Westchester County Streams,
Byram River Basin
Flood Risk Management
Fairfield County, Connecticut and
Westchester County, New York

Draft Integrated Feasibility Report & Environmental Impact Statement



Appendix B3 – Nonstructural

This Appendix documents the activities performed in support of the nonstructural plan development for the initial array of alternatives and final array of alternatives. Four alternatives were evaluated, No Action, nonstructural measures in the 10-percent and 1-percent floodplains, updates to the 1977 Recommendation, and a smaller levee and floodwall plan that also included bridge modifications and channel widening. The evaluation of the initial array suggested nonstructural measures in the 10-percent floodplain may be a viable alternative. The final array of alternatives included nonstructural measures (in the 10-percent, 4-percent, 2-percent, and 1-percent floodplains) as well as the removal and replacement of the Route 1 bridges by itself and in conjunction with nonstructural treatments (in the resulting 10-percent, 4-percent, 2-percent, and 1-percent floodplains). The Nonstructural Plan was initially developed using estimated main floor and low opening elevations based on GIS data. The purpose of the Conceptual Design is to optimize the Nonstructural Plan using more detailed information. The following summarizes the results of the nonstructural evaluation.

# 1. Project Area

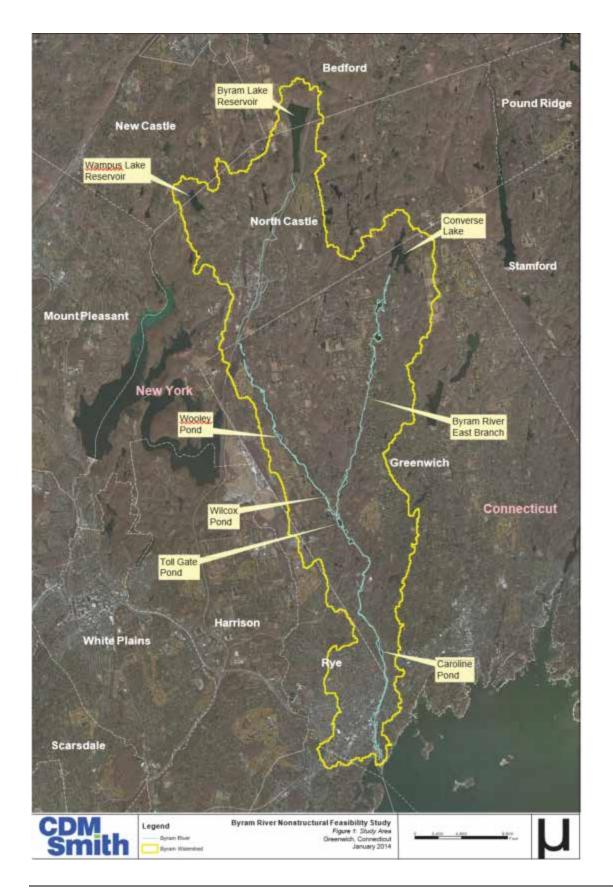
The Byram River basin is almost entirely within the extents of the Town of Greenwich (the Town) in Fairfield County Connecticut with headwaters north across the border in Westchester County, New York (**Figure 1**). The Byram River, with a length of 13.5 miles, flows south and empties into Long Island Sound. The lower portion of the river for a length of 1.3 miles is tidal. At the mouth of the river, the Byram River is the state boundary between Connecticut and New York. The total contributing area at the river mouth is 30 square miles. The riparian zone of the lower three miles of the Byram River is populated with suburban housing and commercial buildings. In the upper reach, generally upstream of the bridge at Bailiwick Road the area is less densely developed.

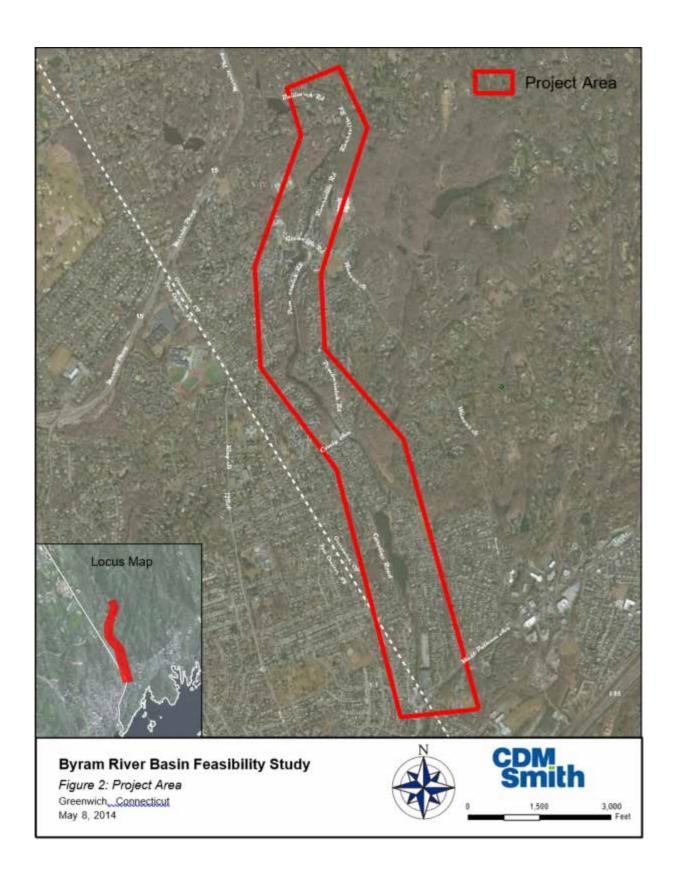
The Byram River project area includes area west and east of the river, extending between just north of Bailiwick Road to South of West Putnam Avenue (**Figure 2**). Structures within the project area were evaluated for nonstructural flood protection using a structure inventory provided by the Town, topographic mapping, and floodplain delineations.

# 2. Structure Inventory

A structure inventory was developed by the Town of Greenwich to provide information on each structure to be used in the evaluation process (Attachment A). Information provided in the inventory included the type of structure, land use, construction, garage, foundation, structure condition, ground elevation, low opening elevation, and main floor elevation. All information was collected from the Town's Tax Assessor's property information, field visits, Google Earth, and the Town's GIS. Main floor elevations were surveyed by Milone and MacBroom Inc. (MMI) and low opening elevations were field verified by the Town. While collecting main floor and low opening elevations for 18 Halock Drive and a low opening elevation for 11 Hollow Wood Lane the properties were under construction and therefore the respective data could not be collected. For these properties the estimated elevations used in the nonstructural assessment were used in this evaluation.

Land use types within the project area included residential and commercial. Residential structure types included slab-on-grade foundations, subgrade basements, elevated, bi-levels, raised ranches, split levels, and large residential. Nonresidential structure types included slab-on-grade foundations, subgrade basements, and raised foundations. The following provides a brief description and example of each structure type.





## **Slab-on-Grade Foundation**

A slab-on-grade foundation structure includes structures constructed on a slab foundation at grade.

Example of Slab-on-Grade Structure Type 499 Den Lane, Greenwich, CT (Pump Station)

# **Subgrade Basement**

Subgrade basement structures contain a basement with all sides subgrade. Basements were considered to be one floor equivalent of space located below the main floor on a slab.



Example of Subgrade Basement Structure Type 98 Monica Road, Greenwich, CT

## **Elevated**

Elevated structures include structures raised on posts, piles, piers, or extended walls.



Example of Elevated Structure Type 18 Hollow Wood Lane, Greenwich, CT

## **Bi-Level**

Bi-level structures consist of two stories, with the first story (typically a living space or garage) partially below grade. The second story (the main floor) is typically above the first story, with the main entrance located between the two stories.



Example of Bi-Level Structure Type 39 Angelus Drive, Greenwich, CT

#### **Raised Ranch**

Ranch ranches consist of two stories, with the first story (typically a living space or garage) built slab-on-grade and the second story (the main floor) directly above the first story.



Example of Raised Ranch Structure Type 9 Lucy Street, Greenwich, CT

#### **Raised Foundation**

Raised foundation structures contain a space below the main floor not big enough for a basement (typically a crawlspace).



Example of Raised Foundation Structure Type 9 Fletcher Avenue, Greenwich, CT

# **Split Level**

Split levels consist of at least three levels, with the lower and upper level stacked, and the main floor level adjacent between the two. Each level is at a different elevation and connected by short stairways. The lower level is typically on a slab foundation and is living space and/or a garage. The main floor is typically on a raised foundation and is where the main entrance is located.



Example of Split Level Structure Type 19 Halock Drive, Greenwich, CT

# **Large Residential**

Large residential structures include apartments, townhouses, and multi-family units. Foundation types typical of large residential structures include slab-on-grade, raised foundation, and subgrade basement.

Example of Large Residential Structure Type 2 Homestead Lane, Greenwich, CT

# 3. Nonstructural Flood Protection Measures

Nonstructural flood proofing measures involve adaption to the natural floodplain without changing flood characteristics. Nonstructural flood protection measures considered in this study include dry flood proofing, wet flood proofing, ringwalls, elevation, and acquisition. The following provides a brief description of each type of protection.

#### **Dry Flood Proofing**

Dry flood proofing prevents water from entering structures through sealants and closures. It includes the addition of waterproofing compounds, impermeable sheeting or other flood-damage resistant materials to the structure's walls (sealants) and attachment of watertight closures to all openings, such as doorways and windows, below the flood elevation (closures). Dry flood proofing is most effective for structures without basements and at flood depths less than 2-feet, which includes 1-foot of freeboard. For structures with basements dry flood proofing should be implemented in conjunction with wet flood proofing. The main floor should be protected through dry flood proofing methods and the basement should be filled or wet flood proofed.

#### **Wet Flood Proofing**

Wet flood proofing involves decreasing flood damage to the structure's foundation by allowing flood waters to enter low, nonliving areas of the structure through vents and other openings. Allowing floodwaters to

enter the structure reduces the effects of hydrostatic pressure and in turn decreases flood related damage to the structure's foundation. Wet flood proofing should be implemented in conjunction with protection of all utilities and any other important equipment below the flood depth. This is typically achieved through elevation. Wet flood proofing is suitable for all flood depths.

## **Ringwall**

Ringwalls (also known as floodwalls) prevent floodwater from reaching the structure through construction of a barrier. Other types of flood barriers include levees and berms, but do to the medium to high density of the project area only ringwalls were considered.

#### Elevation

Elevation involves raising the lowest finished floor of the structure to a height at least one foot above the 1-percent flood elevation. Structures can be elevated on fill, piers, posts, columns, or through extension of foundation walls.

# Acquisition

Acquisition (buyout) involves acquiring the land and structure to demolish, sell and remove, or to be used by the municipality. In cases where elevation is required but not suitable, typically due to the condition of the structure, acquisition is recommended.

#### 4. Recommendations

The structure inventory showed structures within the project area to be primarily residential, with several commercial and one utility (Attachment A). All structures with both residential and commercial land use were assessed as residential structures. Each residential structure was evaluated based on depth of inundation, structure type, square footage and condition. Nonresidential structures were assessed based on depth of inundation, construction type, structure type and structure condition.

Using the criteria listed above, an algorithm was developed to determine the appropriate recommendation for each parcel (Attachment B). Structures included in the structure inventory outside of the flood limits were considered "No Action" structures. These structures were determined through identifying any structure with ground elevations greater than the flood elevation. They were also determined visually in GIS using flood inundation mapping. All structures within the flood limits were assessed based on a foot of freeboard to serve as a factor of safety. Each structure was assessed for the 10-, 4-, 2-, and 1-percent storm events.

Based on the USACE requirements, structures within the 10-, 4-, and 2-percent floodplain were improved to the 1-percent level of protection for flood proofing recommendations. Where dry or wet flood proofing was recommended, ringwalls were also considered. A final recommendation was made based on the structure and its surrounding site characteristics. General assumptions made in the assessment process were:

- n Flood velocity is negligible.
- n Debris impacts are negligible.
- n Flooding is gradual (no flash flooding).
- n Structures elevated will be raised (finished floor elevation) to the 1-percent flood elevation plus an additional foot.

A total of 493 structures were evaluated for nonstructural flood protection within the project area, of which 202 required flood proofing for the 1-percent storm event (Attachment C). These 202 structures with one

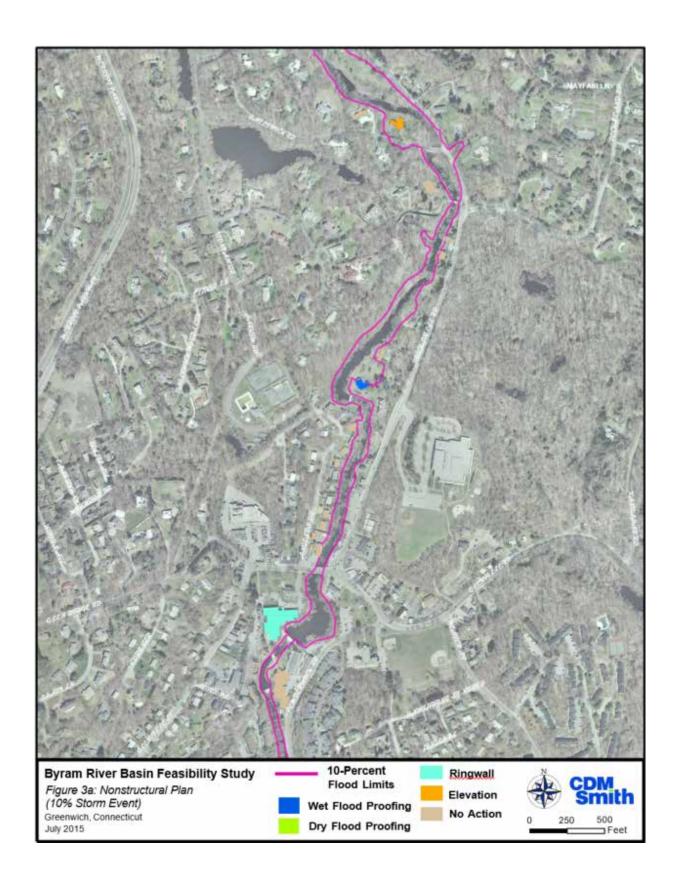
additional new property were evaluated using the updated main floor and low opening elevations. **Table 1** provides a summary of the recommendations for the 10-, 4-, 2-, and 1-percent storm events respectively. Recommendations are also presented in the structure inventory (**Attachment A**) and shown in **Figures 3a,b,c** (10-percent storm event), **Figures 4a,b,c** (4-percent storm event), **Figures 5a,b,c** (2-percent storm event), and **Figures 6a,b,c** (1-percent storm event).

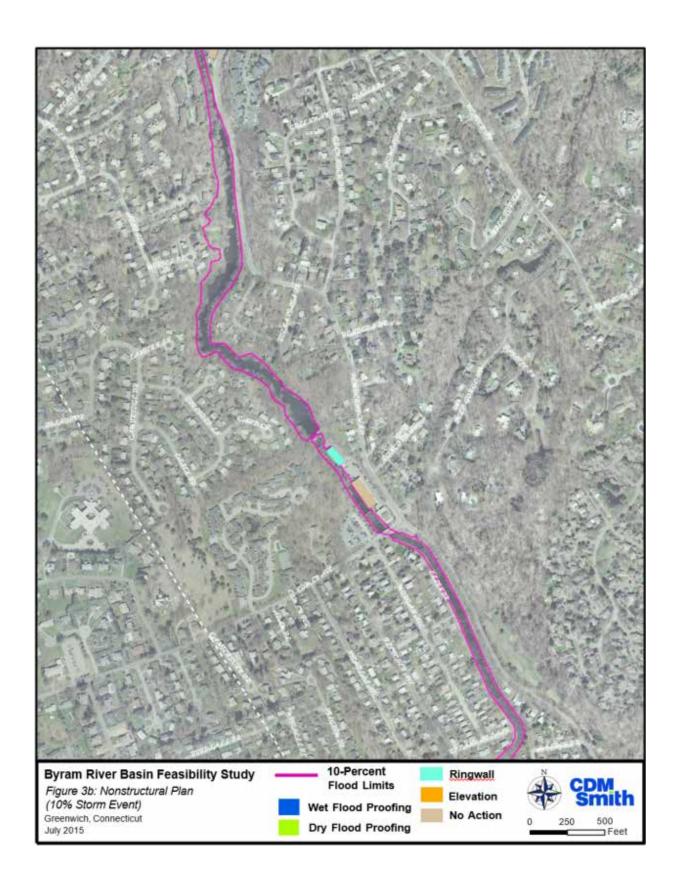
**Table 1 Nonstructural Flood Proofing Summary** 

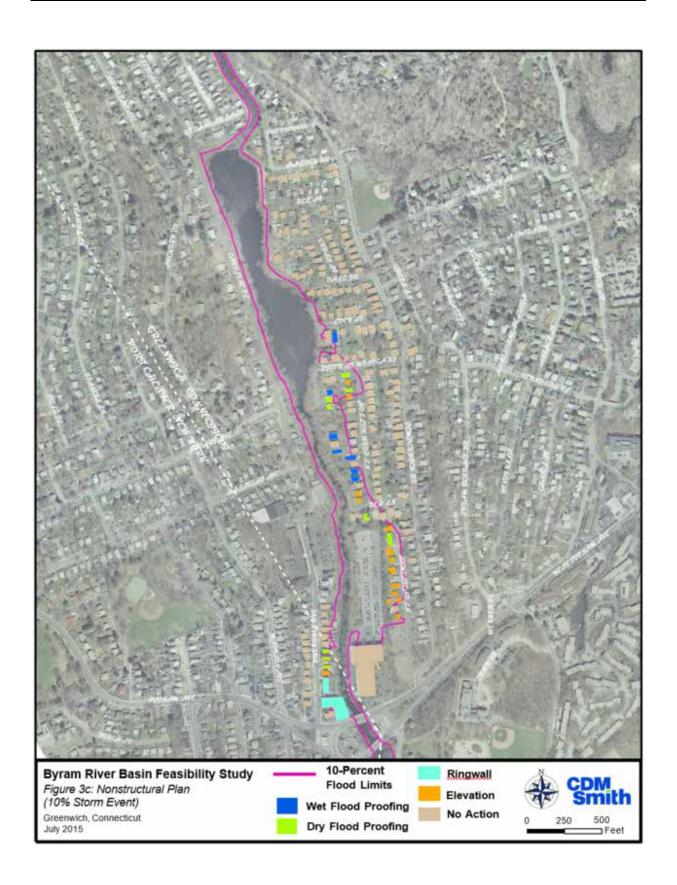
Flood Protection	Number of Structures Requiring Protection for each Storm Event						
	10%	4%	2%	1%			
Dry Flood Proofing	9	35	47	59			
Wet Flood Proofing	8	29	60	90			
Ringwall	9	11	12	12			
Elevation	15	22	22	22			
Total	41	97	141	183			

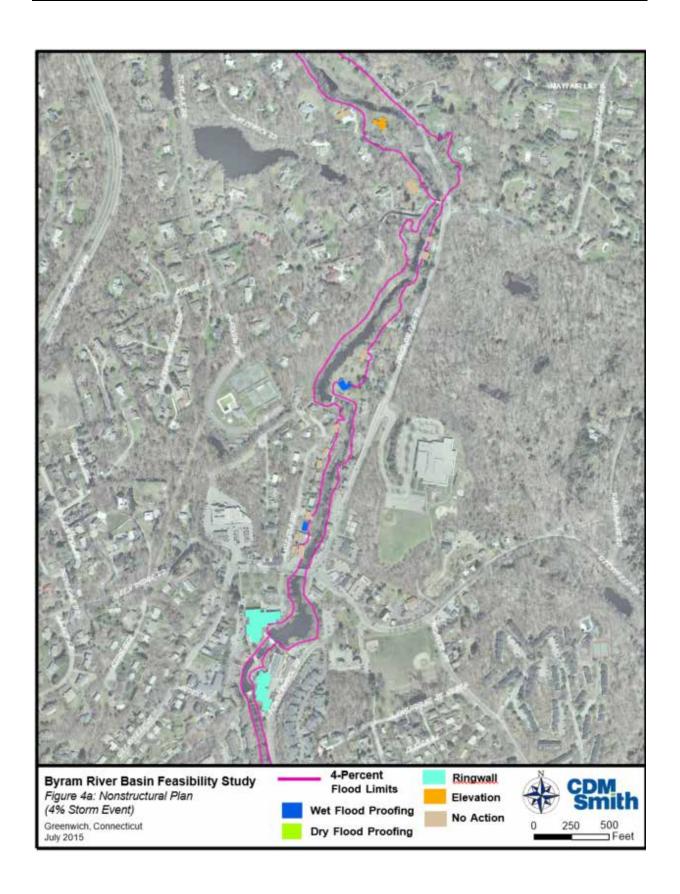
For all storm events it was determined that flood proofing is not required for a majority of the structures in the upstream region of the project area and mostly required for structures in the downstream region on the east side of the Byram River between Halock Drive and West Putnam Avenue. It was also determined that acquisition was not required for any of the structures.

