
NOTICE OF INTENT

Broadway Street Bridge, Canal Street Bridge and Streets F & G

Lowell, Massachusetts

PREPARED FOR

City of Lowell
375 Merrimack Street
Lowell, MA 01852
978.674.1445

PREPARED BY



101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

December 2015



December 23, 2015

Ref: 10808.00

Mr. F. Christopher Zacharer, Esq.
Lowell Conservation Commission
375 Merrimack Street
2nd Floor, Room 51
Lowell, MA 01852

Re: Notice of Intent
Broadway Street Bridge, Canal Street Bridge and Streets F & G
Lowell, Massachusetts

Dear Mr. Zacharer and Commission Members:

On behalf of The City of Lowell, Planning Department (the applicant), Vanasse Hangen Brustlin, Inc. (VHB) respectfully submits the attached Notice of Intent (NOI) for proposed infrastructure improvements in the Lowell Power Canal District. The proposed project consists of pedestrian and roadway improvements at the Broadway Street Bridge, the development of proposed Streets F and G and the construction of a new bridge crossing the Lower Pawtucket Canal and connecting with Canal Street in Lowell, Massachusetts. This NOI is filed under the Massachusetts Wetlands Protection Act (WPA) and the City of Lowell Wetlands Ordinance (the Ordinance). The proposed project occurs within Bank, Land under Waterbodies and Waterways (LUWW), Bordering Land Subject to Flooding (BLSF) and the 100-foot Buffer Zone to Bank.

In compliance with the WPA and the Ordinance, notification to abutters regarding this NOI has been made by certified return receipt mail on this date. A certified list of abutters are enclosed with the NOI. Since this Project is proposed by the City, no filing fee is included.

Please advertise this matter for public hearing at the Commission's next scheduled meeting. Should you have any questions concerning this submittal, or require additional information please contact me at 617.924.1770.

Sincerely,

Gene F. Crouch
Senior Environmental Scientist
gcrouch@vhb.com

CC: DEP Northeast Region
City of Lowell – Craig Thomas

Engineers | Scientists | Planners | Designers

101 Walnut Street
PO Box 9151
Watertown, Massachusetts 02471
P 617.924.1770
F 617.924.2286

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DECEMBER 23, 2015



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Notice of Intent Forms

-
- › WPA Form 3
 - › Fee Transmittal Form
 - › Lowell Land Use Board Main Application



A. General Information

1. Project Location:

a. Street Address	BROADWAY STREET BRIDGE, CANAL STREET, DUTTON STREET		
b. City/Town	LOWELL	c. Zip Code	01852
d. Latitude	42.64379N	e. Longitude	71.31301W
f. Map/Plat #	3200	g. Parcel/Lot #	0221.4

2. Applicant:

Individual Organization

a. First Name	CRAIG	b. Last Name	THOMAS
c. Organization	CITY OF LOWELL		
d. Mailing Address	375 MERRIMACK STREET		
e. City/Town	LOWELL	f. State	MA
g. Zip Code	01852		
h. Phone Number	978-674-1445	i. Fax	
j. Email	cthomas@lowellma.gov		

3. Property Owner:

more than one owner

a. First Name	CRAIG	b. Last Name	THOMAS
c. Organization	CITY OF LOWELL		
d. Mailing Address	375 MERRIMACK STREET		
e. City/Town	LOWELL	f. State	MA
g. Zip Code	01852		
h. Phone Number	978-674-1445	i. Fax	
j. Email	cthomas@lowellma.gov		

4. Representative:

a. First Name	GENE	b. Last Name	CROUCH
c. Organization	VANASSE HANGEN BRUSTLIN, INC.		
d. Mailing Address	101 WALNUT STREET		
e. City/Town	WATERTOWN	f. State	MA
g. Zip Code	02471		
h. Phone Number	617-924-1770	i. Fax	
j. Email	GCrouch@VHB.com		

5. Total WPA Fee Paid (Automatically inserted from NOI Wetland Fee Transmittal Form):

a. Total Fee Paid	b. State Fee Paid	c. City/Town Fee Paid
-------------------	-------------------	-----------------------

6. General Project Description:

THE CITY OF LOWELL IS PROPOSING INFRASTRUCTURE IMPROVEMENTS IN THE LOWELL CANAL DISTRICT. THE PROJECT WORK CONSISTS OF MODIFICATIONS OF THE BROADWAY STREET BRIDGE, DEVELOPMENT OF NEW STREETS F AND G, THE CREATION OF A NEW BRIDGE CONNECTING TO CANAL STREET ACROSS THE PAWTUCKET CANAL AND ASSOCIATED PARKING, PEDESTRIAN, AND LANDSCAPING FEATURES.

7a. Project Type:

- | | |
|--|---|
| 1. <input type="radio"/> Single Family Home | 2. <input type="radio"/> Residential Subdivision |
| 3. <input type="radio"/> Limited Project Driveway Crossing | 4. <input type="radio"/> Commercial/Industrial |
| 5. <input type="radio"/> Dock/Pier | 6. <input type="radio"/> Utilities |
| 7. <input type="radio"/> Coastal Engineering Structure | 8. <input type="radio"/> Agriculture (eg., cranberries, forestry) |
| 9. <input type="radio"/> Transportation | 10. <input type="radio"/> Other |



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
WPA Form 3 - Notice of Intent
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 MassDEP File #:
 eDEP Transaction #:791820
 City/Town:LOWELL

7b. Is any portion of the proposed activity eligible to be treated as a limited project subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. Yes No If yes, describe which limited project applies to this project:
 2. Limited Project

8. Property recorded at the Registry of Deeds for:

a. County:	b. Certificate:	c. Book:	d. Page:
NORTHERN MIDDLESEX	DEED	18047	214
NORTHERN MIDDLESEX	DEED	2560	609

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. Buffer Zone & Resource Area Impacts (temporary & permanent):

This is a Buffer Zone only project - Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.

2. Inland Resource Areas: (See 310 CMR 10.54 - 10.58, if not applicable, go to Section B.3. Coastal Resource Areas)

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input type="radio"/> Bank	816 1. linear feet	2. linear feet
b. <input type="radio"/> Bordering Vegetated Wetland	1. square feet	2. square feet
c. <input type="radio"/> Land under Waterbodies and Waterways	9,234 1. Square feet	2. square feet
	3. cubic yards dredged	
d. <input type="radio"/> Bordering Land Subject to Flooding	2,925 1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. <input type="radio"/> Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. <input type="radio"/> Riverfront Area	1. Name of Waterway (if any)	
	2. Width of Riverfront Area (check one)	
	<input type="radio"/> 25 ft. - Designated Densely Developed Areas only	
	<input type="radio"/> 100 ft. - New agricultural projects only	
	<input type="radio"/> 200 ft. - All other projects	
	3. Total area of Riverfront Area on the site of the proposed project	square feet
	4. Proposed Alteration of the Riverfront Area:	
	a. total square feet	b. square feet within 100 ft.
		c. square feet between 100 ft. and 200 ft.



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5. Has an alternatives analysis been done and is it attached to this NOI? Yes No
 6. Was the lot where the activity is proposed created prior to August 1, 1996? Yes No

3.Coastal Resource Areas: (See 310 CMR 10.25 - 10.35)

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input type="checkbox"/> Designated Port Areas	Indicate size under	Land under the ocean below,
b. <input type="checkbox"/> Land Under the Ocean	1. square feet	
	2. cubic yards dredged	
c. <input type="checkbox"/> Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes, below	
d. <input type="checkbox"/> Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. <input type="checkbox"/> Coastal Dunes	1. square feet	2. cubic yards dune nourishment
f. <input type="checkbox"/> Coastal Banks	1. linear feet	
g. <input type="checkbox"/> Rocky Intertidal Shores	1. square feet	
h. <input type="checkbox"/> Salt Marshes	1. square feet	2. sq ft restoration, rehab, crea.
i. <input type="checkbox"/> Land Under Salt Ponds	1. square feet	
	2. cubic yards dredged	
j. <input type="checkbox"/> Land Containing Shellfish	1. square feet	
k. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above	
	1. cubic yards dredged	
l. <input type="checkbox"/> Land Subject to Coastal Storm Flowage	1. square feet	

4.Restoration/Enhancement

Restoration/Replacement

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please entered the additional amount here.

- a. square feet of BVW b. square feet of Salt Marsh

5.Projects Involves Stream Crossings

Project Involves Streams Crossings

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.



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a. number of new stream crossings

b. number of replacement stream crossings



C. Other Applicable Standards and Requirements

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage of Endangered Species program (NHESP)?

a. Yes No

If yes, include proof of mailing or hand delivery of
 NOI to:

Natural Heritage and Endangered Species
 Program
 Division of Fisheries and Wildlife
 1 Rabbit Hill Road
 Westborough, MA 01581

b. Date of map:FROM MAP VIEWER

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18)....

c. Submit Supplemental Information for Endangered Species Review * (Check boxes as they apply)

1. Percentage/acreage of property to be altered:

(a) within Wetland Resource Area

percentage/acreage

(b) outside Resource Area

percentage/acreage

2. Assessor's Map or right-of-way plan of site

3. Project plans for entire project site, including wetland resource areas and areas outside of wetland jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

a. Project description (including description of impacts outside of wetland resource area & buffer zone)

b. Photographs representative of the site

c. MESA filing fee (fee information available at: <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/mass-endangered-species-act-mesa/esa-fee-schedule.html>)

Make check payable to "Natural Heritage & Endangered Species Fund" and **mail to NHESP** at above address

Projects altering 10 or more acres of land, also submit:

d. Vegetation cover type map of site

e. Project plans showing Priority & Estimated Habitat boundaries

d. OR Check One of the following

1. Project is exempt from MESA review. Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, <http://www.mass.gov/eea/agencies/dfg/dfw/laws-regulations/cmr/321-cmr-1000-massachusetts-endangered-species-act.html#10.14>; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. Separate MESA review ongoing.

a. NHESP Tracking Number

b. Date submitted to NHESP

3. Separate MESA review completed.

Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review...



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2. For coastal projects only, is any portion of the proposed project located below the mean high waterline or in a fish run?

- a. Not applicable - project is in inland resource area only
- b. Yes No

If yes, include proof of mailing or hand delivery of NOI to either:

South Shore - Cohasset to Rhode Island, and the Cape & Islands:	North Shore - Hull to New Hampshire:
---	--------------------------------------

Division of Marine Fisheries - Southeast Marine Fisheries Station Attn: Environmental Reviewer 1213 Purchase street - 3rd floor New Bedford, MA 02740-6694	Division of Marine Fisheries - North Shore Office Attn: Environmental Reviewer 30 Emerson Avenue Gloucester, MA 01930
---	--

If yes, it may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional office.

3. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

- a. Yes No

If yes, provide name of ACEC (see instructions to WPA Form 3 or DEP Website for ACEC locations).
Note: electronic filers click on Website.

b. ACEC Name

4. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

- a. Yes No

5. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L.c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L.c. 130, § 105)?

- a. Yes No

6. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

- a. Yes, Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05 (6)(k)-(q) and check if:

- 1. Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol.2, Chapter 3)
- 2. A portion of the site constitutes redevelopment
- 3. Proprietary BMPs are included in the Stormwater Management System

- b. No, Explain why the project is exempt:

- 1. Single Family Home
- 2. Emergency Road Repair
- 3. Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department by regular mail delivery.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
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1. **b** USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
2. **b** Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.
3. **e** Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s). Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.
4. **b** List the titles and dates for all plans and other materials submitted with this NOI.

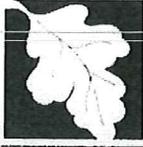
a. Plan Title: b. Plan Prepared By: c. Plan Signed/Stamped By: c. Revised Final Date: e. Scale:

HAMILTON CANAL
DISTRICT- PROJECT
D-1 BROADWAY
BRIDGE AND
STREETS F & G

12/23/2015

1:20

5. **e** If there is more than one property owner, please attach a list of these property owners not listed on this form.
6. **e** Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.
7. **e** Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.
8. **e** Attach NOI Wetland Fee Transmittal Form.
9. **b** Attach Stormwater Report, if needed.



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E. Fees

1. Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

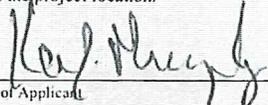
Municipal Project - Fee Exempt

2. Municipal Check Number	3. Check date
4. State Check Number	5. Check date
6. Payer name on check: First Name	7. Payer name on check: Last Name

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant 	2. Date 12/22/2015
3. Signature of Property Owner (if different) 	4. Date 12/22/2015
5. Signature of Representative (if any)	6. Date

For Conservation Commission:

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a copy of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:

If the applicant has checked the "yes" box in Section C, Items 1-3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



LAND USE BOARD: MAIN APPLICATION

The following application is made to the City of Lowell Division of Development Services in accordance with the provisions of The Code of Ordinances, City of Lowell, Massachusetts, Chapter 270, Zoning Code.

1. Application Information **Date:** 12/23/2015

Address of Property Location: Canal Street, Broadway Street Bridge, Parcels between the Merrimack and Lower Pawtucket Canals

Owner: City of Lowell Telephone No. 978-674-1445 Email: cthomas@lowell.gov

Address (if different) 375 Merrimack Street City: Lowell State: MA Zip Code: 01852

Second Owner (if applicable): _____ Telephone No. _____ Email: _____

Address (if different) _____ City: _____ State: _____ Zip Code: _____

Applicant: (If different from Owner): _____ Telephone No: _____

Email: _____ Title (Tenant/Lessee/Purchaser/Etc.): _____

Address _____ City: _____ State: _____ Zip Code: _____

Owner's Agent (if applicable): Gene Crouch Telephone No. 617.607.2783

Email: GCrouch@VHB.com Title: (Attorney/Architect/Contractor/Etc.): Senior Environmental Scientist

Address 101 Walnut Street City: Watertown State: MA Zip Code: 02471

2. Please check all Board/Commission Approval(s) sought:

The applicant is requesting the following from the Planning Board (Please also complete and attach the appropriate form)

- Site Plan Review (See Site Plan Review Supplement Form)
- Special Permit (See Main Special Permit Supplement Form)
- Preliminary Subdivision Approval (See Preliminary Subdivision Supplement Form)
- Definitive Subdivision Approval (See Definitive Subdivision Supplement Form)
- Planned Residential Development
- Endorsement of a Plan thought not to Require Approval (ANR) (See Main Special Permit Supplement Form)
- Repetitive Petition (See Main Special Permit Supplement Form)

The applicant is requesting the following from the Zoning Board (Please also complete and attach the appropriate form)

- Special Permit (See Main Special Permit Supplement Form)
- Variance (See Variance Supplement Form)
- Appeal of Building Commissioner's Determination

The applicant is requesting approval from the Historic Board (Please also complete and attach the appropriate form):

- Downtown District
- Acre District
- Other Neighborhood District - Please Specify: _____

The applicant is requesting the following from the Conservation Commission (Please also complete and attach the appropriate form):

- Request for Determination of Applicability (RDA)
- Notice of Intent (NOI)

_____ Abbreviated Notice of Resource Area Delineation (ANRAD)
_____ Certificate of Compliance (COC)
_____ Other (Please Specify): _____

3. Property Information (Applies to Planning Board and Zoning Board applicants only):

Zoning District of Property: _____

Type of Structures (Existing and Proposed on Property):

Residential: E _____ P _____ Commercial: E _____ P _____ Industrial: E _____ P _____

Institutional: E _____ P _____ Other: _____

Parking Spaces: Existing _____ Proposed _____ Estimated Project Cost: _____

Land Area Square Feet: _____ Building Area Square Feet: _____

Number of Stories: _____ Number Of Dwelling Units: E _____ P _____ Ave. Unit Size (sqft) _____

Occupied: _____ Partially Occupied: _____ Vacant: _____ Vacant Land: _____

4. Notification Requirements: Mailing of Abutter Notices

All applicants will be responsible for submitting abutters notice mailings to meet notification requirements under MGL Ch. 40A. Certificate of Mailing(s) notice shall be submitted to Development Services staff at least two weeks prior to the scheduled public hearing. It is the applicant/petitioner's responsibility to obtain a list of certified abutters and must apply for the list with the Assessor's Office. The Assessor's Office will prepare and certify the list of abutters located within a 300-foot radius*. The applicant will be notified by the Assessor's Office when the list is ready. There is an administrative fee for the certified abutters list.

Request for Permit Signs

All of the following applications are required to post a Request for Permit Sign:

- Special Permit, Site Plan Review and Subdivision Applications from the Planning Board
- Special Permit and Variance Applications from the Zoning Board of Appeals
- New Construction Projects from the Historic Board

Request for Permit Signs must meet the following standards:

- The sign shall include the following information:
NOTICE: REQUEST FOR PERMIT
Address of Property:
Type of Permit: (special permit, site plan review, subdivision, variance, etc.)
Specific information about the project: (type of use, number of units, size of commercial space, etc.)
Proposed Use of Property:
Date, Time and Place of a Public Hearing.
For additional information, contact the City of Lowell at:
Division of Development Services, City Hall, Room 51, 375 Merrimack Street, Lowell, MA 01852
Phone: (978) 674-4252,
City Website: www.lowellma.gov
- The sign shall include a copy of the site plan or plot plan submitted with the permit application.
- The sign shall be made of wood or metal. Size of said sign shall be a minimum of 3 feet by 4 feet.
- The applicant shall notify the City of Lowell in writing that the sign has been erected and where located.
- The sign shall be posted 14 days prior to the opening of the public hearing.

Submit all required materials to:

Division of Development Services, City Hall, Room 51, 375 Merrimack Street, Lowell, MA 01852

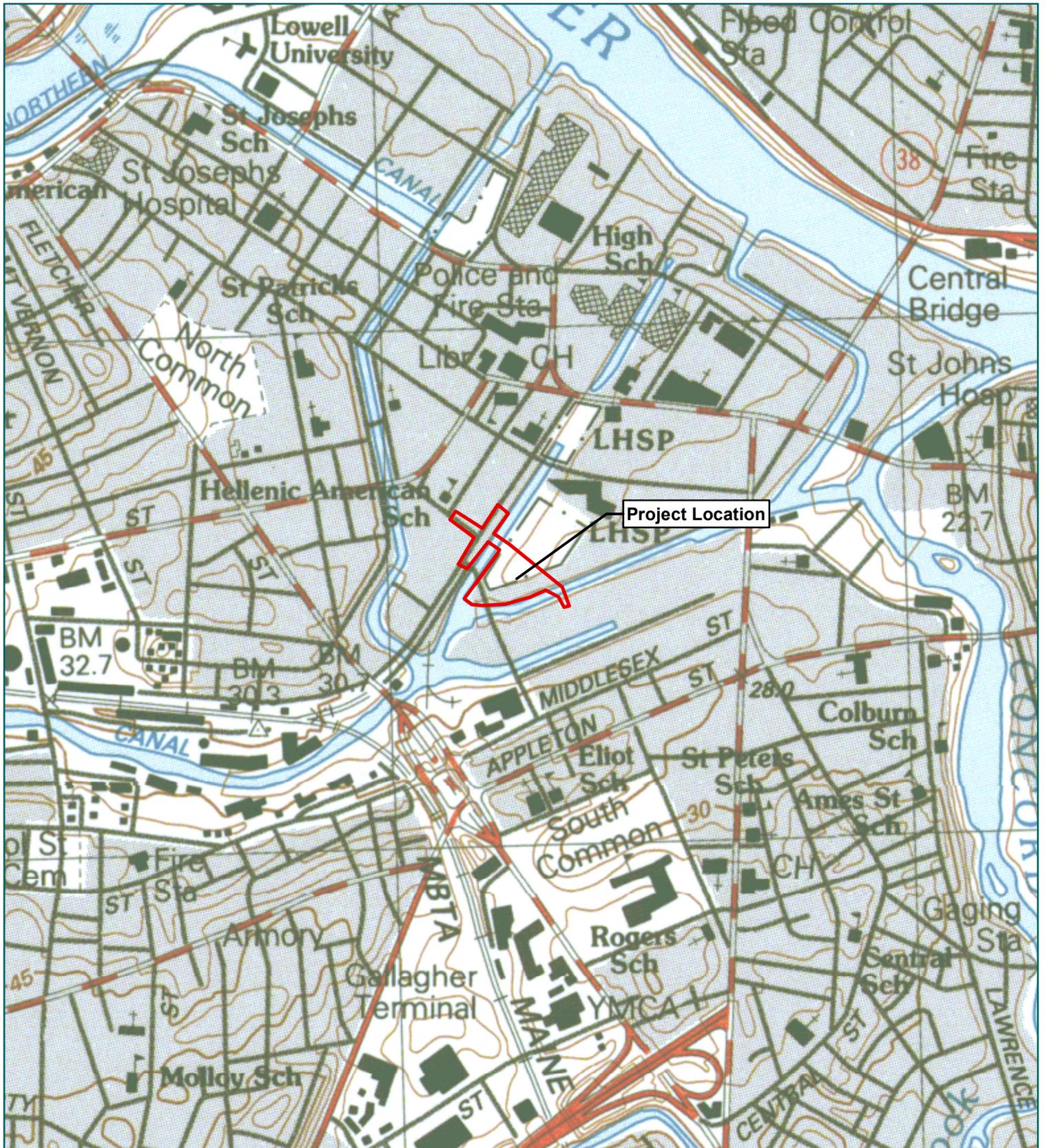
NOTE: Projects greater than 1 acre (43,560 square feet) is required to apply for a NPDES Permit. Please refer to <http://cfpub.epa.gov/npdes/> for more information.

* Radius is different for Linear Projects or projects on land greater than 50 acres filing a Notice of Intent. If falling under this, please discuss with Development Services prior to ordering an Abutters List from the Assessors Office.



Notice of Intent Figures

-
- › Figure 1 – USGS Locus Map
 - › Figure 2 – Aerial Map
 - › Figure 3 –NHESP Map
 - › Figure 4 – FEMA Map



 Project Location



Engineers | Scientists | Planners | Designers
101 Walnut Street, PO Box 9151, Watertown, MA 02471

Figure 1 – Project Location
Broadway Street Bridge, Canal Street Bridge
and Streets F & G
Broadway Street, Dutton Street and Canal Street
Lowell, Massachusetts





Project Location



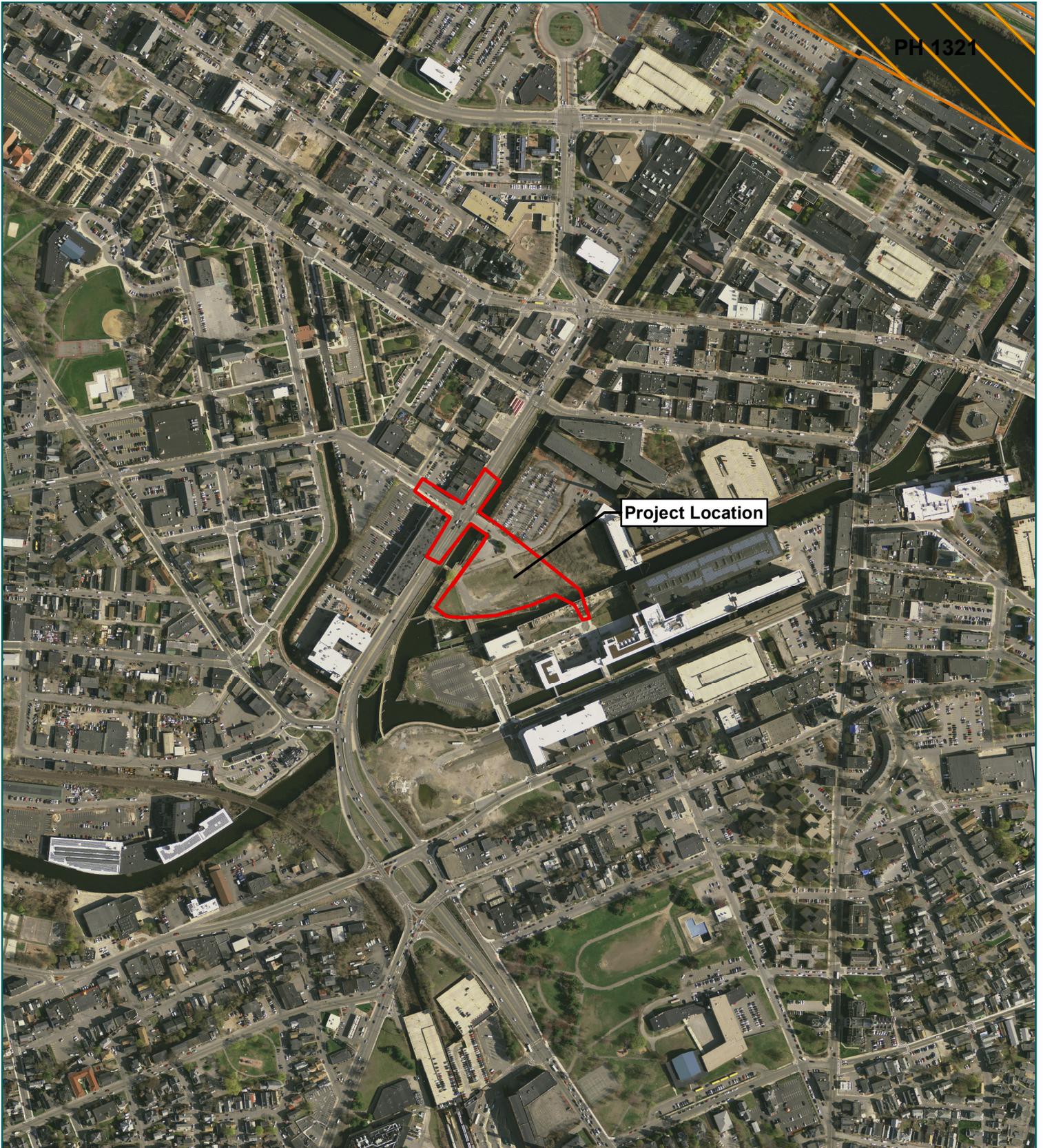
Project Location



Engineers | Scientists | Planners | Designers
101 Walnut Street, PO Box 9151, Watertown, MA 02471

