VERMONT

State of Vermont
Department of Environmental Conservation
Office of the Commissioner

AGENCY OF NATURAL RESOURCES

May 26, 2016

The following report was received on May 25, 2016 at 4:57pm. The following report pending review by the State of Vermont, Drinking Water Groundwater Protection Division. This report prepared by MSK Engineering is limited to the water lines within the Town of Bennington and does not include the Village of North Bennington.

Civil – Environmental – Mechanical – Structural – Surveying
Site & Facility Development – Construction- Compliance – Regulatory Permitting

Professional Engineering in Vermont – New Hampshire – New York

Preliminary Engineering Report

25 May 2016

Bennington Water Distribution System Expansion
Bennington, VT

Prepared for:

Town of Bennington Water Department
205 South Street
Bennington, VT 05201
POC: Terrance A. Morse

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P.O. Box 139
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Contents

Project Purpose

The Town of Bennington proposes to connect certain areas of town whose wells are contaminated by PFOA.

Project Planning

Location of Proposed Improvements

There are two distinct areas of town which improvements are proposed and shown on C-5 and C-6 of Appendix A-1. The northwestern section is identified in two separate zones in this report. Zone A will extend water from Fairview Street along Vail Road, down Austin Hill Road, west on Murphy Road, and loop back to an existing terminus of the distribution system on North Bennington Road. Eaton Road, Bard Road, Red Pine Road, Portions of Silk Road, Bridge Street, and Cardinal Lane will be connected. Zone B, directly to the south of Zone A, will loop water from Route 9 along Gypsy Lane to the terminus of the existing water main on Walloomsac Road. Service will also be extended to just past the intersection of Walloomsac Road and Pippin Knoll. Service will be extended to Pippin Knoll and Hill Shadow Farm Road. The second area, Zone C, to the north of the center of town will extend service down Houghton Lane to Michaels Drive, Apple Hill and its side roads. Service will also be extended down Willow Road and Beck's Drive.

Environmental Resource Present

Environmental resources present in the proposed project area include several wetland areas as well as the Walloomsac River as noted on plans C1 and C2 in Appendix A-1.

Population Trends

Bennington's general population has been stagnant or declining since 1990. The proposed system expansion areas are rural or suburban in nature. There are few undeveloped parcels. Population in these areas are expected to remain stable.

Need for Project

The project's need is driven by the widespread contamination of wells by PFOA in the areas of the proposed expansion. Point of entry treatment systems have been installed in many of the impacted wells, but the individual treatment systems are not expected to be part of a long term economical solution. It is acknowledged that large scale development in any of the affected areas is not likely and runs counter to land use planning in Bennington, but it should be noted that without a non-contaminated source of potable water in these areas,

even limited development will be restricted or prevented entirely. As it is not known how long the watershed will remain contaminated, the only solution for these areas is an extension of the municipal water system.

Alternatives Considered

Proposed expanded coverage areas were determined based on the presence of a concentration of contaminated wells in one area or neighborhood and is shown on plan C5 and C6 in Appendix A-1. Single outliers located a significant distance from other contaminated wells or a great distance from the existing Town distribution system were not considered for municipal water service due to the high per unit cost of bringing water to a signal dwelling. These outliers include a single dwelling unit at the end of Vail Road and a single dwelling unit at the end of Rocky Lane. Several emergent contaminated areas were also not yet considered because too few of the wells in the area had been tested at the time of this report. These areas include Autumn Acres Road off of Houghton Lane and Route 7a north of the existing water system. The remaining areas located outside of the Village of North Bennington and not considered for expansion to the Bennington Water System are those residences west of 1101 Murphy Road, Riverside Drive and Orebed Road, residences on Harrington Road and those located on Matteson Road. All of these locations are expected to be served by extensions to North Bennington's water system.

Two routing alternatives were considered for Zone A:

1. Utilize the former Red Pine Road ROW as an alternative running along Vail and Austin Hill Road: Red Pine Road is a legal trail that once connected Vail Road to Bard Road. The right of way is currently overgrown and impassible, however, since the Town owns the right-of-way, no easements would be required to install a water main in this location. Running a main in this location as an alternate would reduce the overall extension distance by 3,300 lf. Additional cost savings may be seen because there would be less road base disturbed and less paving required. However, municipal water would not be available for two wells with sampling results over 20 ppt. A small line extension would need to run south from the intersection of Bard Road and Austin Hill Road to serve one dwelling with results over 70 ppt. If this option is selected, the municipality should still coordinate with the existing landowner at the end of Red Pine Road even though an easement may not be required. Additionally, care should be taken in design and construction to ensure that after the waterline is installed, Red Pine Road is not made inviting for nuisance off road vehicles.
2. Run water to Silk Road from Vail Road as an alternative to a river crossing at the Silk Road covered bridge. This option may be considered only if the Silk Road Bridge crossing is deemed infeasible or more expensive than running an additional 3,500 lf down Silk Road from Vail Road.

Design Basis

The basis of design for all the major components of the system are covered in the corresponding discussion below.

Design Flow

The existing demands for each zone are shown in the table below. Future demands are not calculated as a part of this report because there are no major projects expected within the service area in the future. Noted average daily and maximum daily demands assume that all units within the proposed coverage area are tied on to the system. The total well count in each of the zones is approximate only and needs final field verification. Additional detail about demands and usages can be found in table 1 located in Appendix A-2.

Service Area	Total Wells	Wells Not Tested	Wells Non-Detect/<20 ppt	Wells >20 ppt	Wells >70 ppt	Existing Average (gpd)	Existing Maximum (gpd)
Zone A	116	14	21	12	69	56,500	113,000
Zone B	36	26	2	7	1	18,900	37,800
Zone C	78	32	4	11	31	37,200	74,400
Total	*230*	*72*	*27*	*30*	*101*	*112,600*	*225,200*

Source Capacity

There will be up to 230 additional service connections to the system with an estimated combined average daily demand of 112,600 gallons per day. The Town has more than enough capacity to service this additional flow. The system's sources are Bolles Brook whose treatment plant is permitted for 4.0 million gallons per day and Morgan Springs whose withdrawal rate is permitted for 1.5 million gallons per day. The average daily demand on the water system is approximately 1.8 million gallons per day.

Design Criteria

The proposed expansion will follow the routes shown on plans C5 and C6 in Appendix A-1. The two alternatives noted above will be assessed during the final design process. Long lines and loops will be installed with 8" ductile iron pipe. Mains sized for the existing demand will be design for shorter dead end lines with little or no potential for development. These areas include, Bard Road, Red Pine Road (if alternate is not selected), Bridge Street, Eaton Road, Pippin Knoll, Hill Shadow Farm Road, Becks Drive, short dead end streets on Apple Hill and sections of Willow Road. Loops will be created where feasible. This will include looping the long line from Vail to North Bennington Road at both the end of the municipal main on Fairview Street as well as the end of the municipal main on North Bennington Road. A reducing valve will be required near the overpass of Route 279. The route will become the primary source for the uses on Northside Drive in order to minimize residence time in the new line. Additionally, a loop will be created at Gypsy Lane and Walloomsac Road. The Willow Road line will be looped at Duffy Drive.

Service Lines to units will be sized for their needs. Copper will be run in the street between the corporation stop and the curb stop. HDPE will be run between the curb stop and the building.

Environmental Impacts

The proposed extension covers a large service area and will pass by several different wetland areas as well as make three different stream crossings. Impacts will be minimized near wetlands by the use of trenchless technology or limiting disturbance to the existing pavement structure. Stream crossing impacts will be mitigated by directional drilling if possible or hanging an aerial crossing within an existing span where possible. All other impacts will be minor or minimal and will occur largely in the traveled way or right of way of a road.

Land Requirements

The majority of the extension will not require permanent or construction easements for the project. North Bennington Road may require easements, but will depend on negotiations with and requirements from VTrans.

Potential Construction Problems

The single largest driver of variation in installation cost of water main is the presence of ledge. USGS mapping estimates that ledge will be encountered on a section of Murphy Road, Apple Hill Road, possibly Pippin Knoll and possibly Cardinal Lane. Ledge probes along the proposed route should be verified after 25% design drawings are completed to determine a better estimate.

Proposed Project

The proposed route of the project is shown generally on sheets C5 and C6 in Appendix A-1.

Project Schedule

The project can either be designed and bid out as one project or designed and bid out as two projects depending on when funding is agreed to by the parties for each zone. A detailed schedule is shown in Appendix A-3. Depending on the weather and the choice of the contractor, construction for Zone A could begin as early as December of 2016 or in March or April of 2017. Construction for Zone B and C would likely begin in the spring of 2017. If all zones were combined bidding and construction would likely follow the Zone B Schedule below.

Zone A Schedule

Phase	Begin	Complete
Existing Conditions	June 2016	July 2016
Design	July 2016	October 2016
Permitting	August 2016	October 2016
Bidding	October 2016	November 2016
Construction	December 2016 or April 2017	Fall/Winter 2017

Zone B and C Schedule

Phase	Begin	Complete
Existing Conditions	June 2016	July 2016
Design	September 2016	December 2016
Permitting	October 2016	December 2016
Bidding	December 2016	February 2016
Construction	April 2017	Winter 2017

Permit Requirements

The following permits will be required:

Wastewater Disposal and Potable Water Supply Permit: It is assumed that a blanket permit can be sought for the entire project and would include all the individual house connections and units with existing ww permits.

Public Water System Construction Permit: A construction permit would be required for the waterline extension.

Army Corp and Stream Alteration Permit: Approval from the Army Corp and Stream Alteration may be required depending on the final configuration of the stream crossings. Directional drilling is a non-reporting activity under the general permit. Hanging a pipe off of an existing structure does not require a permit unless it reduces the opening.

Flood Hazard: At a minimum, local and state authorities will have to review any proposed work in the flood hazard or river corridor areas and may require permitting depending on the design.

VTrans Section 1111 Highway Work Permit: A highway work permit will be required for any work along North Bennington Road which is a State of Vermont owned Right of Way.

Vermont Construction General Permit: A construction general permit will be required for this project. It is assumed a that a moderate risk permit will be required at this time. A detailed risk assessment of the project will be required to confirm this during design.

Total Project Cost Estimate

The total project cost estimate per zone including contingency, engineering, construction administration, permitting, permitting and allocation fees are the following:

Zone	Cost
A	$8,600,000
B & C	$5,100,000
Total	***$13,700,000***

Annual Operating Budget

The Town of Bennington's Annual Operating Budget for Fiscal Year 2017 is $2,529,213.07.

Projected Revenue and Operating Costs

Revenue based on the current flat rate of $459.48 per year charged for municipal water service to private residences and assuming all wells in the service area are connected to the system. Projected Annual Maintenance costs for Zones A, B, and C are included herewith in Appendix A-9.

Zone	Projected Revenue	Projected Annual Maintenance Cost
Zone A	$53,299.68	$7,719.52
Zone B	$16,541.28	$3,529.22
Zone C	$35,839.44	$7,426.72
Total	**$105,680.40**	**$18,675.46**

Conclusions and Recommendations

The initial study shows that it is feasible to provide municipal water to the above noted areas affected by PFOA contamination. The routing alternatives for Zone A should be selected after 25% design drawings are completed based on feasibility, cost and system functionality.

