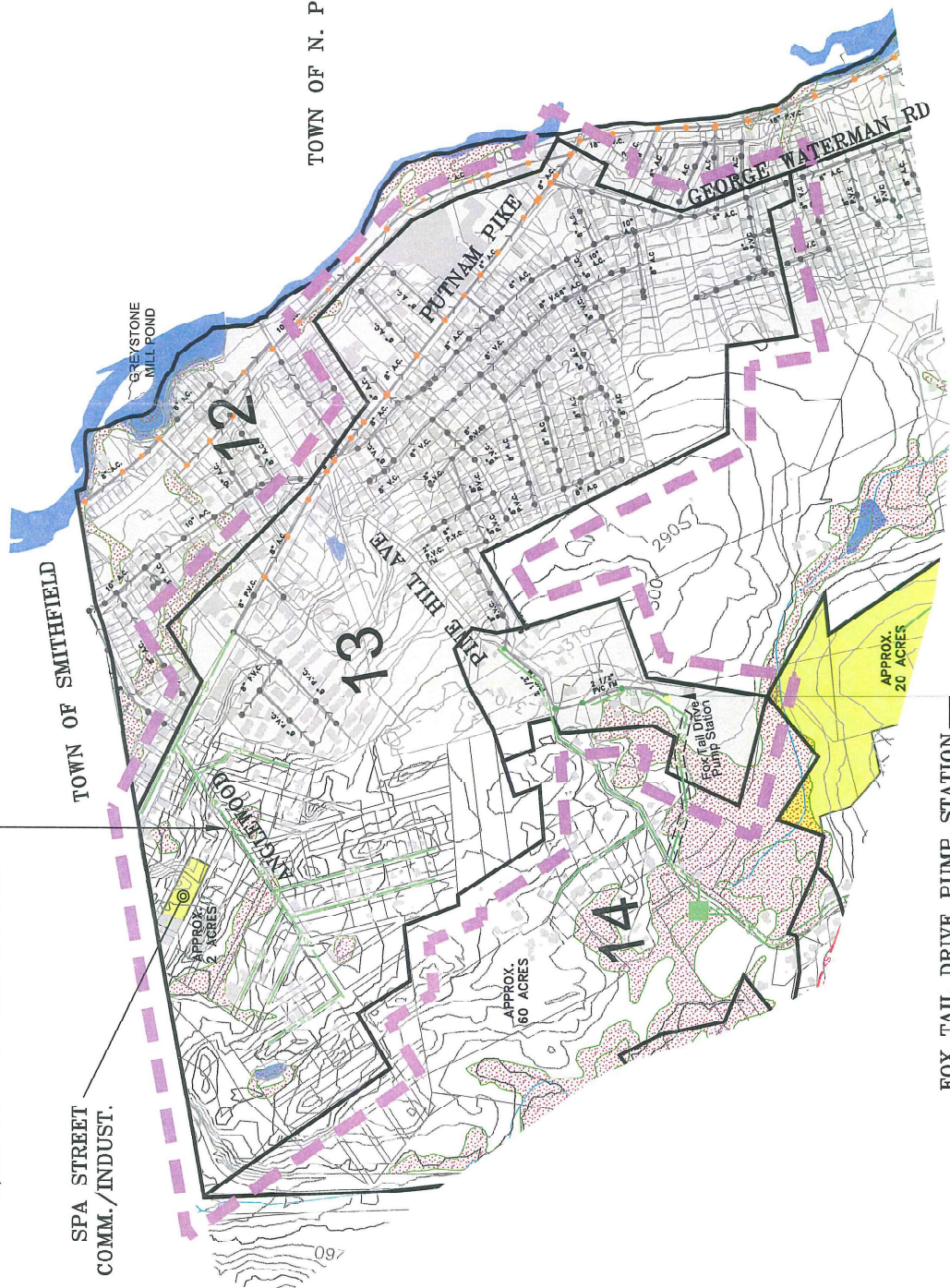
8,600 LF - 8" GRAVITY PIPE

SPA STREET  
 COMM./INDUST.

APPROX.  
 2 ACRES

APPROX.  
 60 ACRES

FOX TAIL DRIVE PUMP STATION  
 REMOVAL DISCUSSED AS PART OF  
 SEWERED 14 IMPROVEMENTS



LEGEND

- SEWERED LAYOUT DELINEATION
- 10-20 YR. FORCEMAIN SEWER PIPE
- 10-20 YR. GRAVITY SEWER PIPE
- 10-20 YR. LIFT STATION
- 5-10 YR. FORCEMAIN SEWER PIPE
- 5-10 YR. GRAVITY SEWER PIPE
- 5-10 YR. LIFT STATION
- 0-5 YR. FORCEMAIN SEWER PIPE
- 0-5 YR. GRAVITY SEWER PIPE
- 0-5 YR. LIFT STATION
- EXISTING SEWER PIPE
- EXISTING LIFT STATION
- EXISTING NBC MANHOLE
- EXISTING JOHNSTON MANHOLE
- 5-YR. HORIZON DEVELOPMENT
- G.I.S. DELINEATED WETLANDS
- EXISTING SEWER SERVICED AREAS

6.1.9 *Sewershed No.14*

Sewershed 14 is located in the northern region of Johnston east of Interstate 295. There is no sewer conveyance within the entirety of sewershed 14. The current sanitary treatment for the overall 157-acre sewershed includes on-site wastewater treatment systems.

The topography of Sewershed 14 is slightly sloped north to south. The highest and lowest ground surface elevations in the sewershed are 300 feet and 250 feet, respectively. The potential for development of vacant parcels exists primarily north of Pine Hill Road, within the R-40 Zone. Approximately one-third of the overall sewershed accounts for RIGIS delineated wetlands and streams. Constraints to development include the presence of streams, RI DEM regulated wetlands, and bedrock/slope considerations.

The sewershed is limited to strictly residential development (R-40). The build-out of vacant parcels within the sewershed identified the potential for an additional 8 units of residential development within the 5 – 10 Year Planning Horizon.

Improvements to the current sewer infrastructure would require the use of a pump station with a 2-½” force main and 8-inch gravity pipe installation. The proposed improvement includes the installation of 3,000 linear feet of 8-inch gravity sewer and 1,200 linear feet of force main as illustrated in Figure 6-9. The installation of the proposed sanitary conveyance system will accommodate the build-out of vacant parcels that are projected to occur within the 5 – 10 Year Planning horizon, in addition to approximately 25 existing residential structures. Costs associated with these improvements are shown in Table 6-10 below.

**TABLE 6-10  
SEWERSHED 14 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER**

	Quantity	Unit Price	Unit	Total
<b>10-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	3,000	\$ 53.35	/LF	\$ 220,055.56
b. Force Main Installation (2 1/2-inches)	1,200	\$ 43.01	/LF	\$ 51,854.22
2.Manholes	15	\$ 2,500.00	/EACH	\$ 37,500.00
3.Rock Removal (5%)	311	\$ 100.00	/CY	\$ 31,100.00
4.Pavement Restoration (town)	1,959	\$ 100.00	/TON	\$ 195,883.33
5.Traffic Protection	84	\$ 960.00	/DAY	\$ 80,640.00
6.New Service Connection	33	\$ 4,000.00	/EACH	\$ 132,000.00
7.Pump Station Construction (200k GPD)	1	\$ 333,000.00	/LS	\$ 333,000.00
8.Pump Station Telemetry	1	\$ 10,000.00	/LS	\$ 10,000.00
9.Legal Fees for Easement Development		\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 1,092,033.11
10.Mobilization/Demobilization (10%)				\$ 109,000.00
11.Utility Coordination (5%)				\$ 55,000.00
12.Engineering/Design/Permitting/Construction Admin (10 %)				\$ 109,000.00
13.Contingency (20%)				\$ 273,000.00
			<b>SEWERSHED TOTAL</b>	<b>\$ 1,600,000.00</b>





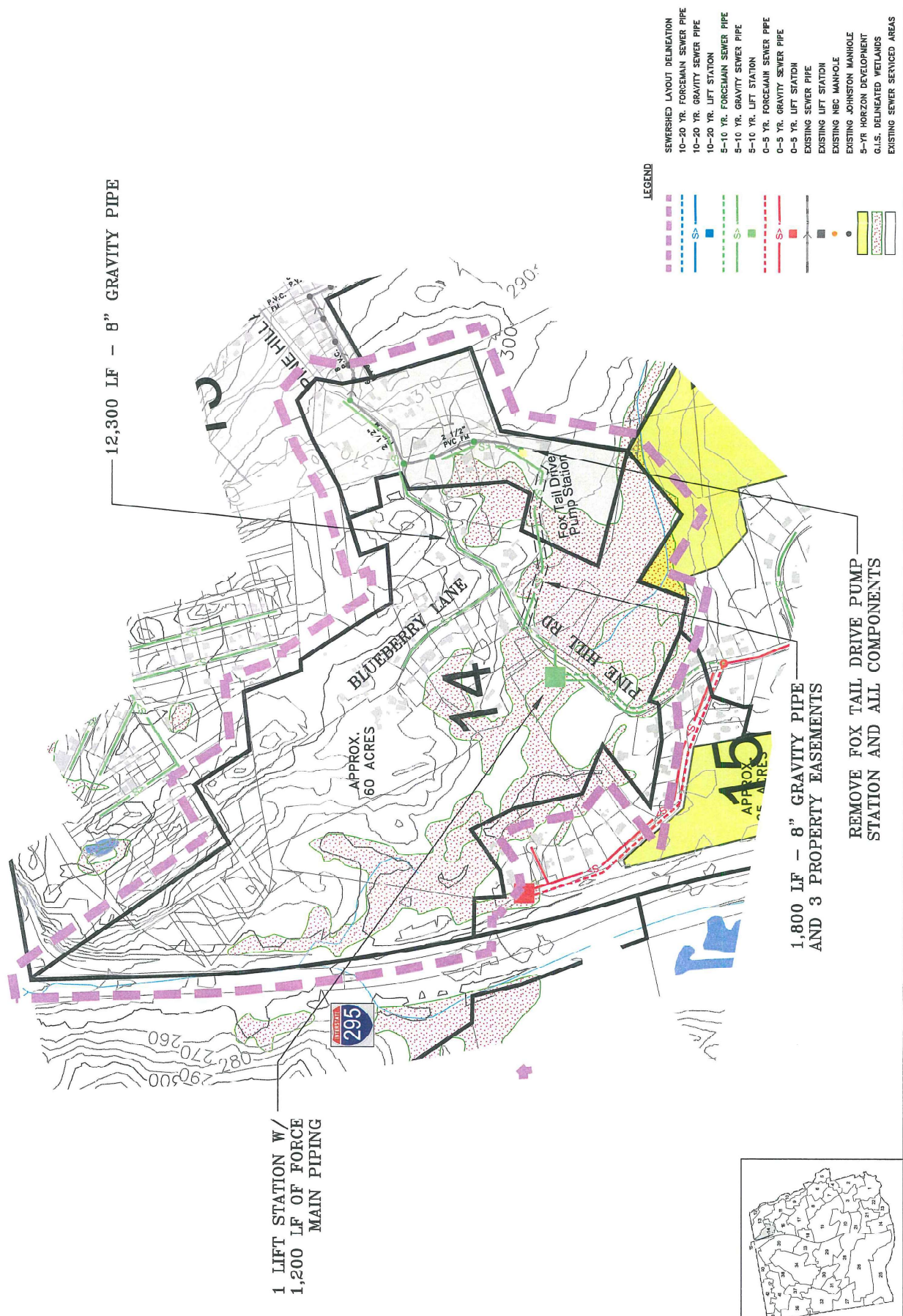
PARE CORPORATION  
 ENGINEERS - SCIENTISTS - PLANNERS  
 8 BLACKSTONE VALLEY PLACE  
 LINDSEY, RI 02885  
 401-334-4100



TOWN OF JOHNSTON FACILITIES PLAN  
 SEWER IMPROVEMENTS  
 PINE HILL AVE & BLUEBERRY LANE

SCALE: 1" = 600'  
 FIGURE:

6-9



**LEGEND**

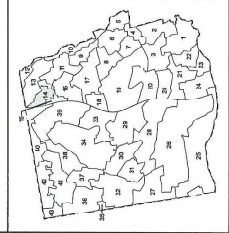
[Pink dashed line]	SEWERED LAYOUT DELINEATION
[Blue dashed line]	10-20 YR. FORCEMAIN SEWER PIPE
[Green dashed line]	10-20 YR. GRAVITY SEWER PIPE
[Red dashed line]	10-20 YR. LIFT STATION
[Blue solid line]	5-10 YR. FORCEMAIN SEWER PIPE
[Green solid line]	5-10 YR. GRAVITY SEWER PIPE
[Red solid line]	0-5 YR. LIFT STATION
[Blue solid line]	0-5 YR. FORCEMAIN SEWER PIPE
[Green solid line]	0-5 YR. GRAVITY SEWER PIPE
[Red solid line]	EXISTING SEWER PIPE
[Blue solid line]	EXISTING LIFT STATION
[Green solid line]	EXISTING NBC MANHOLE
[Red solid line]	EXISTING JOHNSTON MANHOLE
[Blue solid line]	5-YR. HORIZON DEVELOPMENT
[Green solid line]	G.I.S. DELINEATED WETLANDS
[Red solid line]	EXISTING SEWER SERVICED AREAS

1 LIFT STATION W/  
 1,200 LF OF FORCE  
 MAIN PIPING

12,300 LF - 8" GRAVITY PIPE

1,800 LF - 8" GRAVITY PIPE  
 AND 3 PROPERTY EASEMENTS

REMOVE FOX TAIL DRIVE PUMP  
 STATION AND ALL COMPONENTS



#### 6.1.10 Sewershed No.15

Sewershed 15 is located in the northern section of the town east of Interstate 295. It includes areas north and south of Killian Road and east and west of Pine Hill Road. There is no public sewer within sewershed 15. The current sanitary treatment for the overall 76-acre sewershed is on-site wastewater treatment systems.

The topography of sewershed 15 is minimally sloped east to west. The highest and lowest ground surface elevations in the sewershed are 270 feet and 250 feet, respectively. Approximately 11 percent of the overall sewershed accounts for RIGIS delineated wetlands and streams.

Existing developed areas within the sewershed are predominantly residential. The only remaining undeveloped area includes a pending development project identified by the Town as Killian Estates. This development project is proposed elderly housing (25 1-bedroom/25 2-bedroom units), projected within the 0 – 5 Year Planning Horizon of the Facility Plan.

Improvements to the current sewer infrastructure would require the use of a pump station with a forecasted 3-inch force main and 8-inch gravity pipe installation. The proposed improvement includes the installation of 2,700 linear feet of 8-inch gravity sewer and 2,100 linear feet of 3-inch force main as illustrated in Figure 6-10. Also, services to the existing development (17 residences, R-40 Zone) will be provided within the 0 – 5 Year Planning Horizon. Therefore, a total of 67 residential dwellings will receive sanitary sewer service as a result of this sewershed improvement. These sewershed improvements will be dependant upon the installation of 2,300 linear feet of gravity pipe installation within sewershed 16 and an overall secondary branch upgrade of the JNI within Greenville Avenue from the primary connection to Salina Avenue. In addition, an extension of this upgrade from Salina Avenue to Pine Hill Road will need to occur. Costs associated with these improvements are shown in Table 6-11.

