# BOARD OF SELECTMEN
# March 24, 2015
# Needham Town Hall
# Agenda

*Note: Agenda subject to revision, start times are approximate and agenda items may be discussed at earlier or later times.*

| | | |
|---|---|---|
| | **6:45** | Informal Meeting with Citizens<br>*One or more members of the Board of Selectmen will be available between 6:45 and 7:00 p.m. for informal discussion with citizens. While not required, citizens are encouraged to call the Selectmen's Office at (781) 455-7500 extension 204 in advance to arrange for an appointment. This enables the Board to better assure opportunities for participation and respond to citizen concerns.* |
| **1.** | **7:00** | Public Hearing Eversource Energy- Pine Street<br>• Maureen Carroll, Eversource Energy representative |
| **2.** | **7:00** | Public Hearing Eversource Energy- Whitman Road<br>• Maureen Carroll, Eversource Energy representative |
| **3.** | **7:05** | Hillside School Phase IV Supplemental Remedy Implementation Plan<br>• Luke Legere, Esq. |
| **4.** | **7:30** | 2015 Annual Town Meeting – Retiree COLA Base<br>• Robert Mearls, Member, Needham Retirement Board<br>• Evelyn Poness, Chairman, Needham Retirement Board |
| **5.** | **7:45** | Director Public Works<br>• DPW Projects Update |
| **6.** | **8:00** | Town Manager<br>• Water Restriction Update and Water Management Act Comment Letter<br>• Open Special Town Meeting Warrant<br>• Statement of Interest Mitchell School & Pollard School<br>• Parking Lot Naming<br>• 2015 Annual Town Meeting Preparation<br>• Town Manager's Report |
| **7.** | **8:30** | Board Discussion<br>• Committee Reports |
| **8.** | **8:35** | Executive Session Exception 3 & 6 |

## APPOINTMENTS

| | | |
|---|---|---|
| 1. | Commission on Disabilities | Barbara Moss (term expires 6/30/2018) |
| 2. | Golf Course Advisory Committee | Jack Heavey (term expires 6/30/2016) |

## CONSENT AGENDA *=Backup attached

| | |
|---|---|
| 1.* | Approve and sign a letter to NAIOP Massachusetts, a Commercial Real Estate |

| | |
|---|---|
| | Development Association, for inclusion in marketing materials for a guided tour of commercial properties in the 128 corridor including Westwood, Needham, Newton, Waltham, Lexington and Burlington. |
| 2.* | Approve Open and Executive Session Minutes from March 10, 2015 meeting. |
| 3.* | Approve Special One Day Wines & Malt Beverages license for John Grugan, of the Charles River Center to hold its Charles River Center 5K run/1mile walk event on September 27, 2015 from 12:00 p.m. to 3:00 p.m. This event will be held at the Charles River Center, 59 E. Militia Heights Drive, Needham. |
| 4.* | Approve Special One Day Wines & Malt Beverages license for David Volante of Volante Farms to host its "Designs and Drinks: Container Gardening" event on April 11, 2015 from 3:00 p.m. to 5:00 p.m. The event will be held in the greenhouse of Volante Farms, 292 Forest Street, Needham. |
| 5.* | Water and Sewer Abatement Order # 1195. |
| 6. | Accept the following donations made to the Needham Park and Recreation Commission for its Arts in the Parks program: $700 from Louise Condon; $700 from Middlesex Savings Bank; and $700 from Dedham Savings Bank. |

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 03/24/2015**

| | |
|---|---|
| **Agenda Item** | Public Hearing –Eversource Energy- Pine Street |
| **Presenter(s)** | Maureen Carroll, Eversource Energy |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|

Eversource Energy requests permission to install 23 feet of conduit from pole 140/6. This work is necessary to provide underground electric service at 67 Pine Street, Needham.

The Department of Public Works has approved this petition, based on Eversource Energy's commitment to adhere to the Town's regulation that **all conduit installed must be 3" schedule 40 minimum; and, that when buried, the conduit must be placed at 24" below grade to the top of the conduit.**

| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | **YES** | **NO** |
|---|---|---|---|

**Suggested Motion:**
Move that the Board of Selectmen approve and sign a petition from Eversource Energy to install 23 feet of conduit from pole 140/6. This work is necessary to provide underground electric service at 67 Pine Street, Needham.

| **3.** | **BACK UP INFORMATION ATTACHED** | **YES** | **NO** |
|---|---|---|---|

**(Describe backup below)**

a. Letter of Application
b. Petition
c. Order
d. Petition Plan
e. Notice Sent to Abutters
f. List of Abutters

EVERSOURCE
ENERGY

200 Calvary Street
Waltham, Ma 02453

February 20, 2015

Board of Selectmen
Town Hall
1471 Highland Ave
Needham, MA 02192

RE: #67 Pine Street
Needham, MA
W.O. #2043212

Dear Members of the Board:

The enclosed petition and plan is being presented by the EVERSOURCE ENERGY Company for the purpose of obtaining a Grant of Location to install 23± feet of conduit from pole 140/6.

This work is necessary to provide underground electric service to 67 Pine Street, Needham.

If you have any further questions, contact Maureen Carroll @ (781) 314-5053. Your prompt attention to this matter would be greatly appreciated.

Very truly yours

William D. Lemos

William D. Lemos, Supervisor
Rights and permits

OK to proceed
TM (T. Ryder Engr.)
3/9/15
OK R.P. Marsh
3/10/15 DPW Director

WDL/la
Attachments

**PETITION OF EVERSOURCE ENERGY COMPANY FOR LOCATION FOR CONDUITS AND MANHOLES**

To the **Board of Selectmen** of the Town of **NEEDHAM** Massachusetts:

Respectfully represents **Eversource Energy** a company incorporated for the transmission of electricity for lighting, heating or power, that it desires to construct a line for such transmission under the public way or ways hereinafter specified.

WHEREFORE, your petitioner prays that, after due notice and hearing as provided by law, the Board may by Order grant to your petitioner permission to construct, and a location for, such a line of conduits and manholes with the necessary wires and cables therein, said conduits and manholes to be located, substantially as shown on the plan made by **A. Debenedictis Dated February 9, 2015,** and filed herewith, under the following public way or ways of said Town:

**Pine Street – Southwesterly from pole 140/6 approximately 746 ± feet southwest of Central Ave about 23 ± feet of conduit**

**(WO: 2043212)**

**EVERYSOURCE ENERGY COMPANY**

BY William D. Lemos
William D. Lemos
Rights & Permits,Supervisor

**Dated this 20th day of February 20, 2015**

Town of **NEEDHAM** Massachusetts

Received and filed _____2015

_____

**ORDER FOR LOCATION FOR CONDUITS AND MANHOLES**
**Town of NEEDHAM**

WHEREAS, **EVERSOURCE ENERGY COMPANY** has petitioned for permission to construct a line for the tranmission of electricity for lighting, heating or power under the public way or ways of the Town thereinafter specified, and notice has been given and a hearing held on said petition as provided by law.
It is ORDERED that **EVERSOURCE ENERGY COMPANY** be and hereby is granted permission to construct and a location for, such a line of conduits and manholes with the necessary wires and cables therein under the following public way or ways of said Town:

**Pine Street – Southwesterly from pole 140/6 approximately 746 ± feet southwest of Central Ave about 23 ± feet of conduit**

**WO: (2043212)**

All construction work under this Order shall be in accordance with the following conditions:

1. Conduits and manholes shall be located as shown on the plan made by **A.Debenedictis, Dated February 9, 2015** on the file with said petition.
2. Said shall comply with the requirements of existing by-laws and such as may hereafter be adopted governing the construction and maintenance of conduits and manholes.
3. Company All work shall be done to the satisfaction of the Board of Selectmen or such officer or officers as it may appoint to supervise the work.

1 _____
2 _____ Board of Selectmen
3 _____ the Town of
4 _____ **NEEDHAM**
5 _____

**CERTIFICATE**

We hereby certify that the foregoing Order was adopted after due notice and a public hearing as prescribed by Section 22 of Chapter 166 of the General Laws (Ter. Ed.), and any additions thereto or amendments thereof, to wit:-after written notice of the time and place of the hearing mailed at least seven days prior to the date of the hearing by the Selectmen to all owners of real estate abutting upon that part of the way or ways upon, along or across which the line is to be constructed under said Order, as determined by the last preceding assessment for taxation, and a public hearing held on the _____ day of _____ 2015 at _____ in said Town.

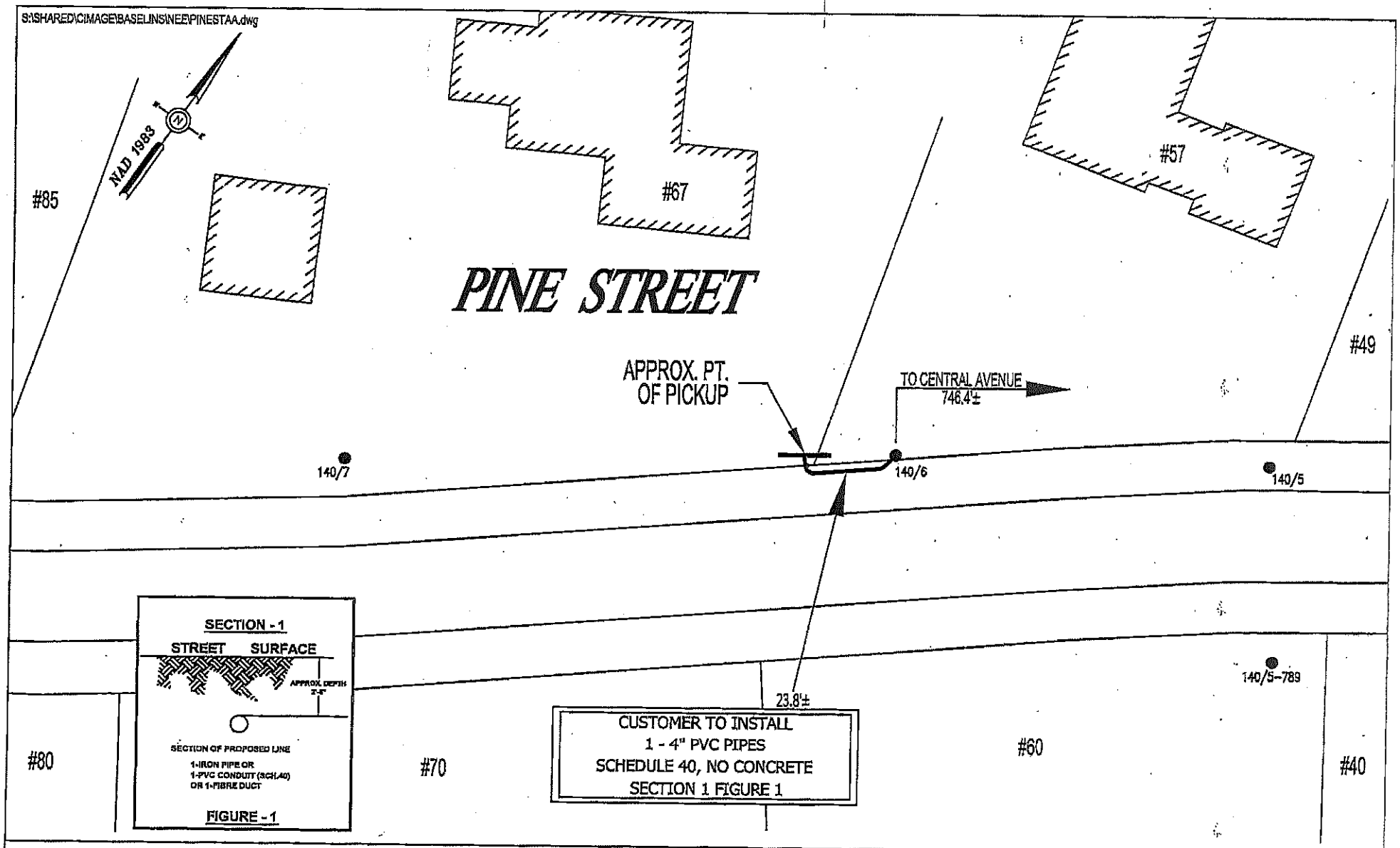
1 _____
2 _____ Board of Selectmen
3 _____ the Town of
4 _____ **NEEDHAM**
5 _____

CERTIFICATE

I hereby certify that the foregoing are true copies of the Order of the **Board of Selectmen** of the Town of **NEEDHAM,** Masssachusetts, duly adopted on the _____ day of _____, 2015 and recorded with the records of location Orders of said Town, Book _____, Page _____ and of the certificate of notice of hearing thereon required by Section 22 of Chapter 166 of the General Laws (Ter.Ed.) and any additions thereto or amendments thereof, as the same appear of record.

Attest: _____
Clerk of the Town of **NEEDHAM,** Massachusetts

S:\SHARED\CIMAGE\BASELINS\NEE\PINESTAA.dwg

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SCALE IN FEET

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MASS. LAW

REQUIRES 72 HOURS ADVANCE NOTICE TO UTILITY COMPANIES BEFORE DIGGING BY ANYONE. CALL DIG-SAFE 1-888-344-7233

| | | | |
|---|---|---|---|
| C# | | EVERSOURCE | |
| Ward # | | 1165 MASSACHUSETTS AVE. DORCHESTER, MASS. 02125 | |
| Work Order # | 2043212 | | |
| Surveyed by: | N/A | Plan of | PINE STREET |
| Research by: | SC | | NEEDHAM |
| Plotted by: | BS | Showing | PROPOSED CUSTOMER CONDUIT LOCATION |
| Proposed Structures; SC | | | |
| Approved: | A DEBENEDICTIS | Scale | 1"=30' Date FEBRUARY 9, 2015 |
| P# | | SHEET | 1 of 1 |

# NOTICE

To the Record

You are hereby notified that a public hearing will be held at the **Needham Town Hall, 1471 Highland Avenue, at 7:00 p.m. on March 24, 2015** upon petition of Eversource Energy dated **February 9, 2015** to install 23 feet of conduit from pole 140/6. This work is necessary to provide underground electric service at 67 Pine Street, Needham. A public hearing is required and abutters should be notified.

If you have any questions regarding this petition, please contact Eversource Energy representative, Maureen Carroll at 781-314-5053.

John A. Bulian
Maurice P. Handel
Matthew D. Borrelli
Marianne B. Cooley
Daniel P. Matthews

BOARD OF SELECTMEN

Dated: March 11, 2015

# 67 PINE STREET

| PARCEL ID | St No. | Street | Owner Names | Owner Address | Mailing Address OWNER CITY | State | OWNER ZIP |
|---|---|---|---|---|---|---|---|
| 199/215.0-0007-0000.0 | 49 | PINE ST | ONOFREY, ROBERT JAMES &<br>ONOFREY, JOAN E. | 49 PINE ST | NEEDHAM | MA | 02492 |
| 199/215.0-0008-0000.0 | 57 | PINE ST | LOWENSTEIN, ADAM C. &<br>LOWENSTEIN, ANGELA MARIE | 7115 POINT REPLETE CIRCLE | FORT BELVOIR | VA | 22060 |
| 199/215.0-0010-0000.0 | 67 | PINE ST | CONVERSE, SHIRLEY E<br>C/O DIGIORGIO, JEANNE & UDELL, LAWRENC | 67 PINE ST | NEEDHAM | MA | 02492 |
| 199/215.0-0011-0000.0 | 85 | PINE ST | RAYNER, WILLIAM J. &<br>RAYNER, JEANNE M. | 85 PINE ST | NEEDHAM | MA | 02492 |
| 199/215.0-0017-0000.0 | 92 | PINE ST | DAS, ANURAG K. &<br>DAS, DIVYA C. | 92 PINE STREET | NEEDHAM | MA | 02492 |
| 199/215.0-0018-0000.0 | 80 | PINE ST | SCHER, MICHAEL &<br>SCHER, LILLY | 80 PINE ST | NEEDHAM | MA | 02492 |
| 199/215.0-0019-0000.0 | 70 | PINE ST | STEIN, DAVID &<br>STEIN, ILENNA | 70 PINE ST | NEEDHAM | MA | 02492 |
| 199/215.0-0020-0000.0 | 60 | PINE ST | WILLS, JOHN III &<br>WILLS, JOANNE KARNO | 60 PINE STREET | NEEDHAM | MA | 02492 |
| 199/215.0-0021-0000.0 | 40 | PINE ST | FISH, AMY BENDER &<br>FISH, BARRY JON | 40 PINE STREET | NEEDHAM | MA | 02492 |

Certified as list of parties in interest under Mass. General Laws and Needham Zoning By-LAw, to the Best of our knowledge
For the Needham Board of Assessors.....

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 03/24/2015**

| | |
|---|---|
| **Agenda Item** | Public Hearing –Eversource Energy- Whitman Road |
| **Presenter(s)** | Maureen Carroll, Eversource Energy |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|
| Eversource Energy requests permission to install 36 feet of conduit from pole 416/5. This work is necessary to provide underground electric service at 54 Whitman Road, Needham.<br><br>The Department of Public Works has approved this petition, based on Eversource Energy's commitment to adhere to the Town's regulation that **all conduit installed must be 3" schedule 40 minimum; and, that when buried, the conduit must be placed at 24" below grade to the top of the conduit.** | | | |
| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | **YES** | **NO** |
| **Suggested Motion:**<br>Move that the Board of Selectmen approve and sign a petition from Eversource Energy to install 36 feet of conduit from pole 416/5. This work is necessary to provide underground electric service at 54 Whitman Road, Needham. | | | |
| **3.** | **BACK UP INFORMATION ATTACHED** | **YES** | **NO** |
| **(Describe backup below)**<br>a. Letter of Application<br>b. Petition<br>c. Order<br>d. Petition Plan<br>e. Notice Sent to Abutters<br>f. List of Abutters | | | |

EVERSOURCE
ENERGY

200 Calvary Street
Waltham, Ma 02453

March 3, 2015

Board of Selectmen
Town Hall
1471 Highland Ave
Needham, MA 02192

#54
RE: Whitman Road
Needham, MA
W.O. #2048658

Dear Members of the Board:

The enclosed petition and plan is being presented by the NStar Electric Company d/b/a EVERSOURCE ENERGY for the purpose of obtaining a Grant of Location to install 36± feet of conduit from pole 416/5.

This work is necessary to provide underground electric service to 54 Whitman Road, Needham.

If you have any further questions, contact Maureen Carroll @ (781) 314-5053.
Your prompt attention to this matter would be greatly appreciated.

Very truly yours,

William D. Lemos

William D. Lemos, Supervisor
Rights and Permits

OK to proceed
(T. Ryder) Engr.
3/9/15
OK 3/10/15
R.P. Davison
DPW Director

WDL/la
Attachments

**PETITION OF NSTAR ELECTRIC COMPANY d/b/a EVERSOURCE ENERGY FOR LOCATION FOR CONDUITS AND MANHOLES**

To the **Board of Selectmen** of the Town of **NEEDHAM** Massachusetts:

Respectfully represents **Nstar Electric Company d/b/a Eversource Energy** a company incorporated for the transmission of electricity for lighting, heating or power, that it desires to construct a line for such transmission under the public way or ways hereinafter specified.

WHEREFORE, your petitioner prays that, after due notice and hearing as provided by law, the Board may by Order grant to your petitioner permission to construct, and a location for, such a line of conduits and manholes with the necessary wires and cables therein, said conduits and manholes to be located, substantially as shown on the plan made by **A. Debenedictis Dated February 25, 2015,** and filed herewith, under the following public way or ways of said Town:

**Whitman Road – Easterly from pole 416/5 approximately 646 feet south of Charles River Street a distance of about 36 ± feet of conduit.**

**WO: (2048658)**

**EVERYSOURCE ENERGY COMPANY**

BY William D. Lemos
William D. Lemos
Rights & Permits, Supervisor

**Dated this 03rd day of March 2015**

Town of **NEEDHAM** Massachusetts

Received and filed _____2015

_____

**ORDER FOR LOCATION FOR CONDUITS AND MANHOLES**
**Town of NEEDHAM**

WHEREAS, **NStar Electric Company d/b/a EVERSOURCE ENERGY** has petitioned for permission to construct a line for the tranmission of electricity for lighting, heating or power under the public way or ways of the Town thereinafter specified, and notice has been given and a hearing held on said petition as provided by law.
It is ORDERED that **NStar Electric Company d/b/a EVERSOURCE ENERGY** be and hereby is granted permission to construct and a location for, such a line of conduits and manholes with the necessary wires and cables therein under the following public way or ways of said Town:

**Whitman Road – Easterly from pole 416/5 approximately 646 feet south of Charles River Street a distance of about 36 ± feet of conduit.**

**WO: (2048658)**

All construction work under this Order shall be in accordance with the following conditions:

1. Conduits and manholes shall be located as shown on the plan made by **A.Debenedictis, Dated February 25, 2015** on the file with said petition.
2. Said shall comply with the requirements of existing by-laws and such as may hereafter be adopted governing the construction and maintenance of conduits and manholes.
3. Company All work shall be done to the satisfaction of the Board of Selectmen or such officer or officers as it may appoint to supervise the work.

1 _____
2 _____
3 _____
4 _____
5 _____

Board of Selectmen
the Town of
**NEEDHAM**

**CERTIFICATE**

We hereby certify that the foregoing Order was adopted after due notice and a public hearing as prescribed by Section 22 of Chapter 166 of the General Laws (Ter. Ed.), and any additions thereto or amendments thereof, to wit:-after written notice of the time and place of the hearing mailed at least seven days prior to the date of the hearing by the Selectmen to all owners of real estate abutting upon that part of the way or ways upon, along or across which the line is to be constructed under said Order, as determined by the last preceding assessment for taxation, and a public hearing held on the _____ day of _____ 2015 at _____ in said Town.

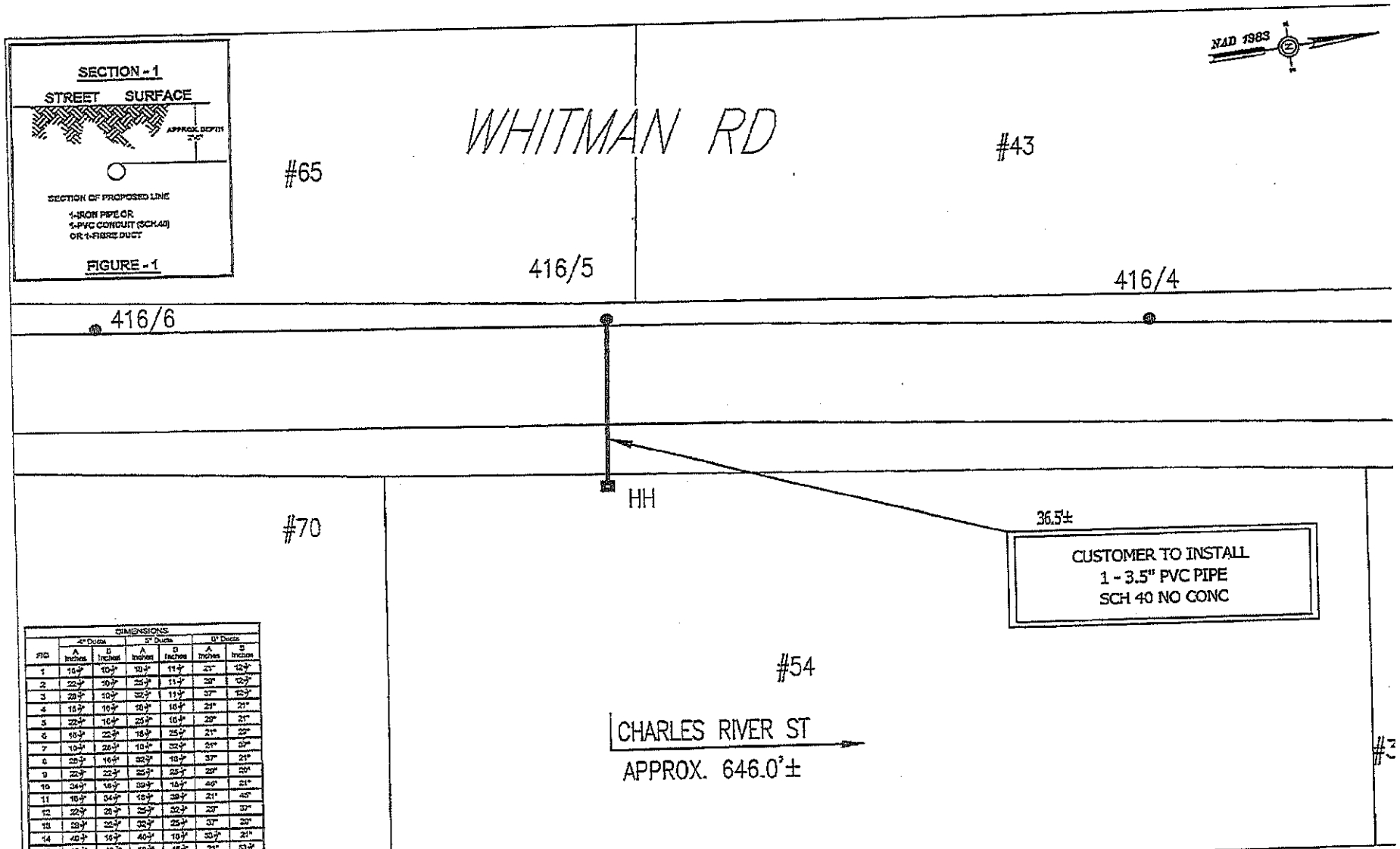
1 _____
2 _____
3 _____
4 _____
5 _____

Board of Selectmen
the Town of
**NEEDHAM**

CERTIFICATE

I hereby certify that the foregoing are true copies of the Order of the **Board of Selectmen** of the Town of **NEEDHAM,** Masssachusetts, duly adopted on the _____ day of _____, 2015 and recorded with the records of location Orders of said Town, Book _____, Page _____ and of the certificate of notice of hearing thereon required by Section 22 of Chapter 166 of the General Laws (Ter.Ed.) and any additions thereto or amendments thereof, as the same appear of record.

Attest: _____
Clerk of the Town of **NEEDHAM,** Massachusetts




| DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|
| | 4" Ducts | | 5" Ducts | | 6" Ducts | |
| FIG | A Inches | B Inches | A Inches | B Inches | A Inches | B Inches |
| 1 | 19-1/2" | 10-1/2" | 20-1/2" | 11-1/2" | 21" | 12-1/2" |
| 2 | 22-1/2" | 10-1/2" | 23-1/2" | 11-1/2" | 23" | 12-1/2" |
| 3 | 28-1/2" | 10-1/2" | 32-1/2" | 11-1/2" | 37" | 12-1/2" |
| 4 | 18-1/2" | 16-1/2" | 20-1/2" | 18-1/2" | 21" | 21" |
| 5 | 22-1/2" | 16-1/2" | 23-1/2" | 18-1/2" | 23" | 21" |
| 6 | 18-1/2" | 22-1/2" | 18-1/2" | 25-1/2" | 21" | 29" |
| 7 | 19-1/2" | 26-1/2" | 19-1/2" | 32-1/2" | 21" | 37" |
| 8 | 28-1/2" | 16-1/2" | 32-1/2" | 18-1/2" | 37" | 21" |
| 9 | 22-1/2" | 22-1/2" | 23-1/2" | 23-1/2" | 23" | 23" |
| 10 | 34-1/2" | 16-1/2" | 39-1/2" | 18-1/2" | 45" | 21" |
| 11 | 18-1/2" | 34-1/2" | 18-1/2" | 39-1/2" | 21" | 45" |
| 12 | 22-1/2" | 28-1/2" | 23-1/2" | 32-1/2" | 23" | 37" |
| 13 | 28-1/2" | 22-1/2" | 32-1/2" | 23-1/2" | 37" | 23" |
| 14 | 40-1/2" | 18-1/2" | 46-1/2" | 18-1/2" | 53-1/2" | 21" |
| 15 | 18-1/2" | 40-1/2" | 18-1/2" | 46-1/2" | 21" | 53-1/2" |
| 16 | 18-1/2" | 46-1/2" | 18-1/2" | 53-1/2" | 21" | 61" |

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SCALE IN FEET

S:\SHARED\CIMAGE\BASELINS\NEE\WHITMAAA.dwg

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MASS. LAW

REQUIRES 72 HOURS ADVANCE NOTICE TO UTILITY COMPANIES BEFORE DIGGING BY ANYONE. CALL DIG-SAFE 1-888-344-7233

| | |
|---|---|
| C# | |
| Ward # | |
| Work Order # 2048658 | |
| Surveyed by: | |
| Research by: JM | |
| Plotted by: PDM | |
| Proposed Structures: BS | |
| Approved: A DEBENEDICTIS | Scale 1"=30' Date 2/25/2015 |
| P# J-2 | SHEET 1 of 1 |

NSTAR ELECTRIC d/b/a EVERSOURCE
1165 MASSACHUSETTS AVE. DORCHESTER, MASS. 02125

*Plan of* WHITMAN ROAD, NEEDHAM

Showing PROPOSED CONDUIT LOCATION

# NOTICE

To the Record

You are hereby notified that a public hearing will be held at the **Needham Town Hall, 1471 Highland Avenue, at 7:00 p.m. on March 24, 2015** upon petition of Eversource Energy dated **February 25, 2015** to install 36 feet of conduit from pole 416/5. This work is necessary to provide underground electric service at 54 Whitman Road, Needham. A public hearing is required and abutters should be notified.

If you have any questions regarding this petition, please contact Eversource Energy representative, Maureen Carroll at 781-314-5053.

John A. Bulian
Maurice P. Handel
Matthew D. Borrelli
Marianne B. Cooley
Daniel P. Matthews

BOARD OF SELECTMEN

Dated: March 11, 2015

# 54 WHITMAN ROAD

| PARCEL ID | St No. | Street | Owner Names | Owner Address | Mailing Address OWNER CITY | State | OWNER ZIP |
|---|---|---|---|---|---|---|---|
| 199/305.0-0002-0000.0 | 34 | WHITMAN RD | LUEDERS, CARL J | 34 WHITMAN RD | NEEDHAM | MA | 02492 |
| 199/305.0-0003-0000.0 | 54 | WHITMAN RD | MOLEY, ELIZABETH T. TR.<br>C/O DEAMORE, DENISE A, | 54 WHITMAN RD | NEEDHAM | MA | 02492 |
| 199/305.0-0004-0000.0 | 70 | WHITMAN RD | ALFORD, LEE &<br>ALFORD, ABBE | 70 WHITMAN RD | NEEDHAM | MA | 02492 |
| 199/305.0-0005-0000.0 | 84 | WHITMAN RD | LAVINE, BENNETT A. &<br>LAVINE, CLAIRE L | 287 GREENDALE AVE | NEEDHAM | MA | 02494 |
| 199/305.0-0016-0000.0 | 81 | WHITMAN RD | STRAPP, HENRY F. +<br>STRAPP, ANN N. | 81 WHITMAN RD | NEEDHAM | MA | 02492 |
| 199/305.0-0017-0000.0 | 65 | WHITMAN RD | BLACK, DAVID W. | 65 WHITMAN RD | NEEDHAM | MA | 02492 |
| 199/305.0-0018-0000.0 | 43 | WHITMAN RD | HASLIP, JOHN H. TR<br>HASLIP, NANCY C, TR | 43 WHITMAN RD | NEEDHAM | MA | 02492 |
| 199/305.0-0019-0000.0 | 25 | WHITMAN RD | COLASACCO, JENNIFER M | 25 WHITMAN RD | NEEDHAM | MA | 02492 |

Certified as list of parties in interest under Mass. General Laws and Needham Zoning By-LAw, to the Best of our knowledge
For the Needham Board of Assessors.....

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 3/24/2015**

| | |
|---|---|
| **Agenda Item** | Hillside School Phase IV Supplemental Remedy Implementation Plan |
| **Presenter(s)** | Luke Legere, Special Counsel<br>Rick Cote, Licensed Site Professional |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|
| Attorney Legere and Mr. Cote will provide the Board with an outline of the Phase IV Supplemental Remedy Implementation Plan for the Hillside School developed by Lord Associates for Microwave Development Labs (MDL). The Massachusetts Department of Environmental Protection (DEP) held a public hearing in Needham on February 24th, and accepted written comments until March 16th. Attorney Legere will also discuss the comments provided to DEP by the Town. | | | |
| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | **YES** | **NO** |
| Update only. | | | |
| **3.** | **BACK UP INFORMATION ATTACHED** | **YES** | **NO** |

a. Comment letter to DEP dated March 16, 2015
b. Phase IV Supplemental Remedy Implementation Plan PowerPoint prepared by Ralph Tella, LSP and edited by DEP 2.20.2015
c. Phase IV Supplemental Remedy Implementation Plan, Lord Associates, 1.23.2015

# TOWN OF NEEDHAM

**TOWN HALL**
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**Office of the**
**TOWN MANAGER**

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VIA E-MAIL & MAIL

March 16, 2015

Ms. Rodene Lamkin
Site Management Section, Bureau of Waste Site Cleanup
Massachusetts Department of Environmental Protection
Northeast Regional Office
205B Lowell Street
Wilmington, Massachusetts 01887

**RE: Phase IV Supplemental Remedy Implementation Plan**
**Microwave Development Laboratories, Inc.**
**Hillside School Site / Needham**
**DEP RTN 3-0386**

Dear Ms. Lamkin:

The Town of Needham (the "Town") appreciates the opportunity to offer the following comments on the final draft Phase IV Supplemental Remedy Implementation Plan in the above-referenced matter.

At the outset, the Town wishes to express its gratitude to the Department of Environmental Protection ("MassDEP") for requiring Microwave Development Laboratories, Inc. ("MDL") to finally address groundwater contamination at the Hillside Elementary School property in Needham ("Hillside").

As you know, in the 1990s a plume of contaminated groundwater carrying solvents including trichloroethene ("TCE") from MDL's operations at 101-145 Crescent Road in Needham was found to extend from the MDL property to Hillside. This resulted in contamination of soil, groundwater, and air at Hillside.[1]

[1] In January 1994, the Commonwealth filed a lawsuit against MDL for recovery of its response costs associated with this release. The Town filed an Intervenor Complaint later that year, seeking recovery of its response costs with respect to the Site, as well as standing to enforce the terms of any negotiated settlement. The parties negotiated a settlement, which led to the Court's entering a Final Judgment by Consent in June 1997 (the "Consent Decree"). The Consent Decree expired on September 31, 2012, but established a method for ensuring that MDL would be responsible for any response action costs remaining after that date. Specifically, it requires the establishment of financial assurance "equal to the estimated cost of the subsequent four (4) years of necessary response actions, as reasonably projected

MDL's attempts to clean up the Site have been unsuccessful, particularly at Hillside. In fact, the most recent information available indicates that contamination at Hillside is worse than previously recognized. Testing has revealed increased TCE concentrations in groundwater west of the school building.[2] MDL has also reported that recent information reflects "an expanded (wider) plume of TCE groundwater contaminations greater than our previous conceptual model indicated." Furthermore, additional contaminants were detected in concentrations "above their potentially applicable MCP Method 1 GW-2/3 standards, indicating a larger area of treatment will be required than previously estimated."[3]

The Hillside School is presently safe for use due to the presence of a Sub-slab Depressurization and Crawlspace Ventilation System. The Hillside School was constructed in 1960. Due to Hillside's age and size, the Town has undertaken a thorough analysis of its existing schools for the purpose of identifying the best long-term solution, and has included the renovation and/or reconstruction of the Hillside School in its scope of services for an on-going feasibility study in partnership with the Massachusetts School Building Authority ("MSBA").

With this lengthy and complex history as a backdrop, the Town has reviewed the draft Phase IV Supplemental Remedy Implementation Plan (the "Plan") prepared for MDL, and offers the following comments.

The Plan calls for six (6) new injection wells to be installed to the east of the Hillside School's current location. Although the Town has not yet definitively established a footprint for a new location of the Hillside School, it is likely that the school building's new footprint would extend further to the east than the current footprint. This creates the likelihood that the newly drilled injection wells would be disturbed or destroyed during construction at Hillside.

In order to avoid the need to drill a second set of injection wells, and the risk of the proposed chemical treatments being interrupted by construction at Hillside, the Town suggests that MDL explore the possibility of drilling wells diagonally from the top of the hill to the east of Hillside.[4]

The Town also suggests that MDL explore the possibility of drilling new injection wells at the top of the hill on its property, and/or activating existing wells in this area. This would provide an extra layer of chemical treatment that would not be interrupted by any construction at Hillside, and potentially reduce the amount of future contaminated groundwater reaching the Hillside Site.

---

by MDL and the Commonwealth." Earlier this year, the Superior Court approved a Modified Final Judgment by Consent, including the Financial Assurance Mechanism required by the Consent Decree.

[2] April 4, 2013 "Focused Environmental Subsurface Investigation for Hillside Elementary School Property" prepared by Lord Associates, Inc. for MDL, pp. 6-7.

[3] March 19, 2014 "Summary Report on Additional Well Installation to Support Response" prepared by Lord Associates, Inc. for MDL.

[4] The Town appreciates that MDL is likely unable to simply relocate the proposed wells up the hill to the east due to constraints presented by the topography and existing vegetation.

Now that a viable In Situ Chemical Oxidation (ISCO) plan has been identified expediting clean-up at the Hillside School site must be a defined objective of that plan.

The Town further suggests that MDL explore the possibility of locating new injection wells on neighboring properties to the east of Hillside which are not owned by MDL or the Town. Although this would require MDL to obtain permission from private property owners, these property owners are surely aware of the situation and may be willing to allow minor work on their land to resolve the situation more quickly and effectively.

The Town requests that MassDEP and MDL consider whether the amount of chemical treatment proposed in the Plan is sufficient. The Plan proposes In Situ Chemical Oxidation, and calls for MDL to introduce approximately eight 500-gallon batches of chemicals, at a rate of roughly one batch per week, meaning that treatment would take place over the course of seven to eight weeks. The Town asks that MassDEP and MDL consider introducing larger batches of chemicals more frequently.

Finally, the Town notes that important information regarding groundwater is apparently missing from MDL's submittals to MassDEP. Specifically, seven new wells have been installed (LB-MW through LB-10D/MW) since the last comprehensive information on groundwater elevation data was made available in the April 2013 Focused Environmental Subsurface Investigation. That 2013 report contained "Table 1 Groundwater Elevations," which included wells LB-2D/MW, LB-3D/MW and LB-4/MW (installed in approximately December 2012).

The Town requests that the Groundwater Elevation Table be updated, if not already, to reflect these new wells and more recent sets of groundwater monitoring data.

Thank you for your consideration in this matter. Please do not hesitate to contact me should you have any questions.

Very truly yours,

Kate Fitzpatrick
Town Manager

cc: Board of Selectmen
Daniel Gutekanst, Superintendent of Schools
Steve Popper, Director of Design and Construction
Ralph Tella, LSP for MDL
Leigh Gilligan, Esq.
Carol Iancu, Esq.
Maureen Vallatini, Esq.
Luke H. Legere, Esq.

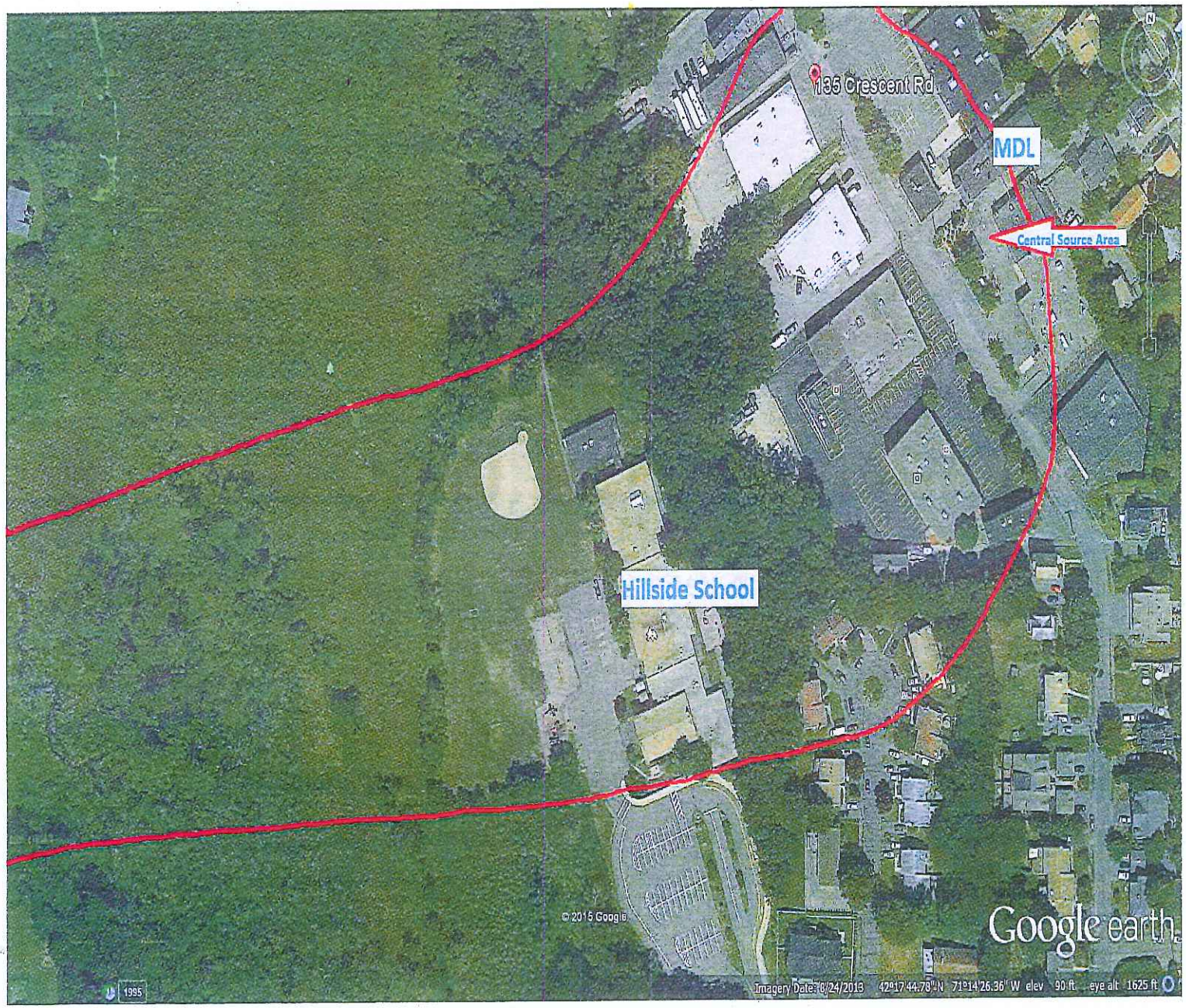
# Phase IV Supplemental Remedy Implementation Plan

Hillside Elementary School

*Prepared by:*

Ralph Tella, LSP & edited by MassDEP for pre-meeting

February 20, 2015


135 Crescent Rd
MDL
Central Source Area
Hillside School
© 2015 Google
Google earth
1995
Imagery Date: 8/24/2013 42°17'44.78" N 71°14'26.36" W elev 90 ft eye alt 1625 ft

# Site History

- 1985 - Routine real estate assessment identifies groundwater contaminated by chlorinated solvents: principally trichloroethene (TCE).

- 1988 - DEP identifies TCE in indoor air at Hillside School and nearby residences.

- 1989 - The Site became a "Public Involvement Plan" site.

- 1990 - Crawl space ventilation and sub-slab depressurization systems installed at School and nearby residences.

# Site History, continued…

- 1994 - Groundwater Pump and Treatment System installed at MDL
- 2000 - Phase II Comprehensive Site Assessment completed
- 2001 - DEP installs "Permeable Reactive Barrier Wall" along Central Avenue to intercept groundwater contamination flow to Wellesley water supply area.

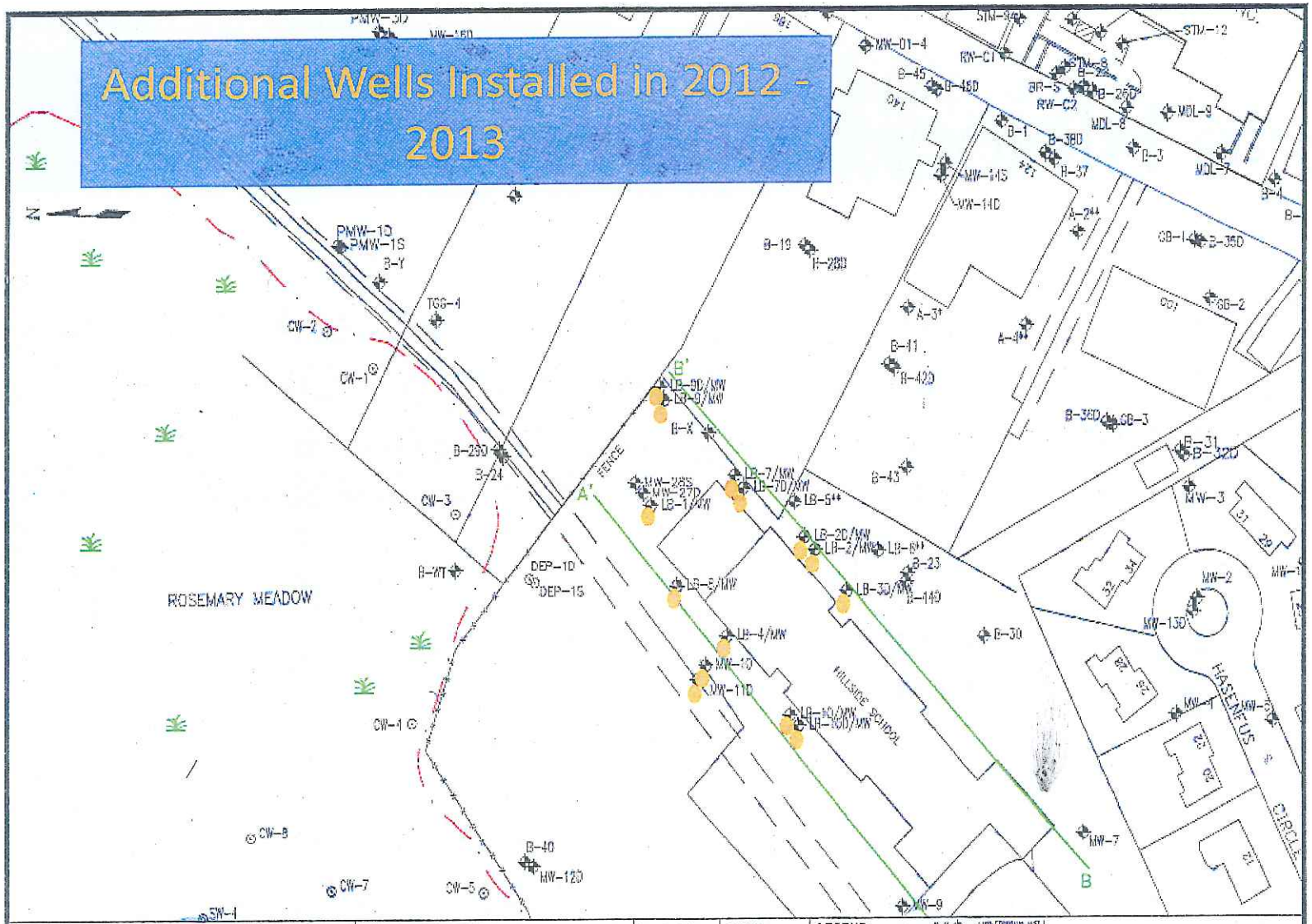
# Site History, continued…

- 2004 - Phase III Identification of Remedial Alternatives identifies In-Situ Chemical Oxidation (ISCO) as preferred technology for addressing contamination at the MDL property.