Appendices

A-1 Plans

C1 PFOA Remediation Land Use and Hazardous Waste Mapping (Zone A and Zone B)

C2 PFOA Remediation Land Use and Hazardous Waste Mapping (Zone C)

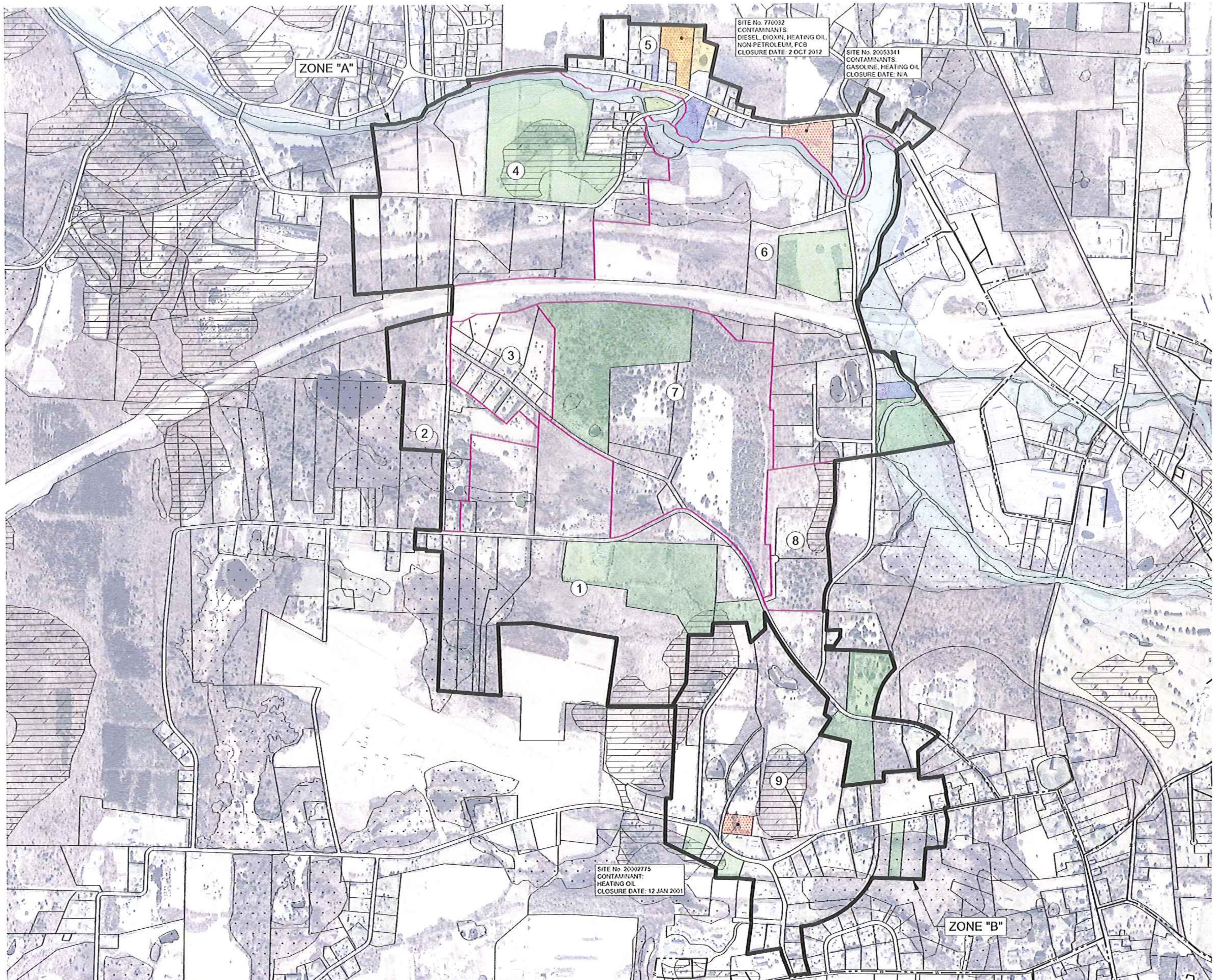
C3 PFOA Remediation Sampling Results Plan (Zone A and Zone B)

C4 PFOA Remediation Sampling Results Plan (Zone C)

C5 PFOA Remediation Proposed Service Zones (Zone A and Zone B)

C6 PFOA Remediation Proposed Service Zones (Zone C)

Town of Bennington Pressure Zones



1 LAND USE AND HAZARDOUS WASTE MAPPING

Scale: 1:600

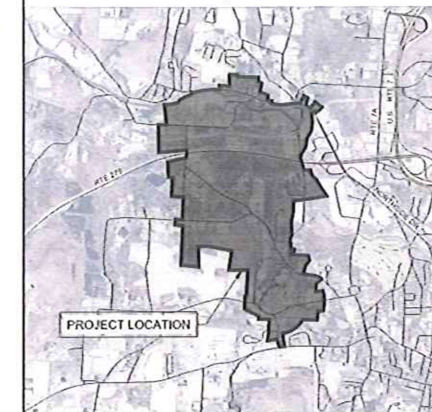
0 600 1200 Feet

NORTH

VICINITY MAP

APPROXIMATE SCALE: 1:4000

BENNINGTON, VERMONT 05201



GENERAL NOTES

1. VAIL ROAD BETWEEN THE END OF WATER SYSTEM AND AUSTIN HILL ROAD
2. AUSTIN HILL ROAD TO BARD ROAD
3. BARD ROAD
4. MURPHY ROAD
5. NORTH BENNINGTON ROAD
6. SILK ROAD FROM THE COVERED BRIDGE TO AND INCLUDING CARDINAL LANE
7. RED PINE ROAD
8. EATON ROAD
9. WALLOOMSAC ROAD AREA INCLUDING MINOR CONNECTED ROADWAYS

LEGEND

SIGNIFICANT WETLAND AREA

ADVERSE SOIL CONDITION: SHALLOW BEDROCK

FLOOD PLAIN

MULTI-UNIT PROPERTY

COMMERCIAL PROPERTY

UNDEVELOPED PROPERTY

HAZARDOUS WASTE SITE

MAPS ARE BASED ON SAMPLING RESULTS ISSUED BY THE STATE OF VERMONT 6 MAY 2016

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REVISIONS

NO.	DATE	DESCRIPTION
0	05-24-2016	FOR REVIEW

TOWN OF BENNINGTON
WATER SYSTEM
NORTHWEST EXTENSION
BENNINGTON, VERMONT

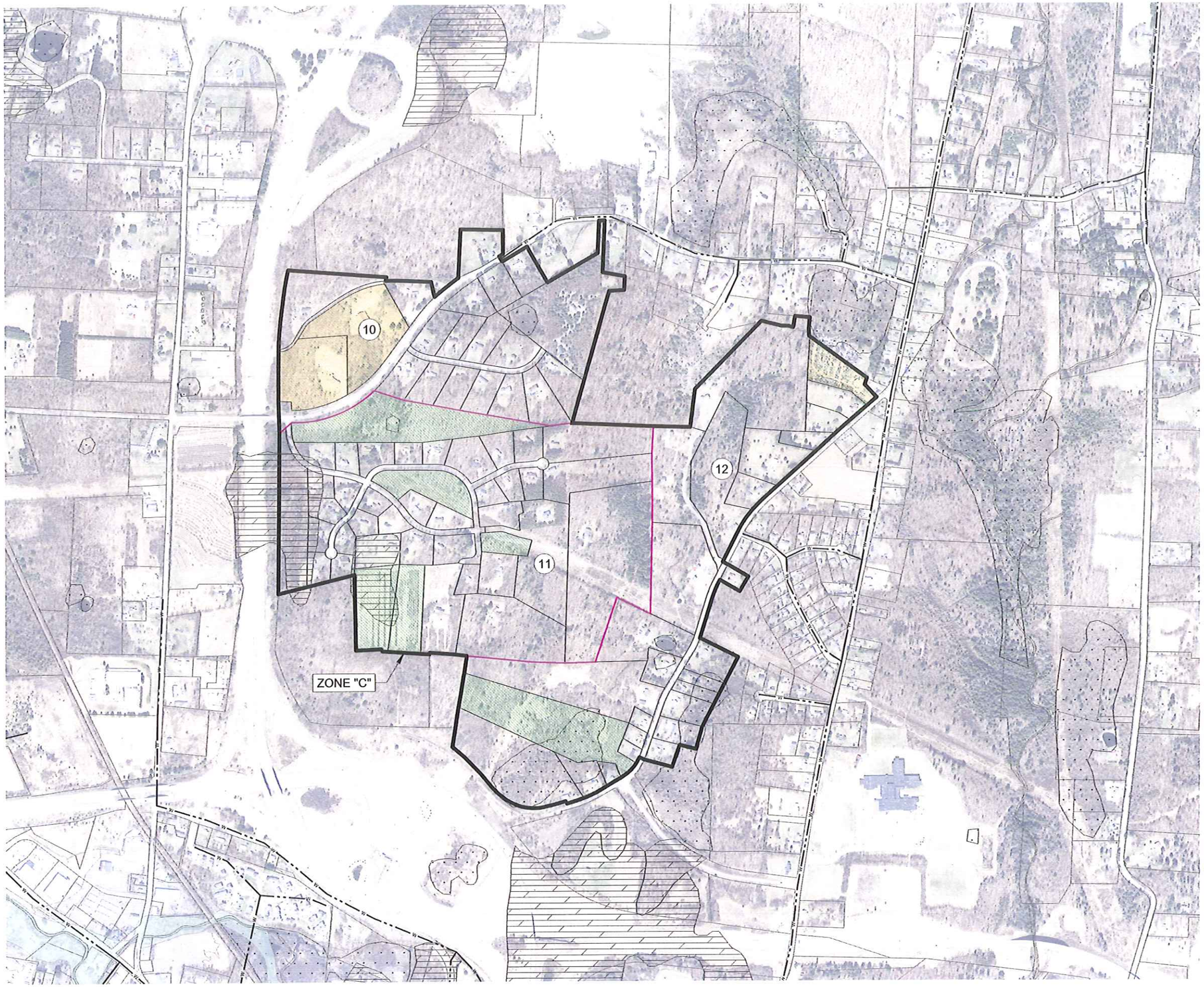
DRAWINGS THIS SHEET

PFOA REMEDIATION
LAND USE AND
HAZARDOUS WASTE
MAPPING

NUMBER	DATE
1001-019	05-03-2016
DRAWN	CHECKED
TJS	JMD

SHEET NUMBER

C1



2 LAND USE AND HAZARDOUS WASTE MAPPING
Scale: 1:400
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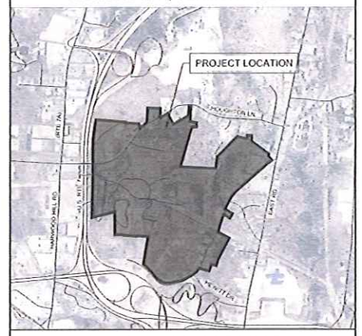
NORTH

VICINITY MAP

APPROXIMATE SCALE: 1:2000

BENNINGTON, VERMONT 05201



GENERAL NOTES

10. MICHAELS DRIVE AND HOUGHTON LANE
11. APPLE HILL SUBDIVISION
12. WILLOW ROAD

LEGEND

- SIGNIFICANT WETLAND AREA
- ADVERSE SOIL CONDITION: SHALLOW BEDROCK
- FLOOD PLAIN
- MULTI-UNIT PROPERTY
- COMMERCIAL PROPERTY
- UNDEVELOPED PROPERTY
- HAZARDOUS WASTE SITE