**TABLE 6-11  
SEWERSHED 15 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER**

	Quantity	Unit Price	Unit	Total
<b>5-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	2,000	\$ 53.35	/LF	\$ 146,703.70
b. Force Main Installation (3-inches)	2,100	\$ 45.30	/LF	\$ 95,553.89
2.Manholes	17	\$ 2,500.00	/EACH	\$ 42,500.00
3.Rock Removal (5%)	304	\$ 100.00	/CY	\$ 30,400.00
4.Pavement Restoration (town)	979	\$ 100.00	/TON	\$ 97,941.67
5.Traffic Protection	82	\$ 960.00	/DAY	\$ 78,720.00
6.New Service Connection	67	\$ 4,000.00	/EACH	\$ 268,000.00
7.Pump Station Construction (200k GPD)	1	\$ 333,000.00	/LS	\$ 333,000.00
8.Pump Station Telemetry	1	\$ 10,000.00	/LS	\$ 10,000.00
9.Legal Fees for Easement Development	1	\$ 10,000.00	/PARCEL	\$ 10,000.00
			Sub-Total	\$ 1,112,819.26
10.Mobilization/Demobilization (10%)				\$ 111,000.00
11.Utility Coordination (5%)				\$ 56,000.00
12.Engineering/Design/Permitting/Construction Admin (10 %)				\$ 111,000.00
13.Contingency (20%)				\$ 278,000.00
			<b>SEWERSHED TOTAL</b>	<b>\$ 1,700,000.00</b>





PARE CORPORATION  
 ENGINEERS - SCIENTISTS - PLANNERS  
 8 BACKSTONE VALLEY PLACE  
 LINCOLN, RI 02865  
 401-334-4100

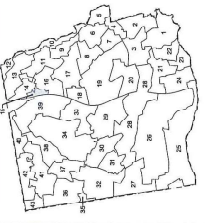


TOWN OF JOHNSTON FACILITIES PLAN  
 SEWER IMPROVEMENTS  
 SEWERSHED NO. 15  
 PINE HILL RD & KILLIAN RD

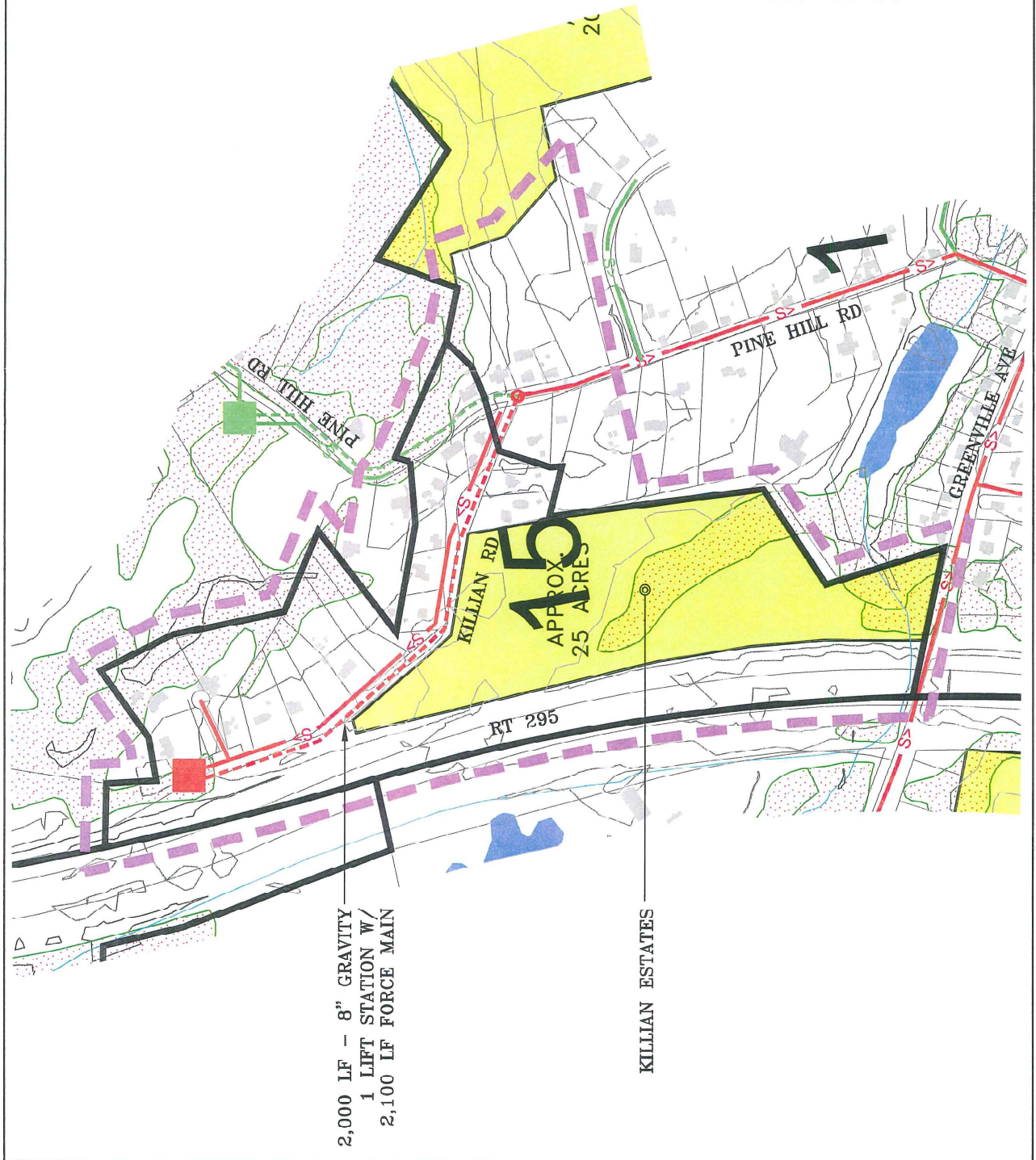
SCALE: 1" = 400'

FIGURE:

6-10



- LEGEND**
- SEWERSHED LAYOUT DELINEATION
  - 10-20 YR. FORCEMAIN SEWER PIPE
  - 10-20 YR. GRAVITY SEWER PIPE
  - 10-20 YR. LIFT STATION
  - 5-10 YR. FORCEMAIN SEWER PIPE
  - 5-10 YR. GRAVITY SEWER PIPE
  - 5-10 YR. LIFT STATION
  - 0-5 YR. FORCEMAIN SEWER PIPE
  - 0-5 YR. GRAVITY SEWER PIPE
  - 0-5 YR. LIFT STATION
  - EXISTING SEWER PIPE
  - EXISTING LIFT STATION
  - EXISTING NBC MANHOLE
  - EXISTING JOHNSTON MANHOLE
  - 5-YR HORIZON DEVELOPMENT
  - 61.S. DELINEATED WETLANDS
  - EXISTING SEWER SERVICED AREAS



2,000 LF - 8" GRAVITY  
 1 LIFT STATION W/  
 2,100 LF FORCE MAIN

KILLIAN ESTATES

### 6.1.11 Sewershed No.16

Sewershed 16 is located north and south of Greenville Avenue from Atwood Avenue to Interstate 295. There is no public sewer within sewershed 16. The current wastewater management strategy for the overall 268-acre sewershed is on-site wastewater treatment systems.

The topography of sewershed 16 is moderately sloped particularly through the center of the sewershed down to Greenville Avenue and traveling west to east. The highest and lowest ground surface elevations in the sewershed are 292 feet and 163 feet, respectively. Approximately 18 percent of the overall sewershed are RIGIS delineated wetlands. Constraints to future development within the sewershed include the presence of streams, RI DEM regulated wetlands and bedrock/slope considerations.

Existing developed areas within the sewershed are primarily residential. Pending development projects identified by the Town include Winsor Woods I & II (21 single-family residential units) located in the northeast quadrant of the sewershed and projected to occur within the 5 – 10 Year Planning Horizon. The build-out of vacant parcels within this sewershed identified the potential for an additional 21 residential units (R-40 Zone) east of Carpenter Drive and a parcel west of Winsor Woods within the 5 – 10 Year Planning Horizon.

Improvements to the current sewer infrastructure would include 2,700 linear feet extension of the Greenville Avenue secondary branch from Carpenter Avenue to Interstate 295. In addition, approximately 2,300 linear feet of 8-inch pipe will need to extend up Pine Hill Avenue to convey sanitary flows from the neighboring sewershed 16 to Greenville Avenue. Existing residents fronting north and south on Greenville Avenue and east and west of Pine Hill Road will receive service. Future sewer service to 83 existing residences on Janet Drive, Surrey Road, Belknap Farm Drive, Stagecoach Road and Carriage Way and vacant land projected to be built out east of Carriage Way and west of Carpenter Drive (22 dwellings) are projected during the 5 – 10 Year Planning Horizon as illustrated in Figure 6-11. Costs associated with these improvements are shown in Table 6-12 below.

<b>TABLE 6-12 SEWERSHED 16 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER</b>				
	Quantity	Unit Price	Unit	Total
<b>5-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	3,400	\$ 53.35	/LF	\$ 249,396.30
b. Gravity Line Installation (12-inches)	2,700	\$ 64.87	/LF	\$ 229,145.00
c. Force Main Installation	0	-	/LF	\$ -
2.Manholes	31	\$ 2,500.00	/EACH	\$ 77,500.00
3.Rock Removal (5%)	452	\$ 100.00	/CY	\$ 45,200.00
4.Pavement Restoration				
a. Town owned Road	1,586	\$ 100.00	/TON	\$ 158,572.22
b. State owned Road	2,156	\$ 100.00	/TON	\$ 215,625.00
5.Traffic Protection	122	\$ 960.00	/DAY	\$ 117,120.00
6.New Service Connection	0	\$ 4,000.00	/EACH	\$ -
7.Pump Station Construction	0	-	/LS	\$ -
8.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 1,092,558.52
9.Mobilization/Demobilization (10%)			\$	109,000.00
10.Utility Coordination (5%)			\$	55,000.00
11.Engineering/Design/Permitting/Construction Admin (10 %)			\$	109,000.00
12.Contingency (20%)			\$	273,000.00
			5-yr Total	\$ 1,600,000.00
<b>10-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	5,500	\$ 53.35	/LF	\$ 403,435.19
c. Force Main Installation (1 1/2-inch)	900	\$ 41.20	/LF	\$ 37,261.67
2.Manholes	28	\$ 2,500.00	/EACH	\$ 70,005.60
3.Rock Removal (5%)	474	\$ 100.00	/CY	\$ 47,400.00
4.Pavement Restoration (town)	2,985	\$ 100.00	/TON	\$ 298,488.89
5.Traffic Protection	128	\$ 960.00	/DAY	\$ 122,880.00
6.New Service Connection by Gravity	84	\$ 4,000.00	/EACH	\$ 336,000.00
7.New Service Connection with Grinder Pump	20	\$ 9,000.00	/EACH	\$ 180,000.00
8.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 1,495,471.34
9.Mobilization/Demobilization (10%)			\$	150,000.00
10.Utility Coordination (5%)			\$	74,800.00
11.Engineering/Design/Permitting/Construction Admin (10 %)			\$	150,000.00
12.Contingency (20%)			\$	374,000.00
			10-yr Total	\$ 2,200,000.00
			<b>SEWERSHED TOTAL</b>	<b>\$ 3,800,000.00</b>



2,700 LF - 12" GREENVILLE AVE INTERCEPTOR EXTENSION

WINSOR WOODS I AND II

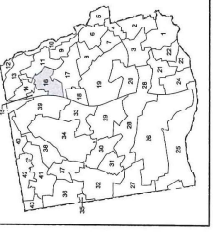
2,300 LF - 8" GRAVITY PIPE

5,500 LF - 8" GRAVITY PIPE

1,100 LF - 8" GRAVITY PIPE

900 LF - 1 1/2" FORCE MAIN

BUILDOUT POTENTIAL IS 5-10 YR HORIZON (21 UNITS)



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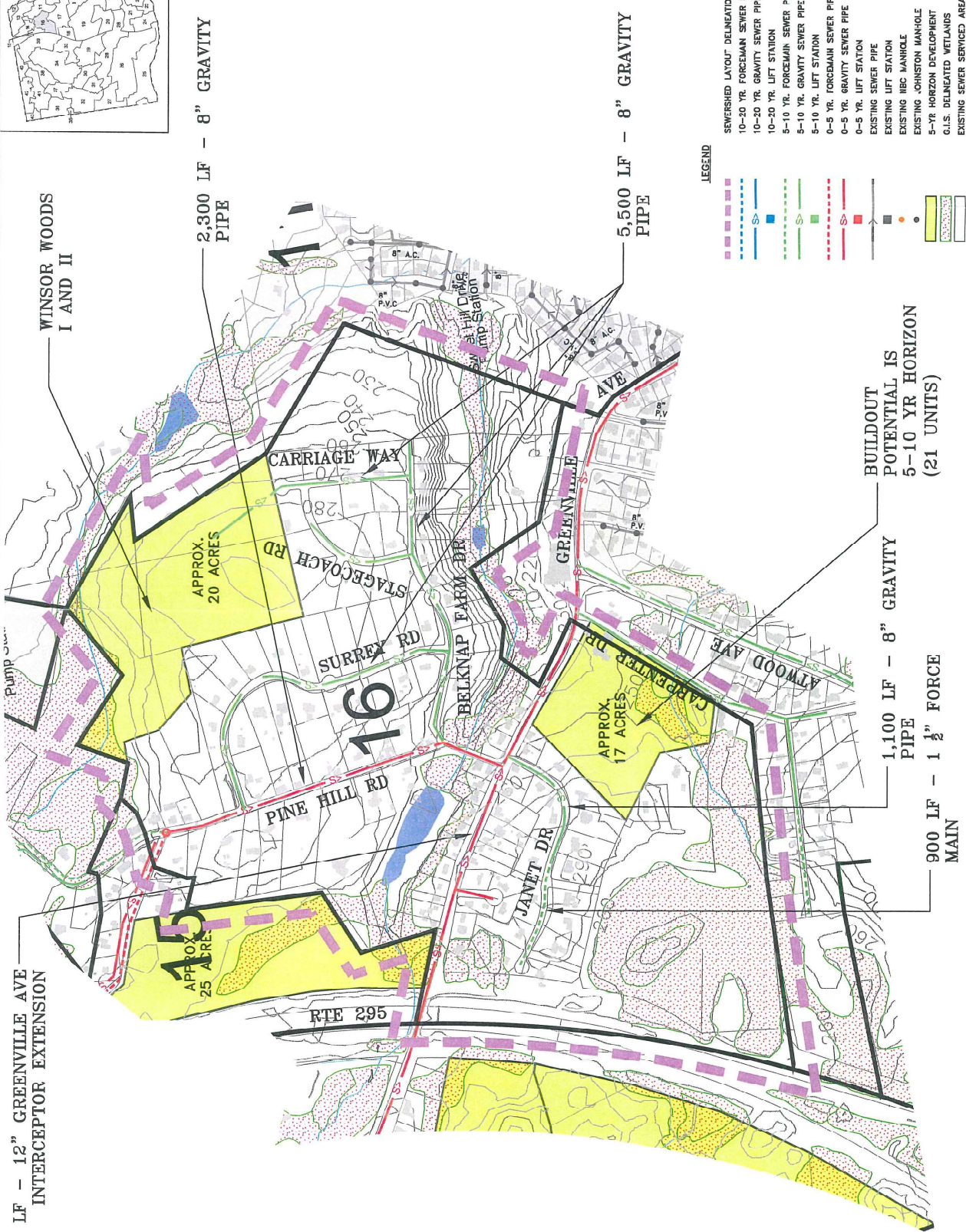


TOWN OF JOHNSTON FACILITIES PLAN  
SEWER IMPROVEMENTS  
GREENVILLE AVE & INTERSTATE 295

SCALE: 1" = 600'  
FIGURE:

6-11

- LEGEND**
- SEWERED LAYOUT DELINEATION
  - 10-20 YR. FORCEMAIN SEWER PIPE
  - 10-20 YR. GRAVITY SEWER PIPE
  - 10-20 YR. LIFT STATION
  - 5-10 YR. FORCEMAIN SEWER PIPE
  - 5-10 YR. GRAVITY SEWER PIPE
  - 5-10 YR. LIFT STATION
  - 0-5 YR. FORCEMAIN SEWER PIPE
  - 0-5 YR. GRAVITY SEWER PIPE
  - 0-5 YR. LIFT STATION
  - EXISTING SEWER PIPE
  - EXISTING LIFT STATION
  - EXISTING INC MANHOLE
  - EXISTING JOHNSTON MANHOLE
  - 5-YR. HORIZON DEVELOPMENT
  - G.I.S. DELINEATED WETLANDS
  - EXISTING SEWER SERVICED AREAS



#### 6.1.12 Sewershed No.17

Sewershed 17 is predominantly residentially zoned and includes areas north and south of Greenville Avenue from George Waterman Road to Atwood Avenue and Carpenter Drive, and also includes the Salina Avenue neighborhood. Almost half (195 acres) of the approximate 414-acre sewershed is currently served by sanitary sewers.