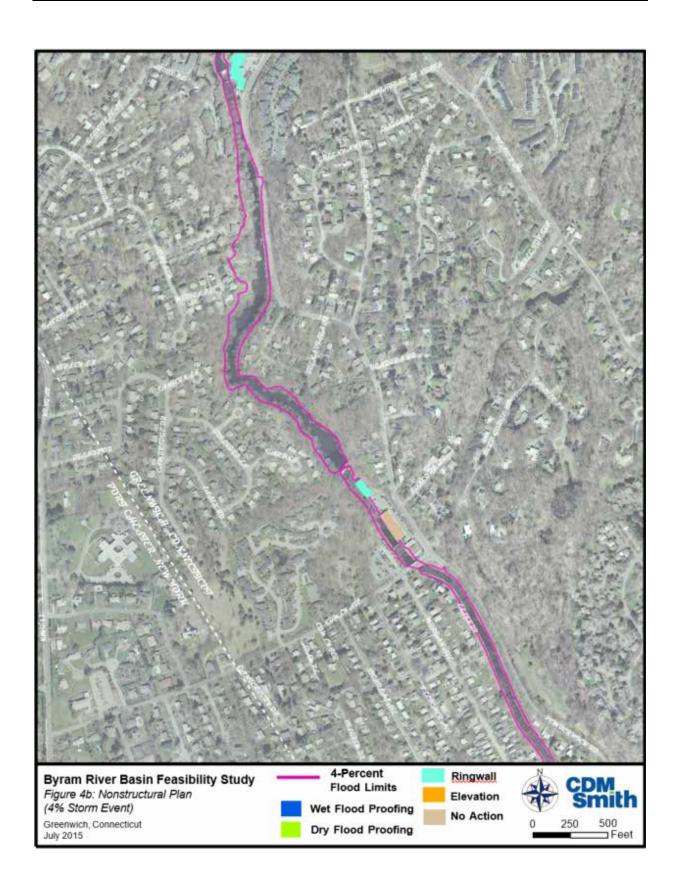
For example, only seven structures require flood proofing in the upstream region for the 1-percent storm event include elevation for several structures near Bailiwick Road, and mostly wet flood proofing and dry flood proofing for several houses located on Angelus Drive, Riversville Road, Glenville Street, and Pemberwick Road (**Figure 6a**). Between Sioux Place and Upland Street East no structures were found to need flood protection for the 1-percent storm event other than 200 Pemberwick Road where a ringwall is recommended (**Figure 6b**). A majority of the structures requiring flood protection for the 1-percent storm event are located in the downstream region of the project area on the east side of the Byram River. In the downstream region several structures on the west side of the Byram River located on Riverdale Avenue require flood protection for the 1-percent storm event as well. All nonstructural flood proofing measures presented in this report are recommended in the downstream region other than acquisition (**Figure 6c**). A majority of the structures require either dry or wet flood proofing for the 1-percent storm event.

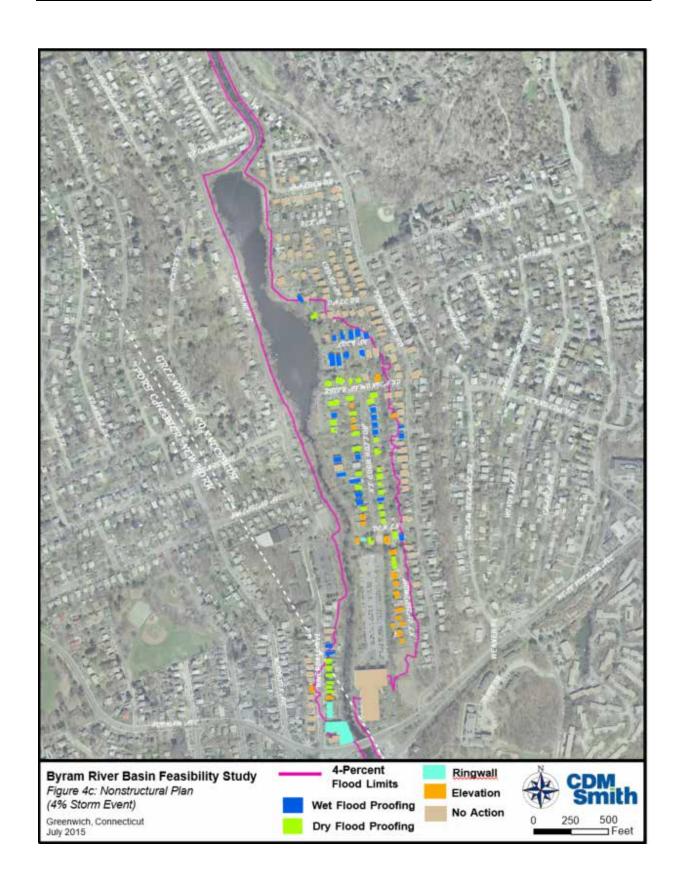


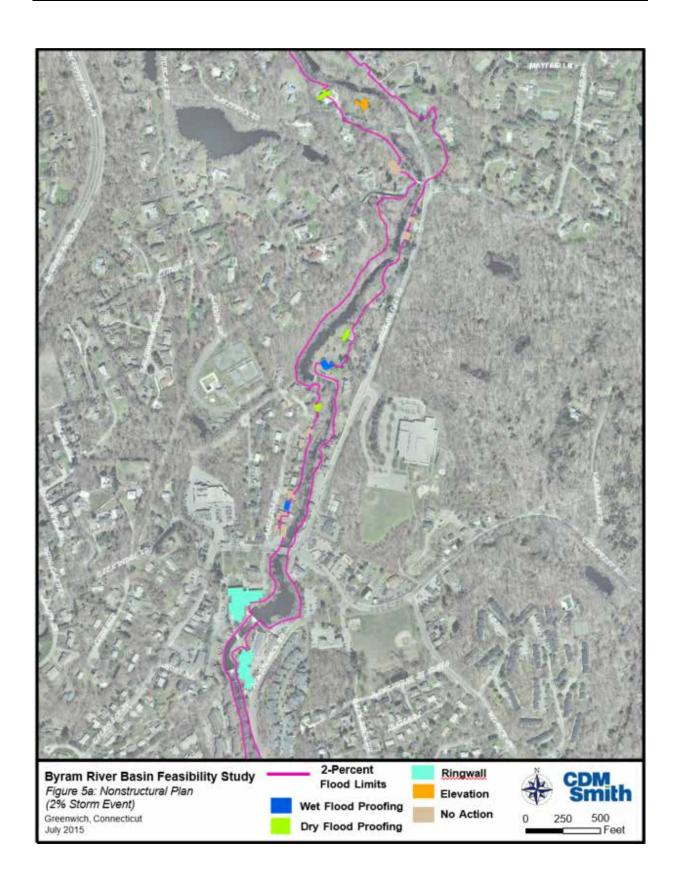


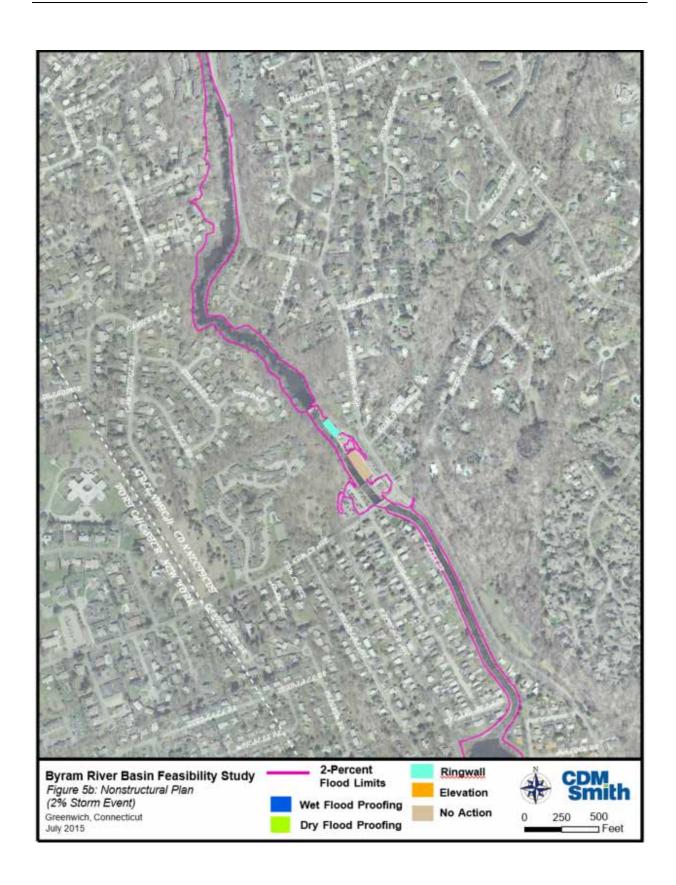


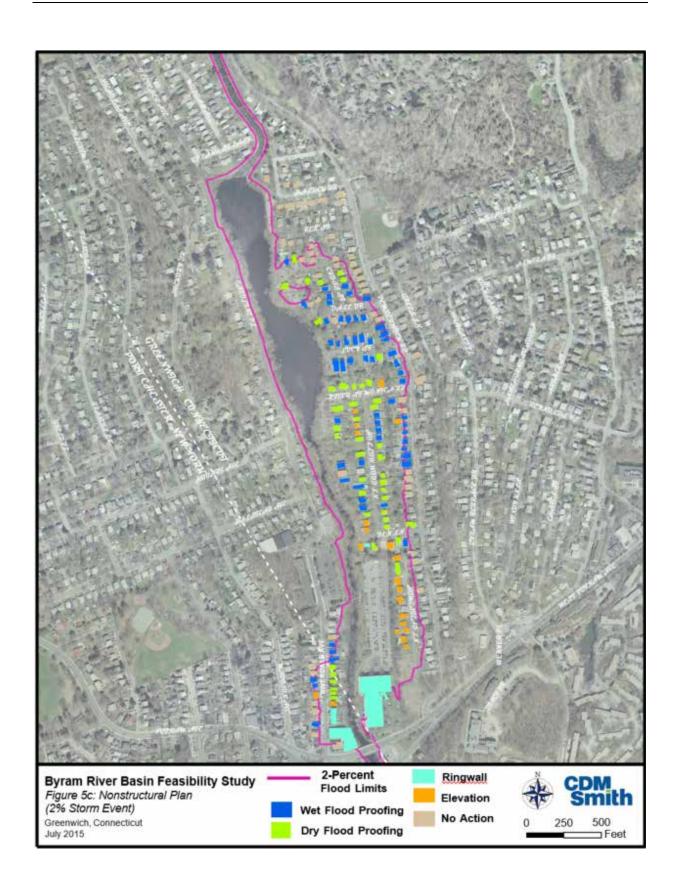


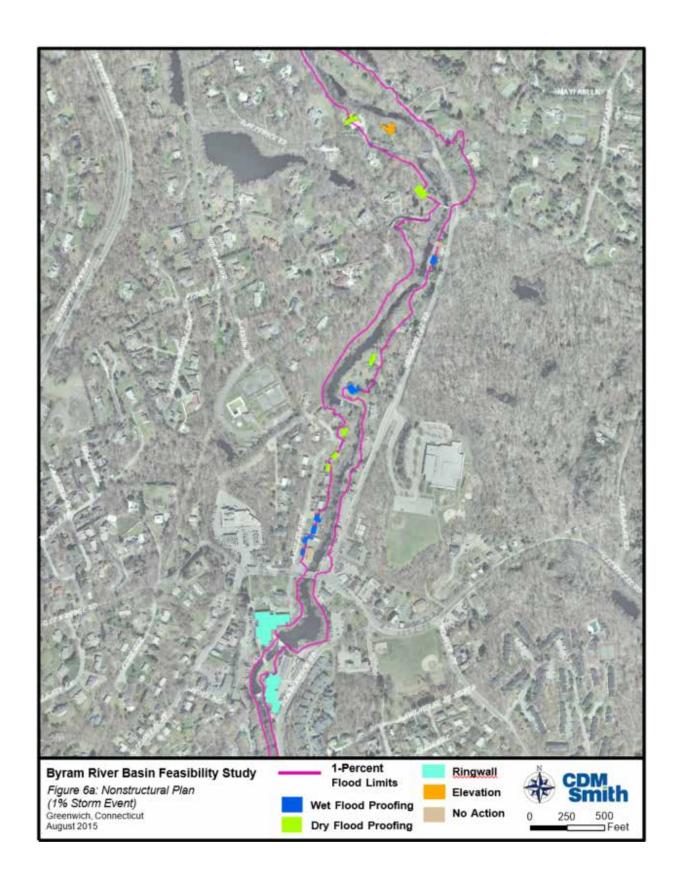


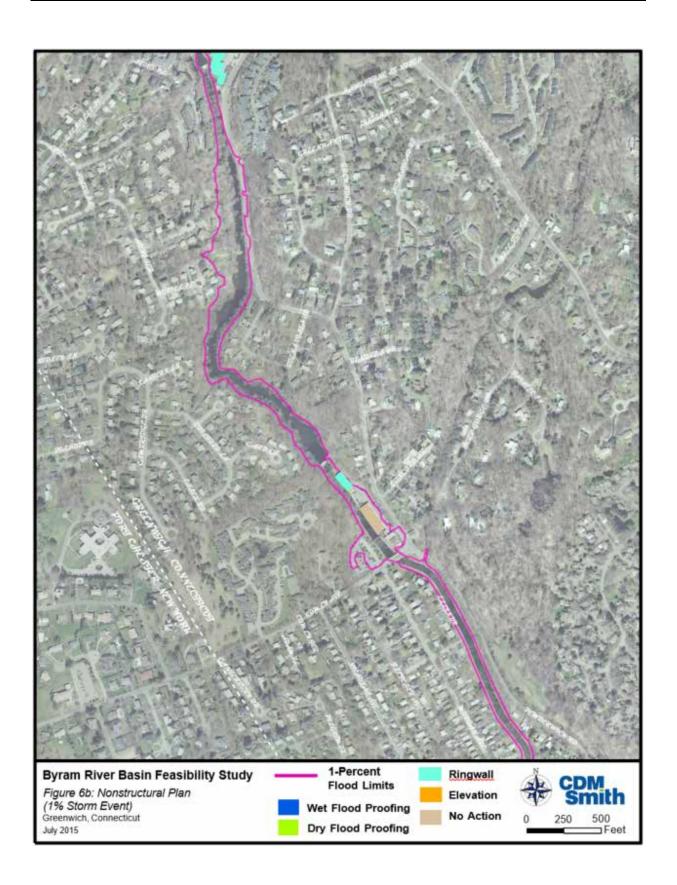


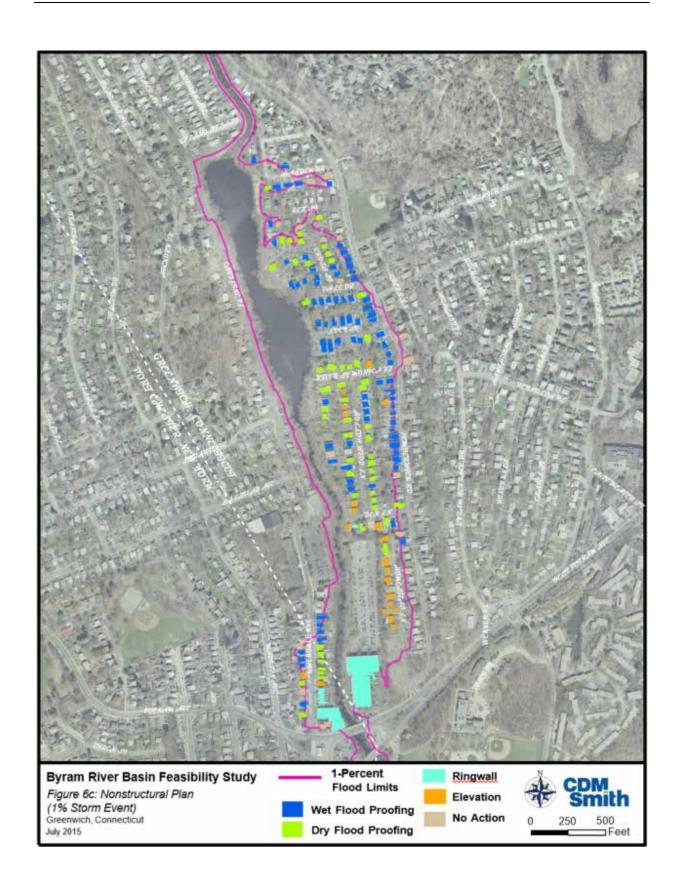












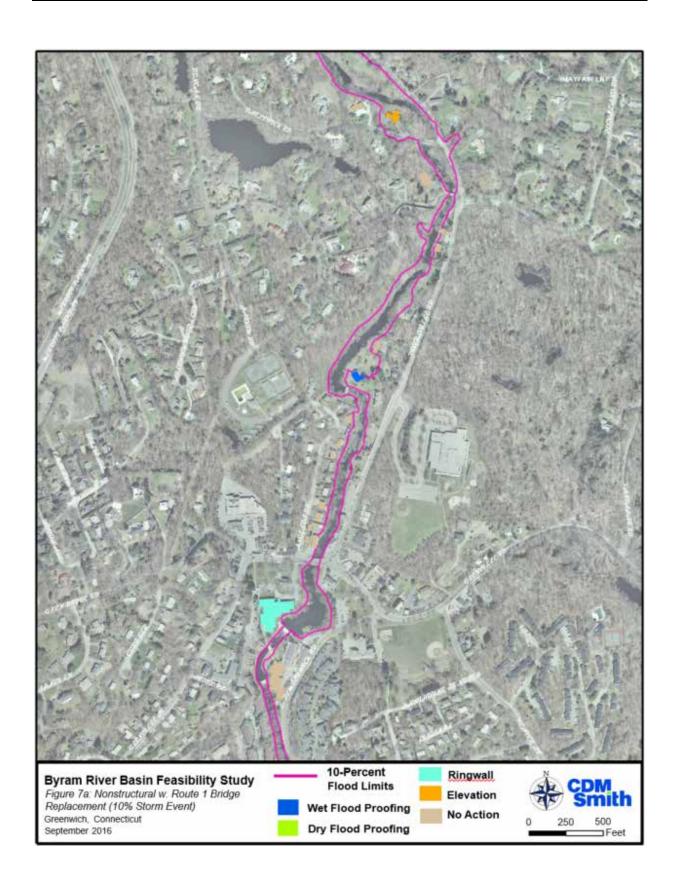
# 5. Route 1 Bridge Replacement

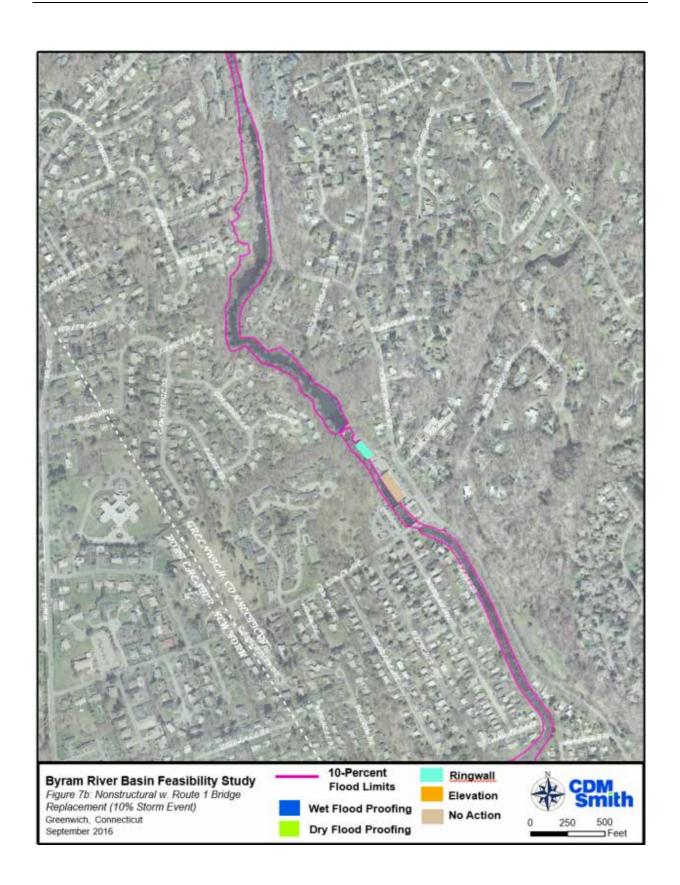
The Route 1 Bridge Replacement and Nonstructural Flood Proofing alternative was reevaluated using the updated main floor and low opening elevations. Water surface elevations associated with the Route 1 bridge alternative were determined using the recommended bridge replacement, including a raised roadway with prestressed concrete box beams. The superstructure consists of a bridge depth of 4.5-ft and an approximate roadway elevation of 17.7-ft for the Route 1 southbound bridge and 17.0-ft for the Route 1 northbound bridge. The advantages of this bridge type includes the ability to accommodate critical vertical clearance requirements, ease of construction over a waterway and the reduction of trapped debris during high flow events. Replacement of the Route 1 bridges also reduces the severity and number of structures impacted due to flooding. Structures that were shown to remain impacted were evaluated for nonstructural flood risk management measures. **Table 2** presents a comparison summary of the nonstructural recommendations with and without the Route 1 bridge replacement for the 10-, 4-, 2-, and 1-percent storm event. Individual structure recommendations for the nonstructural evaluation with the bridge replacement are presented in Attachment D and shown in **Figures 7a,b,c** (10-percent storm event), **Figures 8a,b,c** (4-percent storm event), **Figures 9a,b,c** (2-percent storm event), and **Figures 10a,b,c** (1-percent storm event).