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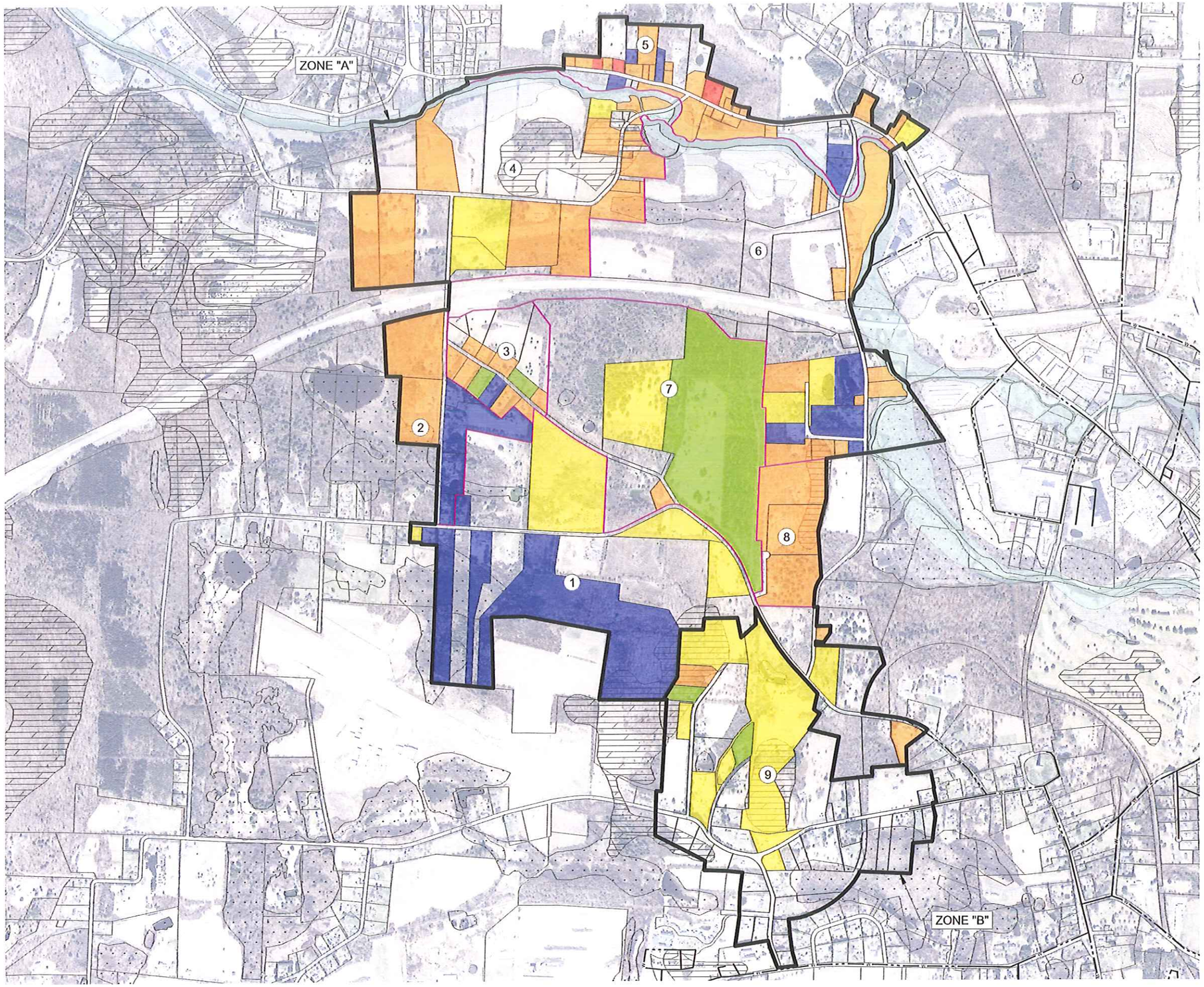
SHEET NUMBER

C2



3 PFOA SAMPLING PLAN

Scale: 1:600

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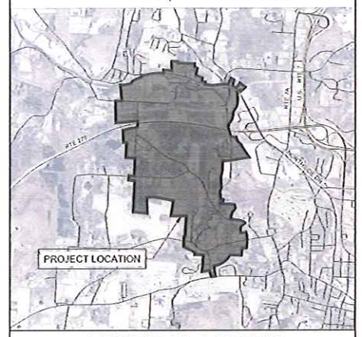
NORTH

VICINITY MAP

APPROXIMATE SCALE: 1:4000

BENNINGTON, VERMONT 05201



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LEGEND

- SIGNIFICANT WETLAND AREA
- ADVERSE SOIL CONDITION: SHALLOW BEDROCK
- FLOOD PLAIN
- PFOA > 1000 ppt
- PFOA 70-1000 ppt
- PFOA 70-50 ppt
- PFOA < 20 ppt (VDH ADVISORY)
- PFOA NON-DETECT (ND)

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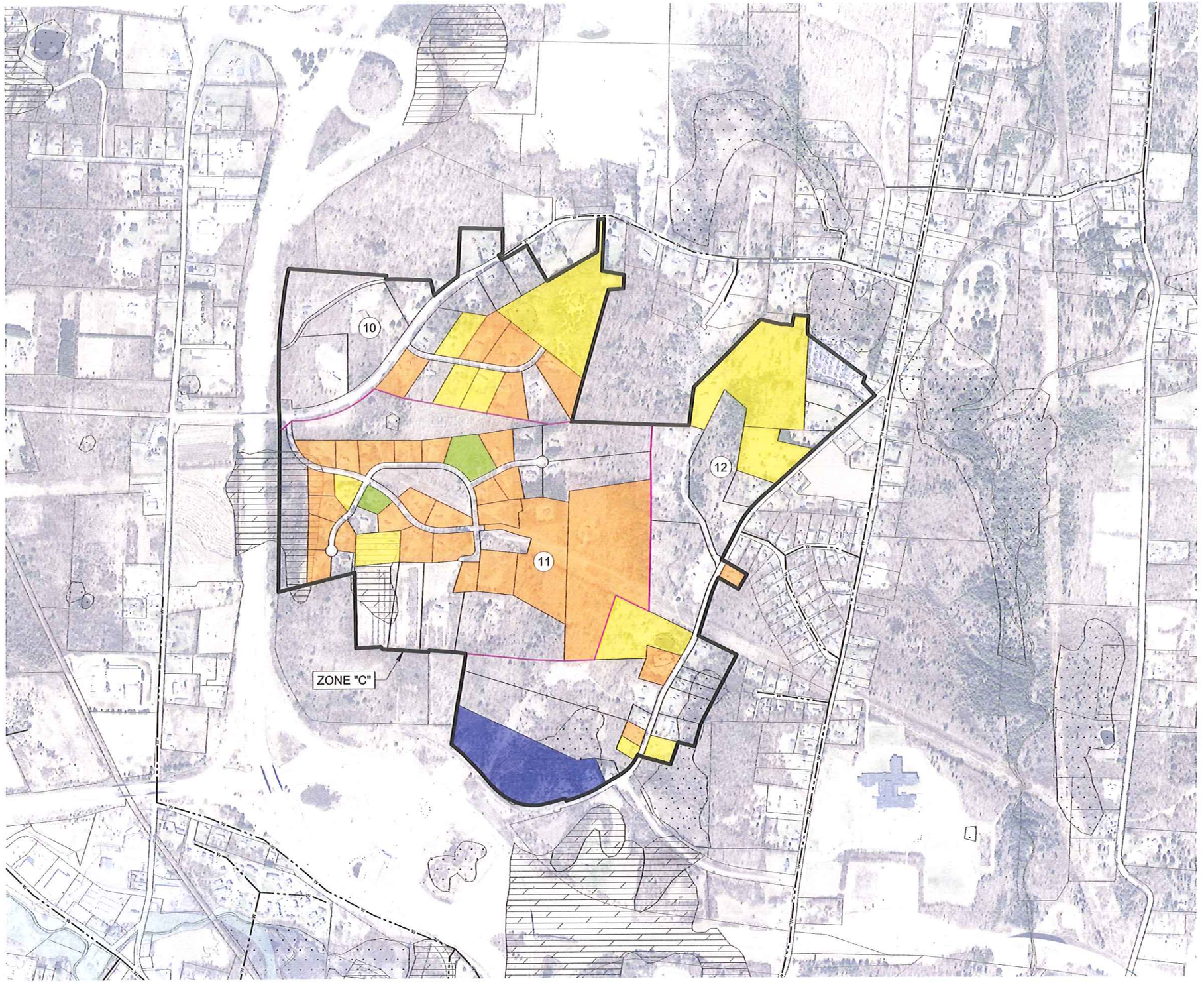


4 PFOA SAMPLING PLAN

Scale: 1:400

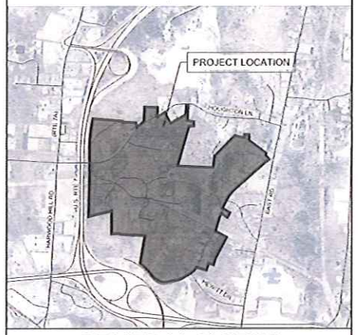
0 400 800 Feet

NORTH

VICINITY MAP

APPROXIMATE SCALE: 1:2000

BENNINGTON, VERMONT 05201



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C4

ZONE "A"

RIVER CROSSING

RIVER CROSSING

NORTH BENNINGTON ROAD
4,800 LF

MURPHY ROAD
3,666 LF

RIVER CROSSING

BRIDGE STREET
400 LF

SILK ROAD AND CARDINAL LANE
5,700 LF

REDUCING UNITS

AUSTIN HILL ROAD
4,292 LF

BARD ROAD
1,600 LF

RED PINE ROAD ALTERNATE
2,180 LF

VAIL ROAD
7,632 LF

SILK ROAD ALTERNATE
3,350 LF

EATON ROAD
700 LF

PIPPIN KNOLL
2,000 LF

HILL SHADOW FARM ROAD
1,200 LF

WALLOOMSAC ROAD
3,500 LF

GYPSY LANE
1,550 LF

ZONE "B"

5 PROPOSED SERVICE ZONES

Scale: 1:600

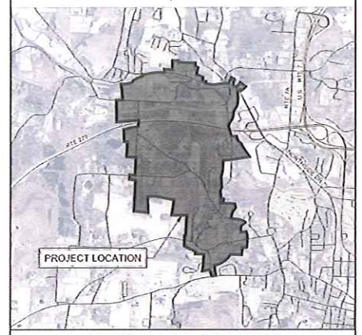
0 600 1200 Feet

NORTH

VICINITY MAP

APPROXIMATE SCALE: 1:4000

BENNINGTON, VERMONT 05201



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FLOOD PLAIN

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PFOA REMEDIATION
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ZONES

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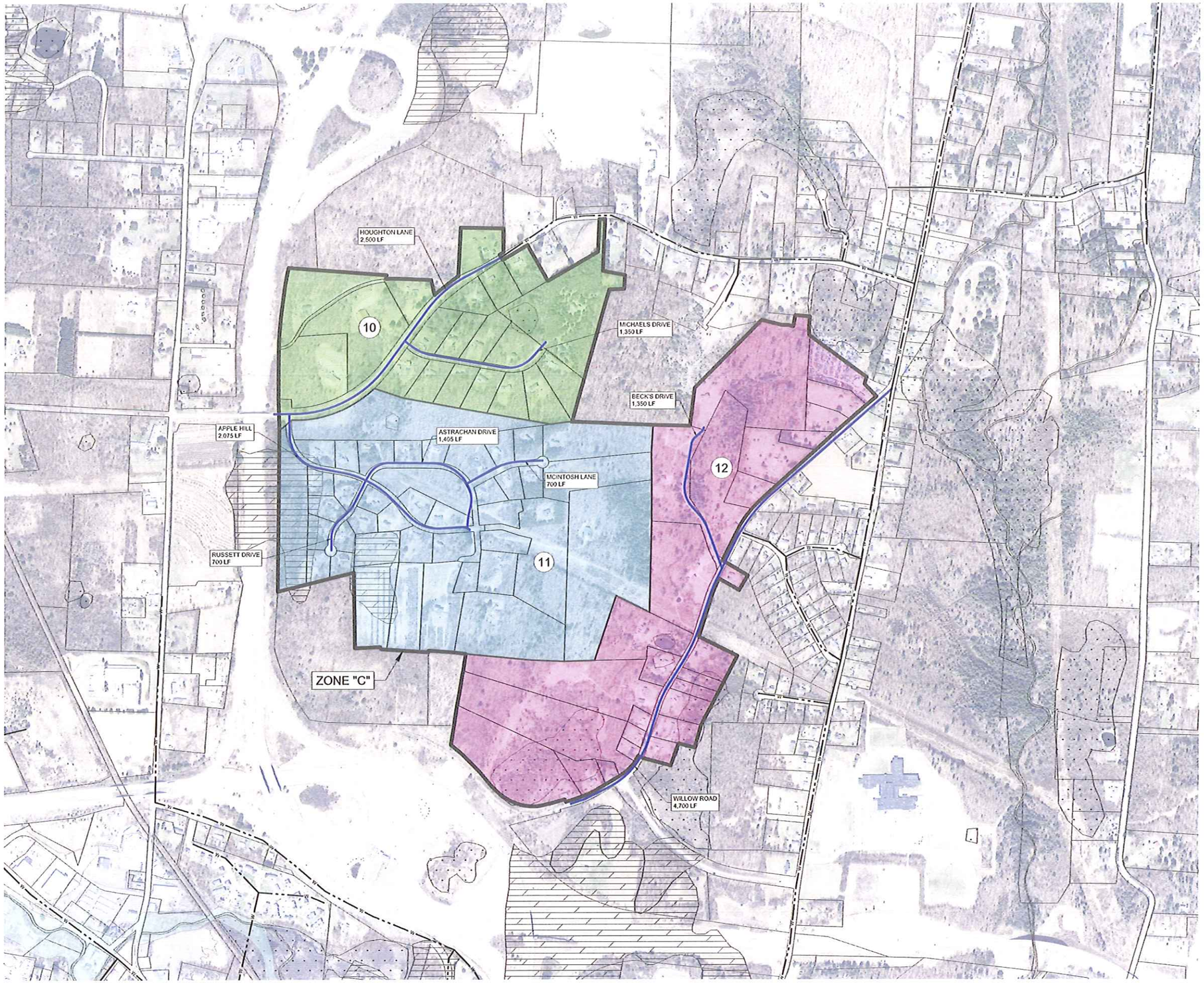
C5