**Figure 2 – Aerial Map
Broadway Street Bridge, Canal Street Bridge
and Streets F & G
Broadway Street, Dutton Street and Canal Street
Lowell, Massachusetts**





Project Location



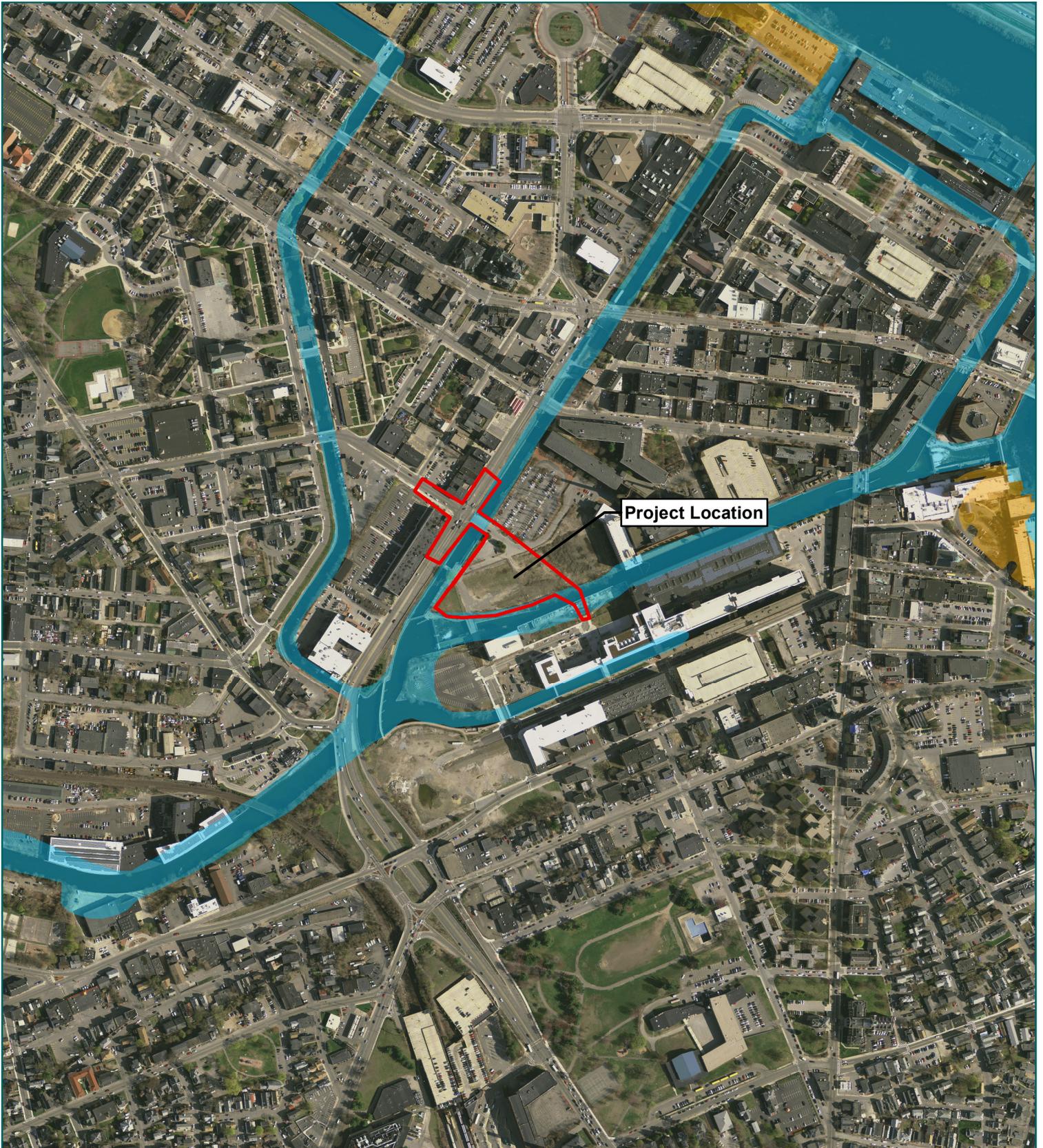
NHESP Priority & Estimated Habitat



Engineers | Scientists | Planners | Designers
101 Walnut Street, PO Box 9151, Watertown, MA 02471

**Figure 3 – NHESP Map
Broadway Street Bridge, Canal Street Bridge
and Streets F & G
Broadway Street, Dutton Street and Canal Street
Lowell, Massachusetts**





-  Project Location
- FEMA National Flood Hazard Layer**
- Flood Zone Designations**
-  100-yr Floodplain
-  500-yr Floodplain



Engineers | Scientists | Planners | Designers
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**Figure 4 – FEMA Map
Broadway Street Bridge, Canal Street Bridge
and Streets F & G
Broadway Street, Dutton Street and Canal Street
Lowell, Massachusetts**



Attachment A - Notice of Intent Narrative

On behalf of the City of Lowell (the Applicant), Vanasse Hangen Brustlin, Inc. (VHB) is submitting this Notice of Intent (NOI) pursuant to the Massachusetts Wetlands Protection Act (MGL Chapter 131, Section 40) (WPA) and its implementing regulations (310 CMR 10.00) and the Lowell Wetlands Ordinance (the Ordinance) and its rules and regulations.

Introduction

The City of Lowell is proposing improvements to the existing Broadway Street Bridge, its associated pedestrian access, and adjacent roadways (proposed Street F and Street G), as well as the creation of a new Canal Street Bridge crossing the Lower Pawtucket Canal to connect to Canal Street (the Project). The Canal Street Bridge (Bridge No. L-15-097(BG1)) will be a signature design steel truss superstructure. The Project is located on the Broadway Street Bridge and nearby portions of Broadway Street, Dutton Street, Canal Street and the areas between the Lower Pawtucket and Merrimack Canals in the City of Lowell, Massachusetts (the Site).

The Project work involves expanding the width of the existing Broadway Street vehicular bridge and eliminating the current pedestrian sidewalk. New pedestrian bridge extensions will be constructed on both the east and west sides of the bridge. Additionally, road and parking area improvements are included in the Project for the area south of the bridge on either side of F Street. Finally the new Canal Street Bridge will be installed over the Lower Pawtucket Canal to connect Canal Street with the project area. The proposed work on the Site is included in Project D-2, a part of the Jackson Appleton Middlesex Urban Renewal Plan (JAM Plan). Earlier work as a part of this plan has included developing pedestrian walkways and other infrastructure in adjacent parcels of the Lowell Canal District.

Portions of the Project will occur within or in the vicinity of resource areas under the jurisdiction of the WPA and the Ordinance. The resource areas identified on Site include Bank and Land Under Waterbodies and Waterways (LUWW) associated with the Merrimack Canal and Lower Pawtucket Canal. Additionally, work will require demolishing and filling several underground raceways which connect the Merrimack and Lower Pawtucket Canals, resulting in further impact to Bank and LUWW.



Wetland resource areas will be protected from impacts during construction through the implementation of an erosion and sedimentation control program. This program includes provisions to minimize areas of disturbance through phasing and sequencing, limit erosion through stabilization, and prevent sediment from leaving the Site by installing structural controls. The proposed work is considered a redevelopment project for the stormwater management standards and the Project will be collected and treated to the maximum extent practicable with design guidelines developed by DEP and standards contained in the WPA Regulations.

In addition to this NOI, applications for Chapter 91 Waterways licenses have been filed with the Massachusetts Department of Environmental Protection (DEP) for work on the Broadway Street Bridge and Signature Bridge across the Pawtucket Canal.

Site Description

The approximately 10-acre Site is located in the Lowell Power Canal System in the City of Lowell, Massachusetts. The Site extends south from approximately 200 feet north of the intersection of Dutton Street and Broadway Street across the Merrimack Canal. The Site is bounded to the south and west by the Lower Pawtucket Canal, with the southern limit of the Project located at the end of Canal Street on the south side of the Lower Pawtucket canal.

The Site currently consists of the existing Broadway Street Bridge, paved roadways, and previously occupied lots, with remnants of razed structures, exposed soil, and residual sections of pavement. The Broadway Street Bridge is currently approximately 62' 8" long by 45' 6" wide and carries two lanes of vehicular traffic and one 6-foot wide pedestrian sidewalk on the north side. Within the Site, there are three subsurface raceways which hydrologically connect portions of the surrounding canal system. The approximate location of these raceways are depicted on the accompanying Project plans.

According to the most recently available data provided by the Massachusetts Natural Heritage and Endangered Species Program¹ (NHESP), the Project Site is not located within any Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife. The Site is not located within an Area of Critical Environmental Concern (ACEC). According to the Massachusetts Department of Environmental Protection (DEP), the Site is not located in an area designated as an Outstanding Resource Water². No portion of the Project Site is located within a Zone II Interim Wellhead Protection Area³.

The Natural Resources Conservation Service⁴ soil survey has mapped the Site and the surrounding area and classified all soils as Urban Soil. Elevation on the Site ranges from

¹ NHESP, 2008. Massachusetts Natural Heritage Atlas. 13th Edition.

² DEP, 2010. Designated Outstanding Resource Waters of Massachusetts.

³ DEP, 2012. Approved Wellhead Protection Areas (Zone II).

⁴ Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey.



73.0 feet at the Median High Water Mark within the canal to 93 feet at the highest point within the Site between the two canals.

The most recently issued Flood Insurance Rate Map (FIRM)⁵ for the area (FEMA Floodway Map Number 25017C0139F, Panel 0139F, dated July 7, 2014, produced by the Federal Emergency Management Agency (FEMA)), indicates that portions of the Site are located within a Zone A floodplain (no base flood elevation) for the 100-year storm event (Figure 4) for the Merrimack River. There are several water level control devices within the Lowell canal system and on the Merrimack River, including the Pawtucket Dam which can modify the floodplain elevations within the canals.

Wetland resource areas on the Site are described below.

Wetland Resource Areas

VHB wetland scientists assessed the wetland resource areas on the Site on March 13 and 25, 2009 in accordance with methods developed by the DEP⁶ and the U.S. Army Corps of Engineers⁷. The following sections of this narrative describe the wetlands and identify resource areas that are regulated under the WPA Regulations and the Lowell Wetlands Ordinance.

The state-regulated wetland resource areas identified near the Site include Bank and Land Under Water Bodies and Waterways (LUWW). All resource areas are associated with the Merrimack River and its adjacent system of canals. These resource areas are defined under the WPA Regulations (310 CMR 10.00) as follows:

- Bank: As defined at 310 CMR 10.54 (2), a Bank is the portion of the land surface, which normally abuts and confines a water body. The upper boundary of Bank is the first observable break in slope.
- LUWW: As defined at 310 CMR 10.56 (2), LUWW is the land beneath any creek, river, stream, pond or lake. The boundary of LUWW is the mean annual low water level.

The upland area 100 feet laterally from the limit of Bank in the vicinity of the Project is an area subject to jurisdiction pursuant to the Wetlands Protection Act. The Buffer Zone includes any non-wetland areas within the 100-foot limit and any work will require review by the Lowell Conservation Commission and the Massachusetts Department of Environmental Protection.

The canal system was constructed using large granite blocks to create vertical canal walls. Some canal walls have been reconstructed with poured concrete and many of the walls consist of granite blocks topped with a poured concrete cap. No delineation flagging was

⁵ Federal Emergency Management Agency, National Hazard Flood Layer, Digital Flood Insurance Rate Map (DFIRM).

⁶ DEP, 1995. *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act*.

⁷ USACE, 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0.*



placed to delineate the LUWW. The limits of the vertical granite block Banks coincidentally defines the limit of LUWW. Wetlands on and adjacent to the Site are described in detail in the following sections of this attachment.

Merrimack Canal

The Merrimack Canal is located in the northern portion of the Site. It is bordered by Dutton Street to the north, parcels of formerly developed land to the south, and connects with the Lower Pawtucket Canal to the west of the Site. Various water control devices and structures are located throughout its course in order to regulate water levels and flow for different usages. The Bank of the canal system consists of a vertical granite block retaining wall along the length of the waterways. Vegetation has become established between the blocks and along the upper edge of the canals in some locations from lack of maintenance. Vegetation growing out of the granite blocks and along the tops of the walls around the canals generally includes trees and shrubs consisting of gray birch (*Betula populifolia*), staghorn sumac (*Rhus typhina*), Tree-of-Heaven (*Ailanthus altissima*), poison ivy (*Toxicodendron radicans*), grasses, and various forbs.

As defined by 310 CMR 10.58 (2)(g), the Merrimack Canal is considered a manmade canal, and therefore does not have an associated Riverfront Area. The vertical canal walls form the Banks of the canal, and a 100-foot Buffer Zone extends horizontally from the Banks. The Buffer Zone to the south of the canal consists of previously developed uplands that contain paved areas and razed structures. Buffer zone located to the north of the canal consists of paved areas of Dutton and Broadway Streets and grassed areas surrounding an existing trolley track.

Lower Pawtucket Canal

The Lower Pawtucket Canal starts at the Swamp Locks and is a continuation of the Pawtucket Canal that originates at Merrimack River northwest of the Site and flows along the south portion of the Site to the Concord River. It is bounded by formerly developed parcels to the north, redeveloped commercial and residential areas on Canal Street to the south. The bank of the canal is defined by the vertical granite block retaining walls on its edges. Vegetation has become established between the slabs and includes staghorn sumac (*Rhus typhina*), Tree-of-Heaven (*Ailanthus altissima*), poison ivy (*Toxicodendron radicans*), grasses and various forbs.

As defined by 310 CMR 10.58 (2)(g), the Lower Pawtucket Canal is a manmade canal, and therefore does not have an associated Riverfront Area. The vertical canal walls form the Banks of the Canal, and a 100-foot Buffer Zone extends horizontally from the Banks. A significant portion of the Site is located within the 100-foot buffer zone to the Bank of the Canal. The buffer zone to the north of the canal consists of previously developed lots



that contain residual paved areas and razed structures. South of the canal there are several parcels that have been redeveloped which consist of paved areas, buildings and small landscaped areas.

Canal Raceways

Two underground raceways are present on the Project site. These raceways were used to generate power for the former factory buildings on the site by moving water from one canal to the other. They are no longer used but continue to have water access to each canal. The raceways are underground but support Bank and LUWW. The raceways have not been observed but are presumed to be constructed of granite block walls and roofs. The bottoms are likely to be natural sediments.

Bordering Land Subject to Flooding

The most recently issued Flood Insurance Rate Map (FIRM) for the area (FEMA Floodway Map Number 25017C0139F, Panel 0139F, dated July 7, 2014, produced by the Federal Emergency Management Agency (FEMA)), indicates that portions of the Site are located within the Zone A floodplain for the 100-year storm event (Figure 4). The Zone A does not have a base floodplain elevation, therefore the actual floodplain elevation is unknown. However, on April 17, 2012, FEMA issued a Letter of Map Amendment (LOMA) for the Lower Pawtucket Canal immediately downstream of the proposed Canal Street Bridge. The LOMA determined the flood elevation in the Lower Pawtucket Canal is Elev. 76.9 feet (NAVD 1988). In addition, there are several water level control mechanisms within the Lowell canal system and the Pawtucket Dam which can modify the floodplain elevations within the canals. The land subject to the 100-year storm would be regulated as a Bordering Land Subject to flooding according to 310 CMR 10.57 (1)(a).

Project and Work Description

The Project will involve a series of infrastructure related improvements on bridges, roadways and pedestrian access features and reconfigured and new parking lots in the Lowell Power Canal District. The width of the existing Broadway Street Bridge will be expanded to align with proposed Street F through the Project site. The construction of the new Canal Street Bridge will connect F Street across the Lower Pawtucket Canal to Canal Street south of the Canal.

Work on the Broadway Street Bridge involves the removal of the existing sidewalk and bridge rail, which will be replaced by an extended road bed. New steel and concrete bridge spans will be added to the east and west sides of the bridge to accommodate two new pedestrian sidewalks. The sidewalks will be 8 feet wide and consist of a 7-foot clear



zone, outer ornamental railings, and inner steel tube bridge rails atop concrete pedestals. Utility supports for a sewer force main, telephone conduits and lighting conduits will be provided beneath the new deck. The new spans will be attached to the outer edges of the existing bridge deck and will be supported at either end by new concrete abutments installed atop micro-piles and attached to the existing granite canal wall.

North of the bridge, on Broadway Street, work will consist of resurfacing of the existing roadway, installation of new light fixtures, 7-foot concrete sidewalks on each side of the street and required utility modifications.

Additionally, work will occur on parcels of land located between the Merrimack and Pawtucket canals. Early demolition work in this area will include the filling of two existing subsurface raceways with structural fill and the removal of the penstocks located in each raceway. Streets F and G are two proposed streets within the space between the canals. The proposed streets will be created using full depth asphalt paving and will contain granite curbing, brick and concrete sidewalks, related utility lines, stormwater management features and landscaped areas. Grading and the installation of ramps and stairways will allow for pedestrian access to the signature bridge and newly developed parking lots on the Site.

The new Canal Street Bridge will connect Canal Street on the south side of the Pawtucket Canal to the rest of the Site will be constructed as a part of the Project. This 87.5-foot bridge will consist of a prefabricated steel truss superstructure that will span the width of the canal and include two travel lanes, pedestrian walkways, and crossings for all necessary utilities. The bridge will be supported by new abutments constructed behind the existing granite block retaining walls. The southern abutment will be a large poured concrete mass supporting a spread footings. The northern abutment will be supported by driven piles and a pile cap. The existing granite block retaining walls along the canal sides will not be altered for the Canal Street Bridge abutments.

Wetland Resource Area Impacts

Construction associated with the Project will occur within wetland resource areas including Bank, LUWW and BLSF and the 100-foot buffer zone associated with the Merrimack Canal, the Lower Pawtucket Canal and the underground raceways. Alteration to Bank include overshadowing from the bridges and filling the underground raceways. Impacts to LUWW also is from overshadowing and the filling of the underground raceways. Alterations to BLSF will also be from the work associated with the bridges particularly the south side of the Lower Pawtucket Canal and both sides of the Merrimack Canal.

Impacts and details of work in each Wetland Resource area are detailed below. Impacts to regulated wetland resource areas are listed in Table 1.



Merrimack Canal

Work will occur on the bank of the Merrimack Canal and across the width of the waterway as a part of the modifications being made to the Broadway Street Bridge. Work on the bridge itself will take place on its length across the canal and on the abutments located behind the Banks of the canal. Widening the bridge on both sides for sidewalks will create new shadowing of the Canal affecting 40 linear feet of Bank and 837 square feet of LUWW. Although portions of the Merrimack Canal will receive additional shading, there will be no direct impact to the Bank or LUWW and the additional shading may benefit the canal by helping to slightly reduce heating of the canal water during summer months.

The FEMA Floodplain, regulated as BLSF, extends outside the limits of the canal on both sides and will be altered by the Project. Work in BLSF will include minor roadway and sidewalk construction and will occupy approximately 2,925 square feet. Ground elevations will not be altered by the construction activities, so there will be no loss of floodplain storage volume. The area of BLSF on both sides of the Canal are highly altered from existing and past land use and provide no significant wildlife habitat value.

Table 1 – Wetland Resource Area Impacts

Resource Area	Bank (Ft.)	LUWW (Sq. Ft.)	Activity	BLSF (Sq. Ft.)	Activity
Merrimack Canal	40	837	Shading	2,925	Road/Sidewalk
Lower Pawtucket Canal	82	1,870	Shading	0	Road/Sidewalk
Underground Raceway West	324	1,920	Filling	N/A	N/A
Underground Raceway East	370	4,607	Filling	N/A	N/A
Total	816	9,234		2,925	

Source: VHB

Lower Pawtucket Canal

Similar to the work over the Merrimack Canal, placing the Canal Street Bridge over the Lower Pawtucket Canal will affect Bank on both sides of the Canal, LUWW. Impacts related to Bank and LUWW will only be shading from the new bridge. Shading of Bank will affect 82 linear feet and 1,870 square feet of LUWW. Shading of the Banks and LUWW will not directly impact these resource areas, but may help to reduce summer water temperatures. Abutments for the new bridge will be set behind the existing granite block retaining walls on each side and will not alter Bank or LUWW.



BLSF is present within the limits of the Lower Pawtucket Canal based on the LOMA determination that the floodplain elevation is 76.9 feet. The proposed work associated with the Canal Street Bridge will span over the Canal and BLSF. The BLSF is highly altered from past and present uses and provides no significant wildlife habitat value.

Canal Raceways

The Project will involve the filling of two of the existing subsurface raceways (raceway west and raceway east) on the Site. The raceways were used at one time in the former factory buildings to generate power by flowing water from the Merrimack Canal to the Lower Pawtucket Canal. The existing raceways are no longer needed and will be filled in to prevent leaving a void space under future development area. End caps of concrete blocks will be installed and the raceways will be demolished and filled with gravel borrow or other structural fill material. Although underground, the raceways constitute Bank and LUWW. Impacts to the Bank will include 324 and 370 linear feet, raceway west and raceway east, respectively; and impacts to LUWW will be 1,920 and 4,607 square feet raceway west and raceway east, respectively.

Both raceways are underground and although they constitute a wetland resource area, they provide little if any functional value. Carrying capacity of the canals is not reduced by the loss of these raceways, and being underground, no significant wildlife habitat value is present. Replacement of the lost Bank and LUWW is not proposed.

Buffer Zone

Portions of the Project will occur within the 100-foot buffer zone of the Bank of the canal on both the north and south sides of the canals. This work includes the development of new paved roadway, landscaping, installation of utilities, stormwater management features, and parking areas in the land area between the canals. The buffer zones are already highly altered by past land use and current land uses and the entire area is planned for redevelopment. The existing buffer zones consist of roadways, parking, sidewalks, gravel and paved surfaces and former building sites and is altered to the existing canal retaining walls.

Mitigation Measures

The Applicant is proposing a suite of mitigation measures to prevent short- and long-term impacts to wetland resource areas. Mitigation measures proposed for this Project are described below.



Erosion and Sediment Control

The Applicant will implement an erosion and sedimentation control program to minimize temporary impacts to wetland resource areas during the construction phase of the Project. The program incorporates Best Management Practices (BMPs) specified in guidelines developed by the DEP⁸ and the U.S. Environmental Protection Agency (EPA)⁹.

Proper implementation of the erosion and sedimentation control program will:

- minimize exposed soil areas through sequencing and temporary stabilization;
- place structures to manage stormwater runoff and erosion; and,
- establish a permanent vegetative cover or other forms of stabilization as soon as practicable.

The following sections describe the controls that will be used and practices that will be followed during construction. These practices comply with criteria contained in the NPDES General Permit for Discharges from Large and Small Construction Activities issued by the EPA.

Non-Structural Practices

Non-structural practices to be used during construction include temporary stabilization, permanent seeding, pavement sweeping and dust control. These practices will be initiated as soon as practicable in appropriate areas at the Site.

Temporary Stabilization

Any areas of exposed soil or stockpiles that will remain inactive for more than 14 days will be covered with a layer of straw mulch applied at a rate of 90 pounds per 1,000 square feet. The mulch will be anchored with a tacking coat (non tar) applied by a hydroseeder. Steeper slopes (greater than 10 percent) will be covered with a bonded fiber matrix (EcoAegis[®] or similar) according to the recommendations provided by the manufacturer.

In the event that heavy rain is forecast (more than 2 inches over a 24 hour period), slopes that are not stabilized may be treated with a polyacrylamide (PAM) product such as Silt Stop[®] (or an equivalent product). PAM is a non-toxic substance that promotes soil bonding. The PAM shall be applied in powder or liquid form in accordance with the recommendations provided by the manufacturer.

Temporary Seeding

If conditions allow, a temporary vegetative cover will be established on areas of exposed soils (including stockpiles) that remain unstabilized for a period of more than 60 days. The

⁸ DEP, 1997. *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers, and Municipal Officials.*

⁹ EPA, 2007. *Interim Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites.* Office of Water. Report EPA 833-R-060-04.



seeded surfaces will be covered with a layer of straw mulch or bonded fiber matrix as described above. The seed mix shall include a blend of rapid germinating grasses that are indigenous to central Massachusetts.

Permanent Seeding

Upon completion of final grading, any areas not covered by pavement, other forms of stabilization, or other methods of landscaping will be seeded with a high quality commercial perennial seed mix. The mix will be applied in accordance with the manufacturer's recommended application rate with mulch or bonded fiber matrix as described above.

Pavement Sweeping

The portion of the street that front the Site shall be swept as needed during construction. The sweeping program will remove sediment and other contaminants directly from paved surfaces before their release into stormwater runoff. Pavement sweeping has been demonstrated to be an effective initial treatment for reducing pollutant loading into stormwater¹⁰. A street sweeper shall be kept at the Site or at a nearby location to facilitate this practice. Once construction has been completed, sweeping at the Project Site will occur as required under the Operation and Maintenance Plan.

Dust Control

The erosion and sediment control program includes provisions to minimize the generation of dust during dry and windy conditions. When necessary, larger areas of exposed soil will be wetted to prevent wind-borne transport of fine grained sediment. Enough water shall be applied to wet the upper 0.5 inches of soil. The water will be applied as a fine spray in order to prevent erosion. A water truck will be kept on the property (or at a nearby location) to facilitate this practice.

Structural Practices

Structural erosion and sedimentation controls to be used on the Site include barriers, catch basin inlet protection.

Erosion Control Barriers

Prior to any ground disturbance, an approved erosion control barrier will be installed at the down gradient limit of work as specified in the attached drawings. As construction progresses, additional barriers may be installed around the base of stockpiles and other erosion prone areas, as needed. The barriers will be entrenched into the substrate to prevent underflow.

¹⁰ U.S. Environmental Protection Agency, 1979. *Demonstration of Nonpoint Pollution Abatement Through Improved Street Cleaning Practices.*



If sediment has accumulated to a depth which impairs proper functioning of the barrier, it will be removed by hand or by machinery operating upslope of the barriers. This material will be either reused in the Project area or disposed of at a suitable offsite location. Any damaged sections of the barrier will be repaired or replaced immediately upon discovery.