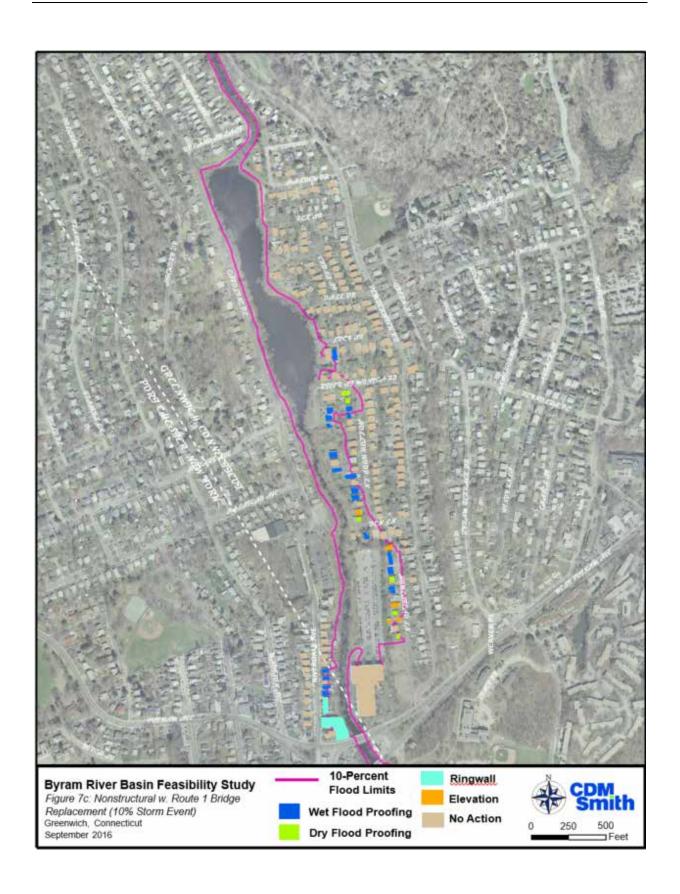
Table 2 Comparison of Nonstructural Recommendations with and without the Route 1 Bridge Replacement

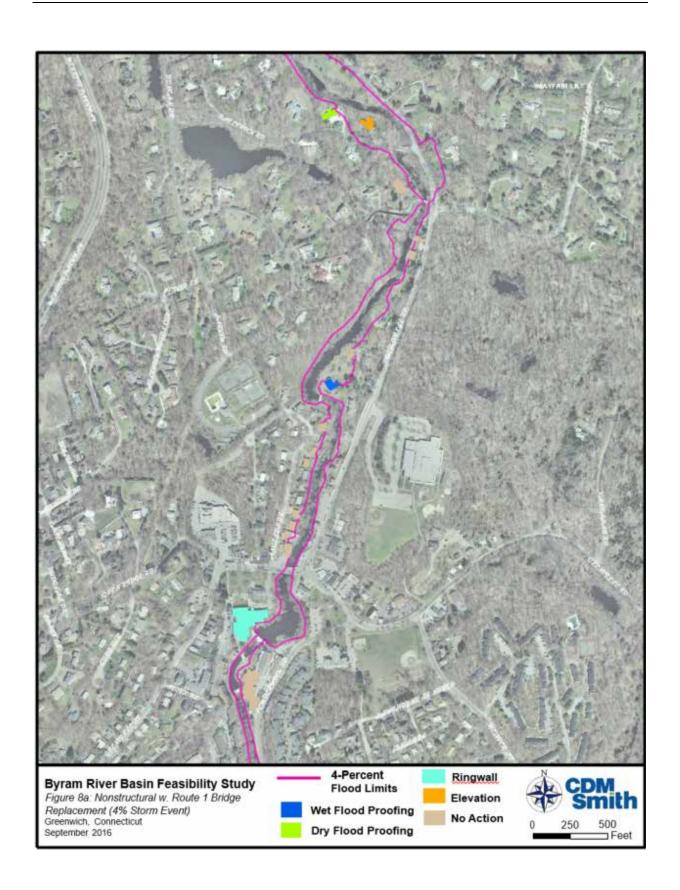
Flood Protection	Nonstructural Comparison							
	10% Flood		4% Flood		2% Flood		1% Flood	
	Nonstructural	Nonstructural w. Bridge Replacement	Nonstructural	Nonstructural w. Bridge Replacement	Nonstructural	Nonstructural w. Bridge Replacement	Nonstructural	Nonstructural w. Bridge Replacement
Dry Flood Proofing	9	6	35	11	47	20	59	24
Wet Flood Proofing	8	20	29	40	60	56	90	85
Ringwall	9	9	11	10	12	11	12	11
Elevation	15	6	22	6	22	8	22	8
Total	41	41	97	67	141	95	183	128
Difference		0		30		46	5	55

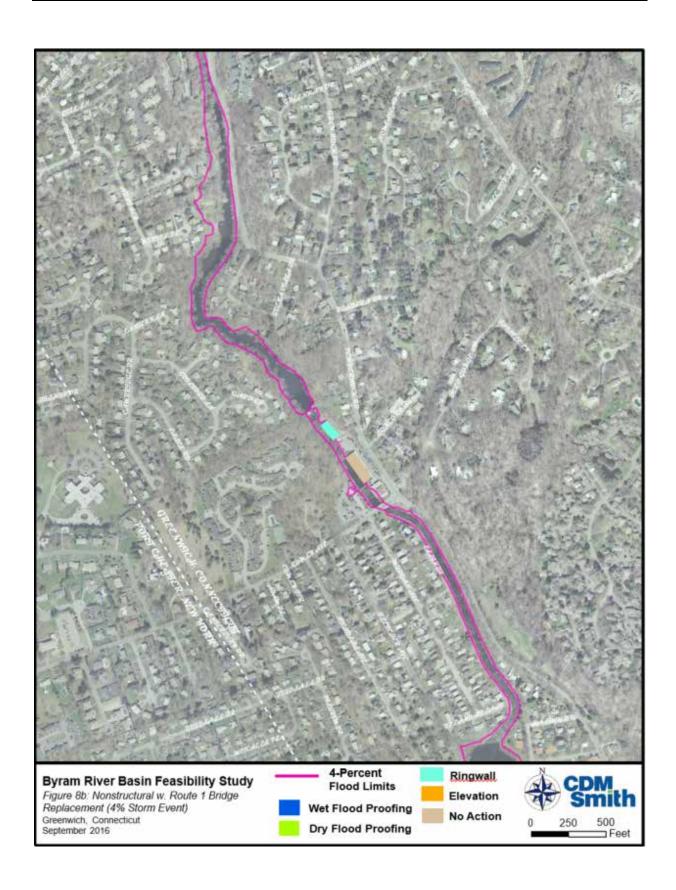
For the nonstructural plan with the Route 1 bridge replacement, the number of structures requiring nonstructural flood proofing was not impacted for the 10-percent storm event, was slightly impacted for the 4-percent storm event, and was significantly impacted for the 2- and 1-percent storm events. For all storm events however, the number of properties requiring elevation decreased significantly with the Route 1 bridge replacement.

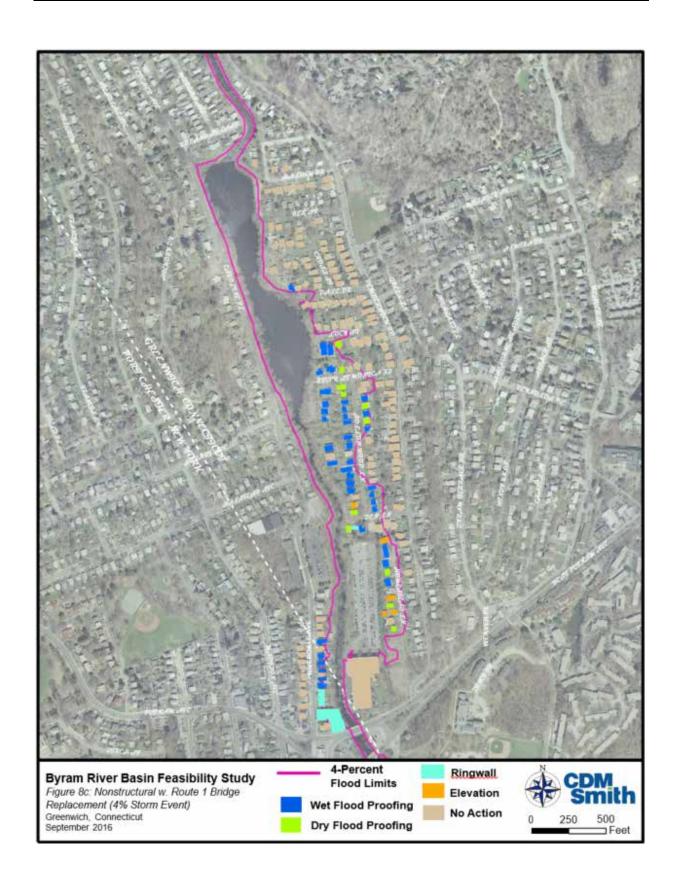


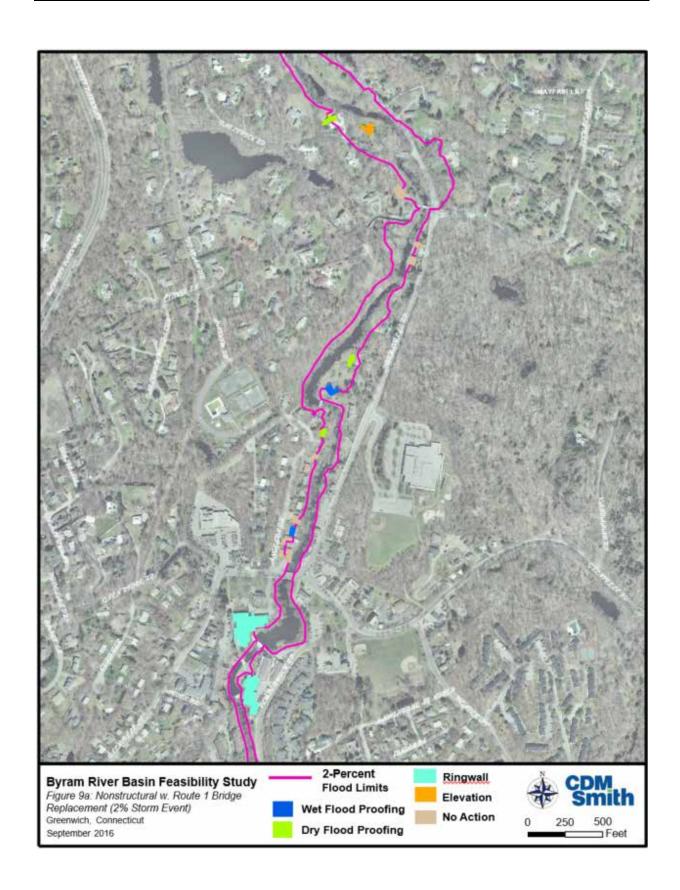


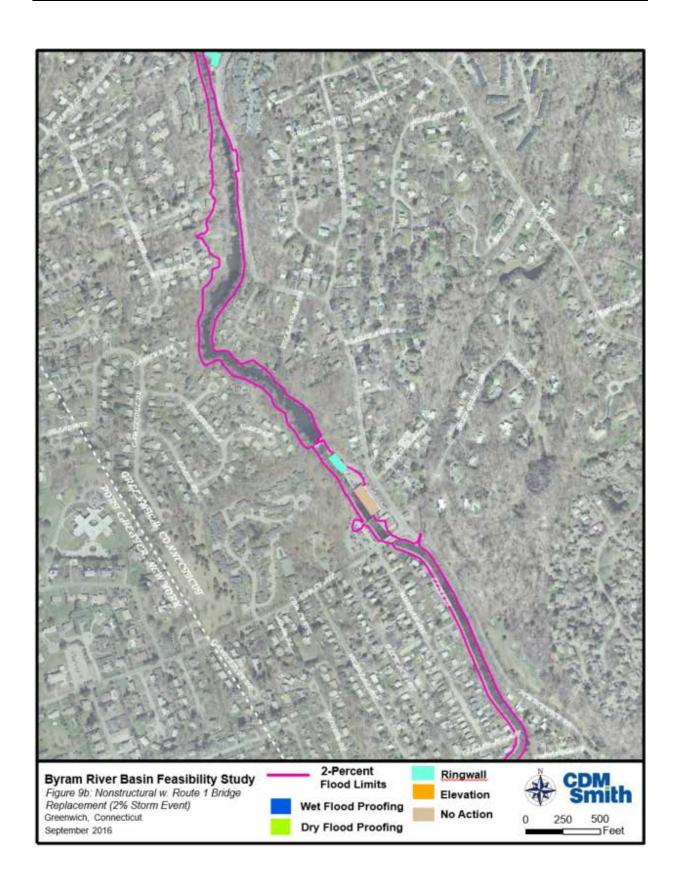


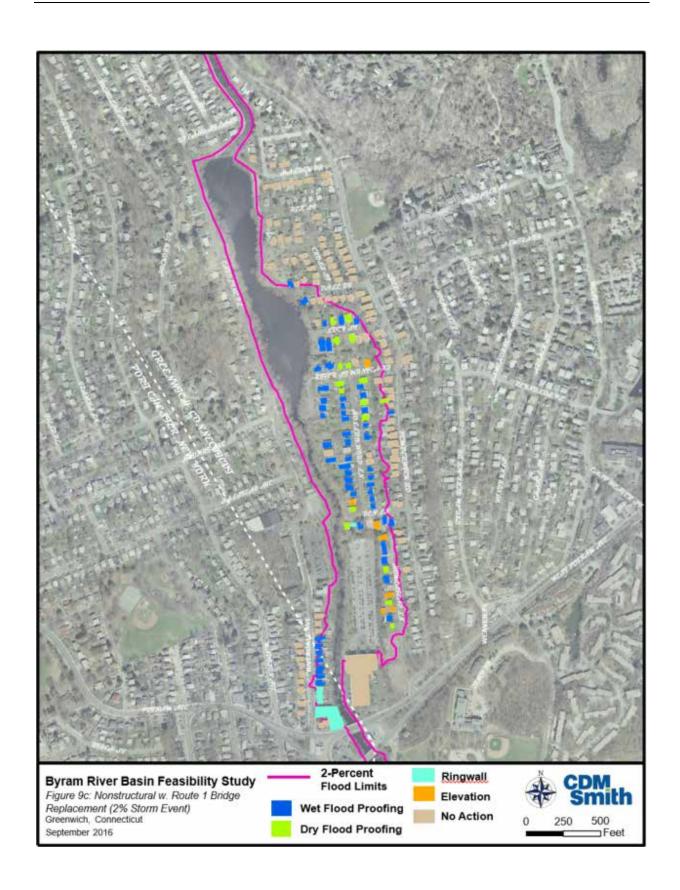


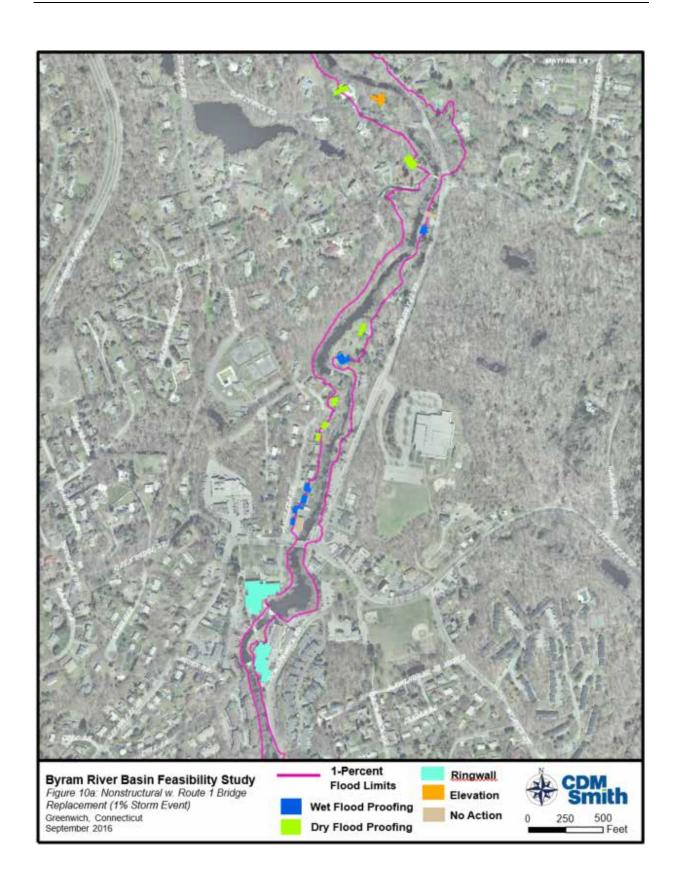


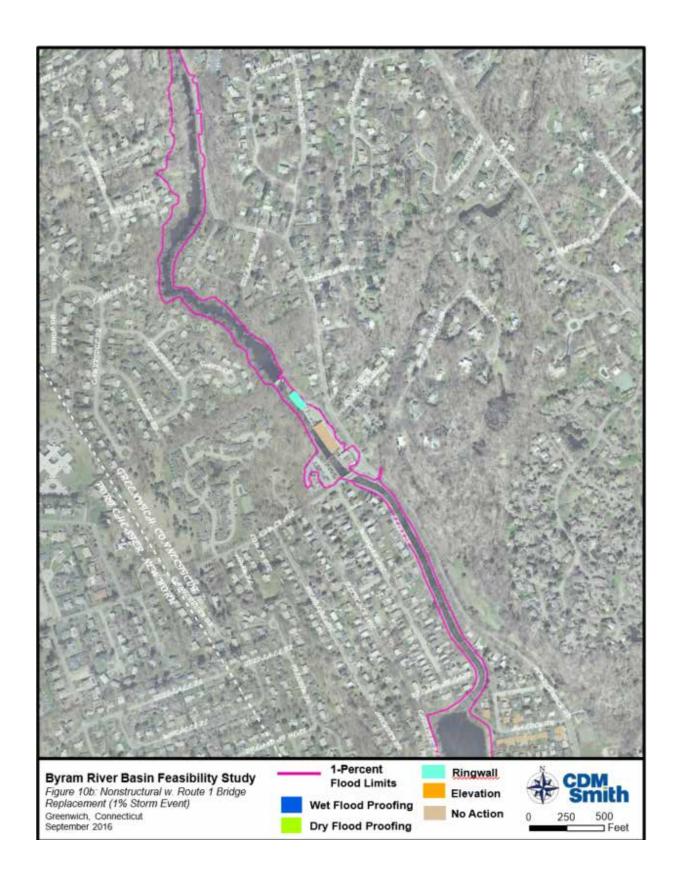


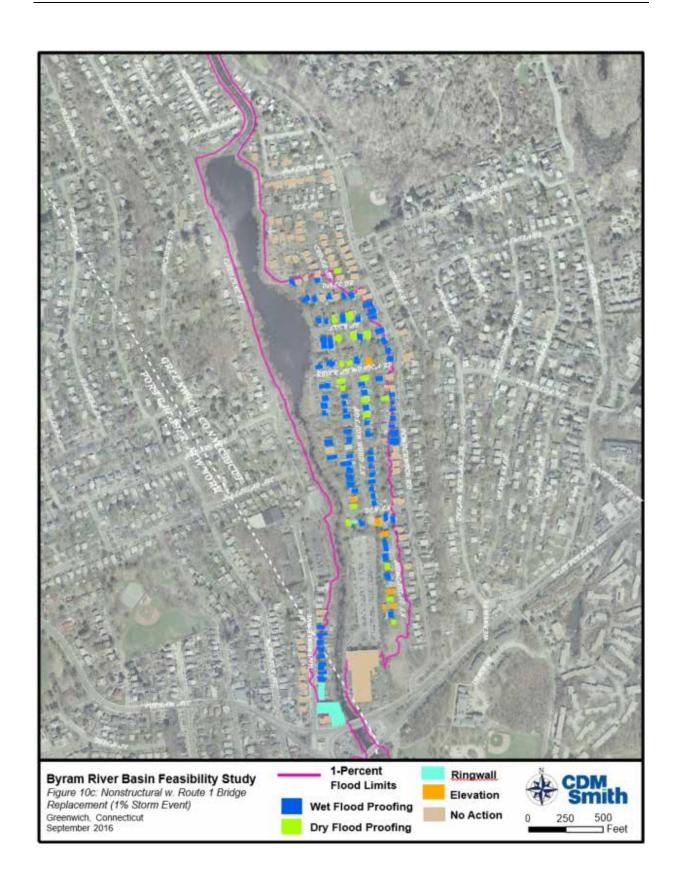












# Attachment A

# **Byram River Basin Feasibility Study**

# Structure Inventory Key

## **Ground Elevation (GE)**

Ground Elevations were determined using the Town of Greenwich's contours in GIS.