6 PROPOSED SERVICE ZONES

Scale: 1:400

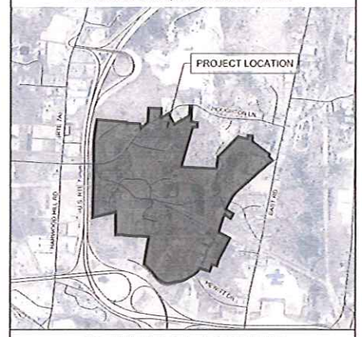
0 400 800 Feet

NORTH

VICINITY MAP

APPROXIMATE SCALE: 1:2000

BENNINGTON, VERMONT 05201



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ZONES

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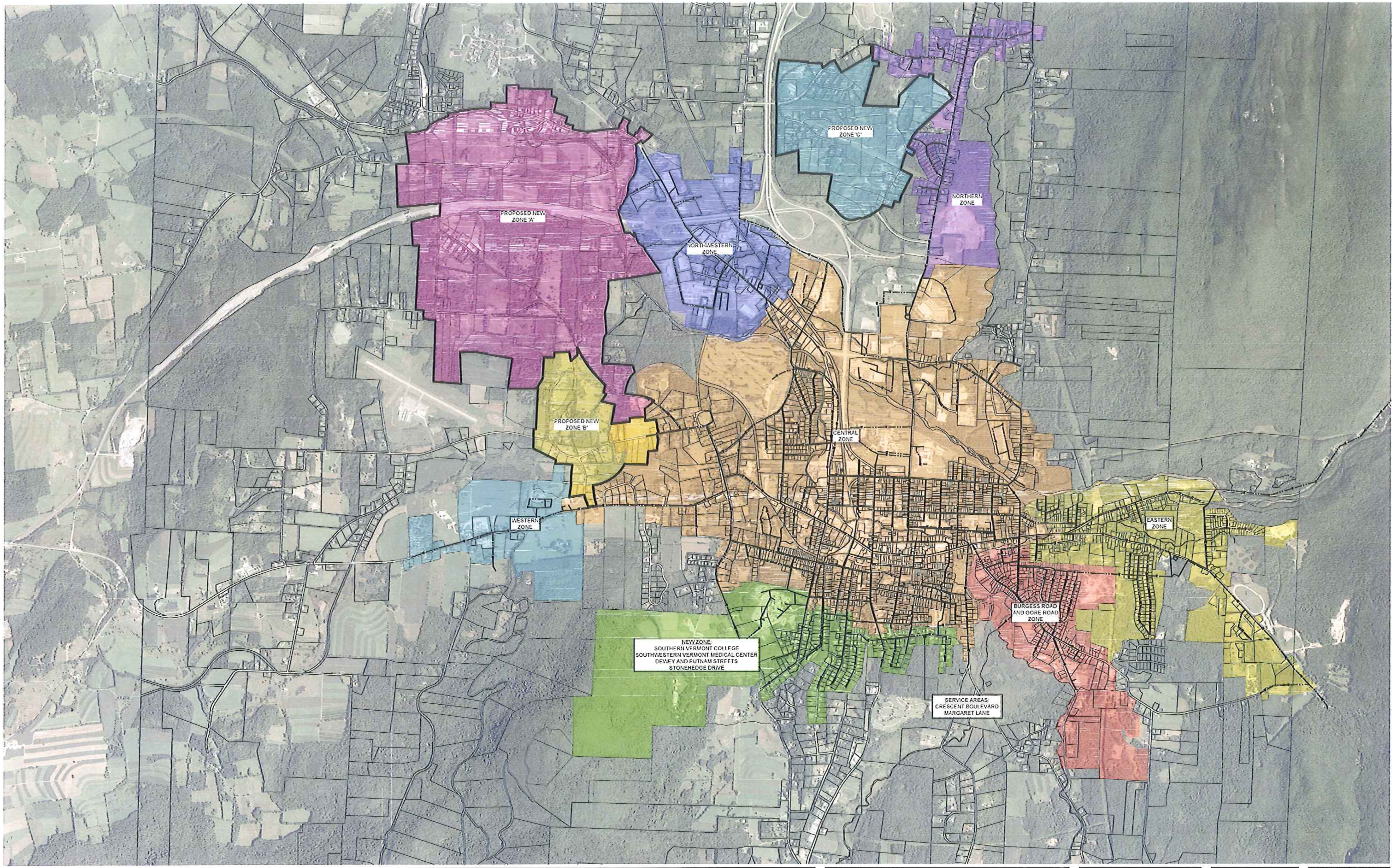
C6



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TOWN OF BENNINGTON
BENNINGTON, VERMONT

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PRESSURE ZONES

NORTH

SCALE: NOT TO SCALE

NUMBER	DATE
---	07-18-2014
DRAWN	CHECKED
TJS	JMD

SHEET NUMBER

A-2 Table 1 – Demand and Usage

ZONE A					
User/Location	Unit type	# Units	gpd/unit	Subtotal	Notes
AREA 1					
	House	18	450	8100	gpd/house based on town avg daily demand
	Multi Unit	0		0	
	Undeveloped Lot	3		0	
	# 1				Vail Road (40500200)
	# 2				744 Vail Road (34501402)
	# 3				
	Commercial	0		0	
	TOTAL			8100	
	NODES			10	
AREA 2					
	House	7	450	3150	gpd/house based on town avg daily demand
	Multi Unit	0		0	
	Undeveloped Lot	1		0	Austin Hill Road (04014700)
	Commercial	0		0	
	TOTAL			3150	
	NODES			1	
AREA 3					
	House	11	450	4950	gpd/house based on town avg daily demand
	Multi Unit	0		0	
	Undeveloped Lot	0		0	
	Commercial	0		0	
	TOTAL			4950	
	NODES			1	
AREA 4					
	House	20	450	9000	gpd/house based on town avg daily demand
	Multi Unit	0		0	
	Undeveloped Lot	2		0	
	# 1				Murphy Rd (04013000)
	# 2				Murphy Rd (04014700)
	Commercial	0		0	
	TOTAL			9000	
	NODES			4	
AREA 5					
	House	32	450	14400	gpd/house based on town avg daily demand
	Multi Unit	2	450	900	1422 N. Benn Rd
	Multi Unit	3	450	1350	1575 N. Benn Rd
	Undeveloped Lot	0		0	
	Commercial	4		0	
	# 1	1	500	500	Gas/ Mini Mart/ Repair - 1414 N. Bennington Rd
	# 2	1	500	500	Big Boys Toys - 1477 N. Bennington Rd
	# 3	1	1227	1227	Carbon Zero - 1514 N. Bennington Rd - WW-8-1715
	# 4	1	500	500	Office, Storage Warehouses - 1505 N. Bennington Rd
	TOTAL			19377	
	NODES			5	
AREA 6					
	House	18	450	8100	gpd/house based on town avg daily demand
	Multi Unit	2	560	1120	747 Silk Rd
	Undeveloped Lot	2		0	
	# 1				Silk Rd (28502700)
	# 2				Silk Rd (35501100)
	Commercial	0		0	
	TOTAL			9220	
	NODES			3	
AREA 7					
	House	3	450	1350	gpd/house based on town avg daily demand
	Multi Unit	0		0	
	Undeveloped Lot	0		0	
	Commercial	0		0	
	TOTAL				
	NODES				
AREA 8					
	House	3	450	1350	gpd/house based on town avg daily demand
	Multi Unit	0		0	
	Undeveloped Lot	0		0	
	Commercial	0		0	
	TOTAL				
	NODES				

ZONE A Total Flow 53797 GPD

ZONE B					
User/Location	Unit type	# Units	gpd/unit	Subtotal	Notes
AREA 9					
	House	42	450	18900	gpd/house based on town avg daily demand
	Multi Unit	2		0	230 Walloomsac Rd
	Undeveloped Lot	6		0	
	# 1				Hill Shadow Farm Rd (34502100)
	# 2				Walloomsac Rd (42503902)
	# 3				Walloomsac Rd (41500200)
	# 4				Walloomsac Rd (41502600)
	# 5				Walloomsac Rd (41502800)
	# 6				571 Walloomsac Rd (41502001)
	Commercial	0		0	
	TOTAL			18900	
	NODES			7	