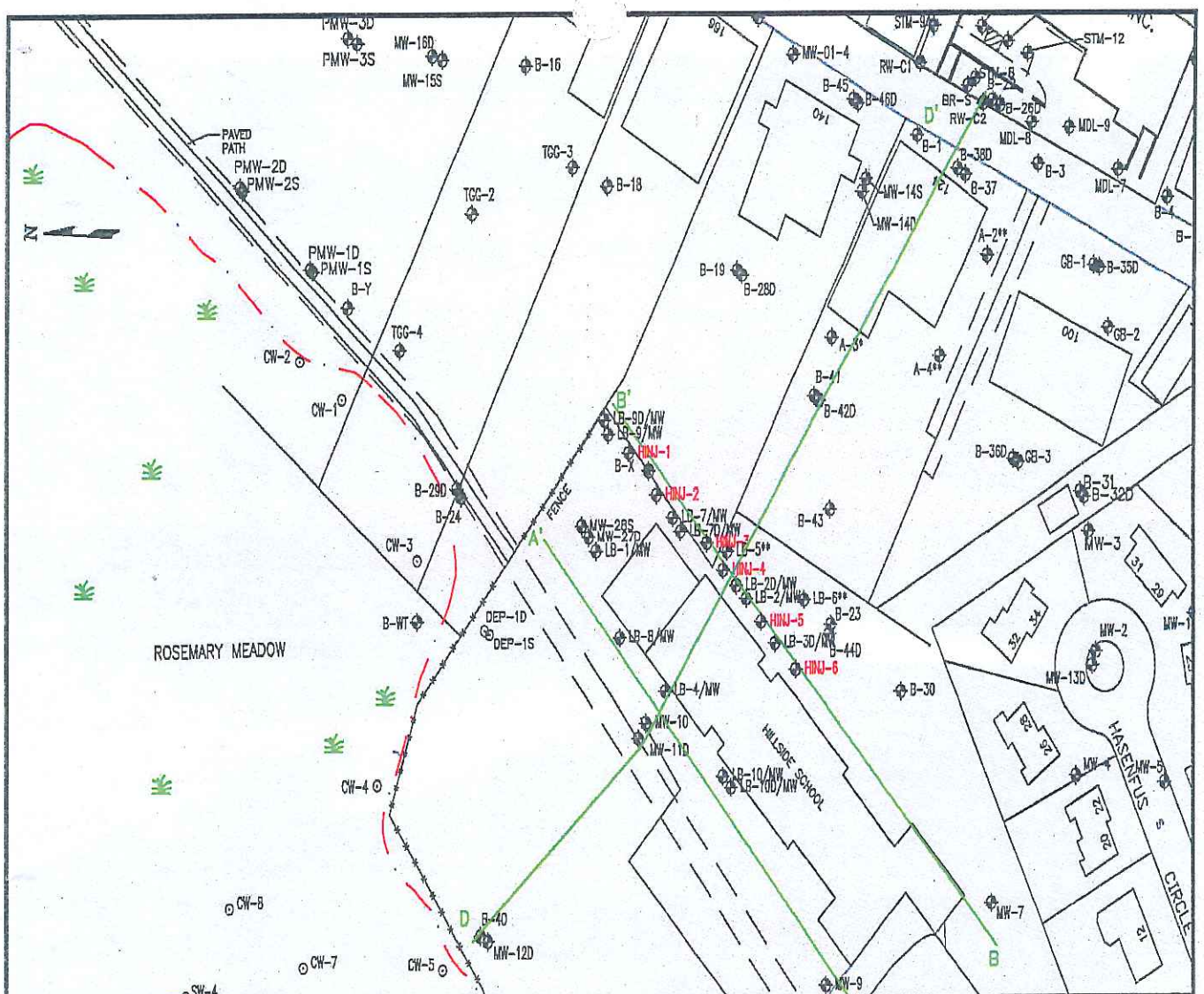
- 2004-2009 - Various "Pilot-Test" ISCO programs are completed at MDL

- 2010 - MDL undertakes a Phase IV Remedy Implementation Plan utilizing iron-catalyzed sodium persulfate as the chemical oxidant to remediate the source area on MDL property .

# Additional Wells Installed in 2012 - 2013




| | | | | |
|---|---|---|---|---|
| LORD ASSOCIATES, INC.<br>1506 PROVIDENCE HWY #30 (781) 255-5554<br>NORWOOD, MA FAX (781) 255-5535 | TITLE: SITE PLAN With Borings/Wells | DRAWN BY: DPL | FIGURE: 2 | LEGEND: MONITORING WELL; RECOVERY WELL; MICROWELL; SEEPAGE/PIEZOMETER; SURFACE WATER SAMPLING LOCATION; RIVER GAGE; APPROXIMATE PROPERTY BOUNDARY; WELL DESTROYED |
| SITE: MDL NEEDHAM, MA | FILE: Feb 2014 Hillside Site Plan | SHEET: 1 of 1 | DATE/REV: 2/27/13 | |




LORD ASSOCIATES, INC.
1506 PROVIDENCE HWY #30
NORWOOD, MA
(781) 255-5554
FAX (781) 255-5535

TITLE: SITE PLAN With Borings/Wells

DRAWN BY: DPL

FIGURE: 2

SHEET: 1 of 1

DATE/REV: 1/5/15

SITE: MDL NEEDHAM, MA

FILE: Jan 2015 Hillside Site Plan

LEGEND:

- MONITORING WELL
- RECOVERY WELL
- MICROWELL
- SEEPAGE/PIEZOMETER
- SURFACE WATER SAMPLING LOCATION
- RIVER GAGE
- APPROXIMATE PROPERTY BOUNDARY
- WELL DESTROYED
- PROPOSED INJECTION WELL

# Remedy Implementation Plan

- A chemical solution of Sodium Persulfate and Iron-catalyst will be injected into the contaminated groundwater through a series of wells located upgradient of the School's northeast side.
- The chemicals will be stored in a building at 140 Crescent Road and injected into the wells through buried piping.

- The solution will be added weekly in 500 gallon batches, to thirteen wells over an 8 week period.

- A chemical reaction occurs which destroys the TCE.

- This process is similar to the treatment program already conducted on the MDL property.

# Project Implementation

- MDL and DEP would like to implement the program as soon as possible this year when school is not in session.
- All activities will be coordinated with the School and Town.
- The program will not disrupt normal school activities.
- Injection of oxidant will take place over a period of 6-8 weeks.
- System checks will be done on a daily basis.
- Groundwater monitoring will take place weekly for field parameters and approximately three months following injections for chlorinated VOCs, sulfate and iron.

# Phase IV Supplemental Remedy Implementation Plan

*for the site:*

Microwave Development Laboratories, Inc.
101-145 Crescent Road
Needham, MA

RTN 3-0386

*Prepared For:*

Microwave Development Laboratories, Inc.
135 Crescent Road
Needham, MA. 02494

*Prepared By:*

**Lord Associates, Inc.**
1506 Providence Highway, Suite 30
Norwood, MA 02062

Project No. 1564

January 23, 2015

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## 1.0 INTRODUCTION

The following submission constitutes a Phase IV Supplemental Remedy Implementation Plan (the "Plan") for the site located at and near Microwave Development Laboratories, Inc., (MDL) 135 Crescent Road in Needham, Massachusetts (the "Site") pursuant to the Massachusetts Contingency Plan regulations at CMR 40.0874, and a Phase IV Conditional Approval Letter prepared by the Massachusetts Department of Environmental Protection (DEP) dated July 21, 2010. The Plan was prepared on behalf of MDL by Lord Associates, Inc. (LAI).

This Plan focuses on remediation at the Hillside Elementary School property (the "School") on Glen Gary Drive, downgradient from the source area on MDL property on Crescent Road. A Phase III Remedial Action Plan, dated February 17, 2004, prepared by Shaw Environmental, Inc. for the DEP identified In-Situ Chemical Oxidation (ISCO) as the preferred remedial alternative technology for the "Central Source Area" on the MDL property. This conclusion was reached following a pilot test utilizing sodium permanganate in 2005. Concurrently, Lord Associates, Inc. and Norfolk Ram Group, on behalf of MDL, performed a pilot test using Modified Fenton's Reagent in the "Northern Plume" area of the Site. These activities were followed by a third pilot test using Modified Fenton's Reagent in the Central Source Area.

Each of these pilot tests demonstrated the effectiveness of ISCO in reducing the primary site contaminant of concern, trichloroethene (TCE). They also documented the difficulty in delivering the remedial additive to the target treatment areas due to the dense glacial till soil present throughout the area.

With consideration to the lessons learned from these pilot tests, MDL implemented a Remedial Action Plan for the Central Source Area using ISCO in 2010. The plan utilized an alternate oxidant that would provide a longer sustained level of treatment, activated (catalyzed) sodium persulfate, and an injection program that utilized a low-flow delivery to the target area over a longer period of time.

The results of that treatment plan were summarized most recently in a Phase IV Status Report submitted to DEP on October 23, 2014. It is available for public viewing on the DEP website at http://public.dep.state.ma.us/wsc_viewer/.

Owing to the success of the remediation conducted at the MDL property, a similar effort is now being proposed at the Hillside Elementary School. While systems are in place to prevent exposure from Site contaminants at the School, no active remedial programs have been implemented to address groundwater contamination that has persisted at approximately the same concentrations for over ten years. Additional assessment activities completed at the School from 2012 to 2014 have further defined the extent of contamination present and facilitated the design of the remedial program proposed in this Plan.

A Site Locus is attached as **Figure 1,** and a Site Plan showing pertinent Site features of the Hillside School Area is attached as **Figure 2**.

## 2.0 RELEVANT CONTACTS

RESPONSIBLE PARTY:

Microwave Development Laboratories, Inc.
135 Crescent Road
Needham, Massachusetts 02494
Business phone: (781) 449-2646
Contact: Mr. James Richmond

LICENSED SITE PROFESSIONAL:

Ralph J. Tella
Lord Associates, Inc.
1506 Providence Highway, Suite 30
Norwood, MA 02062
Phone (781) 255-5554 x1004; Fax (781) 255-5535
LSP#: 7473

## 3.0 SELECTED REMEDIAL ALTERNATIVES

While significant improvements in groundwater quality have been achieved at the source areas near Crescent Road, these activities have not yet resulted in a marked change in TCE concentrations at the base of the slope of the hill where the Hillside Elementary School is located. This is likely attributable to the low hydraulic conductivity soils which result in relatively long travel time estimates from the source areas to the School. Prior studies estimated said travel times to be in excess of ten years.[1]

Factors that make a straight-forward remedial approach difficult to implement at this area of the Site include:

- Limited access, as the current use is an elementary school;
- Location of the highest concentrations are underneath the School;
- Limited space upgradient of the School, as the hill grade rises significantly from within a few feet of the School's east side to the wooded areas up to Crescent Road;
- Very dense, low permeability soil types;
- High groundwater elevations; and
- Potential high natural Soil Oxidant Demand ("SOD").

### 3.1 SELECTED REMEDIAL ADDITIVE

As described in the Phase III Remedial Action Plan, the preferred remedial technology identified for the area located on MDL property in the "Central Source Area" on Crescent Road was In-

[1] Final Phase II Comprehensive Site Assessment Report. MDL, prepared by the Cygnus Group, Inc., June 30, 2000.

Situ Chemical Oxidation (ISCO). Previous pilot ISCO applications with Modified Fenton's Reagent and sodium permanganate were marked by the limited volume of reagents that could be applied due to conditions of low hydraulic conductivity. To address the limitations of low conductivity soils, a modification of the prior remedial approach that includes ISCO treatment utilizing activated sodium persulfate, coupled with a low injection rate but long duration application of the remedial additives via gravity feed and/or low flow chemical metering pumps is proposed.

The decision to use sodium persulfate as the oxidant was based on the need for a more stable and longer-lived compound that exhibited near equal ability to destroy TCE as hydrogen peroxide or sodium permanganate. An oxidant that is more stable and longer lived is a necessary condition for the greater volume of oxidizer to be applied as it allows increased opportunity to travel with groundwater and reach its target. The two most common oxidants in use that exhibit these features are sodium permanganate and sodium persulfate. Use of permanganate may result in manganese oxide precipitation that could lead to a further reduction in the permeability of the soil at the Site. Therefore, sodium persulfate has been selected as the preferred oxidant.

Sodium persulfate, when activated by iron, heat, high alkalinity, or hydrogen peroxide produces highly oxidizing persulfate radicals which are nearly equivalent to the reactive power of the hydroxyl radical (2.6 eV vs. 2.8 eV), and stronger than permanganate at 1.7 eV. Studies have also shown that the soil oxidant demand for sulfate radicals is much lower than that for permanganate and hydroxyl radicals,[2] reducing the amount of oxidizer wasted on reactions competing with the contaminant. Thus while nearly equivalent in strength to Fenton's Reagent, sodium persulfate reacts more slowly. This will eliminate safety and security concerns associated with the potential for Fenton's Reagent to off-gas or eject oxidizer from the well. Another benefit is that testing for sulfate can easily monitor its presence.

The approach considered here is similar to that used on MDL property. MDL proposes injecting sodium persulfate and a chelated iron catalyst (ferric sodium EDTA) at a rate of 500 gallons per week (approximately 70 gallons per day of oxidizer, plus catalyst). This volume may be adjusted depending on the ideal rate of application following system startup.

This plan assumes the oxidizer and catalyst solutions will be prepared on a weekly basis and stored in 500-gallon polyethylene tanks. The tanks will be stored inside a building at 140 Crescent Road where they will be protected from unauthorized access and the weather.

The chemical reagents will be delivered through polyethylene tubing to each of the designated injection well locations at controlled application rates. The tubing will be placed within rigid PVC piping for protection. The piping will be buried where it traverses the paved parking lot behind 140 Crescent Road and on school property.

For the purposes of this initial plan, we are planning up to eight (8) weeks of operation of the system assuming an application rate of one batch per week. The period of operation may be

[2] ITRC. Technical and Regulatory Guidance for ISCO Treatment of Contaminated Soil and Groundwater, January, 2005.

shorter if the rate of application is greater than one batch per week. In total, this plan assumes approximately eight (8) 500-gallon batches of a 30% activated sodium persulfate solution will be initially applied.

## 4.0 ENGINEERING DESIGN OF PROPOSED REMEDIAL MEASURES

The following sections detail the engineering concepts and criteria used for the design and construction specification of the Remedy Implementation Plan (RIP), pursuant to 310 CMR 40.0874(3)(b).

### 4.1 REMEDY IMPLEMENTATION PLAN OBJECTIVES

In accordance with the 1997 Final Judgment[3] and the MCP, the overall objective of the proposed Comprehensive Remedial Response Actions is to achieve a site-wide condition of "No Significant Risk" in order to support a Permanent Solution. In addition, pursuant to 310 CMR 40.0414(3), Critical Exposure Pathways (CEPs) are required to be eliminated to the extent feasible.

To accomplish these objectives, contaminated media must meet either site-specific risk criteria, or published soil and groundwater cleanup standards. A site-specific remedial objective for groundwater at the MDL Central Source Area was developed and approved by the DEP for TCE at 2,680 micrograms per liter (ug/L).[4] This standard was calculated by LAI to be protective of downgradient potential indoor air receptors. It was based on the groundwater category GW-2 standard for TCE of 30 ug/L in effect in 2010 when the Phase IV RIP was developed. In May of 2014, DEP lowered this standard to 5 ug/L. As the GW-2 standard was developed to be protective of indoor air, this is the standard applicable to the Hillside School property within 30 feet of the building where groundwater is less than 15 feet below the surface.

Recognizing the long time period (>10 years) for the treatment on Crescent Road to likely markedly affect a decrease in TCE concentrations at the School property, DEP has required MDL to undertake additional remedial efforts directly on School property. Even with this targeted effort in-place, demonstration that groundwater remediation has resulted in a condition of "No Significant Risk" at the Hillside School will likely involve a long-term (>10 years) groundwater monitoring program, during which time, all sub-slab depressurization and crawlspace ventilation systems currently in-place will need to remain operative. Consequently, no changes to the existing system and indoor air quality monitoring programs now being performed at the School are proposed.

Attainment of a Permanent Solution also requires that site soil meet all applicable cleanup standards. As described in the June 2000 Phase II Comprehensive Site Assessment risk characterization, and the March 19, 2014 Summary Report on Additional Well Installation to

[3] June 23, 1997 Final Judgment Superior Court Civil Action No. 94-0265-G, paragraph 27.
[4] Conditional Approval Letter to Conduct In-Situ Chemical Oxidation Pilot Study using Fenton's Reagent and proposed Remedial Action Goal for the Central Source Area of the MDL Site. DEP, April 9, 2007.

Support the Remedy Implementation Plan at the Hillside School, there are no soils identified at the Site which present a significant risk of exposure. Contaminated soils are not likely to be encountered at a depth less than 15 feet below surface grade.

## 4.2 SIGNIFCANT CHANGES IN SITE CONDITIONS

As documented in the October 23, 2014 Phase IV Status Report, there has been significant improvement in groundwater conditions on the MDL property since implementation of the ISCO program there. Average groundwater TCE concentrations are an order of magnitude less than the initial remedial goal set for the area. While there has also been some indications that certain downgradient wells (e.g., well B-38D, MW-14D) on the hillside are beginning to show improvement, there have been no significant changes in Site conditions since the Phase II Report at the Hillside School area of the Site.

A summary of TCE concentrations at the Hillside School property is provided on **Table 1,** and a graph of certain "key" wells over time is provided as **Figure 3**. As shown, TCE concentrations in the area of wells MW-10 and MW-11D have not appreciably changed in over ten years' time. A summary table of all groundwater sampling completed throughout the entire Site since 2005 is provided as **Table 2**.

No other site conditions have changed since the last status report.

## 4.3 DESCRIPTION OF ENVIRONMENTAL MEDIA TO BE TREATED

The primary environmental media targeted by this plan is groundwater. There have been no reportable concentrations identified in soil. As a result of reducing groundwater concentrations, an improvement in indoor air quality is expected.

## 4.4 CONCEPTUAL PLAN

The planned remediation will take place in the area depicted on **Figure 2**. The remedial additive will be injected in and upgradient of the location of the highest measured TCE concentrations. Based on available information, this is the area east of the north end of the school building, near wells LB-2, 3, 7 & 9/MW.

By injecting the additive upgradient of the target area, it is expected that over time the reagents will migrate though the areas of highest TCE concentration under the school building without the aid of hydraulic pumping or installation of additional injection points underneath the building. Based on the results of hydraulic conductivity testing done previously at the School, the travel time through the treatment zone is expected to be relatively slow. Groundwater velocity in the area of the treatment zone, as presented in the June 2000 Phase II Report is estimated at 0.07 feet/day. Given this velocity, it may take between 6-7 years for the treated groundwater to reach the west side of the building.

Under these conditions, the remedial additives may not reach all contaminated target areas before they are expended. Regardless, a plume of treated groundwater will eventually migrate through the area and a reduction in contamination will be realized.

Seven pre-existing monitoring wells and six new injection wells will be used for the injections. These are wells:

1. LB-9 & 9D/MW
2. LB-7 & 7D/MW
3. LB-2 & 2D/MW
4. LB-3D
5. Six (6) new injection wells

Cross-sectional diagrams of the pre-existing wells showing their horizontal and vertical placement are provided as **Figures 4, 5 & 6**. These wells are clustered in three areas of the property and are expected to treat areas approximately 20' wide by 50' long and 30' deep. Data obtained from the initial injection event proposed herein will be used to evaluate migration and radius of influence. Areas not affected by the initial injections within this area may be included in subsequent application of remedial additives and/or additional injection points.

Based on previous applications on MDL property, we estimate the initial injection to take place over a period of 7-8 weeks.

## 4.5 EQUIPMENT

At this time, six (6) new injection wells are proposed. These wells will be installed along the same line as the pre-existing wells on the east side school property border. It is not feasible to install the wells further upgradient of the School. The installation of any wells further upgradient from the existing array of wells would require extensive landscaping work due to the steep wooded slope that rises from that side of the School up towards MDL property.

The new wells will be constructed of four-inch PVC pipe to depths of approximately 30 feet or refusal, whichever is met first. The wells will be completed using 25 feet of screen, riser, sand packed and sealed with bentonite. Each well will have a cement grout from the seal to the ground surface, and have an eight-inch protective road box cemented in place upon completion.

Plastic tubing will be used to deliver the additive to the desired well and screened interval. The tubing will be attached to the well casing through a fitting with a valve to direct excess reaction gas out the top. The tubing will be installed in a shallow trench or protective PVC casing to the two 500-gallon mixing tanks located in the rear of the building at 140 Crescent Road. This building is locked. Gravity feed, or if necessary, chemical metering pumps will be used deliver the additives to the injection points through flow controlling orifices.

All remedial additives will be stored on MDL property in a secure area. Safety and containment equipment will be maintained on-site in the case of accidental discharge or system malfunction. Injection will be continuously monitored on a daily basis by MDL's waste water treatment plant operator so that in the event of malfunction, pumps and drilling equipment can be immediately shut down (see **Section 5.3**). Hoses will be maintained to wash and dilute any surfacing of chemicals during injections.

### 4.6 MANAGEMENT OF REMEDIAL WASTE

No remedial waste will be generated as a result of this Plan.

### 4.7 IMPACT OF DESIGN ON ENVIRONMENTAL RECEPTORS/NATURAL RESOURCE AREAS

Implementation of this design will have no adverse impact on environmental receptors or natural resource areas.

## 5.0 OPERATION, MAINTENANCE AND MONITORING (OMM) PLAN

### 5.1 PROJECT MOBILIZATION AND SETUP

Following completion of design plans; the system will be installed and prepared for operation. This will include staging the tanks for oxidizer and catalyst, mixing the first batch of reagents, and adjusting the gravity feed system to deliver the anticipated 500-gallon batches at a controlled rate over a one-week period.

The first reagent batch injected will be monitored to assure the rate of injection is within the anticipated design parameters and that the rate does not exceed the hydraulic capacity of the wells. Section 40.0046(1)(b) of the MCP states that the injection of remedial additives must not result in groundwater mounding within two feet of the ground surface. The potential for this to occur will be monitored throughout the injection program by periodic well gauging.

### 5.2 REMEDIAL ISCO APPLICATIONS

Based on a treatment volume of approximately 90,000 cubic feet, the total persulfate demand including soil oxidant demand is estimated at 11,212 pounds (3,636 gallons of 30% persulfate). The weight of chelated iron required is estimated at 1,287 pounds (5,839 gallons of 2.5% solution). This estimate conservatively assumes a uniform elevated concentration of impact based on prior analyses of approximately 13 mg/L TCE in groundwater and 14 mg/kg TCE in soil. Manufacturer's calculations are attached for reference as **Appendix A**.

Based on the rate of injection volume anticipated, at least once per week, LAI and MDL will check on the system operation and prepare each additional 500-gallon batch of sodium persulfate

and catalyst solutions for injection the coming week. The frequency of the mixing will be based on the time required to draw down each 500-gallon tank of catalyst and oxidizer. The sodium persulfate will be mixed as a 30% strength solution and applied via gravity or chemical feed pumps with an additional volume of a chelated iron catalyst (FeNaEDTA) to promote activation of the sodium persulfate.

Activated sodium persulfate utilizes the oxidation potential of the persulfate anion ($S_2O_8 2^-$), and the creation of sulfate radicals ($SO_4^-$) to oxidize TCE and other contaminants including Freon-113. The use of sodium persulfate is desirable for this project due to the greater stability and longevity of the oxidizer in the subsurface environment. Each 500-gallon batch solution of oxidizer will contain 1,550 pounds of sodium persulfate. Approximately 110 pounds of the iron activator will be applied at the same time utilizing gravity feed or a separate chemical feed pump. The activator need not be prepared in 500-gallon batches. An important consideration is that the oxidizer and catalyst are not mixed together until they are injected to prevent premature decomposition of the oxidizer solution.

The need for the iron activator solution was based on previous analyses of soil and groundwater analyses. Analyses for total iron of representative soil types in the target zone for treatment determined that the dense till soil has a total iron content of approximately 20 mg/Kg. Samples of groundwater collected in the area for dissolved iron range between 1-3 mg/L. Because the optimum dissolved iron concentration for persulfate activation is between 100-400 mg/Kg[5], the addition of the iron activation solution is required.

## 5.3 MONITORING

### 5.3.1 System Monitoring

During initial system start-up, the system will be continuously monitored for leaks and injection well water elevations for the first day by MDL's waste water treatment plant operator and LAI field technicians. Once all pumping rates have been satisfactorily adjusted to maintain the proper levels in the injection wells, system checks will be made daily during the application of remedial additives. Inspections made on school grounds will follow school security protocol. School maintenance personnel will be instructed on the system operation and provided with emergency contact numbers.

### 5.3.2 Groundwater Monitoring

Monitoring for remedial additives will be done in accordance with 310 CMR 40.0046 "*Application of Remedial Additives*". Data will be collected to establish baseline conditions and then on a weekly and monthly basis until the RIP is completed according to the following schedule.

[5] Conversations with Peroxychem Technical Department

*Baseline (Pre-ISCO)*

Establishment of baseline conditions and subsequent ISCO performance monitoring will take place at the following well locations:

1. LB-9/MW
2. LB-9D/MW
3. B-X
4. LB-7/MW
5. LB-7D/MW
6. LB-2/MW
7. LB-2D/MW
8. LB-3D/MW
9. B-23
10. B-44D
11. LB-1/MW
12. MW-28S
13. LB-8/MW
14. LB-4/MW
15. MW-10
16. MW-11D
17. LB-10/MW
18. LB-10D/MW
19. MW-12D
20. B-40
21. Plus SIX NEW INJECTION WELLS

Baseline data will be collected for:

- Depth to groundwater measurements
- Physical parameters (pH, temp, specific conductivity, dissolved oxygen, oxidation-reduction potential)
- Sulfate, using EPA Method 300.0
- Total and dissolved iron, using EPA Method 601B or 200.7
- Volatile chlorinated organic compounds (VOCs) including Freon-113 via EPA Method 8260B.

*Post ISCO Monitoring*

Following injection of remedial additives, a monitoring program will be implemented to track the effectiveness of treatment and monitor for potential "rebound" effects. The following wells will be sampled on a weekly basis for the first month and tested in the field for the parameters pH, temp, specific conductivity, dissolved oxygen & oxidation-reduction potential (ORP), and sulfate:

1. LB-9/MW
2. LB-9D/MW
3. B-X
4. LB-7/MW
5. LB-7D/MW
6. LB-2/MW
7. LB-2D/MW
8. LB-3D/MW
9. B-23
10. B-44D
11. LB-1/MW
12. LB-8/MW
13. LB-4/MW
14. MW-10
15. MW-11D
16. LB-10/MW
17. LB-10D/MW
18. Plus SIX NEW INJECTION WELLS

After the first month, if the data indicates that there are no persulfate residuals and field parameters have returned to within 10% of baseline conditions, samples will be collected for the following laboratory analyses:

- Sulfate, using EPA Method 300.0, and/or persulfate radical
- Total and dissolved iron, using EPA Method 601B or 200.7
- Volatile chlorinated organic compounds (VOCs) including Freon-113 via EPA Method 8260B.

Monthly monitoring for field parameters will continue until the sampling for laboratory analyses criteria are met. Once a complete set of laboratory analyses has been obtained and evaluated, a decision regarding continued ISCO will be discussed with DEP.

Samples for lab analyses will not be collected if there are measureable persulfate residuals present in the well. Based on the previous injection programs at the Central Source Area, it is anticipated that sampling for VOCs will not take place for approximately three months following injection of the remedial additive. This sampling will be repeated again in three months time.

## 6.0 SCHEDULE FOR IMPLEMENTATION OF ACTIVITIES

Implementation of the RIP will coincide with DEP approval, seasonal weather considerations, and co-ordination with School officials. While construction of the injection system may take place during the winter of 2014, MDL would prefer to proceed with the application of additives during the spring of 2015 to avoid freezing conditions. Injections would proceed over a period of approximately eight weeks. Performance monitoring will take place according to the schedule described in **Section 5.0**.

No installation or field work will take place on the Hillside School property when classes are in session. All work on Hillside School property will be scheduled in advance with approval from the principal.

## 7.0 FEDERAL, STATE OR LOCAL PERMITS

No federal, state, or local permits are required for the implementation of this plan.

## 8.0 PUBLIC INVOLVEMENT

Public involvement activities relevant to the RIP will be conducted in accordance with 310 CMR 40.1403(3)(a), and the Public Involvement Plan dated June 2000. Notifications to the information repository, local municipal officials, and interested parties who are on the mailing list will be made to inform them of the availability of the Plan and how to obtain a copy. A public comment period of twenty days will be held from the date of the public notice.

## 9.0 HEALTH AND SAFETY PLAN

The Occupational Safety and Health Administration (OSHA) require the development of a site-specific Health and Safety Plan (HASP) pursuant to 29 CFR 1919.120. A HASP will be instituted during the implementation and maintenance of the Comprehensive Remedial Action, which adheres to the procedures described in 310 CMR 40.0018. For informational purposes, copies of the Material Safety Data Sheets for the remedial additives is attached.

## 10.0 FUTURE REPORTING

Any significant modifications to the proposed RIP implemented prior to, or during, the activities will be discussed with DEP and as appropriate, provided to the DEP in a Phase IV As-Built Construction Report in accordance with 310 CMR 40.0875 (1)(c).

Phase IV Status and Remedial Monitoring Reports will be used to convey all data to DEP at six-month intervals until a Phase IV Completion Statement is submitted.

Future reporting for other areas of the Site, including the MDL property, Hasenfus Circle, and Rosemary Meadow, will be the subject of separate submittals.

# FIGURES

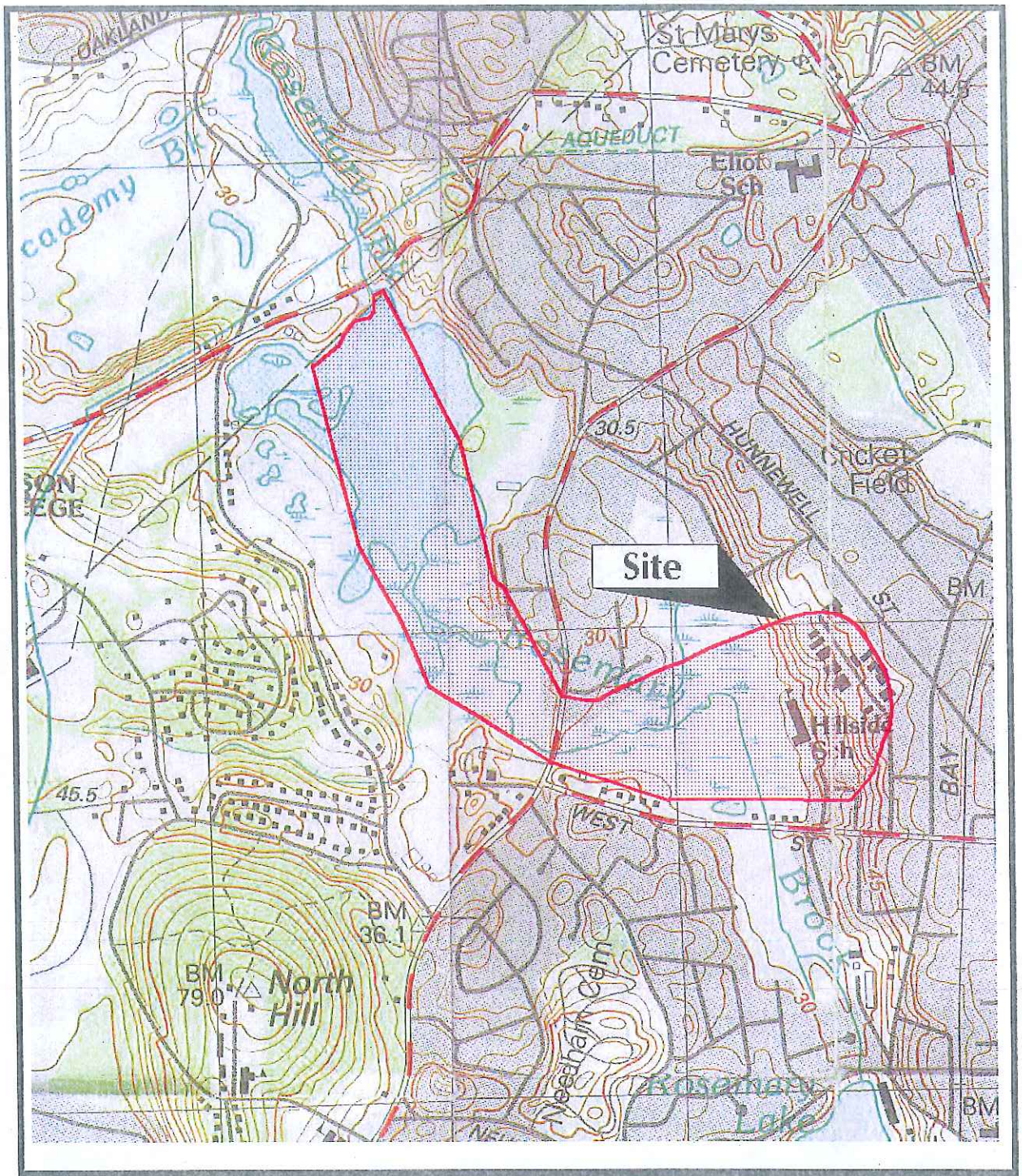



FIGURE 1

## Site Locus

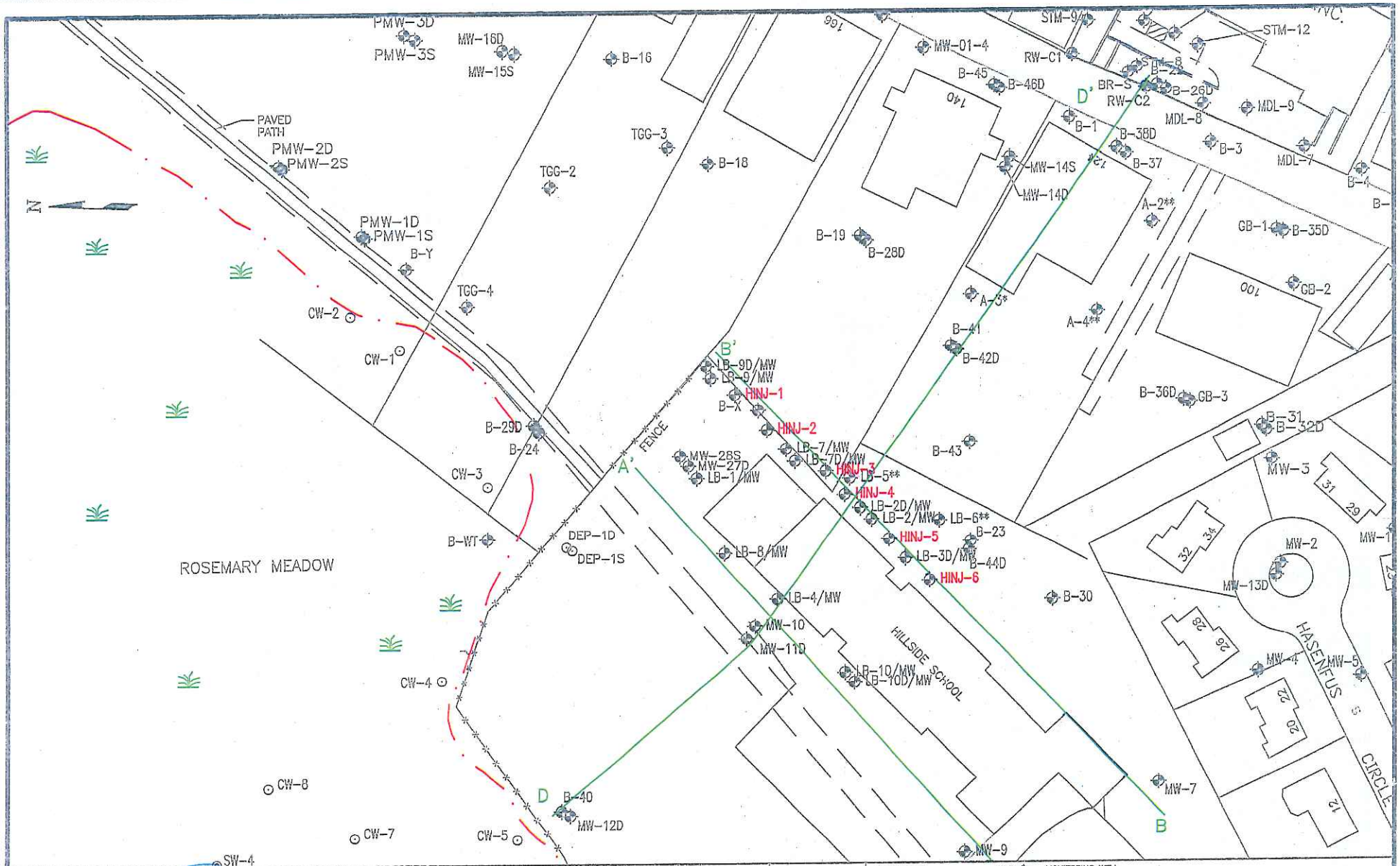
Microwave Development Laboratories, Inc. Site
101-145 Crescent Road, Needham, MA

Scale 1" ≈ 1042'

**Lord Associates, Inc.**

1506 Providence Highway, Suite 30

Norwood, MA. 02062

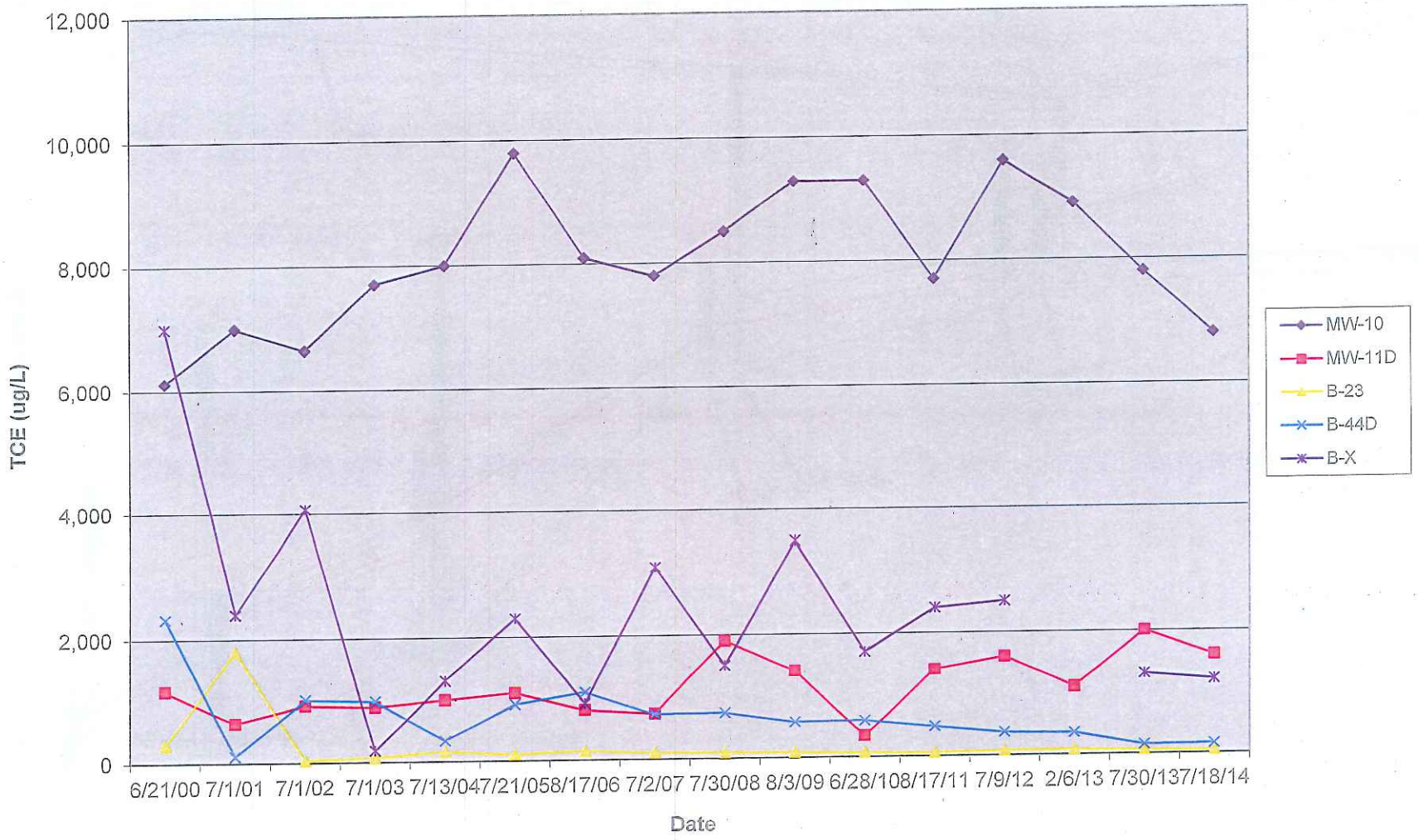


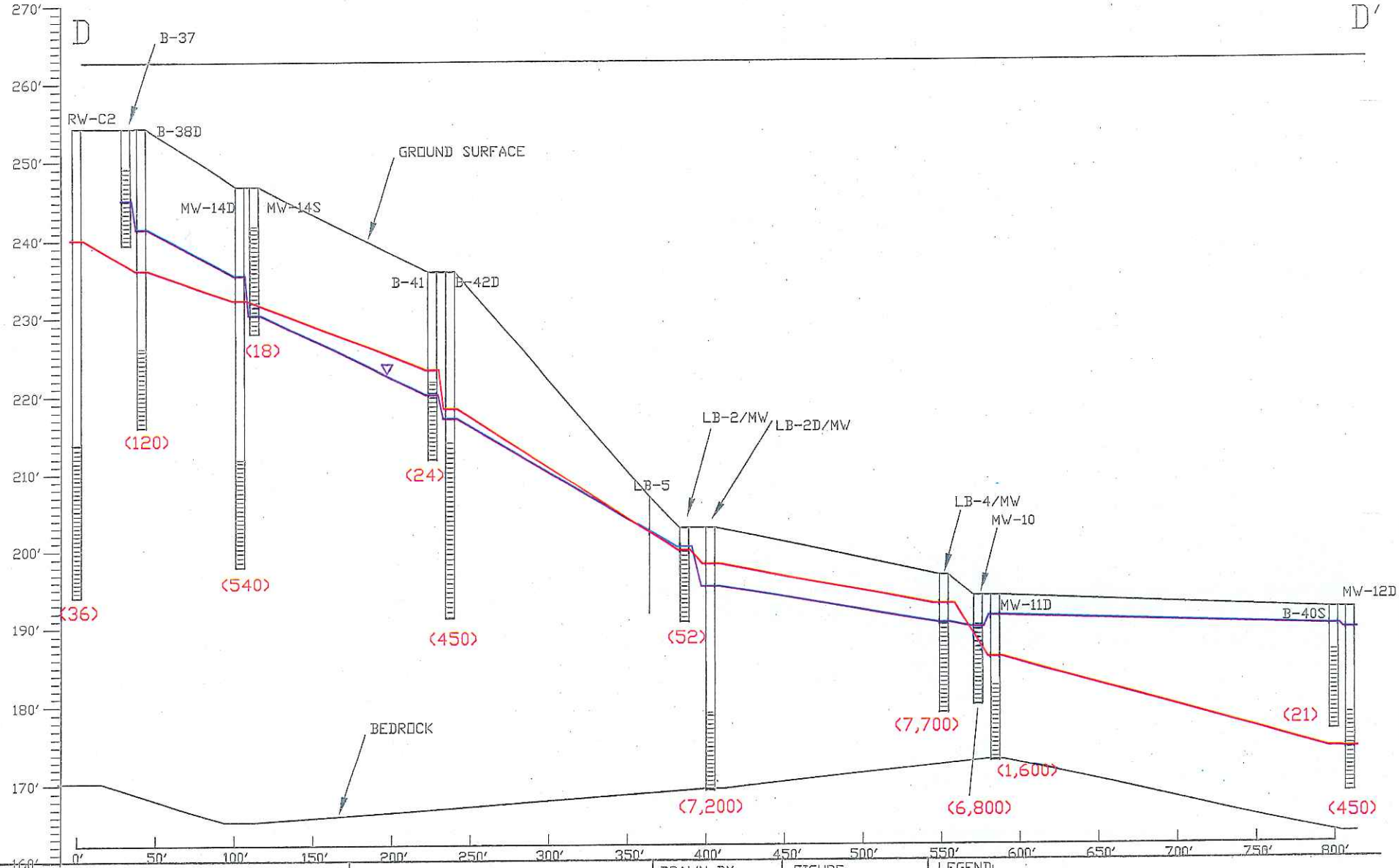

| | | | | |
|---|---|---|---|---|
| **LORD ASSOCIATES, INC.**<br>1506 PROVIDENCE HWY #30 (781) 255-5554<br>NORWOOD, MA FAX (781) 255-5535 | TITLE: SITE PLAN With Borings/Wells | DRAWN BY: DPL | FIGURE: 2 | LEGEND: |
| SITE: MDL NEEDHAM, MA | FILE: Jan 2015 Hillside Site Plan | SHEET: 1 of 1 | DATE/REV: 1/5/15 | |

LEGEND:

- B-45 MONITORING WELL
- RW-N RECOVERY WELL
- CW-2G MICROWELL
- RD-2 SEEPAGE/PIEZOMETER
- SW-1 SURFACE WATER SAMPLING LOCATION
- RG-1 RIVER GAGE
- APPROXIMATE PROPERTY BOUNDARY
- WELL DESTROYED
- INJ-1 PROPOSED INJECTION WELL

Figure 3: TCE in Hillside School Wells Over Time







LORD ASSOCIATES, INC.
1506 PROVIDENCE HWY, SUITE 30 (781) 255-5554
NORWOOD, MA FAX (781) 255-5535


SITE:
MICROWAVE DEVELOPMENT LABORATORIES
101-145 CRESCENT RD
NEEDHAM, MA

TITLE:
CROSS SECTION D – D'
EXTENSION OF FORMER D-D'
GROUND WATER MONITORING WELLS

FILE:
D XSEC EXTENSION 1-5-15

| DRAWN BY: | FIGURE: |
|---|---|
| MLR/DL | 4 |
| SHEET: | DATE/REV: |
| 1 of 1 | 1/5/2015 |

LEGEND:

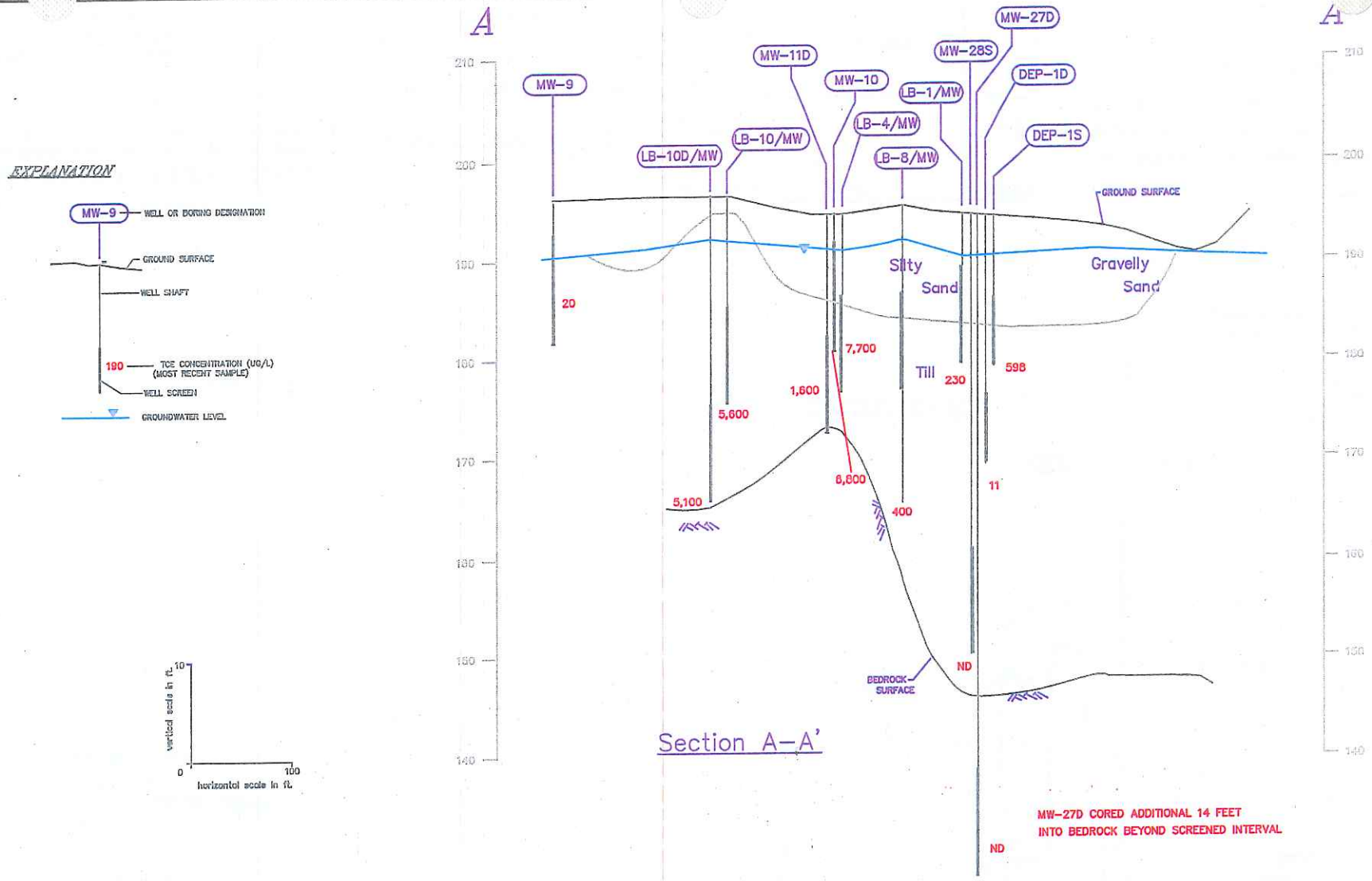
(72) TCE CONCENTRATION (ppb) FROM TABLE 2

GROUND WATER ELEVATION

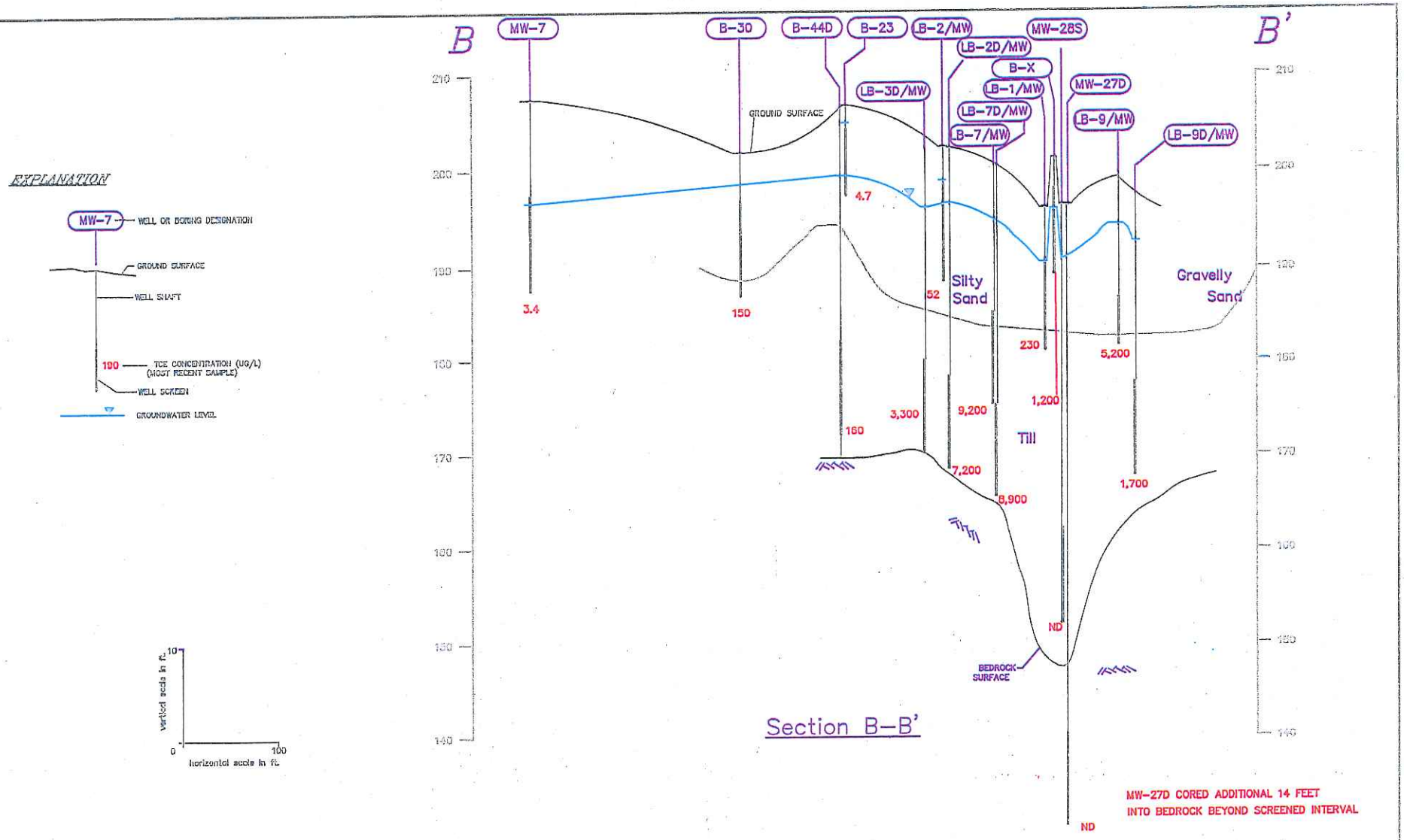
BEDROCK ELEVATION

BASAL TILL ELEVATION

WELL RISER/SCREENED INTERVAL




| | | | | |
|---|---|---|---|---|
| LORD ASSOCIATES, INC.<br>1506 PROVIDENCE HWY, SUITE 30 (781) 255-5554<br>NORWOOD, MA FAX (781) 255-5535 | TITLE:<br>CROSS SECTION A – A'<br>GROUND WATER MONITORING WELLS | DRAWN BY:<br>DL | FIGURE:<br>5 | LEGEND:<br>72 TCE CONCENTRATION (ppb) FROM TABLES 1&2<br>GROUND WATER ELEVATION<br>BEDROCK ELEVATION<br>WELL RISER/SCREENED INTERVAL IS SOLID |
| SITE:<br>MICROWAVE DEVELOPMENT LABORATORIES<br>101-145 CRESCENT RD<br>NEEDHAM, MA | FILE:<br>XSEC A-A' JANUARY 2015 | SHEET:<br>1 of 1 | DATE/REV:<br>1/5/2015 | |

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|---|---|---|---|---|
| LORD ASSOCIATES, INC.<br>1506 PROVIDENCE HWY, SUITE 30 (781) 255-5554<br>NORWOOD, MA FAX (781) 255-5535 | TITLE:<br>CROSS SECTION B – B'<br>GROUND WATER MONITORING WELLS | DRAWN BY:<br>DL | FIGURE:<br>6 | LEGEND:<br>72 TCE CONCENTRATION (ppb) FROM TABLES 1&2<br>GROUND WATER ELEVATION<br>BEDROCK ELEVATION<br>WELL RISER/SCREENED INTERVAL IS SOLID |
| SITE:<br>MICROWAVE DEVELOPMENT LABORATORIES<br>101-145 CRESCENT RD<br>NEEDHAM, MA | FILE:<br>XSEC B-B' JANUARY 2015 | SHEET:<br>1 of 1 | DATE/REV:<br>1/5/2015 | |

# TABLES

Table 1
Summary of Key Hillside School Well TCE Data

| Well ID | TCE (ug/L) | Date |
|---|---|---|
| MW-10 | 6,125 | 6/21/00 |
| | 7,000 | 7/1/01 |
| | 6,650 | 7/1/02 |
| | 7,700 | 7/1/03 |
| | 8,000 | 7/13/04 |
| | 9,800 | 7/21/05 |
| | 8,100 | 8/17/06 |
| | 7,800 | 7/2/07 |
| | 8,500 | 7/30/08 |
| | 9,300 | 8/3/09 |
| | 9,300 | 6/28/10 |
| | 7,700 | 8/17/11 |
| | 9,600 | 7/9/12 |
| | 8,900 | 2/6/13 |
| | 7,800 | 7/30/13 |
| | 6,800 | 7/18/14 |

| Well ID | TCE (ug/L) | Date |
|---|---|---|
| MW-11D | 1,163 | 6/21/00 |
| | 650 | 7/1/01 |
| | 930 | 7/1/02 |
| | 900 | 7/1/03 |
| | 1000 | 7/13/04 |
| | 1,100 | 7/21/05 |
| | 820 | 8/17/06 |
| | 750 | 7/2/07 |
| | 1,900 | 7/30/08 |
| | 1,400 | 8/13/09 |
| | 350 | 6/28/10 |
| | 1,400 | 8/17/11 |
| | 1,600 | 7/9/12 |
| | 1,100 | 2/6/13 |
| | 2,000 | 7/30/13 |
| | 1,600 | 7/18/2014 |

| Well ID | TCE (ug/L) | Date |
|---|---|---|
| LB-2D/MW | 4,800 | 2/6/2013 |
| | 7,200 | 7/31/2013 |
| | 7,200 | 7/21/2014 |
| LB-3D/MW | 3,400 | 2/6/2013 |
| | 3,900 | 7/31/2013 |
| | 3,300 | 7/21/2014 |
| LB-4/MW | 10,000 | 2/6/2013 |
| | 9,100 | 7/31/2013 |
| | 7,700 | 7/21/2014 |
| LB-7/MW | 13,000 | 1/20/2014 |
| | 9,200 | 7/21/2014 |
| LB-7D/MW | 12,000 | 1/20/2014 |
| | 8,900 | 7/21/2014 |
| LB-8/MW | 130 | 1/20/2014 |
| | 400 | 7/21/2014 |
| LB-9/MW | 8,100 | 1/20/2014 |
| | 5,200 | 7/21/2014 |
| LB-9D/MW | 1,800 | 1/20/2014 |
| | 1,700 | 7/21/2014 |
| LB-10/MW | 8,800 | 1/20/2014 |
| | 5,600 | 7/21/2014 |
| LB-10D/MW | 7,600 | 1/20/2014 |
| | 5,100 | 7/21/2014 |

| Well ID | TCE (ug/L) | Date |
|---|---|---|
| B-23 | 293 | 6/21/00 |
| | 1,800 | 7/1/01 |
| | 36 | 7/1/02 |
| | 69 | 7/1/03 |
| | 160 | 7/13/04 |
| | 100 | 7/21/05 |
| | 150 | 7/17/06 |
| | 110 | 7/2/07 |
| | 98 | 7/30/08 |
| | 90 | 8/24/09 |
| | 72 | 7/2/10 |
| | 55 | 8/17/11 |
| | 74 | 7/9/12 |
| | 80 | 2/6/13 |
| | 60 | 7/31/13 |
| | 47 | 7/30/14 |

| Well ID | TCE (ug/L) | Date |
|---|---|---|
| B-44D | 2,325 | 6/21/00 |
| | 110 | 7/1/01 |
| | 1,020 | 7/1/02 |
| | 990 | 7/1/03 |
| | 340 | 7/13/04 |
| | 920 | 7/21/05 |
| | 1,100 | 7/17/06 |
| | 740 | 7/2/07 |
| | 750 | 7/30/08 |
| | 590 | 8/24/09 |
| | 600 | 7/2/10 |
| | 490 | 8/17/11 |
| | 380 | 7/9/12 |
| | 360 | 2/6/13 |
| | 150 | 8/1/13 |
| | 160 | 7/29/14 |

| Well ID | TCE (ug/L) | Date |
|---|---|---|
| B-X | 7,000 | 6/21/00 |
| | 2,400 | 7/1/01 |
| | 4,070 | 7/1/02 |
| | 190 | 7/1/03 |
| | 1,300 | 10/26/04 |
| | 2300 | 4/5/05 |
| | 920 | 8/17/06 |
| | 3100 | 7/2/07 |
| | 1500 | 7/30/08 |
| | 3500 | 8/18/09 |
| | 1700 | 7/2/10 |
| | 2,400 | 8/17/11 |
| | 2,500 | 7/9/12 |
| | | 2/6/13 |
| | 1,300 | 7/31/13 |
| | 1,200 | 7/21/14 |

| Well ID | TCE (ug/L) | Date |
|---|---|---|
| LB-1/MW | 890 | 8/19/2010 |
| | 180 | 8/17/2011 |
| | 310 | 8/16/2012 |
| | 380 | 2/6/2013 |
| | 290 | 8/1/2013 |
| | 230 | 7/21/2014 |

| Well ID | TCE (ug/L) | Date |
|---|---|---|
| LB-2/MW | 91 | 8/19/2010 |
| | 40 | 8/17/2011 |
| | 74 | 8/16/2012 |
| | 140 | 7/31/2013 |
| | 52 | 7/21/2014 |

Note: MCP Method 1 Groundwater Cleanup Standard GW-2 is 5 ug/L, GW-3 is 5,000 ug/L.

Table 2
Summary of Groundwater Results Since 2005
Microwave Development Laboratories, Inc.
(all values in ug/L)

| WELL ID | Methylene chloride | 1,1-Dichloroethane | Chloroform | Carbon Tetrachloride | 1,2-Dichloropropane | Dibromochloromethane | 1,1,2-Trichloroethane | Tetrachloroethene | Chlorobenzene | 1,2-Dichlorobenzene | 1,1,1-Trichloroethane | Bromodichloromethane | trans-1,3-Dichloropropene | cis-1,3-Dichloropropene | Bromoform | 1,1,2,2-Tetrachloroethane | Chloromethane | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AMALYTICAL RESULTS (ug/L) | | | | | | | | | | | | | | | | | |
| STM-13 | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | 15 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/20/05 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | 22 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/17/06 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | 15 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 6/27/07 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | 34 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/29/08 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | 11 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/6/09 |
| | BRL - 5 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 2.0 | BRL - 1.0 | 8.7 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 0.5 | BRL - 1.0 | BRL - 2 | BRL - 1.0 | BRL - 2 | 3/16/2010 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 12 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/28/2011 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 6.1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/28/12 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 5.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/20/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 12 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/18/2014 |
| MDL-11 | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/21/05 |
| STM-9 | BRL - 5 | BRL - 0.75 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | 7.6 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/20/05 |
| | BRL - 25 | BRL - 3.8 | BRL - 3.8 | BRL - 2.5 | BRL - 9.8 | BRL - 2.5 | BRL - 3.8 | 4.1 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 2.5 | BRL - 12 | 7/17/06 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | 2.6 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 6/27/07 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | 0.96 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/29/08 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/6/09 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 20 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/28/10 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 9.5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 5 | BRL - 10 | BRL - 5 | 7/28/2011 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 11/7/11 |
| | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 14 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 2 | BRL - 4 | 6/28/12 |
| | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 9.9 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 2 | BRL - 4 | 2/5/2013 |
| | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 14 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 2 | BRL - 4 | 7/29/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 7.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/17/2014 |
| STM-10 | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/20/05 |
| | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5 | BRL - 18 | BRL - 5 | BRL - 7.5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | BRL - 25 | 7/17/06 |
| | BRL - 100 | BRL - 15 | BRL - 15 | BRL - 10 | BRL - 35 | BRL - 10 | BRL - 15 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 10 | BRL - 50 | 6/26/07 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/29/06 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | 1.6 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/6/09 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/28/10 |
| | 16 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 84 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 3 | 2.2 | 13 | 7/28/2011 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 11/7/11 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/28/12 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 2/5/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/29/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 1.5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/29/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 4/2/2014 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 5.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/15/2014 |
| STM-11 | BRL - 200 | BRL - 30 | BRL - 30 | BRL - 20 | BRL - 70 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 80 | BRL - 20 | BRL - 100 | 6/27/2007 |
| | BRL - 200 | BRL - 30 | BRL - 30 | BRL - 20 | BRL - 70 | BRL - 20 | BRL - 30 | 62 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 80 | BRL - 20 | BRL - 100 | 6/6/2009 |
| | BRL - 80 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 48 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 25 | BRL - 20 | BRL - 80 | BRL - 40 | BRL - 80 | 6/28/2010 |
| | 45 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.5 | 36 | BRL - 1 | 13 | 2.7 | BRL - 1 | BRL - 0.5 | 5.4 | BRL - 1 | 150 | 7/28/2011 |
| | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 72 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | 80 | 11/7/2011 |
| | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 72 | BRL - 20 | 50 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | 80 | 6/28/2012 |
| | 2.3 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 3.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | 7.2 | 2/5/2013 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 7/29/2013 |
| | 11 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.4 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | 18 | 4/2/2014 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 31 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | 44 | 7/15/2014 |
| IR-2 (DUP OF STM-1 | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 30 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | BRL - 45 | 6/28/10 |
| STM-6 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 700 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 800 | BRL - 200 | BRL - 1000 | 7/20/05 |
| | BRL - 1000 | BRL - 150 | BRL - 150 | BRL - 100 | BRL - 350 | BRL - 100 | BRL - 150 | BRL - 110 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 400 | BRL - 100 | BRL - 500 | 7/17/06 |
| | BRL - 1000 | BRL - 150 | BRL - 150 | BRL - 100 | BRL - 350 | BRL - 100 | BRL - 150 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 400 | BRL - 100 | BRL - 500 | 6/27/07 |
| | BRL - 200 | BRL - 30 | BRL - 30 | BRL - 20 | BRL - 70 | BRL - 20 | BRL - 30 | BRL - 28 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 80 | BRL - 20 | BRL - 100 | 7/29/08 |
| | BRL - 200 | BRL - 30 | BRL - 30 | BRL - 20 | BRL - 70 | BRL - 20 | BRL - 30 | 42 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 80 | BRL - 20 | BRL - 100 | 8/6/09 |
| | BRL - 80 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | 70 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 80 | BRL - 40 | BRL - 80 | 6/28/10 |
| | 24 | BRL - 10 | BRL - 11 | BRL - 12 | BRL - 13 | BRL - 14 | BRL - 10 | 31 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | 34 | 7/28/2011 |
| | 23 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 65 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 11/7/11 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 6/28/12 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 13 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 7/28/2013 |
| | 460 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 72 | BRL - 20 | BRL - 20 | 50 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | 32 | 2200 | 4/2/2014 |
| | 12 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 8.7 | BRL - 1 | BRL - 1 | 3.0 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | 1.2 | 30 | 7/29/2014 |
| BR-1 (DUP OF STM- | BRL - 50 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | 60 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 12 | BRL - 12 | BRL - 50 | BRL - 25 | BRL - 50 | 6/28/10 |
| B-16 | BRL - 5 | BRL - 0.7 | BRL - 0.75 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.75 | 1.6 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/21/05 |
| B-18 | BRL - 5 | BRL - 0.75 | BRL - 0.75 | BRL - 0.5 | BRL - 1.4 | BRL - 0.5 | BRL - 0.75 | 0.79 | BRL - 0.5 | BRL - 0.5 | 0.61 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/21/05 |

| WELL ID | Vinyl chloride | Chloroethane | 1,1-Dichloroethane | trans-1,2-Dichloroethene | Trichloroethene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | cis-1,2-Dichloroethene | Dichlorodifluoromethane | 1,2-Dibromoethane | 1,3-Dichloropropane | 1,3-Dichloropropene | 1,1,1,2-Tetrachloroethane | o-Chlorotoluene | p-Chlorotoluene | Hexachlorobutadiene | 1,2,4-Trichlorobenzene | 1,2,3-Trichlorobenzene | 1,2,3-Trichloro-1,2,2-Trifluoroethane (Freon 113) | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AMALYTICAL RESULTS (ug/L) | | | | | | | | | | | | | | | | | | | | |
| STM-13 | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 62 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 1.6 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 19 | 7/20/05 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 54 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 1.2 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 19 | 7/17/06 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 26 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 0.86 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 19 | 6/27/07 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 39 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 19 | 7/29/08 |
| | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 9.2 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 1.4 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 19 | 8/6/09 |
| | BRL - 2 | BRL - 2 | BRL - 0.7 | BRL - 0.75 | 21 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 19 | 3/16/2010 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 9.3 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 7/28/2011 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 6.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 6/28/12 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 4.4 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 6/20/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 6.0 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 7/18/2014 |
| MDL-11 | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 5.4 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 19 | 7/21/05 |
| STM-9 | BRL - 1 | BRL - 1 | BRL - 0.75 | BRL - 0.75 | 230 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 19 | 7/20/05 |
| | BRL - 1 | BRL - 1 | BRL - 0.75 | BRL - 0.75 | 240 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 2.5 | BRL - 29 | BRL - 10 | BRL - 12 | BRL - 2.5 | BRL - 12 | BRL - 12 | BRL - 5 | BRL - 12 | BRL - 5 | BRL - 12 | BRL - 58 | 7/17/06 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 70 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | 12 | BRL - 2.5 | 12 | 6/27/07 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 24 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 19 | 7/29/08 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 7.4 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 19 | 8/6/09 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 300 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 18 | 6/28/10 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 140 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | BRL - 3 | BRL - 10 | 27 | 7/28/2011 |
| | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 70 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 0.6 | BRL - 2 | 30 | 11/7/11 |
| | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 160 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.2 | BRL - 4 | BRL - 1.2 | BRL - 4 | 30 | 6/28/12 |
| | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 170 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.2 | BRL - 4 | BRL - 1.2 | BRL - 4 | 35 | 2/5/2013 |
| | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 150 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.2 | BRL - 4 | BRL - 1.2 | BRL - 4 | 56 | 7/29/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 77 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 0.6 | BRL - 2 | 62 | 7/17/2014 |
| STM-10 | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 22 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | 39 | 7/20/05 |
| | BRL - 10 | BRL - 10 | BRL - 7.5 | BRL - 7.5 | 410 | BRL - 25 | BRL - 25 | BRL - 25 | 26 | BRL - 50 | BRL - 10 | BRL - 25 | BRL - 5 | BRL - 25 | BRL - 25 | BRL - 10 | BRL - 25 | BRL - 10 | BRL - 25 | BRL - 100 | 7/17/06 |
| | BRL - 20 | BRL - 20 | BRL - 15 | BRL - 15 | 620 | BRL - 50 | BRL - 50 | BRL - 50 | 11 | BRL - 100 | BRL - 40 | BRL - 50 | BRL - 10 | BRL - 50 | BRL - 50 | BRL - 12 | BRL - 50 | BRL - 12 | BRL - 50 | BRL - 206 | 6/26/07 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 7.3 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 19 | 7/29/06 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.75 | 61 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 19 | 8/6/09 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 15 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 18 | 6/28/10 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 1,900 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 77 | 7/28/2011 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 2.1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 11/7/11 |
| | BRL - 1 | BRL - 2 | B

Table 2
Summary of Groundwater Results Since 2005
Microwave Development Laboratories, Inc.
(all values in ug/L)

ANALYTICAL RESULTS (ug/L)

| WELL ID | Methylene chloride | 1,1-Dichloroethane | Chloroform | Carbon Tetrachloride | 1,2-Dichloropropane | Bromodichloromethane | 1,1,2-Trichloroethane | Tetrachloroethene | Chlorobenzene | 1,2-Dichlorobenzene | 1,1,1-Trichloroethane | Bromoethylbenzene | trans-1,3-Dichloropropene | cis-1,3-Dichloropropene | Bromoform | 1,1,2,2-Tetrachloroeth. | Chloromethane | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-19 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.9 | BRL - 1 | BRL - 1 | 6.3 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/28/2011 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.9 | BRL - 1 | BRL - 1 | 2.6 | BRL - 2 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 11/8/11 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 32 | BRL - 1 | BRL - 1 | 2.6 | BRL - 2 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/20/12 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 4.8 | BRL - 1 | BRL - 1 | 2.0 | BRL - 2 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 2/5/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 3.7 | BRL - 1 | BRL - 1 | 5.0 | BRL - 2 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/30/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 4.3 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 4/3/2014 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 4.3 | BRL - 1 | BRL - 1 | 3.0 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/16/2014 |
| B-24D | BRL - 5 | BRL - 0.75 | BRL - 0.75 | BRL - 0.9 | BRL - 1.5 | BRL - 0.5 | BRL - 0.75 | 3.8 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/8/05 |
| B-40D | BRL - 20 | BRL - 3 | BRL - 3 | BRL - 2 | BRL - 7 | BRL - 2 | BRL - 3 | 4.9 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 6 | BRL - 2 | BRL - 10 | 7/28/05 |
| | BRL - 20 | BRL - 3 | BRL - 3 | BRL - 2 | BRL - 7 | BRL - 2 | BRL - 3 | 4.9 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 6 | BRL - 2 | BRL - 10 | 7/31/06 |
| | BRL - 10 | BRL - 1.5 | BRL - 1.5 | BRL - 1 | BRL - 3.5 | BRL - 1 | BRL - 1.5 | 3.7 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 5 | BRL - 1 | BRL - 5 | 7/5/07 |
| | BRL - 20 | BRL - 3 | BRL - 3 | BRL - 2 | BRL - 7 | BRL - 2 | BRL - 3 | 4.6 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 6 | BRL - 2 | BRL - 10 | 7/28/06 |
| | BRL - 10 | BRL - 1.5 | BRL - 1.5 | BRL - 1 | BRL - 3.5 | BRL - 1 | BRL - 1.5 | 6.8 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 1 | BRL - 5 | 8/24/09 |
| | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 6.2 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1.2 | BRL - 1.2 | BRL - 6 | BRL - 2.5 | BRL - 5 | 8/26/10 |
| | 2.1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 15 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/28/2011 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 18 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/20/2012 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 11 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 2/5/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 9.4 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/30/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 8.2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/17/2014 |
| MW-14S | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 2/5/2013 |
| MW-14D | BRL - 100 | BRL - 15 | BRL - 15 | BRL - 10 | BRL - 35 | BRL - 10 | BRL - 15 | 79 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 10 | BRL - 50 | 7/20/2005 |
| | BRL - 100 | BRL - 15 | BRL - 15 | BRL - 10 | BRL - 35 | BRL - 10 | BRL - 15 | 49 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 10 | BRL - 50 | 8/17/2006 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | 64 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/5/2007 |
| | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5 | BRL - 15 | BRL - 5 | BRL - 7.5 | 27 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | BRL - 25 | 7/30/2008 |
| | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5 | BRL - 15 | BRL - 5 | BRL - 7.5 | 29 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | BRL - 25 | 8/6/2009 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 44 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 8/26/2010 |
| | BRL - 10 | BRL - 3 | BRL - 3 | BRL - 2 | BRL - 7 | BRL - 2 | BRL - 3 | 38 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2.5 | BRL - 2.5 | BRL - 6 | BRL - 2.5 | BRL - 10 | 7/28/2011 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 1.5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 11/8/2011 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/20/2012 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 7 | BRL - 5 | BRL - 5 | 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 2/5/2013 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 27 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 7/31/2013 |
| | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 9.7 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1.2 | BRL - 1.2 | BRL - 6 | BRL - 2.5 | BRL - 5 | 4/3/2014 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 28 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 7/22/2014 |
| B-26D | BRL - 250 | BRL - 30 | BRL - 30 | BRL - 25 | BRL - 80 | BRL - 25 | BRL - 30 | 130 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 100 | BRL - 25 | BRL - 120 | 7/21/05 |
| | BRL - 250 | BRL - 30 | BRL - 30 | BRL - 25 | BRL - 80 | BRL - 25 | BRL - 30 | 94 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 100 | BRL - 25 | BRL - 120 | 7/17/06 |
| | BRL - 200 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 70 | BRL - 20 | BRL - 20 | 90 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 80 | BRL - 20 | BRL - 100 | 7/7/07 |
| | BRL - 100 | BRL - 15 | BRL - 15 | BRL - 10 | BRL - 35 | BRL - 10 | BRL - 15 | 67 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 10 | BRL - 50 | 7/28/06 |
| | BRL - 5 | 0.87 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | 19 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/6/09 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 60 | BRL - 1 | BRL - 1 | 1.6 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/26/10 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 42 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 7/28/2011 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 29 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 11/8/11 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 1.9 | BRL - 1 | BRL - 1 | 4 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/20/12 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 26 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/31/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 13 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 4/3/2014 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 35 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 7/16/2014 |
| B-28D | BRL - 100 | BRL - 15 | BRL - 15 | BRL - 10 | BRL - 35 | BRL - 10 | BRL - 15 | 32 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 10 | BRL - 50 | 7/21/05 |
| | BRL - 250 | BRL - 30 | BRL - 30 | BRL - 25 | BRL - 80 | BRL - 25 | BRL - 30 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 100 | BRL - 25 | BRL - 120 | 8/17/06 |
| | BRL - 125 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 44 | BRL - 12 | BRL - 12 | 16 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 50 | BRL - 12 | BRL - 62 | 7/5/07 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | 3.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/28/06 |
| | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5 | BRL - 15 | BRL - 5 | BRL - 7.5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | BRL - 25 | 8/6/09 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 8/26/10 |
| | 300 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 28 | BRL - 20 | 40 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | 51 | 640 | 7/28/2011 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 11/8/11 |
| | 120 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 20 | BRL - 10 | 16 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 22 | 180 | 8/20/12 |
| | 72 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | 8.8 | BRL - 4 | 7.6 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 8 | 12 | 120 | 2/5/2013 |
| | 43 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 11 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2 | BRL - 2 | BRL - 10 | 7.1 | 70 | 7/29/2013 |
| | 110 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 12 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1.2 | BRL - 1.2 | BRL - 5 | 0.4 | 240 | 4/3/2014 |
| | 200 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 8 | BRL - 5 | 23 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | 22 | 820 | 7/17/2014 |
| MW-100 (dup of B-26) | 81 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 18 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 13 | 160 | 7/29/2013 |
| B-40 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 2/5/2013 |
| MW-12D | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 2/5/2013 |
| B-41 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 2/5/2013 |

ANALYTICAL RESULTS (ug/L)

| WELL ID | Vinyl chloride | Chloroethane | 1,1-Dichloroethane | trans-1,2-Dichloroethene | Trichloroethene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | 4-Br-1,2-Dichlorobenzene | Dibromochloromethane | 1,3-Dichloropropane | 1,3-Dichlorpropene | 1,1,2-Tetrachloroeth. | o-Chlorotoluene | p-Chlorotoluene | Hexachlorobutadiene | 1,2,3-Trichlorobenzene | 1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113) | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-19 | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 35 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 14 | 7/28/2011 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 31 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 13 | 11/8/11 |
| | BRL - 1 | BRL - 2 | 1.5 | BRL - 1 | 360 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 100 | 8/20/12 |
| | BRL - 1 | BRL - 2 | 1.5 | BRL - 1 | 68 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 24 | 2/5/2013 |
| | BRL - 1 | BRL - 2 | 1.5 | BRL - 1 | 43 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 34 | 7/30/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 42 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 23 | 4/3/2014 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 30 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 20 | 7/16/2014 |
| B-20D | BRL - 1 | BRL - 1 | BRL - 0.75 | 0.87 | 480 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.75 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 850 | 8/8/05 |
| B-40D | BRL - 4 | BRL - 4 | BRL - 3 | BRL - 3 | 130 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 2 | BRL - 20 | BRL - 8 | BRL - 10 | BRL - 2 | BRL - 10 | BRL - 10 | BRL - 4 | BRL - 10 | 80 | 7/28/05 |
| | BRL - 4 | BRL - 4 | BRL - 3 | BRL - 3 | 200 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 2 | BRL - 20 | BRL - 8 | BRL - 10 | BRL - 2 | BRL - 10 | BRL - 10 | BRL - 4 | BRL - 10 | 67 | 7/31/06 |
| | BRL - 5 | BRL - 1.5 | BRL - 1.5 | BRL - 1.5 | 130 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 1 | BRL - 10 | BRL - 4 | BRL - 5 | BRL - 1 | BRL - 5 | BRL - 5 | BRL - 2 | BRL - 5 | 73 | 7/5/07 |
| | BRL - 4 | BRL - 4 | BRL - 3 | BRL - 13 | 160 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 2 | BRL - 20 | BRL - 8 | BRL - 10 | BRL - 2 | BRL - 10 | BRL - 10 | BRL - 2.4 | BRL - 10 | 84 | 7/28/06 |
| | BRL - 2 | BRL - 2 | BRL - 1.5 | BRL - 1.5 | 61 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 1 | BRL - 10 | BRL - 4 | BRL - 5 | BRL - 1 | BRL - 5 | BRL - 5 | BRL - 1.2 | BRL - 5 | 29 | 8/24/09 |
| | BRL - 2.5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | 65 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 5 | BRL - 5 | BRL - 1.5 | BRL - 5 | 41 | 8/26/10 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 60 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 2 | 7/28/2011 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 66 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 47 | 8/20/12 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 62 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 11 | 2/5/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 62 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 92 | 7/30/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 63 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 69 | 7/17/2014 |
| MW-14S | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 18 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 2.2 | 2/5/2013 |
| MW-14D | BRL - 20 | BRL - 20 | BRL - 15 | BRL - 15 | 1,200 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 10 | BRL - 100 | BRL - 40 | BRL - 50 | BRL - 10 | BRL - 50 | BRL - 50 | BRL - 20 | BRL - 50 | 430 | 7/20/2005 |
| | BRL - 20 | BRL - 20 | BRL - 15 | BRL - 15 | 930 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 10 | BRL - 100 | BRL - 40 | BRL - 50 | BRL - 10 | BRL - 50 | BRL - 50 | BRL - 20 | BRL - 50 | 250 | 8/17/2006 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 800 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | 220 | 7/5/2007 |
| | BRL - 10 | BRL - 10 | BRL - 7.5 | BRL - 7.5 | 760 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 5 | BRL - 50 | BRL - 20 | BRL - 25 | BRL - 5 | BRL - 25 | BRL - 25 | BRL - 6 | BRL - 25 | BRL - 160 | 7/30/2008 |
| | BRL - 10 | BRL - 10 | BRL - 7.5 | BRL - 7.5 | 440 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 5 | BRL - 50 | BRL - 20 | BRL - 25 | BRL - 5 | BRL - 25 | BRL - 25 | BRL - 6 | BRL - 25 | 170 | 8/6/2009 |
| | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | 590 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 10 | BRL - 100 | BRL - 40 | BRL - 50 | BRL - 10 | BRL - 50 | BRL - 50 | BRL - 20 | BRL - 50 | 100 | 8/26/2010 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 630 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 1 | BRL - 10 | BRL - 4 | BRL - 5 | BRL - 1 | BRL - 5 | BRL - 5 | BRL - 1.5 | BRL - 5 | 320 | 7/28/2011 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 55 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 17 | 11/8/2011 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 27 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 2 | 8/20/2012 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 430 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 1 | BRL - 10 | BRL - 4 | BRL - 5 | BRL - 1 | BRL - 5 | BRL - 5 | BRL - 1.5 | BRL - 5 | 150 | 2/5/2013 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 740 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 2 | BRL - 20 | BRL - 8 | BRL - 10 | BRL - 2 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | 290 | 7/30/2013 |
| | BRL - 2.5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | 310 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 1 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 81 | 4/3/2014 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 540 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 2 | BRL - 20 | BRL - 8 | BRL - 10 | BRL - 2 | BRL - 10 | BRL - 10 | BRL - 2 | BRL - 10 | 250 | 7/22/2014 |
| B-26D | BRL - 50 | BRL - 50 | BRL - 38 | BRL - 38 | 1,800 | BRL - 125 | BRL - 125 | BRL - 125 | BRL - 25 | BRL - 250 | BRL - 100 | BRL - 125 | BRL - 25 | BRL - 125 | BRL - 125 | BRL - 50 | BRL - 125 | 1,400 | 7/21/05 |
| | BRL - 50 | BRL - 50 | BRL - 38 | BRL - 38 | 2,100 | BRL - 125 | BRL - 125 | BRL - 125 | BRL - 25 | BRL - 250 | BRL - 100 | BRL - 125 | BRL - 25 | BRL - 125 | BRL - 125 | BRL - 50 | BRL - 125 | 1,300 | 7/17/06 |
| | BRL - 40 | BRL - 40 | BRL - 30 | BRL - 30 | 1,000 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 20 | BRL - 200 | BRL - 80 | BRL - 100 | BRL - 20 | BRL - 100 | BRL - 100 | BRL - 24 | BRL - 100 | 690 | 7/5/07 |
| | BRL - 20 | BRL - 20 | BRL - 15 | BRL - 15 | 790 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 10 | BRL - 100 | BRL - 40 | BRL - 50 | BRL - 10 | BRL - 50 | BRL - 50 | BRL - 12 | BRL - 50 | 610 | 7/28/06 |
| | BRL - 1 | BRL - 1 | 0.87 | BRL - 0.7 | 17 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 8/6/09 |
| | BRL - 1 | BRL - 2 | 1 | BRL - 1 | 350 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 130 | 8/26/10 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 660 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 2 | BRL - 20 | BRL - 8 | BRL - 10 | BRL - 2 | BRL - 10 | BRL - 10 | BRL -

Table 2
Summary of Groundwater Results Since 2005
Microwave Development Laboratories, Inc.
(all values in ug/L)

ANALYTICAL RESULTS (ug/L)

| WELL ID | Methylene chloride | 1,1-Dichloroethane | Chloroform | Carbon Tetrachloride | 1,2-Dichloropropane | Dibromochloromethane | 1,1,2-Trichloroethane | Tetrachloroethene | Chlorobenzene | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Bromodichloromethane | trans-1,3-Dichloropropene | cis-1,3-Dichloropropene | Bromoform | 1,1,2,2-Tetrachloroethane | Chloroethane | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-42D | BRL - 10 | BRL - 15 | BRL - 10 | BRL - 10 | BRL - 35 | BRL - 10 | BRL - 15 | 34 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 10 | BRL - 50 | 7/21/05 |
| | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5 | BRL - 18 | BRL - 5 | BRL - 7.5 | 14 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | BRL - 25 | 8/17/06 |
| | BRL - 250 | BRL - 38 | BRL - 38 | BRL - 25 | BRL - 90 | BRL - 25 | BRL - 38 | 41 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 100 | BRL - 25 | BRL - 125 | 7/6/07 |
| | BRL - 100 | BRL - 15 | BRL - 15 | BRL - 15 | BRL - 35 | BRL - 10 | BRL - 15 | 19 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 10 | BRL - 50 | 7/30/08 |
| | BRL - 0.5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.0 | BRL - 0.5 | BRL - 2.5 | 8/10/09 |
| | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 9 | BRL - 2 | BRL - 2 | 12 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 2 | BRL - 4 | 7/2/10 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 17 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 25 | 7/29/2011 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 6/28/2012 |
| | BRL - 8 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | 11 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 8 | BRL - 4 | BRL - 9 | 5/5/2013 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 14 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 7/31/2013 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 12 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 7/18/2014 |
| B-100 (dup of 42D) | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 13 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 7/31/2013 |
| B-35D | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | 8.4 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/21/05 |
| B-30D | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5 | BRL - 18 | BRL - 5 | BRL - 7.5 | 7.5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | BRL - 25 | 7/21/05 |
| | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5 | BRL - 18 | BRL - 5 | BRL - 7.5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | BRL - 25 | 7/31/06 |
| | BRL - 1.0 | BRL - 1.5 | BRL - 1.5 | BRL - 1 | BRL - 3.5 | BRL - 1 | BRL - 1.5 | 3.0 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 5 | BRL - 1 | BRL - 5 | 7/5/07 |
| | BRL - 20 | BRL - 2 | BRL - 3 | BRL - 2 | BRL - 7 | BRL - 2 | BRL - 3 | 2.8 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 8 | BRL - 2 | BRL - 10 | 7/29/08 |
| | BRL - 20 | BRL - 2 | BRL - 3 | BRL - 2 | BRL - 7 | BRL - 2 | BRL - 3 | 2.8 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 8 | BRL - 2 | BRL - 10 | 8/24/09 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 5.5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 7/29/2011 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 6/28/2012 |
| | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 3.8 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 2 | BRL - 4 | 7/31/2013 |
| | BRL - 2 | BRL - 1 | 1.1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 3.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/18/2014 |
| MW-3 | BRL - 5 | BRL - 0.7 | 2.2 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | 1 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/21/05 |
| | BRL - 5 | BRL - 0.7 | 1.1 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | 1.2 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | 0.67 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/6/07 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/29/08 |
| | BRL - 5 | BRL - 0.7 | 2.2 | BRL - 0.5 | BRL - 2.8 | BRL - 0.5 | BRL - 0.7 | 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/3/09 |
| | BRL - 2 | BRL - 1 | 2.3 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/29/2011 |
| | BRL - 2 | BRL - 1 | 2.8 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/9/2012 |
| | BRL - 2 | BRL - 1 | 2.0 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/01/2013 |
| | BRL - 2 | BRL - 1 | 3.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/30/2014 |
| MW-100 (dup of MW-3) | BRL - 2 | BRL - 1 | 2.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/01/2013 |
| MW-2 | BRL - 5 | BRL - 0.7 | 1.1 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/21/05 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/6/07 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/29/08 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/3/09 |
| | BRL - 2 | BRL - 1 | 1.5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1.0 | BRL - 2 | 7/29/2011 |
| | BRL - 2 | BRL - 1 | 1.1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1.0 | BRL - 2 | 7/9/2012 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1.0 | BRL - 2 | 8/01/2013 |
| | BRL - 2 | BRL - 1 | 1.2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1.0 | BRL - 2 | 7/30/2014 |
| MW-2 (duplicate) | BRL - 2 | BRL - 1 | 1.4 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1.0 | BRL - 2 | 7/30/2014 |
| MW-12D | BRL - 5 | BRL - 0.7 | 3.1 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | 0.97 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/21/05 |
| | BRL - 5 | BRL - 0.7 | 1.4 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | 1 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 5 | BRL - 0.7 | 1.1 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | 0.94 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/6/07 |
| | BRL - 5 | BRL - 0.7 | 1.5 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | 1 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/29/08 |
| | BRL - 5 | BRL - 0.7 | 1.1 | BRL - 0.5 | BRL - 1.8 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/3/09 |
| | BRL - 2 | BRL - 1 | 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/29/2011 |
| | BRL - 2 | BRL - 1 | 1.0 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/9/2012 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/01/2013 |
| | BRL - 2 | BRL - 1 | 1.7 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/30/2014 |
| B-23 | BRL - 25 | BRL - 3.0 | BRL - 3.0 | BRL - 2.5 | BRL - 8.0 | BRL - 2.5 | BRL - 3.0 | 4.0 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 2.5 | BRL - 12 | 7/21/05 |
| | BRL - 12 | BRL - 1.5 | BRL - 1.5 | BRL - 1.2 | BRL - 4.0 | BRL - 1.2 | BRL - 1.5 | 4.3 | BRL - 1.2 | BRL - 1.2 | BRL - 1.2 | BRL - 1.2 | BRL - 1.2 | BRL - 1.2 | BRL - 5 | BRL - 1.2 | BRL - 6.0 | 7/7/06 |
| | BRL - 20 | BRL - 3.0 | BRL - 3.0 | BRL - 2.5 | BRL - 7.0 | BRL - 2.5 | BRL - 3.0 | 3.0 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 8.0 | BRL - 2.5 | BRL - 10 | 7/2/07 |
| | BRL - 25 | BRL - 3.0 | BRL - 3.0 | BRL - 2.5 | BRL - 8.0 | BRL - 2.5 | BRL - 3.0 | 3.6 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 2.5 | BRL - 12 | 7/30/08 |
| | BRL - 25 | BRL - 3.0 | BRL - 3.0 | BRL - 2.5 | BRL - 8.0 | BRL - 2.5 | BRL - 3.0 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 2.5 | BRL - 12 | 8/24/09 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 1 | BRL - 1 | 2.8 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/2/10 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 8 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 8/17/2011 |
| | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 7.5 | BRL - 2.5 | BRL - 2.5 | 3.1 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1.2 | BRL - 1.2 | BRL - 5 | BRL - 2.5 | BRL - 5.0 | 7/9/12 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 1 | BRL - 1 | 4.1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 2/6/2013 |
| | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 8 | BRL - 2 | BRL - 2 | 2.8 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - | BRL - 4 | BRL - 2 | BRL - 4 | 7/31/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 1 | BRL - 1 | 2.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/30/2014 |