## Main Floor Elevation (ME)

Main Floor Elevations are based on the number of steps to the front door of the structure. Each step was assumed to have a height of 7-inches (ME = # of Steps  $\times$  7 inches  $\div$  12 inches per foot).

#### **Low Opening Elevation (LE)**

Low Opening Elevations are based on the lowest opening visible from the street. Measurements were taken in the field and from Google Earth.

## Flood Elevation (FE)

Flood Elevations are the water elevations during a storm event.

# Flood Depth (FD)

$$FD = [ME]or[LE] - FE$$

#### **Structure Type**

Structure Type was assumed based on the structure's property information from the Town of Greenwich's Tax Assessor, Google Earth and typical structure type characteristics.

Α	Apartment
BL	Bi-Level
E	Elevated
M	Multifamily
RF	Raised Foundation
RR	Raised Ranch
S	Slab-on-Grade
SB	Subgrade Basement
SL	Split Level

<sup>\*</sup>Negative flood depth values indicate flooding

The following structure characteristics were populated using the Town of Greenwich's Tax Assessor's property information. Any discrepancies between the Tax Assessor's information and what was seen in the field was assessed and updated.

#### **Land Use Type**

C Commercial
R Residential
U Utilities

#### **Construction Type**

Wood, Stucco, Composition, Alum/Vinyl, Brick

#### **Garage Type**

A Attached
BI Built In
D Detached
N None

#### **Foundation Type**

Basement, Slab, Crawlspace, Unknown

#### Condition

Structure Condition was assessed from field visits and from Google Earth.

P Poor
F Fair
G Good
E Excellent

#### Recommendation

Flood Proofing Recommendations were based on a combination of structure type, land use type, construction type, and condition and flood depth using an algorithm (Attachment B).

WET Wet Flood Proofing
DRY Dry Flood Proofing
RW Ringwall

E Elevation
BO Buyout

#### BYRAM RIVER BASIN FEASIBILITY STUDY NONSTRUCTURAL PLAN - RECOMMENDATIONS

Flood Depth equals 0, Recommendation based on 1-foot of freeboard Flood Depth between 0 and 2 feet Flood Depth greater than 2-feet

NOTE:

DRYWET entails wet floor proofing of areas below the main floor elevation, including protection/raising of utilities where necessary, and dry flood proofing for the area above the main floor elevation.

		-	GE	ME	IF					FD				I				STRUCTURE	:			T	I	RECOMME	NDATION	
			CDOUND	CHRYEVED		DEPTH OF 10%	F DEPTH OF 10%	DEPTH OF 4%	DEPTH OF	DEPTH OF 2%	DEPTH OF 2%	DEPTH OF 1%	DEPTH OF 1%													
StreetNAME	BYRAM RI	/LI\ _	GROUND ELEVATION	SURVEYED MAIN	SURVEYED	FLOODING		FLOODING	4% FLOODING		FLOODING	FLOODING		STRUCTURE	LAND USE	# OF	TOTAL			GARAGE	FOUNDATION					
Ou cou v unic	STATIO	۱ -	AT	FLOOR	LOW OPENING	VS.	VS.	VS.	VS.	VS.	VS.	VS.	VS.	TYPE	TYPE	FLOORS	SQ. FT.	CONSTRUCTION TYPE	BASEMENT	TYPE	TYPE	CONDITION	10-PERCENT	4-PERCENT FLOOD	2-PERCENT FLOOD	1-PERCENT FLOOD
			BUILDING	ELEVATION	ELEVATION	FIRST	LOW	FIRST	LOW	FIRST	LOW	FIRST	LOW	I							=		FLOOD	TLOOD	TLOOD	TLOOD
						FLOOR	OPENING	FLOOR	OPENING	FLOOR	OPENING	FLOOR	OPENING													
Hillside Avenue	9512	16	6.0	18.3	18.3	-8	-8	-3	-3	-2	-2	-1	-1	S	С	1.5	1,959	Brick	None	N	Unknown	G				
Riverdale Avenue	9591	8.0			8.8	-4	2	0	6	2	7	3	9	S	C	2	34,584	Brick	None	N	Unknown	F	RW	RW	RW	RW
Riverdale Avenue	9612	15	5.0	25.7	16.9	-15	-6	-11	-2	-10	-1	-8	1	RR	R	2	4,056	Wood	Bsmt	2BI	Unknown	G				DRY/WET
Riverdale Avenue	9668		0.5	16.8	8.7	-6	2	-2	6	-1	8	1	9	SB - M	R	2	1,568	Wood	Bsmt	N	Unknown	G	RW	RW	RW	RW
Riverdale Avenue	9668		3.0	27.4	15.2	-17	-4	-12	0	-11	1	-9	3	SB	R	2.5	2,786	Wood	Bsmt	2D	Unknown	P				WET
Riverdale Avenue	9680		0.5		8.7	-6	2	-2	6	-1	8	1	9	SB - M	R	2	1,352	Wood	Bsmt	N	Unknown	F	RW	RW RW		RW RW
Riverdale Avenue Riverdale Avenue	9686 9698		0.5 0.5		8.6 8.8	-6 -6	2	-2 -2	6	-1	8 7	1 1	9	SB - M SB - M	R	2	1,516 1,506	Composition Wood	Bsmt Bsmt	N	Unknown Unknown	F	RW	RW	RW RW	RW
Riverdale Avenue	9718		0.5		8.6	-6	2	-2	6	-1	8	1	9	SB - M	R	2	1.516	Wood	Bsmt	N	Unknown	G	RW	RW	RW	RW
Riverdale Avenue	9727		1.0		8.7	-6	2	-2	6	-1	8	1	9	SB - M	R	2	1,498	Wood	Bsmt	N	Unknown	F	RW	RW		RW
Riverdale Avenue	9727		3.0		19.2	-16	-8	-12	-4	-11	-3	-9	-1	RR	R	2	4.250	Wood	Bsmt	1BI	Unknown	G				
Riverdale Avenue	9761	11	1.0	15.3	9.2	-4	2	0	6	1	7	3	9	RF	R	2	2,349	Stucco	Bsmt	1D	Unknown	F	E	E	E	E
Riverdale Avenue	9761	14	4.0	26.4	18.3	-16	-7	-11	-3	-10	-2	-8	0	RR	R	2	2,076	Wood	Bsmt	1BI	Unknown	G				DRY/WET
West Putnam Avenue Lot 48A			8.0	19.6	16.7	-9	-6	-5	-2	-3	0	-2	1	S	С	3	140,445	Reinforced Concrete	None	N	Slab	G			RW	RW
Riverdale Avenue	9786		2.0		9.1	-5	2	-1	6	0	7	2	9	SB	R	2	1,294	Wood - Alum/Vinyl	Bsmt	1D	Unknown	G	DRY/WET	DRY/WET	DRY/WET	DRY/WET
Riverdale Avenue	9798 9811		4.0 2.0	14.8	14.7	-4	-4	-1	0	1	2	3	3	RR SB	R	2	2,588	Wood	Bsmt	1BI	Unknown	G		DRY/WET	E DDV/AVET	E DDV/AMET
Riverdale Avenue Riverdale Avenue	9835		2.0	15.9 15.9	12.6 8.4	-5 -5	-2	-1 -1	7	1	9	2	10	SB	R	2	1,620 2,300	Alum/Vinyl Wood	Bsmt Bsmt	N	Unknown Unknown	F	DRY/WET	DRY/WET		DRY/WET DRY/WET
Riverdale Avenue	9860		4.5	19.1	16.0	-8	-5	-4	-1	-3	0	<u>-1</u>	2	SB	R	2.5	1,616	Wood	Bsmt	1D	Unknown	F				WET
Riverdale Avenue	9873		3.0		8.9	-6	2	-2	6	-1	7	1	9	SB	R	2.3	2,008	Wood	Bsmt	N	Unknown	P	DRY/WET	DRY/WET		DRY/WET
Riverdale Avenue	9885		5.0	19.3	16.8	-8	-6	-4	-2	-3	0	-1	1	SB	R	2.5	2,756	Wood	Bsmt	2D	Unknown	G		-		WET
Riverdale Avenue	9910		3.0	17.0	12.0	-6	-1	-2	3	-1	4	1	6	RF	R	2	2,342	Alum/Vinyl	Bsmt	N	Slab	G		DRY/WET	DRY/WET	DRY/WET
Riverdale Avenue	9922		5.0		17.5	-9	-6	-5	-2	-4	-1	-2	1	SB	R	2	2,356	Wood	Bsmt	3D	Unknown	G	-	-		WET
Riverdale Avenue	9947		5.0		12.9	-8	-2	-3	2	-2	4	0	5	SB	R	2	1,834	Stucco	Bsmt	1D	Unknown	G		DRY/WET	DRY/WET	DRY/WET
Riverdale Avenue	9960		7.0 7.0	22.5	20.3	-11	-9	-7	-5	-6	-4	-4	-2	SB	R	2.5	3,140	Wood	Bsmt	N	Unknown	G	-	 \//ET	 \\/ET	 \\/CT
Riverdale Avenue	9972 10022		7.0 9.0	19.1 21.0	11.9 14.2	-8 -10	-1 -3	-4 -6	3	-3 -4	5	-1 -3	6	2R	R	2		Wood	Bsmt	2D	Unknown	- G	E.	WET		WET
Riverdale Avenue Riverdale Avenue	10022		9.0 2.0	23.2	16.8	-10	-5 -6	-8	<u>1</u> -1	- <del>4</del> -7	0	-ა -5	2	SB	R	2		Wood Wood	Bsmt Bsmt	N N	Unknown Unknown	F				WET
Riverdale Avenue	10111		4.0	26.3	18.8	-15	-7	-11	-3	-10	-2	-8	0	SB	R	2		Wood	Bsmt	N	Unknown	G	-			WET
Homestead Lane	10129		2.0	14.1	10.8	-3	0	1	5	3	6	4	8	SB	R	1	810	Wood	Full Bsmt	N	Basement	G	E	E	E	E
Homestead Lane	10155	12	2.0	15.7	13.6	-4	-2	0	2	1	3	3	5	SB	R	2	2,502	Wood frame, vinyl exterior	Full Bsmt	N	Basement	G		E	E	E
Homestead Lane	10172		0.0	11.5	10.7	0	1	4	5	5	6	7	8	S	R	2	1,486	Wood	None	1BI	Slab	G	E	E	E	E
Homestead Lane	10182		0.0	11.5	10.5	0	1	4	5	5	6	7	8	RF	R	1	1,011	Wood	Full Crawl	N	Crawl Space	G	E	E	E	E
Homestead Lane	10203		0.0	14.3	10.1	-3	1	1	5	2	7	4	8	SB	R	2	2,222	Wood frame, aluminum ext	1/2 Bsmt	N	Basement	G	E	E	E	E
Homestead Lane	10227 10327		0.0 0.0		7.9 9.3	<u> </u>	2	5	8	-1	9	0	11 q	SB RR	R	2	1,520 3,434	Wood frame, vinyl exterior	3/4 Bsmt, 1/4 Crawl 1/4 Bsmt, Lower level	1D 1BI	Basement	G	E	E	E	E
Homestead Lane Pemberwick Road	10459		8.0		27.2	-20	-16	-3 -17	-12	-15	-10	-14	-9	SB	R	2	2.876	Wood frame, vinyl exterior  Wood frame, vinyl exterior	1/2 Bsmt	N	Basement Basement	G	E			<u></u>
Homestead Lane	10500		0.0		11.4	-3	-10	-17	4	2	-10	4	7	SB	R	2	2,424	Wood	Full Bsmt	N	Basement	G	E	E	E	E
Homestead Lane Lot 485, 48			2.0	17.8	11.3	-6	1	-2	4	-1	6	1	7	RR	R	2	_,	Wood	Full Bsmt	2BI	Basement	-	E	E	E	E
Homestead Lane Lot 487, 48			2.0	16.2	9.7	-4	2	-1	6	1	7	2	9	SB	R	2	3,646	Wood	Full Bsmt	2BI	Basement	G	DRY/WET	DRY/WET	DRY/WET	DRY/WET
Pemberwick Road	10694		0.0	32.3	18.3	-20	-6	-17	-3	-15	-1	-14	0	SB	R	2	2,860	Wood frame, vinyl exterior	Full Bsmt	2BI	Basement	G				WET
Den Lane	10699		1.0	13.5	13.5	-1	-1	2	2	3	3	5	5	S	U	1	146	Brick	None	N	Slab	G		RW	RW	RW
Pemberwick Road	10699 10703		9.0 0.0	22.4 15.0	22.4 12.7	-10	-10	-7	-7	-6	-6	-4 4	-4	SB SB	R	2	2,676 3.380	Wood	1/2 Bsmt 3/4 Bsmt, 1/4 Crawl	N 1D	Basement	F				
Den Lane Den Lane	10706		1.5		11.8	-3 -5	-1 0	-1	<u> </u>	0	- 4 - 5	2	7	SI	R	3	4,122	Wood/Brick	1/2 Bsmt, Lower level	N N	Basement Basement	G	DRY/WET	DRY/WET	DRY/WET	DDV/MET
Homestead Lane Unit A /B	10726		3.0		8.9	-1	3	2	7	4	8	5	10	RR	R	2	3,068	Brick/Wood	Full Bsmt	N	Basement	G	F F	F F	F F	F F
Den Lane Unit 1	10729		3.0	14.1	14.0	-2	-2	2	2	3	3	4	5	RR	R	3	4,296	Wood	Full Bsmt	2BI	Basement	Ē	_	Ē	Ē	E
Den Lane	10767	14	4.0	17.3	13.3	-5	-1	-2	2	0	4	1	5	SB	R	2	2,800	Wood frame, vinyl/masonite	1/4 Crawl, Lower level	N	Crawl Space	G		DRY/WET	DRY/WET	DRY/WET
Den Lane	10879		6.0	20.3	12.2	-8	0	-5	4	-3	5	-2	6	RR	R	2	2,954	Wood frame, vinyl exterior	Full Bsmt	N	Basement	G		WET	WET	WET
Den Lane	10879		1.0		11.8	-3	1	0	4	1	5	3	7	SB	R	2	2,938	Wood frame, vinyl exterior	Full Bsmt	1D	Basement	G	E	E	E	E
Hollow Wood Lane	10898		3.0	16.8	13.3	-4	-1	-1	2	0	4	2	5	SB	R	2	2,100	Wood	Full Bsmt	D	Basement	G		DRY/WET		DRY/WET
Pemberwick Road Hollow Wood Lane	10907 10909		2.0 2.0	26.9 14.9	16.8 11.0	-14 -2	-4	-11 1	-1 5	-10 2	6	-8 4	2	RR	R	2	3,964 2,542	Wood Wood	Full Bsmt 1/4 Bsmt, Lower level	1BI	Basement Basement	G	F	F	DRY/WET	DRY/WET
Hollow Wood Lane	10943		4.0	17.0	13.8	-4	-1	-1	2	0	3	2	5	SB	R	2	1,922	Wood	Full Bsmt	N	Basement	G	<b> </b> -	DRY/WET	DRY/WET	DRY/WET
Hollow Wood Lane Unit A/B	11003		2.5	21.0	12.2	-8	1	-5	4	-4	5	-2	7	RR	R	3	4,527	Wood frame, vinyl exterior	None	2BI	Slab	G	WET	WET		WET
Pemberwick Road	11172		7.0	28.3	19.8	-15	-7	-12	-4	-11	-3	-10	-1	SB	R	1.5	2,384	Wood frame, composition ext	1/4 Bsmt, Lower level	1BI	Basement	G				
Hollow Wood Lane	11242		4.0	20.9	10.8	-8	2	-5	5	-4	6	-2	8	RR	R	-		-			Unknown	-		WET		WET
Hollow Wood Lane	11243		4.0	16.8	13.5	-4	0	-1	2	0	4	2	5	SB	R	2	1,680	Wood frame, vinyl exterior	Full Bemt	2D	Basement	G	-	DRY/WET		DRY/WET
Hollow Wood Lane Hollow Wood Lane	11243 11272		4.0 3.0	17.7 17.5	15.6 14.9	-5 -4	-3 -2	-2 -2	1	-1 0	2	1	3	SB SB	R	2	1,481 2,176	Wood Wood frame, vinyl exterior	Full Bsmt 3/4 Bsmt, 1/4 Crawl	N 1D	Basement Basement	G	E.	DRY/WET DRY/WET	DRY/WET DRY/WET	DRY/WET
Pemberwick Road	11298		6.0	27.9	19.3	-15	-2 -6	-12	-3	-11	-2	-9	0	SB	R	1	1,322	Wood frame, vinyl exterior	Lower level	1BI	Slab	G				WET
Hollow Wood Lane	11310		4.0		15.1	-5	-2	-2	1	-1	2	1	4	SB	R		2,180	Wood	Full Bsmt	N	Basement	F	I	DRY/WET	DRY/WET	
Pemberwick Road	11339		6.0		18.6	-13	-5	-10	-3	-9	-1	-7	0	SB	R		4,164	Brick	Bsmt	N	Basement	F				WET
Hollow Wood Lane	11350	14	4.0	18.0	14.0	-5	-1	-2	2	-1	3	1	5	SB	R	1	890	Wood frame, aluminum ext	Full Bsmt	N	Basement	G		DRY/WET		DRY/WET
Hollow Wood Lane Unit B	11350		2.5		13.0	-8	0	-6	3	-4	4	-3	6	RR	R	3	5,325	Wood frame, wood/vinyl ext	None	2BI	Slab	G	WET	WET		WET
Hollow Wood Lane	11353 11368		4.0		16.0	-5	-3	-3	0	-1	1	0	3	SB	R		1,956	Wood	Bsmt	1D	Basement	F G	-	DRY/WET		DRY/WET WET
Pemberwick Road Hollow Wood Lane	11368 11388	24	4.0 3.0	27.0 17.2	19.2 14.7	-14 -4	-6 -1	-11 -1	-3 1	-10	-2 3	-8	4	SB SB	R	1.5	1,983 1,523	Brick Wood	Lower level Full Bsmt	2D N	Unknown Basement	G	E.	DRY/WET	DRY/WET	
Pemberwick Road	11408		3.0		17.0	-11	-1	-8	<u> </u>	-7	0	-5	2	SB	R	2	5,418	Brick	Bsmt	1D	Basement	G	I			WET
Hollow Wood Lane	11432		2.0		12.5	-8	1	-6	4	-4	5	-3	6	RR	R	2	4,026	Wood frame, vinyl exterior	None	N	Slab	G	WET	WET		WET
Pemberwick Road	11432	22	2.0	23.2	16.8	-10	-3	-7	-1	-6	1	-4	2	SB	R/C		4,460	Wood frame, brick	Bsmt	1D	Basement	G	I	-	WET	WET
Pemberwick Road	11443		0.0		17.0	-7	-3	-4	-1	-3	0	-1	2	SB	R/C	2	4,266	Wood frame, concrete	Bsmt	D	Basement	G				WET
Hollow Wood Lane	11449		4.0	18.8	14.8	-5	-1	-3	1	-1	3	0	4	SB	R		2,963	Wood frame, stucco exterior	Full Bsmt	N	Basement	F		DRY/WET		DRY/WET
Hollow Wood Lane Unit A	11449		0.0		11.7	-9	2	-6	5	-5	6	-3	7	RR	R		3,772	Wood	Full Bemt	4BI	Basement	G	WET	WET		WET
Hollow Wood Lane Unit B Hollow Wood Lane	11449 11464		0.0 4.0		11.0 13.6	-8 -5	0	-5 -3	5	-4 -2	<u>6</u> 4	-3 0	8	RR SB	R	2	3,772 3,242	Wood frame, vinyl exterior	Full Bsmt 1/2 Bsmt, 1/2 Crawl	4BI N	Basement/Crawl	G	WET	WET DRY/WET		WET DRY/WET
Pemberwick Road	11464		1.0		16.1	-5 -11	-2	-3 -8	n	-2 -7	1	-5	3	SB	R	2	2,536	Wood frame, vinyl exterior Brick	Full Bsmt	2D	Basement	G		WET		WET
Hollow Wood Lane	11484		4.0		14.4	-5	-1	-3	2	-1 -1	3	0	5	SB	R		2,078	Wood	Full Bsmt	N	Basement	F	I	DRY/WET		DRY/WET
Hollow Wood Lane	11516	14	4.0		15.7	-5	-2	-2	1	-1	2	1	3	SB	R		2,466	Brick/Wood	Full Bsmt	2D	Basement	G		DRY/WET	DRY/WET	
Hollow Wood Lane	11525		4.0		15.1	-10	-1	-7	1	-6	2	-4	4	RR	R	2	2,860	Wood frame, composition ext	Full Bsmt	2BI	Basement	G		WET		WET
Pemberwick Road	11525		0.0	21.4	16.1	-8	-2	-5	0	-4	1	-2	3	SB	R/C	1	1,463	Wood	Bsmt	2D	Basement	G	ļ-	WET		WET
Pemberwick Road	11529		1.0	23.1	16.8	-9	-3	-7	0	-6	1	-4	2	SB	R	2	2,838	Wood	Full Bsmt	3A	Basement	G				WET
Hollow Wood Lane	11533 11533		4.0 2.0	21.9 22.0	14.0 22.0	-8 -8	-8	-6	2	-4	4	-3 -3	5	SB	R	2	2,998 4,054	Wood frame vinyl exterior	Full Bsmt	1D N	Basement Slab	G	-	WET	WET	WET
Hollow Wood Lane Hollow Wood Lane	11533		4.0		11.8	-8 -6	-0	-6 -3	-6 5	-4 -2	-4 6	-3	-3 7	RR	R	2	1.884	Wood frame, vinyl exterior Brick/Wood	None Full Bsmt	1BI	Basement	G	E	F	E	F
River Street	11537		2.0		13.2	-4	1	-2	3	0	4	1	6	SB	R	2	1,894	Wood frame, vinyl/brick ext	Full Bsmt	N	Basement	G	DRY/WET	DRY/WET	DRY/WET	DRY/WET
Hollow Wood Lane	11549		4.0		15.1	-6	-1	-3	1	-2	2	0	4	SB	R	_	2,081		Full Bsmt	N	Basement	G		DRY/WET	DRY/WET	
Hollow Wood Lane Unit 1/2	11562		4.0		14.6	-9	-1	-6	2	-5	3	-4	5	RR	R		2,200		Full Bsmt	2BI	Basement	G	I	WET		WET
	-	_																								

# BYRAM RIVER BASIN FEASIBILITY STUDY NONSTRUCTURAL PLAN - RECOMMENDATIONS

Flood Depth equals 0, Recommendation based on 1-foot of freeboard
Flood Depth between 0 and 2 feet
Flood Depth greater than 2-feet

User Input Calculated

NOTE: DRY/

DRY/WET entails wet floor proofing of areas below the main floor elevation, including protection/raising of utilities where necessary, and dry flood proofing for the area above the main floor elevation.