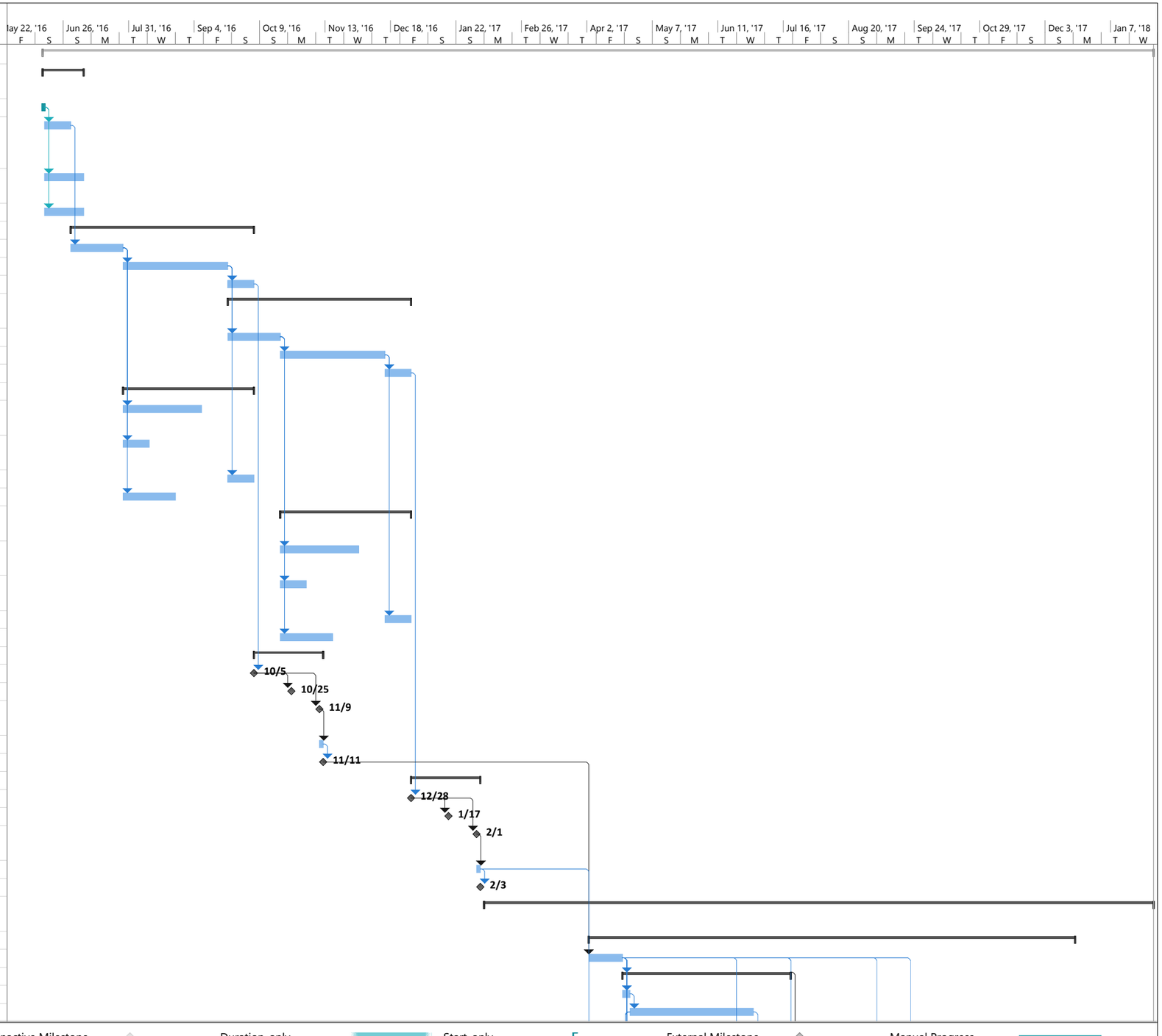
ZONE B Total Flow 18900 GPD

ZONE C					
User/Location	Unit type	# Units	gpd/unit	Subtotal	Notes
AREA 10					
	House	19	450	8550	gpd/house based on town avg daily demand
	Multi Unit	0		0	
	Undeveloped Lot	1		0	825 Houghton Ln (25502601)
	Commercial	2		0	
	# 1	1	700	700	Church of Latter Day Saints - 286 Houghton Ln -
	# 2	1	925	925	New England 7th Day Adventists - 404 Houghton Ln -
	TOTAL			10175	
	NODES			2	
AREA 11					
	House	39	450	17550	gpd/house based on town avg daily demand
	Multi Unit	0		0	
	Undeveloped Lot	2		0	
	# 1				Astrachan Dr (30500400)
	# 2				241 Houghton Ln (24504100)
	Commercial	0		0	
	TOTAL			17550	
	NODES			4	
AREA 12					
	House	25	450	11250	gpd/house based on town avg daily demand
	Multi Unit	0		0	
	Undeveloped Lot	0		0	
	Commercial	0		0	
	TOTAL			11250	
	NODES			3	

ZONE C Total Flow 38975 GPD

A-3 Project Schedule

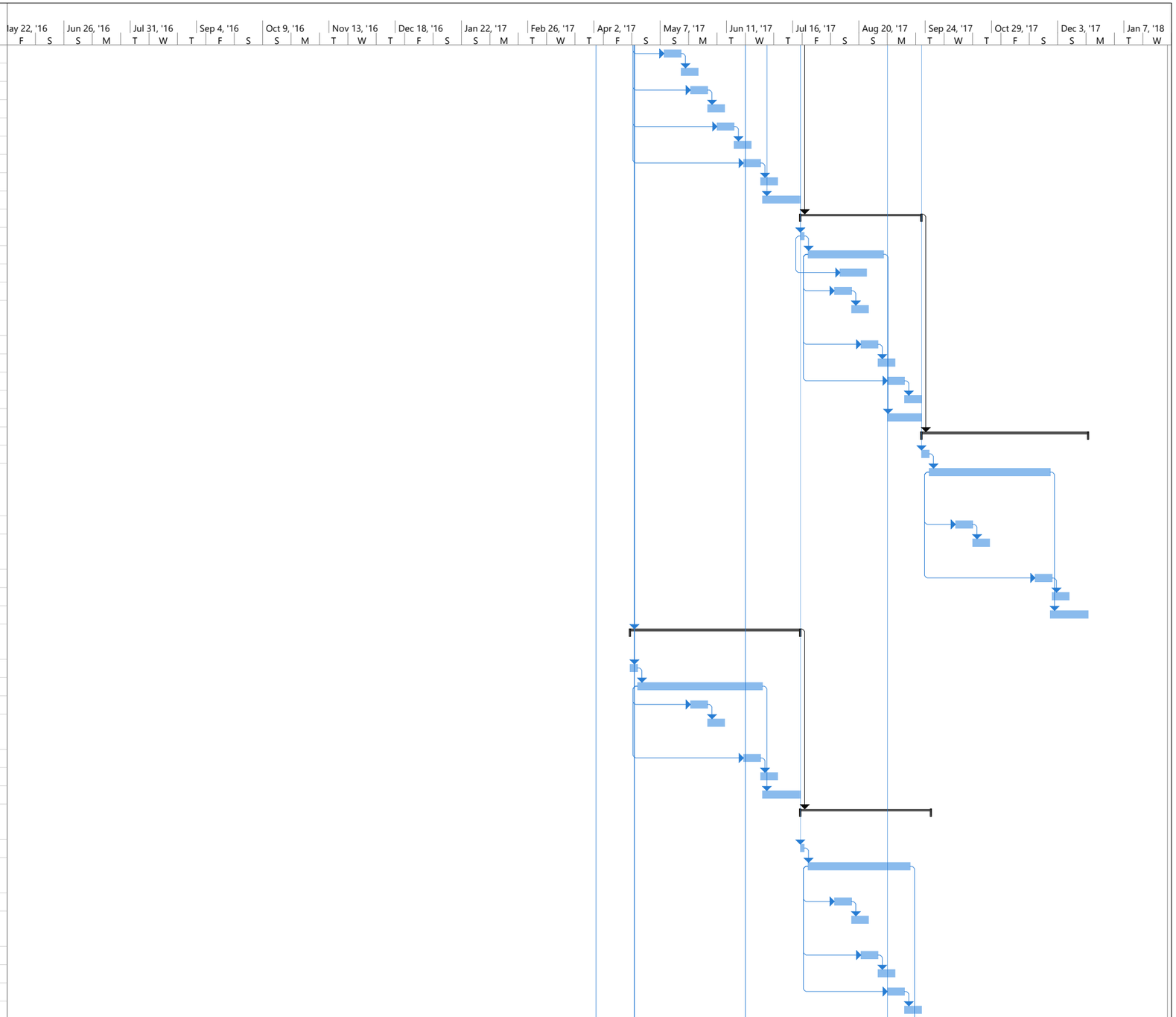
ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
0		**TOB-PFOA Extension**	**424 days**	**Wed 6/15/1**	**Mon 1/29/18**	
1		**Survey Existing Conditions Phase**	**16 days**	**Wed 6/15/16**	**Wed 7/6/16**	
2		Ground Survey Setup	1 day	Wed 6/15/16	Wed 6/15/16	
3		Drone Survey and Existing Conditions Mapping	2 wks	Thu 6/16/16	Wed 6/29/16	2
4		Individual Building Investigation	3 wks	Thu 6/16/16	Wed 7/6/16	2
5		Geotechnical Testing	3 wks	Thu 6/16/16	Wed 7/6/16	2
6		**Final Design Phase (Zone A)**	**70 days**	**Thu 6/30/16**	**Wed 10/5/16**	
7		25% Plans	1 mon	Thu 6/30/16	Wed 7/27/16	3
8		85% Plans	2 mons	Thu 7/28/16	Wed 9/21/16	7
9		Contract Documents	2 wks	Thu 9/22/16	Wed 10/5/16	8
10		**Final Design Phase (Zone B+C)**	**70 days**	**Thu 9/22/16**	**Wed 12/28/16**	
11		25% Plans	1 mon	Thu 9/22/16	Wed 10/19/16	8
12		85% Plans	2 mons	Thu 10/20/16	Wed 12/14/16	11
13		Contract Documents	2 wks	Thu 12/15/16	Wed 12/28/16	12
14		**Permitting Phase (Zone A)**	**50 days**	**Thu 7/28/16**	**Wed 10/5/16**	
15		Construction General Permitting	6 wks	Thu 7/28/16	Wed 9/7/16	7
16		Wastewater Management Division Permitting	2 wks	Thu 7/28/16	Wed 8/10/16	7
17		Water Supply Permitting	2 wks	Thu 9/22/16	Wed 10/5/16	8
18		Vtrans 1111 Permitting	1 mon	Thu 7/28/16	Wed 8/24/16	7
19		**Permitting Phase (Zone B+C)**	**50 days**	**Thu 10/20/16**	**Wed 12/28/16**	
20		Construction General Permitting	6 wks	Thu 10/20/16	Wed 11/30/16	11
21		Wastewater Management Division Permitting	2 wks	Thu 10/20/16	Wed 11/2/16	11
22		Water Supply Permitting	2 wks	Thu 12/15/16	Wed 12/28/16	12
23		Vtrans 1111 Permitting	1 mon	Thu 10/20/16	Wed 11/16/16	11
24		**Bid Phase (Zone A)**	**27 days**	**Wed 10/5/16**	**Fri 11/11/16**	
25		Advertisement for Bid	0 days	Wed 10/5/16	Wed 10/5/16	9
26		Prebid Meeting	0 days	Tue 10/25/16	Tue 10/25/16	25FS+14 days
27		Bid Opening	0 days	Wed 11/9/16	Wed 11/9/16	25FS+25 days
28		Bid Review	2 days	Thu 11/10/16	Fri 11/11/16	27
29		Notice of Award	0 days	Fri 11/11/16	Fri 11/11/16	28
30		**Bid Phase (Zone B+C)**	**27 days**	**Wed 12/28/1**	**Fri 2/3/17**	
31		Advertisement for Bid	0 days	Wed 12/28/1	Wed 12/28/16	13
32		Prebid Meeting	0 days	Tue 1/17/17	Tue 1/17/17	31FS+14 days
33		Bid Opening	0 days	Wed 2/1/17	Wed 2/1/17	31FS+25 days
34		Bid Review	2 days	Thu 2/2/17	Fri 2/3/17	33
35		Notice of Award	0 days	Fri 2/3/17	Fri 2/3/17	34
36		**Construction Administration**	**256 days**	**Mon 2/6/17**	**Mon 1/29/18**	
44		**Construction (Zone A)**	**186 days**	**Mon 4/3/17**	**Mon 12/18/17**	
45		Mobilization	14 days	Mon 4/3/17	Thu 4/20/17	29FS+14 days
46		**Area 1+7+8 (Vail Road)**	**64 days**	**Fri 4/21/17**	**Wed 7/19/17**	**45**
47		Startup	2 days	Fri 4/21/17	Mon 4/24/17	45
48		Pipe Installation	48 days	Tue 4/25/17	Thu 6/29/17	47



Project: TOB-PFOA Extension
Date: Tue 5/24/16

Task	Summary	Inactive Milestone	Duration-only	Start-only	External Milestone	Manual Progress
Split	Project Summary	Inactive Summary	Manual Summary Rollup	Finish-only	Deadline	
Milestone	Inactive Task	Manual Task	Manual Summary	External Tasks	Progress	