The topography of sewershed 17 is steeply sloped west to east and along Greenville Avenue to George Waterman Avenue. The highest and lowest ground surface elevations in the sewershed are 322 feet and 122 feet, respectively. Approximately 21 percent of the overall sewershed are RIGIS delineated wetlands.

Existing sewers within this sewershed are limited to Greenville Avenue where the secondary branch begins at Salina Avenue and flows eastward to the primary interceptor near Newman Avenue. Development north of Salina Avenue is served by 8- and 10-inch PVC and vitrified clay pipes and one segment of asbestos cement, which ties into the Greenville Avenue interceptor.

Constraints to future development within the sewershed include extensive RI DEM regulated streams and wetlands, as well as bedrock/slope considerations which will limit maximum build-out of the identified vacant areas. Pending development projects identified by the Town include the Salina development project (67 single-family residences – Capital Budget Program) within the 5 – 10 Year Planning Horizon. The build-out of vacant parcels within sewershed 17 identified the potential for an additional 83 residential units (R-20/R-40 Zone) projected to occur within the 5 – 10 Year Planning Horizon.

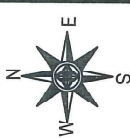
Improvements for the future projected development of this sewershed will include a 3,100 linear foot extension of the new upgraded 12-inch of Greenville Avenue to Carpenter Road. Also proposed are two separate 8-inch gravity pipe extensions from the Greenville Avenue secondary branch totaling 6,000 linear feet onto Carpenter Road and Atwood Avenue. Additionally, individual grinder pumps and approximately 750 linear feet of 1-½ inch force main pipe will be required to service Buena Vista Street.

The Greenville Avenue Secondary Branch Interceptor extension (i.e. approximately 3,100 linear feet) improvements (future sewers to 18 residences/2 commercial structures) is planned to occur

within the 0 – 5 Year Planning Horizon. The remaining 6,000 linear feet of the 8-inch extensions on Carpenter Road, Buena Vista Street and Atwood Avenue (42 residences/2 commercial structures) and force main installations are projected to occur during the 5 – 10 Year Planning Horizon as illustrated in Figure 6-12. Costs associated with these improvements are shown in Table 6-13 below.

<b>TABLE 6-13</b>				
<b>SEWERSHED 17 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER</b>				
	Quantity	Unit Price	Unit	Total
<b>5-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (12-inches)	3,100	\$ 64.87	/LF	\$ 263,092.41
b. Force Main Installation	0	-	/LF	\$ -
2.Manholes	16	\$ 2,500.00	/EACH	\$ 40,000.00
3.Rock Removal (5%)	230	\$ 100.00	/CY	\$ 23,000.00
4.Pavement Restoration (state)	2,476	\$ 100.00	/TON	\$ 247,569.44
5.Traffic Protection	62	\$ 960.00	/DAY	\$ 59,520.00
6.New Service Connection by Gravity	20	\$ 4,000.00	/EACH	\$ 80,000.00
7.New Service Connection with Grinder Pump	0	\$ 9,000.00	/EACH	\$ -
8.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 713,181.85
9.Mobilization/Demobilization (10%)			\$	71,000.00
10.Utility Coordination (5%)			\$	36,000.00
11.Engineering/Design/Permitting/Construction Admin (10 %)			\$	71,000.00
12.Contingency (20%)			\$	178,000.00
			5-yr TOTAL	\$ 1,070,000.00
<b>10-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	7,500	\$ 53.35	/LF	\$ 550,138.89
b. Grinder Force Main Installation (1 1/2-inches)	2,250	\$ 41.20	/LF	\$ 93,154.17
2.Manholes	38	\$ 2,500.00	/EACH	\$ 95,007.60
3.Rock Removal (5%)	722	\$ 100.00	/CY	\$ 72,200.00
4.Pavement Restoration				
a. Town owned Road	2,775	\$ 100.00	/TON	\$ 277,501.39
b. State owned Road	3,035	\$ 100.00	/TON	\$ 303,472.22
5.Traffic Protection	195	\$ 960.00	/DAY	\$ 187,200.00
6.New Service Connection by Gravity	174	\$ 4,000.00	/EACH	\$ 696,000.00
7.New Service Connection with Grinder Pump	20	\$ 9,000.00	/EACH	\$ 180,000.00
8.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 2,454,674.27
9.Mobilization/Demobilization (10%)			\$	245,000.00
10.Utility Coordination (5%)			\$	123,000.00
11.Engineering/Design/Permitting/Construction Admin (10 %)			\$	245,000.00
12Contingency (20%)			\$	614,000.00
			10-yr TOTAL	\$ 3,700,000.00
			<b>SEWERSHED TOTAL</b>	<b>\$ 4,800,000.00</b>

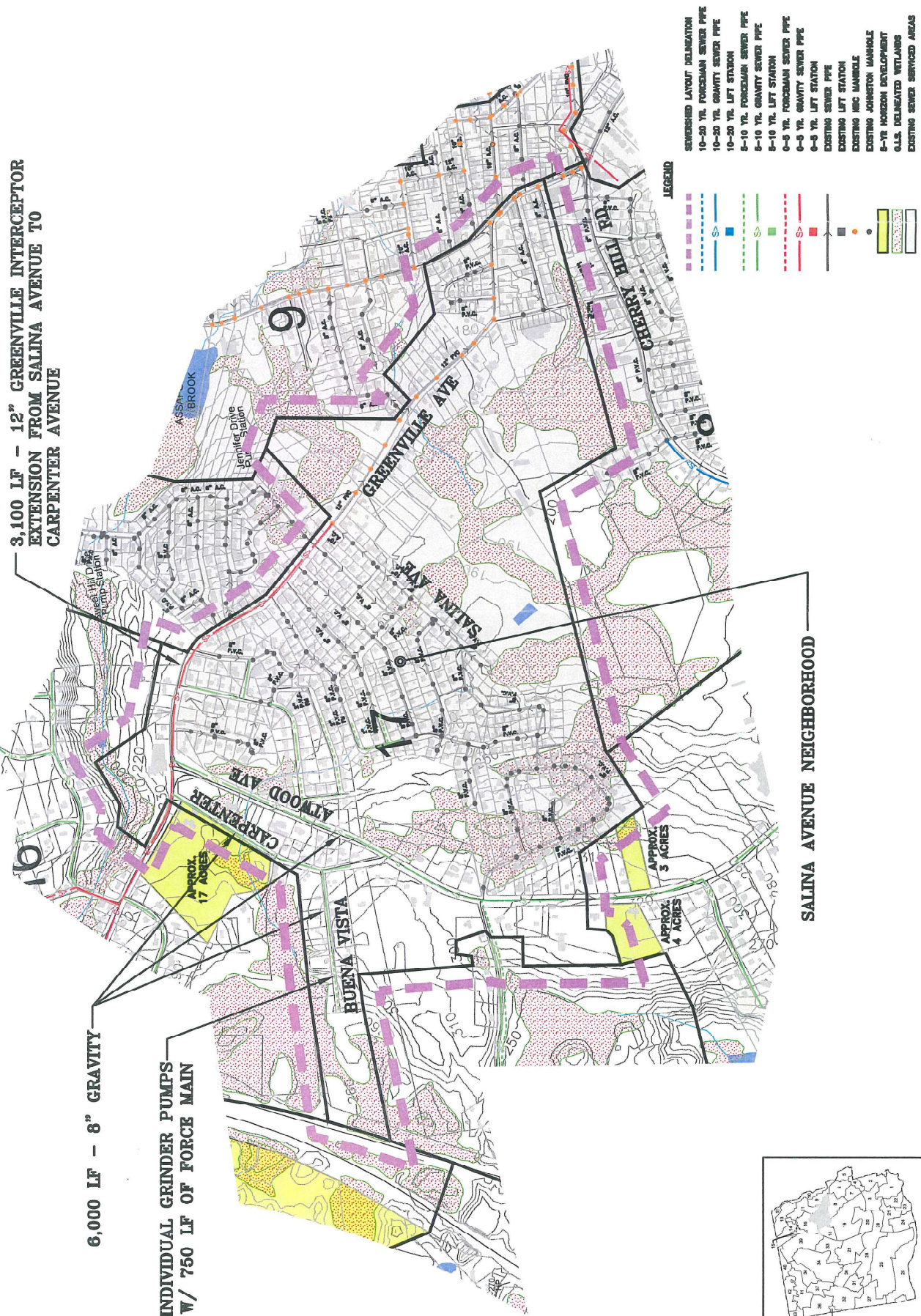




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 401-334-4100  
**PARE**

TOWN OF JOHNSTON FACILITIES PLAN  
 SEWER IMPROVEMENTS  
 SEWERED NO. 17  
 GREENVILLE AVE, CARPENTER DR & ATWOOD AVE

SCALE: 1" = 80'  
 FIGURE:  
**6-12**



**LEGEND**

[Dashed purple line]	SEWERED LAYOUT DELINEATION
[Blue line]	10-20 YR. FORCEMAIN SEWER PIPE
[Blue line]	10-20 YR. GRAVITY SEWER PIPE
[Blue square]	10-20 YR. LIFT STATION
[Green dashed line]	5-10 YR. FORCEMAIN SEWER PIPE
[Green dashed line]	5-10 YR. GRAVITY SEWER PIPE
[Green dashed line]	5-10 YR. LIFT STATION
[Red dashed line]	0-5 YR. FORCEMAIN SEWER PIPE
[Red dashed line]	0-5 YR. GRAVITY SEWER PIPE
[Red dashed line]	0-5 YR. LIFT STATION
[Black line]	EXISTING SEWER PIPE
[Black line]	EXISTING LIFT STATION
[Black line]	EXISTING HIC MANHOLE
[Black line]	EXISTING JOINTMAN MANHOLE
[Black line]	0-10 HORIZON DEVELOPMENT
[Black line]	0-10 DELINEATED WETLANDS
[Black line]	EXISTING SEWER SERVED AREAS

3,100 LF - 12" GREENVILLE INTERCEPTOR  
 EXTENSION FROM SALINA AVENUE TO  
 CARPENTER AVENUE

6,000 LF - 8" GRAVITY

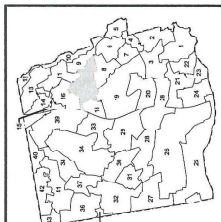
INDIVIDUAL GRINDER PUMPS  
 W/ 750 LF OF FORCE MAIN

APPROX. 17 ACRES

APPROX. 4 ACRES

APPROX. 5 ACRES

SALINA AVENUE NEIGHBORHOOD



### 6.1.13 Sewershed No.18

Sewershed 18 is located east of Interstate 295 and includes residentially zoned areas north and south of Heywood Lane. Currently, sanitary sewer service is unavailable in the 144-acre sewershed.

The topography of sewershed 18 is moderately to steeply sloped east to west. The highest and lowest ground surface elevations in the sewershed are 370 feet and 170 feet, respectively. Some wetlands are present on opposing sides of Heywood Lane due to the impoundment of the roadway. The RI DEM-regulated wetlands present account for approximately 26 percent of the sewershed. Constraints to future development within the sewershed include RI DEM-regulated streams and wetlands, as well as bedrock/slope constraints.

The build-out of vacant parcels in sewershed 18 identified the potential for an additional 29 residential units (R-40 Zone) projected to occur within the 5 – 10 Year Planning Horizon.

Improvements to the current sewer infrastructure would include an installation of 2,100 linear feet of 8-inch gravity pipe, 1 pump station and 2,200 linear feet of force main. The discharge point of the pump station will be located on RI Route 5 Atwood Avenue.

Sewershed 18 is dependent upon the sewer installation of sewershed 17 to convey sanitary flows to the Greenville Avenue Secondary Interceptor. One alternative to avoid the dependency of sewershed 17 proposed improvements would be to utilize the existing 8-inch sewer within Oak Hill Drive, on the opposing side of Atwood Avenue at the intersection, to convey flows through Salina Avenue to the Greenville Avenue interceptor. All improvements within this sewershed (including future sewers to 7 existing residences) are projected to occur during the 5 – 10 Year Planning Horizon as illustrated in Figure 6-13. Costs associated with these improvements are shown in Table 6-14 below.