Catch Basin Inlet Protection

The inlets of functioning catch basins will be protected from sediment inflow during the work period by surrounding them with a barrier of staked straw bales or by installing Silt Sacks®. If straw bales are used, a layer of non-woven filter fabric shall be placed beneath the grate of each basin. If sediment has collected behind the barrier or in the Silt Sack® to a point where it impairs proper functioning, it will be removed and will be either reused onsite or disposed of at a suitable offsite location.

Stabilized Construction Exits

Stone anti-tracking pads will be installed at each access point to the work area to prevent the offsite transport of sediment by construction vehicles. The stabilized construction exits will be at least fifty feet long and will consist of a 4-inch thick layer of crushed stone (1.5 to 2.5 inches in diameter). The stone will be placed over a layer of non-woven filter fabric. The anti-tracking pads will remain in place until a binder coat of pavement has been established on paved surfaces.

Temporary Sediment Basins

If conditions warrant, temporary sediment basins will be installed as excavations that will retain runoff for a sufficient period of time to allow suspended soil particles to settle out prior to discharge. These temporary basins will be located at the low points on the Site (upslope of the perimeter barrier) and will receive runoff via temporary diversion swales. Discharge from the basin will be controlled by a perforated riser surrounded by a crushed stone filter. Points of discharge from sediment basins will be stabilized with rip rap to minimize erosion.

Once constructed, the basins may be temporarily stabilized by covering them with bonded fiber matrix. If sediment has accumulated to a depth which impairs proper functioning of the basin, it will be removed and will be either reused on the Site or disposed of at a suitable offsite location. Any eroded or damaged areas will be repaired immediately upon discovery.

Diversion Swales

Diversion swales may be constructed to collect runoff from construction areas and convey it to the temporary sediment basins. The swales will be lined with a non-woven erosion control blanket (BonTerra HP-90® or equivalent) installed according to the manufacturer's recommendations or a bonded fiber matrix. The temporary diversion swales will remain in place until the sediment basin is no longer required.



Temporary Check Dams

Temporary check dams, consisting of staked straw bales or crushed stone, will be installed at specified intervals within the diversion swales. If sediment has accumulated behind the check dams to a depth that impairs proper functioning, it will be removed and will be either reused at the Site or disposed of at a suitable offsite location. Any damaged check dams will be repaired or replaced immediately upon discovery.

Dewatering Filters

If necessary, sediment laden water that collects in trenches or excavated areas will be pumped into straw bale basins or filter bags. The basins will consist of a ring of staked straw bales overlain by non-woven geotextile filter fabric and crushed stone. Discharge water will be pumped into the basin and allowed to drain through the fabric onto relatively flat stabilized surfaces. Dewatering filter bags may be used in place of straw bale basins. The bags will be placed on relatively flat terrain, free of brush and stumps, to avoid ruptures and punctures. A maximum of one six-inch discharge hose will be allowed per filter bag. To help prevent punctures, geotextile fabric will be placed beneath the filter bag when used in wooded locations. Unattended filter bags will be encircled with a straw bale and silt fence barrier.

All dewatering structures will be placed as far away from wetland resources as possible. Filter bags used during construction will be bundled and removed for proper disposal.

Regulatory Compliance

As demonstrated below, work in Bank, LUWW and BLSF and the 100-foot buffer zone fully complies with applicable performance standards.

Work within Wetland Resource Areas

As demonstrated below, work proposed in the resource areas complies with the requirements contained in the WPA and the Ordinance.

Work in Bank

The proposed Project will require the alteration of an intermittent the canal Banks from overshadowing by the expansion of the Broadway Street Bridge and the new Canal Street Bridge. Bank will be lost by the filling of the underground raceways within the development site. This work will impact approximately 122 linear feet of Bank from overshadowing and lose 694 linear feet of Bank from the filling of the underground



raceways. The lost Bank does not provide significant functional value and is not proposed to be replaced.

Performance standards for Bank [310 CMR 10.54 (4)(a)] require that work not impair the following:

- *the physical stability of the Bank;*
The loss of 694 linear feet of Bank will not cause an instability of the canal Bank. The underground raceways are underground, no longer used and are separate from the Canals. Demolition and filling of the raceways will be conducted to preserve the integrity of the remaining canal Banks.
- *the water carrying capacity of the existing channel within the Bank;*
There will be no alterations of the Canal Banks and the water carrying capacity of the Banks will not be altered. The underground raceways were used as hydrologic connections between the Merrimack and Lower Pawtucket Canals and are no longer used.
- *ground water and surface water quality;*
The Canal Banks will not be altered and ground water and surface water quality will not be affected. The raceways will be filled with gravel or other structural fill material and that will not degrade surface or groundwater quality.
- *the capacity of the Bank to provide breeding habitat, escape cover and food for fisheries;*
Overshadowing of the Canal Banks may provide some additional fishery habitat and escape cover within the canal system. The Banks in the underground raceways are unlikely to provide much fishery habitat. Any habitat provided by the raceway Banks is likely in the area of the raceway penstocks or the entrances off the canals. The penstocks will remain in place, allowing fish to continue to use these areas in the future.
- *the capacity of the Bank to provide important wildlife functions;*
The affected Banks are either vertical rock faces or underground and not accessible to wildlife. Furthermore, no important wildlife habitat features were noted in the Project area. The Project will not reduce the impacted Bank's ability to provide important wildlife habitat functions.

Work in Land Under Water Bodies and Waterways

Construction of the widened Broadway Street Bridge and the installation of the Canal Street Bridge will overshadow approximately 2,707 square feet of the canal water surface



(837 square feet for the Broadway Street Bridge and 1,870 square feet for the Canal Street Bridge). Filling the raceways will eliminate approximately 6,527 square feet of underground waterway (1,920 square feet in the west Raceway and 4,607 square feet in the east Raceway).

Performance standards for LUWW [310 CMR 10.56 (4)(a)] require that work not impair the following:

- *The water carrying capacity within the defined channel, which is provided by said land in conjunction with the banks;*

The overshadowing of a portion of the Canals will have no effect on the carrying capacity of the canals. The loss of 6,527 square feet LUWW will be underground raceways that interconnected the Merrimack and Lower Pawtucket Canals and were opened and closed off as needed for power generation. The loss of the raceways will not impair the carrying capacity of the adjacent canals.

- *Groundwater and surface water quality;*

Overshadowing the LUWW in the Canals from the bridges will not alter ground water and surface water quality. The raceways will be filled with gravel or other structural fill material and that will not degrade surface or groundwater quality.

- *The Capacity of said land to provide breeding habitat, escape cover and food for fisheries;*

Overshadowing of the Canals may provide some fishery habitat and escape cover within the canal system. The waterways in the underground raceways are unlikely to provide much fishery habitat. Any habitat provided by the raceways is likely in the area of the raceway penstocks or the entrances off the canals. The penstocks will remain in place, allowing fish to continue to use these areas in the future.

- *The capacity of said land to provide important wildlife habitat functions;*

The affected Canals are man-made with vertical rock Banks that are unsuitable for burrowing either vertical rock faces or underground and not accessible to wildlife. Furthermore, no important wildlife habitat features were noted in the Project area. The Project will not reduce the impacted Bank's ability to provide important wildlife habitat functions.

Work in Bordering Land Subject to Flooding

There will be minor work in Bordering Land Subject to Flooding. This work will impact approximately 2,925 square feet of LUWW associated with the work over the Merrimack



Canal. Since the floodplain is contained within the Canal Banks, BLSF is not present in the Lower Pawtucket Canal. The BLSF within the work area has been fully altered by existing land use practices. Existing grades will be maintained and loss of flood storage volume will be avoided.

Performance standards for LUWW [310 CMR 10.57 (4)(a)] require that work not impair the following:

- *Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows;*

No flood storage volume will be lost by the project. Work in floodplain will maintain existing grades so no compensatory storage will be needed.

Furthermore, since the work will not result in a horizontal or vertical increase in flood waters.

- *Work within Bordering Land Subject to Flooding, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood stage or velocity.*

The work in floodplain will not raise the ground elevations and will not cause a restriction in flow or cause an increase in the flood stage or velocity.

- *Work in those portions of Bordering Land Subject to Flooding found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10 Percent or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.*

The work area in BLSF has been and continues to be altered from existing land uses. There are not important wildlife functions present in the work area that will be impaired by the proposed work. The work in BLSF will also be less than 5,000 square feet.

- *Protection of Rare Wildlife Species: Notwithstanding the provisions of 310 CMR 10.57(4)(a) or (b), no project may be permitted which will have any adverse effect*



on specified wildlife habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.

No state-listed estimated or priority wildlife habitat polygons have been designated by the Natural Heritage and Endangered Species in the vicinity of the Project.

Work in Buffer Zone

As identified in 310 CMR 10.53(1) of the WPA regulations, *"the issuing authority should consider the characteristics of the Buffer Zone, such as the presence of steep slopes, that may increase the potential for adverse impacts on resource areas. Conditions may include limitations on the scope and location of work in the Buffer Zone as necessary to avoid alteration of resource areas. The issuing authority may require erosion and sedimentation controls during construction, a clear limit of work, and the preservation of natural vegetation adjacent to the resource area and/or other measures commensurate with the scope and location of the work within the Buffer Zone to protect the interests of the Act."*

The Lowell Wetlands Ordinance establishes: The Ordinance also states: *Except as permitted by the Conservation Commission or as provided in the ordinance, no person shall remove, fill, dredge, alter, or build upon or within 100 feet of any bank; upon or within 100 feet of any lake, river, pond, stream; upon or within any land under said waters; or upon any land subject to flooding or inundation by groundwater or surface water.*

The proposed Project has been designed to address these requirements. As identified in the Mitigation Measures section of this attachment, an erosion and sedimentation control program will be implemented to prevent adverse impacts during construction.

Stormwater Management Standards

Runoff generated from impervious surfaces will be collected and managed in accordance with the DEP stormwater management standards. A stormwater management system is proposed that will include measures to provide groundwater recharge, attenuate peak flows and provide water quality treatment. A brief description of these measures is provided below. Full details on the system are included in the accompanying Stormwater Management Report. Compliance with the 10 stormwater management standards cited in Section 310 CMR 10.05(6)(k) of the WPA Regulations is evaluated in this Report.

The proposed stormwater management system will include installation of new deep sump hooded catch basins, a new piped collection system, and proprietary water quality units.



Summary

The City of Lowell is proposing redevelopment of the areas between Merrimack and Pawtucket Canals near Dutton Street and Canal Street. Work will consist of modifications to the Broadway Street Bridge, construction of a new bridge over the Lower Pawtucket Canal from Canal Street to the proposed streets F and G, new parking areas, as well as the resurfacing of nearby roadways and upgrades to pedestrian features. The Project will enhance safety and improve the traffic circulation of the surrounding area on Dutton and Broadway Streets. Work associated with the Project will result in the alteration of areas subject to jurisdiction of the WPA and the Lowell Wetlands Ordinance. Impacts to resource areas on the Site will be mitigated using best management practices during construction.

The applicant respectfully requests that the Lowell Conservation Commission find these measures adequately protective of the interests identified in the WPA and issue an Order of Conditions approving the work described in this NOI and as shown on the accompanying plans.



Attachment B – Abutter Information

› List of Abutters

RE: 19.1 BROADWAY ST

GRIER JAMES P
THOMPSON DEBORAH
69 PEARL ST UNIT 8
ESSEX JUNCTION, VT 05452

RE: 19 BROADWAY ST

NATALE CHRISTOPHER
295 DUTTON ST SUITE 1B
LOWELL, MA 01852

RE: 61 BROADWAY ST

HELLENIC ORTHODOX CHURCH OF LOWELL
61 LEWIS ST
LOWELL, MA 01854

RE: 66 BROADWAY ST

MACHERAS DEMOSTHENES P
MACHERAS PETER A
MACHERAS JOHN
MACHERAS DEMOS
66 BROADWAY ST
LOWELL, MA 01854

RE: 110 CANAL ST

TRINITY FREUDENBERG LIMITED PARTNERSHIP
75 FEDERAL ST 4TH FLOOR
BOSTON, MA 02110

RE: 98 DUMMER ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 116 DUMMER ST

HELLENIC ORTHODOX CHURCH OF LOWELL
62 LEWIS ST
LOWELL, MA 01854

RE: 116.1 DUMMER ST

HELLENIC ORTHODOX CHURCH OF LOWELL
C/O BILL KAFKAS - PRESIDENT
41 BROADWAY ST
LOWELL, MA 01854

RE: 122 DUMMER ST

HELLENIC ORTHODOX CHURCH OF LOWELL
C/O BILL KAFKAS - PRESIDENT
41 BROADWAY ST
LOWELL, MA 01854-3801

RE: 134 DUMMER ST

HELLENIC ORTHODOX CHURCH OF LOWELL
C/O GEORGE KONTOS - PRESIDENT
41 BROADWAY ST
LOWELL, MA 01854-1852

RE: 201 DUTTON ST

TRS HAFFNER REALTY TRUST
C/O HEG 201 DUTTON STREET LLC
2 INTERNATIONAL WAY
LAWRENCE, MA 01843-1064

RE: 227 DUTTON ST

TRS HAFFNER REALTY TRUST
C/O HEG 201 DUTTON STREET LLC
2 INTERNATIONAL WAY
LAWRENCE, MA 01843-1064

RE: 243 DUTTON ST

243-255 DUTTON STREET LLC
C/O DUTTON LLC
65 ADELE AVE
HAVERHILL, MA 01832

RE: 256.1 DUTTON ST

UNITED STATES OF AMERICA
LOWELL NATIONAL HISTORICAL PARK
67 KIRK ST
LOWELL, MA 01852

RE: 261 DUTTON ST #1

TAYLOR EVE CATHERINE
1 KIMBALL COURT UNIT 404
WOBURN, MA 01801-6409

RE: 261 DUTTON ST #2

PORZIO EDWARD S
261-265 DUTTON ST UNIT 2
LOWELL, MA 01852

RE: 261 DUTTON ST #3

O'BOYLE RYAN
265 DUTTON ST UNIT 3
LOWELL, MA 01852

RE: 261 DUTTON ST #4

HEATH DOUGLAS
28 STEDMAN ST
WAKEFIELD, MA 01880-2709

RE: 261 DUTTON ST #5

MILITE A DEAN
261-265 DUTTON ST UNIT 5
LOWELL, MA 01852

RE: 261 DUTTON ST #6

HARGIS STACIE
265 DUTTON ST UNIT 6
LOWELL, MA 01852

RE: 261 DUTTON ST #7

BOULEY JESSE
29 PATTON RD
BILLERICA, MA 01821

RE: 261 DUTTON ST #8

STAID KEVIN PATRICK
265 DUTTON ST UNIT 8
LOWELL, MA 01852

RE: 269 DUTTON ST #A

SYVERSON STEVEN
269 DUTTON ST UNIT A
LOWELL, MA 01852

RE: 269 DUTTON ST #B

BAILEY ANTHONY W
BAILEY BONNIE A
269 DUTTON ST UNIT B
LOWELL, MA 01852

RE: 269 DUTTON ST #C

GONYEA GREGORY
41 PERSHING ST
JAMAICA PLAIN, MA 02130

RE: 269 DUTTON ST #D

HOPKINS RYAN
SALVATO JULIE
269 DUTTON ST UNIT D
LOWELL, MA 01852

RE: 273 DUTTON ST

KSM LLC
277 DUTTON ST
LOWELL, MA 01852

RE: 279 DUTTON ST

YMITTOS CANDLE MFG CO INC
279 DUTTON ST
LOWELL, MA 01852-1804

RE: 287 DUTTON ST #1

MOREAUX JOSHUA J JR
287 DUTTON ST UNIT 1
LOWELL, MA 01852

RE: 287 DUTTON ST #2

NUNN ELIZABETH L
SCHOR PAUL
182 MT VERNON ST
LOWELL, MA 01854

RE: 287 DUTTON ST #3

NUNN ELIZABETH L
SCHOR PAUL
182 MT VERNON ST
LOWELL, MA 01854

RE: 289 DUTTON ST #1

HASSEY DAVID J
289 DUTTON ST UNIT 1
LOWELL, MA 01852

RE: 289 DUTTON ST #2

BARNES MATTHEW G
291 DUTTON ST UNIT 2
LOWELL, MA 01852

RE: 289 DUTTON ST #3

HASSEY DAVID J
289 DUTTON ST UNIT 2
LOWELL, MA 01852

RE: 295 DUTTON ST

NATALE CHRISTOPHER
295 DUTTON ST SUITE 1B
LOWELL, MA 01852

RE: 304 DUTTON ST

UNITED STATES OF AMERICA
1849 C ST NW
WASHINGTON, DC 20240

RE: 305 DUTTON ST

305 DUTTON STREET ASSOC LLC
C/O PMC PROPERTY GROUP ATT BOB WEINSTEIN
1411 WALNUT ST 3RD FLR
PHILADELPHIA, PA 19102

RE: 460 DUTTON ST

UNITED STATES OF AMERICA
LOWELL NATIONAL HISTORICAL PARK
67 KIRK ST
LOWELL, MA 01852

RE: 491 DUTTON ST #2

AMERICAN TEXTILE HISTORY MUSEUM INC
491 DUTTON ST UNIT 2
LOWELL, MA 01854

RE: 491 DUTTON ST #1

MANCHESTER PROPERTY GROUP LLC
35 MONROE ST
SHREWSBURY, MA 01545

RE: 491 DUTTON ST #301

WALL BRIAN E
491 DUTTON ST UNIT 301
LOWELL, MA 01854

RE: 491 DUTTON ST #302

SOUSA RONALD J
SOUSA PATRICIA A
491 DUTTON ST UNIT 302
LOWELL, MA 01854

RE: 491 DUTTON ST #303

WALL THOMAS K
491 DUTTON ST UNIT 303
LOWELL, MA 01854

RE: 491 DUTTON ST #304

TARTER MILES
491 DUTTON ST UNIT 304
LOWELL, MA 01854

RE: 491 DUTTON ST #305

BAUMANN HAROLD J
491 DUTTON ST UNIT 305
LOWELL, MA 01854

RE: 491 DUTTON ST #306

ANWARI FREIDUN
ANWARI BARBARA JO
491 DUTTON ST UNIT 306
LOWELL, MA 01854

RE: 491 DUTTON ST #307

NEITHERCOTT ROBERT MATTHEW
NEITHERCOTT TRACEY ANN
491 DUTTON ST UNIT 307
LOWELL, MA 01854

RE: 491 DUTTON ST #308

STOTIK JASON P
491 DUTTON ST UNIT 308
LOWELL, MA 01854

RE: 491 DUTTON ST #309

SIMON KIM
491 DUTTON ST UNIT 309
LOWELL, MA 01854

RE: 491 DUTTON ST #310

DUTTON PROPERTIES LLC
PO BOX 823
BEDFORD, MA 01730

RE: 491 DUTTON ST #311

LOWRY JOHN H
LOWRY MARGARET L
491 DUTTON ST UNIT 311
LOWELL, MA 01854-4290

RE: 491 DUTTON ST #312

TRS ROBERTA E KLIX TRUST
KLIX ROBERTA E TRUSTEE
491 DUTTON ST UNIT 312
LOWELL, MA 01854

RE: 491 DUTTON ST #4

TRS GAZEBO REALTY TRUST
GIOLDASIS DIMITRIOS G TRUSTEE
491 DUTTON ST UNIT 4
LOWELL, MA 01854

RE: 491 DUTTON ST #401

BRAGDON DAVID
BRAGDON REGINA
491 DUTTON ST UNIT 402
LOWELL, MA 01854

RE: 491 DUTTON ST #402

BRAGDON DAVID
BRAGDON REGINA
491 DUTTON ST UNIT 402
LOWELL, MA 01854

RE: 491 DUTTON ST #403

LOFT PROPERTIES LLC
PO BOX 660
N CHELMSFORD, MA 01863

RE: 491 DUTTON ST #404

WALSH JOHN
BESECKER DONNA
491 DUTTON ST UNIT 404
LOWELL, MA 01854

RE: 491 DUTTON ST #406

LOFT PROPERTIES LLC
PO BOX 660
N CHELMSFORD, MA 01863

RE: 491 DUTTON ST #408

FISHER PETER F
FISHER LORI A
491 DUTTON ST UNIT 408
LOWELL, MA 01854

RE: 491 DUTTON ST #410

LUTHER DOUGLAS E
CARON LAURA E
491 DUTTON ST UNIT 410
LOWELL, MA 01854

RE: 491 DUTTON ST #501

ELLIS MATTHEW
ANNANTUONIO KATHERINE
491 DUTTON ST UNIT 501
LOWELL, MA 01854

RE: 491 DUTTON ST #503

TRS LAUREN BAKER REVOCABLE TRUST
BAKER LAUREN TRUSTEE
491 DUTTON ST UNIT 503
LOWELL, MA 01854

RE: 491 DUTTON ST #505

MITROPOULOS NICHOLAS T
9 COOLIDGE HILL RD
CAMBRIDGE, MA 02141

RE: 491 DUTTON ST #405

HULSE BRIAN T
491 DUTTON ST UNIT 405
LOWELL, MA 01854

RE: 491 DUTTON ST #407

TAYLOR WILLIAM T
LEVENSELER SHEILA M
491 DUTTON ST UNIT 407
LOWELL, MA 01854

RE: 491 DUTTON ST #409

TRS EVAN CORAVOS FAMILY REVOCABLE TRUST
CORAVOS EVAN TRUSTEE
491 DUTTON ST UNIT 409
LOWELL, MA 01854

RE: 491 DUTTON ST #411

GASSETT BRENT J
MCKINNEY TERENCE E
55 MILTON ST
ARLINGTON, MA 02474

RE: 491 DUTTON ST #502

GRAY GLORIA
GRAY DUKE
491 DUTTON ST #502
LOWELL, MA 01854

RE: 491 DUTTON ST #504

MCNAMARA JILL GEOFFROY
PO BOX 116
DUNSTABLE, MA 01827

RE: 491 DUTTON ST #506

CALABRESE TIMOTHY JASON
491 DUTTON ST UNIT 506
LOWELL, MA 01854

RE: 491 DUTTON ST #507

MITROPOULOS NICHOLAS T
9 COOLRIDGE HILL RD
CAMBRIDGE, MA 02141

RE: 491 DUTTON ST #508

THOMAS COFFEY
491 DUTTON ST UNIT 508
LOWELL, MA 01854

RE: 491 DUTTON ST #509

TRS EVAN CORAVOS FAMILY REVOCABLE TRUST
CORAVOS EVAN TRUSTEE
491 DUTTON ST UNIT 509
LOWELL, MA 01854

RE: 491 DUTTON ST #510

SWEENEY COLIN N
SWEENEY LINDA G
491 DUTTON ST #510
LOWELL, MA 01854

RE: 491 DUTTON ST #511

O'HALLORAN JEFFREY
491 DUTTON ST #511
LOWELL, MA 01854

RE: 491 DUTTON ST #512B

COHEN KEVIN
COHEN ANN M
491 DUTTON ST UNIT 512B
LOWELL, MA 01854

RE: 491 DUTTON ST #513

BRIAN K MONAHAN TRUSTEE
A. RICHARD MONAHAN
MARGARET M MONAHAN FAMILY IRREVOCABLE TRUST
86 CANDLEWOOD DR
WOBURN, MA 01801

RE: 491 DUTTON ST #514

DEMELLO MARK
491 DUTTON ST UNIT 514
LOWELL, MA 01854

RE: 491 DUTTON ST #515

GOPLERUD JON
GOPLERUD ELISABETH J
491 DUTTON ST UNIT 515
LOWELL, MA 01854

RE: 491 DUTTON ST #516

SULLIVAN CHRISTOPHER J
SULLIVAN REBECCA A
491 DUTTON ST UNIT 518
LOWELL, MA 01854

RE: 491 DUTTON ST #517

LYONS TIMOTHY A
LYONS LINDA M
491 DUTTON ST UNIT 517
LOWELL, MA 01854

RE: 491 DUTTON ST #518

SULLIVAN CHRISTOPHER J
SULLIVAN REBECCA A
491 DUTTON ST 518
LOWELL, MA 01854

RE: 491 DUTTON ST #519

RICHARD JAMES T
RICHARD KATHLEEN M
491 DUTTON ST UNIT 519
LOWELL, MA 01854

RE: 491 DUTTON ST #520

HUNTER MARK E
GOLDBERG-HUNTER EMILY
130 JOHN ST UNIT 547
LOWELL, MA 01852

RE: 491 DUTTON ST #521

MONAHAN BRIAN
RODERICK ANNA L
491 DUTTON ST UNIT 521
LOWELL, MA 01854

RE: 23 JACKSON ST

BOOTT HYDROPOWER INC
C/O ENEL NORTH AMERICA INC
ONE TECH DR SUITE 220
ANDOVER, MA 01810

RE: 27 JACKSON ST #100

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #101

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #102

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #103

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #104

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #105

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #106

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #107

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #108

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #109

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #110

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #111

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #112

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #114

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #116

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #118

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #120

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #122

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #124

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 20109

RE: 27 JACKSON ST #113

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #115

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #117

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #119

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #121

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #123

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #125

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #126

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #128

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #130

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #132

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #134

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
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BOSTON, MA 02109

RE: 27 JACKSON ST #136

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #138

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #127

27 JACKSON LIMITED PARTNERSHIP
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RE: 27 JACKSON ST #129

27 JACKSON LIMITED PARTNERSHIP
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RE: 27 JACKSON ST #131

27 JACKSON LIMITED PARTNERSHIP
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RE: 27 JACKSON ST #133

27 JACKSON LIMITED PARTNERSHIP
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BOSTON, MA 02109

RE: 27 JACKSON ST #135

27 JACKSON LIMITED PARTNERSHIP
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BOSTON, MA 02109

RE: 27 JACKSON ST #137

27 JACKSON LIMITED PARTNERSHIP
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BOSTON, MA 02109

RE: 27 JACKSON ST #139

27 JACKSON LIMITED PARTNERSHIP
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6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #200

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #203

27 JACKSON LIMITED PARTNERSHIP
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6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #205

27 JACKSON LIMITED PARTNERSHIP
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6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #207