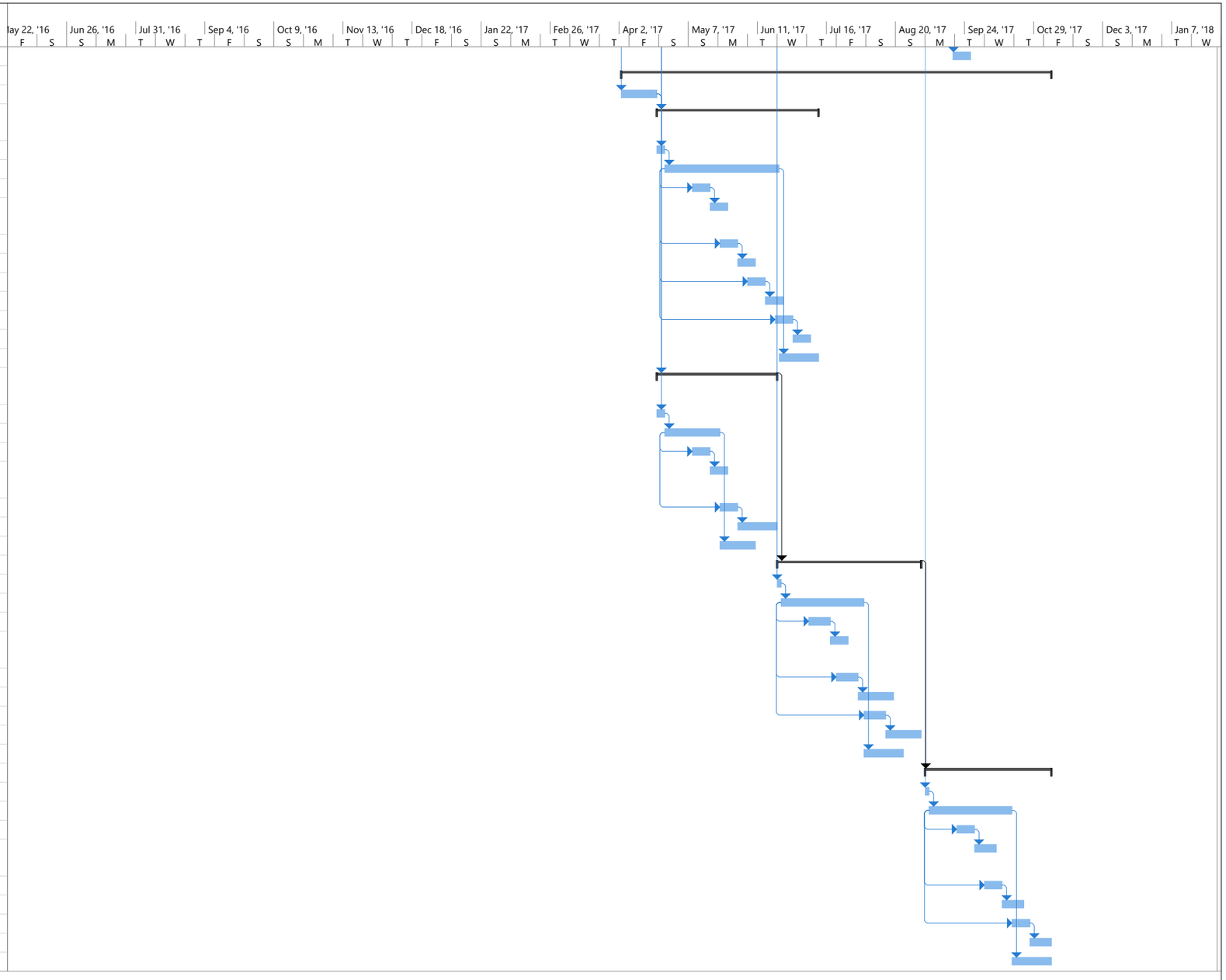
ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
49		Testing 1	7 days	Tue 5/9/17	Wed 5/17/17	48SS+10 days
50		Service Connections 1	7 days	Thu 5/18/17	Fri 5/26/17	49
51		Testing 2	7 days	Tue 5/23/17	Wed 5/31/17	48SS+20 days
52		Service Connection 2	7 days	Thu 6/1/17	Fri 6/9/17	51
53		Testing 3	7 days	Tue 6/6/17	Wed 6/14/17	48SS+30 days
54		Service Connection 3	7 days	Thu 6/15/17	Fri 6/23/17	53
55		Testing 4	7 days	Tue 6/20/17	Wed 6/28/17	48SS+40 days
56		Service Connection 4	7 days	Thu 6/29/17	Fri 7/7/17	55
57		Finalize Restorage	14 days	Fri 6/30/17	Wed 7/19/17	48
58		**Area 2+3 (Austin Hill)**	**46 days**	**Thu 7/20/17**	**Thu 9/21/17**	**46**
59		Startup	2 days	Thu 7/20/17	Fri 7/21/17	45
60		Pipe Installation	30 days	Mon 7/24/17	Fri 9/1/17	59
61		PRV Installation	10 days	Thu 8/10/17	Wed 8/23/17	59SS+15 days
62		Testing 1	7 days	Mon 8/7/17	Tue 8/15/17	60SS+10 days
63		Service Connections 1	7 days	Wed 8/16/17	Thu 8/24/17	62
64		Testing 2	7 days	Mon 8/21/17	Tue 8/29/17	60SS+20 days
65		Service Connection 2	7 days	Wed 8/30/17	Thu 9/7/17	64
66		Testing 3	7 days	Mon 9/4/17	Tue 9/12/17	60SS+30 days
67		Service Connection 3	7 days	Wed 9/13/17	Thu 9/21/17	66
68		Finalize Restorage	14 days	Mon 9/4/17	Thu 9/21/17	60
69		**Area 4 (Murphy Road)**	**62 days**	**Fri 9/22/17**	**Mon 12/18/17**	**58**
70		Startup	2 days	Fri 9/22/17	Mon 9/25/17	45
71		Pipe Installation (includes Ledge and Bridge)	46 days	Tue 9/26/17	Tue 11/28/17	70
72		Testing 1	7 days	Tue 10/10/17	Wed 10/18/17	71SS+10 days
73		Service Connections 1	7 days	Thu 10/19/17	Fri 10/27/17	72
74		Testing 2	7 days	Tue 11/21/17	Wed 11/29/17	71SS+40 days
75		Service Connection 2	7 days	Thu 11/30/17	Fri 12/8/17	74
76		Finalize Restorage	14 days	Wed 11/29/1	Mon 12/18/17	71
77		**Area 5 (North Bennington Rd)**	**64 days**	**Fri 4/21/17**	**Wed 7/19/17**	**45**
78		Startup	2 days	Fri 4/21/17	Mon 4/24/17	45
79		Pipe Installation	48 days	Tue 4/25/17	Thu 6/29/17	78
80		Testing 1	7 days	Tue 5/23/17	Wed 5/31/17	79SS+20 days
81		Service Connections 1	7 days	Thu 6/1/17	Fri 6/9/17	80
82		Testing 2	7 days	Tue 6/20/17	Wed 6/28/17	79SS+40 days
83		Service Connection 2	7 days	Thu 6/29/17	Fri 7/7/17	82
84		Finalize Restorage	14 days	Fri 6/30/17	Wed 7/19/17	79
85		**Area 6 (Silk Cardinal Lane)**	**49 days**	**Thu 7/20/17**	**Tue 9/26/17**	**77**
86		Startup	2 days	Thu 7/20/17	Fri 7/21/17	45
87		Pipe Installation (including bridge)	40 days	Mon 7/24/17	Fri 9/15/17	86
88		Testing 1	7 days	Mon 8/7/17	Tue 8/15/17	87SS+10 days
89		Service Connections 1	7 days	Wed 8/16/17	Thu 8/24/17	88
90		Testing 2	7 days	Mon 8/21/17	Tue 8/29/17	87SS+20 days
91		Service Connection 2	7 days	Wed 8/30/17	Thu 9/7/17	90
92		Testing 3	7 days	Mon 9/4/17	Tue 9/12/17	87SS+30 days
93		Service Connection 3	7 days	Wed 9/13/17	Thu 9/21/17	92



Project: TOB-PFOA Extension
Date: Tue 5/24/16

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress

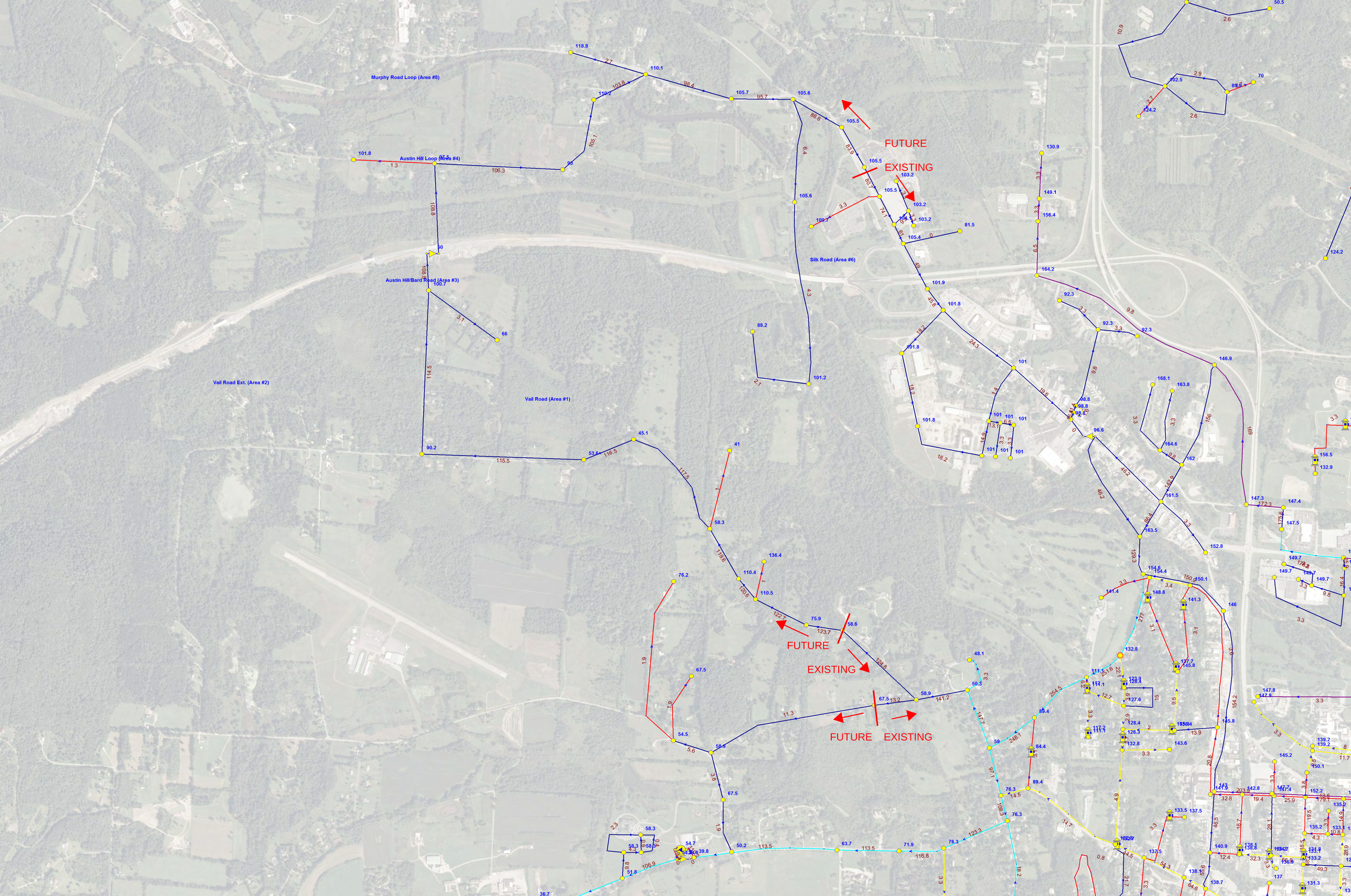
ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
94		Finalize Restorage	7 days	Mon 9/18/17	Tue 9/26/17	87
95		**Construction (Zone B+C)**	**156 days**	**Mon 4/3/17**	**Mon 11/6/17**	
96		Mobilization	14 days	Mon 4/3/17	Thu 4/20/17	34FS+14 days
97		**Area 9 (Walloomsac Area)**	**58 days**	**Fri 4/21/17**	**Tue 7/11/17**	**96**
98		Startup	2 days	Fri 4/21/17	Mon 4/24/17	45
99		Pipe Installation	42 days	Tue 4/25/17	Wed 6/21/17	98
100		Testing 1	7 days	Tue 5/9/17	Wed 5/17/17	99SS+10 days
101		Service Connections 1	7 days	Thu 5/18/17	Fri 5/26/17	100
102		Testing 2	7 days	Tue 5/23/17	Wed 5/31/17	99SS+20 days
103		Service Connection 2	7 days	Thu 6/1/17	Fri 6/9/17	102
104		Testing 3	7 days	Tue 6/6/17	Wed 6/14/17	99SS+30 days
105		Service Connection 3	7 days	Thu 6/15/17	Fri 6/23/17	104
106		Testing 4	7 days	Tue 6/20/17	Wed 6/28/17	99SS+40 days
107		Service Connection 4	7 days	Thu 6/29/17	Fri 7/7/17	106
108		Finalize Restorage	14 days	Thu 6/22/17	Tue 7/11/17	99
109		**Area 10 (Houghton Micheals)**	**43 days**	**Fri 4/21/17**	**Tue 6/20/17**	**96**
110		Startup	2 days	Fri 4/21/17	Mon 4/24/17	45
111		Pipe Installation	20 days	Tue 4/25/17	Mon 5/22/17	110
112		Testing 1	7 days	Tue 5/9/17	Wed 5/17/17	111SS+10 days
113		Service Connections 1	7 days	Thu 5/18/17	Fri 5/26/17	112
114		Testing 2	7 days	Tue 5/23/17	Wed 5/31/17	111SS+20 days
115		Service Connection 2	14 days	Thu 6/1/17	Tue 6/20/17	114
116		Finalize Restorage	14 days	Tue 5/23/17	Fri 6/9/17	111
117		**Area 11 (Apple Hill)**	**53 days**	**Wed 6/21/17**	**Fri 9/1/17**	**109**
118		Startup	2 days	Wed 6/21/17	Thu 6/22/17	45
119		Pipe Installation	30 days	Fri 6/23/17	Thu 8/3/17	118
120		Testing 1	7 days	Fri 7/7/17	Mon 7/17/17	119SS+10 days
121		Service Connections 1	7 days	Tue 7/18/17	Wed 7/26/17	120
122		Testing 2	7 days	Fri 7/21/17	Mon 7/31/17	119SS+20 days
123		Service Connection 2	14 days	Tue 8/1/17	Fri 8/18/17	122
124		Testing 3	7 days	Fri 8/4/17	Mon 8/14/17	119SS+30 days
125		Service Connection 3	14 days	Tue 8/15/17	Fri 9/1/17	124
126		Finalize Restorage	14 days	Fri 8/4/17	Wed 8/23/17	119
127		**Area 12 (Willow Road)**	**46 days**	**Mon 9/4/17**	**Mon 11/6/17**	**117**
128		Startup	2 days	Mon 9/4/17	Tue 9/5/17	45
129		Pipe Installation	30 days	Wed 9/6/17	Tue 10/17/17	128
130		Testing 1	7 days	Wed 9/20/17	Thu 9/28/17	129SS+10 days
131		Service Connections 1	7 days	Fri 9/29/17	Mon 10/9/17	130
132		Testing 2	7 days	Wed 10/4/17	Thu 10/12/17	129SS+20 days
133		Service Connection 2	7 days	Fri 10/13/17	Mon 10/23/17	132
134		Testing 3	7 days	Wed 10/18/17	Thu 10/26/17	129SS+30 days
135		Service Connection 3	7 days	Fri 10/27/17	Mon 11/6/17	134
136		Finalize Restorage	14 days	Wed 10/18/17	Mon 11/6/17	129