Part			GE	ME	LE	1			FI	D								STRUCTURE						RECOMME	NDATION	
Marche   M			- 02			DEPTH OF	DEPTH OF	DEPTH OF	Ī		DEPTH OF	DEPTH OF	DEPTH OF													
Second	StreetNAME				SURVEYED	10%	10%	4%	4%	2%	2%	1%	1%	CTDUCTUDE	LANDLICE	# 05	TOTAL			CARACE	FOUNDATION					
	StreetivAME	STATION																CONSTRUCTION TYPE	BASEMENT			CONDITION				1-PERCENT FLOOD
March   1966   1967   1968   1969			BUILDING	ELEVATION	ELEVATION																		12005			
March   150   15	Listian March Land	44000	45.0	00.0	44.7				OI EINING		OI ENINO		OI EINING	DD	Б	0	0.050	Mand	Full Deset	ODI	Deserved	-		MET	\A/ET	MET
March   10							2		5		6		8			2					_	G	 E	E	E	E
Property of the column   Property of the col									3	0		1	6	~-		_						G	DRY/WET	DRY/WET		
March   Marc						, ,		0	0	1	1	3	3	U.S.		2						F	-	 E	E	E
March   1969   1969   1979								-	2	_	3		5			2	,	***						WET	WET	
Properties								-	2		3		5			_							DRY/WET	DRY/WET	DRY/WET	
The content   15								-4	4	-3	5	-1	6			2						F	WET	WET	WET	WET
March   1981								-5	-2	-4	-1	-2	1	~-		2										WET
March   1966							-2	-2	0		1	0	3	SB								F	-			
March   Marc					-				-1		0	-2	1	SB		2				N N		G	-		WET	
Warrier Stand   105									0	-4	1	-3	2	BL		2							 DDYMET			
Freezended   100   101									0	-3	1	<u>-1</u>	2	05		2										
Property   Property											-2		-1	S		2						F			 \\/\(\(\Gamma\)	 W/FT
Mary									8	2	10	3	11	05		2				N			 	 E	E	E
Heat   15   15   15   15   15   15   15   1						ŭ			1	-3	2	-1	4	SL		1.5						G	-	 DDV/M/ET		
Non-Bridge   1-75									1	0	2	1	4	SB		2				: -		G	-			
March   Marc			15.0						0	_	1	2	3	~-			1,026						-			
Fig. 10		11976	16.0		17.6	· ·			-1		0	0	2	U.S	R	1	1,569			N N			-		DRY/WET	
Management   1985   1985   1986   1							3		5		6		8			-						E	WET	WET	WET	WET
March   1909		12000	18.0								1		2				4,162		Full Bsmt				-	-		
Line   1970										-2	0	-1	2	SB SB		1		Wood frame, Brick exterior		N 1D		G	-			
Unit									1	-3	2	-1	4	SL		2						+ -	 	WET		
1.75   1.75								ŭ	0	-7 6	1		3									G				
Company   Comp								-	-1		0		1			1						G	 			
Log Peter 2223 16									1		2					2										
Decomposition   12-03   16									0		1		2	~-		1							-			
Second   1962   1962   1963   1964   1965											0		2	OB		2	-, -					+ -	-	 \MET		
Control   Cont									1		3		4			2						F			WET	WET
Preference broad   Cool   1910   2010   2017   20									1	-3	2		3	SB		2				N 1DI		G				
Deli District									-2	-8	-1		1	SB		1.5						F	-			
Description   175   175   2   175   2   175   2   175   3   4   5   5   5   4   4   5   5   5   5													1												 WET	
Des Dies 1257 198 218 174 77 3 5 5 1 4 1 1 2 2 8 58 8 2 2244 Wood States, varie before 1 2 2 2 1 4 1 1 2 2 8 58 8 7 2 2 2 3 4 1 4 5 1 2 2 8 58 8 7 2 2 2 3 4 1 4 5 1 2 2 8 58 8 7 2 2 2 3 4 1 4 5 1 2 2 8 58 8 7 2 2 2 3 4 1 4 5 1 2 2 8 58 8 7 2 2 2 3 4 1 4 5 1 2 2 8 58 8 7 2 2 2 3 4 1 4 5 1 2 2 8 58 8 7 2 2 2 3 4 1 4 5 1 2 2 1 2 1 4 1 4 1 2 2 2 8 58 8 7 2 2 2 1 5 1 4 4 1 4 1 2 2 2 1 5 1 4 4 1 4 1 2 2 2 1 5 1 4 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1											•		2									-	-			
Fig.											0		1	OB.		_						F				
Date Dree   1500   160   161   164   164   16   164   16   17   164		12340	16.2	21.4	18.7	-7					-1	-2	1		R	2	2,874		Full Bsmt			F				WET
Case Steel									-1 0		0	-2	1 3			2							 	 DRY/WET		
Death One   1241   18.0   21.2   21.2   7.7   7.7   4.   4.   -3.   3.   2.   2.   2.   2.   2.   3.   3					-				-1	_	0	-3	2	OB		2									WET	WET
Problement Road 1931								-					2			1						G		-	DRY/WET	DRY/WET
Pemberwick Road 1 1258 23.0 25.8 18.8 14.1 4 9 2 8 5 1.1 5 1 8.8 R 2 5 3.548 Block Pull Blant 1 19 Basement F WET OFFINE TO STATE THE PROPERTY OF THE PR	Pemberwick Road	12431	22.0	23.3	17.9	-9	-3	-6		-5		-4	2	SB	R		1,590	Wood	Full Bsmt	1D	Basement	-				
Coes Sirent 1297 18.0 22.6 18.9 8 4 4 6 2 5 1 1 3 1 8.8 8 2 1.888 Wood farme, surjeywood et 1. 4 Bernt Lever feet 181 Basement F WET WET Permittering Road 1.725 24.0 18.2 17.7 4 3 5 10 14 2 15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			18.0			-6 -11	-1 -4	-4 -9	1 -2	-3 -8	2	-1 -6	4	RR SB	R	_		Wood frame, vinyl exterior		1BI	Basement Basement	G		-	WET	WET
Pemberwick Road   1264   240   267   200   12   45   -10   -3   -9   -2   -7   0   -7   0   -7   0   -7   0   -7   0   -7   0   -7   0   -7   0   -7   0   -7   0   -7   0   -7   0   -7   -7	Cross Street	12537		22.6	18.9				-2				1			2	1,898		Full Bsmt				-	-		
Cross Street 18974 18.0 22.4 18.4 8.8 4 6 2 4 4 0 3 1 1 88 R 2 2.332 Wood Full Beart O WET WET Cross Street 12974 18.0 22.0 18.5 -7 -4 5 2.4 4 0 -2 1 1 88 R 2 2.332 Wood Full Beart O WET WET Cross Street 12974 17.5 22.0 18.9 -7 -4 5 -2 4 4 -1 3 1 1 88 R 2 2.296 Wood Tarrely (in the first of the											_		0									•				
Dale Drive 12874 17.5 22.0 18.9 -7 4 -5 2 4 1 1 3 1 SB R 2 1,1928 Wood frame, wirely exterior Full Berrit 1D Basement 0	Cross Street	12674	18.0	22.4	18.4	-8	-4	-6	-2	-4	0	-3	1	SB	R	2	2,332	Wood	Full Bsmt	N	Basement	G	-	-	WET	WET
Date Drive   12695   16,0   221   197   8   5   5   5   5   3   4   2   3   3   0   8   8   R   2   2,094   Wood frame, Price/Company   Full Barnt   191   Basement   P								_			-		1													
Cross Street   1271   18.0   23.8   19.0   9   -4   7   2   6   1   4   9   0   RR   R   1   1,417   Wood frame, yielvedrior   Full Barnt   18   Basement   G     DRYWET   Garden Place   12726   18.0   22.6   17.6   -8   -3   -4   0   -5   0   -3   2   SB   R   1   1,75   Wood frame, yielved exterior   Full Barnt   2D   Basement   F     WET   WET   Garden Place   12729   18.0   22.6   17.6   -8   -3   -4   0   -5   0   -3   2   SB   R   1   1,76   Wood frame, yielved exterior   Full Barnt   2D   Basement   F     WET   WET   Garden Place   12729   18.0   24.6   18.7   -10   -4   -4   -8   -2   -7   -1   -5   1   RR   R   2   2,398   Brick facing   Full Barnt   18   Basement   G     DRYWET   DR	Dale Drive	12695	16.0	22.1	19.7	-8	-5	-5	-3	-4	-2	-3		SB	R	2	2,094	Wood frame, Brick/Composit	Full Bsmt	1BI	Basement	Р	-	-		
Pemberwick Road   12723   28.0   27.2   21.8   13   3   7   10   5   9   4   8   2   RR   R   1   1.181   Wood men, stucce exterior   Full Barnt   D.   Basement   G																										DRY/WET
Cross Street 12729 18.0 21.2 17.1 7 7 3 4 8 0 3 1 2 2 RR R 1 1.152 Wood frame, unity exterior Full Bart 18 B Basemet G	Pemberwick Road	12723	26.0	27.2	21.8	-13	-7	-10	-5	-9	-4	-8		RR	R	1	1,181	Wood frame, stucco exterior	Full Bsmt	N	Basement	G		-		
Garden Place   12730   18.0   24.6   18.7   1.10   4   4   4   5   7   1.1   5   1   RR   R   2   2.388   Brick facing   Full Barnt   18   Basement   G									-1 0		1		2									•	-	-		
Garden Place 12735 18.0 26.9 18.3 -12 -4 -10 -1 -9 0 -7 1 RR R 2 2 5.110 Wood 12736 Hold 15.7 18.0 23.4 H.4.7 -9 0 -7 2 -5 3 -4 5 SB R 2 2 2.716 Wood frame, winyle exterior Full Barnt 181 Basement G	Garden Place	12730	18.0	24.6	18.7	-10	-4	-8		,		-5	1	RR	R	2	2,398	Brick facing	Full Bsmt	1BI	Basement		-			DRY/WET
Dale Drive 12736 16.0 23.4 14.7 9 0 7 2 5.5 3 4.5 5 8B R 2 2.716 Wood frame, winy exterior Full Bsmt 1BI Basement G - WET WET Cross Street 12746 18.0 23.6 18.4 9 4. 77 2.2 -6 0 4. 1 5B R 2 2.022 Wood frame, winy exterior Full Bsmt N Basement G - WET WET Pemberwick Road 12773 26.0 27.5 18.3 -13 -4 -111 -2 -9 0 -8 1 SB R 1.5 2.007 Bink frame, brick/kinyl ext Lover level N Basement G - WET WET WET Cross Street 12791 18.0 21.5 18.0 -7 -3 -5 -1 -3 0 -2 2 RR R 1 1.053 Wood Frame, brick/kinyl ext Lover level N Basement G - WET																						G				
Pemberwick Road   12773   28.0   27.5   18.3   -13   -4   -11   -2   -9   0   -8   1   SB   R   1.5   2,007   Brick frame, brick/vinyl ext   Lower level   N   Basement   G	Dale Drive	12736	16.0	23.4	14.7	-9	0	-7	2	-5	3	-4	5	SB	R	2	2,716	Wood frame, vinyl exterior	Full Bsmt	1BI	Basement	G		WET	WET	WET
Cross Street 12791 18.0 21.5 18.0 -7 -3 -5 -1 -3 0 -2 2 RR R R 1 1.053 Wood fame, viryl exterior Full Bsmt 181 Basement F													1													WET
Cross Street 12826 18.0 20.6 18.9 -6 -4 -4 -4 -2 -3 -1 -1 -1 1 SB R R 1.5 1,707 Wood frame, vinyl exterior Full Bsmt N Basement G WET Garden Place 12841 18.0 21.5 19.5 -7 -5 -5 -5 -1 -3 -3 -2 -2 -2 0 SB R 1 1 1,018 Wood frame, vinyl exterior Full Bsmt 1D Basement G DRY/WET N/WET Cross Street 12864 18.0 23.9 19.7 -9 -5 -7 -3 -6 -2 -4 0 RR R 2 2,804 Wood frame, vinyl exterior Full Bsmt 1D Basement G DRY/WET Cross Street 12864 18.0 23.9 19.7 -9 -5 -7 -3 -6 -2 -5 -1 RR R R 2 2,804 Wood frame, vinyl exterior Full Bsmt 1D Basement G DRY/WET Cross Street 12906 20.0 23.0 19.4 -8 -5 -6 -3 -5 -1 RR R 2 2,530 Wood frame, vinyl exterior Full Bsmt 1B Basement G DRY/WET Rex Street 12904 20.0 24.8 21.9 -10 -7 -8 5 -5 -6 -2 -5 -1 RR R 1.5 1,563 Wood frame, vinyl exterior Full Bsmt 1B Basement G DRY/WET Rex Street 12904 20.0 24.8 21.9 -10 -7 -8 5 -5 -6 -2 -5 -1 -3 0 SB R 1.5 1,563 Wood frame, vinyl exterior Full Bsmt 1B Basement G DRY/WET Rex Street 12904 20.0 24.8 21.9 -10 -7 -8 5 -5 -6 -2 -5 -1 -3 0 SB R 1.5 1,563 Wood frame, vinyl exterior Full Bsmt 1B Basement G DRY/WET Rex Street 12904 20.0 24.8 21.9 -10 -7 -8 5 -5 -6 -2 -5 -1 -3 0 SB R 1.5 1,563 Wood frame, vinyl exterior Full Bsmt 1B Basement G	Cross Street	12791	18.0	21.5	18.0	-7	-3	-5	-1	-3	0	-2	2	RR	R	1	1,053	Wood	Full Bsmt	1BI	Basement			-	DRY/WET	DRY/WET
Garden Place 12841 18.0 21.5 19.5 -7 -5 -5 -5 -3 -3 -3 -2 -2 -0 SB R 1 1,018 Wood frame, vinyl exterior Full Bsmt 1D Basement G								-					1									G	-	-		WET
Cross Street 12864 18.0 23.9 19.7 -9 -5 -7 -3 -6 -2 -4 0 RR R 2 2,804 Wood frame, vinyl exterior Full Bsmt 1D Basement G DRY/WET  Cross Street 12894 18.0 24.3 20.1 -10 -6 -7 -3 -6 -2 -5 -1 RR R 2 1,760 Wood frame, vinyl exterior Full Bsmt 1BI Basement G	Garden Place	12841	18.0	21.5	19.5	-7	-5	-5		-3			0	0.5		1	1,018	Wood	Full Bsmt		Basement		-	-	 DDV/MET	
Cross Street 12894 18.0 24.3 20.1 -10 -6 -7 -3 -6 -2 -5 -1 RR R R 2 1,760 Wood frame, vinyl exterior Full Bsmt 1BI Basement G	Cross Street	12864	18.0	23.9	19.7	-9		-7			-	-4	0	RR	R	2	2,804		Full Bsmt	1D						
Rex Street       12944       20.0       24.8       21.9       -10       -7       -8       -5       -7       -4       -5       -2       RR       R       1.5       1,563       Wood frame, brick facing       Full Bsmt       1BI       Basement       G             Rex Street       12962       19.5       23.1       19.2       -8       -5       -6       -2       -5       -1       -3       0       SB       R       1.5       1,976       Wood frame, vinyl exterior       Full Bsmt       1D       Basement       G          WET         Pemberwick Road       13125       26.0       28.6       19.7       -14       -5       -12       -3       -11       -2       -9       0       SB       R       2       2,162       Brick frame, brick/vinyl ext       1/2 Bsmt, Lower level       N       Basement       G             WET																		Wood frame, vinyl exterior					-	-		 DDV/M/FT
Rex Street 12962 19.5 23.1 19.2 -8 -5 -6 -2 -5 -1 -3 0 SB R 1.5 1,976 Wood frame, vinyl exterior Full Bsmt 1D Basement G WET  Pemberwick Road 13125 26.0 28.6 19.7 -14 -5 -12 -3 -11 -2 -9 0 SB R 2 2 2,162 Brick frame, brick/vinyl ext 1/2 Bsmt, Lower level N Basement G WET	Rex Street	12944	20.0											RR	R	1.5	1,563		Full Bsmt	1BI						
			19.5		19.2	-8		-6				-3	0			1.5	1,976	Wood frame, vinyl exterior						-		
			26.0		21.2					-11 -10	-2							Wood frame, Brick exterior	1/2 Bsmt, Lower level		Basement					vv⊏ I

# BYRAM RIVER BASIN FEASIBILITY STUDY NONSTRUCTURAL PLAN - RECOMMENDATIONS

Flood Depth equals 0, Recommendation based on 1-foot of freeboard Flood Depth between 0 and 2 feet Flood Depth greater than 2-feet

User Input Calculated NOTE: DRY/WET entails wet floor proofing of areas below the main floor elevation, including protection/raising of utilities where necessary, and dry flood proofing for the area above the main floor elevation.