27 JACKSON LIMITED PARTNERSHIP
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6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #209

27 JACKSON LIMITED PARTNERSHIP
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BOSTON, MA 02109

RE: 27 JACKSON ST #211

27 JACKSON LIMITED PARTNERSHIP
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6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #213

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #202

27 JACKSON LIMITED PARTNERSHIP
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6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #204

27 JACKSON LIMITED PARTNERSHIP
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BOSTON, MA 02109

RE: 27 JACKSON ST #206

27 JACKSON LIMITED PARTNERSHIP
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BOSTON, MA 02109

RE: 27 JACKSON ST #208

27 JACKSON LIMITED PARTNERSHIP
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6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #210

27 JACKSON LIMITED PARTNERSHIP
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6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #212

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #214

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #215

27 JACKSON LIMITED PARTNERSHIP
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BOSTON, MA 02109

RE: 27 JACKSON ST #217

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #219

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #221

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #223

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #225

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #227

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #216

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #218

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #220

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #222

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #224

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #226

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #228

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #229

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #231

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #233

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #235

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #237

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #239

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #241

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #230

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #232

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #234

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #236

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #238

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #240

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #242

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #243

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 01208

RE: 27 JACKSON ST #244

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #301

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #302

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #303

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #304

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #305

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #306

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #307

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #308

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 01209

RE: 27 JACKSON ST #309

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #310

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #311

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #312

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #313

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #314

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #315

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #316

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #317

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #318

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #319

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #320

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #321

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #322

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #323

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #324

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #325

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #326

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #327

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #328

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #329

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #330

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #331

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #332

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #333

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #334

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #335

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #336

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #337

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #338

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #339

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #340

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #341

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #343

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #401

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #403

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #405

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #407

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #409

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #342

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #344

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #402

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #404

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #406

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #408

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #410

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #411

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #413

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #415

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #417

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #419

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #421

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #423

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #412

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #414

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #416

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #418

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #420

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #422

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #424

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #425

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #427

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #429

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #431

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #433

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #435

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #437

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #426

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #428

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #430

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #432

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #434

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #436

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #438

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #439

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #441

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #443

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #445

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 161 JACKSON ST #A

LOWELL COMMUNITY HEALTH CENTER INC
161 JACKSON ST
LOWELL, MA 01852

RE: 171 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 219 JACKSON ST #A

TRINITY APPLETON FOUR LTD PARTNERSHIP
C/O TRINITY MANAGEMENT LLC
75 FEDERAL ST 4TH FLOOR
BOSTON, MA 02110

RE: 27 JACKSON ST #440

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #442

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 27 JACKSON ST #444

27 JACKSON LIMITED PARTNERSHIP
C/O WINN COMPANIES
6 FANEUIL HALL MARKET PLACE
BOSTON, MA 02109

RE: 101 JACKSON ST #B

LCHC UNIT B HOLDER CORPORATION
C/O LOWELL COMMUNITY HEALTH CENTER INC
161 JACKSON ST
LOWELL, MA 01852

RE: 169 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 193.1 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 219 JACKSON ST #B

TRINITY APPLETON LTD PARTNERSHIP
C/O TRINITY MANAGEMENT LLC
75 FEDERAL ST 4TH FL
BOSTON, MA 02110

RE: 221.4 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 221.5 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 223.2 JACKSON ST

UNITED STATES OF AMERICA
LOWELL HISTORIC PRESERVATION COMM
67 KIRK ST
LOWELL, MA 01852

RE: 223.3 JACKSON ST

UNITED STATES OF AMERICA
LOWELL HISTORIC PRESERVATION COMM
67 KIRK ST
LOWELL, MA 01852

RE: 239.1 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 291 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 341.3 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 341.1 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 341.2 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 369.1 JACKSON ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 200 MARKET ST #10A

KULLBERG PAULA G
130 JOHN ST UNIT 218
LOWELL, MA 01852

RE: 200 MARKET ST #11A

FOSTER BARBARA V
200 MARKET ST #11A
LOWELL, MA 01852

RE: 200 MARKET ST #12A

STRONG WILLIAM A
200 MARKET ST UNIT 12A
LOWELL, MA 01852

RE: 200 MARKET ST #13A

ZEHR BECKY
22A FLINT RD
TYNGSBORO, MA 01879

RE: 200 MARKET ST #14A

LUZ DIANNE A
DUHAMEL NORMAN F JR
279 WILLOW AVE
HAVERHILL, MA 01835

RE: 200 MARKET ST #16A

VACCA CRAIG
200 MARKET ST UNIT A16
LOWELL, MA 01852

RE: 200 MARKET ST #18A

PRICE WILLIAM A
200 MARKET ST UNIT 18A
LOWELL, MA 01852

RE: 200 MARKET ST #1A

SAVARD PETER
SAVARD LORRAINE
200 MARKET ST UNIT A1
LOWELL, MA 01852

RE: 200 MARKET ST #21A

SHEA PATRICK R
200 MARKET ST UNIT 21A
LOWELL, MA 01852

RE: 200 MARKET ST #23A

DONALDSON JOHN R
45 MEYER HILL DR
ACTON, MA 01720

RE: 200 MARKET ST #25A

SMITH ELIZABETH
SMITH WENDELL
200 MARKET ST UNIT 25A
LOWELL, MA 01852

RE: 200 MARKET ST #15A

LEDUC EDMUND P
200 MARKET ST UNIT 15A
LOWELL, MA 01852

RE: 200 MARKET ST #17A

FOWLER CYNTHIA
62 DOVER ST #8
SOMERVILLE, MA 02144

RE: 200 MARKET ST #19A

TRS GARFIELD REALTY TRUST
C/O TOM GILBERT
200 MARKET ST UNIT 19A
LOWELL, MA 01852-1800

RE: 200 MARKET ST #20A

ANDRUS WILLIAM
ANDRUS DENISE
11 THRESHER RD
NASHUA, NH 03060

RE: 200 MARKET ST #22A

MENEZES JOHN J
200 MARKET ST UNIT A22
LOWELL, MA 01852

RE: 200 MARKET ST #24A

TAGLIAVENTO TOMMASO
TAGLIAVENTO LISA
17 MILLERS FARM RD
BILLERICA, MA 01821

RE: 200 MARKET ST #26A

DORSEY MARIA C
200 MARKET ST UNIT 26A
LOWELL, MA 01852

RE: 200 MARKET ST #27A

DIMITROV STANKO P
DIMITROV SVELTA
10 ERLIN RD
CHELMSFORD, MA 01824

RE: 200 MARKET ST #29A

HOLM JONATHAN K
HANSEN CHRISTOPHER J
200 MARKET ST UNIT A29
LOWELL, MA 01852

RE: 200 MARKET ST #30B

BERNIER JOSEPH M
905 SOUTH ST
TEWKSBURY, MA 01876

RE: 200 MARKET ST #32B

B42 LLC
C/O DEAN MILITE
265 DUTTON ST UNIT 5
LOWELL, MA 01852

RE: 200 MARKET ST #34B

ALBAYRAK YILDIRAY
87 COUNTRY CLUB DR
DEDHAM, MA 02026

RE: 200 MARKET ST #36B

GODDARD MICHAEL C
GODDARD KATELYN M
200 MARKET ST UNIT 36B
LOWELL, MA 01852

RE: 200 MARKET ST #38B

GEARY BRIAN E
200 MARKET ST UNIT 38B
LOWELL, MA 01852

RE: 200 MARKET ST #28A

GARSDIE JAMES J
MULLIN CHERI
200 MARKET ST UNIT 28A
LOWELL, MA 01852

RE: 200 MARKET ST #2A

MACNEIL DAN M
MACNEIL LAURA M
200 MARKET ST UNIT 2A
LOWELL, MA 01852

RE: 200 MARKET ST #31B

HOLIHAN ERIC
SCHNEIDER BRENNNA
165 POWDER HOUSE BLVD #2
SOMERVILLE, MA 02144

RE: 200 MARKET ST #33B

MOORE ROBERTA K
200 MARKET ST UNIT 33B
LOWELL, MA 01852

RE: 200 MARKET ST #35B

SONNTAG MATTHEW J
12 DENNIS ST
CLINTON, MA 01510

RE: 200 MARKET ST #37B

BROWN ALLISON BENETT
200 MARKET ST UNIT 37B
LOWELL, MA 01852

RE: 200 MARKET ST #39B

WHITNEY-OWEN JOANNA
18 CERULEAN WAY
LINCOLN, MA 01773

RE: 200 MARKET ST #3A

ORAM GARY
200 MARKET ST UNIT A3
LOWELL, MA 01852

RE: 200 MARKET ST #41B

SALZARULO JASON W
DOMINGS JILLIAN
200 MARKET ST UNIT 41B
LOWELL, MA 01852

RE: 200 MARKET ST #43B

GILES DANIEL
HADDAD AMANDA
5 EAGLE DR
TEWKSBURY, MA 01876

RE: 200 MARKET ST #45B

BOWMAN DAVID
LUSH ROBIN
200 MARKET ST UNIT B45
LOWELL, MA 01852

RE: 200 MARKET ST #47B

D'ASCENSAO MICHAEL P
200 MARKET ST #47B
LOWELL, MA 01852

RE: 200 MARKET ST #49B

RO DAVID LUTHER
RO JACQUELINE
200 MARKET ST #49B
LOWELL, MA 01852

RE: 200 MARKET ST #50B

COSTELLO MARY E
PO BOX 9384
LOWELL, MA 01853

RE: 200 MARKET ST #40B

CONSALVO MELISSA
200 MARKET ST #40B
LOWELL, MA 01852

RE: 200 MARKET ST #42B

B42 LLC
C/O DEAN MILITE
265 DUTTON ST #5
LOWELL, MA 01852

RE: 200 MARKET ST #44B

HUNYADI GARRETT SNIDER
200 MARKET ST UNIT B44
LOWELL, MA 01852

RE: 200 MARKET ST #46B

BRETTSCHNEIDER MARLA
200 MARKET ST UNIT B46
LOWELL, MA 01852

RE: 200 MARKET ST #48B

VALENTE MARIETTE M
200 MARKET ST UNIT 48
LOWELL, MA 01852

RE: 200 MARKET ST #4

FORD ROSEMARY E
200 MARKET ST UNIT 4A
LOWELL, MA 01852

RE: 200 MARKET ST #51B

EMERY JOHN H
EMERY ELYSE G
200 MARKET ST UNIT 51B
LOWELL, MA 01852

RE: 200 MARKET ST #52B

STARK PAULA
200 MARKET ST UNIT B52
LOWELL, MA 01852

RE: 200 MARKET ST #54B

BERNIER JOSEPH M
200 MARKET ST UNIT 54B
LOWELL, MA 01852

RE: 200 MARKET ST #56B

PETROWICZ MICHAEL
200 MARKET ST UNIT B56
LOWELL, MA 01852

RE: 200 MARKET ST #6A

ESJUNIN EVGENIY
TRAYER DANIELLE
200 MARKET ST UNIT 6A
LOWELL, MA 01852

RE: 200 MARKET ST #8A

DELUCA JANET V
181 MARKET ST UNIT 1
LOWELL, MA 01852

RE: 200.1 MARKET ST #101

CONCORD RIVER REALTY INC
15 COURT SQ STE 800
BOSTON, MA 02108

RE: 200.1 MARKET ST #103

MELDRUM SARAH N
200 MARKET ST UNIT 103
LOWELL, MA 01852

RE: 200 MARKET ST #53B

WILPAN SETH
WILPAN JOANNA
200 MARKET ST UNIT 53B
LOWELL, MA 01852-1887

RE: 200 MARKET ST #55B

BLOOM ROBERTA
200 MARKET ST UNIT 55B
LOWELL, MA 01852

RE: 200 MARKET ST #5A

GILLIES PETER C
MYERS-GILLIES JOHANNA L
200 MARKET ST UNIT A5
LOWELL, MA 01852

RE: 200 MARKET ST #7A

CANGIANO MICHAEL
266 ALBION ST UNIT 11
WAKEFIELD, MA 01880

RE: 200 MARKET ST #9A

TRS HENRY R ACHIN TRUST
GIBSON GORDON S & GIBSON RITA A
ACHIN CARL F TRUSTEES
34 METTACOMETT PATH
HARVARD, MA 01451

RE: 200.1 MARKET ST #102

BERGERON WILLIAM J
STANTON SHEILA K
17 CROWN RD
WESTFORD, MA 01886

RE: 200.1 MARKET ST #104

PERONT HENRY J
MELANSON MAY
200.1 MARKET ST UNIT 104
LOWELL, MA 01852-1827

RE: 200.1 MARKET ST #105

CORNIER RACHEL
200 MARKET ST UNIT 105
LOWELL, MA 01852

RE: 200.1 MARKET ST #106

HOWARD G GREGORY
HOWARD VANNA
201 CHAPMAN RD
TEWKSBURY, MA 01876

RE: 200.1 MARKET ST #107

ANDREWS JOSEPH A
200.1 MARKET ST UNIT 107
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #108

LAICHE DAVID J
200 MARKET ST UNIT 108
LOWELL, MA 01852

RE: 200.1 MARKET ST #109

THOMPSON JOHN
THOMPSON ANGELA C
200 MARKET ST UNIT 109
LOWELL, MA 01852

RE: 200.1 MARKET ST #110

LIGHTBODY DIANE
200 MARKET ST UNIT 110
LOWELL, MA 01852

RE: 200.1 MARKET ST #111

DRAKE JOHN M
DRAKE SUSAN M
200.1 MARKET ST UNIT 111
LOWELL, MA 01852

RE: 200.1 MARKET ST #112

SYLVAIN PETER
ROWLANDS REBECCA
200 MARKET ST UNIT 112
LOWELL, MA 01852

RE: 200.1 MARKET ST #113

HARIHAR JAY A
200 MARKET ST UNIT 113
LOWELL, MA 01852

RE: 200.1 MARKET ST #114

MAURICE ROLAND E JR
MAURICE PATRICIA A
200.1 MARKET ST UNIT 114
LOWELL, MA 01852

RE: 200.1 MARKET ST #115

POTTEL TED W
200.1 MARKET ST UNIT 115
LOWELL, MA 01852

RE: 200.1 MARKET ST #116

GRUNWALD WILLIAM A
GRUNWALD DEIRDRE M
88 PRESCOTT ST UNIT 10
LOWELL, MA 01852

RE: 200.1 MARKET ST #117

CONWAY TRAVIS
5 COBBLER RD
WESTFORD, MA 01886

RE: 200.1 MARKET ST #118

JAILLET JODI
WINDT THEODORE O
113 PHOTINE DR
LOWELL, MA 01854

RE: 200.1 MARKET ST #119

MORTARA CONSTANCE
200.1 MARKET ST #119
LOWELL, MA 01852

RE: 200.1 MARKET ST #120

NOTINI KATHLEEN M
200.1 MARKET ST UNIT 120
LOWELL, MA 01852

RE: 200.1 MARKET ST #121

CHMILARSKI JOHN
200.1 MARKET ST #121
LOWELL, MA 01852

RE: 200.1 MARKET ST #201

KINNEY GLENN P
200.1 MARKET ST UNIT 201
LOWELL, MA 01852

RE: 200.1 MARKET ST #202

LANE DANIEL M
200 MARKET ST UNIT 202
LOWELL, MA 01852

RE: 200.1 MARKET ST #203

TRS C P 203 NOMINEE TRUST
MCNIFF JOSEPH H TRUSTEE
11 COLONIAL DR
CHELMSFORD, MA 01824

RE: 200.1 MARKET ST #204

BREAULT RICHARD L
WOOD ELAINE C
200 MARKET ST UNIT 204
LOWELL, MA 01852

RE: 200.1 MARKET ST #205

GRAVALLESE ALBERT
CARAVIELLO SALVATORE
200.1 MARKET ST UNIT 205
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #206

HART JEFFREY A
HART MARY W
200.1 MARKET ST UNIT 206
LOWELL, MA 01852

RE: 200.1 MARKET ST #207

MORRIS ROBERTA A
200 MARKET ST UNIT 207
LOWELL, MA 01852

RE: 200.1 MARKET ST #208

MIELE NICHOLAS
200 MARKET ST UNIT 208
LOWELL, MA 01852

RE: 200.1 MARKET ST #209

BRISLIN JAY E
200.1 MARKET ST UNIT 209
LOWELL, MA 01852

RE: 200.1 MARKET ST #210

HALL RYAN J
7 GLIDDEN WAY
READING, MA 01867

RE: 200.1 MARKET ST #211

MILLSTEIN JEFFREY A
MILLSTEIN SHEILA D
200 MARKET ST # 211
LOWELL, MA 01852

RE: 200.1 MARKET ST #212

BULAT KAMRAN
200.1 MARKET ST UNIT 212
LOWELL, MA 01852

RE: 200.1 MARKET ST #213

PIOLI DAWN
200.1 MARKET ST UNIT 213
LOWELL, MA 01852

RE: 200.1 MARKET ST #214

FOSTER JAMES W
200.1 MARKET ST #214
LOWELL, MA 01852

RE: 200.1 MARKET ST #215

SEVIGNY ROBERT B
200 MARKET ST UNIT 215
LOWELL, MA 01852

RE: 200.1 MARKET ST #216

FARREN KRISTIN M
5 VIRGINIA RD
TYNGSBORO, MA 01879

RE: 200.1 MARKET ST #217

TOULOUZIS NICHOLAS K
200 MARKET ST UNIT 217
LOWELL, MA 01852

RE: 200.1 MARKET ST #218

TRS ROBERT HOEFER FAMILY TRUST
HOEFER ROBERT F TRUSTEE
975 MASS AVE # 501
ARLINGTON, MA 02476

RE: 200.1 MARKET ST #219

ANANDAM V MAMIDIPUDI
1143 HIGHLAND CT
BETHEL PARK, PA 15102-2787

RE: 200.1 MARKET ST #220

PEDULLA PETER D
200 MARKET ST UNIT 220
LOWELL, MA 01852

RE: 200.1 MARKET ST #221

OREOL TECHNOLOGY LLC
10 ERLIN RD
CHELMSFORD, MA 01824

RE: 200.1 MARKET ST #301

DEMERS LINDA R
200.1 MARKET ST UNIT 301
LOWELL, MA 01852

RE: 200.1 MARKET ST #302

PERRAULT AMY I
200 MARKET ST UNIT 302
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #303

BACHMAN RUTH J
200 MARKET ST UNIT 303
LOWELL, MA 01852

RE: 200.1 MARKET ST #304

NADEAU J DAVID
GALVIN DANIEL S
501 LOWELL ST
METHUEN, MA 01844

RE: 200.1 MARKET ST #305

WONG LESLIE MANWAH
200 MARKET ST UNIT 305
LOWELL, MA 01852

RE: 200.1 MARKET ST #306

DONIUS CHRISTOPHER P
PO BOX 1693
LOWELL, MA 01853

RE: 200.1 MARKET ST #307

TAP ELISSA
200.1 MARKET ST UNIT 307
LOWELL, MA 01852

RE: 200.1 MARKET ST #308

STARRATT WILLIAM C
STARRATT CHRISTINE G
200.1 MARKET ST #308
LOWELL, MA 01852

RE: 200.1 MARKET ST #309

TRS SUSANNE BEATON FAMILY TRUST
BEATON SUSANNE TRUSTEE
200.1 MARKET ST #309
LOWELL, MA 01852

RE: 200.1 MARKET ST #310

KNAPP SUZANNE C
200.1 MARKET ST UNIT 310
LOWELL, MA 01852

RE: 200.1 MARKET ST #311

CELIMLI OSMAN D
KIRK HEATHER M
17 WILDEWOOD DR
LYNNFIELD, MA 01940

RE: 200.1 MARKET ST #312

PHAN JAMES L
311 BUTMAN RD
LOWELL, MA 01852

RE: 200.1 MARKET ST #313

YOHANNES MERID
200 MARKET ST APT 313
LOWELL, MA 01852-1829

RE: 200.1 MARKET ST #314

MOLINARI ROBERT
200 MARKET ST UNIT 314
LOWELL, MA 01852

RE: 200.1 MARKET ST #315

MCANESPIE PETER A
BUTLER COLLEEN
3 EVELYN ST
BURLINGTON, MA 01803

RE: 200.1 MARKET ST #316

SEN SUDESHNA
200 MARKET ST #316
LOWELL, MA 01852

RE: 200.1 MARKET ST #317

REGAN ELIZABETH M
200.1 MARKET ST UNIT 317
LOWELL, MA 01852

RE: 200.1 MARKET ST #318

POWERS COLLEEN
200.1 MARKET ST UNIT 318
LOWELL, MA 01852

RE: 200.1 MARKET ST #319

MAILLE CHRISTOPHER P
200 MARKET ST UNIT 319
LOWELL, MA 01852

RE: 200.1 MARKET ST #401

MCNIFF JOSEPH H
MCNIFF MAUREEN C
11 COLONIAL DR
CHELMSFORD, MA 01824

RE: 200.1 MARKET ST #402

WASHINGTON ERLENE H
31 CARDIFF RD
WINDHAM, NH 03087

RE: 200.1 MARKET ST #403

SOLOMON IRA
SOLOMON TOVE K
200 MARKET ST UNIT 403
LOWELL, MA 01852

RE: 200.1 MARKET ST #404

EVANS RUTH
WORSLEY CHARLES
200 MARKET ST UNIT 404
LOWELL, MA 01852

RE: 200.1 MARKET ST #405

BROGAN JOHN T JR
BROGAN LINDA S
200.1 MARKET ST UNIT 405 REAR
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #406

MAY GEORGETTE S
200 MARKET ST #406
LOWELL, MA 01852

RE: 200.1 MARKET ST #407

CARTER TYLER L
200.1 MARKET ST #407
LOWELL, MA 01852

RE: 200.1 MARKET ST #408

SULLIVAN BRIAN K
200.1 MARKET ST UNIT 408
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #409

TRS UNITED REALTY TRUST
MCDERMOTT FRANK S JR TRUSTEE
200 MARKET ST UNIT 409
LOWELL, MA 01852

RE: 200.1 MARKET ST #410

BOUCHARD ALFRED
BOUCHARD LIEBY
200 MARKET ST UNIT 410
LOWELL, MA 01852

RE: 200.1 MARKET ST #411

TRS JOINT REVOCABLE TRUST AGREEMENT
PEARL DANIEL ET AL TRUSTEE
200.1 MARKET ST UNIT 411
LOWELL, MA 01852

RE: 200.1 MARKET ST #412

GALINDO GERARDO
200 MARKET ST UNIT 412
LOWELL, MA 01852

RE: 200.1 MARKET ST #413

PIANTEDOSI MICHAEL J
200.1 MARKET ST UNIT 413
LOWELL, MA 01852

RE: 200.1 MARKET ST #414

GEORGE ALLEN & SON CONSTRUCTION INC
572 BOSTON RD UNIT 3
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #415

GEORGE ALLEN & SON CONSTRUCTION INC
572 BOSTON RD UNIT 3
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #416

MA KHAI
MA DAO
64 BIGELOW ST
LAWRENCE, MA 01843

RE: 200.1 MARKET ST #417

DEMERS PATRICIA A
200.1 MARKET ST UNIT 417
LOWELL, MA 01852

RE: 200.1 MARKET ST #418

HUNT APRIL R
200.1 MARKET ST UNIT 418 REAR
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #419

TRS CARAVIELLO FAMILY TRUST
CARAVIELLO RENEE M TRUSTEE
200.1 MARKET ST UNIT 419
LOWELL, MA 01852

RE: 200.1 MARKET ST #501

WILK JONATHAN E
WILK KERRI A
200 MARKET ST UNIT 501
LOWELL, MA 01852

RE: 200.1 MARKET ST #502

TRS WILLIAM CHARLES JENKINS TRUST
JENKINS WILLIAM CHARLES TRUSTEE
200 MARKET ST UNIT 502
LOWELL, MA 01852

RE: 200.1 MARKET ST #503

NOOKALA SRIRAM
83 LANCASTER COUNTY RD
HARVARD, MA 01451

RE: 200.1 MARKET ST #504

ALLEN GEORGE T JR
572 BOSTON RD
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #505

KAUFMAN JUSTIN
BISETT SHEILA
6 KENWOOD AVE
WILMINGTON, MA 01887

RE: 200.1 MARKET ST #506

BUCKLEY SUSAN KATHERINE
200 MARKET ST UNIT 506
LOWELL, MA 01852

RE: 200.1 MARKET ST #507

WHITE MATTHEW R
200 MARKET ST UNIT 507
LOWELL, MA 01852

RE: 200.1 MARKET ST #508

COGAN ROBERT J
200.1 MARKET ST UNIT 508
LOWELL, MA 01852

RE: 200.1 MARKET ST #509

MARTIN MICHELE
200.1 MARKET ST #509
LOWELL, MA 01852

RE: 200.1 MARKET ST #510

ESPINOLA THERESA M
7 WAMESIT ST
LOWELL, MA 01852

RE: 200.1 MARKET ST #511

CALAS OLIVIER JR
200 MARKET ST UNIT 511
LOWELL, MA 01852

RE: 200.1 MARKET ST #512

NACOPOULOS ALEXANDROS
200 MARKET ST UNIT 512
LOWELL, MA 01852

RE: 200.1 MARKET ST #513

MCCARTHY WILLIAM E JR
MCCARTHY CHRISTINE M
200 MARKET ST UNIT 513
LOWELL, MA 01852

RE: 200.1 MARKET ST #514

MONTAGUE CURTIS W
200 MARKET ST UNIT 514
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #515

WHEELER ROBERT J JR
200 MARKET ST UNIT 515
LOWELL, MA 01852

RE: 200.1 MARKET ST #516

CHISHOLM ELIZABETH A
200.1 MARKET ST UNIT 516
LOWELL, MA 01852

RE: 200.1 MARKET ST #517

SULLIVAN FELICIA M
200 MARKET ST UNIT 517
LOWELL, MA 01852

RE: 200.1 MARKET ST #518

MCNIFF JOSEPH H
MCNIFF MAUREEN C
11 COLONIAL DR
CHELMSFORD, MA 01824

RE: 200.1 MARKET ST #519

BARBO MICHAEL
200 MARKET ST UNIT 519
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #601