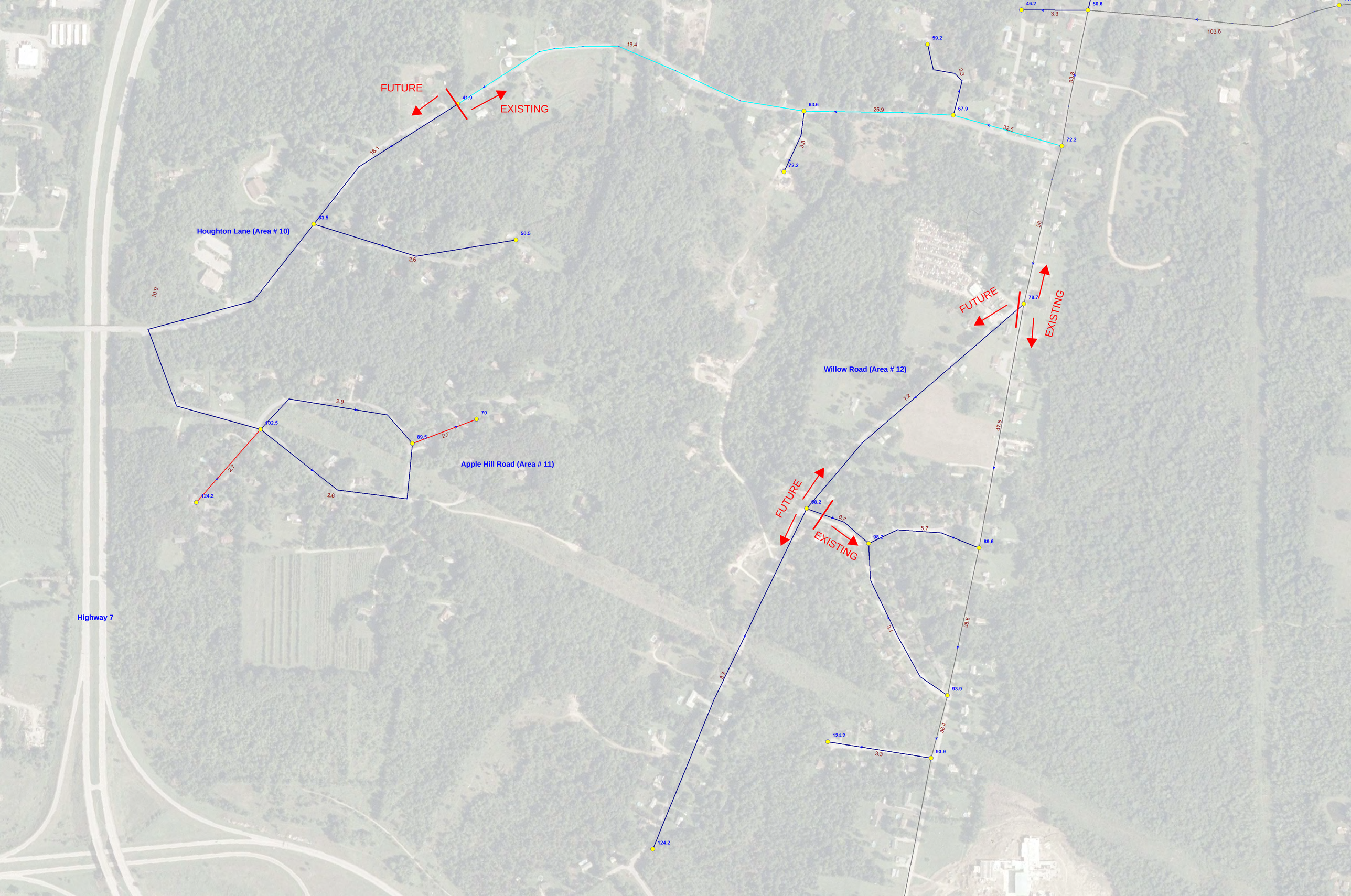


Project: TOB-PFOA Extension
Date: Tue 5/24/16

Task	Summary	Inactive Milestone	Duration-only	Start-only	External Milestone	Manual Progress
Split	Project Summary	Inactive Summary	Manual Summary Rollup	Finish-only	Deadline	
Milestone	Inactive Task	Manual Task	Manual Summary	External Tasks	Progress	

A-4 Hydraulic Models


Murphy Road Loop (Area #8)
Austin Hill Loop (Area #4)
Austin Hill/Bard Road (Area #3)
Vail Road Ext. (Area #2)
Vail Road (Area #1)
Silk Road (Area #6)
FUTURE
EXISTING
FUTURE
EXISTING
FUTURE
EXISTING


FUTURE
EXISTING
41.9
19.4
16.1
63.6
25.9
59.2
3.3
67.9
32.5
72.2
3.3
72.2
46.2
3.3
50.6
103.6
93.8
Houghton Lane (Area # 10)
53.5
50.5
2.6
10.9
58
FUTURE
EXISTING
78.7
Willow Road (Area # 12)
7.2
47.5
2.9
102.5
89.5
70
2.7
2.7
124.2
2.6
Apple Hill Road (Area # 11)
FUTURE
EXISTING
98.2
0.7
98.2
5.7
89.6
5.1
38.6
3.3
93.9
38.4
124.2
3.3
93.9
124.2
Highway 7

A-5 Town of Bennington Allocation Fee and Current Rate Table

TOWN OF BENNINGTON

Water/Sewer Systems
Allocation Fee Policy

Effective January 1, 2004, the Board hereby establishes an allocation fee for the water and sewer systems.

The fee is payable to the Town upon receipt of an allocation of capacity in either system by the Town. Requests for allocation shall be directed to the Water Resources Superintendent in writing.

The fee is based on $1,000.00 for each 450gpd of proposed use. Annually, the Board shall review the proportionate split of the $1,000.00 between the systems and shall establish said split based on system capacity issues. (In the first year, it shall be $650.00 for water; $350.00 for sewer.)

Allocation requests shall be required for all new developments after the effective date. For existing uses, only incremental increases in use (capacity demand) shall require an allocation. Fees charged shall be based on the incremental increase only. Allocations shall be valid for two years from date of issue. An allocation may be renewed, without fee, if the proposed development has not proceeded to completion within the two-year period. Where developments have received an allocation and no activity has occurred within the two years, the allocation shall be void, unless there exists a clear and verifiable reason for the inactivity, which is beyond the control of the developer.