ANALYTICAL RESULTS (ug/L)

| WELL ID | Vinyl chloride | Chloroethane | 1,1-Dichloroethene | trans-1,2-Dichloroethene | Trichloroethene | 1,2-Dichloroethane | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | cis-1,2-Dichloroethene | Dichlorodifluoromethane | 1,2-Dibromoethane | 1,3-Dichloropropane | 1,1,1,2-Tetrachloroeth. | o-Chlorotoluene | p-Chlorotoluene | Hexachlorobutadiene | 1,2,4-Trichlorobenzene | 1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113) | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-42D | BRL - 20 | BRL - 20 | BRL - 15 | BRL - 15 | 1,700 | BRL - 50 | BRL - 50 | BRL - 50 | 170 | BRL - 100 | BRL - 40 | BRL - 50 | BRL - 10 | BRL - 50 | BRL - 10 | BRL - 20 | BRL - 50 | 570 | 7/21/05 |
| | BRL - 10 | BRL - 10 | BRL - 7.5 | BRL - 7.5 | 300 | BRL - 25 | BRL - 25 | BRL - 25 | 78 | BRL - 50 | BRL - 20 | BRL - 25 | BRL - 5 | BRL - 25 | BRL - 5 | BRL - 10 | BRL - 25 | 170 | 8/17/06 |
| | BRL - 50 | BRL - 50 | BRL - 38 | BRL - 38 | 2,900 | BRL - 125 | BRL - 125 | BRL - 125 | 280 | BRL - 250 | BRL - 100 | BRL - 125 | BRL - 25 | BRL - 125 | BRL - 125 | BRL - 50 | BRL - 125 | 790 | 7/6/07 |
| | BRL - 20 | BRL - 20 | BRL - 15 | BRL - 15 | 690 | BRL - 50 | BRL - 50 | BRL - 50 | 100 | BRL - 100 | BRL - 40 | BRL - 50 | BRL - 10 | BRL - 50 | BRL - 50 | BRL - 12 | BRL - 50 | BRL - 200 | 7/30/08 |
| | BRL - 1.0 | BRL - 1.0 | BRL - 0.7 | BRL - 0.7 | 4.3 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 0.77 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 8/10/09 |
| | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 540 | BRL - 2 | BRL - 3 | BRL - 4 | 150 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.2 | BRL - 4 | 230 | 7/2/10 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 740 | BRL - 10 | BRL - 10 | BRL - 10 | 120 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 0.5 | BRL - 20 | 260 | 7/29/2011 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 190 | BRL - 5 | BRL - 5 | BRL - 5 | 55 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 2 | BRL - 10 | 21 | 6/28/2012 |
| | BRL - 4 | BRL - 8 | BRL - 4 | BRL - 4 | 270 | BRL - 4 | BRL - 4 | BRL - 4 | 130 | BRL - 8 | BRL - 8 | BRL - 8 | BRL - 4 | BRL - 8 | BRL - 8 | BRL - 2.4 | BRL - 8 | 120 | 5/5/2013 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 560 | BRL - 10 | BRL - 10 | BRL - 10 | 100 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 0.5 | BRL - 20 | 200 | 7/31/2013 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 450 | BRL - 10 | BRL - 10 | BRL - 10 | 64 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 0.5 | BRL - 20 | 150 | 7/18/2014 |
| B-100 (dup of 42D) | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 539 | BRL - 10 | BRL - 10 | BRL - 10 | 97 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 0.5 | BRL - 20 | 190 | 7/31/2013 |
| B-35D | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 21 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 7.8 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | 14 | 7/21/05 |
| B-30D | BRL - 10 | BRL - 10 | BRL - 7.5 | BRL - 7.5 | 140 | BRL - 25 | BRL - 25 | BRL - 25 | 420 | BRL - 50 | BRL - 20 | BRL - 25 | BRL - 5 | BRL - 25 | BRL - 25 | BRL - 10 | BRL - 25 | BRL - 100 | 7/21/05 |
| | BRL - 10 | BRL - 10 | BRL - 7.5 | BRL - 7.5 | 90 | BRL - 25 | BRL - 25 | BRL - 25 | 360 | BRL - 50 | BRL - 20 | BRL - 25 | BRL - 5 | BRL - 25 | BRL - 25 | BRL - 10 | BRL - 25 | BRL - 100 | 7/31/06 |
| | BRL - 2 | BRL - 5 | BRL - 1.5 | BRL - 1.5 | 66 | BRL - 5 | BRL - 5 | BRL - 5 | 240 | BRL - 10 | BRL - 4 | BRL - 5 | BRL - 1 | BRL - 5 | BRL - 5 | BRL - 2 | BRL - 5 | 27 | 7/5/07 |
| | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 2 | 51 | BRL - 10 | BRL - 10 | BRL - 10 | 130 | BRL - 20 | BRL - 8 | BRL - 10 | BRL - 2 | BRL - 10 | BRL - 10 | BRL - 2.4 | BRL - 10 | BRL - 40 | 7/29/08 |
| | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 3 | 61 | BRL - 10 | BRL - 10 | BRL - 10 | 370 | BRL - 20 | BRL - 8 | BRL - 10 | BRL - 2 | BRL - 10 | BRL - 10 | BRL - 2.4 | BRL - 10 | 61 | 8/24/09 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 64 | BRL - 5 | BRL - 5 | BRL - 5 | 290 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | 62 | 7/29/2011 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 55 | BRL - 5 | BRL - 5 | BRL - 5 | 240 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | 26 | 6/28/12 |
| | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 45 | BRL - 2 | BRL - 3 | BRL - 4 | 150 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.2 | BRL - 4 | 44 | 7/31/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 31 | BRL - 1 | BRL - 1 | BRL - 1 | 100 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 7/18/2014 |
| MW-3 | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 0.6 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 2 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/21/05 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 9.2 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 2.1 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/31/06 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 5.8 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 1.0 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/6/07 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 4.4 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 2.4 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 10 | 7/29/08 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 3.8 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 2.9 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 10 | 8/3/09 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 3.4 | BRL - 1 | BRL - 1 | BRL - 1 | 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 7/29/2011 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 3.3 | BRL - 1 | BRL - 1 | BRL - 1 | 1.4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 7/9/2012 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 2.0 | BRL - 1 | BRL - 1 | BRL - 1 | 1.1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 8/01/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 9.7 | BRL - 1 | BRL - 1 | BRL - 1 | 1.4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 7/30/2014 |
| MW-100 (dup of MW-3) | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 1.9 | BRL - 1 | BRL - 1 | BRL - 1 | 1.0 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | BRL - 2 | 8/01/2013 |
| MW-2 | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 4.6 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 0.66 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/21/05 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 0.69 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/6/07 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 0.99 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 10 | 7/29/08 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 0.59 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 10 | 8/3/09 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 15 | BRL - 1 | BR

Table 2
Summary of Groundwater Results Since 2005
Microwave Development Laboratories, Inc.
(all values in ug/L)

| WELL ID | Methylene chloride | 1,1-Dichloroethane | Chloroform | Carbon Tetrachloride | 1,2-Dichloroethane | Benzene/methylbenzene | 1,1,1-Trichloroethane | Tetrachloroethene | Chlorobenzene | 1,2-Dichlorobenzene | 1,1,1-Trichloroethane | Pentachloroethane | trans-1,3-Dichloropropene | cis-1,3-Dichloropropene | Ethylbenzene | 1,1,2,2-Tetrachloroethane | Chloroethane | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 7.5 | 17 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | BRL - 25 | 7/21/05 |
| | BRL - 12 | BRL - 1.5 | BRL - 1.5 | BRL - 1.5 | BRL - 4.0 | BRL - 1.5 | BRL - 1.5 | 19 | BRL - 1.5 | BRL - 1.5 | BRL - 1.5 | BRL - 1.5 | BRL - 1.5 | BRL - 1.5 | BRL - 5 | BRL - 1.5 | BRL - 6.2 | 7/17/06 |
| | BRL - 10 | BRL - 15 | BRL - 15 | BRL - 15 | BRL - 35 | BRL - 15 | BRL - 15 | 12 | BRL - 15 | BRL - 15 | BRL - 15 | BRL - 15 | BRL - 15 | BRL - 15 | BRL - 50 | BRL - 15 | BRL - 50 | 7/2/07 |
| | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 7.5 | 19 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | BRL - 25 | 7/30/08 |
| | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5 | BRL - 25 | BRL - 5 | BRL - 7.5 | 9.4 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | BRL - 25 | 8/24/09 |
| B-14D | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 11 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 4 | 7/2/10 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 8/17/2011 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 7.7 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 7/9/12 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 6.4 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 3 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 2/6/2013 |
| | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 2.7 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - | BRL - 4 | BRL - 2 | BRL - 4 | 8/01/2013 |
| | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 3.9 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - | BRL - 4 | BRL - 2 | BRL - 4 | 7/29/2014 |
| PERO (DUP OF B-14D) | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 12 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 4 | 7/2/10 |
| B-14X (DUP OF B-14D) | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 8/17/2011 |
| B-X | BRL - 25 | BRL - 3.0 | BRL - 3.0 | BRL - 2.5 | BRL - 8.0 | BRL - 2.5 | BRL - 3.0 | 35 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 2.5 | BRL - 12 | 8/17/06 |
| | BRL - 50 | BRL - 50 | BRL - 75 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 75 | 89 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 200 | BRL - 50 | BRL - 250 | 7/2/07 |
| | BRL - 20 | BRL - 2.0 | BRL - 3.0 | BRL - 2.0 | BRL - 7.0 | BRL - 2.0 | BRL - 3.0 | 49 | BRL - 2.0 | BRL - 2.0 | BRL - 2.0 | BRL - 2.0 | BRL - 8.0 | BRL - 2.0 | BRL - 16 | BRL - 2.0 | BRL - 16 | 7/30/08 |
| | BRL - 100 | BRL - 15 | BRL - 15 | BRL - 15 | BRL - 35 | BRL - 15 | BRL - 15 | 90 | BRL - 10 | BRL - 15 | BRL - 15 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 10 | BRL - 50 | 8/18/09 |
| | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 71 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL - 10 | 7/2/10 |
| | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 97 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | BRL - 40 | 8/17/2011 |
| | BRL - 80 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | 91 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 80 | BRL - 40 | BRL - 80 | 7/9/2012 |
| | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 46 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | BRL - 40 | 7/31/2013 |
| | BRL - 20 | BRL - 2.0 | BRL - 3.0 | BRL - 2.0 | BRL - 7.0 | BRL - 2.0 | BRL - 3.0 | 54 | BRL - 2.0 | BRL - 2.0 | BRL - 2.0 | BRL - 2.0 | BRL - 2.0 | BRL - 2.0 | BRL - 10 | BRL - 2.0 | BRL - 10 | 7/29/2014 |
| 11 GWP-1 | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 7/2/06 |
| | BRL - 0.5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 8/14/08 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/2/10 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/29/12 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 1.1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/07/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/31/2014 |
| 11 GWP-2 | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 7/2/06 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 8/2/08 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/21/10 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/29/2012 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/1/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/31/2014 |
| 11GWP-2 dup | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/31/2014 |
| MW-7 | BRL - 5 | BRL - 0.7 | 3.1 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 7/21/05 |
| | BRL - 5 | BRL - 0.7 | 3.1 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 7/17/06 |
| MW-10 | BRL - 1000 | BRL - 170 | BRL - 170 | BRL - 100 | BRL - 270 | BRL - 100 | BRL - 170 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 500 | BRL - 100 | BRL - 500 | 7/21/05 |
| | BRL - 1000 | BRL - 170 | BRL - 170 | BRL - 100 | BRL - 270 | BRL - 100 | BRL - 170 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 500 | BRL - 100 | BRL - 500 | 8/17/06 |
| | BRL - 1000 | BRL - 170 | BRL - 170 | BRL - 100 | BRL - 270 | BRL - 100 | BRL - 170 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 500 | BRL - 100 | BRL - 500 | 7/2/07 |
| | BRL - 1000 | BRL - 170 | BRL - 170 | BRL - 100 | BRL - 270 | BRL - 100 | BRL - 170 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 500 | BRL - 100 | BRL - 500 | 7/30/08 |
| | BRL - 1000 | BRL - 170 | BRL - 170 | BRL - 100 | BRL - 270 | BRL - 100 | BRL - 170 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 500 | BRL - 100 | BRL - 500 | 8/3/09 |
| | BRL - 400 | BRL - 70 | BRL - 70 | BRL - 40 | BRL - 100 | BRL - 40 | BRL - 70 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 200 | BRL - 40 | BRL - 200 | 8/18/09 |
| | BRL - 400 | BRL - 70 | BRL - 70 | BRL - 40 | BRL - 100 | BRL - 40 | BRL - 70 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 200 | BRL - 40 | BRL - 200 | 7/2/10 |
| | BRL - 200 | BRL - 70 | BRL - 70 | BRL - 40 | BRL - 100 | BRL - 40 | BRL - 70 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 200 | BRL - 40 | BRL - 200 | 8/17/2011 |
| | BRL - 200 | BRL - 70 | BRL - 70 | BRL - 40 | BRL - 100 | BRL - 40 | BRL - 70 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 200 | BRL - 40 | BRL - 200 | 7/9/12 |
| | BRL - 200 | BRL - 70 | BRL - 70 | BRL - 40 | BRL - 100 | BRL - 40 | BRL - 70 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 200 | BRL - 40 | BRL - 200 | 2/6/2013 |
| | BRL - 200 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 200 | BRL - 100 | BRL - 200 | 7/30/2013 |
| | BRL - 400 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 400 | BRL - 200 | BRL - 400 | 7/29/2014 |
| | BRL - 50 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 50 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 100 | BRL - 20 | BRL - 100 | 7/18/2014 |
| MW-11D | BRL - 120 | BRL - 10 | BRL - 10 | BRL - 12 | BRL - 44 | BRL - 12 | BRL - 18 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 50 | BRL - 12 | BRL - 62 | 7/21/05 |
| | BRL - 120 | BRL - 10 | BRL - 10 | BRL - 12 | BRL - 44 | BRL - 12 | BRL - 18 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 50 | BRL - 12 | BRL - 62 | 8/17/06 |
| | BRL - 50 | BRL - 7.5 | BRL - 7.5 | BRL - 5.0 | BRL - 18 | BRL - 5.0 | BRL - 6.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 20 | BRL - 5.0 | BRL - 25 | 7/2/07 |
| | BRL - 120 | BRL - 10 | BRL - 10 | BRL - 12 | BRL - 44 | BRL - 12 | BRL - 18 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 50 | BRL - 12 | BRL - 62 | 7/30/08 |
| | BRL - 120 | BRL - 10 | BRL - 10 | BRL - 12 | BRL - 44 | BRL - 12 | BRL - 18 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 50 | BRL - 12 | BRL - 62 | 8/18/09 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 5.5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/2/10 |
| | BRL - 50 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 50 | BRL - 25 | BRL - 50 | 8/17/2011 |
| | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 7/9/12 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 2/6/2013 |
| | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 7/30/2013 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 13 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 7/10/2014 |
| B-26 | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 7/2/05 |
| OF-3 | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 7/2/05 |
| MW-17D | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 7/2/05 |
| MW-18S | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.5 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 7/2/05 |

| WELL ID | Vinyl chloride | Chloroethane | 1,1-Dichloroethene | trans-1,2-Dichloroethene | Trichloroethene | 1,2-Dichloroethane | 1,1-Dichloroethane | 1,3-Dichloropropene | 1,1-Dichloroethane | cis-1,3-Dichloropropene | Methylene chloride | 1,2-Dichloroethane | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | 1,1,2-Trichloroethane | n-Chlorotoluene | p-Chlorotoluene | Pentachlorobenzene | 1,2,4-Trichlorobenzene | 1,1,2,2-Tetrachloroethane (Freon 113) | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-14D | BRL - 10 | BRL - 10 | BRL - 7.5 | BRL - 7.5 | 920 | BRL - 20 | BRL - 25 | BRL - 25 | 440 | BRL - 50 | BRL - 25 | BRL - 25 | BRL - 5 | BRL - 25 | BRL - 30 | BRL - 10 | BRL - 25 | 250 | 7/21/05 |
| | BRL - 2.5 | BRL - 2.0 | BRL - 1.0 | BRL - 1.0 | 1,100 | BRL - 6.2 | BRL - 6.2 | BRL - 6.2 | 430 | BRL - 12 | BRL - 5 | BRL - 6.2 | BRL - 1.2 | BRL - 6.2 | BRL - 6.2 | BRL - 2.5 | BRL - 6.2 | 300 | 7/17/06 |
| | BRL - 20 | BRL - 20 | BRL - 15 | BRL - 15 | 740 | BRL - 50 | BRL - 50 | BRL - 50 | 360 | BRL - 100 | BRL - 40 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 12 | BRL - 50 | 220 | 7/2/07 |
| | BRL - 10 | BRL - 10 | BRL - 7.5 | BRL - 7.5 | 750 | BRL - 25 | BRL - 25 | BRL - 25 | 480 | BRL - 50 | BRL - 20 | BRL - 25 | BRL - 5 | BRL - 25 | BRL - 25 | BRL - 6 | BRL - 25 | BRL - 100 | 7/30/08 |
| | BRL - 10 | BRL - 10 | BRL - 7.5 | BRL - 7.5 | 590 | BRL - 25 | BRL - 25 | BRL - 25 | 390 | BRL - 50 | BRL - 20 | BRL - 25 | BRL - 5 | BRL - 25 | BRL - 25 | BRL - 6 | BRL - 25 | 200 | 8/24/09 |
| | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 500 | BRL - 2 | BRL - 2 | BRL - 2 | 480 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 1 | BRL - 4 | BRL - 4 | BRL - 1.5 | BRL - 4 | 230 | 7/2/10 |
| | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 10 | 12 | 490 | BRL - 10 | BRL - 10 | 280 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 6 | BRL - 20 | 130 | 8/17/2011 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 5 | 380 | BRL - 5 | BRL - 5 | 380 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | 120 | 7/9/12 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 360 | BRL - 5 | BRL - 5 | BRL - 5 | 270 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | 130 | 2/6/2013 |
| | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 150 | BRL - 2 | BRL - 2 | BRL - 2 | 170 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.5 | BRL - 4 | 24 | 8/01/2013 |
| | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 160 | BRL - 2 | BRL - 2 | BRL - 2 | 200 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.5 | BRL - 4 | 40 | 7/29/2014 |
| PERO (DUP OF B-14D) | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 570 | BRL - 2 | BRL - 2 | BRL - 2 | 330 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.5 | BRL - 4 | 250 | 7/2/10 |
| B-14X (DUP OF B-14D) | BRL - 10 | BRL - 20 | BRL - 10 | 11 | 440 | BRL - 10 | BRL - 10 | BRL - 10 | 280 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 6 | BRL - 20 | 140 | 8/17/2011 |
| B-X | BRL - 5 | BRL - 5 | BRL - 3.0 | BRL - 3.0 | 920 | BRL - 12 | BRL - 12 | BRL - 12 | BRL - 2.5 | BRL - 25 | BRL - 10 | BRL - 12 | 3.8 | BRL - 12 | BRL - 12 | BRL - 5 | BRL - 12 | 250 | 8/17/06 |
| | BRL - 100 | BRL - 100 | BRL - 50 | BRL - 75 | 3,100 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 50 | BRL - 50 | BRL - 25 | BRL - 25 | BRL - 50 | BRL - 25 | BRL - 25 | BRL - 60 | BRL - 25 | BRL - 1,00 | 7/2/07 |
| | BRL - 40 | BRL - 4.0 | BRL - 3.0 | BRL - 3.0 | 1,500 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 2.0 | BRL - 20 | BRL - 8.0 | BRL - 10 | BRL - 2.0 | BRL - 10 | BRL - 10 | BRL - 2.0 | BRL - 10 | BRL - 40 | 7/30/08 |
| | BRL - 20 | BRL - 20 | BRL - 15 | BRL - 15 | 3,900 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 10 | BRL - 40 | BRL - 50 | BRL - 50 | BRL - 10 | BRL - 50 | BRL - 50 | BRL - 12 | BRL - 50 | 1,700 | 8/18/09 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 1,700 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | 620 | 7/2/10 |
| | BRL - 20 | BRL - 40 | BRL - 20 | BRL - 20 | 2,400 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 20 | BRL - 40 | BRL - 40 | BRL - 12 | BRL - 40 | 1,000 | 8/17/2011 |
| | BRL - 40 | BRL - 80 | BRL - 40 | BRL - 40 | 2,500 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 80 | BRL - 80 | BRL - 80 | BRL - 80 | BRL - 40 | BRL - 80 | BRL - 80 | BRL - 24 | BRL - 40 | 1,200 | 7/9/12 |
| | BRL - 20 | BRL - 40 | BRL - 20 | BRL - 20 | 1,300 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 20 | BRL - 40 | BRL - 40 | BRL - 12 | BRL - 40 | 280 | 7/31/2013 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 1,200 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 6 | BRL - 20 | 370 | 7/29/2014 |
| 11 GWP-1 | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 9.8 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 7/2/06 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 10 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 6.53 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 8/14/08 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 3 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 10 | 7/2/10 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 9.8 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 2 | 8/29/12 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 59 | BRL - 1 | BRL - 1 | BRL - 1 | 1.3 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 14 | 8/07/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 22 | BRL - 1 | BRL - 1 | BRL - 1 | 1.3 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 14 | 7/31/2014 |
| 11 GWP-2 | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 11 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 1.6 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 7/2/06 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | 2.2 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 8/2/08 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 1.1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 10 | 7/21/10 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 10 | 8/29/2012 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 4.2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 2 | 8/1/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 9 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 5 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0

Table 2
Summary of Groundwater Results Since 2005
Microwave Development Laboratories, Inc.
(all values in ug/L)

| WELL ID | Methylene chloride | 1,1-Dichloroethane | Chloroform | Carbon Tetrachloride | 1,2-Dichloropropane | Dibromochloromethane | 1,1,2-Trichloroethane | Tetrachloroethene | Chlorobenzene | 1,2-Dichlorobenzene | 1,1,1-Trichloroethane | Bromodichloromethane | trans-1,3-Dichloropropene | cis-1,3-Dichloropropene | Benzene | 1,1,2,2-Tetrachloroethane | Chloromethane | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ANALYTICAL RESULTS (ug/L) | | | | | | | | | | | | | | | | | |
| MW-25D | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/25/05 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/2/07 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/30/08 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/18/09 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/21/10 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/30/2014 |
| MW-26S | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/25/05 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/2/07 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/30/08 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/18/09 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/21/10 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/30/2014 |
| MW-26D | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/25/05 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/2/07 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/30/08 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/18/09 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/21/10 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/19/12 |
| MW-101 | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/6/09 |
| MW-101-SO | BRL - 500 | BRL - 75 | BRL - 75 | BRL - 50 | BRL - 100 | BRL - 50 | BRL - 75 | 55 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 50 | BRL - 200 | BRL - 50 | BRL - 250 | 8/4/2009 |
| | BRL - 200 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 200 | BRL - 100 | BRL - 250 | 6/28/2010 |
| | 150 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 23 | BRL - 20 | 25 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | 26 | 320 | 7/28/2011 |
| | 110 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 40 | BRL - 10 | 14 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 21 | 220 | 11/7/2011 |
| | 21 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 28 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | 30 | 6/28/2012 |
| | BRL-10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 13 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 5 | 17 | 7/28/2013 |
| | 210 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 12 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | 770 | 4/2/2014 |
| | 85 | BRL - 1 | 1.0 | BRL - 0.5 | BRL - 1 | BRL - 1 | 1.0 | 16 | BRL - 1 | 13 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | 0.4 | 270 | 7/23/2014 |
| MW-101-DO | BRL - 100 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 70 | BRL - 20 | BRL - 20 | 35 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 80 | BRL - 20 | BRL - 100 | 8/4/2009 |
| | BRL - 80 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 80 | BRL - 40 | 6/28/10 |
| | 360 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 15 | BRL - 10 | 42 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 43 | 400 | 7/28/2011 |
| | 300 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 21 | BRL - 10 | 41 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 55 | 630 | 11/7/2011 |
| | 210 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 23 | BRL - 20 | 26 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | 340 | 6/28/2012 |
| | 130 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 20 | BRL - 5 | 12 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 10 | 15 | 200 | 7/28/2013 |
| | 620 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 60 | BRL - 20 | 26 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | 1,700 | 4/2/2014 |
| | 250 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 12 | BRL - 10 | 33 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 10 | 620 | 7/23/2014 |
| MW-01-4 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 7/28/2011 |
| | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 11/8/2011 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.4 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/28/12 |
| | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 2 | BRL - 4 | 2/5/2013 |
| | BRL - 50 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 12 | BRL - 12 | 7/30/2013 |
| | 2.8 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 4/3/2014 |
| | BRL - 10 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 5.0 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5.0 | BRL - 10 | 7/17/2014 |
| A-100D (dup of MW-01) | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL - 20 | 7/30/2013 |
| CW-23D | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/25/05 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/2/07 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/30/08 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/18/09 |
| | BRL - 2 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 2 | BRL - 0.5 | BRL - 2 | 7/10/12 |
| | BRL - 2 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 2 | BRL - 0.5 | BRL - 2 | 6/02/2013 |
| | BRL - 2 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 2 | BRL - 0.5 | BRL - 2 | 7/30/2014 |
| CW-33S | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/25/05 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/2/07 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/30/08 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/18/09 |
| | BRL - 2 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 2 | BRL - 0.5 | BRL - 2 | 7/10/12 |
| | BRL - 2 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 2 | BRL - 0.5 | BRL - 2 | 6/02/2013 |
| | BRL - 2 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 1.0 | BRL - 2 | BRL - 0.5 | BRL - 2 | 7/30/2014 |
| CW-36D | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/25/05 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/2/07 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/30/08 |
| | BRL - 5 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.72 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 8/18/09 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/10/12 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/02/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/31/2014 |

| WELL ID | Vinyl chloride | Chloroethane | 1,1-Dichloroethene | trans-1,2-Dichloroethene | Trichloroethene | 1,2-Dichloroethane | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | cis-1,2-Dichloroethene | Dichloromethane | 1,2-Dibromoethane | 1,3-Dichloropropane | 1,1,1,2-Tetrachloroethane | o-Chlorotoluene | p-Chlorotoluene | Hexachlorobutadiene | 1,2,4-Trichlorobenzene | 1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113) | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ANALYTICAL RESULTS (ug/L) | | | | | | | | | | | | | | | | | | |
| MW-25D | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | 2.8 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/25/05 |
| | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | 1.7 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/31/06 |
| | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/2/07 |
| | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | 1.3 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 7/30/08 |
| | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | 2.4 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 8/18/09 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 1.6 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 10 | 7/21/10 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 1.5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 10 | 7/30/2014 |
| MW-26S | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | 4.1 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/25/05 |
| | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | 4.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/31/06 |
| | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | 4.0 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/2/07 |
| | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | 0.7 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 7/30/08 |
| | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | 19 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 1.4 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 8/18/09 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 4 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 10 | 7/21/10 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 0.2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 10 | 7/19/12 |
| MW-101 | BRL - 1 | BRL - 1 | BRL - 0.72 | BRL - 0.72 | 18 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 10 | 8/6/09 |
| MW-101-SO | BRL - 100 | BRL - 100 | BRL - 75 | BRL - 75 | 3,800 | BRL - 250 | BRL - 250 | BRL - 250 | BRL - 50 | BRL - 250 | BRL - 250 | BRL - 250 | BRL - 50 | BRL - 250 | BRL - 250 | BRL - 63 | BRL - 250 | BRL - 1600 | 8/4/09 |
| | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | 2,400 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 200 | BRL - 200 | BRL - 200 | BRL - 100 | BRL - 200 | BRL - 200 | BRL - 63 | BRL - 200 | BRL - 1,600 | 6/28/10 |
| | BRL - 20 | BRL - 40 | BRL - 20 | BRL - 20 | 580 | BRL - 20 | BRL - 20 | BRL - 20 | 1.1 | BRL - 8 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | 270 | 7/28/2011 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 560 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 6 | BRL - 20 | 410 | 11/7/11 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 660 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 6 | BRL - 20 | 120 | 6/28/12 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 360 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | 60 | 7/28/2013 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 240 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 6 | BRL - 20 | 340 | 4/2/2014 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 260 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | 200 | 7/23/2014 |
| MW-101-DO | BRL - 40 | BRL - 80 | BRL - 20 | BRL - 20 | 1,000 | BRL - 100 | BRL - 100 | BRL - 100 | BRL - 20 | BRL - 200 | BRL - 80 | BRL - 160 | BRL - 20 | BRL - 160 | BRL - 160 | BRL - 74 | BRL - 160 | 670 | 8/4/2009 |
| | BRL - 40 | BRL - 80 | BRL - 40 | BRL - 40 | 1,400 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 40

Table 2
Summary of Groundwater Results Since 2005
Microwave Development Laboratories, Inc.
(all values in ug/L)

ANALYTICAL RESULTS (ug/L)

| WELL ID | Methylene chloride | 1,1-Dichloroethane | Chloroform | Carbon Tetrachloride | 1,2-Dichloropropane | Dichlorobromomethane | 1,1,2-Trichloroethane | Tetrachloroethene | Chlorobenzene | 1,3-Dichlorobenzene | 1,1,1-Trichloroethane | Bromodichloromethane | trans-1,3-Dichloropropene | cis-1,3-Dichloropropene | Bromoform | 1,1,2,2-Tetrachloroethane | Chloroethane | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CW-37S | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/25/05 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/2/07 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/30/08 |
| | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 6/10/09 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/6/10 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/10/12 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/31/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/31/2014 |
| CW-22D | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/32/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/31/2014 |
| CW-33S | BRL - 5 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 1.0 | BRL - 0.5 | BRL - 0.7 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 0.5 | BRL - 2.5 | 7/31/06 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/32/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/31/2014 |
| RW-C1* | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 6.4 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 8/19/2011 |
| | BRL - 4 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 4.3 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 2 | BRL - 4 | 11/7/2011 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 1.9 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 6/31/2013 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.0 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 4/2/2014 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.0 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 | 7/17/2014 |
| RW-C2* | 400 | 3.4 | 1.2 | BRL - 1 | 7.7 | BRL - 1 | 4.1 | 3.0 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | BRL - 0.5 | 3 | 159 | 8/19/2011 |
| | 420 | BRL - 5 | BRL - 5 | BRL - 7 | BRL - 5 | BRL - 5 | BRL - 5 | 5.2 | BRL - 5 | 53 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | 340 | 11/7/2011 |
| | 120 | BRL - 5 | BRL - 5 | BRL - 7 | BRL - 5 | BRL - 5 | BRL - 5 | 13 | BRL - 5 | 12 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | 6.6 | 100 | 3/5/2013 |
| | 100 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 9.2 | BRL - 2 | 9.9 | BRL - 2 | BRL - 2 | BRL - 1.0 | BRL - 1.0 | BRL - 4 | 4.6 | 12 | 8/01/2013 |
| | 620 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 74 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | 1,400 | 4/2/2014 |
| | 120 | BRL - 2 | 2.0 | BRL - 2 | BRL - 2 | BRL - 2 | 3.3 | 2.6 | BRL - 2 | 21 | BRL - 2 | BRL - 2 | BRL - 1.0 | BRL - 1.0 | BRL - 4 | 7.1 | 250 | 7/23/2014 |
| INJ-1 | BRL-20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL-20 |
| | BRL-20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 30 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL-20 |
| | 6.2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | 0.8 |
| | 110 | BRL - 1 | 1.2 | BRL - 1 | BRL - 1 | BRL - 1 | 2.4 | 47 | BRL - 1 | 20 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | 3.4 | 310 |
| INJ-2 | 5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL-2 |
| | 2.0 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 1.5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL-2 |
| | 670 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 24 | BRL - 20 | BRL - 20 | 100 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | 1,100 |
| | 67 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 7.1 | BRL - 5 | 12 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | 160 |
| INJ-3 | 21 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 21 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | BRL-20 |
| INJ-4 | 23 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | 22 |
| SHAW-01 | BRL - 250 | BRL - 38 | BRL - 38 | BRL - 25 | BRL - 83 | BRL - 25 | BRL - 38 | 39 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 25 | BRL - 100 | BRL - 25 | BRL - 130 |
| | BRL - 80 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 41 | BRL - 42 | BRL - 40 | 48 | BRL - 40 | BRL - 40 | BRL - 47 | BRL - 48 | BRL - 20 | BRL - 20 | BRL - 80 | BRL - 40 | BRL - 80 |
| | 420 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 20 | BRL - 10 | 44 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 41 | 560 |
| | 240 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 26 | BRL - 10 | 23 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 34 | 260 |
| | 240 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 30 | BRL - 10 | 20 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | 360 |
| | 240 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 27 | BRL - 10 | 22 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 31 | 300 |
| | 160 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 24 | BRL - 10 | 16 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 20 | 280 |
| | 400 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 47 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 40 | 27 | 1,300 |
| | 220 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 11 | BRL - 10 | 27 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | 10 | 560 |
| SHAW-02 | BRL - 150 | BRL - 15 | BRL - 15 | BRL - 10 | BRL - 25 | BRL - 10 | BRL - 15 | 19 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 10 | BRL - 50 |
| | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 50 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | BRL - 40 |
| | 150 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 43 | BRL - 10 | 13 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | 340 |
| | 110 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 50 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | BRL - 40 |
| | BRL - 40 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | 42 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 20 | BRL - 40 |
| | BRL-10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 20 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL-10 |
| | BRL-9 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | 14 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1.2 | BRL - 1.2 | BRL - 5 | BRL - 2.5 | BRL - 8 |
| | 400 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 53 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | 1,200 |
| | 35 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 11 | BRL - 1 | 4.7 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | 2.0 | 98 |
| (blind stop) | 400 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | 73 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 5 | BRL - 20 | BRL - 10 | 1,200 |
| LB-1/MW | BRL - 50 | BRL - 15 | BRL - 15 | BRL - 10 | BRL - 35 | BRL - 10 | BRL - 15 | 18 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 40 | BRL - 10 | BRL - 60 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 6.3 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 |
| | BRL - 5 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | 8.1 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 1 | BRL - 1 | BRL - 8 | BRL - 1 | BRL - 4 |
| | BRL-10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 7.6 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL-10 |
| | BRL-10 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | 8.0 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 2.5 | BRL - 2.5 | BRL - 10 | BRL - 5 | BRL-10 |
| | BRL - 8 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | 8.2 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 1 | BRL - 1 | BRL - 4 | BRL - 1 | BRL - 8 |
| LB-2/MW | BRL - 6 | BRL - 1.5 | BRL - 1.5 | BRL - 1 | BRL - 3.5 | BRL - 1 | BRL - 1.5 | 1.4 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 4.0 | BRL - 1 | BRL - 6.0 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 1.5 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 3.3 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.8 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 |
| | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 |
| LB-2R (disp) | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 3.3 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 0.5 | BRL - 0.5 | BRL - 2 | BRL - 1 | BRL - 2 |

ANALYTICAL RESULTS (ug/L)

| WELL ID | Vinylchloride | Chloroethane | 1,1-Dichloroethene | trans-1,2-Dichloroethene | Trichloroethene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | cis-1,2-Dichloroethene | Dichlorodifluoromethane | 1,2-Dibromoethane | 1,3-Dichloropropane | 1,1,1,2-Tetrachloroethane | o-Chlorotoluene | p-Chlorotoluene | Hexachlorobutadiene | 1,2,4-Trichlorobenzene | 1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113) | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CW-37S | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/25/05 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/31/06 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/2/07 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/30/08 |
| | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.6 | BRL - 2.5 | BRL - 10 | 6/10/09 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.5 | BRL - 2 | BRL - 10 | 7/6/10 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2.5 | BRL - 10 | 7/10/12 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2.2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2.5 | BRL - 10 | 6/31/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 1.0 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2.5 | BRL - 2 | 7/31/2014 |
| CW-22D | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/31/06 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2.5 | BRL - 2 | 6/32/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2.5 | BRL - 2 | 7/31/2014 |
| CW-33S | BRL - 1 | BRL - 1 | BRL - 0.7 | BRL - 0.7 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 2.5 | BRL - 0.5 | BRL - 5 | BRL - 2 | BRL - 2.5 | BRL - 0.5 | BRL - 2.5 | BRL - 2.5 | BRL - 1 | BRL - 2.5 | BRL - 10 | 7/31/06 |
| | 1.1 | BRL - 2 | BRL - 1 | BRL - 1 | 3.4 | BRL - 1 | BRL - 1 | BRL - 1 | 1.0 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2.5 | BRL - 2 | 6/32/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 2.2 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2.5 | BRL - 2 | 7/31/2014 |
| RW-C1* | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2 | 139 | BRL - 1 | BRL - 1 | 93 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 120 | 8/19/2011 |
| | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 2 | 160 | BRL - 2 | BRL - 2 | BRL - 2 | 2.4 | 4.4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.2 | BRL - 4 | 120 | 11/7/2011 |
| | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | 2 | 36 | BRL - 1 | BRL - 1 | 7.0 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 35 | 6/31/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 46 | BRL - 1 | BRL - 1 | BRL - 1 | 7.6 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 20 | 4/2/2014 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 57 | BRL - 1 | BRL - 1 | BRL - 1 | 7.7 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 26 | 7/23/2014 |
| RW-C2* | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 67 | BRL - 1 | BRL - 1 | BRL - 1 | 3 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 320 | 8/19/2011 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 72 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | 110 | 11/7/2011 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 270 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | 350 | 3/5/2013 |
| | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 150 | BRL - 2 | BRL - 2 | BRL - 2 | 19 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.2 | BRL - 4 | 120 | 8/01/2013 |
| | BRL - 20 | BRL - 40 | BRL - 20 | BRL - 20 | 37 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 20 | BRL - 40 | BRL - 40 | BRL - 12 | BRL - 40 | 180 | 4/2/2014 |
| | BRL - 2 | BRL - 4 | BRL - 2 | BRL - 2 | 36 | BRL - 2 | BRL - 2 | BRL - 2 | 2.4 | BRL - 4 | BRL - 4 | BRL - 4 | BRL - 2 | BRL - 4 | BRL - 4 | BRL - 1.2 | BRL - 4 | 110 | 7/23/2014 |
| INJ-1 | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 540 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 6 | BRL - 20 | 780 | 3/5/2013 |
| | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 670 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 6 | BRL - 20 | 780 | 7/30/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 11 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 9.6 | 4/2/2014 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 660 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 1,100 | 7/17/2014 |
| INJ-2 | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 32 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 69 | 3/5/2013 |
| | BRL - 1 | BRL - 2 | BRL - 1 | BRL - 1 | 75 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 2 | BRL - 1 | BRL - 2 | BRL - 2 | BRL - 0.6 | BRL - 2 | 91 | 7/29/2013 |
| | BRL - 20 | BRL - 40 | BRL - 20 | BRL - 20 | 21 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 40 | BRL - 40 | BRL - 40 | BRL - 20 | BRL - 40 | BRL - 40 | BRL - 12 | BRL - 40 | 40 | 4/2/2014 |
| | BRL - 5 | BRL - 10 | BRL - 5 | BRL - 5 | 300 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 5 | BRL - 10 | BRL - 10 | BRL - 3 | BRL - 10 | 1,100 | 7/17/2014 |
| INJ-3 | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 500 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 6 | BRL - 20 | 250 | 3/5/2013 |
| INJ-4 | BRL - 10 | BRL - 20 | BRL - 10 | BRL - 10 | 550 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 20 | BRL - 10 | BRL - 20 | BRL - 20 | BRL - 6 | BRL - 20 | 220 | 3/5/2013 |
| SHAW-01 | BRL - 50 | BRL - 50 | BRL - 38 | BRL - 25 | 2,300 | BRL - 17 | BRL - 12 | BRL - 12 | BRL - 25 | BRL - 25 | BRL - 10 | BRL - 12 |

Table 2
Summary of Groundwater Results Since 2005
Microwave Development Laboratories, Inc.
(all values in ug/L)

ANALYTICAL RESULTS (ug/L)

| WELL ID | Methylene chloride | 1,1-Dichloroethane | Chloroform | Carbon Tetrachloride | 1,2-Dichloropropane | Dichlorobromomethane | 1,1,2-Trichloroethane | Tetrachloroethene | Chlorobenzene | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Bromodichloromethane | trans-1,3-Dichloropropene | cis-1,3-Dichloropropene | Bromoform | 1,1,2,2-Tetrachloroethane | Chloromethane | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LB-20MW | BRL-100 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-2.5 | BRL-2.5 | BRL-100 | BRL-50 | BRL-100 | 2/6/2013 |
| | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 7/31/2013 |
| | BRL-100 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-2.5 | BRL-2.5 | BRL-100 | BRL-50 | BRL-100 | 7/23/2014 |
| LB-30MW | BRL-100 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-2.5 | BRL-2.5 | BRL-100 | BRL-50 | BRL-100 | 2/6/2013 |
| | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 7/31/2013 |
| | BRL-100 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-2.5 | BRL-2.5 | BRL-100 | BRL-50 | BRL-100 | 7/23/2014 |
| LB-40MW | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 2/6/2013 |
| | BRL-400 | BRL-200 | BRL-200 | BRL-200 | BRL-200 | BRL-200 | BRL-200 | BRL-200 | BRL-200 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-100 | BRL-400 | BRL-200 | BRL-400 | 7/30/2013 |
| | BRL-100 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-2.5 | BRL-2.5 | BRL-100 | BRL-50 | BRL-100 | 7/18/2014 |
| LB-4 dup | BRL-100 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | 55 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-2.5 | BRL-2.5 | BRL-100 | BRL-50 | BRL-100 | 7/18/2014 |
| LB-70MW | BRL-100 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-2.5 | BRL-2.5 | BRL-100 | BRL-50 | BRL-100 | 1/20/2014 |
| | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 7/21/2014 |
| LB-70MW | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | 170 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 1/20/2014 |
| | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | 140 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 7/21/2014 |
| LB-70DMW (dup) | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | 180 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 1/20/2014 |
| LB-8MW | BRL-4 | BRL-2 | BRL-2 | BRL-2 | BRL-2 | BRL-2 | BRL-2 | BRL-2 | BRL-2 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-1 | BRL-4 | BRL-2 | BRL-4 | 1/20/2014 |
| | BRL-10 | BRL-5 | BRL-5 | BRL-5 | BRL-5 | BRL-5 | BRL-5 | BRL-5 | BRL-5 | BRL-5 | BRL-5 | BRL-5 | BRL-2.5 | BRL-2.5 | BRL-10 | BRL-5 | BRL-10 | 7/21/2014 |
| LB-9MW | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | 120 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 1/20/2014 |
| | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 7/29/2014 |
| LB-9DMW | BRL-80 | BRL-40 | BRL-40 | BRL-40 | BRL-40 | BRL-40 | BRL-40 | BRL-40 | BRL-40 | BRL-40 | BRL-40 | BRL-40 | BRL-20 | BRL-20 | BRL-80 | BRL-40 | BRL-80 | 1/20/2014 |
| | BRL-40 | BRL-20 | BRL-20 | BRL-20 | BRL-20 | BRL-20 | BRL-20 | 20 | BRL-20 | BRL-20 | BRL-20 | BRL-20 | BRL-10 | BRL-10 | BRL-40 | BRL-20 | BRL-40 | 7/29/2014 |
| LB-10MW | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 1/20/2014 |
| | BRL-100 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-2.5 | BRL-2.5 | BRL-100 | BRL-50 | BRL-100 | 7/18/2014 |
| LB-10DMW | BRL-200 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-50 | BRL-200 | BRL-100 | BRL-200 | 1/20/2014 |
| | BRL-100 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | BRL-2.5 | BRL-2.5 | BRL-100 | BRL-50 | BRL-100 | 7/18/2014 |
| MW-22D | BRL-12 | BRL-1.0 | BRL-1.0 | BRL-1.2 | BRL-4.4 | BRL-1.2 | BRL-1.0 | 4.2 | BRL-1.2 | BRL-1.2 | BRL-1.2 | BRL-1.2 | BRL-1.2 | BRL-1.2 | BRL-5 | BRL-1.2 | BRL-6.2 | 7/22/05 |
| | BRL-12 | BRL-1.0 | BRL-1.0 | BRL-1.2 | BRL-4.4 | BRL-1.2 | BRL-1.0 | 3.3 | BRL-1.2 | BRL-1.2 | BRL-1.2 | BRL-1.2 | BRL-1.2 | BRL-1.2 | BRL-5 | BRL-1.2 | BRL-6.2 | 7/31/06 |
| | BRL-10 | BRL-1.0 | BRL-1.0 | BRL-1.0 | BRL-3.6 | BRL-1.0 | BRL-1.0 | 2.0 | BRL-1.0 | BRL-1.0 | BRL-1.0 | BRL-1.0 | BRL-1.0 | BRL-1.0 | BRL-5.0 | BRL-1.0 | BRL-5.0 | 7/2/07 |
| | BRL-5 | BRL-0.7 | BRL-0.7 | BRL-0.5 | BRL-1.6 | BRL-0.5 | BRL-0.7 | 1.2 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-0.5 | BRL-2.5 | 7/30/08 |
| | BRL-5 | BRL-0.7 | BRL-0.7 | BRL-0.5 | BRL-1.6 | BRL-0.5 | BRL-0.7 | 1.6 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-0.5 | BRL-2.5 | 8/10/09 |
| | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 1.4 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/2/10 |
| | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/9/12 |
| | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 1.3 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 8/01/2013 |
| | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 1.9 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/23/2014 |
| MW-22M | BRL-10 | BRL-1.0 | BRL-1.0 | BRL-1 | BRL-2.6 | BRL-1 | BRL-1.0 | 1.2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-10 | BRL-1 | BRL-5 | 7/22/05 |
| | BRL-10 | BRL-1.0 | BRL-1.0 | BRL-1 | BRL-2.6 | BRL-1 | BRL-1.0 | 1.8 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-10 | BRL-1 | BRL-5 | 7/31/06 |
| | BRL-5 | BRL-0.7 | BRL-0.7 | BRL-0.5 | BRL-1.8 | BRL-0.5 | BRL-0.7 | 1.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-0.5 | BRL-2.5 | 7/2/07 |
| | BRL-5 | BRL-0.7 | BRL-0.7 | BRL-0.5 | BRL-1.8 | BRL-0.5 | BRL-0.7 | 1.4 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-0.5 | BRL-2.5 | 7/30/08 |
| | BRL-5 | BRL-0.7 | BRL-0.7 | BRL-0.5 | BRL-1.8 | BRL-0.5 | BRL-0.7 | 0.73 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-0.5 | BRL-2.5 | 8/10/09 |
| | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/2/10 |
| | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 1.3 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/9/12 |
| | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 1.7 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 8/01/2013 |
| | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 2.5 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 8/01/2013 |
| PM-3S | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/29/2014 |
| PM-3D | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/29/2014 |
| PM-4S | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/23/2014 |
| PM-4D | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 1.1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/23/2014 |
| PM-5S | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/29/2014 |
| PM-5D | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 1.2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/29/2014 |
| PM-6S | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 1.3 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/25/2014 |
| PM-6M | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 3.0 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/23/2014 |
| PM-6D | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 3.3 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/23/2014 |
| PM-7S | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/25/2014 |
| PM-7M | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 2.9 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/25/2014 |
| PM-7D | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 3.0 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/25/2014 |
| PM-7D-DUP | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 3.0 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/25/2014 |
| PM-8S | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/25/2014 |
| PM-8D | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/29/2014 |
| PM-9S | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/29/2014 |
| PM-9D | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/29/2014 |
| PM-9D-DUP | BRL-2 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | 2.4 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-0.5 | BRL-0.5 | BRL-2 | BRL-1 | BRL-2 | 7/29/2014 |
| *see data sheet for all recovery well data | | | | | | | | | | | | | | | | | | |
| Method 1 GW-1/GW-2 Standards | N/A | 70/1,000 | 5/400 | 5/2 | 5/3 | 2/20 | 5/300 | 5/30 | 100/200 | 5 | 200/4,000 | 3/6 | 0.5/3 | 0.5/3 | 4/100 | 5/10 | N/A | |