		GE	ME	LE				F	D								STRUCTUR	E					RECOMME	NDATION	
StreetNAME	BYRAM RIVER STATION	GROUND ELEVATION AT BUILDING	SURVEYED MAIN FLOOR ELEVATION	SURVEYED LOW OPENING ELEVATION	DEPTH OF 10% FLOODING VS. FIRST FLOOR	DEPTH OF 10% FLOODING VS. LOW OPENING	DEPTH OF 4% FLOODING VS. FIRST FLOOR	DEPTH OF 4% FLOODING VS. LOW OPENING	DEPTH OF 2% FLOODING VS. FIRST FLOOR	DEPTH OF 2% FLOODING VS. LOW OPENING	DEPTH OF 1% FLOODING VS. FIRST FLOOR	DEPTH OF 1% FLOODING VS. LOW OPENING	STRUCTURE TYPE	LAND USE TYPE	# OF FLOORS	TOTAL SQ. FT.	CONSTRUCTION TYPE	BASEMENT	GARAGE TYPE	FOUNDATION TYPE	CONDITION	10-PERCENT FLOOD	4-PERCENT FLOOD	2-PERCENT FLOOD	1-PERCENT FLOOD
Halock Drive	13263	19.5	21.9	20.1	-7	-6	-5	-3	-4	-2	-2	-1	SB	R	1.5	2,703	Wood	Full Bsmt	2BI	Basement	F				
Halock Drive	13292	19.0	21.4	19.6	-7	-5	-5	-3	-3	-2	-2	0	SB	R	2	2,984	Wood frame, vinyl exterior	3/4 Bsmt, 1/4 Crawl	2BI	Basement	G				WET
Halock Drive	13334	19.0	21.4	19.0	-7	-4	-5	-2	-3	-1	-2	1	SL	R	1.5	2,229	Wood frame, vinyl exterior	1/2 Bsmt, Lower level	2A	Basement	G			-	WET
Halock Drive	13350	18.5	20.8	18.6	-6	-4	-4	-2	-3	-1	-1	1	SL	R	1.5	3,230	Wood frame, vinyl exterior	1/4 Bsmt, 1/4 Crawl, Lower level	1A	Basement	F			-	WET
Halock Drive	13376	18.0	19.8	18.0	-5	-4	-3	-1	-2	0	0	1	SB	R	1.5	1,757	Wood	1/2 Bsmt, Lower level	1A	Basement	Р				DRY/WET
Halock Drive	13531	19.0	21.7	19.3	-8	-5	-5	-3	-4	-2	-3	0	SL	R	1.5	2,568	Wood frame, vinyl exterior	1/4 Bsmt, 1/4 Crawl, Lower level	2A	Basement	G			-	WET
Halock Drive	13564	19.0	21.3	20.2	-7	-6	-5	-4	-4	-3	-2	-1	SL	R	1.5	1,680	Wood frame, vinyl exterior	3/4 Bsmt, 1/4 Crawl	1A	Basement	G				
Halock Drive	13723	19.0	20.8	18.4	-5	-2	-3	-1	-3	0	-1	1	SL	R	1.5	2,199	Wood frame, composition ext	1/2 Bsmt, 1/4 Crawl, Lower level	1A	Basement	G				WET
Pemberwick RoadBuilding 2	15675	40.0	40.6	40.6	-4	-4	-2	-2	-1	-1	-1	-1	S	С	2	40,852	Brick	None	N	Unknown	G				
Pemberwick RoadBuilding 3	15998	40.0	42.3	42.3	0	0	1	1	3	3	4	4	S	С	2	40,852	Brick	None	N	Unknown	G	RW	RW	RW	RW
Pemberwick Road	19390	119.0	120.4	88.8	-34	-2	-32	0	-31	1	-30	2	SB	С	3	54,720	Brick	Full Bsmt	N	Basement	G		RW	RW	RW
Glenville Street	19780	128.0	110.8	101.3	3	13	4	14	5	14	5	15	SB	С	2	58,992	Brick	Full Bsmt	N	Basement	G	RW	RW	RW	RW
Glenville Street	20352	118.0	120.3	120.3	-5	-5	-4	-4	-3	-3	-1	-1	S	R	1	2,848	Wood	None	2A	Slab	G				
Angelus Drive	20408	125.0	126.5	118.3	-11	-2	-10	-2	-9	-1	-6	2	SB	R	1	1,876	Wood	3/4 Bsmt, Lower level	N	Basement	G				WET
Glenville StreetBldg 1	20440	122.0	124.0	119.2	-8	-3	-7	-2	-6	-2	-4	1	SB	R	2	2,072	Wood frame, vinyl exterior	3/4 Bsmt	1D	Basement	G				WET
Glenville StreetBldg 2	20440	124.0	126.0	118.2	-10	-2	-9	-1	-9	-1	-6	2	SB	R	1	836	Wood frame, wood exterior	Full Bsmt	3BI	Basement	G				WET
Angelus Drive	20475	125.0	126.8	117.3	-11	-1	-10	0	-9	0	-6	3	RR	R	1	1,902	Wood	1/4 Bsmt, Lower Level	1BI	Basement	G		WET	WET	WET
Angelus Drive	21094	126.0	130.0	121.2	-13	-4	-12	-3	-11	-2	-9	0	RR	R	1	1,287	Wood	1/4 Bsmt, Lower level	1BI	Basement	G				DRY/WET
Angelus Drive	21105	126.0	128.5	120.2	-12	-3	-10	-2	-9	-1	-7	1	RR	R	2	2,874	Wood	1/2 Bsmt, Lower level	1BI	Basement	G				DRY/WET
Angelus Drive	21331	122.0	123.9	119.7	-6	-2	-5	-1	-4	0	-2	2	BL	R	1	1,627	Wood	1/2 Bsmt, Lower level	1BI	Basement	G			DRY/WET	DRY/WET
Riversville Road	21635	124.5	128.3	123.8	-5	0	-4	0	-4	1	-3	1	SB	R	1.5	5,331	Wood	Full Bsmt	N	Basement	G	WET	WET	WET	WET
Riversville Road	22041	127.0	127.2	127.2	-1	-1	-1	-1	0	0	0	0	SB	R	1	2,446	Brick frame, brick/wood ext	Bsmt	1BI	Basement	G			DRY/WET	DRY/WET
Riversville RoadBuilding 1	22869	132.0	139.0	130.6	-11	-3	-10	-2	-9	-1	-8	0	RF	R	1	2,019	Wood	None	1D	Slab	G				WET
Riversville RoadBuilding 2	22987	132.0	141.3	134.5	-13	-6	-12	-5	-11	-4	-10	-3	RF	R	1	1,485	Wood	None	N	Slab	G				
Riversville Road	23571	134.0	138.7	136.8	-7	-6	-5	-3	-3	-1	0	2	SB	R	2	11,612	Wood	Full Bsmt	N	Basement	G				DRY/WET
Bailiwick Road	24130	133.0	134.3	134.3	0	0	1	1	2	2	5	5	SB	R	2	7,862	Wood frame, stucco exterior	Full Crawl	1A	Crawl Space	G	E	E	E	E
Bailiwick Road	24300	136.0	138.8	136.3	-4	-2	-3	0	-2	1	0	3	S	R	1.5	4,907	Wood frame, wood exterior	None	2A	Slab	G		-	DRY/WET	DRY/WET

# **Attachment B**



# **Byram River Basin Feasibility Study**

## Algorithm by Structure Type

**Structure Type** Slab-on-Grade Foundation

**Description** Structures that are constructed on a slab foundation at grade.

**Assumptions** Structures will not be dry flood proofed for main floor flood depths

greater than 2-feet.

## Algorithm

#### Residential

I. If FE < GE then No Flood Proofing Required

II. If FE+1 < ME then No Flood Proofing Required

III. If FE+1 > ME then

a. If FE+1 > ME+3 then

i. If Poor Condition then Buyout

ii. Otherwise Elevation

b. If FE+1 < ME+3 then

i. If FE+1 < GE+6 then Dry Flood Proofing or Ringwall

ii. If FE+1 > GE+6 then Dry Flood Proofing

#### Nonresidential

- I. If FE<GE then No Flood Proofing Required
- II. If Wood or Metal Construction Type then
  - a. If FE+1 < ME then No Flood Proofing Required
  - b. If FE+1 > ME then
    - i. If FE+1 > ME+3 then
      - 1. If Poor Condition then Buyout
      - 2. Otherwise Elevation
    - ii. If FE+1 < ME+3 then Dry Flood Proofing or Ringwall
- III. If Masonry Construction Type then
  - a. If FE +1 < ME then No Flood Proofing Required
  - b. If FE + 1 > ME then
    - i. If FE+1 > GE+3 then Ringwall
    - ii. If FE+1 < GE+3 then Dry Flood Proofing or Ringwall

## **Structure Type** Subgrade Basement

## **Description** Subgrade Basement Structures contain a basement with all sides subgrade.

Basements were considered to be one floor equivalent of space located below

the main floor on a slab.

## **Assumptions**

- -All basements were considered unfinished and containing major utilities.
- -All basement foundation types are unreinforced, 8" concrete masonry units (CMUs).
- -Any dry flood proofing will be implemented in conjunction with wet flood proofing of the basement area.

#### Algorithm

#### Residential

- I. If FE<GE then No Flood Proofing Required
- II. If FE+1 > ME +3 then
  - a. If Poor Condition then Buyout
  - b. Otherwise Elevation
- III. If FE+1 < ME +3 then
  - a. If FE+1 > ME then
    - i. If FE+1 < GE+6 then Dry Flood Proofing or Ringwall
    - ii. If FE+1 > GE+6 then Dry Flood Proofing
  - b. If FE+1 < ME then
    - i. If FE+1 < GE+6 then Wet Flood Proofing or Ringwall
    - ii. If FE+1 > GE+6 then Wet Flood Proofing

#### Nonresidential

- I. If FE<GE then No Flood Proofing Required
- II. If Wood or Metal Construction Type then
  - a. If FE + 1 > ME + 3 then
    - i. If Poor Condition then Buyout
    - ii. Otherwise Elevation
  - b. If FE+1 < ME +3 then
    - i. If FE+1 > ME then
      - 1. If FE+1 < GE+6 then Dry Flood Proofing or Ringwall
      - 2. If FE+1 > GE+6 then Dry Flood Proofing
    - ii. If FE+1 < ME then
      - 1. If FE+1 < GE+6 then Wet Flood Proofing or Ringwall
      - 2. If FE+1 > GE+6 then Wet Flood Proofing
- III. If Masonry Construction Type then Ringwall

**Structure Type** Elevated

**Description** Structures elevated on posts, piles, piers, or extended walls.

**Assumptions** No major utilities located below the main floor elevation.

## Algorithm

#### Residential

- I. If FE<GE then No Flood Proofing Required
- II. If FE+1 > ME then
  - a. If FE+1 > ME+3 then
    - i. If Poor Condition then Buyout
    - ii. Otherwise Elevation
  - b. If FE+1 < ME+3 then
    - i. If FE+1 < GE+6 then Dry Flood Proofing or Ringwall
    - ii. If FE+1 > GE+6 then Dry Flood Proofing
- III. If FE+1 < ME then No Flood Proofing Required

#### Nonresidential

Not Applicable

**Structure Type** Bi-Levels/Raised Ranches

## **Description** Bi-Level structures consist of two stories, with the first story

(typically a living space or garage) partially below grade. The second story (the main floor) is typically above the first story, with the main

entrance located between the two stories.

Ranch Ranches consist of two stories, with the first story (typically a living space or garage) built slab-on-grade and the second story (the

main floor) directly above the first story.

#### **Assumptions**

- -The first floor (lower portion) walls are masonry.
- -The foundation is slab-on-grade.
- -The main floor can be raised separately from the lower level.

## **Algorithm**

#### Residential

- I. If FE<GE then No Flood Proofing Required
- II. If FE+1 > ME then
  - a. If Poor Condition then Buyout
  - b. Otherwise Elevation
- III. If FE+1 < ME then
  - a. If FE+1 < GE+3 then Dry Flood Proofing or Ringwall
  - b. If FE+1 > GE+3 then
    - i. If FE+1 < GE+6 then Wet Flood Proofing or Ringwall
    - ii. If FE+1 > GE+6 then Wet Flood Proofing

#### Nonresidential

Not Applicable

## Structure Type Description

## Raised Foundations/Split Levels

Raised Foundation Structures contain a space below the main floor not big enough for a basement (typically a crawlspace).

Split Levels consist of at least three levels, with the lower and upper level stacked, and the main floor level adjacent between the two. Each level is at a different elevation and connected by short stairways. The lower level is typically on a slab foundation and is living space and/or a garage. The main floor is typically on a raised foundation and is where the main entrance is located.

## **Assumptions**

- -No major utilities are located in the crawl space.
- -In cases of dry flood proofing the crawl space will be flooded, and wet flood proofing should be implemented in the area.
- -The lower level is slab-on-grade.
- -The low level (lower portion) walls are masonry.
- -The main floor can be raised separately from the lower level.
- -Nonresidential flood proofing applies to raised foundation structure types only.

## **Algorithm**

#### Residential

- I. If FE<GE then No Flood Proofing Required
- II. If FE+1 > ME+3 then
  - a. If Poor Condition then Buyout
  - b. Otherwise Elevation
- III. If FE+1 < ME+3 then
  - a. If FE+1 > ME then
    - i. If FE+1 < GE+6 then Dry Flood Proofing or Ringwall
    - ii. If FE+1 > GE+6 then Dry Flood Proofing
  - b. If FE+1 < ME then
    - i. If FE+1 < GE+6 then Wet Flood Proofing or Ringwall
    - ii. If FE+1 > GE+6 then Wet Flood Proofing

## Raised Foundation/Split Level Algorithm Continued...

#### Nonresidential

- I. If FE<GE then No Flood Proofing Required
- II. If Wood or Metal Construction Type then
  - a. If FE+1 > ME+3 then
    - i. If Poor Condition then Buyout
    - ii. Otherwise Elevation
  - b. If FE+1 <ME+3 then
    - i. If FE+1 > ME then
      - 1. If FE+1 < GE+6 then Dry Flood Proofing or Ringwall
      - 2. If FE+1 > GE+6 then Dry Flood Proofing
    - ii. If FE+1 <ME then
      - 1. If FE+1 < GE+6 then Wet Flood Proofing or Ringwall
      - 2. If FE+1 > GE+6 then Wet Flood Proofing
- III. If Masonry Construction Type then
  - a. If FE+1 >ME+3 then Ringwall
  - b. If FE+1 <ME+3 then
    - i. If FE+1 > ME then
      - 1. If FE+1 < GE+6 then Dry Flood Proofing or Ringwall
      - 2. If FE+1 > GE+6 then Dry Flood Proofing
    - ii. If FE+1 <ME then
      - 1. If FE+1 < GE+6 then Wet Flood Proofing or Ringwall
      - 2. If FE+1 > GE+6 then Wet Flood Proofing

**Structure Type** Large Residential

**Description** Large Residential structures include apartments, townhouses, and

multi-family units. Foundation types typical of large residential structures include slab-on-grade, raised foundation, and subgrade

basement.

**Assumptions** All assumptions made for slab-on-grade, raised foundation, and

subgrade basements apply to large residential structures.

### **Algorithm**

#### Residential

- I. If FE<GE then No Flood Proofing Required
- II. If Subgrade Basement then
  - a. If FE+1 > ME then
    - i. If Multi-Family Structure with Footprint > 2000 sf, Apartment or Townhouse then Ringwall
    - ii. If Multi-Family Structure with Footprint < 2000 sf then
      - 1. If Poor Condition then Buyout
      - 2. Otherwise Elevation
  - b. If FE+1 < ME then
    - i. If FE+1 < GE+6 then Wet Flood Proofing or Ringwall
    - ii. If FE+1 > GE+6 then Wet Flood Proofing
- III. If Slab-On-Grade or Raised Foundation then
  - a. If FE+1 > ME then
    - i. If Apartment or Townhouse then Ringwall
    - ii. If Multi-Family Structure then
      - 1. If FE+1 < GE+3 then Dry Flood Proofing or Ringwall
      - 2. If FE+1 > GE+3 then
        - a. If Footprint of Structure is > 2000 sf then Ringwall
        - b. If Footprint of Structure is < 2000 sf then
          - i. If Poor Condition then Buyout
          - ii. Otherwise Elevation
  - b. If FE+1 < ME then No Flood Proofing Required

### Nonresidential

Not Applicable

# **Attachment C**



## Byram River Basin Feasibility Study Nonstructural Evaluation – Task 2.2.g Recommendation Summaries

Table C.1 Summary of Recommendations (10-Percent Storm Event)

Structure Type		Flo	od Proofing	Measure	
Structure Type	Dry	Wet	Ringwall	Elevation	Acquisition
Slab-on-Grade	-	-	4	1	-
Subgrade Basement*	4	-	1	18	1
Elevated	-	-	-	-	-
Bi-Levels*	-	-	-	1	-
Raised Ranch	-	1	-	7	-
Raised Foundation*	-	-	-	1	-
Split Level*	1	-	-	1	-
Large Residential	-	-	6	-	-
Flood Proofing Measures Total	5	1	11	29	1

<sup>\*</sup> Dry Flood Proofing entails wet flood proofing of areas below the main floor elevation and dry flood proofing of areas impacted above the main floor elevation.

Table C.2 Summary of Recommendations (1-Percent Storm Event)

Stowestown Tyme		Flo	od Proofing	Measure	
Structure Type	Dry	Wet	Ringwall	Elevation	Acquisition
Slab-on-Grade	4	-	4	2	-
Subgrade Basement*	34	55	1	28	1
Elevated	1	-	-	-	-
Bi-Levels*	1	1	-	1	-
Raised Ranch*	6	28	-	15	-
Raised Foundation	-	2	-	3	-
Split Level*	1	7	-	1	-
Large Residential	-	-	6	-	-
Flood Proofing Measures Total	47	93	11	50	1

<sup>\*</sup> Dry Flood Proofing entails wet flood proofing of areas below the main floor elevation and dry flood proofing of areas impacted above the main floor elevation.

Table C.3 Summary of Recommendations (0.2-Percent Storm Event)

Stunistinus Trino		Flo	od Proofing	Measure	
Structure Type	Dry	Wet	Ringwall	Elevation	Acquisition
Slab-on-Grade	5	-	6	4	-
Subgrade Basement*	48	85	1	62	2
Elevated	2	-	-	1	-
Bi-Levels*	1	-	-	3	-
Raised Ranch	2	19	-	40	-
Raised Foundation*	5	8	-	4	-
Split Level*	12	4	-	2	-
Large Residential	-	-	6	-	-
Flood Proofing Measures Total	75	116	13	116	2

<sup>\*</sup> Dry Flood Proofing entails wet flood proofing of areas below the main floor elevation and dry flood proofing of areas impacted above the main floor elevation.

# **Attachment D**



# BYRAM RIVER BASIN FEASIBILITY STUDY NONSTRUCTURAL PLAN WITH ROUTE 1 BRIDGE REPLACEMENT - RECOMMENDATIONS

Flood Depth equals 0, Recommendation based on 1-foot of freeboard
Flood Depth between 0 and 2 feet
Flood Depth greater than 2-feet

User Input Calculated DRY/WET entails wet floor proofing of areas below the main floor elevation, including protection/raising of utilities where necessary, and dry flood proofing for the area above the main floor elevation.