<b>TABLE 6-14</b>				
<b>SEWERSHED 18 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER</b>				
	Quantity	Unit Price	Unit	Total
<b>10-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	2,100	\$ 53.35	/LF	\$ 154,038.89
b. Force Main Installation (2-inches)	2,200	\$ 42.03	/LF	\$ 92,910.07
2.Manholes	11	\$ 2,500.00	/EACH	\$ 27,500.00
3.Rock Removal (5%)	319	\$ 100.00	/CY	\$ 31,900.00
4.Pavement Restoration (town)	1,026	\$ 100.00	/TON	\$ 102,605.56
5.Traffic Protection	86	\$ 960.00	/DAY	\$ 82,560.00
6.New Service Connection	36	\$ 4,000.00	/EACH	\$ 144,000.00
7.Pump Station Construction (200k GPD)	1	\$ 333,000.00	/LS	\$ 333,000.00
8.Pump Station Telemetry	1	\$ 10,000.00	/LS	\$ 10,000.00
9.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 978,514.52
10.Mobilization/Demobilization (10%)			\$	98,000.00
11.Utility Coordination (5%)			\$	49,000.00
12.Engineering/Design/Permitting/Construction Admin (10 %)			\$	98,000.00
13.Contingency (20%)			\$	245,000.00
			<b>SEWERSHED TOTAL</b>	<b>\$ 1,500,000.00</b>





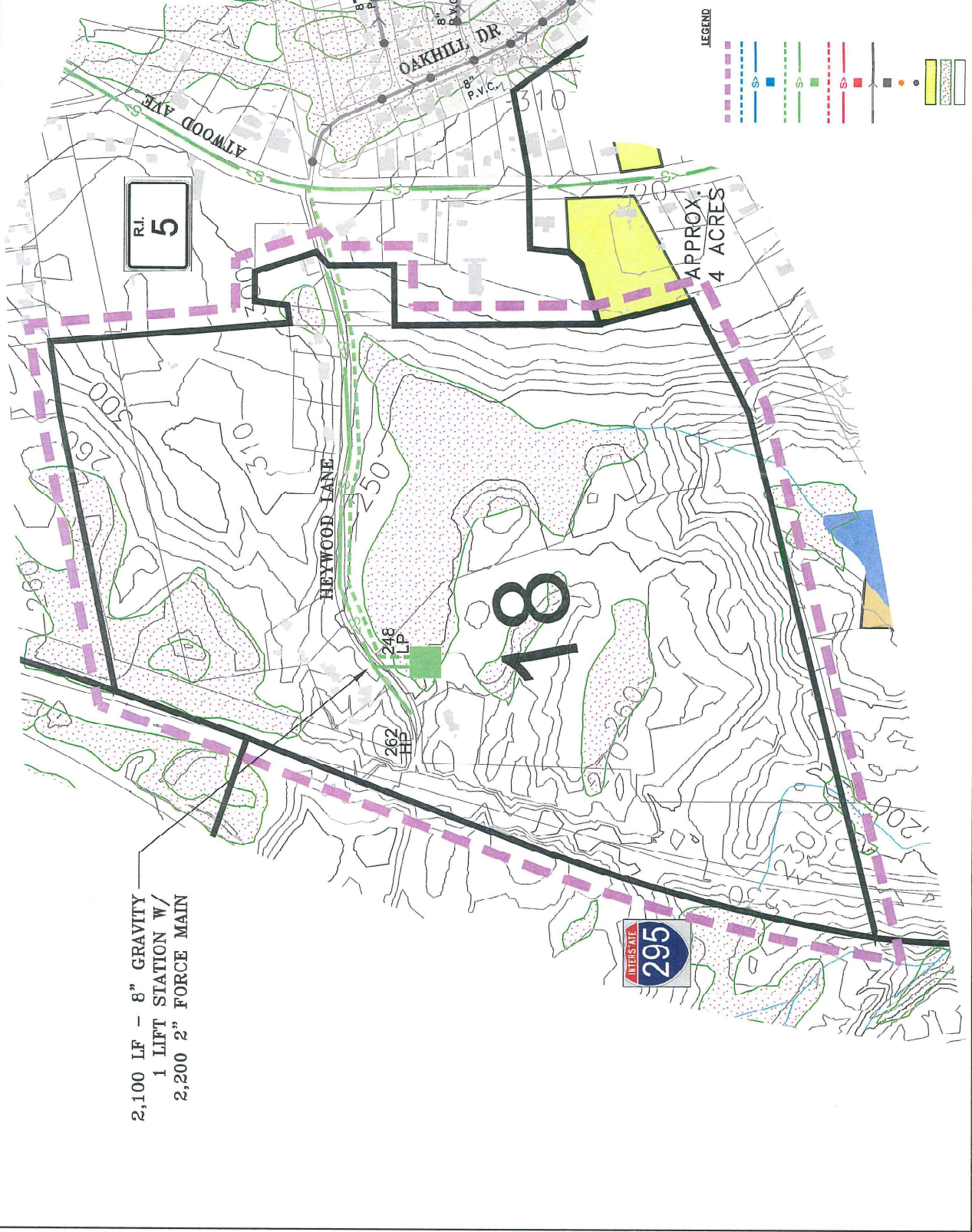
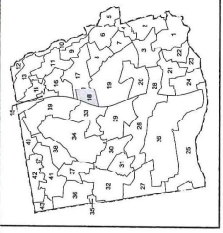
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 LITTLETON, CO 80120  
 401-394-1100

**PARE**

TOWN OF JOHNSTON FACILITIES PLAN  
 SEWER IMPROVEMENTS  
 SEWERSHED NO. 18  
 HEYWOOD LANE & ATWOOD AVE

SCALE: 1" = 400'  
 FIGURE:

6-13



- LEGEND**
- SEWERSHED LAYOUT DELINEATION
  - 10-20 YR. FORCEMAIN SEWER PIPE
  - 10-20 YR. GRAVITY SEWER PIPE
  - 10-20 YR. LIFT STATION
  - 5-10 YR. FORCEMAIN SEWER PIPE
  - 5-10 YR. GRAVITY SEWER PIPE
  - 5-10 YR. LIFT STATION
  - 0-5 YR. FORCEMAIN SEWER PIPE
  - 0-5 YR. GRAVITY SEWER PIPE
  - 0-5 YR. LIFT STATION
  - EXISTING SEWER PIPE
  - EXISTING LIFT STATION
  - EXISTING NBC MANHOLE
  - EXISTING JOHNSTON MANHOLE
  - 5-YR. HORIZON DEVELOPMENT
  - G.L.S. DELINEATED WETLANDS
  - EXISTING SEWER SERVICED AREAS

2,100 LF - 8" GRAVITY  
 1 LIFT STATION W/  
 2,200 2" FORCE MAIN

#### 6.1.14 Sewershed No.19

Sewershed 19 is located at the intersection of Hartford Avenue and Atwood Avenue. This is a mixed-use (residential, commercial, industrial) sewershed that includes parts of Cherry Hill Estates, residential dwellings on and adjacent to Memorial Drive, the Town of Johnston Town Hall and public schools, commercial businesses fronting on Atwood Avenue, commercial and industrial areas just east of Interstate 295 and south of Hartford Avenue, apartment buildings just north side of RI Route 6, the residential development east of the former BJ's Wholesale Club, and the mixed-uses fronting Hartford Avenue within the delineated area. Currently, 60 percent of the 879-acre sewershed is served by sanitary sewers.

The topography of sewershed 19 is sloped from the outer delineated limits on Hartford Avenue to the Atwood Avenue interior corridor, and north to south on Atwood Avenue. The highest and lowest ground surface elevations in the sewershed are 325 feet and 145 feet, respectively. Approximately 14 percent (124.6 acres) of the overall sewershed are RIGIS delineated wetlands. Constraints to future development within sewershed 19 include the presence of RI DEM regulated streams and wetlands, and bedrock/slope considerations. Also, two areas of RI DEM protected open space exist within the sewershed: Pascone Island (26.6 acres held in a Conservation Easement); and, Governor King Memorial Park (1.8 acres held in fee-title).

Existing sewers within the sewershed consist of four separate areas of Town-owned 8-inch PVC, asbestos cement, asbestos clay, and cast iron pipes that tie into Hartford Avenue and/or Atwood Avenue branches of the JSI. Currently, there are three functional pump stations servicing low lying areas of the sewershed, including: Candice Court, Federal Way and Industrial Lane pump stations. There is also the use of individual grinder pumps and force main in low-lying areas within the residential development east of the former BJ's Wholesale club. The potential development upstream of this sewershed off Hartford Avenue will increase the demand for sewer conveyance, requiring a 15-inch pipe extension from Memorial Drive heading west along Hartford Avenue.

A portion of the secondary branch of NBC's JSI runs through sewershed 19. An 8-inch sewer runs along Hartford Avenue between Borden Avenue and Atwood Avenue. The evaluation of the existing system identified a number of pipe sections along Hartford Avenue that are at or above

capacity during dry and wet weather conditions. In addition, future flow from the anticipated build-out of sewershed 19 would exacerbate the capacity issues along Hartford Avenue. As a result, much of the sewer pipe along Hartford Avenue will need to be upgraded over the next 20 years. Those upgrades are depicted in Figure 6-14. The upgrades include approximately 2,700 feet of 12-inch pipe between manhole H130023 and H130019. Costs associated with these improvements are shown in Table 6-15.

<b>TABLE 6-15 SEWERSHED 19 - OPINION OF PROBABLE CONSTRUCTION COSTS - NBC INTERCEPTOR UPGRADES</b>				
	Quantity	Unit Price	Unit	Total
1.Sewer Main Installation				
a. Gravity Line Installation (12-inches)	2,700	\$ 64.87	/LF	\$ 229,145.00
b. Force Main Installation	0	-	/LF	\$ -
2.Manholes	21	\$ 2,500.00	/EACH	\$ 52,500.00
3.Rock Removal 0% (None)	0	\$ 100.00	/CY	\$ -
4.Pavement Restoration (State)	2,156	\$ 100.00	/TON	\$ 215,625.00
5.Traffic Protection	54	\$ 960.00	/DAY	\$ 51,840.00
6.Temporary Bypass Pumping	11	\$ 6,500.00	/WEEK	\$ 71,500.00
7.New Service Connection	27	\$ 4,000.00	/EACH	\$ 108,000.00
8.Pump Station Upgrade	0	\$ 200,000.00	/EACH	\$ -
9.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 728,610.00
10.Mobilization/Demobilization (10%)			\$	73,000.00
11.Utility Coordination (5%)			\$	36,000.00
12.Engineering/Design/Permitting/Construction Admin (10 %)			\$	73,000.00
13.Contingency (20%)			\$	182,000.00
			TOTAL	\$ 1,100,000.00

Future sewer projects identified by the Town include the remaining 90 percent (164 single-family units) of the residential development of Cherry Hill Road (Capital Budget Program) projected to occur within the 0 – 5 Year Planning Horizon. Additional pending development projects identified by the Town proposed in the 0 – 5 Year Planning Horizon include: B. Maceroni & Sons Funeral Home (1 commercial parlor); The Centre at Cherry Hill (mixed-use 55 residential units, Walgreens, and office space); Hampton Place (34 condominium units); Rustic View (28 multi-family condominiums); and, the U.S. Immigration Center (20,000 SF office). The build-out of



vacant parcels within the sewershed identified the potential for an additional 70 residential units (R-7/R-40 Zone) within the 5 – 10 Year Planning Horizon.

Per the Capital Budget Program, 164 existing residential dwellings on Cherry Hill Road in the vicinity of Cavalcade Blvd., Woodcrest Dr. and Famingletti Ave. are in demand for sewers. A resultant of 9,000 linear feet of 8-inch sewer installation will be required to convey sanitary flows from Cherry Hill to the existing Candice Court pump station, which ultimately discharges to the Atwood Avenue interceptor. While this project was recently voted down by residents in the Cherry Hill neighborhood, it is possible that this project may be constructed at some point in the future as demand for municipal sewers increases. Therefore, this project has been included in the 10-20 year timeframe.

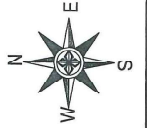
The Hartford Avenue secondary branch interceptor extension will require an extension of 3,100 linear feet of 15-inch gravity pipe. The extension of this secondary branch will provide direct connection from fronting businesses on Hartford Avenue and also future connections anticipated to occur in the neighboring sewershed 29. Also, currently Industrial Lane and Federal Way pump stations within the industrial park south of Hartford Avenue, discharge to sewer within Hartford Avenue. One proposed improvement to this layout is the elimination of the Federal Way pump station with a simple connection to sewers within sewershed 20 as indicated in Figure 6-14. The improvement would amount to 1,200 linear feet of 8-inch gravity pipe with a dedicated utility easement. This extension and the cross-country connection of gravity sewer pipe are anticipated to occur within the 0 – 5 Year Planning Horizon of the Town's Facility Plan. The Atwood Avenue and Hilton Drive sewer extensions to approximately 40 residential units (R-7/R-20/R-40 Zones) and 5 commercial condominium buildings (Planned Business Zone) will require a total of 2,900 linear feet of 8-inch sewer pipe. These improvements are projected to occur during the 5 – 10 Year Planning Horizon. Costs associated with these improvements are shown in Table 6-16 below.

After the 20-year planning horizon, there are three pipes sections along Atwood Avenue north of Hartford Avenue that marginally exceed their capacity during wet weather flow (from G140001 to G130009). Given that these pipes appear to be adequate during dry weather conditions and only marginally exceed their capacity during wet weather conditions, it does not appear as though upgrading these pipes is warranted. However, please note that minor surcharging may occur in these manholes during wet weather conditions. This surcharging should be monitored and in the

event that it is found to be excessive, NBC can consider upgrading these pipe sections at that time.

<b>TABLE 6-16</b>				
<b>SEWERSHED 19 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER</b>				
	Quantity	Unit Price	Unit	Total
<b>5-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	10,200	\$ 53.35	/LF	\$ 748,188.89
b. Gravity Line Installation (15-inches)	3,100	\$ 78.96	/LF	\$ 306,763.66
2.Manholes	67	\$ 2,500.00	/EACH	\$ 167,500.00
3.Rock Removal (5%)	985	\$ 100.00	/CY	\$ 98,500.00
4.Pavement Restoration				
a. Town owned Road	4,757	\$ 100.00	/TON	\$ 475,716.67
b. State owned Road	2,476	\$ 100.00	/TON	\$ 247,569.44
5.Traffic Protection	266	\$ 960.00	/DAY	\$ 255,360.00
6.New Service Connection	285	\$ 4,000.00	/EACH	\$ 1,140,000.00
7.Pump Station Construction	0	-	/LS	\$ -
8.Legal Fees for Easement Development	1	\$ 10,000.00	/PARCEL	\$ 10,000.00
			Sub-Total \$	3,449,598.66
9.Mobilization/Demobilization (10%)			\$	345,000.00
10.Utility Coordination (5%)			\$	172,000.00
11.Engineering/Design/Permitting/Construction Admin (10 %)			\$	345,000.00
12.Contingency (20%)			\$	862,000.00
			5-yr TOTAL \$	5,200,000.00
<b>10-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	2,900	\$ 53.35	/LF	\$ 212,720.37
2.Manholes	15	\$ 2,500.00	/EACH	\$ 37,500.00
3.Rock Removal (5%)	215	\$ 100.00	/CY	\$ 21,500.00
4.Pavement Restoration				
a. Town owned Road	606	\$ 100.00	/TON	\$ 60,630.56
b. State owned Road	1,278	\$ 100.00	/TON	\$ 127,777.78
5.Traffic Protection	58	\$ 960.00	/DAY	\$ 55,680.00
6.New Service Connection	115	\$ 4,000.00	/EACH	\$ 460,000.00
7.Pump Station Construction	0	-	/LS	\$ -
8.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total \$	975,808.70
9.Mobilization/Demobilization (10%)			\$	98,000.00
10.Utility Coordination (5%)			\$	49,000.00
11.Engineering/Design/Permitting/Construction Admin (10 %)			\$	98,000.00
12.Contingency (20%)			\$	244,000.00
			10-yr TOTAL \$	1,500,000.00
			<b>SEWERSHED TOTAL \$</b>	<b>6,700,000.00</b>



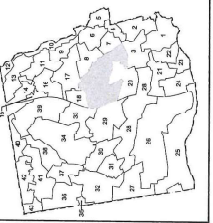


TOWN OF JOHNSTON FACILITIES PLAN  
SEWER IMPROVEMENTS  
HARTFORD AVE, ATWOOD AVE & CHERRY HILL

SCALE: 1" = 800'  
FIGURE:

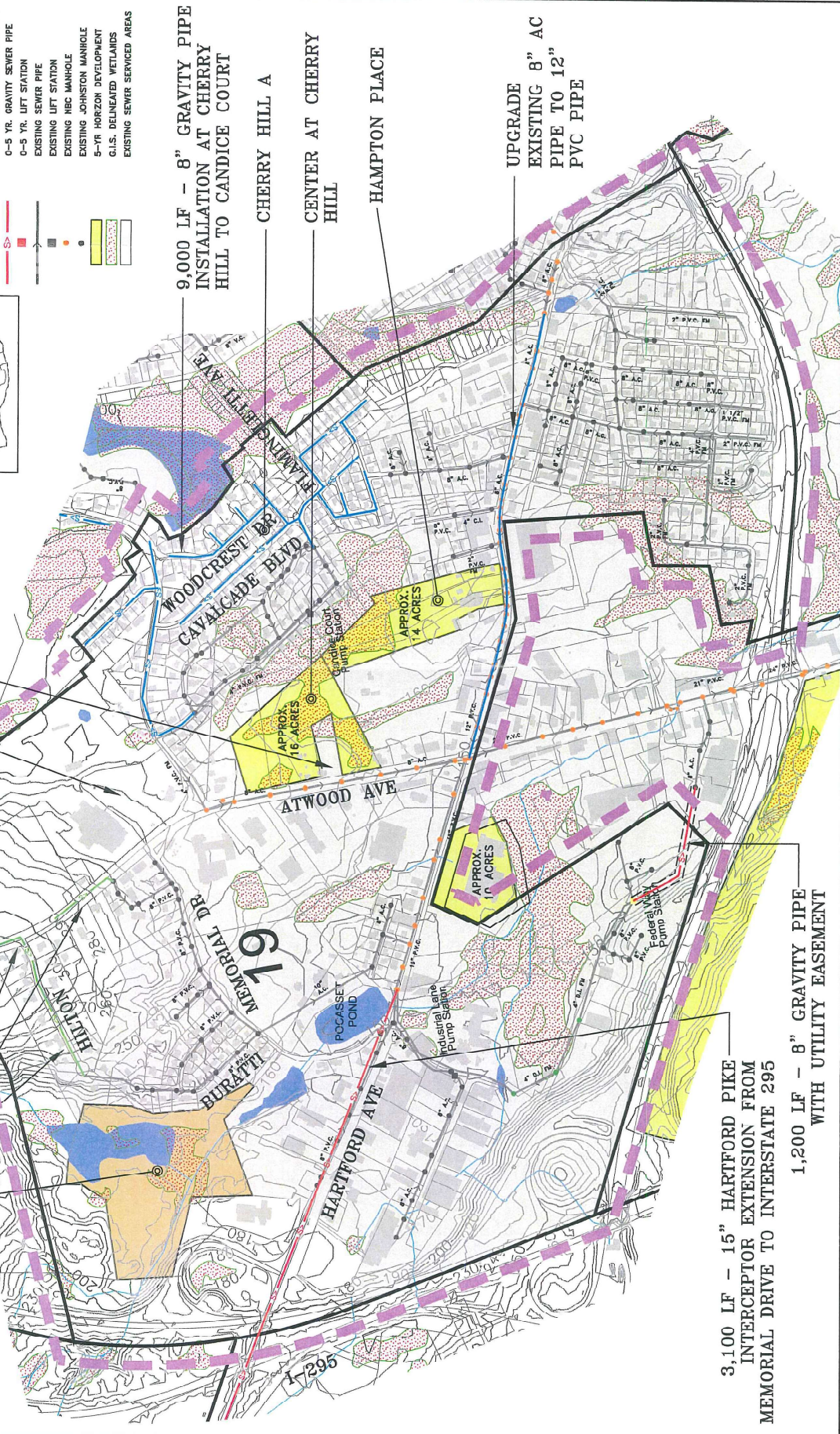
6-14

- LEGEND**
- SEWERED LAYOUT DELINEATION
  - 10-20 YR. FORCEMAIN SEWER PIPE
  - 10-20 YR. GRAVITY SEWER PIPE
  - 10-20 YR. LIFT STATION
  - 5-10 YR. FORCEMAIN SEWER PIPE
  - 5-10 YR. GRAVITY SEWER PIPE
  - 5-10 YR. LIFT STATION
  - 0-5 YR. FORCEMAIN SEWER PIPE
  - 0-5 YR. GRAVITY SEWER PIPE
  - 0-5 YR. LIFT STATION
  - EXISTING SEWER PIPE
  - EXISTING LIFT STATION
  - EXISTING NBC MANHOLE
  - EXISTING JOHNSTON MANHOLE
  - 8 BLACKSTONE VALLEY PLACE
  - FRANK C. CORCORAN
  - LIQUILA, RI 02885
  - 401.354-4100
  - 9-1/2" DELINEATED WETLANDS
  - G.I.S. DELINEATED WETLANDS
  - EXISTING SEWER SERVICED AREAS



GOVERNOR KING  
MEMORIAL PARK  
US IMMIGRATION  
CENTER

RUSTIC VIEW  
MACERONI & SONS  
FUNERAL HOME  
2,900 LF - 8" GRAVITY  
PASCOE ISLAND  
CONSERVATION AREA



9,000 LF - 8" GRAVITY PIPE  
INSTALLATION AT CHERRY  
HILL TO CANDICE COURT

CHERRY HILL A  
CENTER AT CHERRY  
HILL  
HAMPTON PLACE

UPGRADE  
EXISTING 8" AC  
PIPE TO 12"  
PVC PIPE

3,100 LF - 15" HARTFORD PIKE  
INTERCEPTOR EXTENSION FROM  
MEMORIAL DRIVE TO INTERSTATE 295  
1,200 LF - 8" GRAVITY PIPE  
WITH UTILITY EASEMENT

1-295

#### 6.1.15 Sewershed No.20

Sewershed 20 is located at the Hartford Avenue/Atwood Avenue intersection and continues just beyond the RI Route 6 / Atwood Avenue junction. The sewershed is zoned mixed-use, with existing residential, commercial, and industrial developments. Sewershed 20 consists of 343 acres, of which 188 acres (100% of the current development) is served by sanitary sewers. An additional 108 acres (of a 205-acre parcel) of vacant land is pending development and will require the use of sewer conveyance to the public system. The remainder of the sewershed has features that inhibit further development.

The topography of sewershed 20 is sloped west to east and north to south. Low-lying areas exist on the east side of the sewershed where roughly 8 percent of the sewershed are RIGIS delineated wetlands. The highest and lowest ground surface elevations in the sewershed are 365 feet and 110 feet, respectively.

Pending development projects identified by the Town include Stuart's Plaza (Hotel/Restaurant/Retail) and Stone Hill Marketplace (121,354 SF BJ's Wholesale Club, Webster Bank/Aspen Dental 3,452 SF/8-10 chairs, 6,978 SF Sleepy's, and 2+/- additional buildings). The pending developments have been incorporated into the 0 – 5 Year Planning Horizon of the Facility Plan.

All of the current development within this sewershed is served by public sewers, with exception of the pending developments, which are anticipated to be served with private extensions. Sanitary flows generated by both the pending developments and the existing commercial units have been evaluated. Pipe capacities of the existing NBC-owned interceptor along Atwood Avenue have been evaluated relative to the estimated sewer flows generated by the pending developments.

There are number of pipe sections within this sewershed along Atwood Avenue that may exceed their capacity after the 20-year time horizon. These pipe sections are 21 and 24 inches in diameter. While these pipe sections may exceed their capacity, the surcharging that may occur in the manholes may not be significant enough to warrant upgrading this line. If surcharging does become a significant issue, correcting the slopes in individual pipe sections may address this

issue. It is recommended that these pipe sections be examined more carefully to evaluate if surcharging will be a significant issue.

There are no capital improvements proposed within this sewershed; however, an illustration of sewershed 20 is provided in Figure 6-15 and costs associated with betterment fees for service connections within this sewershed are shown in Table 6-17.

<b>TABLE 6-17 SEWERSHED 20 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER</b>				
	Quantity	Unit Price	Unit	Total
<b>5-year Horizon</b>				
1.Sewer Main Installation	0	\$ -	/LF	\$ -
2.Manholes	0	\$ 2,500.00	/EACH	\$ -
3.Rock Removal (5%)	0	\$ 100.00	/CY	\$ -
4.Pavement Restoration (town)	0	\$ 100.00	/TON	\$ -
5.Traffic Protection	20	\$ 960.00	/DAY	\$ 19,200.00
6.New Service Connection	10	\$ 4,000.00	/EACH	\$ 40,000.00
7.Pump Station Construction	0	\$ -	/LS	\$ -
8.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 59,200.00
8.Mobilization/Demobilization (10%)			\$	6,000.00
9.Utility Coordination (5%)			\$	3,000.00
10.Engineering/Design/Permitting/Construction Admin (10 %)			\$	6,000.00
11.Contingency (20%)			\$	15,000.00
			<b>SEWERSHED TOTAL</b>	<b>\$ 90,000.00</b>





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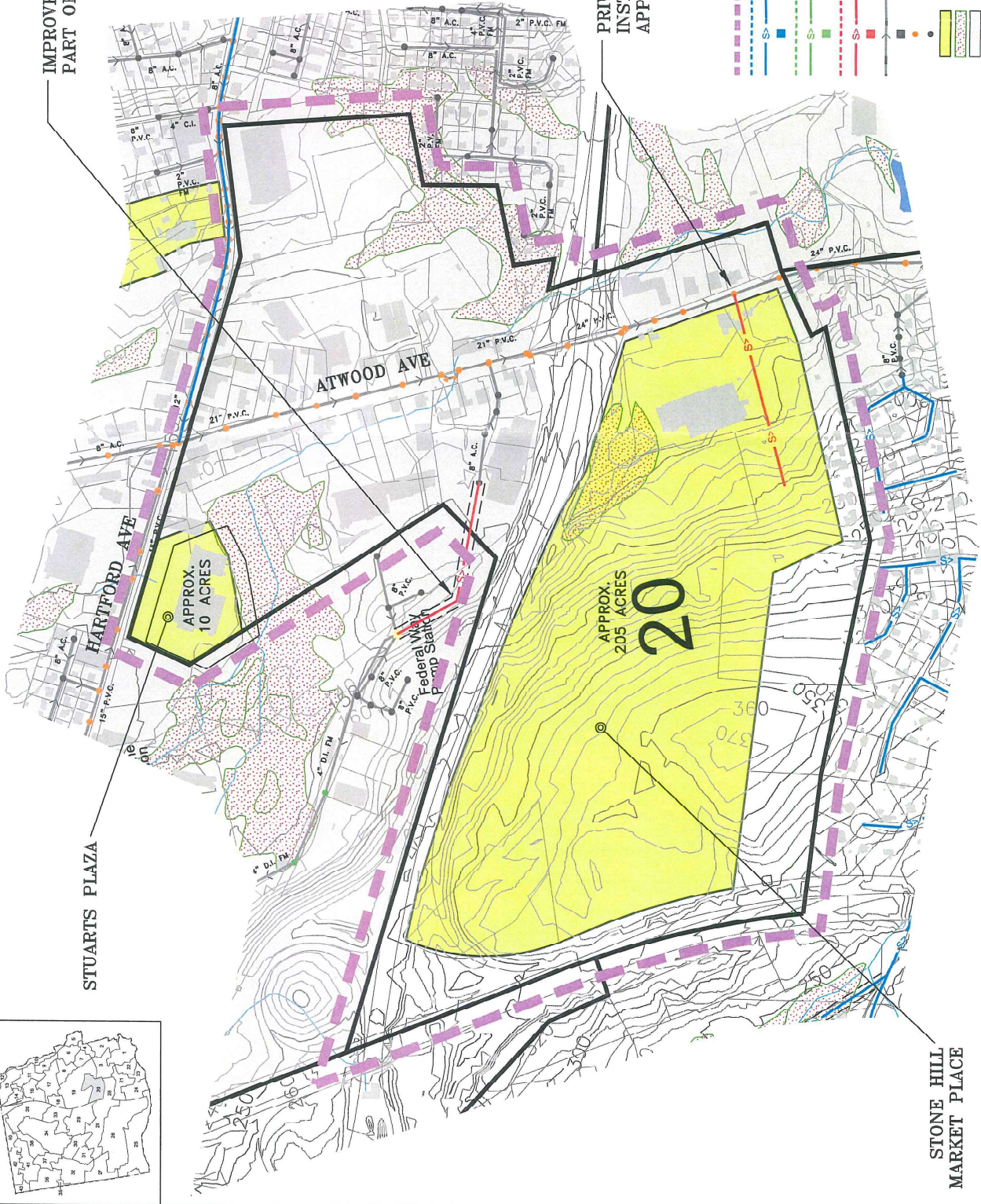
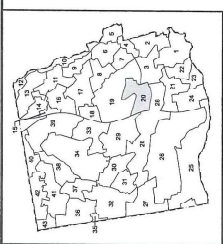
TOWN OF JOHNSTON FACILITIES PLAN  
SEWER IMPROVEMENTS  
SEWER SHED NO. 20  
CENTRAL AVE, ATWOOD AVE & RT. 6

SCALE: 1" = 600'  
FIGURE:

6-15

IMPROVEMENTS MADE AS  
PART OF SEWERSHED 19

PRIVATE SEWER  
INSTALLATION PER  
APPROVED DESIGN PLANS



LEGEND

- SEWERSHED LAYOUT DELINEATION
- 10-20 YR. FORCEMAIN SEWER PIPE
- 10-20 YR. GRAVITY SEWER PIPE
- 10-20 YR. LIFT STATION
- 5-10 YR. FORCEMAIN SEWER PIPE
- 5-10 YR. GRAVITY SEWER PIPE
- 5-10 YR. LIFT STATION
- 0-5 YR. FORCEMAIN SEWER PIPE
- 0-5 YR. GRAVITY SEWER PIPE
- 0-5 YR. LIFT STATION
- EXISTING SEWER PIPE
- EXISTING LIFT STATION
- EXISTING HCB MANHOLE
- EXISTING JOHNSTON MANHOLE
- 5-YR. HORIZON DEVELOPMENT
- 6-YR. DELINEATED WETLANDS
- EXISTING SEWER SERVICED AREAS

STUARTS PLAZA

APPROX.  
10 ACRES

ATWOOD AVE

HARTFORD AVE

APPROX.  
205 ACRES  
20

Federal Way  
Pump Station

STONE HILL  
MARKET PLACE

#### 6.1.16 Sewershed No.21

Sewershed 21 is located on the southeast side of the town at the Scituate Avenue/Simmons ville Avenue intersection, south of Central Avenue. This sewershed is mixed-use and includes mostly residential development with some commercial structures fronting on Atwood Avenue. Residential uses span along both sides of Atwood Avenue and include associative roadways of Scituate Avenue, roughly 50 percent of Simmons ville Avenue and Rotary Drive.

The topography of Sewershed 21 is sloped west to east and north to south. Low-lying RIGIS delineated wetlands areas are sporadic throughout the sewershed and account for roughly 5 percent of the overall sewershed. The highest and lowest ground surface elevations in the sewershed are 348 feet and 105 feet, respectively. Constraints to future development within the sewershed include the presence of streams, RI DEM regulated wetlands, and bedrock/slope considerations.