TRS B L & A PAGE FAMILY TRUST
PAGE BARBARA C TRUSTEE
200 MARKET ST UNIT 601
LOWELL, MA 01852

RE: 200.1 MARKET ST #602

JENNESS KERRY
JENNESS WAYNE
200 MARKET ST #602
LOWELL, MA 01852

RE: 200.1 MARKET ST #603

TRITES DONALD E JR
200 MARKET ST UNIT 603
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #604

ABRAMS JOHN R
ABRAMS M CLAIRE
200 MARKET ST UNIT 604
LOWELL, MA 01852

RE: 200.1 MARKET ST #605

COWAN SYLVIA R
200 MARKET ST UNIT 605
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #606

COX MICHAEL T
COX DEBORAH C
2116 FOREST GLEN RD
SILVER SPRING, MD 20910

RE: 200.1 MARKET ST #607

GATH KERI A
200 MARKET ST UNIT 607
LOWELL, MA 01852

RE: 200.1 MARKET ST #608

BIRRELL NORMAN KIRK
BIRRELL SUSAN MORREO
200 MARKET ST UNIT 609
LOWELL, MA 01852

RE: 200.1 MARKET ST #609

BIRRELL NORMAN KIRK
BIRRELL SUSAN M
200 MARKET ST UNIT 609
LOWELL, MA 01852

RE: 200.1 MARKET ST #610

PAGE GREGORY W
200 MARKET ST UNIT 610
LOWELL, MA 01852

RE: 200.1 MARKET ST #611

COULTER SALLY M
200 MARKET ST UNIT 611
LOWELL, MA 01852

RE: 200.1 MARKET ST #612

BUTLER MALTIMORE JR
200 MARKET ST UNIT 612
LOWELL, MA 01852

RE: 200.1 MARKET ST #613

RYAN IRENE C
15 GREENVILLE AVE
N PROVIDENCE, RI 02901

RE: 200.1 MARKET ST #614

LEMBO PAULA A
200 MARKET ST UNIT 614
LOWELL, MA 01852

RE: 200.1 MARKET ST #615

LEDONNE ANNA T
200 MARKET STREET UNIT 615
LOWELL, MA 01852

RE: 200.1 MARKET ST #616

HUGHES ALISON E
200 MARKET ST UNIT 616
LOWELL, MA 01852

RE: 200.1 MARKET ST #617

HIMMELBERGER CRAIG P
200 MARKET ST UNIT 617
LOWELL, MA 01852

RE: 200.1 MARKET ST #618

HASKINS RANDOLPH G
HASKINS DIANE L
200 MARKET ST UNIT 618
LOWELL, MA 01852

RE: 200.1 MARKET ST #619

FEDERAL NATIONAL MORTGAGE ASSOCIATION
PO BOX 650043
DALLAS, TX 75265-0043

RE: 200.1 MARKET ST #620

WILDE JAMES L
200 MARKET ST UNIT 620
LOWELL, MA 01852

RE: 200.1 MARKET ST #S1

RYAN IRENE
200 MARKET ST UNIT 613
LOWELL, MA 01852

RE: 200.1 MARKET ST #S10

HUNT APRIL R
200.1 MARKET ST UNIT 418 REAR
LOWELL, MA 01852

RE: 200.1 MARKET ST #S11

MCMENIMAN RYAN P
325 HOYTS WHARF RD
GROTON, MA 01450

RE: 200.1 MARKET ST #S12

BUCKLEY SUSAN KATHERINE
200 MARKET ST UNIT 506
LOWELL, MA 01852

RE: 200.1 MARKET ST #S13

MCNIFF JOSEPH H
MCNIFF MAUREEN C
11 COLONIAL DR
CHELMSFORD, MA 01824

RE: 200.1 MARKET ST #S14

BARBO MICHAEL
200 MARKET ST UNIT 519
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #S15

HIMMELBERGER CRAIG P
200 MARKET ST UNIT 617
LOWELL, MA 01852

RE: 200.1 MARKET ST #S16

MCCARTHY WILLIAM E JR
MCCARTHY CHRISTINE M
200 MARKET ST UNIT 513
LOWELL, MA 01852

RE: 200.1 MARKET ST #S17

COX MICHAEL T
COX DEBORAH C
2116 FOREST GLEN RD
SILVER SPRING, MD 20910

RE: 200.1 MARKET ST #S18

TRS CANAL PLACE TRUST
GRAHAM HOWARD F TRUSTEE
572 BOSTON RD
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #S19

KEIL JENNA J
200 MARKET ST UNIT 109
LOWELL, MA 01852

RE: 200.1 MARKET ST #S2

TRS VENGOFF REALTY TRUST THE
VENGOFF RICHARD & VENGOFF CYNTHIA H TRUSTEE
200 MARKET ST UNIT 611
LOWELL, MA 01852

RE: 200.1 MARKET ST #S20

TRS CANAL PLACE TRUST
GRAHAM HOWARD F TRUSTEE
572 BOSTON RD
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #S21

ALLEN GEORGE T JR
572 BOSTON RD
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #S22

SEN SUDESHNA
200 MARKET ST UNIT 316
LOWELL, MA 01852

RE: 200.1 MARKET ST #S23

MAILLE CHRISTOPHER P
MAILLE DAVID A & MAILLE DIANE M
200 MARKET ST UNIT 319
LOWELL, MA 01852

RE: 200.1 MARKET ST #S24

KNAPP SUZANNE C
200.1 MARKET ST UNIT 310
LOWELL, MA 01852

RE: 200.1 MARKET ST #S25

YOHANNES MERID
200 MARKET ST APT 313
LOWELL, MA 01852

RE: 200.1 MARKET ST #S26

MCNIFF JOSEPH H
MCNIFF MAUREEN C
11 COLONIAL DR
CHELMSFORD, MA 01824

RE: 200.1 MARKET ST #S27

TRITES DONALD E JR
200 MARKET ST UNIT 603
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #S28

PAGE GREGORY W
200 MARKET ST UNIT 610
LOWELL, MA 01852

RE: 200.1 MARKET ST #S29

HUNT RICHARD
3440 AVALON RD UNIT 502
SHAKER HEIGHTS, OH 44120

RE: 200.1 MARKET ST #S3

WILK JONATHAN E
WILK KERRI A
200 MARKET ST UNIT 501
LOWELL, MA 01852

RE: 200.1 MARKET ST #S30

DEMERS LINDA R
200.1 MARKET ST UNIT 301
LOWELL, MA 01852

RE: 200.1 MARKET ST #S31

MCNIFF JOSEPH H
MCNIFF MAUREEN C
11 COLONIAL DR
CHELMSFORD, MA 01824

RE: 200.1 MARKET ST #S32

MILLSTEIN JEFFREY A
MILLSTEIN SHEILA D
200 MARKET ST # 211
LOWELL, MA 01852

RE: 200.1 MARKET ST #S33

TRS CANAL PLACE NOMINEE TRUST
MCNIFF JOSEPH H TRUSTEE
11 COLONIAL DR
CHELMSFORD, MA 01824

RE: 200.1 MARKET ST #S34

TRS B L & A PAGE FAMILY TRUST
PAGE BARABARA C TRUSTEE
200 MARKET ST UNIT 601
LOWELL, MA 01852

RE: 200.1 MARKET ST #S35

TRS CANAL PLACE TRUST
GRAHAM HOWARD F TRUSTEE
572 BOSTON RD
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #S36

TRS CANAL PLACE TRUST
GRAHAM HOWARD F TRUSTEE
572 BOSTON RD
BILLERICA, MA 01821

RE: 200.1 MARKET ST #S37

WONG LESLIE MANWAH
200.1 MARKET ST 305
LOWELL, MA 01852

RE: 200.1 MARKET ST #S38

CHISHOLM ELIZABETH
200.1 MARKET ST UNIT 516
LOWELL, MA 01852

RE: 200.1 MARKET ST #S39

MAY GEORGETTE S
85 VERNON ST
LOWELL, MA 01850

RE: 200.1 MARKET ST #S4

CALAS OLIVIER JR
200 MARKET ST UNIT 511
LOWELL, MA 01852

RE: 200.1 MARKET ST #S40

DEMERS PATRICIA A
200.1 MARKET ST UNIT 417
LOWELL, MA 01852

RE: 200.1 MARKET ST #S41

ALLEN GEORGE T JR
572 BOSTON RD
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #S42

TRS UNITED REALTY TRUST
MCDERMOTT FRANK S JR TRUSTEE
200 MARKET ST UNIT 409
LOWELL, MA 01852

RE: 200.1 MARKET ST #S43

BOUCHARD ALFRED
BOUCHARD LIBBY
200 MARKET ST UNIT 410
LOWELL, MA 01852

RE: 200.1 MARKET ST #S44

COGAN ROBERT J
200.1 MARKET ST UNIT 508
LOWELL, MA 01852

RE: 200.1 MARKET ST #S45

ALLEN GEORGE T JR
572 BOSTON RD
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #S47

STARRATT WILLIAM C
STARRATT CHRISTINE A
200.1 MARKET ST UNIT 308
LOWELL, MA 01852

RE: 200.1 MARKET ST #S49

CELIMLI OSMAN D
KIRK HEATHER M
17 WILDEWOOD DR
LYNNFIELD, MA 01940

RE: 200.1 MARKET ST #S50

TRS CANAL PLACE TRUST
GRAHAM HOWARD F TRUSTEE
572 BOSTON RD
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #S52

TRS CANAL PLACE TRUST
GRAHAM HOWARD F TRUSTEE
572 BOSTON RD
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #S7

TRS CANAL PLACE TRUST
GRAHAM HOWARD F TRUSTEE
572 BOSTON RD
BILLERICA, MA 01821-3738

RE: 200.1 MARKET ST #S9

HARIHAR JAY A
200 MARKET ST UNIT 113
LOWELL, MA 01852

RE: 200.1 MARKET ST #S46

NACOPOULOS ALEXANDROS
200 MARKET ST UNIT 512
LOWELL, MA 01852

RE: 200.1 MARKET ST #S48

MONTAGUE CURTIS W
200 MARKET ST UNIT 514
LOWELL, MA 01852-1800

RE: 200.1 MARKET ST #S5

TRS JOINT REVOCABLE TRUST AGREEMENT
PEARL DANIEL & PEARL BARBARA C TRUSTEE
200.1 MARKET ST UNIT 411
LOWELL, MA 01852

RE: 200.1 MARKET ST #S51

BIRRELL NORMAN KIRK
BIRRELL SUSAN M
200 MARKET ST UNIT 609
LOWELL, MA 01852

RE: 200.1 MARKET ST #S6

TRS JOINT REVOCABLE TRUST AGREEMENT
PEARL DANIEL & PEARL BARBARA C TRUSTEE
200.1 MARKET ST UNIT 411
LOWELL, MA 01852

RE: 200.1 MARKET ST #S8

DRAKE JOHN M
DRAKE SUSAN M
200.1 MARKET ST UNIT 111
LOWELL, MA 01852

RE: 246.1 MARKET ST

BOOTT MILLS
9 CENTRAL ST FL 6TH
LOWELL, MA 01852-1930

RE: 246 MARKET ST

MARKET MILL ASSOCIATES
C/O PEABODY PROPERTIES INC
536 GRANITE ST
BRAintree, MA 02184-3952

RE: 256 MARKET ST

MARKET MILL ASSOCIATES
C/O PEABODY PROPERTIES INC
536 GRANITE ST
BRAintree, MA 02184

RE: 256.3 MARKET ST

UNITED STATES OF AMERICA
LOWELL NATIONAL HISTORICAL PARK
67 KIRK ST
LOWELL, MA 01852

RE: 256.3 MARKET ST #3002

TRS J&J FAMILY TRUST
CLANCEY JOHN G TRUSTEE
14 WINSOR RD
BILLERICA, MA 01821

RE: 256.3 MARKET ST #3004

BALL JACQUELINE
PO BOX 9351
LOWELL, MA 01853

RE: 256.3 MARKET ST #3006

VERHOFSTAD JOOST
200 MARKET ST UNIT 3006
LOWELL, MA 01852

RE: 256.3 MARKET ST #3007

AUSTIN MARY K
256.3 MARKET ST #3007
LOWELL, MA 01852

RE: 256.3 MARKET ST #3008

VALENCIA AMPARO
VALENCIA GUILLERMO
200 MARKET ST UNIT 3008
LOWELL, MA 01852

RE: 256.3 MARKET ST #3009

TRS CJB REALTY TRUST
RILEY SEAN M TRUSTEE
PO BOX 2481
LOWELL, MA 01852

RE: 256.3 MARKET ST #3010

BIGGIOTORRES JOSE M
200 MARKET ST UNIT 3010
LOWELL, MA 01852

RE: 256.3 MARKET ST #3011

SCIUTO COREY P
200 MARKET ST UNIT 3011
LOWELL, MA 01852

RE: 256.3 MARKET ST #3012

LAFLEUR MICHAEL A
256.3 MARKET ST #3012
LOWELL, MA 01852

RE: 256.3 MARKET ST #3013

KINGMAN JULIA M
200-256 MARKET ST UNIT 3013
LOWELL, MA 01852

RE: 256.3 MARKET ST #3014

D'AUTEUIL MICHELLE
200 MARKET ST UNIT 3014
LOWELL, MA 01852

RE: 256.3 MARKET ST #3101

LEMAY CHRISTINE A
14 LONDONDERRY LN
BELFAST, ME 04915

RE: 256.3 MARKET ST #3102

CHRISTAKOS CATHERINE
256.3 MARKET ST UNIT 3102
LOWELL, MA 01852

RE: 256.3 MARKET ST #3103

CURRAN JOSHUA
200 MARKET ST UNIT 3103
LOWELL, MA 01852

RE: 256.3 MARKET ST #3104

DEROMA CHRISTOPHER
200 MARKET ST UNIT 3104
LOWELL, MA 01852

RE: 256.3 MARKET ST #3105

TRS NANCY LAPOINTE-MORRISON TRUST THE
LAPOINTE-MORRISON NANCY E TRUSTEE
75 BONNIES WAY
HAMPSTEAD, NH 03841

RE: 256.3 MARKET ST #3106

VERHOFSTAND JOOST
1 WOOD ST
PELHAM, NH 03076

RE: 256.3 MARKET ST #3107

HICKS RICHARD
3534 PENNY LN
PALM SPRINGS, CA 92262

RE: 256.3 MARKET ST #3108

RAMIREZ GLORIA E
200 MARKET ST UNIT 3108
LOWELL, MA 01852

RE: 256.3 MARKET ST #3109

TRS HEALEY FAMILY REVOCABLE TRUST
HEALEY DAVID T & HEALEY CAMILLE TRUSTEE
20 PATRIDGE LN
LYNNFIELD, MA 01940

RE: 256.3 MARKET ST #3110

LUONGO KEVIN
75 ROBBINS ST
ACTON, MA 01720

RE: 256.3 MARKET ST #3111

JOHNSON CYNTHIA ELAINE
200 MARKET ST UNIT 3111
LOWELL, MA 01852

RE: 256.3 MARKET ST #3112

SANTOS MICHAEL R
200 MARKET ST UNIT 3112
LOWELL, MA 01852

RE: 256.3 MARKET ST #3113

OUELLETTE MICHELLE R
256.3 MARKET ST #3113
LOWELL, MA 01852

RE: 256.3 MARKET ST #3114

HAYES MARTIN E
MORRIS ANTOINETTE N
200 MARKET ST UNIT 3114
LOWELL, MA 01852

RE: 256.3 MARKET ST #3115

GLYNN MARTHA
200 MARKET ST UNIT 3115
LOWELL, MA 01852

RE: 256.3 MARKET ST #3116

MILLS ELAINE C
200 MARKET ST UNIT 4504
LOWELL, MA 01852

RE: 256.3 MARKET ST #3117

LEONARD RICHARD F
200 MARKET ST UNIT 3117
LOWELL, MA 01852

RE: 256.3 MARKET ST #3201

DUQUE PATRICIA A
200 MARKET ST # 3201
LOWELL, MA 01852

RE: 256.3 MARKET ST #3202

SULLIVAN CAROL
162 PARKSIDE DR
ANNVILLE, PA 17003

RE: 256.3 MARKET ST #3203

LANTAGNE DAVID
128 WARREN ST #15
LOWELL, MA 01852

RE: 256.3 MARKET ST #3204

BURGE ROBERT S
C/O MIDDLESEX REALTY TRUST
PO BOX 134
LEXINGTON, MA 02420

RE: 256.3 MARKET ST #3205

MA WAYNE
ONE OTIS PL #3
BOSTON, MA 02108

RE: 256.3 MARKET ST #3206

COHN MARK M
COHN MARTHA M
200 MARKET ST UNIT 3206
LOWELL, MA 01852

RE: 256.3 MARKET ST #3207

MCCARTHY RYAN S
200 MARKET ST UNIT 3207
LOWELL, MA 01852

RE: 256.3 MARKET ST #3208

OREOL TECHNOLOGY LLC
10 ERLIN RD
CHELMSFORD, MA 01824

RE: 256.3 MARKET ST #3210

DEMAIO MICHELLE
11 STONEY BROOK RD
WESTFORD, MA 01886

RE: 256.3 MARKET ST #3211

AGBO VICTORIA
558 WILDER ST
LOWELL, MA 01851

RE: 256.3 MARKET ST #3212

MALONEY-MORRILL KATHLEEN A
125 MT VERNON ST UNIT C
LOWELL, MA 01854

RE: 256.3 MARKET ST #3213

O'BRIEN JUSTIN D
200 MARKET ST UNIT 3213
LOWELL, MA 01852

RE: 256.3 MARKET ST #3214

WONG WALLACE K
WONG HELEN C
3 BOYLSTON LN #3
LOWELL, MA 01852

RE: 256.3 MARKET ST #3215

MATERAZZO PAUL T
25 BARBARA LN
MEDFORD, MA 02155

RE: 256.3 MARKET ST #3216

DORRINGTON BRIAN JR
200 MARKET ST UNIT 3216
LOWELL, MA 01852

RE: 256.3 MARKET ST #3301

WEYMOUTH ROBERT B
200 MARKET ST UNIT 3301
LOWELL, MA 01852

RE: 256.3 MARKET ST #3302

MORANGE VICTOR O
256.3 MARKET ST #3302
LOWELL, MA 01852

RE: 256.3 MARKET ST #3303

RAGUCCI ROBERT
1 CAVEY CIRCLE UNIT 309
REVERE, MA 02151

RE: 256.3 MARKET ST #3304

COTO CLAUDETTE J
200 MARKET ST UNIT 3304
LOWELL, MA 01852

RE: 256.3 MARKET ST #3305

HOMEN JAMIE
200 MARKET ST UNIT 3305
LOWELL, MA 01852

RE: 256.3 MARKET ST #3306

DONOVAN MARY
124 VAN GREENBY RD
LOWELL, MA 01851

RE: 256.3 MARKET ST #3307

CASSIDY ELLEN M
200 MARKET ST UNIT 3307
LOWELL, MA 01852

RE: 256.3 MARKET ST #3308

BIBEAU STEVEN P
200 MARKET ST UNIT 3308
LOWELL, MA 01852

RE: 256.3 MARKET ST #3310

DOWNEY ANDREW
136 A ST
LOWELL, MA 01851

RE: 256.3 MARKET ST #3311

MORNEAU DANIEL P
200 MARKET ST UNIT 3311
LOWELL, MA 01852

RE: 256.3 MARKET ST #3312

MURPHY JOHN J
MURPHY AMANDA A
200 MARKET ST UNIT 3312
LOWELL, MA 01852

RE: 256.3 MARKET ST #3314

DRINKWATER JOHN M
256.3 MARKET ST #3314
LOWELL, MA 01852

RE: 256.3 MARKET ST #3316

DENNE KRISTIN
200 MARKET ST UNIT 3316
LOWELL, MA 01852

RE: 256.3 MARKET ST #3402

ALPHEN PAUL C
200 MARKET ST UNIT 3402
LOWELL, MA 01852

RE: 256.3 MARKET ST #3404

FLAGG KRISTI L
200 MARKET ST UNIT 3404
LOWELL, MA 01852

RE: 256.3 MARKET ST #3406

WESTGATE JASON C
WESTGATE KEITH A
200 MARKET ST #3406
LOWELL, MA 01852

RE: 256.3 MARKET ST #3408

MARSHALL SARAH
543 HEMINGWAY DR
HOCKESSIN, DE 19707

RE: 256.3 MARKET ST #3313

DUBE DONNA MARIE
200 MARKET ST UNIT 3313
LOWELL, MA 01852

RE: 256.3 MARKET ST #3315

CROCE PHYLLIS
116 MERRIMACK MEADOW LN
TEWKSBURY, MA 01876

RE: 256.3 MARKET ST #3401

CONSALVO JOSEPH M
CONSALVO MARY T
200 MARKET ST UNIT 3401
LOWELL, MA 01852

RE: 256.3 MARKET ST #3403

MIDDLESEX HOLDINGS LLC
C/O HERITAGE PROPERTIES
1201 WESTFORD ST
LOWELL, MA 01851

RE: 256.3 MARKET ST #3405

LONDON MATTHEW P
105 HOPKINS ST APT 305
WAKEFIELD, MA 01880

RE: 256.3 MARKET ST #3407

KANE ROGER K JR
C/O STOW WOODLANDS LLC
PO BOX 620-636
NEWTON LOWER FALLS, MA 02462

RE: 256.3 MARKET ST #3409

CHIANG ERIC J
200 MARKET ST UNIT 3409
LOWELL, MA 01852

RE: 256.3 MARKET ST #3410

GIL CLARA M
256.3 MARKET ST #3410
LOWELL, MA 01852

RE: 256.3 MARKET ST #3412

BOCK MICHAEL TRYON
200 MARKET ST UNIT 3412
LOWELL, MA 01852

RE: 256.3 MARKET ST #3414

CARNEIRO LEAH R
200 MARKET ST UNIT 3414
LOWELL, MA 01852

RE: 256.3 MARKET ST #3502

O'RIORDAN MARTIN J
25 LINCOLN ST
FRAMINGHAM, MA 01702

RE: 256.3 MARKET ST #3504

KERNS JARRID W
200 MARKET ST UNIT 3504
LOWELL, MA 01852

RE: 256.3 MARKET ST #3506

LARKIN THOMAS J JR
200 MARKET ST UNIT 3506
LOWELL, MA 01852

RE: 256.3 MARKET ST #3508

GRAHAM DANIELLE
200 MARKET ST UNIT 3508
LOWELL, MA 01852

RE: 256.3 MARKET ST #3411

LEE CHIT SANG
200 MARKET ST UNIT 3411
LOWELL, MA 01852

RE: 256.3 MARKET ST #3413

ROCHA ADRIANO DEOLIVEIRA
256 MARKET ST UNIT 3413
LOWELL, MA 01852

RE: 256.3 MARKET ST #3501

KOROBKIN MATTHEW
200 MARKET ST UNIT 3501
LOWELL, MA 01852

RE: 256.3 MARKET ST #3503

CURTIS JOHN T
200 MARKET ST UNIT 3503
LOWELL, MA 01852

RE: 256.3 MARKET ST #3505

CJB REALTY TRUST
PO BOX 2481
LOWELL, MA 01853

RE: 256.3 MARKET ST #3507

YOUNG RUSSELL
38 HIGHWOOD LN
IPSWICH, MA 01938

RE: 256.3 MARKET ST #3509

LEMAY CHRISTOPHER
MARTIN JAMES J III
200 MARKET ST UNIT 3509
LOWELL, MA 01852

RE: 256.3 MARKET ST #3510

SINIAWSKI BRENT M
6 BLAISDELL RD
WESTFORD, MA 01886

RE: 256.3 MARKET ST #3512

BENNETT JAMES G III
200 MARKET ST UNIT 3512
LOWELL, MA 01852

RE: 256.3 MARKET ST #3514

DUQUETTE DAVID
CARDACI JAMES
200 MARKET ST UNIT 3514
LOWELL, MA 01852

RE: 256.3 MARKET ST #4004

FREDDURA PAUL
256.3 MARKET ST #4004
LOWELL, MA 01852

RE: 256.3 MARKET ST #4102

SHANAHAN KELLIE
200 MARKET ST UNIT 4102
LOWELL, MA 01852

RE: 256.3 MARKET ST #4104

FORREST KRISTY A
9 MILES RD
TEWKSBURY, MA 01876

RE: 256.3 MARKET ST #4201

SMITH BRIAN F
BRUNELLE JAMES T
200 MARKET ST UNIT 4201
LOWELL, MA 01852

RE: 256.3 MARKET ST #3511

BANH LONG G
200 MARKET ST UNIT 3511
LOWELL, MA 01852

RE: 256.3 MARKET ST #3513

SHEA PATRICK R
200 MARKET ST #3513
LOWELL, MA 01852

RE: 256.3 MARKET ST #4002

PENDLETON BRIAN J
1661 WORTHINGTON RD STE 100
W PALM BEACH, FL 33409

RE: 256.3 MARKET ST #4101

PROPERT KEITH W
200 MARKET ST UNIT 4101
LOWELL, MA 01852

RE: 256.3 MARKET ST #4103

GOGUEN TIMOTHY R
200 MARKET ST #4103
LOWELL, MA 01852

RE: 256.3 MARKET ST #4105

LAMOUREUX MARC M
200 MARKET ST UNIT 4105
LOWELL, MA 01852

RE: 256.3 MARKET ST #4202

STREIN DALE F
CHAVES PATRICIA C
200 MARKET ST UNIT 4202
LOWELL, MA 01852

RE: 256.3 MARKET ST #4203

TAVILLA ANTHONY
TAVILLA PAMELA
66 OLD STOW RD
CONCORD , MA 01742

RE: 256.3 MARKET ST #4204

TAVILLA ANTHONY
TAVILLA PAMELA
66 OLD STOW RD
CONCORD , MA 01742

RE: 256.3 MARKET ST #4205

BURNS DAVID J
200 MARKET ST UNIT 4205
LOWELL, MA 01852

RE: 256.3 MARKET ST #4301

MARCIN KATHLEEN M
200 MARKET ST UNIT 4301
LOWELL, MA 01852

RE: 256.3 MARKET ST #4302

JARACZ SCOTT T
MCNEIL DAVID A
200 MARKET ST UNIT 4302
LOWELL, MA 01852

RE: 256.3 MARKET ST #4303

BANNWORTH THOMAS M
GOSSELIN LYNNE M
90 HAWTHORNE DR
NEW PROVIDENCE, NJ 07974

RE: 256.3 MARKET ST #4304

PEDULLA PETER D
200 MARKET ST #220
LOWELL, MA 01852

RE: 256.3 MARKET ST #4305

SHPITALNIK-BELOT VALERY
VEGLIA MARK
200 MARKET ST UNIT 4305
LOWELL, MA 01852

RE: 256.3 MARKET ST #4401

TRS 200 MARKET STREET REALTY TRUST
LEGAULT NASRIN M TRUSTEE
12 PHILLIPS ST
LOWELL, MA 01854

RE: 256.3 MARKET ST #4402

GLAUDE NATALIE
GLAUDE RONALD P
200 MARKET ST UNIT 4402
LOWELL, MA 01852

RE: 256.3 MARKET ST #4403

ADAMS BETSY L
200 MARKET ST UNIT 4403
LOWELL, MA 01852

RE: 256.3 MARKET ST #4404

MIDDLESEX HOLDINGS LLC
1201 WESTFORD ST
LOWELL, MA 01851

RE: 256.3 MARKET ST #4405

KOLAKOWSKI JOHN
KOLAKOWSKI JESSICA
85 SAYLES ST
LOWELL, MA 01851

RE: 256.3 MARKET ST #4501

PEOU YENG
PEOU VOUCH
35 WIGHT ST
WALTHAM, MA 02452

RE: 256.3 MARKET ST #4502

ABDELNABY EMAD
HAMMOUD-ABDELNABY SOMMER
200 MARKET ST UNIT 4502
LOWELL, MA 01852

RE: 256.3 MARKET ST #4504

GAVIN JULIA K
200 MARKET ST UNIT 4504
LOWELL, MA 01852

RE: 256.5 MARKET ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 256.7 MARKET ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 314 MARKET ST