205 SOUTH STREET P.O. BOX 469 BENNINGTON, VERMONT 05201
802 442 1037 FAX (802) 442-1068

Single Family Residences

Water - Sewer
Allocation Fees Schedule

MAY 2015

WATER

	Estimated *(gallons)*	MINIMUM Fee	
3-Bedroom (*up to*)	450	$ 650	($1.44 p/g)
4-Bedroom	600	$ 865	
5-Bedroom	750	$1,083	
6-Bedroom	900	$1,300	
7-Bedroom	1050	$1,517	

Sewer

	(gallons)	MINIMUM Fee	
3-Bedroom (*up to*)	210 (state) / 420 (calc)	$380	($1.81 p/g)
4-Bedroom	210 (state) / 490 (calc)	$380	
5-Bedroom	560	$1,008	
6-Bedroom	630	$1,134	
7-Bedroom	700	$1,260	

FY2016
WATER & SEWER RATE CALCULATION
RATE PROPOSAL WATER & SEWER

Board approval: xx/xx/xx

WATER

NUMBER OF UNITS	PROPOSED QUARTERLY RATES		FY15 Rates	DOLLARS GENERATED
	FLAT:	114.87	111.53	3% Increase
	PER 1,000 GALLONS:	4.25	4.12	3% Increase
	METER SURCHARGE	69.05	67.04	3% Increase

2776	N/A	459.48	Per Person Yrly Increase 13.36	1,275,516	ANNUALIZED FLAT RATE	
1182	197,686,085	4.25	0.13	840,166	UNITS X PER 1,000 GALLONS	
		276.20	8.04	326,468	ANNUAL TOTAL SURCHARGE	
				$ 2,442,151	TOTAL DOLLARS GENERATED	
				$ 2,443,650	BUDGETED EXPENDITURES NET OF OTHER REVENUES	
				$ (1,499)	SURPLUS OVER BUDGET	

SEWER

NUMBER OF UNITS	PROPOSED QUARTERLY RATES		FY15 Rates	DOLLARS GENERATED
	FLAT:	86.00	83.50	3% Increase
	PER 1,000 GALLONS	2.99	2.91	3% Increase
	METER SURCHARGE	53.44	51.88	3% Increase

2830	N/A	344.02	Per Person Yrly Increase 10.02	973,570
1272	219,237,080	2.99	0.08	656,613
		213.76	6.24	271,904
				$ 1,902,086
				$ 1,906,430
				$ (4,344)

FLAT:	$111	THE ANNUAL IMPACT OF INCREASING EACH RATE BY A PENNY WOULD INCREASE REVENUE BY THE AMOUNTS SHOWN FOR	FLAT:	$113
PER 1,000 GALLONS:	$1,977	← WATER AND SEWER →	PER 1,000 GALLONS:	$2,192
METER SURCHARGE	$12		METER SURCHARGE	$13

A-6 Opinion of Probable Cost

Opinion of Probable Cost

Unit Price	$	175.00	$/FT
Cost Per Connection	$	7,000.00	$/CONNECTION

Zone A

Area #	Description	Length (FT)	Total Houses	H: NT	H: <20/ND	H: 20-70	H: >70	Cost	Add	Total	Notes
1	Vail Road	7,700	18	6	5	5	2	$ 1,473,500.00		$ 1,473,500.00	
2	Austin Hill Road	4,300	8	0	4	2	2	$ 808,500.00	$ 50,000.00	$ 858,500.00	PRV needed
3	Bard Road	1,600	11	0	3	0	8	$ 357,000.00		$ 357,000.00	
4	Murphy Road	3,900	18	3	0	1	14	$ 808,500.00	$ 100,000.00	$ 908,500.00	Murphy Road needs a river crossing, ledge present
5	North Bennington Rd	4,800	36	4	4	1	27	$ 1,092,000.00		$ 1,092,000.00	
6	Silk/Cardinal	6,100	18	0	4	2	12	$ 1,193,500.00	$ 150,000.00	$ 1,343,500.00	Silk Road needs a river crossing
7	Red Pine Road	350	4	1	1	1	1	$ 89,250.00		$ 89,250.00	
8	Eaton Rd	700	3	0	0	0	3	$ 143,500.00		$ 143,500.00	
		29,450	**116**	**14**	**21**	**12**	**69**	**Subtotal Construction Zone A**		**$ 6,265,750.00**	
								Contingency (20%)		$ 1,253,150.00	
								Permit Fees		$16,000.00	
								Allocation Fees		$ 81,360.00	
								Engineering Design (State DWSRLF Fee Curve)		$ 1,043,408.00	
								Total Zone A		***$ 8,659,668.00***	

Zone B

Area #	Description	Length (FT)	Total Houses	H: NT	H: <20/ND	H: 20-70	H: >70	Cost	Add	Total	Notes
9	Walloomsac et. Al	8,300	36	26	2	7	1	$ 1,704,500.00		$ 1,704,500.00	
		8,300	**36**	**26**	**2**	**7**	**1**	**Subtotal Construction Zone B**		**$ 1,704,500.00**	

Zone C

Area #	Description	Length (FT)	Total Houses	H: NT	H: <20/ND	H: 20-70	H: >70	Cost	Add	Total	Notes
10	Houghton Ln/Michaels	3,900	19	10	0	4	5	$ 815,500.00		$ 815,500.00	
11	Apple Hill	4,900	35	8	2	2	23	$ 1,102,500.00	$ 25,000.00	$ 1,127,500.00	ledge present
12	Willow Road	6,050	24	14	2	5	3	$ 1,226,750.00		$ 1,226,750.00	
		14,850	**78**	**32**	**4**	**11**	**31**	**Subtotal Construction Zone C**		**$ 3,169,750.00**	
								Contingency (20%)		$ 974,850.00	
								Permit Fees		$16,000.00	
								Allocation Fees		$ 80,784.00	
								Engineering Design (State DWSRLF Fee Curve)		$ 828,034.97	
								Total Zone B&C		***$ 5,069,418.97***	

Notes:

1. Test results are based on sampling results provided by VTDEC dated 5/6/16
2. Number of connections shown per zone are estimated from information provided by Town of Bennington and verified by a manual count from aerial photographs. Actual totals may differ.
3. Allocation Fees are calculated based on all users in the area connected to public water

A-7 Letter from Department of Environmental Conservation (Corrective Action Measures)

State of Vermont
Department of Environmental Conservation
Office of the Commissioner
1 National Life Drive – Main 2
Montpelier, VT 05620-3704
(802) 249-4393
matt.chapman@state.vt.us

AGENCY OF NATURAL RESOURCES

May 17, 2016

Nathan H. Stearns
Hershenson, Carter, Scott and McGee, P.C.
P.O. Box 909
Norwich, VT 05055-0909
Phone: (802) 295-2800
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nate@hcsmlaw.com

Dear Nate:

This letter is to follow up from our conversation on the afternoon of May 17, 2016. The Agency of Natural Resources is currently undertaking a response action with respect to releases from the Saint-Gobain facility located in North Bennington, Vermont.

The contaminant of concern (perfluorooctanoic acid or PFOA) has been found in groundwater and potable water supplies in concentrations greater than the Primary Groundwater Enforcement Standard adopted by the Agency on April 29, 2016. As a result, we have advised Saint-Gobain that the impacted area is required to receive bottled water, have point of entry treatment systems, and, ultimately, connect to the municipal water supply of the Town of Bennington. Placing these residents on the municipal water supply is a necessary step to remediate of the release and protect the health of persons impacted by the release.

The extension of the public water system represents an interim corrective action measure required by the Agency pursuant to its authority under 10 V.S.A. §§ 1283 and 6615b. While the measures identified in this letter do not represent all the steps Saint-Gobain is legally obligated to complete under 10 V.S.A. § 6615b, we believe it is appropriate to issue an interim corrective action approval for the extension of the public water supply to ensure its timely completion. In light of this determination, the Agency also believes that the extension does not represent a development subject to a permit under 10 V.S.A. Chapter 151 (Act 250) consistent with the corrective action exception to the definition of development. 10 V.S.A. § 6001(3)(D)(iv).

Please feel free to contact me with any questions that you may have.

Matthew Chapman, General Counsel
Department of Environmental Conservation

cc. Jean Nicolai, DEC project coordinator; water supply matters
Chris Gibson Esq., Counsel for Saint-Gobain

A-8 Estimated Annual Maintenance Costs

Zone-A

Hydrant Flushing

With fire hydrants located at 500' intervals there would be roughly 59 new hydrants
59 Hyd. X 15 min Flush X 2-times per year =29.5 Hrs to do semi-annual flushing
Labor Costs-Manpower-29.5 hr X 41.07/hr = $1,211.57
Equipment Costs-Vehicle Expense-29.5 hr X $36.00/hr = $1,062.00
Total Cost for Hydrant Flushing Annually = $2,273.57

Additional Sampling Expenses

Disinfection By-Product Sampling (3) Locations (4) Times per Year
Disinfection By-Products-$260.00/sample X (12) = **$3,120.00/yr**
Labor Costs- Manpower-(1) Operator X 1/hr per sampling, $41.07/hr X 12/yr = **$492.84/yr**
Equipment Costs-Vehicle Expense X 1 hr per sampling, $36.00/hr X 12 = $**432.00/yr**
Sub-Total Costs-$4,044.84/yr

(4) Total Coliform Samples per month at $25.00 per sample, $25.00 X 48 samples = **$1,200.00/yr**
Miscellaneous Costs-Cl2 Powder Pillows-**$25.00/yr**, Cl2 Test Unit-**$600.00/yr (Est.) = $625.00/yr**
Labor Costs-Manpower-(1) Operator X 0.5 hr/sample, $41.07/hr X 0.5 hr X 48 samples = **$985.68/yr**
Equipment Costs-Vehicle Expense-0.5 hr X 48 Samples X $36/00/hr = **$864.00**
Sub-Total Costs-$3,674.68/yr

Total Zone A Maintenance Costs per Year = $7,719.52

Note:This estimate only represents out of pocket costs for annual sampling costs and semi-annual hydrant flushing.

Zone-B (8,300lf new pipe)

Hydrant Flushing

With fire hydrants located at 500' intervals there would be roughly 17 new hydrants
17 Hyd. X 15 min Flush X 2-times per year =8.5 Hrs to do semi-annual flushing
Labor Costs-Manpower-8.5 hr X 41.07/hr **= $349.10**
Equipment Costs-Vehicle Expense-8.5 hr X $36.00/hr **= $306.00**
Total Cost for Hydrant Flushing Annually = $651.10

Additional Sampling Expenses

Disinfection By-Product Sampling (1) Locations (4) Times per Year
Disinfection By-Products-$260.00/sample X (4) = **$1,040.00/yr**
Labor Costs- Manpower-(1) Operator X 1/hr per sampling, $41.07/hr X 4/yr = **$164.28/yr**
Equipment Costs-Vehicle Expense X 1 hr per sampling, $36.00/hr X 4 = **$144.00/yr**
Sub-Total Costs-$1,348.28/yr

(2) Total Coliform Samples per month at $25.00 per sample, $25.00 X 24 samples = **$600.00/yr**
Miscellaneous Costs-Cl2 Powder Pillows**-$5.00/yr**, Cl2 Test Unit**-$N/C = $0.00/yr**
Labor Costs-Manpower-(1) Operator X 0.5 hr/sample, $41.07/hr X 0.5 hr X 12 samples = **$492.84/yr**
Equipment Costs-Vehicle Expense-0.5 hr X 24 Samples X $36/00/hr = **$432.00**
Sub-Total Costs-$1,529.84/yr

Total Zone B Maintenance Costs per Year = $3,529.22

Note:This estimate only represents out of pocket costs for annual sampling costs and semi-annual hydrant flushing.

Zone-C (14,850lf new pipe)

Hydrant Flushing

With fire hydrants located at 500' intervals there would be roughly 30 new hydrants
30 Hyd. X 15 min Flush X 2-times per year = 15 Hrs to do semi-annual flushing
Labor Costs-Manpower-15 hr X 41.07/hr = **$616.05**
Equipment Costs-Vehicle Expense-15 hr X $36.00/hr = **$540.00**
Total Cost for Hydrant Flushing Annually = $1,156.05

Additional Sampling Expenses

Disinfection By-Product Sampling (3) Locations (4) Times per Year
Disinfection By-Products-$260.00/sample X (12) = **$3,120.00/yr**
Labor Costs- Manpower-(1) Operator X 1/hr per sampling, $41.07/hr X 12/yr = **$492.84/yr**
Equipment Costs-Vehicle Expense X 1 hr per sampling, $36.00/hr X 12 = **$432.00/yr**
Sub-Total Costs-$4,044.84/yr

(3) Total Coliform Samples per month at $25.00 per sample, $25.00 X 36 samples = **$900.00/yr**
Miscellaneous Costs-Cl2 Powder Pillows-**$12.50/yr**, Cl2 Test Unit-**$N/C = $0.00/yr**
Labor Costs-Manpower-(1) Operator X 0.5 hr/sample, $41.07/hr X 0.5 hr X 36 samples = **$665.33/yr**
Equipment Costs-Vehicle Expense-0.5 hr X 36 Samples X $36/00/hr = **$648.00/yr**
Sub-Total Costs-$2,225.83/yr

Total Zone C Maintenance Costs per Year = $7,426.72

Note:This estimate only represents out of pocket costs for annual sampling costs and semi-annual hydrant flushing.