Currently, 98-acres of the overall 317-acre sewershed is currently served with sanitary sewers. Also, a sixteen-lot subdivision and two apartment building cluster developments are sewered west of Atwood Avenue. Pending development projects identified by the Town include Rockcrest Highlands (10 single-family residences) incorporated into the 0 – 5 Year Planning Horizon. The build-out of vacant parcels identified the potential for an additional 55 residential units in the R-10 Zone and 45 residential units in the R-20 Zone, within the 5 – 10 Year Planning Horizon.

A portion of the main branch of NBC's JSI runs through sewershed 21. A 27-inch interceptor runs along Atwood Avenue between Central Avenue and Plainfield Street, a portion of which is in sewershed 21, and the remaining portion is in the adjacent sewershed 22. The evaluation of the existing system identified a number of pipe sections along Atwood Avenue that are at or above capacity during dry and wet weather conditions. In addition, future flow from the anticipated build-out of sewershed 21, along with the upstream tributary sewersheds, would exacerbate the capacity issues along Atwood Avenue. As a result, much of the interceptor along Atwood Avenue will need to be upgraded over the next 20 years. The upgrades that would need to be completed along the portion of Atwood Avenue in sewershed 21 are depicted in Figure 6-16. The upgrades include approximately 1,400 feet of 36-inch pipe between manhole H100021 and H110020. Costs associated with these improvements are shown in Table 6-18.

<b>TABLE 6-18</b>				
<b>SEWERSHED 21 - OPINION OF PROBABLE CONSTRUCTION COSTS - NBC INTERCEPTOR UPGRADES</b>				
	Quantity	Unit Price	Unit	Total
1.Sewer Main Installation				
a. Gravity Line Installation (36-inches)	1,400	\$ 170.57	/LF	\$ 266,795.93
b. Force Main Installation	0	-	/LF	\$ -
2.Manholes	15	\$ 7,000.00	/EACH	\$ 105,000.00
3.Rock Removal 0% (None)	0	\$ 100.00	/CY	\$ -
4.Pavement Restoration (State)	1,118	\$ 100.00	/TON	\$ 111,805.56
5.Traffic Protection	28	\$ 960.00	/DAY	\$ 26,880.00
6.Temporary Bypass Pumping	6	\$ 6,500.00	/WEEK	\$ 39,000.00
7.New Service Connection	13	\$ 4,000.00	/EACH	\$ 52,000.00
8.Pump Station Upgrade	0	\$ 200,000.00	/EACH	\$ -
9.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 601,481.48
10.Mobilization/Demobilization (10%)			\$	60,000.00
11.Utility Coordination (5%)			\$	30,000.00
12.Engineering/Design/Permitting/Construction Admin (10 %)			\$	60,000.00
13.Contingency (20%)			\$	150,000.00
			<b>TOTAL</b>	<b>\$ 900,000.00</b>

Proposed improvements to the sewershed consist of the installation of 8-inch gravity PVC pipes to the existing residents. In order to accomplish this, the installation would require a total of 9,500 linear feet of pipe. All of these improvements are proposed to be within the Town’s right-of-way with the exception of one area of 8 residential dwelling clustered just south of Bainbridge Apartments. To sewer these houses would require the installation of pipe at the end of Fillmore Avenue to the existing sewer on Belmont Avenue. According to available information, this would require a utility easement on private property, which has been factored into the cost of this sewershed build out.

An alternative to the utility easement would be to install an individual grinder pump at the homeowner’s expense in lieu of paying legal fees for utility easement. However, this would require the installation of 600 linear feet of pressurized pipe to be installed within the public right-of-way.

Future sewers to existing development (140 residences and 3 commercial structures) are projected to occur within the 5 – 10 Year Planning Horizon of the Facility Plan, and are indicated on the illustration in Figure 6-16. Costs associated with these improvements are shown in Table 6-19 below.

<b>TABLE 6-19 SEWERSHED 21 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER</b>				
	Quantity	Unit Price	Unit	Total
<b>5-year Horizon</b>				
1.Sewer Main Installation	0	\$ - /LF	\$	-
2.Manholes	0	\$ 2,500.00/EACH	\$	-
3.Rock Removal (5%)	0	\$ 100.00/CY	\$	-
4.Pavement Restoration (town)	0	\$ 100.00/TON	\$	-
5.Traffic Protection	20	\$ 960.00/DAY	\$	19,200.00
6.New Service Connection	10	\$ 4,000.00/EACH	\$	40,000.00
7.Pump Station Construction	0	\$ - /LS	\$	-
8.Legal Fees for Easement Development	1	\$ 10,000.00/PARCEL	\$	10,000.00
			Sub-Total	\$ 69,200.00
9.Mobilization/Demobilization (10%)			\$	7,000.00
10.Utility Coordination (5%)			\$	3,000.00
11.Engineering/Design/Permitting/Construction Admin (10 %)			\$	7,000.00
12.Contingency (20%)			\$	17,000.00
			5-year TOTAL	\$ 103,000.00
<b>10-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	9,500	\$ 53.35/LF	\$	696,842.59
2.Manholes	48	\$ 2,500.00/EACH	\$	120,000.00
3.Rock Removal (5%)	704	\$ 100.00/CY	\$	70,400.00
4.Pavement Restoration (town)	4,431	\$ 85.00/TON	\$	376,609.03
5.Traffic Protection	190	\$ 960.00/DAY	\$	182,400.00
6.New Service Connection	243	\$ 4,000.00/EACH	\$	972,000.00
7.Pump Station Construction	0	\$ - /LS	\$	-
8.Legal Fees for Easement Development	1	\$ 10,000.00/PARCEL	\$	10,000.00
			Sub-Total	\$ 2,428,251.62
9.Mobilization/Demobilization (10%)			\$	243,000.00
10.Utility Coordination (5%)			\$	121,000.00
11.Engineering/Design/Permitting/Construction Admin (10 %)			\$	243,000.00
12.Contingency (20%)			\$	607,000.00
			10-year TOTAL	\$ 3,600,000.00
			<b>SEWERSHED TOTAL</b>	<b>\$ 3,800,000.00</b>





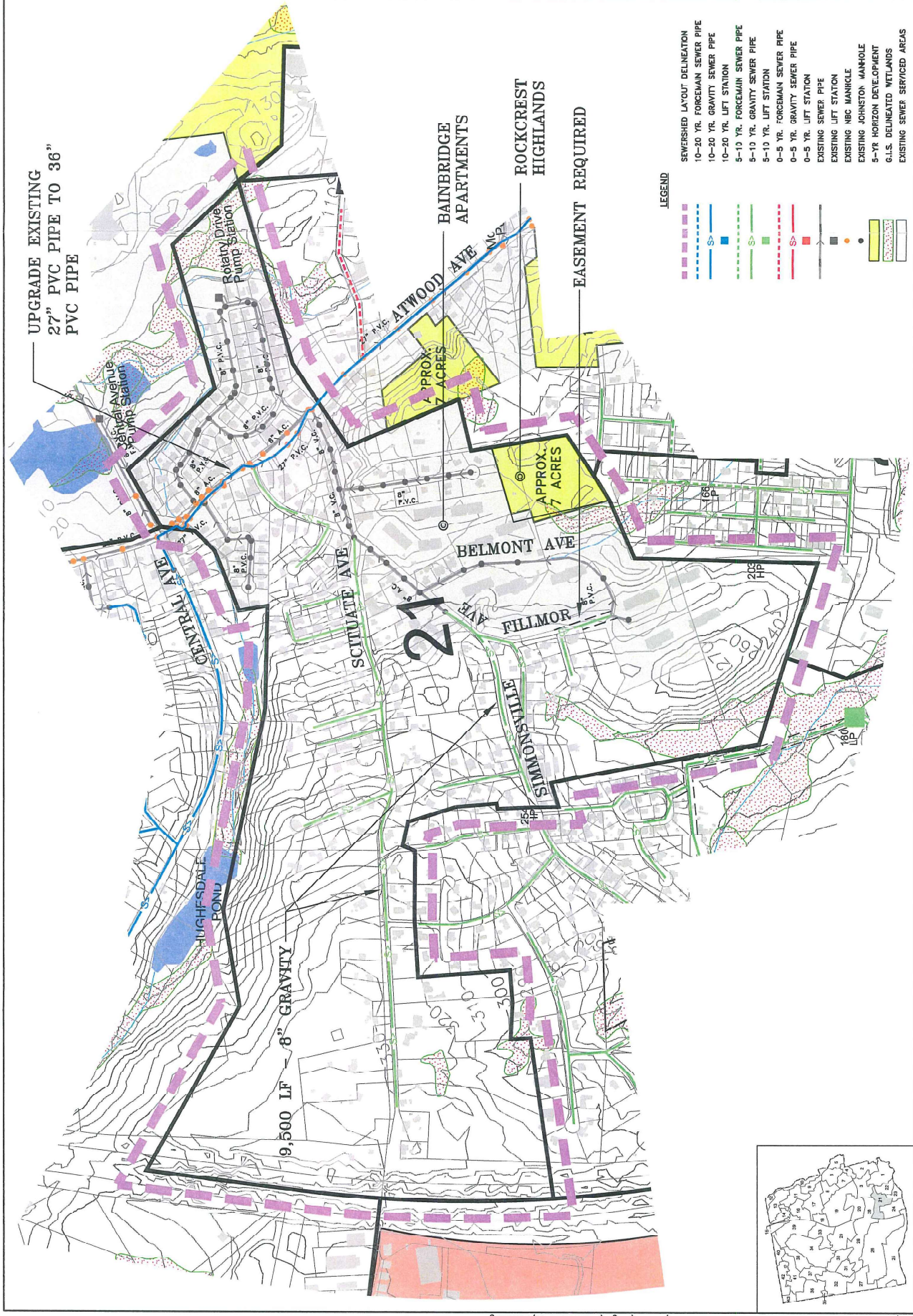
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 8 BLACKSTONE VALLEY PLACE  
 LINCOLN, RI 02805  
 401-334-4100



TOWN OF JOHNSTON FACILITIES PLAN  
 SEWER IMPROVEMENTS  
 SCITUATE AVE & SIMMONSVILLE AVE

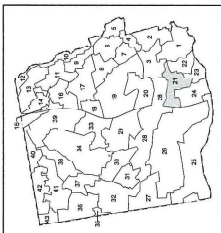
SCALE: 1" = 60'  
 FIGURE:

6-16



LEGEND

- SEWERED LAYOUT DELINEATION
- 10-20 YR. FORCEMAIN SEWER PIPE
- 10-20 YR. GRAVITY SEWER PIPE
- 10-20 YR. LIFT STATION
- 5-10 YR. FORCEMAIN SEWER PIPE
- 5-10 YR. GRAVITY SEWER PIPE
- 5-10 YR. LIFT STATION
- 0-5 YR. FORCEMAIN SEWER PIPE
- 0-5 YR. GRAVITY SEWER PIPE
- 0-5 YR. LIFT STATION
- EXISTING SEWER PIPE
- EXISTING LIFT STATION
- EXISTING NBC MANHOLE
- EXISTING JOHNSTON MANHOLE
- 5-YR. HORIZON DEVELOPMENT
- 6-L.S. DELINEATED WETLANDS
- EXISTING SEWER SERVICED AREAS





### 6.1.17 Sewershed No.22

Sewershed 22, located in the south-central portion of Johnston, includes development east and west of the southern Atwood Avenue corridor. The entire sewershed encompasses approximately 161 acres of land, 132 acres of which are served with sanitary sewers. Both residential and commercial development on Atwood Avenue is sewered, as is existing development served by pump stations on Morgan Hill Road (industrial) and Center Street to the east (residential). The neighborhood west of Atwood Avenue between Luther Street and Miller Circle is also sewered. The topography of sewershed 22 is moderately sloped west to east and north to south. The highest and lowest ground surface elevations in the sewershed are 325 feet and 145 feet, respectively. Approximately 8 percent (12.6 acres) of the overall sewershed are RIGIS delineated wetlands.

Various low lying areas along the east side of the sewershed are served by pump stations (Morgan Mill pumps station and Centre Street pump station) to convey sanitary flows to the NBC-owned 27-inch primary Atwood Avenue interceptor and ultimately discharging to a 30-inch pipe in Plainfield Street. The existing sewer system also includes 8-inch lines in the Luther Street, Shaw Avenue, Starr Street, and the Miller Circle neighborhood.

Pending development projects identified by the Town include Cassisi Plat (8 single-family residences/R-15 Zone) and Falcon Nest (17 single-family residences/R-20 Zone) projected to occur within the 0 – 5 Year Planning Horizon.

A portion of the main branch of NBC's JSI runs through sewershed 22. A 27-inch interceptor runs along Atwood Avenue between Central Avenue and Plainfield Street, a portion of which is in sewershed 22, and the remaining portion is in the adjacent sewershed 21. The evaluation of the existing system identified a number of pipe sections along Atwood Avenue that are at or above capacity during dry and wet weather conditions. In addition, future flow from the anticipated build-out of sewershed 22, along with the upstream tributary sewersheds, would exacerbate the capacity issues along Atwood Avenue. As a result, much of the interceptor along Atwood Avenue will need to be upgraded over the next 20 years. Those upgrades are depicted in Figure 6-17. The upgrades include approximately 4,500 feet of 36-inch pipe between manhole I90022 and H110020. Costs associated with these improvements are shown in Table 6-20.

<b>TABLE 6-20 SEWERSHED 22 - OPINION OF PROBABLE CONSTRUCTION COSTS - NBC INTERCEPTOR UPGRADES</b>				
	Quantity	Unit Price	Unit	Total
1.Sewer Main Installation				
a. Gravity Line Installation (42-inches)	870	\$ 215.74	/LF	\$ 205,096.86
b. Gravity Line Installation (36-inches)	4,500	\$ 170.57	/LF	\$ 857,558.33
b. Force Main Installation	0	-	/LF	\$ -
2.Manholes	32	\$ 7,000.00	/EACH	\$ 224,000.00
3.Rock Removal 0% (None)	0	\$ 100.00	/CY	\$ -
4.Pavement Restoration (Town)	2,505	\$ 100.00	/TON	\$ 250,450.83
5.Traffic Protection	18	\$ 960.00	/DAY	\$ 17,280.00
6.Temporary Bypass Pumping	4	\$ 6,500.00	/WEEK	\$ 26,000.00
7.New Service Connection	0	\$ 4,000.00	/EACH	\$ -
8.Pump Station Upgrade	0	\$ 200,000.00	/EACH	\$ -
9.Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total \$	1,580,386.03
10.Mobilization/Demobilization (10%)			\$	158,000.00
11.Utility Coordination (5%)			\$	79,000.00
12.Engineering/Design/Permitting/Construction Admin (10 %)			\$	158,000.00
13.Contingency (20%)			\$	395,000.00
			<b>TOTAL \$</b>	<b>2,400,000.00</b>

The proposed improvements to the sanitary sewers in this sewershed include the installation of 2,500 linear feet of 8-inch gravity pipe at the top of Granite Street, down Genoa Street, Water Street, Deluca Street, and into Starr Street. A separate extension is needed to convey sanitary flows of Water Street to existing sewers; however, will require an installation within a paper street, but outside of a constructed roadway. Therefore, tree clearing may be required, but no legal fees are anticipated for this build-out. Also, the use of grinder pumps will have to be utilized by residents occupying homes along Starr Street between Venice Avenue and Deluca Street and 800 linear feet force main will tie into the existing sewers of the lower portion of Starr Street. In addition to the sewers for existing development, a potential elimination of Morgan Mill pump station on Morgan Mill Road and the redirection of sanitary flows to Sewershed 1 could be accomplished with an additional 700 linear feet of gravity sewer and upgrades to LaFazia Drive pump station. Also, a section north of Morgan Avenue on the east side of Atwood Avenue where the river crosses currently utilizes private OWTS's. To capture sanitary flows from these parcels, grinder pumps and a small force main would be required.