TRS 302 MARKET STREET REALTY T
HARMON SEAN TRUSTEE
314 MARKET ST
LOWELL, MA 01852-1208

RE: 217 WORTHEN ST

LOWELL ART ASSOCIATION
243 WORTHEN ST
LOWELL, MA 01852

RE: 243 WORTHEN ST

LOWELL ART ASSOCIATION INC
243 WORTHEN ST
LOWELL, MA 01852

RE: 256.3 MARKET ST #4503

DELGENIO MELODY S
200 MARKET ST UNIT 4503
LOWELL, MA 01852

RE: 256.3 MARKET ST #4505

YEUNG PETER
YEUNG MEI CHANG
281 SOUTH RD
BEDFORD, MA 01730

RE: 256.6 MARKET ST

CITY OF LOWELL
375 MERRIMACK ST
LOWELL, MA 01852

RE: 256.8 MARKET ST

UNITED STATES OF AMERICA
LOWELL NATIONAL HISTORICAL PARK
67 KIRK ST
LOWELL, MA 01852

RE: 200 WORTHEN ST

GIRLS INC OF GREATER LOWELL
C/O CAROL DUNCAN
220 WORTHEN ST
LOWELL, MA 01852

RE: 228 WORTHEN ST

GREEK AMERICAN LEGION POST #1
C/O CHARLES BOUTSELIS - TREASURER
228 WORTHEN ST
LOWELL, MA 01854

RE: 250 WORTHEN ST

MASS ELECTRIC CO
C/O PROPERTY TAX DEPT
40 SYLVAN RD
WALTHAM, MA 02451-1120

RE: 259 WORTHEN ST

HELLENIC ORTHODOX CHURCH OF LOWELL
62 LEWIS ST
LOWELL, MA 01854

RE: 259.1 WORTHEN ST

HELLENIC ORTHODOX CHURCH OF LOWELL
62 LEWIS ST
LOWELL, MA 01854

RE: 259.2 WORTHEN ST

HELLENIC ORTHODOX CHURCH OF LOWELL
62 LEWIS ST
LOWELL, MA 01854

RE: 266 WORTHEN ST

HELLENIC ORTHODOX CHURCH OF LOWELL
C/O BILL KAFKAS - PRESIDENT
41 BROADWAY ST
LOWELL, MA 01854

RE: 284 WORTHEN ST

HELLENIC ORTHODOX CHURCH OF LOWELL
HOLY TRINITY INC
62 LEWIS ST
LOWELL, MA 01854-4213

RE: 475 WORTHEN ST

MUSEUM OF AMERICAN TEXTILE
HISTORY INC
491 DUTTON STREET
LOWELL, MA 01854



Attachment C – Stormwater Report

Stormwater Report

This Stormwater Report has been prepared to demonstrate compliance with the Massachusetts Stormwater Management Standards in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00) and Water Quality Certification Regulations (314 CMR 9.00). This report also demonstrates compliance with the City of Lowell bylaws for stormwater design and mitigation.

Project Description

The proposed 4 acre project site consists of realignment and extension of portions of existing Canal Street and Broadway Street and redevelopment of the an existing paved parking area and former mill building location in Lowell, Massachusetts. The Site is located in the Hamilton Canal District, west of downtown Lowell (see Figure 1). The Site is a peninsula bounded by Merrimack Canal to the northwest, the Pawtucket Canal to the south and southwest and existing former mill buildings to the east

The Site is presently occupied by existing paved roadways, parking areas and gravel lot of demolished former mill building. The gravel lot contains stockpiles of soils, boulders and other debris. The project is redevelopment pursuant to the Massachusetts Stormwater Management Standards as the project is an existing paved road, paved parking area and former mill building site. Most of the existing paved areas will be repaved with asphalt and/ or concrete roadways and sidewalks. The roadway and parcel developments will have sporadic tree plantings and landscaped areas. The remaining site is slated for future development.

The proposed project area is within a fully developed portion of downtown Lowell. The property is bordered by the Merrimack and Pawtucket Canals, public roadways and redeveloped mill buildings. Other lots and mill buildings are slated for development as part of the Lowell's Urban Revitalization Plan. The urban well developed nature of the surrounding land use and impacted existing soils precluded large scale storm water management features and infiltration.

The proposed roadway realignment and extension will include the installation of a new stormwater collection system. The stormwater system will include hooded deep sump catch basins and vortex units which will provide 80% suspended solid removal. Also proposed is a new sanitary sewer system. This will eliminate the possibility of any illicit sanitary connections from the area. The new drainage systems will outfall through an existing abandoned mill race outfall to the Lower Pawtucket Canal.

Existing Drainage Conditions

Under existing conditions, the project site was fully developed by mill buildings and impervious roof areas as recently as 2005. Currently the site consists of existing paved roadways, paved parking areas and a compacted gravel lot of the demolished former mill building. The gravel lot contains stockpiles of soils, boulders and other debris. The historical drainage patterns and drain systems of the former mill building cannot be determined. The current site configuration has a closed drainage system for the existing paved parking areas. These parking areas are to remain with no changes to the drainage patterns or systems. The runoff pattern from the roadways and gravel lot of the former mill building run overland in a north to south direction with final flows entering the Lower Pawtucket Canal.

The existing condition drainage areas and flow patterns of the project site are shown in Figure 2.

Proposed Drainage Conditions

The project, which will include the construction of realignment and extension of portions of existing Canal Street and Broadway Street and redevelopment of the remaining parking area and mill demolition property. The realigned and extended streets will be renamed to 'F' and "G" Streets. Portions of existing drainage and grading patterns will be maintained. However; a new drainage collection system will be installed within the new roadways. The new system has been designed to treat the half inch Water Quality Volume and will utilize hooded deep sump basins and vortex water quality units to remove suspended solids.

The proposed drainage areas and flow patterns are shown in Figure 3.

A minor increase in peak rate runoff is anticipated due to improved runoff catchment proposed by the redevelopment of this previously mostly impervious site.

The site complies fully with the total suspended solids removal requirement of the Stormwater Management Policy. The calculated TSS removal rates for discharges from the site are shown on the Worksheets that are included in the Appendix of this report.

Hydraulic Analysis

The new drainage pipe system will be designed to accommodate a 25 year storm event, in accordance with the City of Lowell's by-laws. The rainfall intensity data that was used for the design was produced by the National Oceanic & Atmospheric Administration (NOAA) using precipitation frequency data.

Drainage pipes were sized using Manning's Equation for full-flow capacity and the Rational Method. Pipe sizing calculations are included in the Appendix of this report.

Figure 1: Site Locus Map

Project Site (2005)

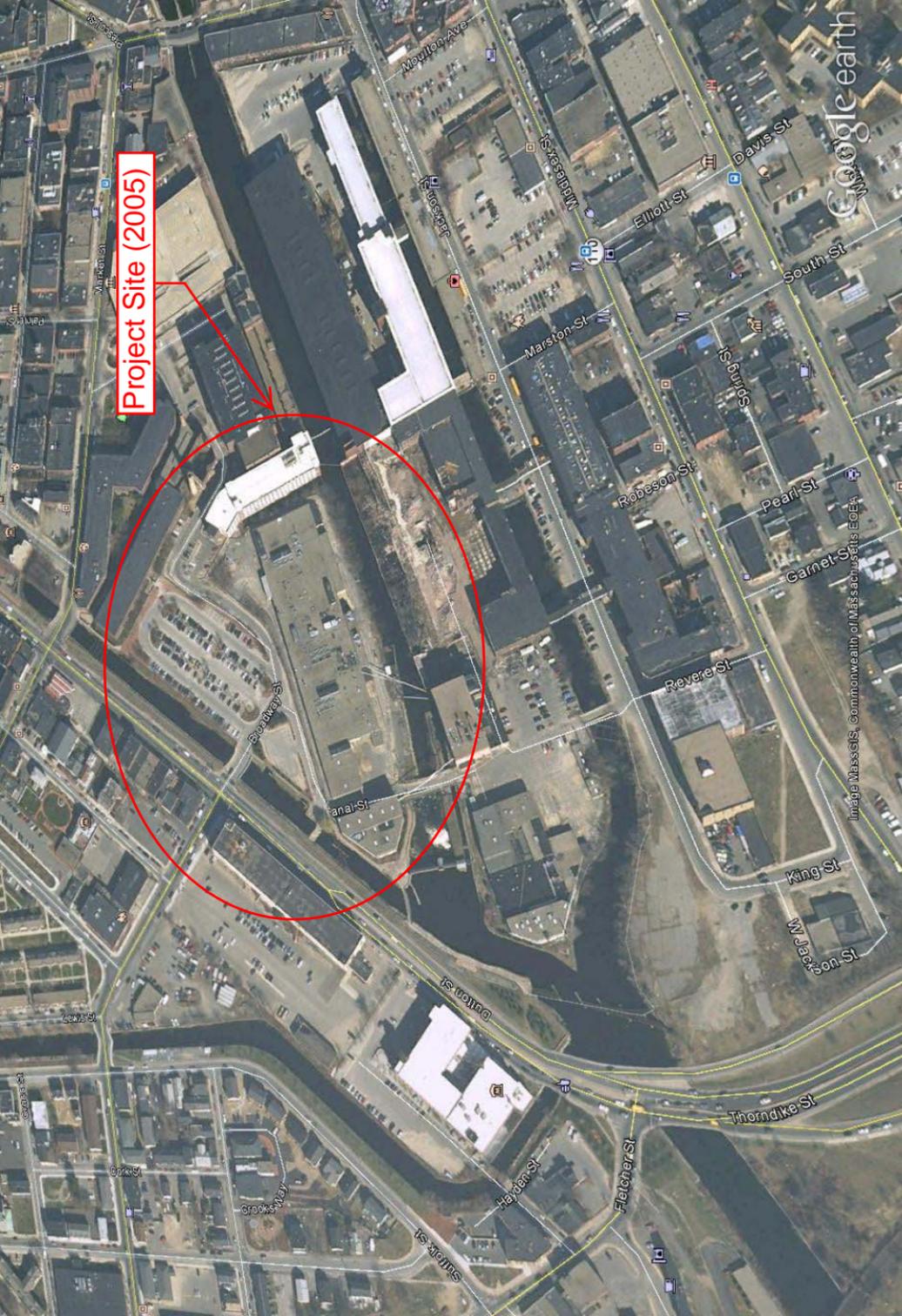
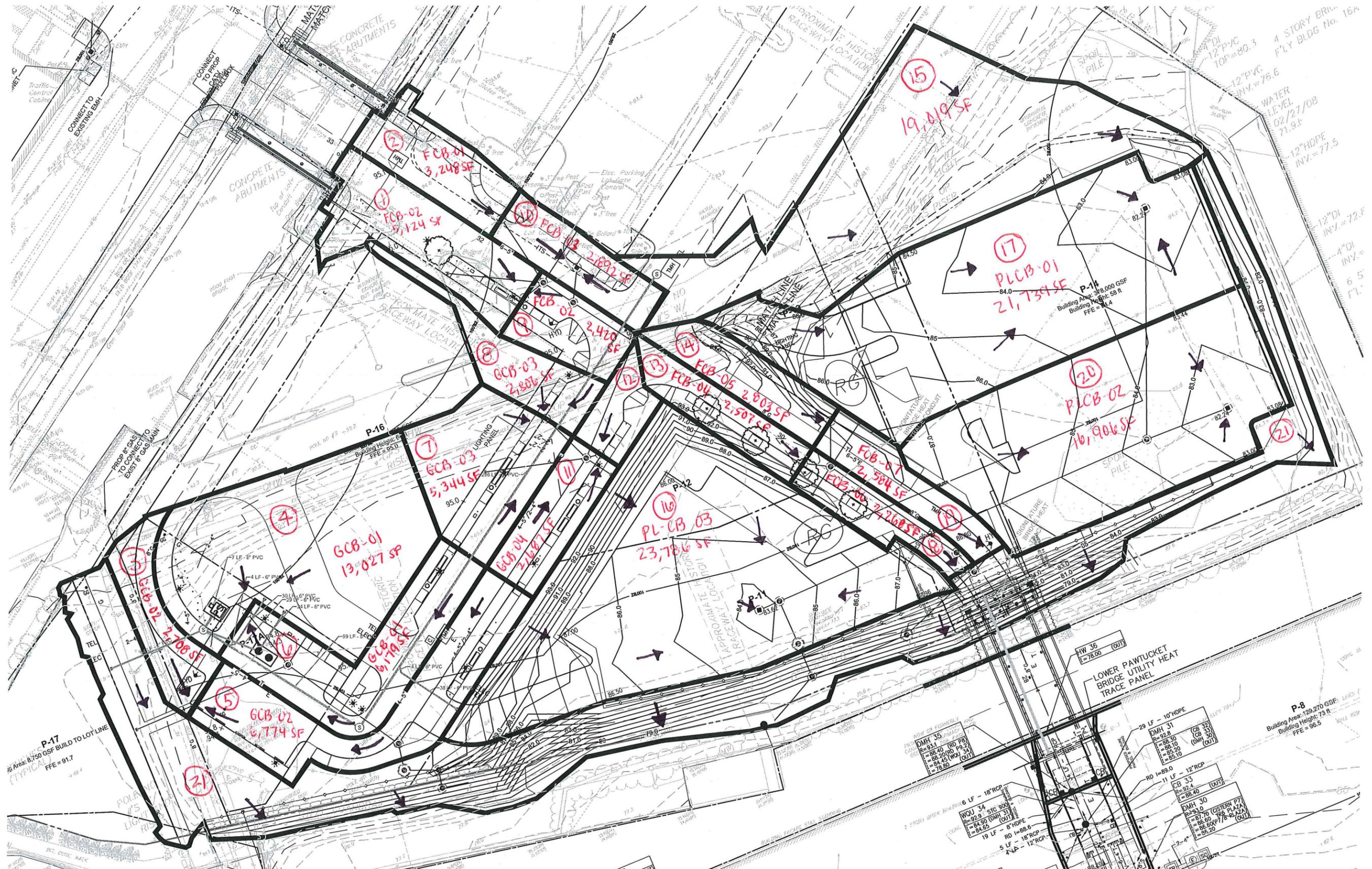


Figure 2: Existing Drainage Areas

Figure 3: Proposed Drainage Areas



PROPOSED CONDITIONS

Regulatory Compliance

The purpose of the Stormwater Management Plan (the Plan) is to provide long-term protection of natural resources in and around the Site. This is achieved by implementing water quality and quantity control measures designed to decrease the amount of pollutants discharged from the Site.

The following sections describe the regulations pertinent to stormwater management and the specific components of the Plan to be implemented.

Massachusetts Department of Environmental Protection (DEP) - Stormwater Management Standards

Standard 1: No New Untreated Discharges or Erosion to Wetlands

No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The Project has been designed to fully comply with Standard 1.

All stormwater that will be discharged by the project will be collected and treated by routing through hooded and deep sump catch basins as well as vortex units to remove 80% of total suspended solids. No untreated stormwater runoff will be discharged by the project.

Standard 2: Peak Rate Attenuation

Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

The Project is seeking relief under Stormwater Management Standard 7 and as such complies with Standard 2 to the maximum extent practicable.

The project is a redevelopment of a former roadway, parking and industrial buildings area. The post construction site runoff rates are anticipated to be only slightly elevated from existing conditions due to improved runoff catchment.

Standard 3: Stormwater Recharge

Loss of annual recharge to ground water shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

The Project is seeking relief under Stormwater Management Standard 7 and as such complies with Standard 3 to the maximum extent practicable.

The limited right-of-way and developed nature of the surrounding land uses limit the potential for infiltration facilities in the project. Furthermore, the site contains impacted soils and infiltration of stormwater is not recommended.

Standard 4: Water Quality

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:

- *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;*
- *Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*
- *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

The Project has been designed to fully comply with Standard 4.

The proposed stormwater management system implements a treatment train of BMPs that has been designed to meet or exceed the 80% TSS removal rate. This will be accomplished with the use of deep sump catch basins in tandem with vortex treatment units. Maintenance of the basins and the vortex units will be completed by the City of Lowell in accordance with their standard roadway maintenance practices.

Computations and TSS removal worksheets are included in the Appendix of this report.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow,

snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

The proposed project development and future use is not identified as a Land Use of Higher Potential Pollutant Load.

Standard 6: Critical Areas

Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area, if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply

There will be no discharges to Critical Areas as a result of this project.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable

A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The Project qualifies a redevelopment project and has been designed to comply with Stormwater Management Standards 2-3 to the maximum extent practicable. Standards 1 & 5-10 have been met completely.

Refer directly to each Standard for applicable supporting information.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls

A plan to control construction related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

The Project will disturb greater than 1 acre of plan and is therefore required to obtain coverage under the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit. As required under this permit, a Stormwater Pollution Prevention Plan (SWPPP) will be developed and submitted before land disturbance begins.

Recommended construction period pollution prevention and erosion and sedimentation controls are illustrated on the project plans.

Standard 9: Operation and Maintenance Plan

A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

The City of Lowell has developed a long-term Operations and Maintenance Plan for the roadway facilities in the City. Operation and maintenance of this portion of F and G Streets will be conducted in compliance with the existing maintenance plan.

Standard 10: Prohibition of Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

Sanitary sewer and storm drainage structures which were part of the previous development on this site are to be completely removed during the site redevelopment. The design plans submitted with this report have been designed in full compliance with current standards. An Illicit discharge statement has been included in the appendix of this report.

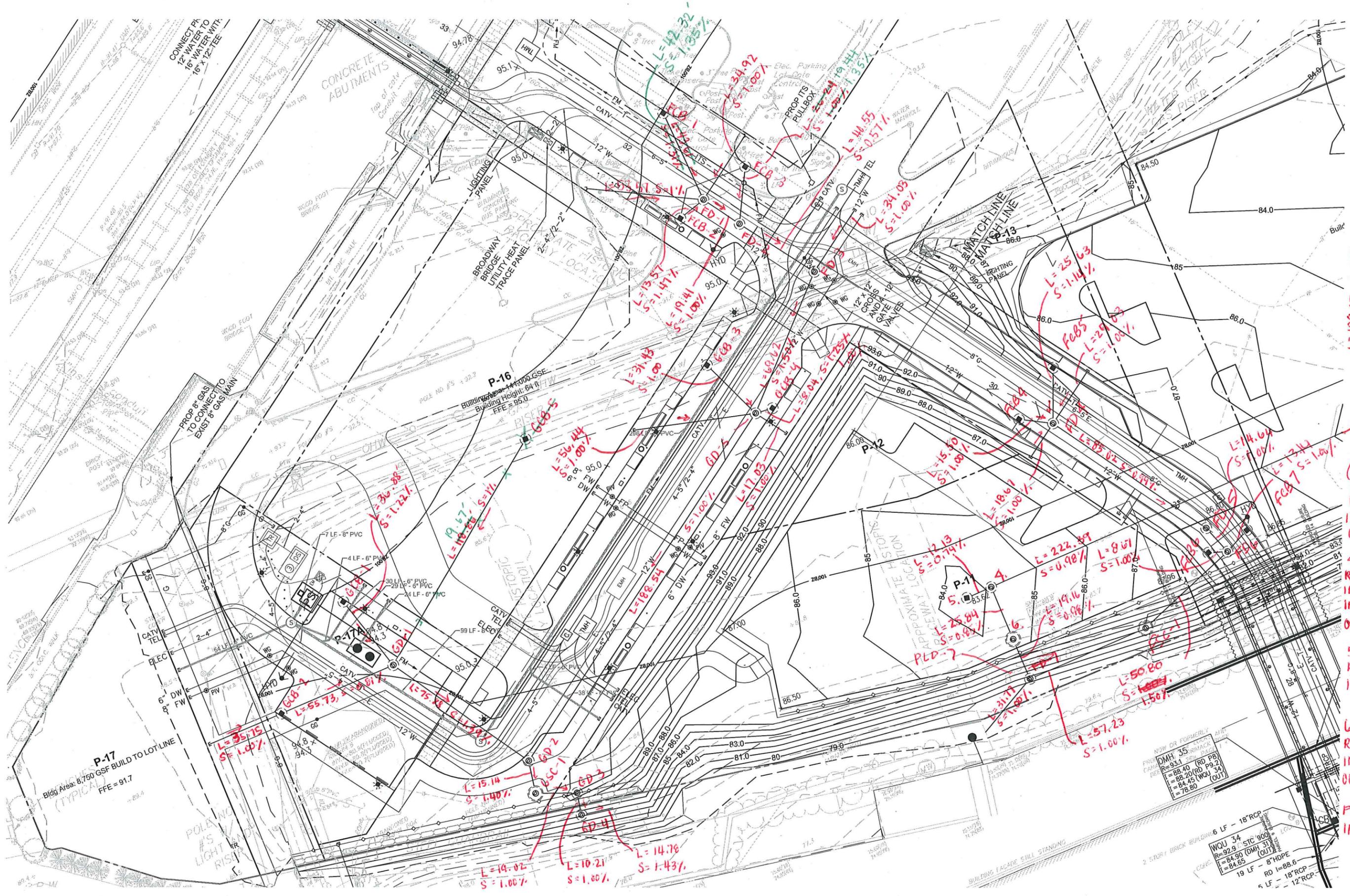
Federal NPDES Construction-Related General Stormwater Permits

The proposed project will result in the disturbance of more than one acre of land and thus requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) by the **site contractor** and **owner** in accordance with the Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System (NPDES) General Permit Program for Stormwater Discharges from Construction Sites. The SWPPP is not included in this report.