		GE	ME	LE		T	1	FD	1	T		1			7		STRUCTURE					- 1	RECOMM	ENDATION	1
STREET NAME	BYRAM RIVER STATION	GROUND ELEVATION AT BUILDING	MAIN FLOOR	SURVEYED LOW OPENING ELEVATION	DEPTH OF 10% FLOODING VS. FIRST FLOOR	DEPTH OF 10% FLOODING VS. LOW OPENING	DEPTH OF 4% FLOODING VS. FIRST FLOOR	DEPTH OF 4% FLOODING VS. LOW OPENING	DEPTH OF 2% FLOODING VS. FIRST FLOOR	DEPTH OF 2% FLOODING VS. LOW OPENING	DEPTH OF 1% FLOODING VS. FIRST FLOOR	DEPTH OF 1% FLOODING VS. LOW OPENING	STRUCTURE TYPE	LAND USE TYPE	# OF FLOORS	TOTAL SQ. FT.	CONSTRUCTION TYPE	BASEMENT	GARAGE TYPE	FOUNDATION TYPE	CONDITION	10-PERCENT FLOOD	4-PERCENT FLOOD	2-PERCENT FLOOD	Γ 1-PE FI
Hillside Avenue Riverdale Avenue	9512 9591	16.0 8.0	18.3 14.6	18.3 8.8	-8 -5	-8 1	-7 -3	-7 3	-6 -2	-6	-5 -1	-5	S	С		1,959 34,584	Brick Non- Brick Non-		N N	Unknown Unknown	G	 RW	 RW	 RW	
Riverdale Avenue	9612	15.0	25.7	16.9	-16	-7	-3 -14	-5	-13	-4	-12	-3	RR	R		4,056	Wood Bsm		2BI	Unknown	G				+
Riverdale Avenue	9668	10.5	16.8	8.7	-7	2	-5	3	-4	4	-3	5	SB - M	R		1,568	Wood Bsm		N	Unknown	G	RW	RW	RW	
Riverdale Avenue	9668	13.0	27.4	15.2	-17	-5	-16	-3	-15	-2	-14	-1	SB	R	2.5	2,786	Wood Bsm		2D	Unknown	Р				
Riverdale Avenue	9680 9686	10.5	16.8	8.7	-7	2	-5	3	-4	4	-3	5	SB - M	R	2	1,352	Wood Bsm		N	Unknown	F	RW	RW	RW	
Riverdale Avenue Riverdale Avenue	9698	10.5 10.5	16.7 16.9	8.6 8.8	-7	1	-5 -5	3	-4	4	-3	5	SB - M SB - M	R		1,516 1,506	Composition Bsm Wood Bsm		N N	Unknown Unknown	F	RW RW	RW RW	RW RW	-
Riverdale Avenue	9718	10.5	16.7	8.6	-6	2	-5	3	-4	4	-3	5	SB - M	R		1.516	Wood Bsm		N	Unknown	G	RW	RW	RW	+
Riverdale Avenue	9727	11.0	16.8	8.7	-7	2	-5	3	-4	4	-3	5	SB - M	R	2	1,498	Wood Bsm	it .	N	Unknown	F	RW	RW	RW	
Riverdale Avenue	9727	13.0	27.2	19.2	-17	-9	-16	-8	-14	-6	-13	-5	RR	R	2	4,250	Wood Bsm	it	1BI	Unknown	G				
Riverdale Avenue	9761	11.0	15.3	9.2	-5	1	-4	-7	-2	4	-1	5	RF RR	R		2,349	Stucco Bsm		1D	Unknown	F G	WET	WET	WET	4
Riverdale Avenue West Putnam Avenue Lot 48A	9761 9771	14.0 18.0	26.4 19.6	18.3 16.7	-16 -9	-8 -6	-15 -8	- <i>1</i> -5	-14 -7	-5 -4	-13 -6	-4 -3	S	C	3	2,076 140,445	Wood Bsm Reinforced Concrete Non-		1BI N	Unknown Slab	G				+
Riverdale Avenue	9786	12.0	16.2	9.1	-6	1	-4	3	-3	4	-2	5	SB	R	-	1,294	Wood - Alum/Vinyl Bsm		1D	Unknown	G	WET	WET	WET	+
Riverdale Avenue	9798	14.0	14.8	14.7	-5	-4	-3	-3	-2	-2	-1	-1	RR	R		2,588	Wood Bsm		1BI	Unknown	G				
Riverdale Avenue	9811	12.0	15.9	12.6	-6	-2	-4	-1	-3	0	-2	1	SB	R		1,620	Alum/Vinyl Bsm		N	Unknown	F			WET	
Riverdale Avenue	9835	12.0	15.9	8.4	-5	2	-4	4	-3	5	-2	6	SB	R		2,300	Wood Bsm		N	Unknown	F	WET	WET	WET	_
Riverdale Avenue	9860 9873	14.5 13.0	19.1 17.0	16.0 8.9	-9	-6	-/	-4	-6	-3	-5	-2	SB	R		1,616 2,008	Wood Bsm Wood Bsm		1D N	Unknown	P	 \\/[T	 \\//ET	 \//⊏T	+
Riverdale Avenue Riverdale Avenue	9885	15.0	19.3	16.8	-/ -9	-6	-5 -7	-5	-6	-4	-3 -5	-3	SB	R		2,008	Wood Bsm Wood Bsm		2D	Unknown Unknown	G	WET 	WET 	WET	+
Riverdale Avenue	9910	13.0	17.0	12.0	-6	-1	-5	0	-4	1	-3	2	RF	R		2,342	Alum/Vinyl Bsm		N	Slab	G		WET	WET	$\dagger$
Riverdale Avenue	9922	15.0	20.1	17.5	-10	-7	-8	-5	-7	-4	-6	-3	SB	R	2	2,356	Wood Bsm		3D		G				I
Riverdale Avenue	9947	15.0	18.7	12.9	-8	-2	-7	-1	-5	0	-4	1	SB	R		1,834	Stucco Bsm		1D		G			WET	4
Riverdale Avenue Riverdale Avenue	9960 9972	17.0 17.0	22.5 19.1	20.3 11.9	-12 -9	-10 -1	-10 -7	-8	-9 -6	-7 1	-8 -5	-6 3	SB SB	R	2.5	3,140	Wood Bsm Wood Bsm		N 2D	Unknown Unknown	G G		WET	WET	+
Riverdale Avenue	10022	17.0	21.0	14.2	-9 -10	-4	-9	-2	-7	-1	-6	0	SB	R	2		Wood Bsm	•	3D	Unknown	F		WE1		+
Riverdale Avenue	10066	22.0	23.2	16.8	-12	-6	-11	-4	-10	-3	-8	-2	SB	R	2		Wood Bsm		N	Unknown	F				
Riverdale Avenue	10111	24.0	26.3	18.8	-15	-8	-14	-6	-13	-5	-11	-4	SB	R	2		Wood Bsm		N	Unknown	G				I
Homestead Lane	10129	12.0	14.1	10.8	-3	0	-2	2	0	3	1	4	SB	R	-	810	Wood Full		N		G	DRY/WET	DRY/WET	DRY/WET	Т
Homestead Lane	10155 10172	12.0 10.0	15.7 11.5	13.6	-5	-3	-3	-1	-2	0	-1	4	SB	R	2	2,502 1.486	Wood frame, vinyl exterior Full Wood Non		N 1BI		G			WET	4
Homestead Lane Homestead Lane	10172	10.0	11.5	10.7	-1	0	1	2	2	3	3	4	RF	R	1	1,011		Crawl	N	Slab Crawl Space	G	E	E	E	+
Homestead Lane	10203	10.0	14.3	10.1	-3	1	-2	2	0	4	1	5	SB	R		2,222	Wood frame, aluminum ext 1/2 l		N		G	DRY/WET	DRY/WET	DRY/WET	Т
Homestead Lane	10227	10.0	10.9	7.9	0	3	2	5	3	6	4	7	SB	R	1	1,520		Bsmt, 1/4 Crawl	1D	Basement	F	Е	E	E	1
Homestead Lane	10327	10.0	18.2	9.3	-7	2	-5	3	-4	5	-3	6	RR	R	2	3,434		Bsmt, Lower level	1BI	Basement	G	WET	WET	WET	4
Pemberwick Road Homestead Lane	10459 10500	28.0 10.0	32.1 14.7	27.2 11.4	-21 -3	-16 0	-19 -2	-14	-18 -1	-13	-17	-12 4	SB SB	R		2,876 2,424	Wood frame, vinyl exterior 1/2 f	Bsmt	N N		G G	DRY/WET	DRY/WET	DRY/WET	Т
Homestead Lane Lot 485, 486	10569	12.0	17.8	11.3	-6	0	-5	2	-4	3	-3	4	RR	R	2	2,727			2BI	Basement	-	WET	WET	WET	+
Homestead Lane Lot 487, 488	10660	12.0	16.2	9.7	-4	2	-3	3	-2	5	-1	6	SB	R	2	3,646		Bsmt	2BI		G	WET	WET	WET	T
Pemberwick Road	10694	30.0	32.3	18.3	-20	-6	-19	-5	-18	-4	-17	-3	SB	R		2,860	Wood frame, vinyl exterior Full		2BI		G				I
Den Lane	10699 10699	11.0 29.0	13.5 22.4	13.5 22.4	-1 -10	-1 -10	-9	-9	0	-8	-7	-7	S SB	U	1	146 2,676	Brick   Non   Wood   1/2	e Bsmt	N	Slab Basement	G		RW	RW 	+
Pemberwick Road Den Lane	10703	10.0	15.0	12.7	-10	-10	-9	1	-1	2	0	3	SB	R		3.380		Bsmt, 1/4 Crawl	1D	Basement	G		DRY/WET	DRY/WET	Т
Den Lane	10706	11.5	17.1	11.8	-5	0	-4	1	-3	2	-2	4	SL	R		4,122		Bsmt, Lower level	N		G	WET	WET	WET	T
Homestead Lane Unit A /B	10726	13.0	13.2	8.9	-1	3	0	4	1	5	2	6	RR	R		3,068	Brick/Wood Full		N		G	E	Е	E	I
Den Lane Unit 1	10729 10767	13.0	14.1	14.0	-2	-2	-1	-1	0	0	1	1	RR SB	R		4,296		Bsmt	2BI	Basement	E			E	4
Den Lane Den Lane	10767	16.0	17.3 20.3	13.3	-5 -8	-1	-4 -7	1	-5 -6	2	-5	3	RR	R		2,800		Crawl, Lower level Bsmt	N N	Crawl Space Basement	G			WET	+
Den Lane	10879	11.0	15.8	11.8	-3	1	-2	2	-1	3	0	4	SB	R		2,938		Bsmt	1D		G	DRY/WET	DRY/WET	DRY/WET	Т
Hollow Wood Lane	10898	13.0	16.8	13.3	-4	-1	-3	0	-2	1	-1	2	SB	R		2,100		Bsmt	D	Basement	G		WET	WET	
Pemberwick Road	10907	22.0	26.9	16.8	-14	-4	-13	-3	-12	-2	-11	-1	RR	R		3,964		Bsmt	N	Basement	G				_
Hollow Wood Lane Hollow Wood Lane	10909 10943	12.0 14.0	14.9 17.0	11.0	-2 -4	-1	-1 -3	0	-2	1	-1	5	SR SR	R		2,542 1,922		Bsmt, Lower level Bsmt	1BI N	Basement Basement	G	E	E WET	WET	4
Hollow Wood Lane Unit A/B	11003	12.5	21.0	12.2	-8	0	-3 -7	2	-6	3	-5	4	RR	R		4.527	Wood frame, vinyl exterior Non		2BI	Slab	G	WET	WET	WET	+
Pemberwick Road	11172	27.0	28.3	19.8	-15	-7	-14	-6	-13	-5	-12	-4	SB	R	-	2,384	Wood frame, composition ext 1/4 I		1BI	Basement	G				I
Hollow Wood Lane	11242	14.0	20.9	10.8	-8	2	-7	3	-6	4	-5	5	RR	R	-	-			-	Unknown	-		WET	WET	1
Hollow Wood Lane Hollow Wood Lane	11243 11243	14.0 14.0	16.8 17.7	13.5 15.6	-4 -5	-3	-3 -4	-2	-2 -3	-1	-1 -2	0	SB SB	R	1	1,680 1.481	Wood frame, vinyl exterior Full Wood Full	Bsmt Bsmt	2D N		G G		WET	WET	4
Hollow Wood Lane	11243	13.0	17.5	14.9	-5 -4	-3	-3	-1	-2	0	-1	1	SB			2,176		Bsmt, 1/4 Crawl	1D		F			WET	ď
Pemberwick Road	11298	26.0	27.9	19.3	-15	-6	-14	-5	-13	-4	-12	-3	SB	R	1	1,322			1BI	Slab	G				Ī
Hollow Wood Lane	11310	14.0	18.3	15.1	-5	-2	-4	-1	-3	0	-2	1	SB			2,180			N		F		-	WET	4
Pemberwick Road	11339 11350	26.0 14.0	25.8 18.0	18.6 14.0	-13 -5	-5 -1	-11 -4	-4 0	-10 -3	-3	-9 -2	-2	SB SB			4,164 890	Brick Bsm Wood frame, aluminum ext Full		N N		F G			 WET	+
Hollow Wood Lane Hollow Wood Lane Unit B	11350	12.5	21.8	13.0	-9	0	-4 -7	1	-6	2	-5	3	RR	R		5,325	Wood frame, aluminum ext Full Wood frame, wood/vinyl ext Non		N 2BI		G	WET	WET	WET	+
Hollow Wood Lane	11353	14.0	18.6	16.0	-5	-3	-4	-2	-3	-1	-2	0	SB	1		1,956	Wood Bsm		1D		F				_
Pemberwick Road	11368	24.0	27.0	19.2	-14	-6	-13	-5	-12	-4	-11	-3	SB			1,983	Brick Low	er level	2D		G				I
Hollow Wood Lane	11388	13.0	17.2	14.7	-4	-1	-3	0	-2	1	-1	2	SB			1,523	Wood Full		N 4D		G		WET	WET	4
Pemberwick Road Hollow Wood Lane	11408 11432	23.0 12.0	24.1	17.0 12.5	-11 -8	-4 1	-9 -7	-2	-8 -6	-1 3	-7 -5	0	SB RR	1		5,418 4,026	Brick Bsm Wood frame, vinyl exterior Non		1D N		G G	WET	WET	WET	#
Pemberwick Road	11432	22.0	23.2	16.8	-o -10	-3	<u>'</u>	-2	-7	-1	-5 -6	0	SB			4,460	Wood frame, brick Bsm		1D		G		VV⊏1		+
Pemberwick Road	11443	20.0	20.4	17.0	-7	-4	-6	-2	-5	-1	-4	0	SB			4,266	Wood frame, concrete Bsm		D		G				1
Hollow Wood Lane	11449	14.0	18.8	14.8	-5	-1	-4	0	-3	1	-2	2	SB			2,963	Wood frame, stucco exterior Full		N	Basement	F	 \A(ET	WET	WET	4
Hollow Wood Lane Unit A Hollow Wood Lane Unit B	11449 11449	10.0	22.3	11.7	-9 -8	2	-8 -7	4	-7 -6	5	-6 -5	5	RR RR			3,772 3,772	Wood Full Wood Full		4BI 4BI		G G	WET	WET WET	WET	+
follow Wood Lane Unit B	11449	14.0	19.0	13.6	-8 -5	0	- <i>1</i> -4	1	-3	2	-5	3	SB			3,772		Bsmt, 1/2 Crawl	N ABI	Basement/Crawl			WET	WET	+
Pemberwick Road	11481	21.0	24.4	16.1	-11	-3	-10	-1	-9	0	-8	1	SB			2,536		Bsmt Samt	2D		G				
Hollow Wood Lane	11484	14.0	18.8	14.4	-5	-1	-4	0	-3	2	-2	2	SB			2,078	Wood Full		N		F		WET	WET	J
Hollow Wood Lane	11516	14.0	18.4	15.7	-5 10	-2		-1	-2	0	-1	1	SB			2,466	Brick/Wood Full		2D		G		 DDVM/CT	WET	4
Hollow Wood Lane Pemberwick Road	11525 11525	14.0 20.0	23.4	15.1 16.1	-10 -8	-1 -2	-8 -6	-1	-7 -5	0	-6 -4	1	RR SB			2,860 1,463	Wood frame, composition ext Full Wood Bsm		2BI 2D	Basement Basement	G G		DRY/WET	WET	1
Pemberwick Road	11529	21.0	23.1	16.8	-9	-3	-8	-2	-7	-1	-6	0	SB			2,838	Wood Full		3A		G				1
Hollow Wood Lane	11533	14.0	21.9	14.0	-8	0	-7	1	-6	2	-5	3	SB			2,998	Wood Full		1D		G		WET	WET	₫
Hollow Wood Lane	11533	12.0	22.0	22.0	-8	-8	-7	-7	-6	-6	-5	-5	E			4,054	Wood frame, vinyl exterior Non		N		G				⅃
Hollow Wood Lane River Street	11537	14.0	19.5	11.8	-6	2	-4	3	-3	4	-2	5	RR			1,884		Bsmt	1BI		G	 \A/ET	WET	WET	+
	11537	12.0	17.9	13.2	-4	1	-3	2	-2	- 3	-1	4	SB	R	2	1,894	Wood frame, vinyl/brick ext Full	BSIIII	l N	Basement	G	WET	WET	WET	- 1

# BYRAM RIVER BASIN FEASIBILITY STUDY NONSTRUCTURAL PLAN WITH ROUTE 1 BRIDGE REPLACEMENT - RECOMMENDATIONS

Flood Depth equals 0, Recommendation based on 1-foot of freeboard
Flood Depth between 0 and 2 feet
Flood Depth greater than 2-feet

User Input Calculated NOTE: DRY/WET entails wet floor proofing of areas below the main floor elevation, including protection/raising of utilities where necessary, and dry flood proofing for the area above the main floor elevation.