Morgan Mill pump station redirection to LaFazia Drive pump station is projected to occur within the 0 – 5 Year Planning Horizon. Future sewers to existing development (39 residences/10 commercial structures) are projected to occur within the 5 – 10 Year Planning Horizon. Costs associated with these improvements are shown in Table 6-21 below.

<b>TABLE 6-21</b>				
<b>SEWERSHED 22 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER</b>				
	Quantity	Unit Price	Unit	Total
<b>5-year Horizon</b>				
1. Sewer Main Installation				
a. Gravity Line Installation (8-inches)	700	\$ 53.35/LF		\$ 51,346.30
b. Force Main Installation (1 1/2-inches)	1,000	\$ 41.20/LF		\$ 41,401.85
2. Manholes	4	\$ 2,500.00/EACH		\$ 10,000.00
3. Rock Removal (5%)	126	\$ 100.00/CY		\$ 12,600.00
4. Pavement Restoration (town)	793	\$ 100.00/TON		\$ 79,286.11
5. Traffic Protection	34	\$ 960.00/DAY		\$ 32,640.00
6. New Service Connection by Gravity	15	\$ 4,000.00/EACH		\$ 60,000.00
7. New Service Connection with Grinder Pump	10	\$ 9,000.00/EACH		\$ 90,000.00
8. Legal Fees for Easement Development	3	\$ 10,000.00/PARCEL		\$ 30,000.00
			Sub-Total \$	407,274.26
9. Mobilization/Demobilization (10%)				\$ 41,000.00
10. Utility Coordination (5%)				\$ 20,000.00
11. Engineering/Design/Permitting/Construction Admin (10 %)				\$ 41,000.00
12. Contingency (20%)				\$ 102,000.00
			5-year TOTAL \$	610,000.00
<b>10-year Horizon</b>				
1. Sewer Main Installation				
a. Gravity Line Installation (8-inches)	2,500	\$ 53.35/LF		\$ 183,379.63
b. Force Main Installation (1 1/2-inches)	800	\$ 41.20/LF		\$ 33,121.48
2. Manholes	13	\$ 2,500.00/EACH		\$ 32,500.00
3. Rock Removal (5%)	244	\$ 100.00/CY		\$ 24,400.00
4. Pavement Restoration (town)	1,539	\$ 100.00/TON		\$ 153,908.33
5. Traffic Protection	66	\$ 960.00/DAY		\$ 63,360.00
6. New Service Connection by Gravity	30	\$ 4,000.00/EACH		\$ 120,000.00
7. New Service Connection with Grinder Pump	19	\$ 9,000.00/EACH		\$ 171,000.00
8. Legal Fees for Easement Development	0	\$ 10,000.00/PARCEL		\$ -
			Sub-Total \$	781,669.44
9. Mobilization/Demobilization (10%)				\$ 78,000.00
10. Utility Coordination (5%)				\$ 39,000.00
11. Engineering/Design/Permitting/Construction Admin (10 %)				\$ 78,000.00
12. Contingency (20%)				\$ 195,000.00
			10-year TOTAL \$	1,200,000.00
			<b>SEWERSHED TOTAL \$</b>	<b>1,900,000.00</b>



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LITTLETON, CO 80120  
303-794-4100



TOWN OF JOHNSTON FACILITIES PLAN  
SEWER IMPROVEMENTS  
SCHEMATIC NO. 22  
ATWOOD AVE, STAR ST & WATER ST

SCALE: 1" = 600'  
FIGURE:

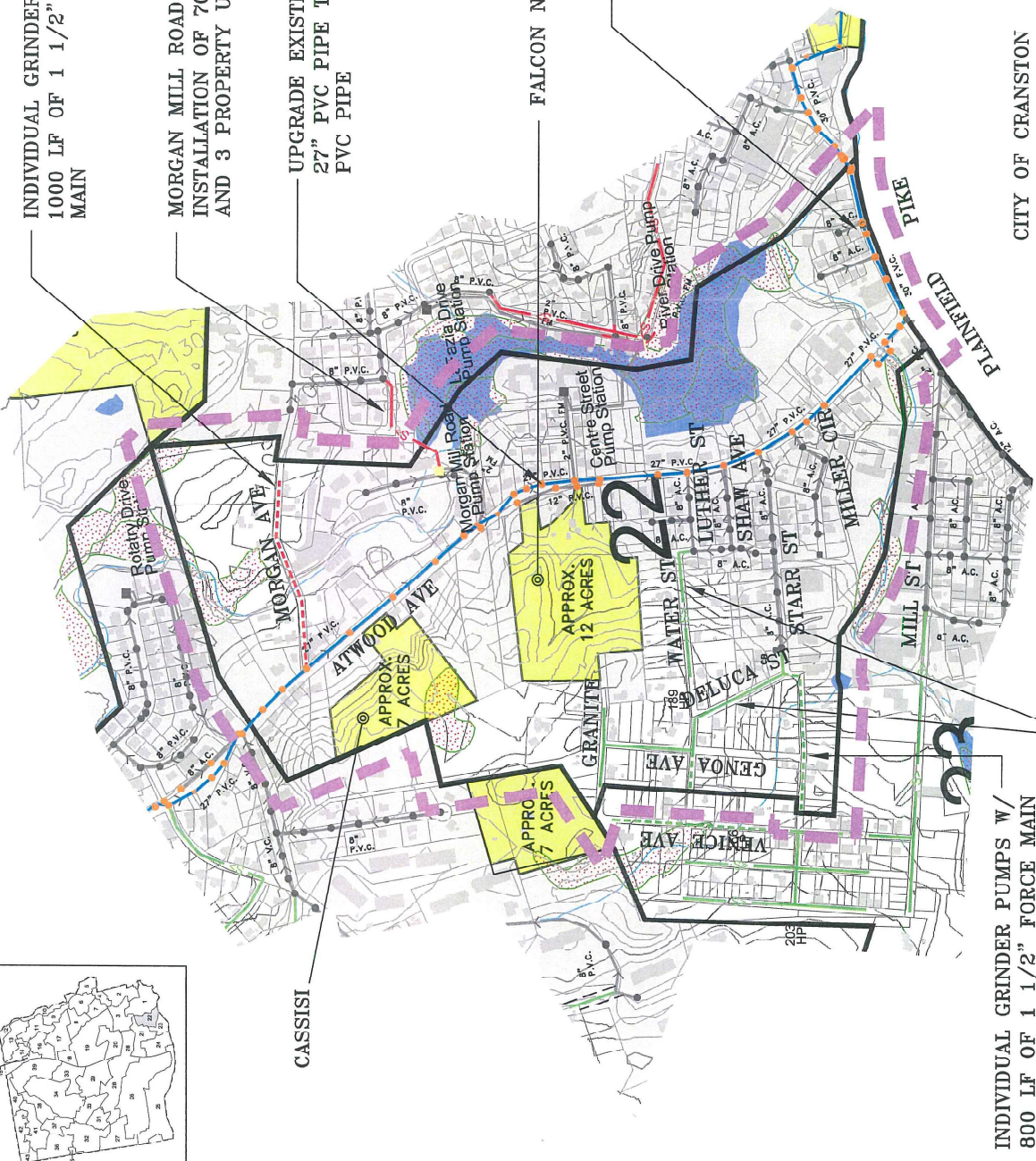
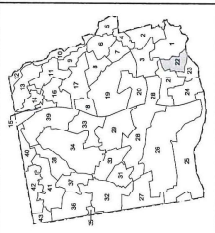
6-17

INDIVIDUAL GRINDER PUMPS W/  
1000 LF OF 1 1/2" FORCE  
MAIN

MORGAN MILL ROAD PUMP STATION ELIMINATION.  
INSTALLATION OF 700 LF OF 8" SEWER GRAVITY PIPE  
AND 3 PROPERTY UTILITY EASEMENTS REQUIRED.

UPGRADE EXISTING  
27" PVC PIPE TO 36"  
PVC PIPE

UPGRADE EXISTING  
30" PVC PIPE TO 42"  
PVC PIPE



LEGEND

- SEWERED LAYOUT DELINEATION
- 10-20 YR. FORCEMAIN SEWER PIPE
- 10-20 YR. GRAVITY SEWER PIPE
- 10-20 YR. LIFT STATION
- 5-10 YR. FORCEMAIN SEWER PIPE
- 5-10 YR. GRAVITY SEWER PIPE
- 5-10 YR. LIFT STATION
- 0-5 YR. FORCEMAIN SEWER PIPE
- 0-5 YR. GRAVITY SEWER PIPE
- 0-5 YR. LIFT STATION
- EXISTING SEWER PIPE
- EXISTING LIFT STATION
- EXISTING RBC MANHOLE
- EXISTING JOHNSTON MANHOLE
- 5-YR. HORIZON DEVELOPMENT
- G.I.S. DELINEATED WETLANDS
- EXISTING SEWER SERVICED AREAS

INDIVIDUAL GRINDER PUMPS W/  
800 LF OF 1 1/2" FORCE MAIN

2,500 LF - 8" GRAVITY

CITY OF CRANSTON

6.1.18 *Sewershed No.23*

Sewershed 23 is located in the Simonsville section of south-central Johnston, north of Plainfield Pike and including the neighborhood between Rachela and Johns Streets to the south and Mill and Water Streets to the north. The entire sewershed encompasses approximately 140 acres of land. The Rachela and John Streets neighborhood and approximately 1/4-mile of Plainfield Pike are sewered. Refer to Figure 6-18.

The topography of unsewered sections of sewershed 23 is moderately sloped, generally eastward from high points on Rome Avenue (207-ft) to a low point south of Priscilla Lane (105-ft) near a tributary to Simmons Brook. Constraints for future development in sewershed 23 include RI DEM regulated streams and wetlands associated with Simmons Brook.

Sanitary sewers serve approximately 58 percent of the sewershed. The sewershed is well developed with businesses along Plainfield Pike, industrial development along Mill Street, and residential neighborhoods both north and south of Mill Street. The build-out of vacant parcels within the sewershed identified the potential for an additional 4 residential units (R-10 Zone) and 48 residential units (R-7 Zone) projected to occur within the 5 – 10 Year Planning Horizon.

The existing sewer system includes all 8-inch pipes south of Mill Street and north of Plainfield Pike. Areas north of Mill Street do not currently have public sewer service. Proposed improvements include sewer extensions west along Mill Street from the existing sewered area and north along Venice, Naples, and Roma Avenue.

A total of 4,700 linear feet of 8-inch gravity pipe and 1,000 linear feet of 1-½ inch force main will be needed to sewer the remaining unsewered portion of Sewershed 23. The build-out of vacant parcels, as well as future sewers to existing development (21 residences/4 commercial structures), are projected to occur within the 5 – 10 Year Planning Horizon. Costs associated with these improvements are shown in Table 6-22 below.



<b>TABLE 6-22</b>				
<b>SEWERSHED 23 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER</b>				
	Quantity	Unit Price	Unit	Total
<b>10-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	4,700	\$ 53.35	/LF	\$ 344,753.70
b. Grinder Force Main Installation (1 1/2-inches)	1,000	\$ 41.20	/LF	\$ 41,401.85
2.Manholes	24	\$ 2,500.00	/EACH	\$ 60,000.00
3.Rock Removal (5%)	422	\$ 100.00	/CY	\$ 42,200.00
4.Pavement Restoration (town)	2,658	\$ 100.00	/TON	\$ 265,841.67
5.Traffic Protection	114	\$ 960.00	/DAY	\$ 109,440.00
6.New Service Connection by Gravity	50	\$ 4,000.00	/EACH	\$ 200,000.00
7.New Service Connection with Grinder Pump	27	\$ 9,000.00	/EACH	\$ 243,000.00
7. Legal Fees for Easement Development	0	\$ 10,000.00	/PARCEL	\$ -
			Sub-Total	\$ 1,306,637.22
8.Mobilization/Demobilization (10%)			\$	131,000.00
9.Utility Coordination (5%)			\$	65,000.00
10.Engineering/Design/Permitting/Construction Admin (10 %)			\$	131,000.00
11.Contingency (20%)			\$	327,000.00
			<b>SEWERSHED TOTAL</b>	<b>\$ 2,000,000.00</b>

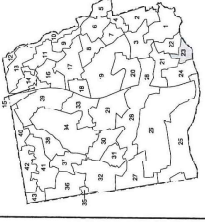
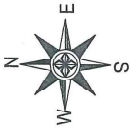
TOWN OF JOHNSTON FACILITIES PLAN  
SEWERED NO.23  
MILL ST & PLAINFIELD PIKE

SCALE: 1" = 600'

FIGURE:

6-18

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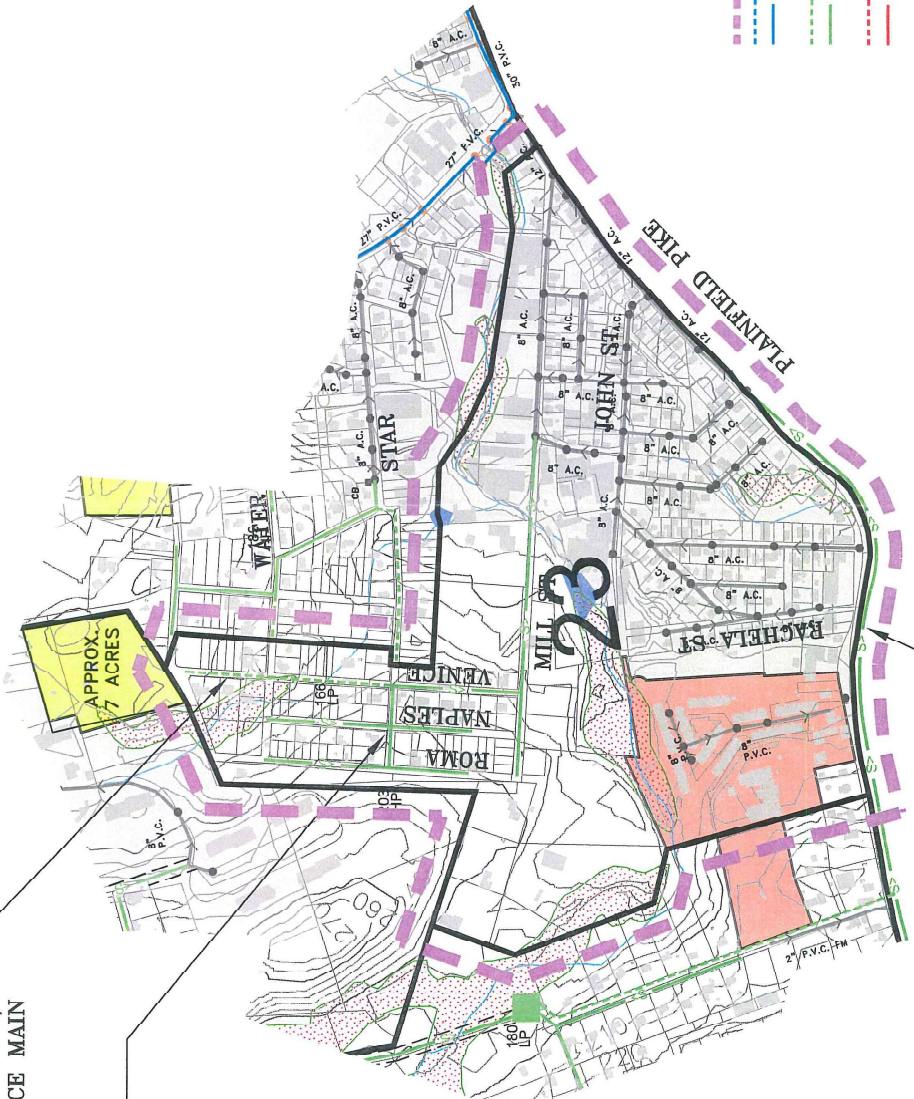