ANALYTICAL RESULTS (ug/L)

| WELL ID | Vinyl chloride | Chloroethane | 1,1-Dichloroethene | trans-1,2-Dichloroethene | Trichloroethene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | cis-1,2-Dichloroethene | Dichlorodifluoromethane | 1,2-Dibromoethane | 1,3-Dichloropropane | 1,1,1,2-Tetrachloroethane | o-Chlorotoluene | p-Chlorotoluene | Hexachlorobutadiene | 1,2,4-Trimethylbenzene | 1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113) | DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LB-20MW | BRL-50 | BRL-100 | BRL-50 | BRL-50 | 4,900 | BRL-50 | BRL-50 | BRL-50 | 250 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-100 | BRL-100 | BRL-20 | BRL-100 | 600 | 2/6/2013 |
| | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 7,200 | BRL-100 | BRL-100 | BRL-100 | 390 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 1,300 | 7/31/2013 |
| | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 7,200 | BRL-100 | BRL-100 | BRL-100 | 320 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 1,400 | 7/23/2014 |
| LB-30MW | BRL-50 | BRL-100 | BRL-50 | BRL-50 | 3,400 | BRL-50 | BRL-50 | BRL-50 | 400 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-100 | BRL-100 | BRL-20 | BRL-100 | 920 | 2/6/2013 |
| | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 3,900 | BRL-100 | BRL-100 | BRL-100 | 390 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 1,000 | 7/31/2013 |
| | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 3,300 | BRL-100 | BRL-100 | BRL-100 | 360 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 760 | 7/23/2014 |
| LB-40MW | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 10,000 | BRL-100 | BRL-100 | BRL-100 | 250 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 1,200 | 2/6/2013 |
| | BRL-200 | BRL-400 | BRL-200 | BRL-200 | 9,100 | BRL-200 | BRL-200 | BRL-200 | 1,400 | BRL-400 | BRL-400 | BRL-400 | BRL-200 | BRL-400 | BRL-400 | BRL-60 | BRL-400 | 1,400 | 7/30/2013 |
| | BRL-50 | BRL-100 | BRL-50 | BRL-50 | 7,700 | BRL-50 | BRL-50 | BRL-50 | 170 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-100 | BRL-100 | BRL-20 | BRL-100 | 900 | 7/18/2014 |
| LB-4 dup | BRL-50 | BRL-100 | BRL-50 | BRL-50 | 8,000 | BRL-50 | BRL-50 | BRL-50 | 170 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-100 | BRL-100 | BRL-20 | BRL-100 | 920 | 7/18/2014 |
| LB-7MW | BRL-200 | BRL-400 | BRL-200 | BRL-200 | 13,000 | BRL-200 | BRL-200 | BRL-200 | BRL-200 | BRL-400 | BRL-400 | BRL-400 | BRL-200 | BRL-400 | BRL-400 | BRL-60 | BRL-400 | 2,300 | 1/20/2014 |
| | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 9,200 | BRL-100 | BRL-100 | BRL-100 | 150 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 2,100 | 7/21/2014 |
| LB-70MW | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 12,000 | BRL-100 | BRL-100 | BRL-100 | 160 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 2,100 | 1/20/2014 |
| | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 8,000 | BRL-100 | BRL-100 | BRL-100 | BRL-160 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 1,500 | 7/21/2014 |
| LB-70DMW (dup) | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 12,000 | BRL-100 | BRL-100 | BRL-100 | 160 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 3,000 | 1/20/2014 |
| LB-8MW | BRL-2 | BRL-4 | BRL-2 | BRL-2 | 130 | BRL-2 | BRL-2 | BRL-2 | 9.8 | BRL-4 | BRL-4 | BRL-4 | BRL-2 | BRL-4 | BRL-4 | BRL-1.2 | BRL-4 | 19 | 1/20/2014 |
| | BRL-5 | BRL-10 | BRL-5 | BRL-5 | 400 | BRL-5 | BRL-5 | BRL-5 | 11 | BRL-10 | BRL-10 | BRL-10 | BRL-5 | BRL-10 | BRL-10 | BRL-3 | BRL-10 | 41 | 7/21/2014 |
| LB-9MW | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 0,100 | BRL-100 | BRL-100 | BRL-100 | BRL-460 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 920 | 1/20/2014 |
| | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 5,200 | BRL-100 | BRL-100 | BRL-100 | BRL-460 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 210 | 7/29/2014 |
| LB-9DMW | BRL-40 | BRL-80 | BRL-40 | BRL-40 | 1,800 | BRL-40 | BRL-40 | BRL-40 | BRL-40 | BRL-80 | BRL-80 | BRL-80 | BRL-40 | BRL-80 | BRL-80 | BRL-24 | BRL-80 | BRL-80 | 1/20/2014 |
| | BRL-20 | BRL-40 | BRL-10 | BRL-15 | 1,700 | BRL-20 | BRL-20 | BRL-20 | 20 | BRL-40 | BRL-40 | BRL-40 | BRL-10 | BRL-50 | BRL-50 | BRL-50 | BRL-50 | 52 | 7/29/2014 |
| LB-10MW | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 0,600 | BRL-100 | BRL-100 | BRL-100 | 370 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 1,500 | 1/20/2014 |
| | BRL-50 | BRL-100 | BRL-50 | BRL-50 | 5,600 | BRL-50 | BRL-50 | BRL-50 | 160 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-100 | BRL-100 | BRL-20 | BRL-100 | 720 | 7/18/2014 |
| LB-10DMW | BRL-100 | BRL-200 | BRL-100 | BRL-100 | 7,600 | BRL-100 | BRL-100 | BRL-100 | 230 | BRL-200 | BRL-200 | BRL-200 | BRL-100 | BRL-200 | BRL-200 | BRL-60 | BRL-200 | 1,100 | 1/20/2014 |
| | BRL-50 | BRL-100 | BRL-50 | BRL-50 | 5,100 | BRL-50 | BRL-50 | BRL-50 | 140 | BRL-100 | BRL-100 | BRL-100 | BRL-50 | BRL-100 | BRL-100 | BRL-20 | BRL-100 | 610 | 7/18/2014 |
| MW-22D | BRL-2.5 | BRL-2.5 | BRL-1.0 | BRL-1.0 | 200 | BRL-6.2 | BRL-6.2 | BRL-6.2 | 5.2 | BRL-12 | BRL-5 | BRL-6.2 | BRL-1.2 | BRL-6.2 | BRL-6.2 | BRL-2.5 | BRL-6.2 | 30 | 7/22/05 |
| | BRL-2.5 | BRL-2.5 | BRL-1.0 | BRL-1.0 | 160 | BRL-6.2 | BRL-6.2 | BRL-6.2 | 4.2 | BRL-12 | BRL-5 | BRL-6.2 | BRL-1.2 | BRL-6.2 | BRL-6.2 | BRL-2.5 | BRL-6.2 | 27 | 7/31/06 |
| | BRL-2.0 | BRL-5 | BRL-1.0 | BRL-1.0 | 110 | BRL-5.0 | BRL-5.0 | BRL-5.0 | 4.2 | BRL-10 | BRL-4.0 | BRL-5.0 | BRL-1.0 | BRL-5.0 | BRL-5.0 | BRL-2.0 | BRL-5.0 | 20 | 7/2/07 |
| | BRL-1 | BRL-1 | BRL-0.7 | BRL-0.7 | 60 | BRL-2.5 | BRL-2.5 | BRL-2.5 | 2.3 | BRL-5 | BRL-2 | BRL-2.5 | BRL-0.5 | BRL-2.5 | BRL-2.5 | BRL-0.5 | BRL-2.5 | BRL-10 | 7/30/08 |
| | BRL-1 | BRL-1 | BRL-0.7 | BRL-0.7 | 110 | BRL-2.5 | BRL-2.5 | BRL-2.5 | 2.5 | BRL-5 | BRL-2 | BRL-2.5 | BRL-0.5 | BRL-2.5 | BRL-2.5 | BRL-0.5 | BRL-2.5 | 23 | 8/10/09 |
| | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 68 | BRL-1 | BRL-1 | BRL-1 | 7.4 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | 12 | 7/2/10 |
| | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 0.7 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | 2.4 | 7/9/12 |
| | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 69 | BRL-1 | BRL-1 | BRL-1 | 1.8 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | 0.1 | 8/01/2013 |
| | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 100 | BRL-1 | BRL-1 | BRL-1 | 2.2 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | 10 | 7/23/2014 |
| MW-22M | BRL-2 | BRL-5 | BRL-1.5 | BRL-1.5 | 69 | BRL-5 | BRL-5 | BRL-5 | 1.3 | BRL-10 | BRL-4 | BRL-5 | BRL-1 | BRL-5 | BRL-5 | BRL-2 | BRL-5 | BRL-20 | 7/22/05 |
| | BRL-2 | BRL-5 | BRL-1.5 | BRL-1.5 | 61 | BRL-5 | BRL-5 | BRL-5 | 2.0 | BRL-10 | BRL-4 | BRL-5 | BRL-1 | BRL-5 | BRL-5 | BRL-2 | BRL-5 | BRL-20 | 7/31/06 |
| | BRL-1 | BRL-1 | BRL-0.7 | BRL-0.7 | 79 | BRL-2.5 | BRL-2.5 | BRL-2.5 | 1.7 | BRL-5 | BRL-2 | BRL-2.5 | BRL-0.5 | BRL-2.5 | BRL-2.5 | BRL-1 | BRL-2.5 | 17 | 7/2/07 |
| | BRL-1 | BRL-1 | BRL-0.7 | BRL-0.7 | 67 | BRL-2.5 | BRL-2.5 | BRL-2.5 | 0.2 | BRL-5 | BRL-2 | BRL-2.5 | BRL-0.5 | BRL-2.5 | BRL-2.5 | BRL-0.5 | BRL-2.5 | 16 | 7/30/08 |
| | BRL-1 | BRL-1 | BRL-0.7 | BRL-0.7 | 51 | BRL-2.5 | BRL-2.5 | BRL-2.5 | 1.2 | BRL-5 | BRL-2 | BRL-2.5 | BRL-0.5 | BRL-2.5 | BRL-2.5 | BRL-0.5 | BRL-2.5 | 15 | 8/10/09 |
| | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 29 | BRL-1 | BRL-1 | BRL-1 | 1.2 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | BRL-10 | 7/2/10 |
| | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 75 | BRL-1 | BRL-1 | BRL-1 | 2.0 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | 9.5 | 7/9/12 |
| | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 100 | BRL-1 | BRL-1 | BRL-1 | 2.4 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | 22 | 8/01/2013 |
| | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 130 | BRL-1 | BRL-1 | BRL-1 | 3.4 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | 27 | 7/23/2014 |
| PM-3S | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 6.8 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | BRL-2 | 7/29/2014 |
| PM-3D | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 12 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | BRL-2 | 7/29/2014 |
| PM-4S | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 27 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | 6.4 | 7/23/2014 |
| PM-4D | BRL-1 | BRL-2 | BRL-1 | BRL-1 | 54 | BRL-1 | BRL-1 | BRL-1 | BRL-1 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 | 12 | 7/23/2014 |
| PM-5S | 7.0 | BRL-2 | BRL-1 | BRL-1 | 35 | BRL-1 | BRL-1 | BRL-1 | 6.5 | BRL-2 | BRL-2 | BRL-2 | BRL-1 | BRL-2 | BRL-2 | BRL-0.6 | BRL-2 

# APPENDIX A

# Klozur® Activated Persulfate Demand Calculations

PeroxyChem

20-Jun-2014

| | | | |
|---|---|---|---|
| Customer: | Lord Associates | Prepared by: | |
| Contact: | Ralph Tella | Ravi Srirangam PhD | |
| Site Location: | Hillside School , MA | 1-312-480-5250 | |
| Proposal Number: | PeroxyChem-OPP-2274 | Ravi.Srirangam@peroxychem.com | |

## PRODUCT OVERVIEW

Because of its ability to treat a wide range of contaminants, Klozur® Activated Persulfate is the oxidant of choice for in situ chemical oxidation (ISCO). When properly activated, Klozur® Persulfate provides an unmatched combination of oxidative power and control that can be delivered both safely and cost effectively. Klozur activated persulfate generates the sulfate radical (SO4•-), one of the strongest oxidizing species available, giving Klozur® Persulfate the power to destroy the most recalcitrant of contaminants.

## SITE INFORMATION

| | Value | Unit | Note |
|---|---|---|---|
| Area of Treatment | 1,500 | ft x ft | customer supplied |
| Treatment Zone Thickness | 30 | ft | customer supplied |
| Treatment Volume | 45,000 | ft3 | calculated value |
| Porosity | 20 | % | default value |
| Ground Water Volume | 9,000 | ft3 | calculated value |
| Soil Density | 115 | lbs/ft3 | default value |
| Soil Mass | 2,587.5 | ton | calculated value |
| Soil Oxidant Demand | 1 | g Klozur / kg soil | estimated value, it is recommend that this be analytically determined |

## CONTAMINANTS OF CONCERN (COCs)

| Constituent | GW (mg/L) | Soil (mg/kg) | Total COI Mass (lb) |
|---|---|---|---|
| TCE | 13 | 13.91 | 79.3 |

*Unless provided, sorbed concentrations were roughly estimated based on expected groundwater concentrations, foc and Koc values. For a more refined estimate, it is recommended that actual values be verified via direct sampling of the targeted treatment interval.

## KLOZUR® PERSULFATE DEMAND

| | | |
|---|---|---|
| Demand from COCs | 431 | lb |
| Demand from SOD | 5,175 | lb |
| Total Klozur® Persulfate Demand | 5,606 | lb |

## KLOZUR® PERSULFATE PACKAGING OPTIONS AND PRICING

| Available Packaging Types | # of packages / pallet | lb Klozur® / pallet | # of packages needed [1] |
|---|---|---|---|
| 55.1 # bags | 42 | 2314.2 | 102 |
| 1102 # super sacks | 2 | 2204 | 6 |
| 2204 # super sacks | 1 | 2204 | 3 |

| Available Packaging Types | Unit Rate [2] ($ / lb) | Total Mass (lbs) | Cost in USD [3, 4] (FOB Tonawanda, NY) |
|---|---|---|---|
| 55.1 # bags | 1.48 | 5,620.2 | $8,317.90 |
| 1102 # super sacks | 1.48 | 6,612 | $9,785.76 |
| 2204 # super sacks | 1.46 | 6,612 | $9,653.52 |

1) Number of packages needed is rounded up to nearest whole unit.

2) Price valid for 90 days from date at top of document. Terms: net 30 days.

3) Any applicable taxes not included. Please provide a copy of your tax exempt certificate or resale tax number when placing your order. In accordance with the law, applicable state and local taxes will be applied at the time of invoicing if PeroxyChem has not been presented with your fully executed tax exemption documentation.

4) Shipping not included. Freight rates from Tonawanda NY available upon request. Standard delivery time can vary from 1-3 weeks from time of order, depending upon volume. Expedited transport can be arranged at extra cost.

5) All sales are per PeroxyChem's Terms and Conditions.

**Disclaimer:**

**The estimated dosage and recommended application methodology described in this document are based on the site information provided to us, but are not meant to constitute a guaranty of performance or a predictor of the speed at which a given site is remediated. Klozur® persulfate and activator demand calculations are based on stoichiometry, and do not take into account the kinetics, or speed of the reaction, and represent the minimum anticipated amount needed to mineralize the constituents of concern (COCs). As a result, these calculations should be used as a general approximation for purposes of an initial economic assessment. PeroxyChem recommends that oxidant demand and treatability testing be performed to verify the quantities of oxidant needed.**

## KLOZUR® ACTIVATION CHEMISTRIES

Klozur® Persulfate activation chemistries are used to convert Klozur® Persulfate into the highly reactive persulfate radical, a very strong oxidant capable of destroying a wide range of contaminants. Choosing the right activator chemistry for your contaminants of concern is important in obtaining a successful site remediation. The choice of activator will be dependent upon the target contaminants, site lithology and hydrogeology, and site conditions. While activator demand quantities for all methods are given, not all method are recommended for your given contaminant or site conditions. Please consult with an PeroxyChem Environmental Solutions technologist for proper selection of activation chemistry.

| Recommended methods to activated Klozur® Persulfate: | FeEDTA | high pH | hydrogen peroxide |
|---|---|---|---|

*PeroxyChem Corporation is the owner or licensee under various patent applications relating to the use of activation chemistries

**Calculation for FeEDTA demand:**

**Note, it is not recommended mixing Fe and Klozur Persulfate Prior to Injection**

| | | |
|---|---|---|
| Recommended concentration of Fe available in the groundwater | 150 | ppm |
| Calculated FeEDTA demand based on gw volume | 643.3 | lb |
| # of bags of FeEDTA needed (55 # bags) | 12 | bags |
| Pricing | $4.10 | $ / lb |
| Cost in USD (FOB Tonawanda, NY) | $2,706.00 | |

# Klozur® Activated Persulfate Demand Calculations

PeroxyChem

20-Jun-2014

| | | | |
|---|---|---|---|
| Customer: | Lord Associates | Prepared by: | |
| Contact: | Ralph Tella | Ravi Srirangam PhD | |
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|---|---|---|---|

*PeroxyChem Corporation is the owner or licensee under various patent applications relating to the use of activation chemistries

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| Pricing | $4.10 | $ / lb |
| Cost in USD (FOB Tonawanda, NY) | $2,706.00 | |

FMC

Environmental Solutions

KLOZUR™
Power. Stability. Versatility.

## Klozur® Persulfate Demand Test

**Client:** Lord Associates, Inc.
1506 Providence Highway, Suite 30
Norwood, MA 02062

Ralph Tella

**Performing Lab:** FMC Corporation
Tonawanda, NY

**Date** February 07, 2014

## I. Background

Klozur® activated persulfate is a strong oxidant capable of mineralizing a wide range of contaminants, including chlorinated solvents, petroleum hydrocarbons, polyaromatic hydrocarbons, gasoline additives, pesticides, and many others. Activation of the persulfate anion generates the sulfate radical, the primary species that drives the rapid destruction of the contaminants of concern. Activation can be accomplished by several methods[1]: heat, transition metals, addition of hydrogen peroxide, or utilizing high pH. Choice of the activation method will depend on the contaminant of concern and site characteristics.

A chemical oxidant is not specific as to what it will oxidize. As a result, activated persulfate will not only mineralize the contaminant of concern, but a portion of the oxidant will be used in oxidizing soil organics, reduced metals, and organic species that are not of concern. In addition, activated persulfate will undergo auto-decomposition, which will be a function of temperature, concentration and activation method. The demand upon the activated persulfate from all of these components is captured in a coarse screening test termed, "Klozur Demand Test". It is dependent upon the site characteristics, such as the organic content of the soil, the mineral loading, and soil type and collectively must be considered for estimating the magnitude of oxidant dosing during field application.

The Klozur® Persulfate KDT test measures the loss of persulfate in the presence of soil, groundwater and activator over a period of 48 and 96 hours. The resulting KDT values can then be used as a guide to develop appropriate persulfate dosing for subsequent treatability testing and field applications.

[1] FMC is the owner of licensee under various patents relating to the use of activation chemistries

## II. Sample Handling for Lord Associates, Inc.

Client Sample Identification

- Soil ID: LB-7D; GW ID: 7D

Handling Procedures

- The samples were received on 01/28/2014.
- During the collection of the preliminary data, the soil was well mixed, used and put into its original container after its use.
- The groundwater sample was well mixed, used and put into its original containers after its use.
- On 02/03/2014, multiple experimental samples were prepared according to the amounts shown in the results table below.
- The experimental samples were stored at room temperature and each sample was gently shaken once per day.
- About 900 grams of the soil sample is left with us and about 750 milliliters of the groundwater sample is left. The unused soil and groundwater samples will be disposed of responsibly after about one week.

## III. Results

| Sample ID | Run # | Trial Activator | Soil Wt. (g) | Water Vol. (mL) | Klozur Dosage (g/Kg Soil) t=0 hrs. | Slurry pH | Klozur Consumption (g/Kg Soil) t=48hr | Klozur Consumption (g/Kg Soil) t=96 hr |
|---|---|---|---|---|---|---|---|---|
| LB-7D | 1 | Fe(III)EDTA | 10 | 30 | 15 | 6.63-5.96 | 0.59 | 1.28 |
| | 2 | Fe(III)EDTA | 10 | 30 | 15 | 6.63-5.96 | 0.63 | 1.29 |

## IV. Conclusions

The Klozur® Persulfate demand with FeEDTA activation for the LB-7D soil sample ranges from approximately 0.59 – 1.29 g persulfate / kg soil, which is considered low to average as compared to persulfate SOD for most soils. Based on these values, an average of 0.94 g/kg is recommended as an area SOD for further refinement of the Klozur persulfate total demand.

## V. Authorizing Signatures

This report contains the results as determined by FMC laboratory protocol and are accurately represented herein.

Eric Krueger
FMC Performing Scientist

Note: 1. FMC recommends performing suitable treatability testing and field pilot demonstration to determine the effectiveness of Klozur® activated persulfate on the contaminants of concern. KDT testing provides only an indication of the minimum amount of oxidant required to overcome the demands of soil, groundwater and other secondary species that contribute to the usage of the oxidant. The KDT results do not imply a guarantee of efficacy of the activated persulfate in actual field situations. 2. ANY SUCH QUANTITY OR WARRANTY IS EXPRESSLY DISCLAIMED.

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# APPENDIX B

# APPENDIX C

# Material Safety Data Sheet

Klozur® SP

MSDS #: 7775-27-1-12
Revision Date: 2014-04-15
Version 3

This MSDS has been prepared to meet U.S. OSHA Hazard Communication Standard 29 CFR 1910.1200 And Canadian Workplace Hazardous Materials Information System (WHMIS) requirements.

## 1. PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| Product name | Klozur® SP |
| Synonyms | Sodium Peroxydisulfate; Disodium Peroxydisulfate; Peroxydisulfuric acid, disodium salt; Peroxydisulfuric acid, sodium salt |
| Formula | Na2O8S2 and $Na_2S_2O_8$ |
| Recommended use: | In situ and ex situ chemical oxidation of contaminants and compounds of concern for environmental remediation applications |
| Restrictions on use: | No uses to be advised against were identified |

| Manufacturer | Emergency telephone number |
|---|---|
| PeroxyChem LLC<br>1735 Market Street<br>Philadelphia, PA 19103<br>Phone: +1 215/ 299-5858 (General Information)<br>E-Mail: sdsinfo@peroxychem.com | For leak, fire, spill or accident emergencies, call:<br>1 800 / 424 9300 (CHEMTREC - U.S.A.)<br>1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)<br>1 303/ 389-1409 (Medical - U.S. - Call Collect) |

## 2. HAZARDS IDENTIFICATION

Emergency Overview

White, odorless crystals
Oxidizer; Contact with combustible material may cause fire.
Decomposes in storage under conditions of moisture and/or excessive heat causing release of sulfur oxides and oxygen that supports combustion (See Section 10).

Potential health effects

Acute Toxicity

| | |
|---|---|
| Eyes | Causes moderate eye irritation. |
| Skin | Moderately irritating to the eyes. May cause sensitization by skin contact. |
| Inhalation | May cause irritation of respiratory tract. Respiratory sensitizer. |
| Ingestion | Harmful if swallowed. |

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

| Chemical Name | CAS-No | Weight % |
|---|---|---|
| Sodium Persulfate | 7775-27-1 | > 99 |

## 4. FIRST AID MEASURES

**General advice** Remove from exposure, lie down. Show this material safety data sheet to the doctor in attendance.

**Eye contact** Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids intermittently. Consult a physician. In case of contact, immediately flush eyes with plenty of water. If symptoms persist, call a physician.

**Skin contact** Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.

**Inhalation** Remove from exposure, lie down. If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.

**Ingestion** Do NOT induce vomiting. Call a physician or poison control center immediately. Rinse mouth. Drink 1 or 2 glasses of water.

## 5. FIRE-FIGHTING MEASURES

**Flash Point** Not flammable

**Suitable extinguishing media** Water. Cool containers with flooding quantities of water until well after fire is out.

**Unsuitable Extinguishing Media** Do not use carbon dioxide or other gas filled fire extinguishers; they will have little effect on decomposing persulfate.

**Explosion Data**
- **Sensitivity to Mechanical Impact** Not applicable
- **Sensitivity to Static Discharge** Not applicable

**Specific hazards arising from the chemical** Decomposes under fire conditions to release oxygen that intensifies the fire.

**Protective equipment and precautions for firefighters** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

| NFPA | Health Hazard 2 | Flammability 0 | Stability 1 | Special Hazards OX |
|---|---|---|---|---|

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions** Keep off any unprotected persons. Avoid contact with the skin and the eyes. Avoid breathing dust. Wear personal protective equipment.

**Methods for containment** Vacuum, shovel or pump waste into a drum and label contents for disposal. Avoid dust formation Store in closed container

**Methods for cleaning up** Clean up spill area and treat as special waste. Clean up the area with plenty of water.

**Other** Never add other substances or combustible waste to product residues.

## 7. HANDLING AND STORAGE

**Handling**

Wear personal protective equipment. Refer to Section 8. Use only in area provided with appropriate exhaust ventilation. Avoid dust formation. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Avoid contact with skin and eyes. Avoid breathing dust. Remove and wash contaminated clothing before re-use.

**Storage**

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat. Do not store near combustible materials. Avoid contamination of opened product. Keep away from food, drink and animal feedingstuffs. Avoid formation and deposition of dust.

## 8. EXPOSURE CONTROL / PERSONAL PROTECTION

**Exposure guidelines**

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH | Mexico |
|---|---|---|---|---|
| Sodium Persulfate 7775-27-1 | TWA: 0.1 mg/m³ | | | |

| Chemical Name | British Columbia | Quebec | Ontario TWAEV | Alberta |
|---|---|---|---|---|
| Sodium Persulfate 7775-27-1 | TWA: 0.1 mg/m³ | | TWA: 0.1 mg/m³ | TWA: 0.1 mg/m³ |

**Occupational exposure controls**

**Engineering measures**

Local exhaust ventilation w >90% efficiency.

**Respiratory protection**

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

**Eye/face protection**

Eye protection recommended. Chemical goggles consistent with EN 166 or equivalent.

**Skin and body protection**

Wear suitable protective clothing. Protective shoes or boots.

**Hand protection**

Protective gloves: Neoprene gloves, Polyvinylchloride, Natural Rubber.

**Hygiene measures**

Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Wash hands before breaks and after shifts. Keep work clothes separate, remove contaminated clothing - launder after open handling of product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

| | |
|---|---|
| **Appearance** | Crystalline solid |
| **Color** | white |
| **Physical state** | solid |
| **Odor** | Odorless |
| **Odor Threshold** | Not applicable |
| **pH** | 6.0 (1% solution) |
| **Melting Point/Range** | Decomposes on heating. 180 °C |
| **Freezing point** | Not applicable |
| **Boiling Point/Range** | Decomposes |
| **Flash Point** | Not flammable |
| **Evaporation rate** | Not applicable |
| **Oxidizing properties** | Oxidizer |
| **Explosive properties** | Not explosive |
| **Vapor pressure** | 6.07E-30 mm Hg at 25°C |
| **Vapor density** | No information available |

| | |
|---|---|
| Specific Gravity | 1.68 |
| Molecular Weight | 238.1 |
| Water solubility | 730 g/L @ 25 °C |
| Percent volatile | No information available |
| Partition coefficient | Not applicable |
| Viscosity | (Solid) |
| Decomposition Temperature | > 100 °C |
| Autoignition Temperature | No evidence of combustion up to 600°C |

## 10. STABILITY AND REACTIVITY

| | |
|---|---|
| Stability | Stable. |
| Conditions to avoid | Heat; Moisture; Combustibles such as paper and wood. |
| Materials to avoid | Acids, Bases, Halides, Oxidizing agents, Strong reducing agents, Combustible materials |
| Hazardous decomposition products | None known . |
| Hazardous polymerization | Hazardous polymerization does not occur. |
| Hazardous reactions | Use of persulfates in chemical reactions requires appropriate precautions and design considerations for pressure and thermal relief.<br><br>Decomposing persulfates will evolve large volumes of gas and/or vapor, can accelerate exponentially with heat generation, and create significant and hazardous pressures if contained and not properly controlled or mitigated.<br><br>Use with alcohols in the presence of water has been demonstrated to generate conditions that require rigorous adherence to process safety methods and standards to prevent escalation to an uncontrolled reaction. |

## 11. TOXICOLOGICAL INFORMATION

Acute effects

| | |
|---|---|
| Eye irritation | Irritating to eyes. Has been shown to exhibit eye irritation properties in human case reports following occupational exposure and consumer use. Slight irritation (rabbit). |
| Skin irritation | Irritating to skin. Persulfates in general, specifically diammonium persulfate and dipotassium persulfate, exhibited skin irritation properties in human case reports, following occupational exposure and consumer use. Slight irritation (rabbit). |
| LD50 Oral | 1200 mg/kg (Rat) Sodium Persulfate |
| LD50 Dermal | > 10,000 mg/kg (rabbit) Sodium Persulfate |
| LC50 Inhalation | => 5.1 mg/L (4-hr) (Rat) Sodium Persulfate |
| Sensitization | Sensitizing to skin and respiratory system Positive in a local lymph node assay. |

Chronic Toxicity

| | |
|---|---|
| Carcinogenicity | Did not show carcinogenic effects in animal experiments |
| Mutagenicity | In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects. |
| Target Organ Effects | Eyes, Skin, Respiratory system. |

## 12. ECOLOGICAL INFORMATION

Ecotoxicity

Sodium Persulfate (7775-27-1)

| Active Ingredient(s) | Duration | Species | Value | Units |
|---|---|---|---|---|
| Sodium Persulfate | 96 h LC50 | Rainbow trout | 163 | mg/L |
| Sodium Persulfate | 48 h LC50 | Daphnia magna | 133 | mg/L |
| Sodium Persulfate | 96 h LC50 | Grass shrimp | 519 | mg/L |
| Sodium Persulfate | 72 h EC50 | Algae S. capricornutum | 116 | mg/L |

**Persistence and degradability** Biodegradability does not pertain to inorganic substances.

**Bioaccumulation** Does not bioaccumulate.

**Mobility** Dissociates into ions.

**Other adverse effects** None known

## 13. DISPOSAL CONSIDERATIONS

**Waste disposal methods** This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

**RCRA D Waste Code** D001 (ignitable).

**Contaminated packaging** Dispose of in accordance with local regulations.

## 14. TRANSPORT INFORMATION

DOT

| | |
|---|---|
| UN/ID No | UN 1505 |
| Proper shipping name | SODIUM PERSULFATE |
| Hazard Class | 5.1 |
| Packing group | III |
| Reportable Quantity (RQ) | not applicable |

TDG

| | |
|---|---|
| UN/ID No | UN 1505 |
| Proper shipping name | SODIUM PERSULFATE |
| Hazard Class | 5.1 |
| Packing group | III |

ICAO/IATA

| | |
|---|---|
| UN/ID No | UN 1505 |
| Proper shipping name | SODIUM PERSULFATE |
| Hazard Class | 5.1 |
| Packing group | III |

IMDG/IMO

| | |
|---|---|
| UN/ID No | UN 1505 |
| Proper shipping name | SODIUM PERSULFATE |
| Hazard Class | 5.1 |
| Packing group | III |

ADR/RID

| | |
|---|---|
| UN/ID No | 1505 |
| Proper shipping name | SODIUM PERSULFATE |

| | |
|---|---|
| Hazard Class | 5.1 |
| Packing group | III |
| Description | Oxidizer |

## 15. REGULATORY INFORMATION

### International Inventories

| | |
|---|---|
| TSCA Inventory (United States of America) | Complies |
| DSL (Canada) | Complies |
| NDSL (Canada) | Complies |
| EINECS/ELINCS (Europe) | Complies |
| ENCS (Japan) | Complies |
| IECSC (China) | Complies |
| KECL (Korea) | Complies |
| PICCS (Philippines) | Complies |
| AICS (Afstralia) | Complies |
| NZIoC (New Zealand) | Complies |

### U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

| | |
|---|---|
| Acute Health Hazard | yes |
| Chronic Health Hazard | no |
| Fire Hazard | yes |
| Sudden Release of Pressure Hazard | no |
| Reactive Hazard | no |

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

### International Regulations

Mexico - Grade Moderate risk, Grade 2

Canada

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.**

WHMIS Hazard Class

C Oxidizing materials

D2A Very toxic materials

D2B Toxic materials

## 16. OTHER INFORMATION

| HMIS | Health Hazard 2 | Flammability 0 | Stability 1 | Special precautions J |
|---|---|---|---|---|

Protection=J (Safety goggles, gloves, apron, combination dust and vapor respirator)

Product Certifications

Revision Date: 2014-04-15
Reason for revision: Initial Release.

Disclaimer
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Prepared By

PeroxyChem
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**End of Material Safety Data Sheet**

# MATERIAL SAFETY DATA SHEET

**Dissolvine® E-FE-13**

**MSDS #:** 15708-41-5
**Revision date:** 2014-06-25
**Version** 2

This MSDS has been prepared to meet U.S. OSHA Hazard Communication Standard 29 CFR 1910.1200 And Canadian Workplace Hazardous Materials Information System (WHMIS) requirements.

## 1. PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| **Product Name** | **Dissolvine® E-FE-13** |
| **Synonyms** | Ferric sodium EDTA; CHEMICAL NAME: Ethyldiaminetetraacetic acid, ferric sodium complex |
| **Formula** | C10H12FeN2O8Na.3H2O |
| **Recommended Use:** | Chelating agent; Plant nutrient |
| **Manufacturer/Supplier** | **Emergency telephone number** |
| PeroxyChem LLC<br>1735 Market Street<br>Philadelphia, PA 19103<br>Phone: +1 215/ 299-5858 (General Information)<br>E-Mail: sdsinfo@peroxychem.com | For leak, fire, spill or accident emergencies, call:<br>1 800 / 424 9300 (CHEMTREC - U.S.A.)<br>1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)<br>1 303/ 389-1409 (Medical - U.S. - Call Collect)<br><br>Medical / Handling Emergencies:<br>1 914 / 693-6946 (Akzo Nobel - U.S.A.) |

## 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Yellow-green odorless powder
Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source, is a potential dust explosion hazard.

**Potential Health Effects**

| | |
|---|---|
| **Eyes** | Product dust may cause mechanical eye irritation. |
| **Skin** | Substance may cause slight skin irritation. |
| **Inhalation** | Inhalation of dust in high concentration may cause irritation of respiratory system. |
| **Ingestion** | No known effect based on information supplied. |
| Chronic toxicity | In a 31/61-day oral study on rats with Ferric-sodium EDTA, the NOAEL >/= 84 mg/kg. |

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

| Chemical name | CAS-No | Weight % |
|---|---|---|
| EDTA ferric sodium complex | 15708-41-5 | 87-89 |
| Water | 7732-18-5 | 11-13 |

## 4. FIRST AID MEASURES

**Eye Contact** In case of eye contact, remove contact lenses and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if irritation persists.

**Skin Contact** Wash off with warm water and soap. Wash contaminated clothing before reuse. Get medical attention if irritation develops and persists.

**Inhalation** Move to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.

**Ingestion** Rinse mouth with water and afterwards drink plenty of water or milk. Do not induce vomiting or give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

## 5. FIRE-FIGHTING MEASURES

**Flammable properties** Not combustible.

**Suitable Extinguishing Media** Use $CO_2$, dry chemical, or foam. Soft stream or water fog only if necessary.

Explosion data
**Sensitivity to Mechanical Impact** Not sensitive
**Sensitivity to Static Discharge** Not sensitive

**Specific Hazards Arising from the Chemical** Avoid dust formation. Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Protective equipment and precautions for firefighters** As in any fire, wear self-contained breathing apparatus and full protective gear.

| NFPA | Health Hazards 1 | Flammability 1 | Stability 0 | Special Hazards - |
|---|---|---|---|---|

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions** Avoid contact with the skin and the eyes. Powder becomes slippery when wet. For personal protection see section 8.

**Methods for Containment** Cover with plastic sheet to prevent spreading Do not allow material to enter storm or sanitary sewer system Use a wet sweeping compound or water to prevent dust formation Sweep or vacuum up spillage and return to container Material may be recycled when contamination is not a problem

**Methods for cleaning up** After cleaning, flush away traces with water. Dispose of waste as indicated in Section 13.

## 7. HANDLING AND STORAGE

**Handling**

Avoid dust formation. Use in well ventilated areas to prevent formation of explosive dust-air mixtures. Avoid inhalation and prolonged and/or repeated skin and eye contact.

**Storage**

Keep tightly closed in a dry and cool place. Containers should not be opened until ready to use. Store in original container. Keep at temperatures below 25°C. Keep away from incompatible materials (see Section 10).

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

| Chemical name | British Columbia | Quebec | Ontario TWAEV | Alberta |
|---|---|---|---|---|
| EDTA ferric sodium complex 15708-41-5 | TWA: 1 mg/m³ | TWA: 1.0 mg/m³ | TWA: 1 mg/m³ | TWA: 1 mg/m³ |

Occupational exposure controls

**Engineering measures**

Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

**Respiratory Protection**

Whenever dust in the worker's breathing zone cannot be controlled with ventilation or other engineering means, workers should wear respirators or dust masks approved by NIOSH/MSHA, EU CEN or comparable organization to protect against airborne dust.

**Eye/Face Protection**

Tightly fitting safety goggles

**Skin and Body Protection**

Protective shoes or boots Wear suitable protective clothing

**Hand Protection**

Protective gloves: Nitrile rubber.

**Hygiene measures**

When using, do not eat, drink or smoke. Wash hands and face before breaks and immediately after handling the product

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

| | |
|---|---|
| **Appearance** | Yellow to green Powder |
| **Physical State** | Solid |
| **Odor** | odorless |
| **pH** | (1% solution) 4 - 5.5 |
| **Melting Point/Range** | 80 °C (crystal water loss) |
| **Boiling Point/Range** | Not applicable |
| **Flash point** | Not applicable |
| **Flammable properties** | Not combustible |
| **Density** | 0.95 g/cm³ |
| **Water solubility** | 90 g/L @ 20 °C; 300 g/L @ 80 °C |
| **Partition coefficient** | log Pow = <1 |
| **Decomposition temperature** | No information available |
| **Autoignition temperature** | > 200 °C |

## 10. STABILITY AND REACTIVITY

**Stability**

Stable under recommended storage conditions.

| | |
|---|---|
| **Conditions to Avoid** | Temperatures above 25°C. Very hygroscopic; protect from moisture. |
| **Hazardous Decomposition Products** | Thermal decomposition can lead to release of irritating and toxic gases and vapors: Nitrogen oxides (NOx), Carbon oxides (COx), Metal oxides. |
| **Hazardous polymerization** | Hazardous polymerization does not occur. |

## 11. TOXICOLOGICAL INFORMATION

Acute Effects

| | |
|---|---|
| **Eye irritation** | Non-irritating. |
| **Skin irritation** | Non-irritating to the skin |
| **LD50 Oral** | > 2000 mg/kg bw (rat) |
| **LD50 Dermal** | > 2000 mg/kg bw (rat) |
| **LC50 Inhalation** | > 2.75 mg/L (4-hr) |

| | |
|---|---|
| **Sensitization** | Did not cause sensitization on laboratory animals |

Chronic toxicity

| | |
|---|---|
| **Chronic toxicity** | In a 31/61-day oral study on rats with Ferric-sodium EDTA, the NOAEL >/= 84 mg/kg. |
| **Carcinogenicity** | Not recognized as carcinogenic by Research Agencies (IARC, NTP, OSHA, ACGIH) |
| **Mutagenicity** | Not mutagenic in AMES Test. Ferric sodium EDTA gave a positive response in the Mouse Lynphoma Assay (in vitro) with and without metabolic activation at concentrations that were cytotoxic. The positive response was attributed to a possible sensitivity of the cells to abnormal iron concentrations. |
| **Reproductive toxicity** | EDTA and its sodium salts have been reported, in some studies, to cause birth defects in laboratory animals only at exaggerated doses that were toxic to the mother. These effects are likely associated with zinc deficiency due to chelation. Exposures having no effect on the mother should have no effect on the fetus. Based on data with a related substance (magnesium-disodium EDTA), the NOAEL is expected to be 500 mg/kg. |
| **Target organ effects** | Skin, Eyes. |

## 12. ECOLOGICAL INFORMATION

Ecotoxicity

EDTA ferric sodium complex (15708-41-5)

| Active Ingredient(s) | Duration | Species | Value | Units |
|---|---|---|---|---|
| Ferric Sodium EDTA | 96 h LC50 | Rainbow trout | >100 | mg/L |
| Ferric Sodium EDTA | 35 d NOEC | Zebra fish | 28.9 | mg/L |
| Ferric Sodium EDTA | 48 h EC50 | Daphnia magna | 100.9 | mg/L |
| Ferric Sodium EDTA | 21 d NOEC | Daphnia magna | 31 | mg/L |
| Ferric Sodium EDTA | 72 h NOEC | Algae | 69.9 | mg/L |

**Persistence and degradability** Inherently biodegradable. EDTA ferric-sodium complex is photodegradable with a half life of 20 days.

**Bioaccumulation** Bioaccumulation is unlikely.

**Mobility** Will likely be mobile in the environment due to its water solubility. C.O.D. is approximately 570 mg/g.

## 13. DISPOSAL CONSIDERATIONS

**Waste disposal methods** This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

**Contaminated Packaging** Cleaning the container before final disposal is the responsibility of the person disposing of the container. Empty containers should be taken to an approved waste handling site for recycling or disposal.

## 14. TRANSPORT INFORMATION

DOT NOT REGULATED

TDG NOT REGULATED

ICAO/IATA NOT REGULATED

IMDG/IMO NOT REGULATED

## 15. REGULATORY INFORMATION

International Inventories

| | |
|---|---|
| TSCA (United States) | Complies |
| DSL (Canada) | Complies |
| NDSL (Canada) | Complies |
| EINECS/ELINCS (Europe) | Complies |
| ENCS (Japan) | - |
| China (IECSC) | Complies |
| KECL (Korea) | Complies |
| PICCS (Philippines) | Complies |

| | |
|---|---|
| AICS (Australia) | Complies |
| NZIoC (New Zealand) | Complies |

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

| | |
|---|---|
| Acute health hazard | No |
| Chronic health hazard | No |
| Fire hazard | No |
| Sudden release of pressure hazard | No |
| Reactive Hazard | No |

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

International Regulations

Mexico - Grade Slight risk, Grade 1

CANADA

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR**

WHMIS Hazard Class

Non-controlled

## 16. OTHER INFORMATION

| HMIS | Health Hazards 1 | Flammability 1 | Stability 0 | Special precautions - |
|---|---|---|---|---|

Revision date: 2014-06-25

Reason for revision: Initial Release.

Disclaimer

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Prepared By:

PeroxyChem

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**End of Safety Data Sheet**

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 3/24/2015**

| | |
|---|---|
| **Agenda Item** | 2015 Annual Town Meeting – Retiree COLA Base |
| **Presenter(s)** | Robert Mearls, Member, Needham Retirement Board<br>Evelyn Poness, Chairman, Needham Retirement Board |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|
| Mr. Mearls and Ms. Poness will present the Needham Contributory Retirement Board's recommendation to increase the base upon which retiree cost of living (COLA) adjustments are calculated – from $12,000 to $14,000. | | | |
| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | **YES** | **NO** |
| Update only. The Board is scheduled to vote positions on individual warrant articles in April. | | | |
| **3.** | **BACK UP INFORMATION ATTACHED** | **YES** | **NO** |
| a. Town of Needham Contributory Retirement System, Increase in Retiree Cost-of-Living Base Adjustment PowerPoint | | | |

# TOWN OF NEEDHAM CONTRIBUTORY RETIREMENT SYSTEM

## Increase in Retiree Cost-of-Living Base Adjustment

March 24, 2015

# RETIREE COST OF LIVING ADJUSTMENT (COLA) BASE
# CURRENT PROVISIONS

- Retirees are eligible to receive an annual cost of living adjustment (COLA) each July 1st. The annual adjustment is:
  - A *maximum of 3% per annum* as voted annually by the Needham Retirement Board
  - *The percentage increase is limited to the first $12,000 of a retiree's pension (the "COLA base")*

# RETIREE COST OF LIVING ADJUSTMENT (COLA) BASE PROPOSAL

- Accept Provisions of MGL Chapter 32 Section 103(j) and Section 19 of Chapter 188 of the Acts of 2010
- Increase COLA Base from $12,000 to $14,000

# RETIREE COST OF LIVING ADJUSTMENT (COLA) BASE
# CURRENT PROVISIONS EXAMPLE

- Example: Retiree annual allowance equals $24,000

  - Maximum annual increase equals $360
    (3% of $12,000 = $360)

  - "Effective" COLA in this example equals 1.5%
    ($360 divided by $24,000)

# RETIREE COST OF LIVING ADJUSTMENT UNDER NEW PROPOSAL

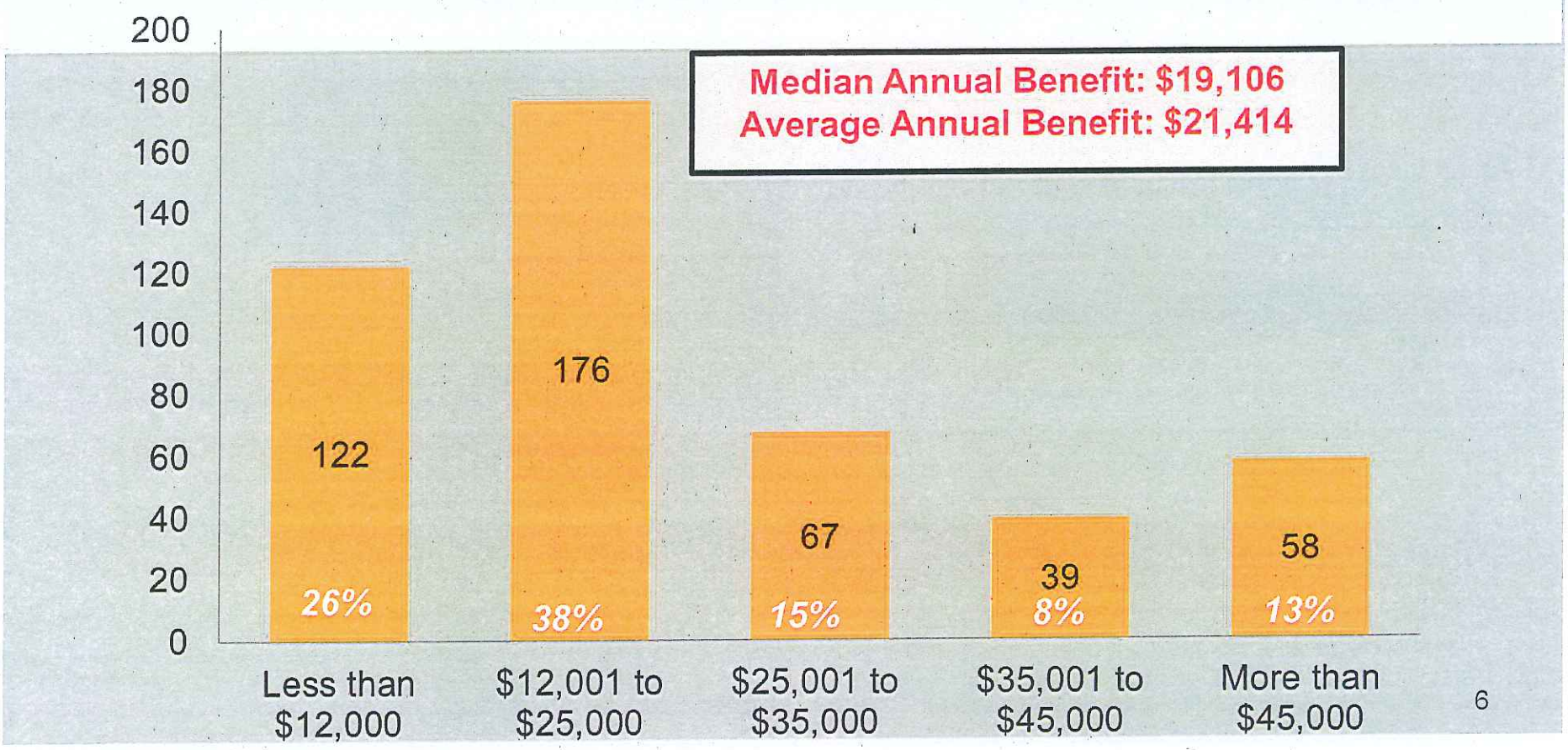
- Example: Retiree annual allowance equals $24,000

  - Maximum annual increase equals $420 (3% of $14,000 = $420)

  - "Effective" COLA in this example equals 1.75 ($420 divided by $24,000)

# TOWN OF NEEDHAM CONTRIBUTORY RETIREMENT SYSTEM

## Distribution of 462 Retirees and Beneficiaries in Pay Status as of 1/1/2015



# RETIREE COST OF LIVING ADJUSTMENT (COLA) BASE

## WHAT DOES INCREASING THE COLA BASE MEAN?

- The COLA base was last increased effective 1998 from $9,000 to $12,000
- Recently enacted law allows the COLA base to be increased in $1,000 increments
- Retirement Board recommends raising the COLA base to $14,000 effective July 1, 2015
- Requires Town Meeting approval

# "EFFECTIVE" COST OF LIVING ADJUSTMENT MAXIMUM ANNUAL COLA PERCENTAGE INCREASE

| Annual Retiree Benefit | Number of Retirees | $12,000 COLA Base | $14,000 COLA Base |
|---|---|---|---|
| Less than $12,000 | 122 | 3.0% | 3.0% |
| $12,001 to $25,000 | 176 | 3.0% - 1.4% | 3.0% - 1.7% |
| $25,001 to $35,000 | 67 | 1.4% - 1.0% | 1.7% - 1.2% |
| $35,001 to $45,000 | 39 | 1.0% - 0.8% | 1.2% - 0.9% |
| More than $45,000 | 58 | <0.8% | <0.9% |

**The maximum dollar increase for any single retiree is <u>$60 per year</u> if COLA base increased to $14,000 (3% times $2,000 increase in base).**

# ACTION BY OTHER RETIREMENT BOARDS

- 12 County systems, and 42 municipal systems, the Commonwealth and the State Teacher systems have approved increases in the COLA base, covering 308 cities and towns
  - 21 systems have approved an increase to $13,000
  - 20 systems have approved an increase to $14,000
  - 9 systems have approved an increase to $15,000
  - 4 systems have approved an increase to $16,000
  - 2 systems have approved an increase to $18,000

# COST IMPLICATIONS

- Increasing the COLA base to $14,000 will result in an increase to the unfunded liability of about $1.8 million.