Stormwater Report Appendix

- Pipe Sizing & Drainage Area Calculations
- Water Quality & TSS Removal Calculations
- Illicit Discharge Statement
- Checklist for Stormwater Report

PIPE SIZING & DRAINAGE AREA CALCULATIONS



1. RIM=82.42
INV=79.24
2. RIM=82.42
INV=78.24
3. RIM=83.60
INV(1)=77.00
INV(2)=77.80
OUT=74.72
4. RIM=84.11
INV(3)=76.90
INV(5)=79.53
OUT=74.62
5. RIM=83.62
INV=79.62
6. RIM=84.64
INV(4)=74.40
OUT=74.3

PROPOSED DRAINAGE SYSTEM

STREET F

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
FCB-4	CB	29+81.8 10.0 L	89.45		84.00	
FCB-5	CB	29+81.8 18.0 R	89.45		84.00	
FCB-6	CB	28+72.9 10.2 L	83.27		79.27	
FCB-7	CB	28+69.1 9.8 R	84.77		80.77	
FD-4	DMH	29+67.8 3.2 L	88.91	() 83.80 (FCB-4) 83.84 (FCB-5) 83.71 () 83.80	82.77	
FD-5	DMH	28+82.2 3.1 L	85.69	(FD-4) 83.61	82.67	
FD-6	DMH	28+67.3 3.2 L	86.53	(FD-5) 82.53 (FCB-6) 79.18 (FCB-7) 80.64	75.48	
FD-7	DMH	29+12.4 105.6 L	86.50	(FSC-1) 74.04	73.94	
FSC-1	WQU	28+60.0 53.6 L	82.00	(FD-6) 74.72	74.61	STORMCEPTOR

STREET G

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
FCB-1	CB	31+96.4 12.0 R	93.18		89.00	
FCB-2	CB	31+62.1 18.0 L	92.90		88.88	
FCB-3	CB	31+46.8 12.0 R	93.06		88.76	
FD-1	DMH	31+57.9 5.1 L	93.16	(FCB-1) 88.43 (FCB-2) 85.68 () 88.90 () 88.95	88.33	
FD-2	DMH	31+37.9 5.3 L	93.23	(FD-1) 88.13 (FCB-3) 88.50	88.00	
FD-3	DMH	30+97.4 5.0 L	93.59	(FD-2) 87.77 () 88.00	87.67	
GCB-1	CB	53+65.2 29.0 R	89.58		86.06	
GCB-2	CB	53+61.2 29.0 L	89.59	() 86.27	86.06	
GCB-3	CB	50+67.2 18.0 R	92.47		88.47	
GCB-4	CB	50+67.2 18.0 L	92.47		88.47	
GD-1	DMH	53+30.2 17.3 R	90.14	(GCB-2) 85.61 (GCB-1) 85.61 () 85.81	85.31	
GD-2	DMH	52+59.2 13.6 L	92.20	(GD-5) 84.64 (GD-1) 84.26	84.16	DEEP DMH
GD-3	DMH	52+57.3 39.8 L	91.00	(GSC-1) 83.66	78.20	DEEP DMH
GD-4	DMH	52+59.2 48.2 L	84.00	(GD-3) 78.10	78.00	
GD-5	DMH	50+73.4 12.8 L	92.80	(FD-3) 86.63 (GCB-4) 88.39 (GCB-3) 88.16 () 88.87 () 88.66	86.53	
GSC-1	WQU	52+62.9 27.0 L	92.00	(GD-2) 83.95	83.85	STORMCEPTOR

PARKING LOT

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
46	DMH	29+12.4 105.6 L	79.47	(PSC-1) 74.11	73.91	
PCB-3	CB	29+57.1 90.9 L	83.62		79.62	
PLCB-1	CB	29+00.8 212.0 R	82.24		78.24	
PLCB-2	CB	29+59.9 163.7 R	82.24		78.24	
PLD-1	DMH	28+65.6 117.3 R	83.60	(PLCB-1) 77.00 (PLCB-2) 77.80	76.90	
PLD-2	DMH	29+50.5 80.7 L	84.11	(PLD-1) 74.72 (PCB-3) 79.53	74.62	
PSC-1	WQU	29+28.8 94.9 L	84.64	(PLD-2) 74.40	74.30	STORMCEPTOR



Computations

Project _____ Project # _____
 Location _____ Sheet _____ of _____
 Calculated by _____ Date _____
 Checked by _____ Date _____
 Title _____

PROPOSED DRAINAGE AREAS

AREA #	FLOW TO STR #	AREA (SF)
1	FCB-02	5,124
2	FCB-01	3,248
3	GCB-02	2,708
4	GCB-01	13,027
5	GCB-02	6,774
6	GCB-01	6,179
7	GCB-03	5,344
8	GCB-03	2,806
9	FCB-02	2,420
10	FCB-03	2,892
11	GCB-04	2,687
12	GCB-04	1,564
13	FCB-04	2,507
14	FCB-05	2,803
15	FCB-03 CANAL	20,182 19,019
16	PLCB-03	22,585 23,786
17	PLCB-01	20,586 21,739
18	FCB-06	2,268
19	FCB-07	2,584
20	PLCB-02	16,906
21	CANAL	27,541 26,340

FCB-01 = 3,248 SF
 FCB-02 = 5,124 + 2,420 = 7,544 SF
 FCB-03 = 2,892 SF
 FCB-04 = 2,507 SF
 FCB-05 = 2,803 SF
 FCB-06 = 2,268 SF
 FCB-07 = 2,584 SF

 GCB-01 = 13,027 + 6,179 = 19,206 SF
 GCB-02 = 2,708 + 6,774 = 9,482 SF
 GCB-03 = 5,344 + 2,806 = 8,150 SF
 GCB-04 = 2,687 + 1,564 = 4,251 SF

 DLCB-01 = ~~20,580~~ 21,739 SF
 DLCB-02 = 16,906 SF
 DLCB-03 = ~~22,585~~ 23,786 SF

 CANAL = ~~20,182~~ + ~~27,541~~ = ~~47,723~~ SF
 19,019 + 26,340 = 45,359 SF

STRUCTURE		HIGHWAY INFORMATION											WATERSHED AREA						TIME OF CONC. (min.)	BYPASS FLOW (NEXT STRUCT.)	FLOW TO OUTLET (NEXT STRUCT.)	LENGTH OF PIPE TO OUTLET (ft)	FLOW FROM STRUCTURE		
TYPE	NO.	STATION	OFFSET		GUTTER WIDTH	EDGE CURB = 0 BERM = 1	BASELINE ELEV.	SLOPE			RIM ELEVATION	ALLOWABLE SPREAD	IMPERV.	COEFF.	PERV.	COEFF.	PERV.	COEFF.							
			(ft)		(ft)		(ft)	LONG. (ft/ft)	CROSS (ft/ft)	GUTTER (ft/ft)	(ft)	(ft)	(sf)		(sf)		(sf)								
CB	FCB-1	31+96.4	12.00	RT	2.00	0	93.45	0.0094	0.0200	0.0200	93.18	7.5	3,284	0.9	0.00	0.6	0.00	0.3	5	FCB-3	FD-1	43.00	-	-	-
CB	FCB-2	31+62.1	18.00	LT	2.00	0	93.38	-0.0100	0.0200	0.0200	92.90	7.5	7,544	0.9	0.00	0.6	0.00	0.3	5	-	FD-1	14.00	-	-	-
DMH	FD-1	31+57.9	5.10	LT	0.00	0	93.39	-0.0100	0.0200	0.0200	93.16	0	0	0.9	0.00	0.6	0.00	0.3	5	-	FD-2	20.00	FCB-1	FCB-2	-
CB	FCB-3	31+46.8	12.00	RT	2.00	0	93.45	-0.0100	0.0200	0.0200	93.06	7.5	2,892	0.9	0.00	0.6	0.00	0.3	5	-	FD-2	20.00	-	-	-
DMH	FD-2	31+37.9	5.30	LT	0.00	0	93.49	-0.0100	0.0200	0.0200	93.23	0	0	0.9	0.00	0.6	0.00	0.3	5	-	FD-3	41.00	FD-1	FCB-3	-
DMH	FD-3	30+97.4	5.00	LT	0.00	0	93.90	0.0150	0.0200	0.0200	93.59	0	0	0.9	0.00	0.6	0.00	0.3	5	-	GD-5	70.00	FD-2	-	-
CB	GCB-3	50+67.2	18.00	RT	2.00	0	92.83	0.0145	0.0200	0.0200	92.47	7.5	8,150	0.9	0.00	0.6	0.00	0.3	5	-	GD-5	32.00	-	-	-
CB	GCB-4	50+67.2	18.00	LT	2.00	0	92.83	0.0145	0.0200	0.0200	92.47	7.5	4,251	0.9	0.00	0.6	0.00	0.3	5	-	GD-5	8.00	-	-	-
DMH	GD-5	50+73.4	12.80	LT	0.00	0	92.84	0.0145	0.0200	0.0200	92.80	0	0	0.9	0.00	0.6	0.00	0.3	5	-	GD-2	189.00	FD-3	GCB-3	GCB-4
DMH	GD-2	52+59.2	13.60	LT	0.00	0	91.91	-0.0200	0.0200	0.0200	92.20	0	0	0.9	0.00	0.6	0.00	0.3	5	-	GSC-1	15.00	GD-5	GD-1	-
DMH	GSC-1	52+62.9	27.00	LT	0.00	0	91.83	-0.0200	0.0200	0.0200	92.00	0	0	0.9	0.00	0.6	0.00	0.3	5	-	GD-3	19.00	GD-2	-	-
DMH	GD-3	52+57.3	39.80	LT	0.00	0	91.95	-0.0200	0.0200	0.0200	91.00	0	0	0.9	0.00	0.6	0.00	0.3	5	-	GD-4	10.00	GSC-1	-	-
DMH	GD-4	52+59.2	48.20	LT	0.00	0	91.91	-0.0200	0.0200	0.0200	84.00	0	0	0.9	0.00	0.6	0.00	0.3	5	-	OF	15.00	GD-3	-	-
OF	outfall	52+40	50.00	LT	0.00	0	92.92	-0.0200	0.0200	0.0200	78.00	0	0	0.9	0.00	0.6	0.00	0.3	5	-	OUTFALL	OUTFALL	GD-4	-	-
CB	GCB-1	53+65.2	29.00	RT	2.00	0	90.16	0.0146	0.0200	0.0200	89.58	7.5	19,206	0.9	0.00	0.6	0.00	0.3	5	LOW POINT	GD-1	37.00	-	-	-
CB	GCB-2	53+61.2	29.00	LT	2.00	0	90.17	0.0146	0.0200	0.0200	89.59	7.5	9,482	0.9	0.00	0.6	0.00	0.3	5	LOWPOINT	GD-1	56.00	-	-	-
DMH	GD-1	53+30.2	17.30	RT	0.00	0	90.49	-0.0200	0.0200	0.0200	90.14	0	0	0.9	0.00	0.6	0.00	0.3	5	-	GD-2	76.00	GCB-1	GCB-2	-
CB	FCB-4	29+81.8	10.00	LT	2.00	0	89.54	0.0500	0.0200	0.0200	89.45	7.5	2,507	0.9	0.00	0.6	0.00	0.3	5	FCB-6	FD-4	16.00	-	-	-
CB	FCB-5	29+81.8	18.00	RT	2.00	0	89.54	0.0500	0.0200	0.0200	89.45	2	2,803	0.9	0.00	0.6	0.00	0.3	5	FCB-7	FD-4	26.00	-	-	-
DMH	FD-4	29+67.8	3.20	LT	0.00	0	88.87	0.0462	0.0200	0.0200	88.91	0	0	0.9	0.00	0.6	0.00	0.3		-	FD-5	85.00	FCB-4	FCB-5	-
DMH	FD-5	28+82.2	3.10	LT	0.00	0	86.74	0.0200	0.0200	0.0200	85.69	0	0	0.9	0.00	0.6	0.00	0.3		-	FD-6	15.00	FD-4	-	-
DMH	FD-6	28+67.3	3.20	LT	0.00	0	-	-	0.0200	0.0200	86.53	0	0	0.9	0.00	0.6	0.00	0.3		-	FSC-1	51.00	FD-5	FCB-5	FCB-7
CB	FCB-6	28+72.9	10.20	RT	2.00	0	83.74	0.3337	0.0200	0.0200	83.27	2	2,268	0.9	0.00	0.6	0.00	0.3	5	LOW POINT	FD-6	9.00	-	-	-
CB	FCB-7	28+69.1	9.80	LT	2.00	0	83.05	-	0.0200	0.0200	84.77	2	2,584	0.9	0.00	0.6	0.00	0.3	5	LOWPOINT	FD-6	13.00	-	-	-
DMH	FSC-1	28+60.0	53.60	LT	0.00	0	81.96	-	0.0200	0.0200	82.00	0	0	0.9	0.00	0.6	0.00	0.3		-	PD-3	57.00	FD-6	-	-
CB	PLCB-1	29+00.8	212.00	RT	2.00	1	82.24	0.0200	0.0200	0.0200	82.24	4	21,739	0.9	0.00	0.6	0.00	0.3	5	LOW POINT	PD-1	128.00	-	-	-
CB	PLCB-2	28+59.9	163.70	RT	2.00	1	82.24	0.0200	0.0200	0.0200	82.24	4	16,906	0.9	0.00	0.6	0.00	0.3	5	LOW POINT	PD-1	48.00	-	-	-
DMH	PD-1	28+65.6	117.30	RT	0.00	1	83.6	0.0280	0.0200	0.0200	83.75	0	0	0.9	0.00	0.6	0.00	0.3		-	PD-2	222.00	PLCB-1	PLCB-2	-
DMH	PD-2	29+50.5	80.70	LT	0.00	1	84.11	0.0400	0.0200	0.0200	84.11	0	0	0.9	0.00	0.6	0.00	0.3		-	PSC-1	26.00	PD-1	PLCB-3	-
CB	PLCB-3	29+57.1	90.90	LT	2.00	1	83.62	0.0200	0.0200	0.0200	83.62	4	23,786	0.9	0.00	0.6	0.00	0.3	5	LOW POINT	PD-2	12.00	-	-	-
DMH	PSC-1	29+28.8	94.90	LT	2.00	1	84.64	-	0.0200	0.0200	84.64	0	0	0.9	0.00	0.6	0.00	0.3		-	PD-3	19.00	PD-2	-	-
DMH	PD-3	29+12.4	105.60	LT	2.00	1	84.8	-	0.0200	0.0200	84.80	0	0	0.9	0.00	0.6	0.00	0.3		-	OF	32.00	PSC-1	FSC-1	-

STORM DRAIN DESIGN (Massachusetts 2015 - 25 year rainfall intensity rates)

RUN		LOCATION			DRAINAGE AREA				TIME		RUNOFF		FLOW IN PIPE								ELEVATIONS										
From	To	Station	Offset	Struct. Type	Area No./Run	Area Ac	Runoff Coeff., C	Increment CA	Tc	Time In Section	Intensity (In/Hr)	Design Flow	Diam (In.)	Length (Ft.)	Slope (Ft./Ft.)	Manning Coeff.	Capacity (Cfs)	Velocity (Fps)	Depth (Ft.)	Velocity (Fps.)	Head (Ft.)	Upper	Lower	Upper	Lower						
FCB-1	FD-1	31+96.4	RT	4.4.0	I	0.08	0.90	0.07	5.00																						
					P	0.00	0.60	0.00																							
					P	0.00	0.30	0.00																							
					-	-	-	0.00	5.0																						
					-	-	-	0.00	5.0																						
					-	-	-	0.00	5.0																						
FCB-2	FD-1	31+62.1	LT	4.4.0	I	0.17	0.90	0.16	5.00																						
					P	0.00	0.60	0.00																							
					P	0.00	0.30	0.00																							
					-	-	-	0.00	5.0																						
					-	-	-	0.00	5.0																						
					-	-	-	0.00	5.0																						
FD-1	FD-2	31+57.9	LT	4.2.0	I	0.00	0.90	0.00	5.00																						
					P	0.00	0.60	0.00																							
					P	0.00	0.30	0.00																							
					FCB-1	-	-	0.07	5.2																						
					FCB-2	-	-	0.16	5.1																						
					-	-	-	0.00	5.0																						
FCB-3	FD-2	31+46.8	RT	4.4.0	I	0.07	0.90	0.06	5.00																						
					P	0.00	0.60	0.00																							
					P	0.00	0.30	0.00																							
					-	-	-	0.00	5.0																						
					-	-	-	0.00	5.0																						
					-	-	-	0.00	5.0																						
FD-2	FD-3	31+37.9	LT	4.2.0	I	0.00	0.90	0.00	5.00																						
					P	0.00	0.60	0.00																							
					P	0.00	0.30	0.00																							
					FD-1	-	-	0.22	5.3																						
					FCB-3	-	-	0.06	5.1																						
					-	-	-	0.00	5.0																						
GCB-3	GD-5	50+67.2	RT	4.4.0	I	0.19	0.90	0.17	5.00																						
					P	0.00	0.60	0.00																							
					P	0.00	0.30	0.00																							
					-	-	-	0.00	5.0																						
					-	-	-	0.00	5.0																						
					-	-	-	0.00	5.0																						

STORM DRAIN DESIGN (Massachusetts 2015 - 25 year rainfall intensity rates)

RUN		LOCATION		DRAINAGE AREA				TIME		RUNOFF		FLOW IN PIPE									ELEVATIONS				
From	To	Station	Offset	Struct. Type	Area No./Run	Area Ac	Runoff Coeff., C	Increment CA	Tc	Time In Section	Intensity (In/Hr)	Design Flow	Diam (In.)	Length (Ft.)	Slope (Ft./Ft.)	Manning Coeff.	Capacity (Cfs)	Velocity (Fps)	Depth (Ft.)	Velocity (Fps.)	Head (Ft.)	Upper	Lower	Upper	Lower
GCB-4	GD-5	50+67.2	LT	4.4.0	I	0.10	0.90	0.09	5.00	0.14	8.02	1.35	12	32	0.010	0.015	3.09	3.9	0.46	3.8		92.47	92.80	88.48	88.16
					P	0.00	0.60	0.00																	
					P	0.00	0.30	0.00																	
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
FD-3	GD-5	30+97.4	LT	4.2.0	I	0.00	0.90	0.00	5.00	0.04	8.02	0.70	12	8	0.010	0.015	3.09	3.9	0.33	3.2		92.47	92.80	88.45	88.37
					P	0.00	0.60	0.00																	
					P	0.00	0.30	0.00																	
					FD-2	-	-	0.28	5.5																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
GD-5	GD-2	50+73.4	LT	4.2.0	I	0.00	0.90	0.00	5.00	0.23	7.67	2.17	12	70	0.015	0.015	3.79	4.8	0.55	5.0		93.59	92.80	87.68	86.63
					P	0.00	0.60	0.00																	
					P	0.00	0.30	0.00																	
					FD-3	-	-	0.28	5.7																
					GCB-3	-	-	0.17	5.1																
					GCB-4	-	-	0.09	5.0																
								0.54	5.7	0.54	7.51	4.05	18	189	0.010	0.012	11.40	6.4	0.61	5.9		92.80	92.20	86.53	84.64
GD-2	GSC-1	52+59.2	LT	4.2.0	I	0.00	0.90	0.00	5.00	0.03	7.17	8.12	18	15	0.014	0.012	13.49	7.6	0.85	8.0		92.20	92.00	84.16	83.95
					P	0.00	0.60	0.00																	
					P	0.00	0.30	0.00																	
					GD-5	-	-	0.54	6.2																
					GD-1	-	-	0.59	5.4																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
GSC-1	GD-3	52+62.9	LT	4.2.0	I	0.00	0.90	0.00	5.00	0.05	7.16	8.10	18	19	0.010	0.012	11.40	6.4	0.95	7.0		92.00	91.00	84.14	83.95
					P	0.00	0.60	0.00																	
					P	0.00	0.30	0.00																	
					GD-2	-	-	1.13	6.3																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
GD-3	GD-4	52+57.3	LT	4.2.0	I	0.00	0.90	0.00	5.00	0.05	7.16	8.10	18	19	0.010	0.012	11.40	6.4	0.95	7.0		92.00	91.00	84.14	83.95
					P	0.00	0.60	0.00																	
					P	0.00	0.30	0.00																	

STORM DRAIN DESIGN (Massachusetts 2015 - 25 year rainfall intensity rates)

RUN		LOCATION			DRAINAGE AREA				TIME		RUNOFF		FLOW IN PIPE								ELEVATIONS									
From	To	Station	Offset	Struct. Type	Area No./Run	Area Ac	Runoff Coeff., C	Increment CA	Tc	Time In Section	Intensity (In/Hr)	Design Flow	Diam (In.)	Length (Ft.)	Slope (Ft./Ft.)	Manning Coeff.	Capacity (Cfs)	Velocity (Fps)	Depth (Ft.)	Velocity (Fps.)	Head (Ft.)	Upper	Lower	Upper	Lower					
FCB-5	FD-4	29+81.8	RT	4.4.0	I	0.06	0.90	0.06	5.00																					
					P	0.00	0.60	0.00																						
					P	0.00	0.30	0.00																						
					-	-	-	0.00	5.0																					
					-	-	-	0.00	5.0																					
FD-4	FD-5	29+67.8	LT	4.2.0	I	0.00	0.90	0.00	0.00																					
					P	0.00	0.60	0.00																						
					P	0.00	0.30	0.00																						
					FCB-4	-	-	0.05	5.1																					
					FCB-5	-	-	0.06	5.1																					
FD-5	FD-6	28+82.2	LT	4.2.0	I	0.00	0.90	0.00	0.00																					
					P	0.00	0.60	0.00																						
					P	0.00	0.30	0.00																						
					FD-4	-	-	0.11	5.6																					
					-	-	-	0.00	5.0																					
FCB-6	FD-6	28+72.9	RT	4.4.0	I	0.05	0.90	0.05	5.00																					
					P	0.00	0.60	0.00																						
					P	0.00	0.30	0.00																						
					-	-	-	0.00	5.0																					
					-	-	-	0.00	5.0																					
FCB-7	FD-6	28+69.1	LT	4.4.0	I	0.06	0.90	0.05	5.00																					
					P	0.00	0.60	0.00																						
					P	0.00	0.30	0.00																						
					-	-	-	0.00	5.0																					
					-	-	-	0.00	5.0																					
FD-6	FSC-1	28+67.3	LT	4.2.0	I	0.00	0.90	0.00	0.00																					
					P	0.00	0.60	0.00																						
					P	0.00	0.30	0.00																						
					FD-5	-	-	0.11	5.6																					
					FCB-5	-	-	0.06	5.1																					

STORM DRAIN DESIGN (Massachusetts 2015 - 25 year rainfall intensity rates)

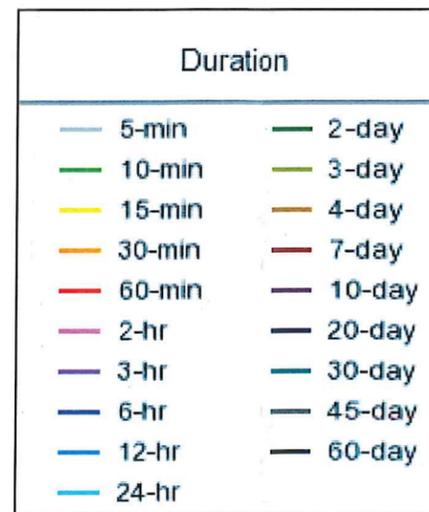
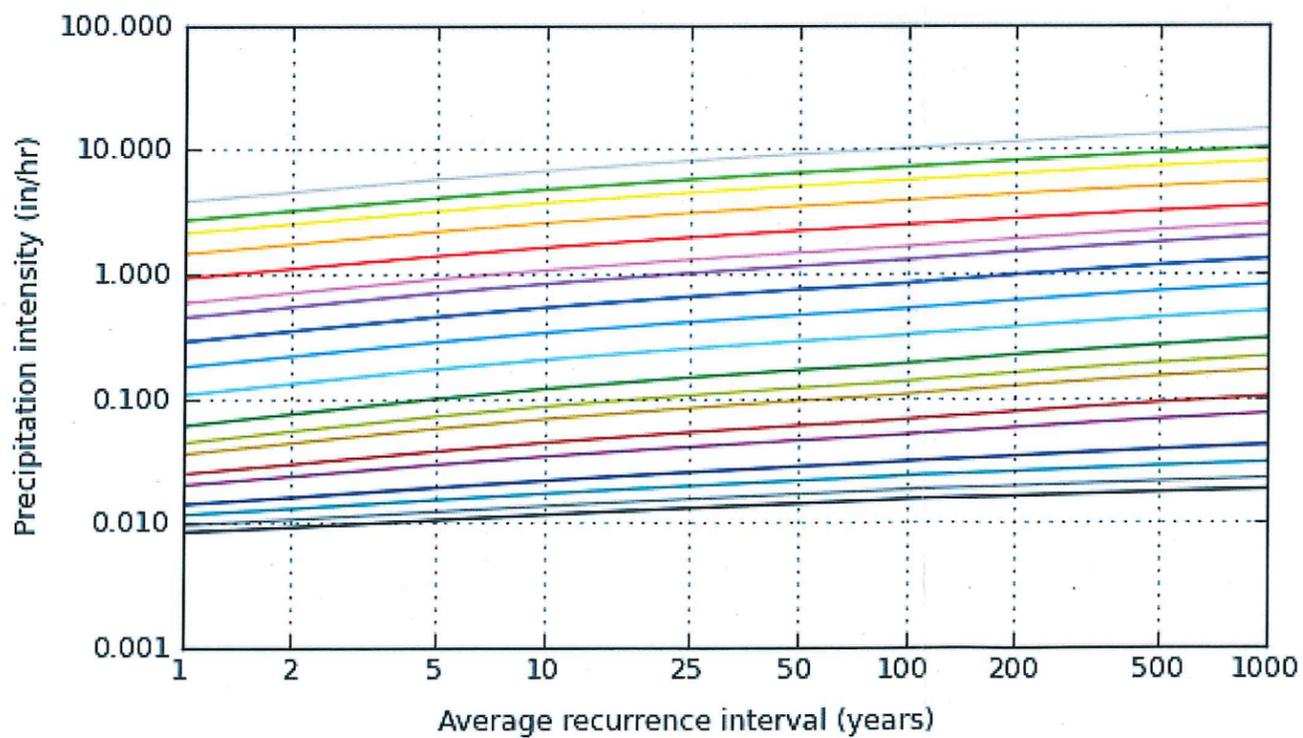
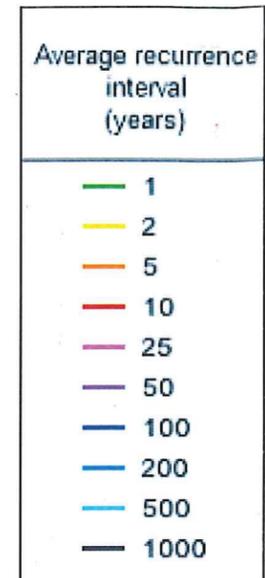
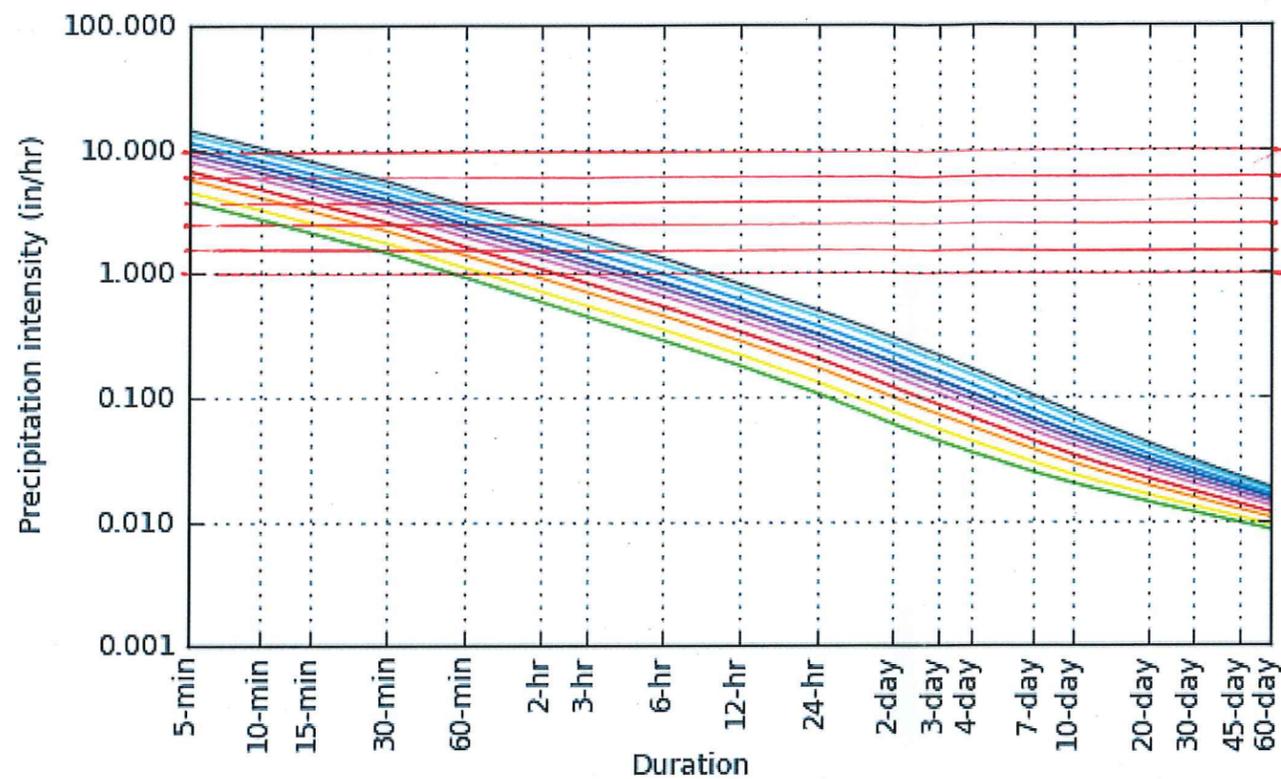
RUN		LOCATION			DRAINAGE AREA				TIME		RUNOFF		FLOW IN PIPE									ELEVATIONS			
From	To	Station	Offset	Struct. Type	Area No./Run	Area Ac	Runoff Coeff., C	Increment CA	Tc	Time In Section	Intensity (In/Hr)	Design Flow	Diam (In.)	Length (Ft.)	Slope (Ft./Ft.)	Manning Coeff.	Capacity (Cfs)	Velocity (Fps)	Depth (Ft.)	Velocity (Fps.)	Head (Ft.)	Upper	Lower	Upper	Lower
FSC-1	PD-3	28+60.0	LT	4.2.0	FCB-7	-	-	0.05	5.1	0.18	7.56	1.67	12	51	0.015	0.015	3.79	4.8	0.46	4.6		86.53	82.00	88.90	88.13
					I	0.00	0.90	0.00	0.00																
					P	0.00	0.60	0.00																	
					P	0.00	0.30	0.00																	
					FD-6	-	-	0.22	5.8																
					-	-	-	0.00	5.0																
-	-	-	0.00	5.0																					
							0.22	5.8	0.24	7.44	1.64	12	57	0.010	0.015	3.09	3.9	0.52	4.0		82.00	84.80	88.70	88.13	