	T	GE	ME	LE				FD									STRUCTURE					R	RECOMME	NDATION	
HOUSE# STREET NAME	BYRAM RIVER STATION	GROUND ELEVATION AT BUILDING	SURVEYED MAIN FLOOR ELEVATION	LOW OPENING ELEVATION	DEPTH OF 10% FLOODING VS. FIRST FLOOR	DEPTH OF 10% FLOODING VS. LOW OPENING	DEPTH OF 4% FLOODING VS. FIRST FLOOR	DEPTH OF 4% FLOODING VS. LOW OPENING	DEPTH OF 2% FLOODING VS. FIRST FLOOR	DEPTH OF 2% FLOODING VS. LOW OPENING	DEPTH OF 1% FLOODING VS. FIRST FLOOR	DEPTH OF 1% FLOODING VS. LOW OPENING	STRUCTURE TYPE	LAND USE TYPE	# OF FLOORS	TOTAL SQ. FT.	CONSTRUCTION TYPE	BASEMENT	GARAGE TYPE	FOUNDATION TYPE	CONDITION	FLOOD F	FLOOD	2-PERCENT FLOOD	1-PERCENT FLOOD
Hollow Wood Lane Unit 1/2 Hollow Wood Lane	11562 11606	14.0 15.0	22.9 23.0	14.6 14.7	-9 -9	-1 -1	-8 -8	0	-7 -7	2	-6 -6	2	RR	R	2	2,200 2,852	Wood frame, composition ex Wood	Full Bsmt	2BI 2BI	Basement	G F	DR			WET DRY/WET
Hollow Wood Lane River Street	11606 11606	14.0 13.0	19.3 17.8	11.6 13.5	-5 -4	0	-4 -3	2	-3 -2	3	-2 -1	4	RR SB			1,838 2,952	Wood Brick/wood	Full Bsmt Full Bsmt	N N	Basement Basement	G G		WET WET	WET	WET
Pemberwick Road Building 1	11662	22.0	23.4	17.7	-9	-4	-8	-2	-7	-1 0	-6	0	SB		2	2,658	Wood frame, stucco exterior	Full Bsmt	N N	Basement	F				WET
Pemberwick Road Building 2 Hollow Wood Lane	11703 11751	17.0 15.0	16.8 23.1	16.8 14.9	-3 -9	-3 -1	-8	-1 1	-7	2	-6	3	SB RR	• •	2	2,246 2,878	Wood Wood	Full Bsmt Full Bsmt	2BI	Basement Basement	G	\	L	WET I	DRY/WET WET
Pemberwick Road Hollow Wood Lane	11767 11779	22.0 14.0	23.8 19.2	18.6 14.7	-9 -5	-4 0	-8 -4	-3 1	-7 -3	-2	-6 -2	-1	SB SB	R R	2	3,608 1,838	Wood frame, vinyl exterior Wood frame, aluminum ext	Full Bsmt Full Bsmt	N 2D	Basement Basement	G G	WET \	 WET	WET	WET
River Street	11779	12.5	20.9	13.0	-7	1	-5	3	-4	4	-3	5	RR	R	2	2,998	Brick/wood	Full Bsmt	2BI	Basement	F	WET \	WET	WET	WET
Hollow Wood Lane Pemberwick Road	11841 11847	14.0 18.0	16.1 21.9	14.1	-2 -7	-4	-6	-3	-5	-2	-4	-1	SB SB	R R	2	1,884 3,324	Wood Wood frame, stucco exterior	Full Bsmt Full Bsmt	1D N	Basement Basement	G	DRY/WET DR	RY/WET [	DRY/WET I	DRY/WET
Hollow Wood Lane Monica Road	11848 11868	15.0 14.0	19.1 19.2	16.5 16.1	-5 -5	-2 -2	-3 -3	-1 0	-2	0	-1 -1	1	SB SB			2,512 2,314	Wood frame, stucco exterior Wood frame, aluminum ext		2D 1A	Basement Basement	F G		 WET	WET WET	WET WET
Monica Road	11868	16.5	21.6	18.3	-7	-4	-6	-2	-5	-1	-4	0	SB	R	2	3,326	Wood frame, stucco exterior	Full Bsmt	N	Basement	G				WET
Hollow Wood Lane Unit B Hollow Wood Lane	11878 11880	16.0 14.0	22.1 18.0	17.2 14.1	-8 -3	-3 0	-6 -2	-1 2	-5 -1	3	-4 0	4	BL SB	R R	1	3,482 1,549	Wood Wood	1/4 Bsmt Full Bsmt	2BI N	Basement Basement	G G	DRY/WET DR			DRY/WET DRY/WET
Pemberwick Road Pemberwick Road	11908 11910	18.0 20.0	20.8	17.1 20.4	-6 -6	-3 -6	-5 -5	-1 -5	-4 -4	0 -4	-3 -3	1 -3	SB		2	2,842 6,642	Wood frame, stucco exterior Wood/Masonry	Full Bsmt None	N N	Basement Slab	G	-		-	WET
Pemberwick Road	11933	18.5	23.7	16.7	-9	-2	-5 -8	-5 -1	-7	0	-6	1	SB	R	1.5	1,947	Wood frame, stone/stucco ex	Full Bsmt	N	Basement	G				WET
Monica Road Pemberwick Road	11961 11962	16.5 18.0	16.4 20.8	8.4 15.9	-2 -6	<u>6</u> -1	-1 -5	7	0 -4	1	-3	2	RR SL			3,716 3,107	Brick/Stone Wood frame, brick/vinyl ext	None 1/2 Bsmt, 1/4 Crawl, Lower level	N 1BI	Slab Basement/Crawl	G G			E	WET
Monica Road Monica Road	11966 11969	14.5 14.0	17.8 18.4	15.4 15.7	-3 -4	-1 -1	-2 -3	0	-1	1	0 -1	2	SB SB	R	2	2,034 2,778	Wood frame, vinyl exterior Brick/wood	3/4 Bsmt, 1/4 Crawl Full Bsmt	1D 1A	Basement Basement	G		RY/WET [	ORY/WET I	DRY/WET WET
Monica Road	11969	15.0	17.9	16.5	-3	-2	-2	-1	- <u>z</u> -1	0	0	1	SB	R	1	1,026	Wood frame, vinyl exterior	Full Bsmt	1D	Basement	G		[	DRY/WET I	DRY/WET
Monica Road  Monica Road	11976 11976	14.0	19.5 19.5	15.1 17.6	-5 -5	-1 -3	-4 -4	-2	-3 -3	-1	-2 -2	0	SB SB	R R	1	1,684 1,569	Wood frame, vinyl exterior Wood frame, vinyl/brick	Full Bsmt 3/4 Bsmt, 1/4 Crawl	1A N	Basement/Crawl	G G	\\	WET 	WET	WET
Lucy Street Pemberwick Road	11990 11990	16.0 19.5	20.8 27.5	11.9 20.0	-6 -13	<del>3</del> -6	-5 -12	4 -4	-4 -11	5 -3	-3 -10	<del>6</del> -2	RR RR	• •		4,392 4,398	Wood frame, vinyl exterior Wood frame, aluminum ext	None Full Bsmt, Lower level	2BI N	Slab Basement	E G	WET \	WET	WET	WET
Pemberwick Road  Pemberwick Road	12000	18.0	22.4	17.4	-8	-3	-12 -7	- <del>4</del> -2	-6	-5 -1	-10	0	SB	R		4,162	Wood frame, Brick exterior	Full Bsmt	N	Basement	G				WET
Lucy Street Lucy Street	12097 12100	16.0 17.0	20.4 18.1	17.9 18.1	-6 -4	-3 -4	-5 -2	-2 -2	-3 -1	<u>-1</u> -1	_	0	SB SB		2	1,446 3,474	Wood frame, Brick exterior Wood frame, vinyl exterior	Full Bsmt Full Bsmt	N 1D	Basement Basement	G G				WET DRY/WET
Lucy Street	12100 12102	14.5	20.8	15.8	-6	-1	-5 -9	0	-4	1	-3 -7	2	SL	R	2	6,250	Wood frame, stucco exterior	1/2 Bsmt, Lower level	2BI	Basement	G		WET	WET	WET
Lucy Street Lucy Street	12107	16.0 16.0	24.5 23.7	16.8 15.7	-10 -9	-2 -1	-9 -8	-1 0	-8 -7	1	-7 -6	2	RR RR	R R		3,198 3,282	Brick Brick	Full Bsmt Full Bsmt	2BI N	Basement Basement	G F				DRY/WET DRY/WET
Lucy Street Lucy Street	12174 12183	18.0 16.0	22.9 24.0	18.0 15.8	-8 -9	-4 -1	-7 -8	-2 0	-6 -7	<u>-1</u>	-5 -6	2	SB RR	R R	1 2	849 3.748	Wood frame, vinyl exterior Wood frame, Brick exterior	Full Bsmt 1/4 Bsmt, Lower level	N 1BI	Basement Basement	G G		[	ORY/WET I	WET DRY/WET
Lucy Street	12183	16.0	23.4	15.7 17.2	-9 -9	-1	-8	0	-7 -6	1	-6 -5	2	SB SB	R R		3,682 1.389	Wood frame, Brick exterior	Full Bsmt	2BI	Basement	G			WET	WET
Lucy Street Pemberwick Road	12222 12224	16.0 19.0	23.2 23.5	17.2	-9 -9	-3 -3	- <i>1</i> -8	-1 -2	-6 -7	-1	-5 -6	0	SB	R	2	3,416	Wood frame, vinyl exterior Wood frame, brick/wood ext	Full Bsmt Full Bsmt	1D 1A	Basement Basement	G	-			WET
Lucy Street Lucy Street	12248 12252	16.0 16.0	22.2	16.5 15.3	-8 -7	-2 -1	-6 -5	-1 1	-5 -4	2	-4 -3	3	RR RR			2,612 1.690	Wood Wood frame, aluminum ext	3/4 Bsmt, 1/4 Crawl Full Bsmt	1BI 1BI	Basement Basement	G F		[	DRY/WET I	DRY/WET WET
Pemberwick Road	12252	19.0	21.3	16.2	-7	-2	-5	0	-4	1	-3	2	SB	R	2	3,936	Wood frame, Brick exterior	Full Bsmt	N	Basement	G				WET
Lucy Street Pemberwick Road	12263 12284	16.0 19.0	20.4 26.0	17.8 18.7	-6 -11	-3 -4	-5 -10	-2 -3	-4 -9	-1 -2	-3 -8	-1	SB SB	R R	1.5	2,492 2,069	Wood frame, stone/vinyl ext Wood	3/4 Bsmt, Lower level	1BI N	Basement Basement	G F				WET 
Dale Drive Dale Drive	12304 12309	18.0 18.0	24.2 21.4	19.0 18.0	-10 -7	-4 -3	-8 -6	-3 -2	-7 -4	-2 -1	-6 -4	-1	RR SB		2	1,369 2,562	Wood Wood	Full Bsmt	1BI N	Basement Basement	G				WET
Dale Drive	12318	17.5	22.1	17.9	-8	-3	-6 -5	-2 -3	-5	-1		0	SB	R	2	3,434	Wood frame, vinyl exterior	Full Bsmt	1BI	Basement	G				WET
Dale Drive Dale Drive	12326 12337	17.0 16.5	21.0 21.6	18.5 17.4	-6 -7	-4 -3	-5 -6	-3 -2	- <del>4</del> -5	-2 -1	·	-1 0	SB SB		2	2,846 2,294	Wood frame, aluminum ext Wood frame, vinyl exterior	Full Bsmt Full Bsmt	1D 1A	Basement Basement	G				WET
Dale Drive Dale Drive	12340 12345	16.2 16.0	21.4	18.7 18.3	-7 -7	-4 -4	-6 -6	-3 -2	-5 -5	-2 -1	-4 -4	-1	SB SB	R R	2	2,874 2,252	Wood frame, vinyl exterior Wood	Full Bsmt	N N	Basement Basement	F G				WET
Dale Drive	12353	16.0	19.6	16.4	-5	-2	-4	-1	-3	0	-2	1	SB	R	2	3,278	Wood	Full Bsmt	N	Basement	G			WET	WET
Dale Drive Cross Street	12393 12411	18.0 18.0	22.5 22.7	18.0 18.0	-8 -8	-4 -3	-7 -7	-2 -2	-6	-1 -1	-5 -5	0	SB RR	R R	1	3,014 1,084	Wood frame, vinyl exterior Wood frame, vinyl exterior	Full Bsmt Full Bsmt	N 1BI	Basement Basement	G				
Dale Drive Pemberwick Road	12418 12431	18.0 22.0	21.2	21.2 17.9	-7 -9	-7 -3	-5 -7	-5 -2	-4 -6	-4 -1	-3 -5	-3 0	SB SB	R R	1.5	2,724 1,590	Wood frame, vinyl exterior Wood	Full Bsmt Full Bsmt	N 1D	Basement Basement	G G				
Cross Street	12489 12526	18.0	21.0	15.8	-6	-1	-5	0	-4	1	-3	2	RR SB	R	2	2,474	Wood frame, vinyl exterior	Full Bsmt	1BI	Basement	G				DRY/WET
Pemberwick Road Cross Street	12537	23.0 18.0	25.8 22.6	18.8 18.9	-11 -8	-4 -4	-10 -7	-3 -3	-6	-2 -2	-5	-1 -1	RR	R	2	3,548 1,898	Brick Wood frame, vinyl/wood ext		N 1BI	Basement Basement	G				
Cross Street Pemberwick Road	12579 12664	16.0 24.0	23.3 26.7	17.7 20.0	-9 -12	-3 -5	-7 -11	-2 -4	-	-1 -3		-2	SL SB			2,306 3,483	Wood frame, vinyl exterior Brick	1/4 Bsmt, Lower level Full Bsmt	1BI N	Basement Basement	F G				WET 
Cross Street	12674 12674	18.0 18.0	22.4 22.0	18.4 18.5	-8 -7	-4 -4	-7 -6	-3 -3	-5	-2 -2	-5	-1 -1	SB	R	2	2,332 2,950	Wood Wood	Full Bsmt 1/2 Bsmt, Lower level	N	Basement Basement	G G				
Cross Street Dale Drive	12674	17.5	22.0	18.9	-8	-4	-6	-3	-5	-2	-4	-1	SB	R	2	1,928	Wood frame, vinyl exterior	Full Bsmt	N 1D	Basement	G				
Dale Drive Cross Street	12695 12696	16.0 19.0	22.1 22.5	19.7 22.5	-8 -8	-5 -8	-6 -7	-4 -7		-3 -6		-2 -5	SB SB			2,094 1,335	Wood frame, Brick/Composit Wood frame, vinyl exterior		1BI N	Basement Basement	P G				
Cross Street	12717 12723	18.0 26.0	23.8	19.0 21.8	-9 -13	-4 -7	-8 -11	-3	-7	-2	-6	-1 -4	RR		1	1,417 1,181	Wood frame, vinyl exterior Wood frame, stucco exterior	Full Bsmt	1BI N	Basement	G				
Pemberwick Road Garden Place	12726	18.0	27.2 22.6	17.6	-8	-3	-7	-6 -2	-6	-5 -1	-5	0	SB	R	1	1,275	Wood	Full Bsmt	2D	Basement Basement	G F				
Cross Street Garden Place	12729 12730	18.0 18.0	21.2 24.6	17.1 18.7	-7 -10	-3 -4	-5 -9	-1 -3		-2	-3 -7	<u>1</u> -1	RR RR			1,162 2,398	Wood frame, vinyl exterior Brick facing	Full Bsmt Full Bsmt	1BI 1BI	Basement Basement	G G				
Pemberwick Road Garden Place	12732 12735	25.0 18.0	26.9 26.9	19.1	-12 -12	-5 -4	-11 -11	-3 -2	-10	-2 -1		-1 0	SB	R	2.5	3,610 3,110	Brick Wood	Full Bsmt 1/2 Bsmt, Lower level	N 1BI	Basement	F G			-	
Dale Drive	12736	16.0	23.4	14.7	-9	0	-8	1	-7	2	-6	3	SB	R	2	2,716	Wood frame, vinyl exterior	Full Bsmt	1BI	Basement	G	\	WET	WET	WET
Cross Street Pemberwick Road	12746 12773	18.0 26.0	23.6 27.5	18.4 18.3	-9 -13	-4 -4	-8 -12	-3 -2		-2 -1		-1 0	SB SB			2,082	Wood frame, wood/stucco ex Brick frame, brick/vinyl ext		N N	Basement Basement	G				
Cross Street Garden Place	12791 12820	18.0 18.0	21.5	18.0 18.0	-7 -8	-3 -3	-6 -6	-2 -2	-5	-1 -1	-4	0	RR	R	1	1,053	Wood Wood frame, vinyl exterior	Full Bsmt	1BI 1BI	Basement Basement	F	-			
Cross Street	12826	18.0	22.3 20.6	18.9	-8 -6	-4	-5	-3	-4	-2	-3	-1	SB	R	1.5	1,707	Wood frame, vinyl exterior	Full Bsmt	N	Basement	G				
Garden Place Garden Place	12841 12853	18.0 18.0	21.5 21.9	19.5 18.1	-7 -7	-5 -4	-6 -6	-4 -2	-5 -5	-3 -1		-2	SB RR			1,018 1,924	Wood Wood frame, vinyl exterior	Full Bsmt 3/4 Bsmt, 1/4 Crawl	1D 1BI	Basement Basement	G	-			
Cross Street Cross Street	12864 12894	18.0	23.9	19.7	-9 -10	-5 -6	-8 -8	-4 -4	-7 -7	-3 -3	-6	-2 -2	RR	R	2	2,804 1,760	Wood frame, vinyl exterior Wood frame, vinyl exterior		1D 1BI	Basement Basement	G G				
Cross Street	12906	20.0	23.0	19.4	-8	-5	-7	-4	-6	-3	-5	-2	RR	R	2	2,530	Wood frame, vinyl exterior	Full Bsmt	1BI	Basement	G	-			-
Rex Street	12944	20.0	24.8	21.9	-10	-7	-9	-6	-8	-5	-7	-4	RR	R	1.5	1,563	Wood frame, brick facing	Full Bsmt	1BI	Basement	G				

# BYRAM RIVER BASIN FEASIBILITY STUDY NONSTRUCTURAL PLAN WITH ROUTE 1 BRIDGE REPLACEMENT - RECOMMENDATIONS

Flood Depth equals 0, Recommendation based on 1-foot of freeboard
Flood Depth between 0 and 2 feet
Flood Depth greater than 2-feet

User Input Calculated DRY/WET entails wet floor proofing of areas below the main floor elevation, including protection/raising of utilities where necessary, and dry flood proofing for the area above the main floor elevation.

		GE	ME	LE				FD									STRUCTURE						RECOM	MENDATION	
STREET NAME	BYRAM RIVER STATION	GROUND ELEVATION AT BUILDING	SURVEYED MAIN FLOOR ELEVATION	LOW OPENING	DEPTH OF 10% FLOODING VS. FIRST FLOOR	DEPTH OF 10% FLOODING VS. LOW OPENING	DEPTH OF 4% FLOODING VS. FIRST FLOOR	DEPTH OF 4% FLOODING VS. LOW OPENING	DEPTH OF 2% FLOODING VS. FIRST FLOOR	DEPTH OF 2% FLOODING VS. LOW OPENING	DEPTH OF 1% FLOODING VS. FIRST FLOOR	DEPTH OF 1% FLOODING VS. LOW OPENING	STRUCTURE TYPE	LAND USE TYPE	# OF FLOORS	TOTAL SQ. FT.	CONSTRUCTION TYPE	BASEMENT	GARAGE TYPE	FOUNDATION TYPE	CONDITION	10-PERCENT FLOOD	4-PERCENT FLOOD	2-PERCENT FLOOD	1-PERCENT FLOOD
Rex Street	12962	19.5	23.1	19.2	-8	-5	-7	-3	-6	-2	-5	-1	SB	R	1.5	1,976	Wood frame, vinyl exterior	Full Bsmt	1D	Basement	G	-			
Pemberwick Road	13125	26.0	28.6	19.7	-14	-5	-13	-4	-12	-3	-11	-2	SB	R	2	2,162	Brick frame, brick/vinyl ext	1/2 Bsmt, Lower level	N	Basement	G	-			-
Pemberwick Road	13223	26.5	28.0	21.2	-13	-7	-12	-5	-11	-4	-10	-3	SB	R	2	3,922	Wood frame, Brick exterior	1/2 Bsmt, Lower level	N	Basement	G	-			-
Halock Drive	13263	19.5	21.9	20.1	-7	-6	-6	-4	-5	-3	-4	-2	SB	R	1.5	2,703	Wood	Full Bsmt	2BI	Basement	F	-			-
Halock Drive	13292	19.0	21.4	19.6	-7	-5	-6	-4	-4	-3	-3	-2	SB	R	2	2,984	Wood frame, vinyl exterior	3/4 Bsmt, 1/4 Crawl	2BI	Basement	G				
Halock Drive	13334	19.0	21.4	19.0	-7	-5	-6	-3	-5	-2	-4	-1	SL	R	1.5	2,229	Wood frame, vinyl exterior	1/2 Bsmt, Lower level	2A	Basement	G	-			-
Halock Drive	13350	18.5	20.8	18.6	-6	-4	-5	-3	-4	-2	-3	-1	SL	R	1.5	3,230	Wood frame, vinyl exterior	1/4 Bsmt, 1/4 Crawl, Lower level	1A	Basement	F	-			-
Halock Drive	13376	18.0	19.8	18.0	-5	-4	-4	-2	-3	-1	-2	0	SB	R	1.5	1,757	Wood	1/2 Bsmt, Lower level	1A	Basement	Р	-			-
Halock Drive	13531	19.0	21.7	19.3	-8	-5	-6	-4	-5	-3	-5	-2	SL	R	1.5	2.568	Wood frame, vinvl exterior	1/4 Bsmt, 1/4 Crawl, Lower level	2A	Basement	G				
Halock Drive	13564	19.0	21.3	20.2	-7	-6	-6	-5	-5	-4	-4	-3	SL	R	1.5	1,680	Wood frame, vinyl exterior	3/4 Bsmt, 1/4 Crawl	1A	Basement	G	-			
Halock Drive	13723	19.0	20.8	18.4	-5	-2	-4	-1	-3	-1	-2	0	SL	R	1.5	2.199	Wood frame, composition ext	1/2 Bsmt, 1/4 Crawl, Lower level	1A	Basement	G	-			
Pemberwick Road Building 2	15675	40.0	40.6	40.6	-4	-4	-2	-2	-1	-1	-1	-1	S	С	2	40.852	Brick	None	N	Unknown	G	-			
Pemberwick Road Building 3	15998	40.0	42.3	42.3	0	0	1	1	3	3	4	4	S	С	2	40.852	Brick	None	N	Unknown	G	RW	RW	RW	RW
Pemberwick Road	19390	119.0	120.4	88.8	-34	-2	-32	0	-31	1	-30	2	SB	C	3	54.720	Brick	Full Bsmt	N	Basement	G			RW	RW
Glenville Street	19780	128.0	110.8	101.3	3	13	4	14	5	14	5	15	SB	С	2	58.992	Brick	Full Bsmt	N	Basement	G	RW	RW	RW	RW
Glenville Street	20352	118.0	120.3	120.3	-5	-5	-4	-4	-3	-3	-1	-1	S	R	1	2.848	Wood	None	2A	Slab	G				-
Angelus Drive	20408	125.0	126.5	118.3	-11	-2	-10	-2	-9	-1	-6	2	SB	R	1	1.876	Wood	3/4 Bsmt. Lower level	N	Basement	G				WET
Glenville Street Bldg 1	20440	122.0	124.0	119.2	-8	-3	-7	-2	-6	-2	-4	1	SB	R	2	2,072	Wood frame, vinyl exterior	3/4 Bsmt	1D	Basement	G	-			WET
Glenville Street Bldg 2	20440	124.0	126.0	118.2	-10	-2	-9	-1	-9	-1	-6	2	SB	R	1	836	Wood frame, wood exterior	Full Bsmt	3BI	Basement	G				WET
Angelus Drive	20475	125.0	126.8	117.3	-11	-1	-10	0	-9	0	-6	3	RR	R	1	1,902	Wood	1/4 Bsmt, Lower Level	1BI	Basement	G			WET	WET
Angelus Drive	21094	126.0	130.0	121.2	-13	-4	-12	-3	-11	-2	-9	0	RR	R	1	1,287	Wood	1/4 Bsmt, Lower level	1BI	Basement	G				DRY/WET
Angelus Drive	21105	126.0	128.5	120.2	-12	-3	-10	-2	-9	-1	-7	1	RR	R	2	2.874	Wood	1/2 Bsmt, Lower level	1BI	Basement	G	-			DRY/WET
Angelus Drive	21331	122.0	123.9	119.7	-6	-2	-5	-1	-4	0	-2	2	BI	R	1	1.627	Wood	1/2 Bsmt. Lower level	1BI	Basement	G			DRY/WET	DRY/WET
Riversville Road	21635	124.5	128.3	123.8	-5	0	-4	0	-4	1	-3	1	SB	R	1.5	5.331	Wood	Full Bsmt	N.	Basement	G	WET	WET	WET	WET
Riversville Road	22041	127.0	127.2	127.2	-1	-1	-1	-1	0	0	0	0	SB	R	1	2.446	Brick frame, brick/wood ext	Bsmt	1BI	Basement	G				DRY/WET
Riversville Road Building 1	22869	132.0	139.0	130.6	-11	-3	-10	-2	-9	-1	-8	0	RF	R	1	2,019	Wood	None	1D	Slab	G				WET
Riversville Road Building 2	22987	132.0	141.3	134.5	-13	-6	-12	-5	-11	-4	-10	-3	RF	R	1	1.485	Wood	None	N	Slab	G				
Riversville Road	23571	134.0	138.7	136.8	-8	-6	-5	-3	-3	-1	-3	-1	SB	R	2	11,612	Wood	Full Bsmt	N	Basement	G	-			
Bailiwick Road	24130	133.0	134.3	134.3	n	n	1	1	2	2	3	3	SB	R	2	7.862		Full Crawl	1A	Crawl Space	G	F	F	F	F
Bailiwick Road	24300	136.0	138.8	136.3	-1	-2	-3	_1	-2	0	-2	1	9	P	1.5	4.907		None	2A	Slah	G			DRY/WET	DRY/WET