- Raising the COLA base to $14,000 results in an increase to the FY2017 funding schedule of approximately $200,000.

- No modification of the FY2016 schedule is proposed.

The Needham Contributory Retirement Board gratefully acknowledges assistance from the Wellesley Contributory Retirement Board in the development of this material.

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 3/24/2015**

| | |
|---|---|
| **Agenda Item** | DPW Projects Update |
| **Presenter(s)** | Richard Merson, DPW Director<br>Anthony Del Gaizo, Town Engineer |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|
| 1. DPW Related Annual Town Meeting Items<br>2. Eliot Street Bridge Reconstruction<br>3. Route 128 Add-A-Lane – Highland Ave Eversource Conduit Relocation | | | |
| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | __YES | _X_NO |
| | | | |
| **3.** | **BACK UP INFORMATION ATTACHED** | __YES | _X_NO |
| **(Describe backup below)**<br>1. **none** | | | |

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 3/24/2015**

| | |
|---|---|
| **Agenda Item** | Water Restriction Update & Water Management Act Comment Letter |
| **Presenter(s)** | Kate Fitzpatrick, Town Manager<br>Rick Merson, Director of Public Works |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|

The Town Manager and Mr. Merson will provide the Board with a status of the Town's water use in calendar year 2014, plans for the 2015 mandatory non-essential outdoor water use restriction, and a proposed letter to Governor Baker regarding the Water Management Act.

One of the options for communities to consider as an alternative to the two-day per week watering schedule is to tie the non-essential outdoor watering restriction to the level of the Charles River at the USGS Gauge in Waltham. The restriction must be declared each time the reading falls below certain thresholds. We will discuss this option with the Board.

| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | **YES** | **NO** |
|---|---|---|---|

***Suggested Motion:*** that the Board approve and sign a letter to Governor Baker outlining the Town's objections to the pending Water Management Act Regulation changes.

| **3.** | **BACK UP INFORMATION ATTACHED** | **YES** | **NO** |
|---|---|---|---|

a. Proposed letter to Governor Baker
b. Stream Flow Gauge Charts – Waltham – 2010 – 2014
c. Sample Public Notice of Mandatory Odd/Even Water Use Restriction

# TOWN OF NEEDHAM

**TOWN HALL**
**1471 Highland Avenue**
**Needham, MA 02492-2669**

**Office of the**
**BOARD OF SELECTMEN**

**TEL: (781) 455-7500**
**FAX: (781) 449-4569**
**TDD: (781) 455-7558**


March 24, 2015

Hon. Charles D. Baker, Jr.
Massachusetts State House
Office of the Governor
Room 280
Boston, MA 02133

Hon. Matthew A. Beaton
Secretary of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

**Re:** ***Water Management Act*** **Regulations, 310 CMR 36.00**

Dear Governor Baker and Secretary Beaton:

As you know, the Massachusetts Department of Environmental Protection last year amended its *Water Management Act* (WMA) regulations, 310 CMR 36.00, to bring them into line with the prior Administration's Sustainable Water Management Initiative. While we strongly agree that our water resources deserve to be protected, we believe that the regulations, as adopted, fail to achieve their goal and neglect to consider the potential fiscal impacts on cities and towns.

Needham understands that a total repeal of the regulation is not feasible or practical at this time. However, we nevertheless believe that the Department should revise some of the more problematic provisions immediately. The Town proposes the following suggested amendments, which may be made without disturbing the core foundations of the regulations.

First, the definition of "baseline" should be amended to allow a community's unique circumstances to be taken into consideration in computing its obligations under 310 CMR 36.03. In 2005, Needham shut down its wells completely to repair its water treatment plant. However, the regulations currently permit the Department to alter a water supplier's baseline only if its 2003-2005 withdrawals were interrupted due to "contamination." Without incorporating a more flexible approach to baseline calculations, the Department is essentially punishing the Town for its efforts to repair its plant.

Second, modifications need to be made to the permit tier system (310 CMR 36.19). The regulations assign each permit renewal application to a "Permit Tier" based upon whether the water supplier is requesting withdrawal volumes above its baseline and, if such a request is made, whether DEP's modeling predicts that the increase will result in a significant change in the subbasin's streamflow. The assigned Permit Tier directly impacts the stringency of the permit's conditions and requirements. Notably, water suppliers seeking new or increased withdrawals from the most degraded water sources cannot, by definition, cause a subbasin to drop to a lower streamflow category, and thus will be assigned to Permit Tier 2. In contrast, communities that seek to hold on to their existing permit volumes above their baseline, but that withdraw from less degraded subbasins, may be subject to the stricter requirements of Permit Tier 3 if the Department determines that their withdrawals will adversely affect streamflow to a sufficient degree. This unfair treatment of communities that seek to retain their previously permitted volumes directly contradicts one of the goals explicitly stated in section 7 of the WMA, "[r]easonable protection of water uses, land values, investments and enterprises that are dependent on previously allowable withdrawals."

Third, the regulations fail to provide any guidance to applicants in determining what level of offsets will be required of them (310 CMR 36.21). The same is true for the level of minimization or mitigation necessary to be achieved pursuant to 310 CMR 36.03 or 310 CMR 36.22. Accordingly, the Department should revise the regulations to establish specific, numerical and reasonably achievable goals.

Fourth, the Department should specify that connection to the MWRA does not automatically constitute an "alternative source" under section 310 CMR 36.21(3)(c) of the regulations. In light of the substantial investments cities and towns have already made into their existing water withdrawal infrastructure, and the high cost of actually purchasing water from the MWRA, forcing Tier 3 applicants to purchase water from the MWRA should be a last resort to be considered only in the event that no other option is viable.

Fifth, the Town strongly objects to 310 CMR 36.28's incorporation of conservation standards established by the Water Resources Commission without the benefit of a proper rulemaking process pursuant to state law. As an example, they impose strict seasonal bans on "nonessential" outdoor water use, without any consideration of the efforts made by local communities to relieve pressure on the water source. For example, Needham limits its withdrawals during the summer months by purchasing, at a higher cost, water from the MWRA. The regulations should be encouraging Needham to continue this water management strategy, which results in relieving pressure on the Charles River Basin far more effectively than any water ban.

The Town believes that the regulations, as issued, substantially interfere with its ability to build on its record of sound water management. They fail to consider the diversity of municipalities within the Commonwealth and impose complex and costly requirements upon public water suppliers without any evidence in science or in fact that they will achieve their espoused purpose. We ask that the Department make the changes recommended above, and begin work as soon as possible to out into place a more comprehensive revision that inevitably will be necessary in the future.

Very truly yours,
Selectmen of Needham

| | |
|---|---|
| John A. Bulian, Chairman | Maurice P. Handel, Vice Chairman |
| Matthew D. Borrelli, Clerk | Marianne B. Cooley |

Daniel P. Matthews

cc: Kate Fitzpatrick, Town Manager
Hon. Karyn E. Polito
Representative Denise Garlick
Senator Michael Rush
Senator Richard Ross
Ray Miyares, Special Counsel
David Tobin, Town Counsel
Richard Merson, Director of Public Works
Christopher Coleman, Assistant Town Manager/Operations
David Davison, Assistant Town Manager/Finance

## 2010
## USGS 01104500 Charles River at Waltham, MA

| Date | May | June | July | August | Sept |
|---|---|---|---|---|---|
| 1 | 554 | 199 | 79 | 45 | 245 |
| 2 | 411 | 190 | 72 | 43 | 142 |
| 3 | 420 | 195 | 68 | 41 | 94 |
| 4 | 390 | 195 | 63 | 40 | 90 |
| 5 | 358 | 269 | 57 | 40 | 42 |
| 6 | 327 | 318 | 53 | 75 | 66 |
| 7 | 289 | 327 | 50 | 71 | 68 |
| 8 | 390 | 260 | 48 | 57 | 74 |
| 9 | 427 | 230 | 46 | 48 | 61 |
| 10 | 391 | 231 | 79 | 44 | 46 |
| 11 | 393 | 218 | 112 | 42 | 40 |
| 12 | 341 | 215 | 81 | 40 | 42 |
| 13 | 267 | 219 | 63 | 39 | 43 |
| 14 | 264 | 218 | 63 | 38 | 45 |
| 15 | 250 | 210 | 58 | 36 | 34 |
| 16 | 223 | 197 | 56 | 35 | 31 |
| 17 | 200 | 184 | 61 | 34 | 32 |
| 18 | 185 | 168 | 57 | 32 | 32 |
| 19 | 446 | 148 | 52 | 30 | 30 |
| 20 | 477 | 149 | 49 | 27 | 28 |
| 21 | 500 | 192 | 45 | 26 | 25 |
| 22 | 505 | 147 | 43 | 26 | 23 |
| 23 | 457 | 135 | 42 | 30 | 21 |
| 24 | 374 | 141 | 51 | 37 | 20 |
| 25 | 328 | 145 | 51 | 426 | 19 |
| 26 | 282 | 117 | 48 | 404 | 18 |
| 27 | 254 | 106 | 52 | 268 | 17 |
| 28 | 213 | 104 | 61 | 212 | 35 |
| 29 | 199 | 97 | 61 | 177 | 69 |
| 30 | 196 | 87 | 56 | 158 | 54 |
| 31 | 169 | | 49 | 207 | |

**May and June cannot fall below 279 cfs for 3 consecutive days.**
**July, August and September cannot fall below 98 cfs for 3 days.**

**Key =** **Fell below threshold**

## 2011
## USGS 01104500 Charles River at Waltham, MA

| Date | May | June | July | August | Sept |
|---|---|---|---|---|---|
| 1 | 504 | 252 | 267 | 59 | 694 |
| 2 | 478 | 323 | 231 | 60 | 663 |
| 3 | 454 | 290 | 205 | 70 | 636 |
| 4 | 445 | 288 | 182 | 55 | 595 |
| 5 | 451 | 288 | 162 | 47 | 538 |
| 6 | 421 | 266 | 123 | 37 | 553 |
| 7 | 415 | 264 | 119 | 99 | 586 |
| 8 | 431 | 241 | 125 | 167 | 766 |
| 9 | 402 | 228 | 144 | 164 | 831 |
| 10 | 379 | 234 | 138 | 515 | 796 |
| 11 | 354 | 220 | 135 | 440 | 769 |
| 12 | 322 | 307 | 135 | 371 | 741 |
| 13 | 310 | 302 | 131 | 371 | 712 |
| 14 | 292 | 296 | 154 | 358 | 664 |
| 15 | 332 | 281 | 125 | 404 | 635 |
| 16 | 371 | 294 | 111 | 439 | 586 |
| 17 | 367 | 292 | 104 | 399 | 543 |
| 18 | 411 | 271 | 96 | 357 | 489 |
| 19 | 500 | 237 | 89 | 337 | 446 |
| 20 | 516 | 210 | 82 | 358 | 427 |
| 21 | 493 | 162 | 76 | 321 | 391 |
| 22 | 466 | 177 | 68 | 312 | 368 |
| 23 | 466 | 301 | 71 | 262 | 352 |
| 24 | 455 | 288 | 67 | 197 | 474 |
| 25 | 416 | 326 | 64 | 211 | 460 |
| 26 | 388 | 357 | 71 | 263 | 455 |
| 27 | 351 | 342 | 67 | 348 | 440 |
| 28 | 327 | 327 | 62 | 927 | 399 |
| 29 | 302 | 323 | 61 | 789 | 464 |
| 30 | 277 | 296 | 71 | 715 | 535 |
| 31 | 258 | | 64 | 697 | |

**May and June cannot fall below 279 cfs for 3 consecutive days.**
**July, August and September cannot fall below 98 cfs for 3 days.**

**Key =** **Fell below threshold**

## 2012
## USGS 01104500 Charles River at Waltham, MA

| Date | May | June | July | August | Sept |
|---|---|---|---|---|---|
| 1 | 483 | 201 | 166 | 114 | 64 |
| 2 | 470 | 279 | 148 | 123 | 60 |
| 3 | 428 | 347 | 133 | 126 | 53 |
| 4 | 397 | 338 | 140 | 122 | 58 |
| 5 | 375 | 323 | 134 | 113 | 106 |
| 6 | 354 | 315 | 125 | 101 | 84 |
| 7 | 334 | 309 | 116 | 85 | 75 |
| 8 | 323 | 302 | 107 | 73 | 71 |
| 9 | 326 | 299 | 97 | 63 | 80 |
| 10 | 482 | 282 | 90 | 73 | 76 |
| 11 | 512 | 266 | 84 | 102 | 68 |
| 12 | 502 | 244 | 78 | 75 | 64 |
| 13 | 481 | 259 | 72 | 66 | 58 |
| 14 | 456 | 248 | 65 | 59 | 52 |
| 15 | 481 | 232 | 62 | 78 | 50 |
| 16 | 506 | 224 | 58 | 237 | 45 |
| 17 | 440 | 214 | 56 | 102 | 40 |
| 18 | 410 | 198 | 127 | 101 | 39 |
| 19 | 389 | 184 | 232 | 87 | 124 |
| 20 | 367 | 169 | 146 | 77 | 91 |
| 21 | 340 | 157 | 108 | 66 | 75 |
| 22 | 333 | 149 | 84 | 58 | 71 |
| 23 | 341 | 211 | 71 | 53 | 68 |
| 24 | 323 | 224 | 59 | 52 | 59 |
| 25 | 317 | 217 | 35 | 52 | 52 |
| 26 | 312 | 247 | 28 | 48 | 49 |
| 27 | 296 | 233 | 34 | 43 | 47 |
| 28 | 274 | 219 | 56 | 47 | 60 |
| 29 | 255 | 208 | 107 | 51 | 107 |
| 30 | 251 | 187 | 77 | 59 | 93 |
| 31 | 224 | | 77 | 65 | |

**May and June cannot fall below 279 cfs for 3 consecutive days.**
**July, August and September cannot fall below 98 cfs for 3 days.**

**Key =** **Fell below threshold**

## 2013
## USGS 01104500 Charles River at Waltham, MA

| Date | May | June | July | August | Sept |
|---|---|---|---|---|---|
| 1 | 196 | 307 | 515 | 253 | 145 |
| 2 | 174 | 283 | 469 | 249 | 286 |
| 3 | 163 | 285 | 427 | 217 | 192 |
| 4 | 157 | 272 | 385 | 191 | 147 |
| 5 | 148 | 244 | 335 | 174 | 134 |
| 6 | 142 | 248 | 273 | 156 | 129 |
| 7 | 145 | 349 | 208 | 135 | 120 |
| 8 | 141 | 920 | 170 | 113 | 106 |
| 9 | 183 | 877 | 142 | 169 | 96 |
| 10 | 214 | 835 | 195 | 212 | 88 |
| 11 | 207 | 1,110 | 266 | 185 | 82 |
| 12 | 209 | 1,190 | 278 | 186 | 80 |
| 13 | 199 | 1,180 | 257 | 213 | 127 |
| 14 | 186 | 1,500 | 237 | 211 | 91 |
| 15 | 176 | 1,530 | 217 | 191 | 79 |
| 16 | 160 | 1,490 | 200 | 163 | 74 |
| 17 | 146 | 1,400 | 184 | 140 | 68 |
| 18 | 143 | 1,340 | 151 | 122 | 65 |
| 19 | 126 | 1,270 | 138 | 112 | 60 |
| 20 | 121 | 1,140 | 127 | 99 | 59 |
| 21 | 119 | 1,050 | 117 | 82 | 57 |
| 22 | 130 | 938 | 110 | 73 | 83 |
| 23 | 152 | 840 | 170 | 64 | 80 |
| 24 | 188 | 877 | 234 | 59 | 69 |
| 25 | 233 | 891 | 239 | 54 | 68 |
| 26 | 234 | 805 | 372 | 51 | 72 |
| 27 | 232 | 724 | 393 | 50 | 76 |
| 28 | 227 | 698 | 385 | 46 | 73 |
| 29 | 267 | 640 | 377 | 41 | 64 |
| 30 | 348 | 571 | 357 | 40 | 52 |
| 31 | 323 | | 299 | 39 | |

**May and June cannot fall below 279 cfs for 3 consecutive days.**
**July, August and September cannot fall below 98 cfs for 3 days.**

**Key =** **Fell below threshold**

## 2014
## USGS 01104500 Charles River at Waltham, MA

| Date | May | June | July | August | Sept |
|---|---|---|---|---|---|
| 1 | 562 | 179 | 71 | 67 | 35 |
| 2 | 564 | 168 | 41 | 72 | 33 |
| 3 | 548 | 147 | 42 | 75 | 33 |
| 4 | 540 | 152 | 156 | 69 | 25 |
| 5 | 520 | 210 | 332 | 54 | 22 |
| 6 | 545 | 263 | 240 | 46 | 22 |
| 7 | 522 | 245 | 184 | 37 | 21 |
| 8 | 480 | 229 | 116 | 31 | 19 |
| 9 | 448 | 195 | 113 | 27 | 19 |
| 10 | 419 | 185 | 92 | 26 | 19 |
| 11 | 390 | 172 | 75 | 24 | 20 |
| 12 | 365 | 152 | 65 | 24 | 19 |
| 13 | 355 | 164 | 56 | 102 | 19 |
| 14 | 311 | 177 | 51 | 126 | 19 |
| 15 | 291 | 175 | 72 | 71 | 19 |
| 16 | 283 | 191 | 143 | 62 | 18 |
| 17 | 275 | 219 | 126 | 66 | 19 |
| 18 | 267 | 212 | 114 | 66 | 18 |
| 19 | 250 | 188 | 107 | 37 | 18 |
| 20 | 225 | 160 | 104 | 31 | 17 |
| 21 | 218 | 136 | 85 | 33 | 18 |
| 22 | 211 | 115 | 84 | 52 | 20 |
| 23 | 239 | 100 | 80 | 53 | 17 |
| 24 | 224 | 78 | 60 | 50 | 17 |
| 25 | 211 | 64 | 48 | 45 | 17 |
| 26 | 205 | 81 | 40 | 41 | 17 |
| 27 | 201 | 54 | 40 | 34 | 16 |
| 28 | 276 | 31 | 168 | 30 | 16 |
| 29 | 279 | 40 | 166 | 26 | 16 |
| 30 | 186 | 40 | 114 | 25 | 16 |
| 31 | 190 | | 77 | 27 | |

**May and June cannot fall below 279 cfs for 3 consecutive days.**
**July, August and September cannot fall below 98 cfs for 3 days.**

**Key =** **Fell below threshold**

# Public Notice
# Mandatory ODD/EVEN Non-essential Outdoor Water Use Restriction
For Residential & Commercial Customers

The Town of Needham's mandatory non-essential outdoor water use restriction is effective May 1, 2015 through September 30, 2015. Non-essential water use is allowed two days per week before 9:00 a.m. and after 5:00 p.m. This restriction is in accordance with the Town's Department of Environmental Protection (DEP) Water Management Act Permit, and is in keeping with regional water conservation efforts.

## Odd/Even Outdoor Water Use Restriction

Properties with **even** street numbers may water lawns (and perform other allowed non-essential outdoor water uses) only before 9:00 a.m. or after 5:00 p.m. on **Mondays and Thursdays**.

Properties with **odd** street numbers may water lawns (and perform other non-essential outdoor water uses) only before 9:00 a.m. or after 5:00 p.m. on **Tuesdays and Fridays**.

No lawn watering via sprinklers or automatic irrigations system is allowed on Saturday, Sunday or Wednesday.

Watering of lawns, gardens, flowers and ornamental plants by means of a **hand held hose is allowed at all hours** during the restricted period.

The policy of the Commonwealth is to reduce residential water use to 65 gallons per person per day to ensure a sustainable drinking water supply and to protect natural resources and stream flow for aquatic life. Residential use in Needham has fluctuated between 65 and 66 gallons for the last few years. Accordingly, the Town is seeking the cooperation of all residents in achieving the required standard. Failure to comply with the provisions of the mandatory restriction may result in a fine in accordance with Section 2.2.5.5 of the General By-laws.

In the event that the Massachusetts Drought Management Task Force declares a drought advisory (or higher), non-essential outdoor water use will be allowed only one day per week before 9:00 a.m. and after 5:00 p.m.

April 15, 2015

DRAFT

**Non-essential outdoor water uses that are subject to the mandatory Odd/Even restriction are:**

- Irrigation of lawns and landscaping via sprinklers or automatic irrigation systems;

- Washing of vehicles, except in a commercial car wash or as necessary for operator safety; and

- Washing of exterior building surfaces, parking lots, driveways or sidewalks, except as necessary to apply surface treatments such as paint, preservatives, stucco, pavement or cement.

**The following uses are allowed while the mandatory restriction is in place:**

- Watering of lawns, gardens, flowers and ornamental plants by means of a hand-held hose.

- Irrigation to establish a new lawn and new plantings during the months of May and September. Please contact the Town if you intend to do so, so that we may ensure you do not receive an enforcement notice.

- Irrigation of public parks and recreation fields by means of automatic sprinklers outside the hours of 9:00 a.m. and 5:00 p.m.

**Water uses NOT subject to the mandatory restrictions** are those required for health or safety reasons, by regulation, for the production of food and fiber, for the maintenance of livestock, or to meet the core functions of a business (e.g. irrigation by golf courses as necessary to maintain tees, greens, and limited fairway watering, or irrigation by plant nurseries as necessary to maintain stock).

Under typical weather conditions, lawns require only one inch of water per week to remain healthy. Further information about the mandatory water use restriction and on efforts to reduce outdoor water use is available at http://needhamma.gov/waterrestriction. Questions about the mandatory non-essential outdoor water restriction should be directed to the Department of Public Works, Water & Sewer Division at (781) 455-7550 – select option 2 then 1 on the automated telephone system - between 8:30 a.m. and 5:00 p.m., Monday – Friday or by email at dpwadmin@needhamma.gov.

The Town of Needham thanks you for your cooperation.

DRAFT

April 15, 2015

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 3/24/2015**

| | |
|---|---|
| **Agenda Item** | Open Special Town Meeting Warrant |
| **Presenter(s)** | Kate Fitzpatrick, Town Manager |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|
| The Board is scheduled to open the warrant for the May 11, 2015 Special Town Meeting. The Warrant is scheduled to be closed on April 7th. | | | |
| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | **YES** | **NO** |
| *Suggested Motion:* That the Board vote to open the warrant for the May 11, 2015 Special Town Meeting. | | | |
| **3.** | **BACK UP INFORMATION ATTACHED** | **YES** | **NO** |
| a. Draft Special Town Meeting Warrant 3.20.2015 | | | |

# TOWN OF NEEDHAM

# SPECIAL TOWN MEETING WARRANT

MONDAY, MAY 11, 2015

7:30 P.M.

JAMES HUGH POWERS HALL, NEEDHAM TOWN HALL

1471 HIGHLAND AVENUE

DRAFT 3.20.15

Additional information on particular warrant articles will be made available from time to time at www.needhamma.gov/townmeeting during the weeks leading up to the Special Town Meeting.

COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

To either of the constables in the Town of Needham in said County, Greetings:

In the name of the Commonwealth of Massachusetts, you are hereby required to notify and warn the inhabitants of the Town of Needham qualified to vote in elections and in Town affairs to meet at the Town Hall:

**MONDAY, THE ELEVENTH DAY OF MAY, 2015**

At 7:30 in the afternoon, then and there to act upon the following articles, viz:

---

## ARTICLE 1: AMEND ZONING BY-LAW – RETAINING WALLS

To see if the Town will vote to amend the Needham Zoning By-Law, as follows:

(a) Amend Section 1.3 Definitions, by adding the following term and definition in the appropriate alphabetical location as follows:

"Retaining Wall - A wall or terraced combination of walls used at a grade change to hold soil and other earth material at a higher position. Retaining walls may be attached to or independent from other structures. The exposed side of a retaining wall shall be known as a "face". The area between a lower wall and a successive higher wall shall be known as a "terrace."

(b) Amend Section 1.3 Definitions, by revising the existing definition of the term "Structure", so that the entire definition shall now read as follows: (new language underlined):

"Structure – anything constructed or erected, the use of which requires a fixed location on the ground or attached to something located on the ground including an artificial or a constructed swimming pool having a depth of water of two (2) feet or more or a water surface area of at least one hundred (100) square feet when filled to capacity, but excluding a fence, boundary wall, retaining wall, public utility pole, public utility supporting device or a structure with less than one hundred square foot ground coverage and a height of less than eight (8) feet."

(c) Amend Section 6, Special Regulations, by a inserting a new Subsection 6.11, Retaining Walls, to read as follows:

"6.11 Retaining Walls

6.11.1 Purpose and Intent

The Town of Needham adopts this section to accomplish and ensure the following:

(a) To allow for the review of retaining walls of a size that may impact surrounding buildings, land, and uses;

(b) To require the construction of retaining walls in a manner consistent with engineering and construction best practices; and

(c) To lessen the impact of large retaining walls on abutting properties and the public by encouraging the use of landscaping and aesthetically pleasing design elements.

6.11.2 Applicability

The regulations and requirements contained herein shall apply to all retaining walls erected in the Town of Needham.

6.11.3 General Provisions

(a) Determining Retaining Wall Height - The height of a retaining wall shall be the distance from the grade at the base of the face of the wall to the top of the finished wall. Terraced walls shall be measured in the same manner.

(b) Walls Within Yard Setbacks – No retaining wall shall be built within the required yard setback except a retaining wall (i) with a face not greater than four (4) feet in height at any point that does not exceed forty (40) percent of the lot's perimeter, or (ii) as allowed by a Special Permit issued in accordance with Subsection 6.11.5 of this Section. Notwithstanding the above, a retaining wall attached to the house and located within the driveway for access to the garage is permitted at a height of 7 feet with up to 8 linear feet of said wall permitted to encroach into the required setback.

(c) Walls Outside Yard Setbacks. No retaining wall with a face greater than twelve (12) feet in height shall be built except as allowed by Special Permit issued in accordance with Subsection 6.11.5 of this Section.

(d) Fall Protection - All retaining walls over four (4) feet in height shall be required to provide fall protection if so determined by the Building Inspector. Fall protection systems may include, but shall not be limited to, permanent landscaping or fencing as approved by the Building Inspector.

(e) Terracing - Terracing of retaining walls is allowed and encouraged. In a terraced retaining wall system, if two (2) retaining walls are separated by a distance at least one times (1x) the height of the higher of the two (2) walls, the walls shall be considered as separate walls; if two (2) retaining walls are separated by a distance

less than one times (1x) the height of the higher of the two (2) walls, the walls shall be considered as a single wall.

(f) Nonconforming Retaining Walls - Retaining walls legally constructed prior to the adoption of these regulations shall be allowed to remain in their existing state; however, significant changes or alterations to such walls shall be made in conformity with these regulations. The repair and routine maintenance, as determined by the Building Inspector, of nonconforming retaining walls shall be allowed without requiring conformity with these regulations.

6.11.4 Design Review and Permitting

(a) Design Review - Design Review shall be required for all retaining walls requiring a permit, as determined by the Building Inspector, and having a height of more than (four) 4 feet. The Design Review Board shall review retaining walls in accordance with Section 7.7, Design Review, and shall consider such requests under those criteria contained in Subsection 7.7.4, Design Criteria, of Section 7.7. The Design Review Board shall submit an advisory recommendation to the Building Inspector prior to the issuance of a permit and to the Board of Appeals and applicant prior to the issuance of a special permit.

(b) Permitting - A building permit shall be required, consistent with the requirements of the Town of Needham Building Department, for all retaining walls that retain four (4) or more feet of unbalanced fill.

6.11.5 Special Permit Provisions

The Board of Appeals shall consider requests for special permits in accordance with this Section and Section 7.5 of the Zoning Bylaw and a Special Permit for a retaining wall may be issued provided the Board of Appeals finds:

(a) That the retaining wall will not cause an increase of water flow off the property;

(b) That the requested retaining wall will not adversely impact adjacent property or the public;

(c) That the report of the Design Review Board has been received and considered.

(d) Amend Section 7.7 Design Review, Subsection 7.7.2, Design Review Board, Subparagraph 7.7.2.2, Authority and Specific Powers, by revising the first paragraph, so that the entire paragraph shall now read as follows: (new language underlined):

"The Design Review Board shall review requests for site plan review and approval submitted in accordance with Section 7.4 Site Plan Review and requests for special permits in accordance with Section 4.2.5 Planned Residential Development, Section 4.2.4 Flexible Development and Section 6.11 Retaining Walls and, for a minor project that

only involves a change in the exterior façade of a building in the Center Business District, shall review and may approve such façade change."

(e) Amend Section 7.7 Design Review, Subsection 7.7.2, Design Review Board, Subparagraph 7.7.2.2, Authority and Specific Powers, by adding a new sentence at the end of the fourth paragraph, so that the entire paragraph shall now read as follows: (new language underlined):

"It shall evaluate such requests based on Subsection 7.7.4 Design Criteria below. Its findings and recommendations, along with any suggested restrictions and conditions, shall be transmitted to the applicant and Planning Board, acting as a special permit granting authority for "Major Projects" under Site Plan Review, Planned Residential Developments and Flexible Developments and to the applicant and Board of Appeals, acting as a special permit granting authority, under Section 6.11 Retaining Walls. Such advisory reports of the Design Review Board shall be transmitted to the Building Inspector and applicant in all other instances as described in the two paragraphs above for "Minor Projects" under Site Plan Review, building permits in all non-residential districts, retaining wall permits and sign permits. For a minor project that only involves a change in the exterior of a building in the Center Business District, the Design Review Board shall be the review and approval entity for such façade changes."

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDS THAT:

*Article Information:*

---

## ARTICLE 2: APPROPRIATE FOR PLANNING CONSULTING ASSISTANCE

To see if the Town will vote to raise and/or transfer and appropriate the sum of $45,000 for the purpose of funding professional services for planning, zoning, and other land use initiatives, said sum to be spent under the direction of the Town Manager, and to meet this appropriation that $45,000 be transferred from Free Cash; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT:

*Article Information:*

---

## ARTICLE 3: AMEND THE FY2015 OPERATING BUDGET

To see if the Town will vote to amend and supersede certain parts of the fiscal year 2015 Operating Budget adopted under Article 11 of the 2014 Annual Town Meeting and amended under Article 3 of the October 27, 2014 Special Town Meeting, by deleting the amounts of money appropriated under some of the line items and appropriating new amounts as follows:

| Line Item | Appropriation | Changing From: | Changing To: |
|---|---|---|---|

Or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT:

*Article Information:*

---

## ARTICLE 4: RESCIND DEBT AUTHORIZATIONS

To see if the Town will vote to rescind a portion of certain authorizations to borrow, which were approved at prior town meetings, where the purposes of the borrowing have been completed, and/or it was unnecessary to borrow the full authorization:

| Project | Town Meeting | Article | Authorized | Rescind |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT:

*Article Information*:

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## ARTICLE 5: APPROPRIATE TO CAPITAL IMPROVEMENT FUND

To see if the Town will vote to raise, and/or transfer and appropriate $17,475 to the Capital Improvement Fund, as provided under M.G.L., Ch. 40, Sec. 5B as recently amended by Section 14 of Chapter 46 of the Acts of 2003 and Section 19 of Chapter 140 of the Acts of 2003, and meet this appropriation that $8,380 be transferred from Article 38 of the 2003 Annual Town Meeting and that $9,095 be transferred from Article 38 of the 2004 Annual Town Meeting; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT:

*Article Explanation: Under Article 58 of the May 2004 Annual Town Meeting, the Town voted to establish the General Fund Cash Capital Equipment and Facility Improvement Fund for the purpose of setting aside funds for future capital investment. Over time, as the fund grows and is supported, it will be one of the tools in the overall financial plan of the Town. Maintaining and supporting such funds is looked upon favorably by the credit rating industry.*

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## ARTICLE 6: APPROPRIATE TO CAPITAL FACILITY FUND

To see if the Town will vote to raise and/or transfer and appropriate $9,113 to the Capital Facility Fund as provided under the provisions of M.G.L. Chapter 40, Section 5B as amended by Section 14 of Chapter 46 of the Acts of 2003, and as further amended by Section 19 of Chapter 140 of the Acts of 2003 and meet this appropriation that $9,113 be transferred from Article 60 of the 2006 Annual Town Meeting; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT:

*Article Information: Established at the 2007 Annual Town meeting, this fund is intended to be part of the Town's planning strategy for addressing capital facility maintenance needs by providing a reserve to address extraordinary building repairs and related expenses at times when other resources are unavailable. The purpose of this fund is to allow the Town, from time to time, by appropriation, to reserve funds for design, maintenance, renovation or reconstruction relating to the structural integrity, building envelope or MEP (mechanical, electrical, plumbing) systems of then existing capital facilities.*

---

And you are hereby directed to serve this Warrant by posting copies thereof in not less than twenty public places in said town at least fourteen (14) days before said meeting.

Hereof fail not and make due return of this warrant with your doings thereon unto our Town Clerk on or after said day and hour.

Given into our hands at Needham aforesaid this 7th day of April, 2015.

**JOHN A. BULIAN. Chairman**
**MAURICE P. HANDEL, Vice *Chairman***
**MATTHEW D. BORRELLI, Clerk**
**MARIANNE B. COOLEY**
**DANIEL P. MATTHEWS**

***Selectmen of Needham***

A TRUE COPY
Attest:
Constable:

DRAFT 3.20.15

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 3/24/2015**

| | |
|---|---|
| **Agenda Item** | Statement of Interest Mitchell School & Pollard School |
| **Presenter(s)** | Kate Fitzpatrick, Town Manager |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|
| At its meeting on March 17th, the School Committee authorized the Superintendent to submit MSBA Statements of Interest for the Mitchell School and the Pollard School. Statements of Interest for these two schools were also filed in calendar year 2014. The Hillside School has been accepted for participation in the MSBA process. A vote of the Board of Selectmen is required for the submission. | | | |
| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | **YES** | **NO** |

*That the Board of Selectmen vote as follows:*

*Resolved*: Having convened in an open meeting on March 24, 2015, prior to the closing date, the Board of Selectmen of Needham, in accordance with its charter, by-laws, and ordinances, has voted to authorize the Superintendent to submit to the Massachusetts School Building Authority the Statement of Interest Form dated February 25, 2015 for the **Mitchell School,** located at 187 Brookline Street, Needham, Massachusetts, which describes and explains the following deficiencies and the priority categories for which an application may be submitted to the Massachusetts School Building Authority in the future: Priority No. 2: Elimination of severe overcrowding; and Priority No. 7: Replacement of or addition to obsolete buildings in order to provide for a full range of programs consistent with state and approved local requirements; and hereby further specifically acknowledges that by submitting this Statement of Interest Form, the Massachusetts School Building Authority in no way guarantees the acceptance or the approval of an application, the awarding of a grant or any other funding commitment from the Massachusetts School Building Authority, or commits the Town to filing an application for funding with the Massachusetts School Building Authority.

*Resolved:* Having convened in an open meeting on March 24, 2015, prior to the closing date, the Board of Selectmen of Needham, in accordance with its charter, by-laws, and ordinances, has voted to authorize the Superintendent to submit to

the Massachusetts School Building Authority the Statement of Interest Form dated February 25, 2015, for the **Pollard School,** located at 200 Harris Avenue, Needham, Massachusetts, which describes and explains the following deficiencies and the priority categories for which an application may be submitted to the Massachusetts School Building Authority in the future: Priority No. 2: Elimination of severe overcrowding; and
Priority No. 7: Replacement of or addition to obsolete buildings in order to provide for a full range of programs consistent with state and approved local requirements; and hereby further specifically acknowledges that by submitting this Statement of Interest Form, the Massachusetts School Building Authority in no way guarantees the acceptance or the approval of an application, the awarding of a grant or any other funding commitment from the Massachusetts School Building Authority, or commits the Town to filing an application for funding with the Massachusetts School Building Authority.

| 3. | BACK UP INFORMATION ATTACHED | YES | NO |
|---|---|---|---|

a. Statement of Interest, Mitchell School
b. Statement of Interest, Pollard School

Pollard

# Massachusetts School Building Authority

## Next Steps to Finalize Submission of your FY 2015 Statement of Interest

Thank you for submitting your FY 2015 Statement of Interest (SOI) to the MSBA electronically. **Please note, the District's submission is not yet complete**. The District is required to print and mail a hard copy of the SOI to the MSBA along with the required supporting documentation, which is described below.

Each SOI has two Certification pages that must be signed by the Superintendent, the School Committee Chair, and the Chief Executive Officer*. Please make sure that **both** certifications contained in the SOI have been signed and dated by each of the specified parties and that the hardcopy SOI is submitted to the MSBA with **original signatures**.

**SIGNATURES: Each SOI has two (2) Certification pages that must be signed by the District.**

In some Districts, two of the required signatures may be that of the same person. If this is the case, please have that person sign in both locations. Please do not leave any of the signature lines blank or submit photocopied signatures, as your SOI will be incomplete.

**Local chief executive officer: In a city or town with a manager form of government, the manager of the municipality; in other cities, the mayor; and in other towns, the board of selectmen unless, in a city or town, some other municipal office is designated as the chief executive office under the provisions of a local charter.*

**VOTES: Each SOI must be submitted with the proper vote documentation.** This means that (1) the required governing bodies have voted to submit each SOI, (2) the specific vote language required by the MSBA has been used, and (3) the District has submitted a record of the vote in the format required by the MSBA.

- **School Committee Vote:** Submittal of all SOIs must be approved by a vote of the School Committee.
  - For documentation of the vote of the School Committee, Minutes of the School Committee meeting at which the vote was taken must be submitted with the original signature of the Committee Chairperson. The Minutes must contain the actual text of the vote taken which should be substantially the same as the MSBA's SOI vote language.
- **Municipal Body Vote:** SOIs that are submitted by cities and towns must be approved by a vote of the appropriate municipal body (e.g., City Council/ Aldermen/Board of Selectmen) in addition to a vote of the School Committee.
  - Regional School Districts do not need to submit a vote of the municipal body.
  - For the vote of the municipal governing body, a copy of the text of the vote, which shall be substantially the same as the MSBA's SOI vote language, must be submitted with a certification of the City/Town Clerk that the vote was taken and duly recorded, and the date of the vote must be provided.

**CLOSED SCHOOLS: Districts must** download the report from the "Closed School" tab, which can be found on the District Main page. Please print this report, which then must be signed by the Superintendent, the School Committee Chair, and the Chief Executive Officer. A signed report, with original signatures must be included with the District's hard copy SOI submittal. **If a District submits multiple SOIs, only one copy of the Closed School information is required.**

ADDITIONAL DOCUMENTATION FOR SOI PRIORITIES #1 AND #3: If a District selects Priority #1 and/or Priority #3, the District is required to submit additional documentation with its SOI.

- If a District selects Priority #1, Replacement or renovation of a building which is structurally unsound or otherwise in a condition seriously jeopardizing the health and safety of the school children, where no alternative exists, the MSBA requires a hard copy of the engineering or other report detailing the nature and severity of the problem and a written professional opinion of how imminent the system failure is likely to manifest itself. The District also must submit photographs of the problematic building area or system to the MSBA.
- If a District selects Priority #3, Prevention of a loss of accreditation, the MSBA requires the full accreditation report(s) and any supporting correspondence between the District and the accrediting entity.

**ADDITIONAL INFORMATION:** In addition to the information required with the SOI hard copy submittal, the District may also provide any reports, pictures, or other information they feel will give the MSBA a better understanding of the issues identified at a facility.

If you have any questions about the SOI process please contact Diane Sullivan at 617-720-4466 or Diane.Sullivan@massschoolbuildings.org.

# Massachusetts School Building Authority

School District Needham

District Contact Anne Gulati TEL: (781) 455-0400

Name of School Pollard Middle

Submission Date 2/25/2015

## SOI CERTIFICATION

To be eligible to submit a Statement of Interest (SOI), a district must certify the following:

- ☑ The district hereby acknowledges and agrees that this SOI is NOT an application for funding and that submission of this SOI in no way commits the MSBA to accept an application, approve an application, provide a grant or any other type of funding, or places any other obligation on the MSBA.
- ☑ The district hereby acknowledges that no district shall have any entitlement to funds from the MSBA, pursuant to M.G.L. c. 70B or the provisions of 963 CMR 2.00.
- ☑ The district hereby acknowledges that the provisions of 963 CMR 2.00 shall apply to the district and all projects for which the district is seeking and/or receiving funds for any portion of a municipally-owned or regionally-owned school facility from the MSBA pursuant to M.G.L. c. 70B.
- ☑ The district hereby acknowledges that this SOI is for one existing municipally-owned or regionally-owned public school facility in the district that is currently used or will be used to educate public PreK-12 students and that the facility for which the SOI is being submitted does not serve a solely early childhood or Pre-K student population.
- ☑ After the district completes and submits this SOI electronically, the district must sign the required certifications and submit one signed original hard copy of the SOI to the MSBA, with all of the required documentation described under the "Vote" tab, on or before the deadline.
- ☑ The district will schedule and hold a meeting at which the School Committee will vote, using the specific language contained in the "Vote" tab, to authorize the submission of this SOI. This is required for cities, towns, and regional school districts.
- ☑ Prior to the submission of the hard copy of the SOI, the district will schedule and hold a meeting at which the City Council/Board of Aldermen or Board of Selectmen/equivalent governing body will vote, using the specific language contained in the "Vote" tab, to authorize the submission of this SOI. This is not required for regional school districts.
- ☑ On or before the SOI deadline, the district will submit the minutes of the meeting at which the School Committee votes to authorize the Superintendent to submit this SOI. The District will use the MSBA's vote template and the vote will specifically reference the school and the priorities for which the SOI is being submitted. The minutes will be signed by the School Committee Chair. This is required for cities, towns, and regional school districts.
- ☑ The district has arranged with the City/Town Clerk to certify the vote of the City Council/Board of Aldermen or Board of Selectmen/equivalent governing body to authorize the Superintendent to submit this SOI. The district will use the MSBA's vote template and submit the full text of this vote, which will specifically reference the school and the priorities for which the SOI is being submitted, to the MSBA on or before the SOI deadline. This is not required for regional school districts.
- ☑ The district hereby acknowledges that this SOI submission will not be complete until the MSBA has received all of the required vote documentation and certification signatures in a format acceptable to the MSBA. If Priority 1 is selected, your Statement of Interest will not be considered complete unless and until you provide the required engineering (or other) report, a professional opinion regarding the problem, and photographs of the problematic area or system.

| **Chief Executive Officer *** | **School Committee Chair** | **Superintendent of Schools** |
|---|---|---|
| Kate Fitzpatrick | Michael Greis | Dan Gutekanst |
| Town Manager | | |
| (signature) | (signature) | (signature) |
| Date | Date | Date |

* Local chief executive officer: In a city or town with a manager form of government, the manager of the municipality; in other cities, the mayor; and in other towns, the board of selectmen unless, in a city or town, some other municipal office is designated to the chief executive office under the provisions of a local charter. Please note, in districts where the Superintendent is also the Local Chief Executive Officer, it is required for the same person to sign the Statement of Interest Certifications twice. Please do not leave any signature lines blank.

# Massachusetts School Building Authority

School District Needham

District Contact Anne Gulati TEL: (781) 455-0400

Name of School Pollard Middle

Submission Date 2/25/2015

**Note**

**The following Priorities have been included in the Statement of Interest:**

1. ☐ Replacement or renovation of a building which is structurally unsound or otherwise in a condition seriously jeopardizing the health and safety of school children, where no alternative exists.
2. ☑ Elimination of existing severe overcrowding.
3. ☐ Prevention of the loss of accreditation.
4. ☐ Prevention of severe overcrowding expected to result from increased enrollments.
5. ☐ Replacement, renovation or modernization of school facility systems, such as roofs, windows, boilers, heating and ventilation systems, to increase energy conservation and decrease energy related costs in a school facility.
6. ☐ Short term enrollment growth.
7. ☑ Replacement of or addition to obsolete buildings in order to provide for a full range of programs consistent with state and approved local requirements.
8. ☐ Transition from court-ordered and approved racial balance school districts to walk-to, so-called, or other school districts.

**SOI Vote Requirement**

☑ I acknowledge that I have reviewed the MSBA's vote requirements for submitting an SOI which are set forth in the Vote Tab of this SOI. I understand that the MSBA requires votes from specific parties/governing bodies, in a specific format using the language provided by the MSBA. Further, I understand that the MSBA requires certified and signed vote documentation to be submitted with the SOI. I acknowledge that my SOI will not be considered complete and, therefore, will not be reviewed by the MSBA unless the required accompanying vote documentation is submitted to the satisfaction of the MSBA.

**Potential Project Scope:** Renovation/ Addition

**Is this SOI the District Priority SOI?** NO

**School name of the District Priority SOI:** William Mitchell

**Is this part of a larger facilities plan?** YES

**If "YES", please provide the following:**

**Facilities Plan Date:** 12/1/2014

**Planning Firm:** HKT Architects 2014; DiNisco Design 2006; Kaestle Boos 1998.

**Please provide an overview of the plan including as much detail as necessary to describe the plan, its goals and how the school facility that is the subject of this SOI fits into that plan:**

The scope of this project is the renovation of and addition to the Pollard School, including: upgrading and replacing sections of the school that are obsolete and/or deficient according to current codes; and adding or renovating core educational spaces, which are not consistent with current MSBA standards, in order to provide the full range of programs consistent with state and approved local requirements. The Town's three recent Master Plans, the 5/15/1998- Townwide Comprehensive Facilities Study, Kaestle Boos Associates, Inc. (KBA), the 11/15/ 2006 – Facilities Master Plan – Town of Needham, DiNisco Design Partnership (DDP), and the 2014 Facilities Master Plan by KHT Architects (2014) all identified the need to renovate and add to the Pollard School to address size and condition deficiencies. Additionally, a Comprehensive Facilities Assessment, completed 8/22/2011 by Dore & Whittier Architects Inc. (DWA) examined the deficiencies of the science classrooms, auditorium, gymnasiums, and administrative office spaces in greater detail. The Comprehensive Facilities Assessment study was commissioned for the purpose of understanding the current condition of the Pollard School. It included evaluations by the following professional (A&E) disciplines: Site (Civil and Landscape), Architectural, Structural, Mechanical, Electrical, Plumbing, Fire Protection, Hazardous Materials and Energy Savings programs, with a cost analysis for both short-term and long-term improvements. The short-term maintenance/repair recommendations (which address immediate or urgent needs) have been incorporated into the Town's Capital Improvement Plan (CIP,) and have received capital budget funding. However, the Conditions report made it clear that the Pollard School requires a comprehensive repair/addition project to address the following significant deficiencies: the age of the building (between 20 and 60 years), deficiencies in the size and number of some core educational spaces (particularly the science classrooms), the age of the temporary modular classrooms (now 12 years old), deficiencies in many building systems, and poor energy performance. The report recommended a comprehensive renovation/addition project to address these needs, as well as the associated code-related upgrades that would be triggered, including life safety, energy efficiency, and accessibility improvements. These deficiencies will be summarized within this SOI and a full copy of the Conditions Assessment Report is included as a reference in Appendix A.