PLCB-1	PD-1	29+00.8	RT	4.4.0	I	0.50	0.90	0.45	5.00	0.50	8.02	3.60	12	128	0.010	0.015	3.05	3.9	0.94	4.3		82.24	83.75	78.24	77.00
					P	0.00	0.60	0.00	5.0																
					P	0.00	0.30	0.00	5.0																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
PLCB-2	PD-1	28+59.9	RT	4.4.0	I	0.39	0.90	0.35	5.00	0.19	8.02	2.80	12	48	0.009	0.015	2.95	3.7	0.79	4.3		82.24	83.75	78.24	77.80
					P	0.00	0.60	0.00	5.0																
					P	0.00	0.30	0.00	5.0																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
					-	-	-	0.00	5.0																
PLCB-3	PD-2	29+57.1	LT	4.4.0	I	0.55	0.90	0.49	5.00	0.57	7.65	6.11	18	222	0.010	0.012	11.29	6.4	0.79	6.5		83.75	84.11	76.98	74.80
					P	0.00	0.60	0.00	5.0																
					P	0.00	0.30	0.00	5.0																
					PLCB-1	-	-	0.45	5.5																
					PLCB-2	-	-	0.35	5.2																
					-	-	-	0.00	5.0																
							0.80	5.5	0.04	8.02	3.94	18	12	0.007	0.012	9.81	5.5	0.66	5.2		83.62	84.11	79.62	79.53	

STORM DRAIN DESIGN (Massachusetts 2015 - 25 year rainfall intensity rates)

RUN		LOCATION			DRAINAGE AREA				TIME		RUNOFF		FLOW IN PIPE							ELEVATIONS										
From	To	Station	Offset	Struct. Type	Area No./Run	Area Ac	Runoff Coeff., C	Increment CA	Tc	Time In Section	Intensity (In/Hr)	Design Flow	Diam (In.)	Length (Ft.)	Slope (Ft./Ft.)	Manning Coeff.	Capacity (Cfs)	Velocity (Fps)	Depth (Ft.)	Velocity (Fps.)	Head (Ft.)	Upper	Lower	Upper	Lower					
PD-2	PSC-1	29+50.5	LT	4.2.0	I	0.00	0.90	0.00	0.00																					
					P	0.00	0.60	0.00																						
					P	0.00	0.30	0.00																						
					PD-1	-	-	0.80	6.1																					
					PLCB-3	-	-	0.49	5.0																					
PSC-1	PD-3	29+28.8	LT	4.2.0	I	0.00	0.90	0.00	0.00																					
					P	0.00	0.60	0.00																						
					P	0.00	0.30	0.00																						
					PD-2	-	-	1.29	6.1																					
					-	-	-	0.00	5.0																					
PD-3	OF	29+12.4	LT	4.2.0	I	0.00	0.90	0.00	0.00																					
					P	0.00	0.60	0.00																						
					P	0.00	0.30	0.00																						
					PSC-1	-	-	1.29	6.2																					
					FSC-1	-	-	0.22	6.1																					
					-	-	-	0.00	5.0																					
								1.51	6.2	0.07	7.22	10.90	18	32	0.010	0.012	11.40	6.4	1.19	7.3		84.80	#N/A	74.01	73.69					

PDS-based intensity-duration-frequency (IDF) curves
 Latitude: 42.6438°, Longitude: -71.3128°



POINT PRECIPITATION FREQUENCY (PF) ESTIMATES

WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
NOAA Atlas 14, Volume 10, Version 2

Print Page

Supplementary information

PF graphical

PF tabular

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	3.83 (3.11-4.72)	4.55 (3.68-5.60)	5.72 (4.62-7.07)	6.70 (5.36-8.30)	8.03 8.03 (6.18-10.4)	9.06 (6.80-11.9)	10.1 (7.31-13.7)	11.4 (7.74-15.7)	13.0 (8.50-18.6)	14.3 (9.06-20.8)
10-min	2.71 (2.20-3.34)	3.22 (2.61-3.97)	4.05 (3.27-5.00)	4.74 (3.80-5.89)	5.69 5.69 (4.38-7.33)	6.41 (4.82-8.43)	7.15 (5.18-9.70)	8.05 (5.48-11.1)	9.23 (6.01-13.2)	10.1 (6.41-14.7)
15-min	2.13 (1.73-2.62)	2.53 (2.05-3.11)	3.18 (2.56-3.93)	3.72 (2.98-4.62)	4.46 4.46 (3.44-5.75)	5.03 (3.78-6.61)	5.60 (4.06-7.61)	6.31 (4.30-8.73)	7.24 (4.72-10.3)	7.95 (5.03-11.5)
30-min	1.46 (1.19-1.80)	1.73 (1.41-2.14)	2.18 (1.76-2.70)	2.55 (2.05-3.17)	3.06 3.06 (2.36-3.95)	3.46 (2.60-4.54)	3.85 (2.79-5.23)	4.34 (2.96-6.00)	4.98 (3.24-7.10)	5.46 (3.46-7.93)
60-min	0.929 (0.754-1.14)	1.10 (0.894-1.36)	1.39 (1.12-1.72)	1.62 (1.30-2.02)	1.95 2.03 (1.50-2.51)	2.20 (1.65-2.89)	2.45 (1.78-3.33)	2.76 (1.88-3.82)	3.17 (2.06-4.52)	3.47 (2.20-5.05)
2-hr	0.584 (0.477-0.714)	0.706 (0.576-0.864)	0.904 (0.735-1.11)	1.07 (0.863-1.32)	1.30 1.31 (1.01-1.67)	1.47 (1.12-1.94)	1.65 (1.21-2.25)	1.90 (1.30-2.62)	2.25 (1.47-3.19)	2.50 (1.59-3.61)
3-hr	0.446 (0.365-0.543)	0.542 (0.444-0.661)	0.700 (0.571-0.856)	0.831 (0.673-1.02)	1.01 (0.791-1.30)	1.15 (0.879-1.51)	1.29 (0.956-1.77)	1.51 (1.03-2.07)	1.79 (1.17-2.53)	2.01 (1.28-2.89)
6-hr	0.284 (0.235-0.344)	0.347 (0.286-0.420)	0.450 (0.370-0.547)	0.535 (0.437-0.654)	0.653 (0.514-0.835)	0.743 (0.572-0.973)	0.834 (0.623-1.14)	0.978 (0.672-1.33)	1.17 (0.766-1.64)	1.31 (0.836-1.87)
12-hr	0.179 (0.149-0.215)	0.218 (0.181-0.262)	0.281 (0.233-0.340)	0.334 (0.275-0.406)	0.407 (0.322-0.517)	0.463 (0.358-0.601)	0.519 (0.388-0.701)	0.605 (0.417-0.818)	0.717 (0.472-1.00)	0.802 (0.513-1.14)
24-hr	0.107 (0.090-0.128)	0.131 (0.110-0.157)	0.170 (0.142-0.204)	0.203 (0.168-0.244)	0.248 (0.197-0.312)	0.282 (0.219-0.363)	0.316 (0.238-0.423)	0.368 (0.255-0.494)	0.436 (0.288-0.604)	0.487 (0.312-0.686)
2-day	0.061 (0.051-0.072)	0.075 (0.063-0.089)	0.098 (0.082-0.117)	0.118 (0.098-0.141)	0.144 (0.116-0.181)	0.165 (0.129-0.211)	0.185 (0.140-0.247)	0.217 (0.151-0.289)	0.258 (0.171-0.356)	0.290 (0.186-0.405)

~~b=5
 10
 15
 20
 35
 65~~

~~b=10
 15
 20
 25
 40
 70~~

WATER QUALITY & TSS REMOVAL CALCULATIONS

Project: F and G Streets

Water Quality Volume

Phase: Phase 1

Date: 12/22/2015

Sub Catch	SQ FT	ACRES	Impervious	Imp (acres)	Pervious	Perv (acres)	Vol @ 1" (cf)
TO WQU GSC-1, Tc= 6.3 min., qu=774							
FCB 1	3,248	0.07	3,248	0.07	0.00	0.00	270.7
FCB 2	7,544	0.17	7,544	0.17	0.00	0.00	628.7
FCB 3	2,892	0.07	2,892	0.07	0.00	0.00	241.0
GCB 1	19,206	0.44	19,206	0.44	0.00	0.00	1,600.5
GCB 2	9,482	0.22	9,482	0.22	0.00	0.00	790.2
GCB 3	8,150	0.19	8,150	0.19	0.00	0.00	679.2
GCB 4	4,251	0.10	4,251	0.10	0.00	0.00	354.3

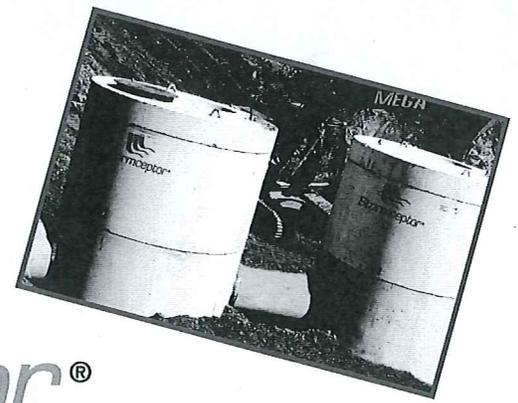
TO WQU PSC-1, Tc= 6.1 min, qu=774							
PLCB-01	21,739	0.50	21,739	0.50	0.00	0.00	1,811.6
PLCB-02	16,906	0.39	16,906	0.39	0.00	0.00	1,408.8
PLCB-03	23,786	0.55	23,786	0.55	0.00	0.00	1,982.2

TO WQU FSC-1, Tc=5.6 min, qu=784							
FCB-04	2,507	0.06	2,507	0.06	0.00	0.00	208.9
FCB-05	2,803	0.06	2,803	0.06	0.00	0.00	233.6
FCB-06	2,268	0.05	2,268	0.05	0.00	0.00	189.0
FCB-07	2,584	0.06	2,584	0.06	0.00	0.00	215.3
Other	45,359	1.04	45,359	1.04	0.00	0.00	
TOTAL	172,725.00	3.97	172,725.00	3.97	0.00	0.00	
CHECK							
		2.92		2.92		0.00	

WQU GSC-1	54,773	1.26	0.001965
WQU PSC-1	62,431	1.43	0.002239
WQU FSC-1	10,162	0.23	0.000365
Q - GSC-1	qu x A x WQV	1.52	
Q - PSC-1	qu x A x WQV	1.73	
Q - FSC-1	qu x A x WQV	0.28	

Figure 4: for First 1-inch Runoff, Table of qu values for Ia/P Curve = 0.034, listed by tc, for Type III Storm Distribution

Tc (Hours)	qu (csm/in)	Tc (Hours)	qu (csm/in)	Tc (Hours)	qu (csm/in)
0.01	835	2.7	197	7.1	95
0.03	835	2.8	192	7.2	94
0.05	831	2.9	187	7.3	93
0.067	814	3	183	7.4	92
0.083	795	3.1	179	7.5	91
0.1	774	3.2	175	7.6	90
0.116	755	3.3	171	7.7	89
0.133	736	3.4	168	7.8	88
0.15	717	3.5	164	7.9	87
0.167	700	3.6	161	8	86
0.183	685	3.7	158	8.1	85
0.2	669	3.8	155	8.2	84
0.217	654	3.9	152	8.3	84
0.233	641	4	149	8.4	83
0.25	628	4.1	146	8.5	82
0.3	593	4.2	144	8.6	81
0.333	572	4.3	141	8.7	80
0.35	563	4.4	139	8.8	79
0.4	536	4.5	137	8.9	79
0.416	528	4.6	134	9	78
0.5	491	4.7	132	9.1	77
0.583	460	4.8	130	9.2	76
0.6	454	4.9	128	9.3	76
0.667	433	5	126	9.4	75
0.7	424	5.1	124	9.5	74
0.8	398	5.2	122	9.6	74
0.9	376	5.3	120	9.7	73
1	356	5.4	119	9.8	72
1.1	339	5.5	117	9.9	72
1.2	323	5.6	115	10	71
1.3	309	5.7	114		
1.4	296	5.8	112		
1.5	285	5.9	111		
1.6	274	6	109		
1.7	264	6.1	108		
1.8	255	6.2	106		
1.9	247	6.3	105		
2	239	6.4	104		
2.1	232	6.5	102		
2.2	225	6.6	101		
2.3	219	6.7	100		
2.4	213	6.8	99		
2.5	207	6.9	98		
2.6	202	7	96		



Stormceptor®

-----STC

Stormceptor® is an underground stormwater quality treatment device that is unparalleled in its effectiveness for pollutant capture and retention. With thousands of systems operating worldwide, Stormceptor delivers protection every day in every storm.

With patented technology, optimal treatment occurs by allowing free oil to rise and sediment to settle. The Stormceptor design prohibits scour and release of previously captured pollutants, ensuring superior treatment and protection during even the most extreme storm events.

Stormceptor is very easy to design and provides flexibility under varying site constraints such as tight right-of-ways, zero lot lines and retrofit projects. Design flexibility allows for a cost-effective approach to stormwater treatment. Stormceptor has proven performance backed by the longest record of lab and field verification in the industry.

Tested Performance

- Fine particle capture
- Prevents scour or release
- 95%+ Oil removal

Massachusetts – Water Quality (Q) Flow Rate

Stormceptor STC Model	Inside Diameter	Typical Depth Below Inlet Pipe Invert ¹	Water Quality Flow Rate Q ²	Peak Conveyance Flow Rate ³	Hydrocarbon Capacity ⁴	Maximum Sediment Capacity ⁴
	(ft)	(in)	(cfs)	(cfs)	(Gallons)	(ft ³)
STC 450i	4	68	0.40	5.5	86	46
STC 900	6	63	0.89	22	251	89
STC 2400	8	104	1.58	22	840	205
STC 4800	10	140	2.47	22	909	543
STC 7200	12	148	3.56	22	1,059	839
STC 11000	2 x 10	142	4.94	48	2,792	1,086
STC 16000	2 x 12	148	7.12	48	3,055	1,677

¹ Depth Below Pipe Inlet Invert to the Bottom of Base Slab, and Maximum Sediment Capacity can vary to accommodate specific site designs and pollutant loads. Depths can vary to accommodate special designs or site conditions. Contact your local representative for assistance.

² Water Quality Flow Rate (Q) is based on 80% annual average TSS removal of the OK110 particle size distribution.

³ Peak Conveyance Flow Rate is based upon ideal velocity of 3 feet per second and outlet pipe diameters of 18-inch, 36-inch, and 54-inch diameters.

⁴ Hydrocarbon & Sediment capacities can be modified to accommodate specific site design requirements, contact your local representative for assistance.

Current User:
MASTEP GUEST



Stormwater Technologies Clearinghouse

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Performance Evaluation

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Stormceptor :: A product from [STORMCEPTOR](#) ::

Performance information: [\(This product was evaluated in at least one third-party study. See MASTEP Evaluation Summary.\)](#)

MASTEP rating is primarily based on the 2005 NJCAT Technology Verification study. In general, this was a well-conducted test, which in large part followed NJDEP test guidelines for laboratory studies. Issues of concern: the study measured suspended sediment concentration (SSC) rather than total suspended solids (TSS). The test was conducted with higher influent sediment concentrations than is preferred, but results were fairly consistent across all ranges studied. The particle size distribution also appears to be higher than the target test range. There are additional field studies that in general support the results obtained in this laboratory studies. These studies do not satisfy TARP protocols, but they do not contradict results obtained in the NJCAT study. The Stormceptor system has received a General Use Level Determination for Pretreatment of TSS by the Washington State Department of Ecology (September 2007).

Pollutants addressed	Manufacturer's Removal Efficiency claim	Minimum particle size	Tested removal efficiency (*)	Test Data Status (**)	Notes
Suspended sediment concentration	50-80%	20	75 %	2	75% found in NJCAT lab study
Oil and grease	0-90%	-	-	3	Evaluated in Coventry U. study
Zinc	0-80%	-	-	0	-
Copper	0-80%	-	-	0	-
Lead	0-80%	-	-	0	-
Iron	0-80%	-	-	0	-
Chromium	0-80%	-	-	0	-
Mercury	0-80%	-	-	0	-
Cadmium	0-80%	-	-	0	-
Total suspended solids	50-80%	20	-	2	-
Ammonium	0-80%	-	-	0	-
Hydrocarbons	0-98%	-	-	0	-
Total Keldhal Nitrogen	0-65%	-	-	0	-
Total Phosphorus	0-60%	-	-	0	-

* - Pollution removal efficiency evaluated by MASTEP staff based on review of available performance evaluation reports.

** - **1** = sufficient credible data to be able to evaluate pollution removal efficiency claims. **2** = sound field or laboratory performance studies exist for this technology. Some caveats exist regarding use of the study information. **3** = performance studies with some scientific merit exist for this technology. Significant caveats exist regarding use of the study information. **4** = There is insufficient reliable data available to evaluate the performance of this technology. **0** = data review not yet conducted.



Vanasse Hangen Brustlin, Inc.
 Consulting Engineers and Planners
 101 Walnut Street
 Watertown, MA 02471
 (617) 924-1770

TSS Removal Calculation Worksheet

Project Name: _____
 Project Number: _____
 Location: _____
 Discharge Point: _____
 Drainage Area(s): _____

Streets F&G
 10808.00
 Lowell, MA
 Lower Pawtucket Canal
 0.23, 1.26, 1.43 Ac / 0.28, 1.52, 1.73 cfs

Sheet: 3 of 3
 Date: 23-Dec-2015
 Computed by: Scott D "Amelio"
 Checked by: _____

A	B	C	D	E
BMP*	TSS Removal Rate*	Starting TSS Load**	Amount Removed (B*C)	Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	25%	1.00	0.25	0.75
Stormceptor STC 450, 2400, 4800	75%	0.75	0.56	0.19
	0%	0.19	0.00	0.19
	0%	0.19	0.00	0.19
	0%	0.19	0.00	0.19

* BMP and TSS Removal Rate Values from the MassDEP Stormwater Handbook Vol. 1.
 Removal rates for proprietary devices are from approved studies and/or manufacturer data.

** Equals remaining load from previous BMP (E)

*** Stormceptor sizing calculation gives a TSS removal rate of 87%. To be conservative, 75% removal is used for this calculation based upon the NJCAT study provided on the MA STEP website.

**Treatment Train
 TSS Removal = 81%**

ILLCIT DISCHARGE STATEMENT

Broadway Street Bridge, Canal Street Bridge and Streets F & G

Illicit Discharge and Compliance Statement

Lowell, Massachusetts The Project includes construction of a new drainage system including piping, catch basins, water quality units and outfalls. All components of the drainage system will be reinforced concrete. Since the drainage system will be constructed new, the contractor will ensure there will be no sanitary connections to the drainage system. In addition, a new sanitary system will be constructed including piping manholes and forcemain system. The sanitary system will be constructed using PVC piping. Segregating the drainage and sewer system will be evident based on the materials used.



Scott D'Amelio, PE

CHECKLIST FOR STORMWATER REPORT



Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

¹ The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

² For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

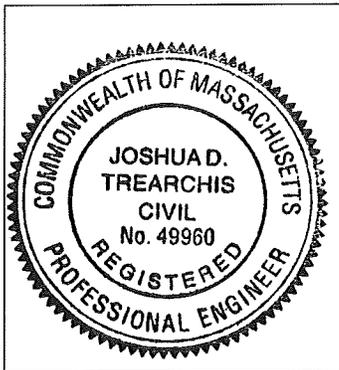
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

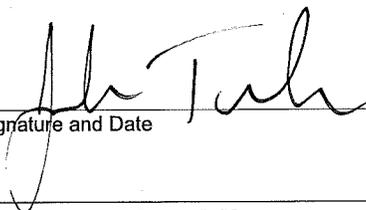
A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



 12/23/15
Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

- New development
- Redevelopment
- Mix of New Development and Redevelopment



Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- No disturbance to any Wetland Resource Areas
- Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- Reduced Impervious Area (Redevelopment Only)
- Minimizing disturbance to existing trees and shrubs
- LID Site Design Credit Requested:
 - Credit 1
 - Credit 2
 - Credit 3
- Use of "country drainage" versus curb and gutter conveyance and pipe
- Bioretention Cells (includes Rain Gardens)
- Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- Treebox Filter
- Water Quality Swale
- Grass Channel
- Green Roof
- Other (describe): See Stormwater Report

Standard 1: No New Untreated Discharges

- No new untreated discharges
- Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

- Soil Analysis provided.
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
 - Static
 - Simple Dynamic
 - Dynamic Field¹
- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
 - Site is comprised solely of C and D soils and/or bedrock at the land surface
 - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
 - Solid Waste Landfill pursuant to 310 CMR 19.000
 - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

¹ 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

- The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
 - Provisions for storing materials and waste products inside or under cover;
 - Vehicle washing controls;
 - Requirements for routine inspections and maintenance of stormwater BMPs;
 - Spill prevention and response plans;
 - Provisions for maintenance of lawns, gardens, and other landscaped areas;
 - Requirements for storage and use of fertilizers, herbicides, and pesticides;
 - Pet waste management provisions;
 - Provisions for operation and management of septic systems;
 - Provisions for solid waste management;
 - Snow disposal and plowing plans relative to Wetland Resource Areas;
 - Winter Road Salt and/or Sand Use and Storage restrictions;
 - Street sweeping schedules;
 - Provisions for prevention of illicit discharges to the stormwater management system;
 - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
 - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
 - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent. **
 - Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
 - is within the Zone II or Interim Wellhead Protection Area
 - is near or to other critical areas
 - is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
 - involves runoff from land uses with higher potential pollutant loads.
 - The Required Water Quality Volume is reduced through use of the LID site Design Credits.
 - Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

**** Project Site will be maintained in accordance with Lowell's existing Municipal Operations and Management Plan.**



Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

- The BMP is sized (and calculations provided) based on:
 - The ½" or 1" Water Quality Volume or
 - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- The NPDES Multi-Sector General Permit does **not** cover the land use.
- LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- All exposure has been eliminated.
- All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

- The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- Critical areas and BMPs are identified in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

- The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
 - Limited Project
 - Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
 - Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
 - Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
 - Bike Path and/or Foot Path
 - Redevelopment Project
 - Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
 - Construction Period Operation and Maintenance Plan;
 - Names of Persons or Entity Responsible for Plan Compliance;
 - Construction Period Pollution Prevention Measures;
 - Erosion and Sedimentation Control Plan Drawings;
 - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
 - Vegetation Planning;
 - Site Development Plan;
 - Construction Sequencing Plan;
 - Sequencing of Erosion and Sedimentation Controls;
 - Operation and Maintenance of Erosion and Sedimentation Controls;
 - Inspection Schedule;
 - Maintenance Schedule;
 - Inspection and Maintenance Log Form.
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- The project is **not** covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

- The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information: **
 - Name of the stormwater management system owners;
 - Party responsible for operation and maintenance;
 - Schedule for implementation of routine and non-routine maintenance tasks;
 - Plan showing the location of all stormwater BMPs maintenance access areas;
 - Description and delineation of public safety features;
 - Estimated operation and maintenance budget; and
 - Operation and Maintenance Log Form.
- The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
 - A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
 - A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

- The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- An Illicit Discharge Compliance Statement is attached;
- NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.

**** Project site will be maintained in accordance with Lowell's existing Municipal Operations and Management Plan**