LEGEND

- SEWERED LAYOUT DELINEATION
- 10-20 YR. FORCEMAIN SEWER PIPE
- 10-20 YR. GRAVITY SEWER PIPE
- 10-20 YR. LIFT STATION
- 5-10 YR. FORCEMAIN SEWER PIPE
- 5-10 YR. GRAVITY SEWER PIPE
- 5-10 YR. LIFT STATION
- 0-5 YR. FORCEMAIN SEWER PIPE
- 0-5 YR. GRAVITY SEWER PIPE
- 0-5 YR. LIFT STATION
- EXISTING SEWER PIPE
- EXISTING LIFT STATION
- EXISTING NBC MANHOLE
- EXISTING JOHNSTON MANHOLE
- 5-YR HORIZON DEVELOPMENT
- G.I.S. DELINEATED WETLANDS
- EXISTING SEWER SERVED AREAS

INDIVIDUAL GRINDER PUMPS W/  
1,000 LF OF 1 1/2" FORCE MAIN

4,700 LF - 8" GRAVITY



CITY OF CRANSTON

PLAINFIELD PIKE SEWER EXTENSION  
IS ACCOUNTED FOR AS PART OF  
SEWERED 24 IMPROVEMENTS

6.1.19 *Sewershed No.24*

Sewershed 24 is located in the Simmonsville section of south-central Johnston, east of I-295 and south of (not including) Scituate Avenue. Simmonsville Avenue runs through sewershed 24 north of Country View Drive and extends north to Plainfield Pike to include the neighborhoods near Tartaglia and James Streets, as well as Macera Farm. The entire sewershed encompasses approximately 298 acres of land, of which only 12.4 acres (4 percent of the entire sewershed) are served by sanitary sewers.

The topography of sewershed 24 is moderately sloped from the north, south toward the Pocasset River, and easterly in the river's flow direction towards Providence. Elevations range from 330 to 170. Constraints for future development within the sewershed include RI DEM regulated streams and wetlands associated with Simmons Brook.

The sewershed is heavily developed with residential and limited sections of commercial/business development along Plainfield Pike. On-site wastewater treatment systems such as cesspools and/or individual sewerage disposal systems are sole current method of wastewater management disposal for sewershed 24. The nearest existing sewers are located within Simmonsville Avenue approximately 0.3 miles away or within Plainfield Pike approximately 0.5 miles away and both locations will require the use of a lift station to connect.

Pending development projects identified by the Town include Alvina Estates and Bellawoods Vue, both proposed as 5 single-family residences/R-20 Zone within the 5 – 10 Year planning Horizon. The build-out of vacant parcels identified the potential for an additional 13 residential units, also within the 5 – 10 Year Planning Horizon.

Proposed improvements to sewershed 24 will require the use of a pump station that will serve all current development utilizing two separate piping networks. One would serve Simmonsville Avenue and adjacent streets with a low point south of Regina Drive, and second serving areas south of Simmons Brook and north of Plainfield Pike in the Nardillo Street area.

The improvements will include a total use of 20,900 linear feet of 8-inch gravity pipe, one pump station, approximately 750 linear feet of 3-inch force main, and two separate locations requiring

the use of individual grinder pumps and 120 linear feet of 1½-inch force main piping. The piping layout within Figure 6-19 includes the use of cross-country sewers that require easements to private property. It also will require a state permit from the RI DEM to cross and alter a river. Both of which have been included within the table of costs for this sewershed build out.

Alternates to this layout would include, one, the use of an additional pump station to avoid any river crossings or, two, combining sewershed 24 with sewershed 21 pipe layout resulting in an extremely deep sewer system within Simmonsville Avenue between the river crossing and sewershed 21. Areas southeast of Simmonsville Avenue and north of Plainfield Pike would still require a pump station or the use of grinder pumps as currently shown in the figure provided.

Pending development projects, build-out to vacant parcels and future sewers to existing development (224 residences/28 commercial structures) are all projected to occur within the 5 – 10 Year Planning Horizon of the Town’s Facility Plan. Costs associated with these improvements are shown in Table 6-23 below.

<b>TABLE 6-23</b>				
<b>SEWERSHED 24 - OPINION OF PROBABLE CONSTRUCTION COSTS - TOWN-OWNED SEWER</b>				
	Quantity	Unit Price	Unit	Total
<b>10-year Horizon</b>				
1.Sewer Main Installation				
a. Gravity Line Installation (8-inches)	18,400	\$ 53.35	/LF	\$ 1,349,674.07
b. Gravity Line Installation (12-inches)	4,500	\$ 64.87	/LF	\$ 381,908.33
c. Force Main Installation (3-inches)	750	\$ 45.30	/LF	\$ 34,126.39
d. Force Main Installation (1 1/2-inches)	1,800	\$ 41.20	/LF	\$ 74,523.33
2.Manholes	117	\$ 2,500.00	/EACH	\$ 292,500.00
3.Rock Removal (5%)	1,552	\$ 100.00	/CY	\$ 155,200.00
4.Pavement Restoration				
a. Town owned Road	8,255	\$ 100.00	/TON	\$ 825,508.33
b. State owned Road	1,997	\$ 100.00	/TON	\$ 199,652.78
5.Traffic Protection	419	\$ 960.00	/DAY	\$ 402,240.00
6.New Service Connection by Gravity	240	\$ 4,000.00	/EACH	\$ 960,000.00
7.New Service Connection with Grinder Pump	35	\$ 9,000.00	/EACH	\$ 315,000.00
8.Pump Station Construction (200k GPD)	1	\$ 333,000.00	/LS	\$ 333,000.00
9.Pump Station Telemetry	1	\$ 10,000.00	/LS	\$ 10,000.00
10.Legal Fees for Easement Development	4	\$ 10,000.00	/PARCEL	\$ 40,000.00
			Sub-Total \$	5,373,333.24
11.Mobilization/Demobilization (10%)			\$	537,000.00
12.Utility Coordination (5%)			\$	269,000.00
13.Engineering/Design/Permitting/Construction Admin (10 %)			\$	537,000.00
14.Contingency (20%)			\$	1,343,000.00
			<b>SEWERSHED TOTAL \$</b>	<b>8,100,000.00</b>





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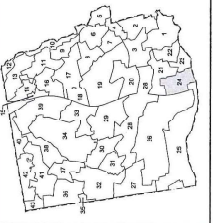


TOWN OF JOHNSTON FACILITIES PLAN  
 SEWER IMPROVEMENTS  
 SEWERSHED NO. 24  
 PLAINFIELD PIKE, SIMMONSVILLE AVE & NARDILLO ST

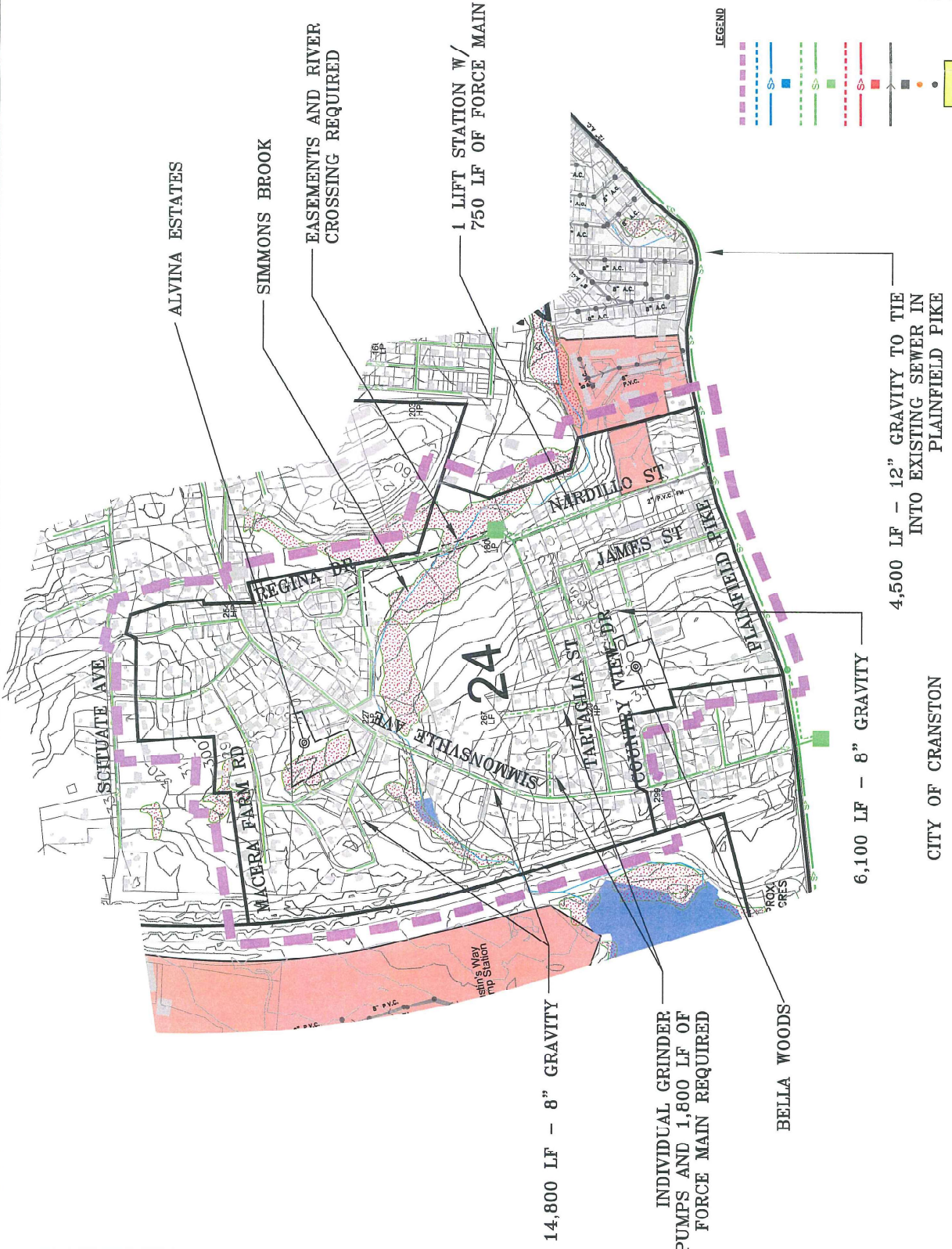
SCALE: 1" = 800'

FIGURE:

6-19



- LEGEND**
- SEWERSHED LAYOUT DELINEATION
  - 10-20 YR. FORCEMAIN SEWER PIPE
  - 10-20 YR. GRAVITY SEWER PIPE
  - 10-20 YR. LIFT STATION
  - 5-10 YR. FORCEMAIN SEWER PIPE
  - 5-10 YR. GRAVITY SEWER PIPE
  - 5-10 YR. LIFT STATION
  - 0-5 YR. FORCEMAIN SEWER PIPE
  - 0-5 YR. GRAVITY SEWER PIPE
  - 0-5 YR. LIFT STATION
  - EXISTING SEWER PIPE
  - EXISTING LIFT STATION
  - EXISTING NBC MANHOLE
  - EXISTING JOHNSTON MANHOLE
  - 5-YR. HORIZON DEVELOPMENT
  - G.I.S. DELINEATED WETLANDS
  - EXISTING SEWER SERVICED AREAS



#### 6.1.20 Sewershed No.25

Sewershed 25 is located in the southern most section of town, adjacent to the Town boundary with the City of Cranston. Shun Pike delineates the northern limits, while Plainfield Pike runs along the southern limit. The majority of the sewershed is west of I-295, with a small residential development just east of I-295. The entire sewershed encompasses approximately 875 acres of land, very little of which is currently served by sanitary sewers. Approximately 11 percent of the overall sewershed are RIGIS delineated wetlands. Refer to Figure 6-20.

The topography of Sewershed 25 is steeply sloped from Peck Hill Road at elevation 522 feet downward towards Simmonsville Avenue where Interstate 295 passes over Plainfield Pike at elevation 320 ft. Constraints for future development within the sewershed include RI DEM regulated streams and wetlands as well as bedrock/slope considerations.

The sewershed is moderately built-out with a mix of residential, industrial, and light industrial development. On-site wastewater treatment systems such as cesspools and/or individual sewerage disposal systems are the current method of wastewater management for sewershed 25. The nearest existing sewers are located within Simmonsville Avenue approximately 0.3-miles away or within Plainfield Pike approximately 0.5-miles away and both locations will require the use of a lift station to connect.

Pending development projects identified by the Town include CVS and the Contractors Business Park (B-2 Zone), both currently utilizing on-site wastewater disposal; however, both may tie into the proposed Johnston sewers within the 5 – 10 Year Planning Horizon. The build-out of vacant parcels identified the potential for an additional 96 residential units (R-20/R-40 Zone), 29.1 acres of industrial development, and 14.7 acres of light-industrial development projected within the 10 – 20 Year Planning Horizon.

Future sewers to existing development for 102 residences/31 commercial structures, and 29 residential structures and 25 commercial units are projected to occur within the 5 – 10 Year Planning Horizon and 10 - 20 Year Planning Horizon, respectively. Proposed improvements to sewershed 25 will require a combination of conveyance methods. The neighborhood east of Simmonsville Avenue will require the use of 8-inch gravity sewer pipes that will convey flows to

a proposed pump station on Plainfield Pike. Also connected to the pump station will be all new proposed 12-inch gravity sewer pipes within Plainfield Pike up to Peck Hill Road serving residents and businesses north of Plainfield Pike. Another municipal pump station proposed on Shun Pike will serve residents and businesses on the north and south of Shun Pike from Green Hill Road to Peck Hill Road. The use of individual grinder pumps with 2-inch force main is proposed for the dwellings located in the residential area southwest of Simmons Reservoir and units located west of Peck Hill Road on Plainfield Pike.

The improvements will include a total use of 24,800 linear feet of 8-inch gravity pipe, 8,400 linear feet of 12-inch pipe, three separate locations requiring the use of individual grinder pumps and 6,900 linear feet of 2-inch force main piping, and two municipal pump stations requiring approximately 4,450 linear feet of 4-inch force main.

Costs associated with these improvements are shown in Table 6-24 below.