**Please provide the current student to teacher ratios at the school facility that is the subject of this SOI: 21 students per teacher**

**Please provide the originally planned student to teacher ratios at the school facility that is the subject of this SOI: 22 students per teacher**

**Does the District have a Master Educational Plan that includes facility goals for this building and all school buildings in District?** YES

**If "YES", please provide the author and date of the District's Master Educational Plan.**

This project has been identified in several Town facilities plans: Town-wide Comprehensive Facilities Study, Kaestle Boos Associates, Inc. (5/15/1998, KBA); Facilities Master Plan – Town of Needham, DiNisco Design Partnership (11/15/ 2006, DDP); Comprehensive Facilities Assessment- Pollard Middle School, Dore & Whittier Architects Inc. (8/22/2011, DWA.) Pollard School also is mentioned in the Town's 2014 Master Plan update, by HKT Architects.

**Is there overcrowding at the school facility?** YES

**If "YES", please describe in detail, including specific examples of the overcrowding.**

The current enrollment at Pollard is 864 in FY15. A large number of classrooms are small and cannot accommodate more than 23 to 25 students. As a result, alternative spaces have been used for classroom instruction purposes. For example, due to the lack of music rooms, strings classes are held in the Lecture Hall, which in turn, has limited the use of that space. The Pollard Auditorium is used for theater arts classes, which are moved on a constant basis to make the Auditorium available for creative arts presentations or other large class presentations.

Additionally, the gymnasia are very crowded. Currently, the Pollard School schedules 3-4 classes of physical education concurrently in its two gym spaces. Class sizes range from 20 – 26 students, and as a result, there can be anywhere between 75 - 100 plus students in the gyms during one class period. The gyms are divided into courts for game play i.e., basketball courts, handball courts and volleyball courts during typical physical education classes. The number of courts is limited by the space. For example, only four basketball courts, four handball courts and five volleyball courts can be

created within the allotted space. Once students are divided into teams, there are not enough courts for everyone to play at the same time. As a result, students have to sit out and wait their turn to play. In our current situation, students are sitting out for approximately 1/3 of their class time, which contradicts our philosophy that students should remain active for at least 80% of their time in a physical education class. Ideally, a new gymnasium or alternative activity space is needed.

The locker rooms are small and do not safely accommodate the number of students who are scheduled to use them for their physical education classes. In addition, many of the gym lockers are damaged or broken beyond repair. Finally, the locker rooms were not well designed for supervision purposes. There is no office embedded within the locker room (as there is at the High School) for teachers to casually supervise while students are changing. As a result, teachers walk directly into the locker room to make sure students are behaving appropriately. A window (or office) discretely connecting the female physical education teacher's office with the girls' locker room and the male physical education teacher's office with the boys' locker room would give the teachers a better perspective on what is going on without them having to be directly in the locker room.

The Fitness Center also is small, although in 'good shape.' It can safely accommodate about 20 students at one time. With classes of 25 plus, however, it becomes almost impossible to use this space effectively. There is also a need for some aerobic equipment to complement the weight training circuit that currently exists in the Fitness Center.

The current science rooms have not been updated since the early 1960's. Many of these rooms are small, and as a result, it is difficult to accommodate enough lab tables for the number of students who are currently enrolled.

Finally, the student and faculty bathrooms have not been updated in years. There are constant plumbing issues. With the increase in enrollment, the constant use of these bathrooms will increase.

**Has the district had any recent teacher layoffs or reductions?** YES

**If "YES", how many teaching positions were affected?** 2

**At which schools in the district?** Newman Elementary, Needham High School, Pollard Middle School, Hillside Elementary

**Please describe the types of teacher positions that were eliminated (e.g., art, math, science, physical education, etc.).**

FY13: 1.0 FTE Newman classroom teacher, 0.06 FTE NHS Nurse. FY15: 0.4 Middle School Teacher FY16 Proposed: 0.5 Hillside Kindergarten Teacher

**Has the district had any recent staff layoffs or reductions?** YES

**If "YES", how many staff positions were affected?** 2

**At which schools in the district?** Needham High School, all Elementary

**Please describe the types of staff positions that were eliminated (e.g., guidance, administrative, maintenance, etc.).**

FY13: 1.0 FTE NHS Special Education Teaching Assistant FY15: 1.0 FTE Elementary Teaching Assistant

**Please provide a description of the program modifications as a consequence of these teacher and/or staff reductions, including the impact on district class sizes and curriculum.**

The teacher/staff reductions in FY13 were in response to changes in Newman School enrollment and High School student support services requirements. There was no impact on program, class size or curriculum, resulting from the changes. The reductions proposed for FY15 are due to fiscal constraints, but do not substantially modify the program. The FY16 reduction was in response to projected enrollment.

**Please provide a detailed description of your most recent budget approval process including a description of any budget reductions and the impact of those reductions on the district's school facilities, class sizes, and educational program.**

The budget process begins in September/October, when the School Committee votes budget guidelines. The budget is developed in October-December, with a public hearing and budget review in December - January. The School Committee votes its final budget recommendation at the end of January and the Town Manager's balanced budget proposal (including the School Committee's voted budget, if different) is due to the Finance Committee by January 31. The Finance Committee's recommendation becomes the main motion at Town Meeting. Annual Town Meeting occurs during the first and second week in May. The fiscal year begins July 1. The aforementioned reductions have not had an impact on school facilities. The impact on class size and the elective program is detailed above. Other budget reductions have resulted in fewer opportunities to engage in District-wide curriculum development and teacher professional development; reduced the number of paid co-curricular faculty adviser and coaching opportunities for High School students; reduced the amount of middle school computer technician support (resulting in longer wait times for staff); and reduced the amount of District-level teacher leader support for English Language Arts/targeted reading support. Other clerical reductions forced consolidation/re-organization of existing tasks onto fewer individuals and tighter educational supply budgets.

# General Description

**BRIEF BUILDING HISTORY: Please provide a detailed description of when the original building was built, and the date(s) and project scopes(s) of any additions and renovations (maximum of 5000 characters).**

The Pollard Middle School was constructed in 1956 with major additions/ renovations in 1968 and 1992, which nearly doubled the original size of the school. A series of additional renovations were completed in the 1990's including: 1996 - handicapped accessibility renovations; 1998 - air balancing and 1999 – HVAC / electrical system improvements. In 2002, ten modular classrooms and toilets were added to the south of the existing building, with a ramp connection to the lower level of the 1968 wing. The roof was replaced in 2011 as part of the MSBA Green Roof repair program. Parking was added adjacent to the sports fields with a driveway for busses to Dedham Ave in 2011-12, with some renovations to the modular classrooms. Boiler replacement was completed during the summer of 2013, as part of a strategic investment plan for energy efficiency renovations for the facility.

The building has always functioned as a middle school, and at one time contained Grades 6, 7 & 8. However, due to overcrowding, the 6th Grade was moved to the High Rock School in 2009. The building currently serves the 7th and 8th Grades, with 864 students utilizing all available space within the building.

**TOTAL BUILDING SQUARE FOOTAGE: Please provide the original building square footage PLUS the square footage of any additions.**

147224

**SITE DESCRIPTION: Please provide a detailed description of the current site and any known existing conditions that would impact a potential project at the site. Please note whether there are any other buildings, public or private, that share this current site with the school facility. What is the use(s) of this building(s)? (maximum of 5000 characters).**

The Pollard Middle School is located in a residential area of Needham, with a main entrance at 200 Harris Ave. It has a west side entrance and parking area accessed from Glenwood Rd. The school is located on a 15.6 acre parcel of land near the center of Needham. The building footprint occupies about 16% of the site area. The trapezoidal shaped property has 725 feet of frontage onto Harris Ave on the north, residential abutters to the east and west, and an M.B.T. A. railroad embankment on the south. There are two "paper road" right-of-ways along the western boundary, Mayo Drive and Glen Terrace, which are Town-owned but undeveloped, except for two abutter driveways. The land terraces down in elevation from north to south by about thirty feet. A pedestrian underpass beneath the railroad embankment links the Pollard playing fields to the adjacent DeFazio Park sports playing fields.

The School appears to be one story tall from the main entrance on Harris Ave. However, due to the land contours, the central and west wings are actually two stories tall as seen from the secondary entrance to the site. The building sits in the northwest corner of the site, with a large stand of mature pine trees along the east side of the property. The southern side of the site is occupied by playing fields and a tennis court. The multipurpose field has a softball diamond with backstop and a multi-purpose soccer and field hockey playing area in the outfield. The southwest corner of the site is a wooded wetland which drains through a culvert beneath the railroad embankment to the south.

A bus drop off loop with two handicapped parking spaces and parking lot (44 cars) face Harris Ave. The lower parking lot has space for 66 cars including four handicapped spaces. Therefore the total striped parking on site is 110 spaces. While the 2011 site improvements reduced the parking deficiency on site, it still required a zoning variance, because a school of this size should have additional parking for about 65 cars. The parking facilities included drainage and water quality structures on the south side of the building, but the Harris Ave parking and bus loop remain deficient for drainage and water quality. The Town Engineering Department has studied opportunities for parking and drop off improvements,

but determined that these would need to be part of a larger repair/ addition project.

The two main north-south classroom wings and entry corridor frame a paved entrance courtyard facing Harris Ave. These wings also create an interior grassy courtyard on two levels with a small amphitheater. The two N-S classroom wings are connected by a main corridor and media center on the north and an upper level bridge on the south. There are several mature oak trees on the east and south sides of the building, and several mature pine trees on the north side of the school. The interior cafeteria overlooks the enclosed courtyard and students can eat outside in the good weather.

The school has pedestrian sidewalk access from Harris Ave, Dedham Ave and grass pathway access from DeFazio Park. Improvements to these pathways would be required to meet current Massachusetts Architectural Access Board (MAAB) requirements. The site walkways surrounding the building leading from Harris Ave to the playing fields are asphalt and in generally poor condition and also require repair in the long term. The path from the Harris Ave parking lot to the administration wing is not MAAB compliant, and because this is a primary handicapped access pathway, the Town will be making repairs in 2014-5. A concrete bridge adjacent to the service entrance on the west side of the auditorium is blockaded and requires total reconstruction, but timing is yet to be determined.

The School is the only use on this parcel of land.

**ADDRESS OF FACILITY: Please type address, including number, street name and city/town, if available, or describe the location of the site. (Maximum of 300 characters)**

The Pollard Middle School, 200 Harris Ave, Needham, MA 02492

**BUILDING ENVELOPE: Please provide a detailed description of the building envelope, types of construction materials used, and any known problems or existing conditions (maximum of 5000 characters).**

Building Structure: The foundation beneath the 1956 original building is uninsulated cast-in-place concrete, with a 4" cast-in-place uninsulated concrete slab on grade. There is minimal rigid insulation isolating the slab from the exterior. The structural frame of the original school included steel WF8 columns and open web steel joists, 5 feet on center. supporting a low-slope 1- 1/2" steel deck roof. The 1968 two-story wing and 1992 addition have a two story steel frame with HSS 6x6 columns supporting 27" steel girders and 16" steel beams and a 1 1/2"metal deck with cast in place concrete floor. The roof is framed with open web steel joists and 1 1/2" metal low-slope deck. The exterior steel frame on the oldest section of the school is generally exposed steel and the roof beams cantilever to form a roof overhang with no thermal break from the interior. Insulated metal soffit panels were added to the 1968 wing to enclose the cantilevered steel beams within the thermal envelope during the 2011 roof repair project. In the interior, 4-inch and 8-inch masonry walls form classroom and corridor partitions depending upon the location within the school. The gymnasiums and the auditorium have long-span 44" deep wide flange girders supporting 24" deep open web steel joists at 4-feet on center with a tectum roof deck system. Any repairs, renovations, additions or changes of occupancy or use to the existing structure would need to conform to contemporary seismic and snow load design criteria.

Building Envelope: The building has an insulated double-pane aluminum window wall system (EFCO type), which was installed in 1992 and is in good condition, but at 20+ years in age, some windows are loosing their seal and require replacement. The end walls and gymnasium walls are constructed of 6" interior CMU block, 2 3/4" airspace and 4" exterior red brick with no insulation. The brick and mortar are generally in good repair. The settlement cracks and water staining that was noted in the 2011 report were repaired as part of the 2011 Green Roof Project, along with the leaking downspouts that caused some of the problems. Exterior wall louvers bring unconditioned outside air into each classroom through the unit ventilators. Some of the upper facade areas of the building have vertical tongue and grove cedar siding with grey stain in good condition. Portions of these walls have fiberglass batt insulation. Solid knee walls beneath the windows in most classrooms have 1-inch asphalt impregnated insulation board adhered to the exterior brick. The floor and wall system insulation is minimal and would not meet contemporary energy codes. These energy code upgrades would likely be triggered in a major renovation project.
All exterior doors have been replaced with red aluminum insulated panel doors, with double-pane insulated vision glass

panels with new egress hardware and are in good condition. Exterior stairs leading out of the gym should be replaced or reconstructed to solve water drainage problems that cause occasional flooding. Some of the exterior galvanized metal frame exit stairs from 1958 have rotted wood railings that require replacement.
The modular classrooms have 4" wood frame walls with painted plasterboard interior, fiberglass-bat insulation, and vinyl horizontal exterior sheathing. The double-pane, double-hung, vinyl clad windows are operable in the modular classroom wing. The skirt around the crawl space beneath the modular classrooms has a cement board finish with Tyvek wrap installed over plywood with pressure-treated wood framing. Egress stairs from this area are made of pressure treated lumber. These 12-year old temporary classrooms have a maximum useful life of about twenty years, therefore demolition and replacement with permanent space would likely be required in any major renovation/ repair project.

Roof: The main building has a built-up asphalt sheeting roof with a white granular finish (Tremco system), with 6" to 8" of sloping insulation installed in 2011 as part of the roof project. The main roof has a minimum average R-value of 25. The white roof helps reflect summer sun and heat to help minimize the interior cooling load. The added insulation has improved the roof envelope to meet or exceed current energy codes. The roof included a twenty year warantee. The four sloped skylight structures over the art rooms were also replaced with translucent fiberglass insulating skylights (Kalwall System). Similar translucent fiberglass insulating clearstory windows were installed on the two roof monitors in the 1958 classroom wing. New roof drains, cap flashing, downspouts and gutters were also installed in 2011. This repair project provided an important upgrade to the energy efficiency of the building. The modular classrooms roof (not upgraded in 2011) is a black single ply EPDM rubber roof membrane with 1-3" of rigid insulation on a plywood deck on composite wood I-beams.

**Has there been a Major Repair or Replacement of the EXTERIOR WALLS?** NO
**Year of Last Major Repair or Replacement:(YYYY)** 1958
**Description of Last Major Repair or Replacement:**
Original walls. Exterior painting and minor repairs subsequently made, on a periodic basis, most recently in 2011.

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**Roof Section** A
**Is the District seeking replacement of the Roof Section?** NO
**Area of Section (square feet)** 140000
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
Main building: built-up asphalt sheeting roof with a white granular finish (Tremco system.)
**Age of Section (number of years since the Roof was installed or replaced)** 4
**Description of repairs, if applicable, in the last three years. Include year of repair:**
A new asphalt roof on the main building was installed in 2011, as part of an MSBA Green Roof project. New roof drains, cap flashing, downspouts and gutters were also installed in 2011.

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**Roof Section** B
**Is the District seeking replacement of the Roof Section?** YES
**Area of Section (square feet)** 12385
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
Modular classrooms (2002): black single ply EPDM rubber roof membrane.
**Age of Section (number of years since the Roof was installed or replaced)** 13
**Description of repairs, if applicable, in the last three years. Include year of repair:**
N/A

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**Roof Section** C
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

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**Roof Section** D

**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** E
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** F
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** G
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** H
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** I
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** J
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** A
**Is the District seeking replacement of the Windows Section?** NO
**Windows in Section (count)** 434
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**

Aluminum windows with insulated glass and thermally-broken frames, typically with fixed 3'x3' window above and awning 1'x3' window below.
**Age of Section (number of years since the Windows were installed or replaced)** 22
**Description of repairs, if applicable, in the last three years. Include year of repair:**
Aluminum frame double pane energy efficient windows were installed (1992) EFCO-type.

**Window Section** B
**Is the District seeking replacement of the Windows Section?** YES
**Windows in Section (count)** 23
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
Double pane siding
**Age of Section (number of years since the Windows were installed or replaced)** 13
**Description of repairs, if applicable, in the last three years. Include year of repair:**
The long-term plan is to demolish the modular classrooms and replace with permanent construction.

**Window Section** C
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** D
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** E
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** F
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** G
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** H
**Is the District seeking replacement of the Windows Section?**

**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** I
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** J
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**MECHANICAL and ELECTRICAL SYSTEMS: Please provide a detailed description of the current mechanical and electrical systems and any known problems or existing conditions (maximum of 5000 characters).**

Mechanical:
Mechanical Systems
The building had been heated with two pairs of cast iron, sectional type HB Smith hot water boilers. They all are dual fuel boilers that can burn either #2 fuel oil or natural gas. The total capacity of all four boilers is approximately 11,400 MBH. In 2013, the boilers in the Upper Boiler Room were replaced with three high-efficiency, natural gas condenser boilers. The lower boiler room is rarely used because when operating, the pressure relief valves open due to improper pipe sizing in the original 1992 installation. The 20-year old underground storage tank (UST) was removed in 2013.
General heating in the older classrooms is provided through finned-tube radiators in both floor-mount and ceiling-mount locations. Perimeter classrooms get outdoor air and heating from floor-mounted unit ventilators. While there is no central cooling system in place, most classrooms have roof-mounted split systems or window-mounted air-conditioning systems. The building has over 50 rooftop fans, which were installed in the 1990's, to improve indoor air quality throughout the school. The modular classroom wing has twelve gas-fired rooftop heating and cooling units that supply hot and cold air into the modular classroom spaces. A Barber-Coleman Network 8000 Microzone pneumatic DDC control system was installed in 1995 to control all the HVAC systems within the building, including the modular classrooms. This control system is nearing the end of its useful life and should be replaced with an electronically actuated valve system.

Electrical Systems
The building is supplied by two electrical services. The main school service (upgraded in 1999), is a 2000Amp, 208Y/120Volt, 3-phase, 4-wire underground lateral to a transformer located in a vault, below grade. The switchboard is in good condition, with three 225AMP spaces and one 400Amp space for future expansion. The modular classroom service (installed in 2002), is an underground lateral to a pad mounted transformer, is rated 800 Amps at 208Y/120 Volt, 3-phase, 4-wire, and has no spare capacity. The electrical distribution system in the primary technology classrooms was enhanced in 1999, but otherwise is original to the phase of construction. Areas of the 1958 and 1968 building wings have original wiring that is approaching the end of its useful life. The building has an emergency generator rated at 125kVA/100W, at 208Y/120Volt, 3phase, 4-wire. Life safety and emergency egress lighting is illuminated with emergency battery units and LED exit signs.
The fire alarm system is an addressable system manufactured by FCI, and is in good condition.
The school has a public address system, which operates through the phone system. The master clock system functions in only 50% to 70% of the rooms. The telephone system was replaced and the intercom system and bells were repaired in 2013.

The lighting within the classrooms is typically 2'x4', recessed flat prismatic lens type and the fixtures are in good condition. The balance of the lighting consists of 2'x4' and 2'x2' parabolic louvered fixtures. Corridor lighting is generally liner fluorescent fixtures either surface mounted or indirect, wall-slot type light cover. The lighting is functional and in fair to good condition throughout the school.

Plumbing

The building is supplied with a 4" water service line coming to the building from Harris Ave. The water distribution system is contemporary to the phase of the building, with the exception of the hot water heater, which was converted to a high efficiency natural gas condenser hot water heater in 2013. The hot water heater connects with a mixing valve and circulating pump that maintains a constant water temperature supply to the building. The hot water piping appears to be insulated where exposed in the building.

The cast iron, oakum and lead draining system is original to the phase of construction and therefore, the older sections are approaching the end of their useful life. The plumbing fixtures within the bathrooms also are largely original to the phase of construction, with wall mounted sinks, toilets and urinals. Some fixtures were replaced in 1996 during accessibility upgrades. However, some deficiencies for MAAB compliance and accessibility exist within the bathroom layouts as noted in the 2011 report.

Fire Protection

The building is partially equipped with an automatic sprinkler system added in 1992, and serve those spaces that were added or renovated at that time. The original 1956 building and most of the 1969 addition do not have automatic sprinklers. The modular classrooms have an independent automatic sprinkler system. Many of the larger spaces like the gymnasium and auditorium are lacking coverage. Any major renovation would require adding sprinklers to the rest of the building in order to be compliant with contemporary code.

**Boiler Section** 1
**Is the District seeking replacement of the Boiler?** NO
**Is there more than one boiler room in the School?** YES
**What percentage of the School is heated by the Boiler?** 100
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
Natural Gas
**Age of Boiler (number of years since the Boiler was installed or replaced)** 2
**Description of repairs, if applicable, in the last three years. Include year of repair:**
In 2013, the the 20-year old dual fuel boilers in the Upper Boiler Room were replaced with three high efficiency, natural gas condenser boilers. The domestic hot water heater also was replaced with high efficiency natural gas condenser hot water heaters. Fresh air intake and exhaust systems were added to improve combustion efficiency. Boiler operations were integrated with the building management system software and the system was programmed for energy efficient cycling of boilers. Underground oil storage tank was removed. The emergency generator fuel pump was installed in 2003. The lower boiler room has two unused 23-year old cast iron boilers.

**Boiler Section** 2
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 3
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**

**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 4
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 5
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 6
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 7
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 8
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 9
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 10

**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Has there been a Major Repair or Replacement of the HVAC SYSTEM?** YES
**Year of Last Major Repair or Replacement:(YYYY)** 1995
**Description of Last Major Repair or Replacement:**
In 1995, the HVAC system was updated in the "1969" building and the cafeteria building, and was put on the building management system for remote control. There were modifications to the system in 1999-2000, including exhaust fans and outlets. Rooftop units and exhaust fans were installed in 2006 and replaced in 2011. In 2009, a Rentar fuel catalyst was installed, and the pneumatic devices were replaced with digital controls.

**Has there been a Major Repair or Replacement of the ELECTRICAL SERVICES AND DISTRIBUTION SYSTEM?** YES
**Year of Last Major Repair or Replacement:(YYYY)** 2009
**Description of Last Major Repair or Replacement:**
In 2009, the electrical and technology infrastructure was upgraded. The 1998 study found that the service switchboard had been upgraded in the previous 10 years and was in excellent condition. New lighting was installed in 1995. Electrical outlets were installed in 2003, 2004, and 2005. In 2003 a closet was constructed and wired in the rear of the lecture hall to house data and port connections. The cafeteria AV closet was rewired and conduits were installed for data cables. Additional data lines were strung in 2004 and 2005. All the electrical systems in the modular classrooms are original to the 2002 construction, with minor upgrades in 2011.

**BUILDING INTERIOR: Please provide a detailed description of the current building interior including a description of the flooring systems, finishes, ceilings, lighting, etc. (maximum of 5000 characters).**

Interior:
The flooring throughout the cafeteria, corridors and classrooms is Vinyl Composite Tile (VCT) and is well maintained and in good condition. The low-pile carpet in the Media Center and administrative offices is in good condition, but only in fair condition in the 1968 classroom wing. Bathroom floors are ceramic tile in good condition, except in sections of the locker room shower, which have de-laminated from the concrete substrate and require replacement. The gymnasium floors are rubber flooring in fair to poor condition. These are scheduled for replacement in 2014-15. The floors in the utility areas are exposed concrete. Kitchen flooring is quarry tile in good condition. The Auditorium stage floor is wood and in good condition.
The wall finish system varies according to the phase of construction, but incorporates similar materials. Classrooms in the 1958 building have a combination of plaster and SGFT walls. Walls in the 1969 wing are a combination of concrete masonry unit (CMU) and sheetrock and are generally in good condition. Some of the corridor walls have hard-wood panels in good to fair condition. Multi-stall bathrooms are typically 20+ years old and in need of upgrades, with poor lighting, bowed ceiling tiles, chipped ceramic mosaic tile, rusting metal partitions, and sink/ counters that are in poor condition.
Most of the classrooms have dropped ceiling metal grid with 2'x4' Acoustic Ceiling Tile (ACT). The ACT in the administration area and a few of the classrooms in the 1958 wing are at a very low height 7'-1/2" above finished floor (AFF), instead of the required 7'-6" AFF. Ceilings in the 1969 wing are in good condition. The kitchen has vinyl coated ceiling tile, which is in good condition. The Media Center/ Library and the main entry hall have exposed painted structural metal deck.
The interior doors throughout the building are typically wood and original to their date of construction. The oldest doors in the 1958 wing are in need of replacement, while the doors in the 1969 wing are in generally good condition.
Many interior stairways have railings that were acceptable at the time of installation, but do not meet all current egress code and \accessibility requirements.

Technology:
The building has Category 5 cabling to every classroom with many classrooms outfitted with smart boards and computers. There are four computer labs within the building, which function as teaching spaces for technology education. The following areas require upgrade: the Auditorium AV system; wireless access points in the Auditorium, Lecture hall, cafeteria and Gymnasium; projection system in the Lecture Hall; upgrades to the soundfield systems in many classrooms; and technology upgrades in all science labs.

Hazardous Materials:
The Public Facilities Department has an ongoing plan for the assessment and remediation of hazardous materials in the school. Testing confirmed that floor tiles contain asbestos (ACM) and a program of phased remediation and replacement has been in place for the past decade. Asbestos in the hard joint insulation of heating pipes was removed as part of the boiler room upgrades, but ACM's still remain in the utility tunnels. Interior caulking at wall seams is assumed to contain asbestos and PCB's. The exterior and interior window framing and glazing caulking are assumed to contain ACM's and PCB's and will require abatement as a part of repair/ replacement. Other locations assumed to contain asbestos are door framing caulking, unit vent grill caulking, blackboard glue, underground waste water pipes, damproofing on foundation wall, and thru-wall flashing. Tubes within light fixtures, exit signs, switches, and thermostats are assumed to contain Mercury. The painted surfaces are assumed to contain lead. All of these materials would need to be remediated during a comprehensive repair or replacement project.

**PROGRAMS and OPERATIONS: Please provide a detailed description of the current programs offered and grades served, and indicate whether there are program components that cannot be offered due to facility constraints, operational constraints, etc. (maximum of 5000 characters).**

The 2011 DWA study identified several deficiencies to core educational science classroom spaces, the auditorium, gymnasia, and administration area.

The highest priority are the science classrooms, which are below MSBA standards. The existing science classrooms range in size from 539 sf. to 1011 sf., which is well below the current MSBA standard of 1200 sf. These classrooms lack adequate prep rooms and storage space, and the built-in casework and plumbing fixtures are in poor condition. Improvements to these classrooms alone would likely trigger code-required upgrades throughout the building for a complete automatic sprinkler system, handicapped accessibility improvements, seismic design, energy efficiency, as well as infrastructure upgrades to plumbing, fire alarm and electrical systems. The lack of adequate science classrooms and facilities means that Pollard's students are shortchanged and do not receive the type of science instruction expected. Tight spaces, inadequate or missing gas, water, and electrical utilities, crumbling classroom walls, tables, and cabinets mean that teachers take shortcuts and avoid certain experiments and learning opportunities that would otherwise be available in more appropriate space.

Other programmatic deficiencies are found in the auditorium, which is largely original to its construction in 1958. It is not large enough to accommodate the whole school for any activity; it can accommodate only one grade at a time. The lighting and sound in the auditorium is in need of updating/upgrading and is in a constant state of repair. The HVAC system is noisy and can interfere with performance acoustics. Sections of the auditorium seating are broken or missing, as well.

The gymnasiums lack spectator space and require replacement of the flooring, lighting, sound system and venting systems. The gyms are dark, lighting is generally dull, and there are ongoing heating issues. The walls are lined with paneling that is splintered in some locations and has little nails jutting out, which have caused cuts and scratches to students and teachers. The exposed pipes also present a safety concern, since students engaged in strenuous activity could come into contact with the hard surface, causing injury. The flooring is beginning to tear at the thresholds between the two gyms and at the doorways, creating a trip hazard. The floors in both gyms are beginning to wear thin and they are extremely dirty and marked-up from many years of use. The basketball hoops have not been updated or replaced in over 18 years. The mechanics that raise and lower some of the hoops are no longer working properly; there are many baskets (especially in the Blue Gym) that remain in the way of our volleyball courts, as a result. If these baskets could be replaced with hoops

that could be raised and lowered, we would have room for an additional volleyball court in the Blue Gym. The scoreboard in the Green Gym no longer works, and there is no scoreboard in the Blue Gym. The clocks do not work in the gym.

In addition, the school has too few special education meeting spaces. The current special education parent meeting room was turned into a learning center in 2013/14. With the increasing number of special education parent team meetings, it is essential to have a dedicated conference room space.

The administration offices are located in the northeast corner of the building and lack proper visibility and access from the main entry court. As a result, visitors are required to enter the building via the side door to the Administrative Office. The location of this side door makes it difficult for visitors to identify the main entrance, and doesn't allow school personnel to view visitors as they approach the building. The offices are undersized by approximately 40%, according to current MSBA standards, which call for 2,400 sf of space for 880 students, compared to the current 1,400 sf. The lobby space is used as a work and copy layout space.

The modular classrooms (constructed in 2002) are not designed as permanent, long-term facilities. They are constructed of inexpensive materials, in fast production style construction techniques and are not energy efficient. A long-term solution that provides for permanent classroom space will be required within the next 10 years (expected lifespan for modular classrooms is 20 yrs.)

Finally, consideration should be given to "21st Century Learning" as it relates to the layout of the School. Learning-teaching methods now include technology integration, project-based learning, team-teaching, multidisciplinary collaboration and special education delivery methods. These concepts are not reflected in the current layout and should be incorporated into future space planning.

**CORE EDUCATIONAL SPACES: Please provide a detailed description of the Core Educational Spaces within the facility, a description of the number and sizes (in square feet) of classrooms, a description of science rooms/labs including ages and most recent updates, a description of the cafeteria, gym and/or auditorium and a description of the media center/library (maximum of 5000 characters).**

The building was designed for 45 classrooms spaces, which vary approximately from 723 sf. to 907 sf. As enrollment has increased over the years, however, spaces have been converted to accommodate 40 regular education classrooms for core subject delivery and 22 classrooms for elective programs, which include the use of the Lecture Hall, Auditorium and modular classrooms. Presently, there are 10 science rooms and 15 special education classrooms. The science classrooms range in size from 539 sf. to 1011 sf and are smaller than the MSBA guideline of 1200 sf. for science classrooms. Pollard has two gymnasiums, one media center/library and one computer lab. There are 3 rooms that have been converted to computer rooms for students taking Computer Technology and Music Explorations.

Of the 10 science rooms, only seven are true science classrooms with the proper connections for gas lines and drainage for chemicals. The other three rooms, which are converted general classrooms, have only sinks and eye wash stations.

The Media Center is adequate to accommodate the educational needs of the school. However, the science rooms, auditorium and gymnasium are in need of modernization and/or additional program space.

**CAPACITY and UTILIZATION: Please provide a detailed description of the current capacity and utilization of the school facility. If the school is overcrowded, please describe steps taken by the administration to address capacity issues. Please also describe in detail any spaces that have been converted from their intended use to be used as classroom space (maximum of 5000 characters).**

The school currently is over-crowded, particularly in the classroom and common space areas. Given the existing cluster configuration (of four Grade 7 clusters and 5 Grade 8 clusters) and 864-student population, the average class size is 21 students per class, which is at the design capacity, however, many classrooms are too small to accommodate a standard size class. Additionally, some science classrooms) are too small to accommodate the required number of science tables for

enrolled students and have non-functioning sinks. The science teachers have been forced to modify the curriculum, particularly science experimentation, due to the facility constraints.

A number of non-traditional classrooms also are in use. For example, due to the lack of music rooms, strings classes are held in the Pollard Lecture Hall, which in turn, has limited the use of the Lecture Hall. The Pollard Auditorium is used for theater arts classes, which are moved on a constant basis to make the Pollard Auditorium available for creative arts presentations or other large class presentations. Given overcrowding in the gyms, the Wellness Department has modified the physical education curriculum to accommodate the number of students and space available. In our current situation, students sit out for approximately 1/3 of their class time. Because there are not enough courts for everyone to play a game at the same time, students have sat on the sidelines to wait their turn. Additionally, Experiential Education is taught in a typical classroom, even though the program requires a large activity space. The smaller classroom space limits what the teacher can do in terms of activities and requires that classes be taken outside, when the weather is warm enough. In addition, the Health Education teacher and the Experiential Education teacher are located in the modulars, while the physical educators are located in the gymnasia. This assignment breaks the department up and limits opportunities for spontaneous ideas to emerge. Finally, given the limited size of the Fitness Center, students are rotated into the space one group at a time to accommodate the number of students. Given the small locker rooms, teachers must supervise students in the gym locker rooms to the best of their abilities and continually remind students about the importance of appropriate behavior.

To accommodate the current student population, the School has implemented split lunches. As a result, the school does not work on a bell system. Thus, teachers must rely on personal clocks for guidance and are required to communicate on the Pollard website if they have let students out late.

Finally, given a lack of guidance and special education spaces, the School is looking at alternative spaces for meeting, office and transition spaces. The school constructed the modular classrooms in 2002. These are now entirely used for educational purposes.

Additional enrollment growth will result in increased class size, the subdivision of existing modular classroom spaces, the conversion of non-traditional spaces to classrooms and/or traveling teachers on carts.

**MAINTENANCE and CAPITAL REPAIR: Please provide a detailed description of the district's current maintenance practices, its capital repair program, and the maintenance program in place at the facility that is the subject of this SOI. Please include specific examples of capital repair projects undertaken in the past, including any override or debt exclusion votes that were necessary (maximum of 5000 characters).**

The Town implemented a structured preventative maintenance program in 2009. This program provides for the quarterly and/or annual maintenance of HVAC, water heating, plumbing, electrical, and general maintenance systems. The Town also funds an annual facility maintenance capital article to address the needs of smaller repairs such as duct cleaning, asbestos abatement, flooring replacement, and HVAC upgrades. The recent major capital repair projects include:

2014 - Gym floor repair
2013 - Boiler replacement project (high efficiency gas boilers)
2013 - Telephone system replacement
2011 - Roof replacement (MSBA Green Roof Project)
2011 - Parking lot improvements and minor modifications to modular classrooms

Future capital improvements included in the five-year Capital Improvement Plan include:

FY 2017 - Lighting upgrades to gyms - better lighting and more energy efficient
FY 2019 - Replace rubber flooring in both gyms
FY 2019 - Wood siding removal/ replacement and basketball hoop replacement/ repair and 2 sections of spectator seating installed in green gym for class accommodation.

**Priority 2**

***Question 1: Please describe the existing conditions that constitute severe overcrowding.***

The school currently is over-crowded, particularly classroom and common space areas, such as the Gymnasium.

Given the existing configuration of five Grade 7 clusters and five Grade 8 clusters and the 864 current student population, the average class size is 21 students per class, which is at the design capacity, however, a large number of classrooms are small and cannot accommodate more than 23 to 25 students. The modular classrooms, which were constructed in 2002, also are not designed as long-term, permanent facilities. A long-term solution to replace these modular classrooms with permanent classroom space will be required within the next ten years, since the average lifespan for modular classrooms is 20 years.

The current science classrooms also are severely undersized, relative to MSBA standards. These classrooms range in size from approximately 539 sf to 1011 sf vs. 1200 sf per current MSBA standards. As a result, it is difficult to accommodate enough lab tables for the number of students who are currently enrolled. (This condition will become exacerbated with the additional students projected for 2013-2014.) The science classrooms also do not have adequate prep rooms or storage spaces, and the built-in lab casework and plumbing fixtures are in poor condition.

The gymnasium spaces are significantly overcrowded. Currently, the Pollard School schedules 3-4 classes of physical education concurrently in the gymnasia. Class sizes range anywhere from 20 – 26 students. As a result, there can be anywhere from 75 - 100 plus students in the gyms during one class period. The gyms are divided into courts for game play i.e., basketball courts, handball courts, volleyball courts and such during typical physical education classes. The number of courts is limited by the space. For example, the school can only create four basketball courts, four handball courts and five volleyball courts within the allotted space. Once students are divided into teams, there are not enough courts for everyone to play at the same time. As a result, students have to sit out and wait their turn to play. In our current situation, students are sitting out for approximately 1/3 of their class time. Additionally, the locker rooms are small and do not safely accommodate the number of students who are scheduled to use them for their physical education classes.

The Fitness Center also is small, although in 'good shape.' It can safely accommodate about 20 students at one time. With classes of 25 plus, it becomes almost impossible to use this space effectively. There also is a need for some aerobic equipment to complement the weight training circuit that currently exists in the Fitness Center. Although the School Department has a replacement cycle for fitness equipment, the weight training equipment is in need of update.

To accommodate the current student population, the School has implemented split lunches. As a result, Pollard does not work on a bell system. Thus, teachers must rely on personal clocks for guidance and are required to communicate on the Pollard website if they have let students out late.

Additionally, the school lacks a sufficient number of guidance, special education and ELL spaces. The room that is currently used for meetings with special education parents was eliminated in the 2013-2014 school year and turned into a learning center. It is essential to have a dedicated conference room space for parent meetings in the future. There is no dedicated ELL space for English Language instruction for our non-English speaking students and the school lacks appropriate space for curriculum meetings, resource materials, or offices for the Literacy Specialist and Curriculum Coordinators.

Finally, the administrative spaces are undersized by approximately 40%. The MSBA standard for 880 students (the approximate current enrollment) is 2,400 s.f. The current administrative space is 1,400 s.f. The lack of administrative space is evidenced by the tight quarters that the administrative personnel occupy, and the use of the lobby space as additional work and copy layout space.

**Priority 2**

***Question 2: Please describe the measures the School District has taken to mitigate the problem(s) described above.***

To mitigate the need for additional classroom space, including the need for two additional classrooms in FY15, the school subdivided modular classroom space. The conversion of non-traditional spaces to classrooms or traveling teachers on carts also are possibilities. The modular classrooms, which were constructed in 2002, also are not designed as long-term, permanent facilities. A long-term solution that provides for additional classroom space will be required within the next ten years, since the average lifespan of modular classrooms is 20 years.

To mitigate deficiencies in the science spaces, the teachers have been required to modify the curriculum, including science experiments. As previously noted, these rooms are undersized, are lacking in adequate prep rooms or storage spaces, and are in poor condition (some have non-working sinks.) Additionally, since there are no additional rooms that can be converted into science classrooms in FY14, the School may collapse two science rooms into one large classroom to accommodate the additional students.

A number of non-traditional classrooms also are in use. For example, due to the lack of music rooms, strings classes are held in the Pollard Lecture Hall, which in turn, has limited the use of the Lecture Hall. The Pollard Auditorium is used for theater arts classes and these classes are moved on a constant basis to make the Pollard Auditorium available for creative arts presentations or other large class presentations. The Library also is used for ELL instruction. The Inner Space conference room now is in use as a classroom space, which limits its use as a meeting place.

Finally, the limited gymnasium space has required classes to be scheduled concurrently, and for teachers to modify the physical education curriculum. Currently, the Pollard School schedules 3-4 classes of physical education concurrently in the gym space, which constitutes two gyms. Class sizes range anywhere from 20 – 26 students. As a result, there can be anywhere from 75 - 100 plus students in the gyms during one class period. Because there are not enough courts for everyone to play a game at the same time, students sit on the sidelines to wait their turn. Due to the lack of large activity spaces, Experiential Education is taught in a typical classroom, which limits what the teacher can do in terms of activities and requires that classes be taken outside, when the weather is warm enough. In addition, the lack of appropriate physical education office space has resulted in the Health Education teacher and the Experiential Education teacher to be are housed in different areas of the school. The Physical Education teachers are located in the gymnasium, while the Health teacher is located in the modular classrooms. Finally, given the limited size of the Fitness Center, students are rotated into the space one group at a time to accommodate the number of students. Given the small locker rooms, teachers must supervise students in the gym locker rooms to the best of their abilities and continually remind students about the importance of appropriate behavior.

To accommodate the current student population, the School has implemented split lunches. As a result, the school does not work on a bell system. Thus, teachers must rely on personal clocks for guidance and are required to communicate on the Pollard website if they have let students out late.

The School has been unable to fully mitigate the lack of administrative space. Although the lobby has been utilized as additional work space, offices are undersized and there is a lack of conference and meeting spaces. The School also is in need of additional guidance and special education meeting space.

**Priority 2**

***Question 3: Please provide a detailed explanation of the impact of the problem described in this priority on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem identified.***

The 2011 DWA study identified several deficiencies to core educational science classroom spaces, the Auditorium, Gymnasiums, and administration area.

To mitigate the lack of appropriate and appropriately-sized classroom space for core curriculum, the Pollard School has been required to increase class size, subdivide existing space and/or modify the existing curriculum, to the detriment of the educational program. Given the lack of additional classrooms, the Pollard School will future enrollment growth by increasing class size and subdividing existing modular classroom space, as well as converting non-traditional spaces to learning centers. Science teachers have modified the existing curriculum, particularly experiments, to meet the existing facility constraints. As previously noted, the science rooms are undersized, are lacking in adequate prep rooms or storage spaces, and are in poor condition (some have non-working sinks.)

Additionally, non-traditional spaces have been used for specialized instruction, which has limited the educational program in other ways. For example, due to the lack of music rooms, strings classes are held in the Pollard Lecture Hall. As a result, the use of the Lecture Hall is limited. The Pollard Auditorium is used for theater arts classes, which are moved on a constant basis to make the Pollard Auditorium available for creative arts presentations or other large class presentations. ELL instruction, conducted in the Library, often is interrupted by groups using the space or by noise from other students.

The gymnasiums are undersized, which limits physical education activities for students. As noted, Pollard schedules 3-4 classes of physical education concurrently in the gym space, resulting in anywhere from 75 - 100 plus students occupying the gym at one time. Since there are not enough courts for everyone to play a game at the same time, students sit on the sidelines to wait their turn. This goes against the philosophy of the program that all students should remain active for at least 80% of their time in a physical education class. Due to the lack of large activity spaces, Experiential Education is taught in a typical classroom, which limits what the teacher can do in terms of activities and requires that classes be taken outside, when the weather is warm enough. Finally, the small size of the Fitness Center requires that students be rotated in for instruction, and limits the amount of equipment that can be made available. (There is also a need for aerobic equipment to complement the weight training circuit that currently exists in the Fitness Center.)

In addition, the physical limitations of the gymnasia have further limited the educational program. Specifically, there is no space for spectators and the following systems require replacement: flooring, lighting, sound system and venting. The gyms are dark, lighting is generally dull, and the gyms are dark in color and dark in ambiance. There also are ongoing heating issues - either it is too hot or too cold. The walls are lined with paneling, which as splintered in some locations and has little nails jutting out, which have caused cuts and scratches to students and teachers. The exposed pipes also present a safety concern, since students engaged in strenuous activity could come into contact with the hard surface of the pipes, causing injury. The gym flooring is beginning to tear at the thresholds between the two gyms and at the doorways. Students have tripped from time to time as they walk from one gym into the other. The floors in both gyms are beginning to wear thin in several places, and they are extremely dirty and marked-up from many years of use. The basketball hoops have not been updated or replaced in over 18 years. The mechanics that raise and lower some of the hoops are no longer working properly, and there are many baskets (especially in the Blue Gym) that cannot be raised and lowered. As a result, they remain in the way of our volleyball courts. If they could be replaced with hoops that could be raised and lowered, we would have room for an additional volleyball court in the Blue Gym. The scoreboard in the Green Gym no longer works, and there is no scoreboard in the Blue Gym. The clocks do not work in the gym.

The Pollard Auditorium is not large enough to accommodate a whole grade for any activity. Finally, the lighting and sound systems are sorely in need of updating/upgrading; they are constantly being repaired. The dimly lit and inadequately sized auditorium is limiting. The stage is not handicapped accessible, the carpet is threadbare, exit stairs are in need of repair, the acoustics are quite poor, and the overall design limits programs and learning opportunities.

Finally, consideration also should be given to "21st Century Learning" as it relates to the layout of the Pollard School. Learning-teaching methods have changed over the past 50 years, including technology integration, project-based learning, team-teaching, multidisciplinary collaboration, and special education delivery methods. These concepts should be incorporated into the future space plans.

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**Please also provide the following:**

**Cafeteria Seating Capacity:** 381

**Number of lunch seatings per day:** 4

**Are modular units currently present on-site and being used for classroom space?:** YES

**If "YES", indicate the number of years that the modular units have been in use:** 13

**Number of Modular Units:** 10

**Classroom count in Modular Units:** 10

**Seating Capacity of Modular classrooms:** 20

**What was the original anticipated useful life in years of the modular units when they were installed?:** 20

**Have non-traditional classroom spaces been converted to be used for classroom space?:** YES

**If "YES", indicate the number of non-traditional classroom spaces in use:** 3

**Please provide a description of each non-traditional classroom space, its originally-intended use and how it is currently used (maximum of 1000 characters).:**

Due to the lack of music rooms, strings classes are held in the Pollard Lecture Hall, which in turn, has limited the use of that space. The Pollard Auditorium also is used for theater arts classes and is moved on a constant basis to make the Pollard Auditorium available for creative arts presentations or other large class presentations. The Inner Space conference room also has been converted to classroom use for technology integration/ media classes. Finally, two former storage spaces are now being used as office spaces this year.

**Please explain any recent changes to the district's educational program, school assignment polices, grade configurations, class size policy, school closures, changes in administrative space, or any other changes that impact the district's enrollment capacity (maximum of 5000 characters).:**

The School District is committed to a K-5, 6-8, and 9-12 educational program and grade configuration. In 2009, consistent with this policy and to provide adequate space for the growing secondary enrollment, the District opened the High Rock School, a sixth grade center designed to meet the needs of new middle school students, who are transitioning from five elementary schools into one middle school building. After completing the sixth grade at High Rock, students continue their middle school experience at the Pollard Middle School, where they attend 7th and 8th Grades before transitioning to Needham High School.

Although the stand-alone Sixth Grade Center is a unique component of Needham's middle school model, it has been successfully integrated into the District's overall program and provides a gateway to the middle school experience for our students.

Finally, the School Committee is committed to providing full-day Kindergarten in Needham, through the successful renovation and reconstruction of its two remaining elementary schools. Due to a longstanding lack of space in the elementary schools, Needham has been unable to offer full-day Kindergarten to eligible students. Renovation and/or construction projects at the Hillside and Mitchell schools would ideally incorporate sufficient space to allow full-day Kindergarten in all of the District's schools.

**What are the district's current class size policies (maximum of 500 characters)?:**

School Committee Policy #IHB specifies that student/teacher ratios should be within the guidelines: 18-22 in Grades K-3, 20-24 in Grades 4-5, and 'reasonable class size' in Grades 6-12. These guidelines are recommendations, however, rather than absolute limits requiring strict, literal adherence.

Priority 7

***Question 1: Please provide a detailed description of the programs not currently available due to facility constraints, the state or local requirement for such programs, and the facility limitations precluding the programs from being offered.***

As previously noted, facility deficiencies constrain the educational program, primarily in the area of science, school-wide events, physical education and access.

Program offerings ate Pollard are diminished because of the many building and design inefficiencies associated with Pollard. The lack of appropriate space, for example, for engineering and design means that the program is limited in scope and does not accommodate all the aspects of the program intended. Additionally and as previously stated, the science classrooms are undersized and inadequate. Tight spaces, inadequate or missing gas, water, and electrical utilities, crumbling classroom walls, tables, and cabinets mean that teachers take shortcuts and avoid certain experiments and learning opportunities that would otherwise be available in more appropriate space.

Art, science, performing arts, special education, technology, and other programs are unable to expand due to a lack of adequate space. At the middle school level, these programs are essential for students but the school is unable to expand due to the many inefficiencies and inadequacies described. For example, music education is limited to cramped classrooms and the auditorium because the design and spaces do not provide the kind of room, lighting, acoustics, and appropriate space required for a high performing middle school program.

Classroom space is very tight. The school, originally designed with 45 classrooms, requires 40 regular education classrooms and 22 classrooms for elective programs. In addition, the science classrooms are severely undersized, relative to MSBA standards, ranging from 539 sf to 1011 sf vs. 1200 sf per current MSBA standards. As a result, it is difficult to accommodate enough lab tables for the number of students who are currently enrolled. In addition, the classrooms lack adequate electrical outlets for technology (computers and probeware), as well as storage for student work or prep supplies. The built-in lab casework and plumbing fixtures are in poor condition and sinks in many classrooms do not work. Finally, since three of the science classrooms are converted general education classrooms, they lack the proper gas line and chemical drainage hookups. Similarly, the Engineering classrooms (also converted from modified standard size classrooms) are insufficient in size for groups of students to work on projects and the rooms have inadequate space for the storage of materials, equipment and student work. Access to electrical outlets are limited.

There are no dedicated spaces for ELL instruction (which is held in the Library), or to implement a reading program at Pollard. In addition, inadequate curriculum space has limited the ability of the four Curriculum Coordinators to meet with teachers and build a lending library of reference materials. The curriculum suite currently consists of two small offices and a foyer, which is home to the two Curriculum Coordinators, as well as departmental space for meetings with teachers, job-embedded professional development and resource materials. Two of these offices are former storage closets.

Similarly, the physical education program is limited by the constraints of the gymnasium spaces. As previously noted, the gyms are not large enough to create enough courts for game play to ensure that all students to play at the same time. This results in students sitting on the sidelines, waiting for a turn to play, for approximately one third of their class time. The curriculum objective of the Wellness Program is for students to remain active for at least 80% of their time in a physical education class. In addition, Experiential Education is taught in a typical classroom, rather than the requisite large activity space, which limits what the teacher can do in terms of activities and requires that classes be taken outside, when the weather is warm enough.

The Pollard Auditorium is not large enough to accommodate a whole grade for any activity. Finally, the lighting and sound systems are sorely in need of updating/upgrading; it is constantly being fixed. HVAC noise is a problem during performances. There are blocks of seats that are broken and unusable.

Finally, consideration also should be given to "21st Century Learning" as it relates to the layout of the Pollard School. Learning-teaching methods have changed over the past 50 years, including technology integration, project-based learning, team-teaching, multidisciplinary collaboration, and special education delivery methods. These concepts should be incorporated into the future space planning.

While upgrades to the parking were made n 2018, the total parking provided on site (113 cars) is deficient, when compared with current zoning requirements by 66 cars. This forces visitors to park on the surrounding streets during daytime visits and congests local traffic on Harris Ave. at the start and end of the school day. The front driveway is not long enough to accommodate all 14 buses, so the school is forced to double load the driveway during release time. There are no dedicated visitor or medical emergency spaces.

**Priority 7**

***Question 2: Please describe the measures the district has taken or is planning to take in the immediate future to mitigate the problem(s) described above.***

To mitigate the lack of appropriate and appropriately-sized classroom space for core curriculum, the Pollard School has been required to increase class size, and convert/subdivide available space to create the required number of classrooms. Students have been squeezed into science and engineering classrooms, which do not all contain enough tables for enrolled students, or which are too small to conduct a full complement of engineering projects. As a result, science teachers have modified the existing curriculum, particularly experiments, to meet the space and equipment constraints of their classrooms. As previously noted, the science rooms are undersized, are lacking in adequate prep rooms or storage spaces, and are in poor condition (some have non-working sinks.) Similarly, the Engineering teachers have limited the type and scope of student projects to those which can be accomplished within the limited classroom and storage space of the Engineering classrooms.

Additionally, non-traditional spaces have been used for specialized instruction, which has limited the educational program in other ways. For example, due to the lack of music rooms, strings classes are held in the Pollard Lecture Hall. As a result, the use of the Lecture Hall is limited. The Pollard Auditorium is used for theater arts classes, which are moved on a constant basis to make the Pollard Auditorium available for creative arts presentations or other large class presentations. ELL instruction is conducted in the Library, due to lack of dedicated space, where instruction is often interrupted by the activities of other students. Finally, the Inner Space conference room is now used as a classroom, which limits the amount of meeting spaces for staff members.

Curriculum instruction and job-embedded professional development has been offered to teachers, but is often provided in too-small spaces, where teachers are confined for day-long events, or across multiple classrooms, where teachers move from one space to another during the day.

During gym class, students are required to 'sit out' for approximately one third of their class time, since there are not enough available courts for all students to play at the same time. As noted above, classes are scheduled concurrently, which results in 75 - 100 plus students occupying the gym at one time. Additionally, due to the lack of a large activity space, Experiential Education is taught in a typical classroom, which limits what the teacher can do in terms of activities students are rotated through the small Fitness Center on a class-by-class basis.

The parking deficiency was only partly mitigated by the recent renovation, which added a number of new spaces. However, the school should have approximately 65 additional spaces to meet zoning requirements. Parents and visitors park on the streets or available grassy areas, to the annoyance of neighbors.

Priority 7

***Question 3: Please provide a detailed explanation of the impact of the problem described in this priority on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem identified.***

As previously noted, the 2011 DWA study identified several deficiencies to core educational science classroom spaces, the Auditorium, Gymnasiums, and Administration area.

To mitigate the lack of appropriate and appropriately-sized classroom space for core curriculum, the Pollard School has been required to increase class size, subdivide existing space and/or modify the existing curriculum, to the detriment of the educational program. Given the lack of additional classrooms, the Pollard School will accommodate the two additional classrooms required for 2014/15 by increasing class size and subdividing existing modular classroom space, to create learning centers for students. Science teachers have modified the existing curriculum, particularly experiments, to meet the existing facility constraints. Science units are often designed with safety and facility condition in mind, rather than promoting student interest or delivering the middle school science program. Similarly, the Engineering teachers have limited the type and scope of student projects to those which can be accomplished within the limited classroom and storage space of the Engineering classrooms. As enrollment increases, the quality of STEM instruction will be further eroded as more students are squeezed into these spaces or as additional standard classrooms are converted into Science and Engineering rooms.

Additionally, non-traditional spaces have been used for specialized instruction, which has limited the educational program in other ways. For example, due to the lack of music rooms, strings classes are held in the Pollard Lecture Hall. As a result, the use of the Lecture Hall is limited. The Pollard Auditorium is used for theater arts classes and is moved on a constant basis to make the Pollard Auditorium available for creative arts presentations or other large class presentations. The lack of a dedicated space for ELL instruction compromises the type of focused, 1:1 instruction that our non-English speaking students require. Additionally, due to the lack of available space, there is no Reading Program at Pollard.

The gymnasiums are undersized, which has limited the physical education program for students. As noted, Pollard schedules 3 - 4 classes of physical education concurrently in the gym space, resulting in anywhere from 75 - 100 plus students occupying the gym at one time. Since there are not enough courts for everyone to play a game at the same time, students sit on the sidelines to wait their turn. This goes against the philosophy of the program that all students should remain active for at least 80% of their time in a physical education class. Due to the lack of large activity spaces, Experiential Education is taught in a typical classroom, which limits what the teacher can do in terms of activities and requires that classes be taken outside, when the weather is warm enough. In addition, due to the lack of office space, the Physical Education and Health teachers are located in different parts of the school, which breaks up the department and limits opportunities for spontaneous ideas to emerge. Finally, the small size of the Fitness Center requires that students be rotated in for instruction, and limits the amount of equipment that can be made available. (There is also a need for aerobic equipment to complement the weight training circuit that currently exists in the Fitness Center.)

The Pollard Auditorium is not large enough to accommodate a whole grade for any activity. Additionally, the Pollard Auditorium is used for theater arts classes, which are moved on a constant basis to make the Pollard Auditorium available for creative arts presentations or other large class presentations. Finally, the lighting and sound systems are sorely in need of updating/upgrading. They are constantly being fixed.

The inadequate space available for curriculum instruction has compromised the professional development program for teachers. As previously noted, the teachers who participate in professional development workshops either are squeezed into too-small spaces, or rotated through a series of venues, neither of which are conducive to promoting effective teacher learning. Additionally, the limited available space will constrain Needham's plans to increase the number of Coordinators from two to

four, to provide instruction in all core academic areas.

Finally, consideration also should be given to "21st Century Learning" as it relates to the layout of the Pollard School. Learning-teaching methods have changed over the past 50 years, including technology integration, project-based learning, team-teaching, multidisciplinary collaboration, and special education delivery methods. These concepts should be reviewed in relation to the school's educational program and vision in context with the school's existing classroom layout.

The District added 10 modular classrooms to the school in 2002 to accommodate a growing Grade 6-8 population. By 2009, as the population continued to grow, the District renovated the High Rock School and converted it to a Grade 6 Center. During the 2011-12 School Year, the Pollard modular classrooms were used to accommodate Newman Preschool and Kindergarten students during the Newman School Renovation. The 7th-8th grade student population has continued to grow since 2012 and the modular classrooms have been fully utilized for 7th-8th grade classroom, and will be needed for the next decade.

# REQUIRED FORM OF VOTE TO SUBMIT AN SOI

**REQUIRED VOTES**

If the SOI is being submitted by a City or Town, a vote in the following form is required from both the City Council/Board of Aldermen **OR** the Board of Selectmen/equivalent governing body **AND** the School Committee.

If the SOI is being submitted by a regional school district, a vote in the following form is required from the Regional School Committee only. FORM OF VOTE Please use the text below to prepare your City's, Town's or District's required vote(s).

**FORM OF VOTE**

Please use the text below to prepare your City's, Town's or District's required vote(s).

Resolved: Having convened in an open meeting on _____, prior to the closing date, the _____ *[City Council/Board of Aldermen, Board of Selectmen, Equivalent Governing Body/School Committee]* of _____ *[City/Town]*, in accordance with its charter, by-laws, and ordinances, has voted to authorize the Superintendent to submit to the Massachusetts School Building Authority the Statement of Interest dated _____ for the _____ *[Name of School]* located at _____ *[Address]* which describes and explains the following deficiencies and the priority category(s) for which an application may be submitted to the Massachusetts School Building Authority in the future

_____

_____

_____

_____

_____

_____; *[Insert a description of the priority(s) checked off on the Statement of Interest Form and a brief description of the deficiency described therein for each priority]*; and hereby further specifically acknowledges that by submitting this Statement of Interest Form, the Massachusetts School Building Authority in no way guarantees the acceptance or the approval of an application, the awarding of a grant or any other funding commitment from the Massachusetts School Building Authority, or commits the City/Town/Regional School District to filing an application for funding with the Massachusetts School Building Authority.

## CERTIFICATIONS

The undersigned hereby certifies that, to the best of his/her knowledge, information and belief, the statements and information contained in this statement of Interest and attached hereto are true and accurate and that this Statement of Interest has been prepared under the direction of the district school committee and the undersigned is duly authorized to submit this Statement of Interest to the Massachusetts School Building Authority. The undersigned also hereby acknowledges and agrees to provide the Massachusetts School Building Authority, upon request by the Authority, any additional information relating to this Statement of Interest that may be required by the Authority.

| **Chief Executive Officer *** | **School Committee Chair** | **Superintendent of Schools** |
|---|---|---|
| Kate Fitzpatrick | Michael Greis | Dan Gutekanst |
| Town Manager | | |
| (signature) | (signature) | (signature) |
| Date | Date | Date |

* Local Chief Executive Officer: In a city or town with a manager form of government, the manager of the municipality; in other cities, the mayor; and in other towns, the board of selectmen unless, in a city or town, some other municipal office is designated to the chief executive office under the provisions of a local charter. Please note, in districts where the Superintendent is also the Local Chief Executive Officer, it is required for the same person to sign the Statement of Interest Certifications twice. Please do not leave any signature lines blank.

# Massachusetts School Building Authority

## Next Steps to Finalize Submission of your FY 2015 Statement of Interest

Thank you for submitting your FY 2015 Statement of Interest (SOI) to the MSBA electronically. **Please note, the District's submission is not yet complete.** The District is required to print and mail a hard copy of the SOI to the MSBA along with the required supporting documentation, which is described below.

Each SOI has two Certification pages that must be signed by the Superintendent, the School Committee Chair, and the Chief Executive Officer*. Please make sure that **both** certifications contained in the SOI have been signed and dated by each of the specified parties and that the hardcopy SOI is submitted to the MSBA with **original signatures.**

**SIGNATURES: Each SOI has two (2) Certification pages that must be signed by the District.**

In some Districts, two of the required signatures may be that of the same person. If this is the case, please have that person sign in both locations. Please do not leave any of the signature lines blank or submit photocopied signatures, as your SOI will be incomplete.

**Local chief executive officer: In a city or town with a manager form of government, the manager of the municipality; in other cities, the mayor; and in other towns, the board of selectmen unless, in a city or town, some other municipal office is designated as the chief executive office under the provisions of a local charter.*

**VOTES: Each SOI must be submitted with the proper vote documentation.** This means that (1) the required governing bodies have voted to submit each SOI, (2) the specific vote language required by the MSBA has been used, and (3) the District has submitted a record of the vote in the format required by the MSBA.

**School Committee Vote:** Submittal of all SOIs must be approved by a vote of the School Committee.

For documentation of the vote of the School Committee, Minutes of the School Committee meeting at which the vote was taken must be submitted with the original signature of the Committee Chairperson. The Minutes must contain the actual text of the vote taken which should be substantially the same as the MSBA's SOI vote language.

**Municipal Body Vote:** SOIs that are submitted by cities and towns must be approved by a vote of the appropriate municipal body (e.g., City Council/ Aldermen/Board of Selectmen) in addition to a vote of the School Committee.

Regional School Districts do not need to submit a vote of the municipal body.

For the vote of the municipal governing body, a copy of the text of the vote, which shall be substantially the same as the MSBA's SOI vote language, must be submitted with a certification of the City/Town Clerk that the vote was taken and duly recorded, and the date of the vote must be provided.

**CLOSED SCHOOLS: Districts must** download the report from the "Closed School" tab, which can be found on the District Main page. Please print this report, which then must be signed by the Superintendent, the School Committee Chair, and the Chief Executive Officer. A signed report, with original signatures must be included with the District's hard copy SOI submittal. **If a District submits multiple SOIs, only one copy of the Closed School information is required.**

ADDITIONAL DOCUMENTATION FOR SOI PRIORITIES #1 AND #3: If a District selects Priority #1 and/or Priority #3, the District is required to submit additional documentation with its SOI.

If a District selects Priority #1, Replacement or renovation of a building which is structurally unsound or otherwise in a condition seriously jeopardizing the health and safety of the school children, where no alternative exists, the MSBA requires a hard copy of the engineering or other report detailing the nature and severity of the problem and a written professional opinion of how imminent the system failure is likely to manifest itself. The District also must submit photographs of the problematic building area or system to the MSBA.
If a District selects Priority #3, Prevention of a loss of accreditation, the MSBA requires the full accreditation report(s) and any supporting correspondence between the District and the accrediting entity.

**ADDITIONAL INFORMATION:** In addition to the information required with the SOI hard copy submittal, the District may also provide any reports, pictures, or other information they feel will give the MSBA a better understanding of the issues identified at a facility.

If you have any questions about the SOI process please contact Diane Sullivan at 617-720-4466 or Diane.Sullivan@massschoolbuildings.org.

# Massachusetts School Building Authority

School District Needham

District Contact Anne Gulati TEL: (781) 455-0400

Name of School William Mitchell

Submission Date 2/25/2015

## SOI CERTIFICATION

To be eligible to submit a Statement of Interest (SOI), a district must certify the following:

- ☑ The district hereby acknowledges and agrees that this SOI is NOT an application for funding and that submission of this SOI in no way commits the MSBA to accept an application, approve an application, provide a grant or any other type of funding, or places any other obligation on the MSBA.
- ☑ The district hereby acknowledges that no district shall have any entitlement to funds from the MSBA, pursuant to M.G.L. c. 70B or the provisions of 963 CMR 2.00.
- ☑ The district hereby acknowledges that the provisions of 963 CMR 2.00 shall apply to the district and all projects for which the district is seeking and/or receiving funds for any portion of a municipally-owned or regionally-owned school facility from the MSBA pursuant to M.G.L. c. 70B.
- ☑ The district hereby acknowledges that this SOI is for one existing municipally-owned or regionally-owned public school facility in the district that is currently used or will be used to educate public PreK-12 students and that the facility for which the SOI is being submitted does not serve a solely early childhood or Pre-K student population.
- ☑ After the district completes and submits this SOI electronically, the district must sign the required certifications and submit one signed original hard copy of the SOI to the MSBA, with all of the required documentation described under the "Vote" tab, on or before the deadline.
- ☑ The district will schedule and hold a meeting at which the School Committee will vote, using the specific language contained in the "Vote" tab, to authorize the submission of this SOI. This is required for cities, towns, and regional school districts.
- ☑ Prior to the submission of the hard copy of the SOI, the district will schedule and hold a meeting at which the City Council/Board of Aldermen or Board of Selectmen/equivalent governing body will vote, using the specific language contained in the "Vote" tab, to authorize the submission of this SOI. This is not required for regional school districts.
- ☑ On or before the SOI deadline, the district will submit the minutes of the meeting at which the School Committee votes to authorize the Superintendent to submit this SOI. The District will use the MSBA's vote template and the vote will specifically reference the school and the priorities for which the SOI is being submitted. The minutes will be signed by the School Committee Chair. This is required for cities, towns, and regional school districts.
- ☑ The district has arranged with the City/Town Clerk to certify the vote of the City Council/Board of Aldermen or Board of Selectmen/equivalent governing body to authorize the Superintendent to submit this SOI. The district will use the MSBA's vote template and submit the full text of this vote, which will specifically reference the school and the priorities for which the SOI is being submitted, to the MSBA on or before the SOI deadline. This is not required for regional school districts.
- ☑ The district hereby acknowledges that this SOI submission will not be complete until the MSBA has received all of the required vote documentation and certification signatures in a format acceptable to the MSBA. If Priority 1 is selected, your Statement of Interest will not be considered complete unless and until you provide the required engineering (or other) report, a professional opinion regarding the problem, and photographs of the problematic area or system.

| **Chief Executive Officer *** | **School Committee Chair** | **Superintendent of Schools** |
|---|---|---|
| Kate Fitzpatrick | Michael Greis | Dan Gutekanst |
| Town Manager | | |
| (signature) | (signature) | (signature) |
| Date | Date | Date |

* Local chief executive officer: In a city or town with a manager form of government, the manager of the municipality; in other cities, the mayor; and in other towns, the board of selectmen unless, in a city or town, some other municipal office is designated to the chief executive office under the provisions of a local charter. Please note, in districts where the Superintendent is also the Local Chief Executive Officer, it is required for the same person to sign the Statement of Interest Certifications twice. Please do not leave any signature lines blank.

# Massachusetts School Building Authority

School District Needham

District Contact Anne Gulati TEL: (781) 455-0400

Name of School William Mitchell

Submission Date 2/25/2015

**Note**

**The following Priorities have been included in the Statement of Interest:**

1. ☐ Replacement or renovation of a building which is structurally unsound or otherwise in a condition seriously jeopardizing the health and safety of school children, where no alternative exists.
2. ☑ Elimination of existing severe overcrowding.
3. ☐ Prevention of the loss of accreditation.
4. ☐ Prevention of severe overcrowding expected to result from increased enrollments.
5. ☐ Replacement, renovation or modernization of school facility systems, such as roofs, windows, boilers, heating and ventilation systems, to increase energy conservation and decrease energy related costs in a school facility.
6. ☐ Short term enrollment growth.
7. ☑ Replacement of or addition to obsolete buildings in order to provide for a full range of programs consistent with state and approved local requirements.
8. ☐ Transition from court-ordered and approved racial balance school districts to walk-to, so-called, or other school districts.

**SOI Vote Requirement**

☑ I acknowledge that I have reviewed the MSBA's vote requirements for submitting an SOI which are set forth in the Vote Tab of this SOI. I understand that the MSBA requires votes from specific parties/governing bodies, in a specific format using the language provided by the MSBA. Further, I understand that the MSBA requires certified and signed vote documentation to be submitted with the SOI. I acknowledge that my SOI will not be considered complete and, therefore, will not be reviewed by the MSBA unless the required accompanying vote documentation is submitted to the satisfaction of the MSBA.

**Potential Project Scope:** Renovation/ Addition

**Is this SOI the District Priority SOI?** YES

**School name of the District Priority SOI:** William Mitchell

**Is this part of a larger facilities plan?** YES

**If "YES", please provide the following:**

**Facilities Plan Date:** 12/1/2014

**Planning Firm:** HKT Architects 2014; DiNisco Design 2006; Kaestle Boos 1998

**Please provide an overview of the plan including as much detail as necessary to describe the plan, its goals and how the school facility that is the subject of this SOI fits into that plan:**

The scope of this project is to renovate/replace the Mitchell School and increase its capacity to 528 students, for the purpose of addressing extreme overcrowding and other building deficiencies. This project has been identified in several Town facilities plans: Town-wide Comprehensive Facilities Study, Kaestle Boos Associates, Inc. (5/15/1998, KBA); Facilities Master Plan – Town of Needham, DiNisco Design Partnership (11/15/ 2006, DDP); Comprehensive Facilities Assessment- Mitchell & Hillside Schools, Dore & Whittier Architects Inc. (8/22/2011, DWA); and the Pre-Feasibility Study – Mitchell & Hillside Schools, (7/6/2012, DWA.) In addition, Mitchell School is mentioned in a Master Plan update by HKT Architects, Inc. (2014.) The Town of Needham updates its Facilities Master Plan about every decade. The 1998, 2006 and 2014 master plans all have identified the need to renovate/replace the Mitchell School to address overcrowding and other building deficiencies. In addition, a current condition assessment of the Mitchell School was completed by DWA in 2011. The Comprehensive Facilities Assessment report included evaluations by the following professional (A&E) disciplines: Site (Civil and Landscape), Architectural, Structural, Mechanical, Electrical, Plumbing, Fire Protection, Hazardous Materials and Energy Savings, with a cost analysis of both short-term and long-term improvements. The most urgent and immediate maintenance and repair recommendations have been incorporated into the Town's five-year Capital Improvement Planning (CIP) and budgeting process. However, the Facilities Assessment also made clear that the Mitchell School is a high priority for a comprehensive building renovation/ or replacement project, due to the age of the building (60+ years), deficiencies in the size and number of core educational spaces (42% under current MSBA standards for the permanent structure), inaccessibility of the school to handicapped students, noted deficiencies and/or end-of-life conditions in most building systems, poor energy performance, and site constraints. A copy of the Comprehensive Facilities Assessment is found in Appendix B. In 2012, DWA was commissioned to complete a Pre-feasibility Study of the Mitchell and Hillside Schools (2012, Appendix C.) The purpose of this study was to identify potential options for addressing the long-term facilities issues at each school and to initiate a public dialogue about the needs at each facility. We understand that, if this school is selected by MSBA, the feasibility study conducted jointly with the MSBA would restart the evaluation process. During the summer of 2014 the Town of Needham, at its own expense, constructed a modular classroom building adjacent to, but not connected to, the existing Mitchell School building. This 7,000 s.f. addition created five additional classrooms to temporarily reduce, but not permanently solve, the overcrowding problem at the Mitchell school. This addition accommodates two (2) Kindergarten rooms, two (2) half-size Kindergarten-After-School-Experience rooms (KASE) and one Art Room. The two KASE spaces were created by subdividing one of the main rooms into two halves. The former Kindergarten rooms in the existing building have been repurposed into a Music Room and an Occupational Therapy (OT) / Special Education (SPED) room. The former undersized Art room has been repurposed as a reading specialist room and office space for two part time Spanish teachers. The former OT/SPED space has been repurposed into a shared administrative and conference room space. The modular classroom addition is a temporary "band aid" that helps to reduce some of the severe overcrowding at Mitchell while the District awaits a more comprehensive repair and/or replacement of the School. This addition has helped reduce the space deficiency from 42% undersized to about 32% undersized for the Mitchell student population, when compared to current MSBA standards.

**Please provide the current student to teacher ratios at the school facility that is the subject of this SOI: 23 students per teacher**

**Please provide the originally planned student to teacher ratios at the school facility that is the subject of this SOI: 22 students per teacher**

**Does the District have a Master Educational Plan that includes facility goals for this building and all school buildings in District?** YES

**If "YES", please provide the author and date of the District's Master Educational Plan.**

The District's Master Educational Plan is an element of the Town's Master Plan, the most recent update for which occurred in 2014 by HKT Architects. In addition, the following studies have been conducted to address the long-term needs of Hillside School: Comprehensive Facilities Assessment (DWA, 2011); and the Mitchell & Hillside Schools Pre-feasibility Study (DWA, 2012.)

**Is there overcrowding at the school facility?** YES

**If "YES", please describe in detail, including specific examples of the overcrowding.**

Compared to MSBA standards, the Mitchell School is undersized by 42%. (When the new modular classrooms are included, the deficit drops to 32%.) As noted in the Comprehensive Facilities Assessment (DWA, 2011), specific educational spaces are undersized in comparison to current MSBA standards by the following percentages: 1949 Wing (-18%), 1959 wing (-8%), Library Media Center (-25%), Cafeteria (-31%), Gymnasium (-10%) and former art room (-53%.) The only spaces that meet current MSBA standards are two classrooms at the end of the 1969 wing and the temporary modular classrooms installed in 2014.

Additionally, there is a significant lack of remedial/tutorial and special education spaces. Small group instruction often occurs in stairways, corridors and storage rooms. Currently, the reading and spanish teachers share a small office. Students must walk through general education classrooms to access the math coach and special education spaces. Special education parent meetings often occur in spaces that are shared by other service providers, which has created a confidentiality issue for the students being seen at that time. In addition, Occupational Therapy (OT) has limited, shared space for gross motor activities and often has to provide services in the hallway, if at all. As a result, Mitchell is not able to house the OT equipment necessary for some students. This leads to inequity among buildings, with regard to OT services. Moreover, due to the shared use of space by service providers, special education, speech and language, and occupational therapy sessions often are interrupted or displaced by team meetings. Finally, the undersized and inadequate spaces mean that, during the two MCAS administration windows, Mitchell lacks sufficient testing areas to accommodate students whose IEPs require separate testing space.

Due to the lack of appropriate specialized program space, Spanish and Media/Technology education are delivered in a way that compromises the educational program. Twice per week, Physical Education (PE) is taught in the cafeteria, on the stage. This arrangement limits the availability of the stage/cafeteria space for school wide events, or special joint classroom events that need larger spaces to only two afternoons per week. Also, the stage is not handicapped accessible, which limits student access and makes it difficult for the PE teacher to move equipment on or off the stage for class. PE classes are bothered by the noise from the kitchen, the motors from the vending machines and milk cooler and the raising and lowering of tables by the custodian. The Media Center size is problematic because the limited size and specific layout require computer and media classes to run simultaneously within the same space with no sound separation. The school has no separate performance space.

Mitchell does not have adequate space to offer full-day Kindergarten.

Finally, there is inadequate space for administrative activities . The Principal's Office is only accessible via an adjacent conference room. Given the lack of alternative meeting spaces, this conference room is used several times/day by lunch groups, special education and reading testing and assessment, parent/teacher conferences, team meetings, and small group work with students. This is problematic because the Principal, and those who come to see him, must walk through and interrupt these meetings and testing situations. It also limits the Principal's access to the conference room for his own meetings with teacher teams, the TST team, School Council, and parent groups.

To remediate the space shortage at Mitchell School on a temporary basis, the District constructed four temporary modular classrooms at the Mitchell School facility, which opened in Fall, 2014. The modular classrooms house the Kindergarten classes, as well as the KASE and Art.

**Has the district had any recent teacher layoffs or reductions?** YES

**If "YES", how many teaching positions were affected?** 2

**At which schools in the district?** Newman Elementary, Needham High School, Pollard Middle School, Hillside Elementary

**Please describe the types of teacher positions that were eliminated (e.g., art, math, science, physical education, etc.).**

FY13: 1.0 FTE Newman classroom teacher, 0.06 FTE NHS Nurse. FY15: 0.4 Middle School Teacher FY16

Proposed: 0.5 Hillside Kindergarten Teacher

**Has the district had any recent staff layoffs or reductions?** YES

**If "YES", how many staff positions were affected?** 2

**At which schools in the district?** Needham High School, all Elementary

**Please describe the types of staff positions that were eliminated (e.g., guidance, administrative, maintenance, etc.).**

FY13: 1.0 FTE NHS Special Education Teaching Assistant FY15: 1.0 FTE Elementary Teaching Assistant

**Please provide a description of the program modifications as a consequence of these teacher and/or staff reductions, including the impact on district class sizes and curriculum.**

The teacher/staff reductions in FY13 were in response to changes in Newman School enrollment and High School student support services requirements. The changes had no impact on program, class size, or curriculum. The FY15 reductions were due to fiscal constraints, but did not substantially modify the program. The FY16 proposed reduction is in response to projected enrollment.

**Please provide a detailed description of your most recent budget approval process including a description of any budget reductions and the impact of those reductions on the district's school facilities, class sizes, and educational program.**

The budget process begins in September/October, when the School Committee votes budget guidelines. The budget is developed in October-December, with a public hearing and budget review in December - January. The School Committee votes its final budget recommendation at the end of January and the Town Manager's balanced budget proposal (including the School Committee's voted budget, if different) is due to the Finance Committee by January 31. The Finance Committee's recommendation becomes the main motion at Town Meeting. Annual Town Meeting occurs during the first and second week in May. The fiscal year begins July 1. The aforementioned budget reductions do not have an impact on school facilities or class size. Generally, they result in fewer opportunities to engage in District-wide curriculum development; reduce the number of paid co-curricular faculty adviser and coaching opportunities; reduce the amount of professional development resources available to teachers; reduce educational supplies for teachers; and reduce the District's ability to respond to special education van replacement needs.

# General Description

**BRIEF BUILDING HISTORY: Please provide a detailed description of when the original building was built, and the date(s) and project scopes(s) of any additions and renovations (maximum of 5000 characters).**

The Mitchell Elementary School was originally designed in 1949 and constructed in 1949-50 as a one-story brick and steel frame elementary school with a pitched roof and an "I-shaped" floor plan. In 1959, a series of additions were made that included: 1) eight classrooms on the east side of the existing building with two connecting corridors, creating an interior courtyard space, 2) a second Kindergarten room on the southwest corner and 3) a gymnasium on the NW corner of the original building. The 1969 addition included the library, toilets and six classrooms to the northeast end of the 1959 wing. The 1959 and 1969 buildings were constructed with flat roofs.

To remediate the space shortage at Mitchell School on a temporary basis, the District installed four temporary modular classrooms at the Mitchell School facility, which opened in Fall, 2014. The modular classrooms house the Kindergarten classes, as well as the KASE and Art programs.

**TOTAL BUILDING SQUARE FOOTAGE: Please provide the original building square footage PLUS the square footage of any additions.**

49027

**SITE DESCRIPTION: Please provide a detailed description of the current site and any known existing conditions that would impact a potential project at the site. Please note whether there are any other buildings, public or private, that share this current site with the school facility. What is the use(s) of this building(s)? (maximum of 5000 characters).**

The Mitchell Elementary School is located in a residential area of Needham, with its primary address at 187 Brookline St. The 12.47 acre parcel has about 8.35 acres that are viable for the school building, parking and field uses. The site is about twice as long (1,100 ft.) in the east-west axis as it is wide (550 ft.) on the north-south axis. The school building sits roughly in the middle of the lot with a setback of 150 feet to Brookline Street and 120 feet to Tower Ave. The site has about 620 ft. of frontage onto Brookline St. and 45 ft. of frontage at a back entrance on the north side onto Tower Avenue. Each point of access has sidewalks, a car drop-off loop and parking, but there is no interconnecting road between the north and south sides, except for emergency access over broad sidewalks and the playground on the west side of the school. The majority of the Mitchell Elementary School students walk to the school, due to the proximity of houses to the school and the compactness of the Mitchell School District. The neighborhood is zoned as SRB single family residence-B, which allows for quarter acre lot sizes. As a result, it is one of the more densely populated single family districts in Town.

The existing school parcel has a dense stand of trees on the east, where the land drops off by about 25 feet to a wetland area. On the west side, at the edge of the open playing field, there is an adjacent Town-owned lot with a park called "Mitchell Woods," a heavily wooded sloping parcel, which slopes 50 feet down to James Ave.

The site has about 89 car parking spaces. The northern lot with 33 parking spaces, including 3 handicapped spots, is used primarily for teachers. The cul-de-sac accessed from Tower Ave. is used mainly for student drop-off / pick-up by parents. The front entrance loop on Brookline St. is used for student drop-off and pick-up by car. Six parking spaces are on the east side of the Brookline St drive, plus one handicapped space. The rest of the parking spots (49 spaces) are located in a lot that abuts Brookline St to the southwest of the school building. On-street parking is restricted near the school. There is a limited drainage system for moving storm water off the site, however, it does not meet current NPDES stormwater standards.

There is an 80ft x 130ft hard-surfaced play area adjacent to the 1949 wing on the west side of the building, with an

adjacent paved basketball court that was relocated near the back parking lot to make way for the modular classrooms. A playground with swings and play structures is adjacent to this play area and further to the west are two 60 ft baseball diamonds in an open playing field. The school is the only use on this parcel of land.

Utilities serving the school come mainly from Brookline St. There is municipal water and sewer service including: four-inch cast iron water main; a six-inch cement sewer from the original building and a six-inch asbestos cement sewer from the 1968 addition. There is a two-inch gas line in Brookline Street near the school, which is not yet connected to the school. A twenty-year-old, double-walled underground 10,000-gallon oil storage tank is located within the planted circle at the front of the building, with iron supply piping to the basement boiler room.

**ADDRESS OF FACILITY: Please type address, including number, street name and city/town, if available, or describe the location of the site. (Maximum of 300 characters)**

The William Mitchell Elementary School, 187 Brookline Street, Needham, MA 02492

**BUILDING ENVELOPE: Please provide a detailed description of the building envelope, types of construction materials used, and any known problems or existing conditions (maximum of 5000 characters).**

Building Envelope:
The building envelope varies depending upon the phase of construction. There is little or no insulation within the walls and the exterior brick walls are in fair condition with some areas in poor condition. The original structure shows the least deterioration, with a small amount of efflorescence and brick decay. The 1959 addition shows some efflorescence and fungal growth on the exterior and there is evidence of brick settlement and cracking in several locations. Deterioration of the exterior surface was observed in areas of the 1959 and 1969 additions. Repointing is needed in many areas.
All of the window glazing within the building is single glazed and therefore very energy inefficient. Windows in the original building are steel sash with 'hopper style' venting at both the top and bottom of the window units. In the 1959 addition, the windows are a mix of steel frame and wood frame. Several of the wood windows are close to the grade and show signs of wood rot. The 1969 wing metal frame windows have evidence of rust and are allowing water to enter some of the window frames. The building envelope is very energy inefficient, when compared to contemporary codes and energy standards. Comprehensive replacement of all windows and most walls would be required to meet contemporary energy codes.
Grills and vents around the school are damaged and are being replaced under the current maintenance plan, as these are affecting the performance of existing mechanical systems. Many exterior doors around the building have been replaced; however these new insulated fiberglass panel doors have been set within the existing metal frames, which are in poor condition. Some of the remaining existing doors are original to the building and further replacement is required.

Building Structure:
1949 Building - The original building was constructed about 4 ft above grade, with a utility basement for boilers and storage at the front of the building and a crawl space beneath the rest of the building. Foundations are traditional, cast-in-place concrete with interior concrete pilasters on footings and concrete walls around the perimeter of the structure. The ground floor structure consists of exterior masonry walls and eight-inch wide flange steel columns and beams supporting roof framing of trusses with eight-inch and ten-inch steel purlins. The roof substrate has 1-½ inch wood planking spiked to the purlins and trusses. The exterior walls appear to be solid brick with steel lintels supporting the brick veneer.
1959 Addition – The single story wing has a flat roof. Foundations are traditional cast-in-place concrete with a four-inch cast-in-place concrete un-insulated floor slab. The roof framing is supported on steel columns both on the corridor and exterior. Twelve-inch girders and ten-inch deep steel beams support fourteen-inch deep open web steel joists thirty – inches on center with perlite on steel-tex decking. The exterior walls have curtain wall with masonry to sill level consisting of various materials including solid brick and concrete breeze block. Masonry cavities vary from one-inch to two –inches, typically without any insulation.
1969 Addition – This single-story flat-roofed classroom section has traditional un-insulated cast-in-place concrete foundations and a four-inch un-insulated slab on grade. Steel columns and beams support open web steel joists at four-feet on center and 1- ½ inch deep steel decking. The structural frame is in sound condition, but would not meet

contemporary seismic code requirements. While the roof probably meets current loading requirements, any new roof top equipment would require structural assessment prior to installation. The building was not designed for the addition of any future stories. Any major renovation would require lateral stabilization of the exterior and interior masonry walls to meet contemporary seismic codes and limit removal of any existing lateral bracing and walls within the structure.

Roof:
The 1949 building has a pitched roof with asphalt shingles, while both of the additions have flat, internally-drained roof systems with built-up roofing. The asphalt shingle roof is about ten-years old, while the flat roof sections of the building are original to their phase of construction. There was approximately 2-3" of insulation above the ceiling in the original building, and an additional 6 to 8 inches of insulation were added last summer to improve energy efficiency and maintain better temperature control of these classrooms. The flat roof additions have only 2 inches of rigid insulation on top of the metal roof deck with built-up asphalt and gravel roofing materials. The rigid roof insulation thickness would need to triple in depth to meet contemporary codes. In conclusion, the envelope of the building is reaching the end of its useful life and does not meet contemporary energy code requirements.

See Attachment A.

**Has there been a Major Repair or Replacement of the EXTERIOR WALLS?** YES
**Year of Last Major Repair or Replacement:(YYYY)** 2001
**Description of Last Major Repair or Replacement:**
The exterior of the Mitchell school was painted, in its entirety, in 2012. In 2000 and 2001, major structural repairs were made to the concrete block walls between Room 22 and 23 and Rooms 20 and 21.

---

**Roof Section** A
**Is the District seeking replacement of the Roof Section?** YES
**Area of Section (square feet)** 20664
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
1949 wing: Pitched roof with asphalt shingles
**Age of Section (number of years since the Roof was installed or replaced)** 18
**Description of repairs, if applicable, in the last three years. Include year of repair:**
The sloped roof was last replaced in 1997.

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**Roof Section** B
**Is the District seeking replacement of the Roof Section?** YES
**Area of Section (square feet)** 17280
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
1959 wing: flat, internally-drained roof systems with built-up asphalt and gravel roofing
**Age of Section (number of years since the Roof was installed or replaced)** 8
**Description of repairs, if applicable, in the last three years. Include year of repair:**
All flat roofing was replaced in 2007. The new roof has a life expectancy of 20 years and should be replaced in 2027.

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**Roof Section** C
**Is the District seeking replacement of the Roof Section?** NO
**Area of Section (square feet)** 11083
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
1969 wing: flat, internally-drained roof systems with built-up asphalt and gravel roofing
**Age of Section (number of years since the Roof was installed or replaced)** 8
**Description of repairs, if applicable, in the last three years. Include year of repair:**
All flat roofing was replaced in 2007. The new roof has a life expectancy of 20 years and should be replaced in 2027.

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**Roof Section** D
**Is the District seeking replacement of the Roof Section?**

**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** E
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** F
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** G
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** H
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** I
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Roof Section** J
**Is the District seeking replacement of the Roof Section?**
**Area of Section (square feet)**
**Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)**
**Age of Section (number of years since the Roof was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** A
**Is the District seeking replacement of the Windows Section?** YES
**Windows in Section (count)** 76
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
1949 wing: steel sash with 'hopper style' venting; All windows single glazed

**Age of Section (number of years since the Windows were installed or replaced)** 61
**Description of repairs, if applicable, in the last three years. Include year of repair:**
Original windows.

**Window Section** B
**Is the District seeking replacement of the Windows Section?** YES
**Windows in Section (count)** 85
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
1959 wing: mix of steel frame and wood frame; All windows single glazed
**Age of Section (number of years since the Windows were installed or replaced)** 56
**Description of repairs, if applicable, in the last three years. Include year of repair:**
All windows in the gym were replaced in 2006 with polycarbonate windows. In 2012, the gym windows were replaced with thermal pane windows.

**Window Section** C
**Is the District seeking replacement of the Windows Section?** YES
**Windows in Section (count)** 18
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
1969 wing: metal frame; All windows single glazed
**Age of Section (number of years since the Windows were installed or replaced)** 46
**Description of repairs, if applicable, in the last three years. Include year of repair:**
Original windows

**Window Section** D
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** E
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** F
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** G
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section** H

**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section I**
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Window Section J**
**Is the District seeking replacement of the Windows Section?**
**Windows in Section (count)**
**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))**
**Age of Section (number of years since the Windows were installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**MECHANICAL and ELECTRICAL SYSTEMS: Please provide a detailed description of the current mechanical and electrical systems and any known problems or existing conditions (maximum of 5000 characters).**

Mechanical Systems

The building is heated with two, cast iron, sectional-type HB Smith low-pressure steam boilers, which burn #2 fuel oil. One boiler was replaced in 1997. The total capacity of both boilers is approximately 6,000 lbs/h of steam or 5,700 MBH. The fuel system for the #2 oil is supplied by a 22-year old 10,000 gallon underground storage tank (UST). Fuel oil enters the boiler room and is distributed to each boiler by three fuel oil pumps. Distribution piping in the boiler room is about 15 years old, but the piping is original elsewhere in the building and is in fair condition. One new boiler was installed in 1997, but the other boiler is about 10 years older. In 2013, gas service and salvaged dual fuel burners from the Pollard School were installed to enable use of gas or oil for heating the building.

There is no central air conditioning system within the building. The classrooms get outdoor air and heating from the 1968 floor-mounted unit ventilators. General heating is provided by finned tube radiators and convectors along the perimeter walls of the building. The radiators and convectors are original to their phase of construction. The 1968 addition has a hot water hydronic loop, which serves the unit ventilators in that section of the building and uneven heating in the most remote spaces is an ongoing problem. Some classrooms have window-mounted air conditioners, which have blocked or used operable windows within the room. These air conditioners are in fair or good condition. The modular classrooms have electric heat pumps (6 units) that provide both heating and cooling. Generally speaking, all of the HVAC systems (with the exception of those in the modular units) are in poor to fair condition and reaching the end of their useful lives.

Electrical Systems

The building is supplied by an underground electrical service with a 208Y/120 Volt, 3-phase, and 4-wire supply. In the basement, the electric service is split into a metered 400 Amp section and a metered 200 Amp and 100 Amp section. The panels and switches appear to be original. All panels are full and there are no empty circuits or spaces for new circuits. Certain circuits within the school trip the breakers during AC operation, and no expanded service to classrooms for enhanced technology is currently possible. The circuit breakers and main service are obsolete and unavailable, making maintenance impossible. Upgrades would require comprehensive replacement of the electrical service, and the existing electrical service is not adequate to support the growing technology and HVAC needs of the school.

The fire alarm system is a zoned analog type system manufactured by FCI, in fair condition. System components include outside beacon, Knox-box, pull stations, heat detectors, horn /strobes. The system does not have smoke detectors, only heat detectors, but is in good operating condition.

The school has a public address system with an integrated bell, which operates throughout the building, and functions

properly. A clock system is in place with 90% of the clocks functioning properly.
The lighting within most of the classrooms is surface-mounted 2-lamp 1ft x 4ft fluorescent light strips with prismatic lens placed in rows about 4 to 8 feet apart. The lighting is functional and in fair condition throughout the school.
The modular classrooms have their own independent 600 amp electric service. Heating, cooling and lighting are all provided by electricity.

See Attachment A

**Boiler Section** 1
**Is the District seeking replacement of the Boiler?** YES
**Is there more than one boiler room in the School?** NO
**What percentage of the School is heated by the Boiler?** 100
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
Heating Oil
**Age of Boiler (number of years since the Boiler was installed or replaced)** 6
**Description of repairs, if applicable, in the last three years. Include year of repair:**
Oil tanks were replaced in 1992-1993. In 2009, Boiler Number 1 was replaced and the boilers, univents, and air handling units were upgraded to digital control. Also in 2009, the piping in crawl spaces and in the boiler room were insulated, exterior air leaks were sealed, and a Rentar catalyst unit was installed. In 2013, boiler burners converted to dual fuel oil and natural gas-fired units and hot water heater replaced with natural gas-fired unit.

**Boiler Section** 2
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 3
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 4
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 5
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 6
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 7
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 8
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 9
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Boiler Section** 10
**Is the District seeking replacement of the Boiler?**
**Is there more than one boiler room in the School?**
**What percentage of the School is heated by the Boiler?**
**Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)**
**Age of Boiler (number of years since the Boiler was installed or replaced)**
**Description of repairs, if applicable, in the last three years. Include year of repair:**

**Has there been a Major Repair or Replacement of the HVAC SYSTEM?** YES
**Year of Last Major Repair or Replacement:(YYYY)** 2005
**Description of Last Major Repair or Replacement:**
Partial repair/replacement: Window air conditioning units were installed in 2004 and 2005. The rooftop HVAC unit above the Media Center was replaced in 1998. Modular classroom equipment is all new in 2014.

**Has there been a Major Repair or Replacement of the ELECTRICAL SERVICES AND DISTRIBUTION SYSTEM?** YES
**Year of Last Major Repair or Replacement:(YYYY)** 2009
**Description of Last Major Repair or Replacement:**
In 2006, there was an electrical update that included all exit signs and emergency lighting, safety upgrades to several electric distribution panels, rewiring 1 main distribution circuit, rebuilding 1 flush wall mounted electrical sub-panel in the

1968 corridor, and replacing cafeteria fans. The kitchen was wired for a new convection oven in 2009. The intercom, clock, and bells were updated in 1997, and the lights and ceilings were updated in 1983-1985. The media center was rewired in 2005. The electrical fixtures in the Kindergarten were replaced in 1985. Modular classroom service is all new in 2014.

**BUILDING INTERIOR: Please provide a detailed description of the current building interior including a description of the flooring systems, finishes, ceilings, lighting, etc. (maximum of 5000 characters).**

Interior

The floor in the main corridor of the original 1949 building is 1ft x 1ft ceramic tile. It is original to the building and in good condition, although this floor can be slippery when wet, since it has aged and gotten smoother over the years. Classrooms and offices within this wing have VCT flooring in good condition. The flooring throughout the corridors and classrooms in the 1959 & 1969 additions are Vinyl Composite Tile (VCT) and are well maintained. The low-pile carpet in the Media Center is in good condition, except near the entrance to the room where some of the carpet squares are lifting due to heavy wear. Bathroom floors are ceramic tile, in good condition. The gymnasium floor is hardwood, in good condition. Many of the interior walls in the original wing are constructed of 4" steel stud with plaster finish. They are generally in good condition, except for a few locations with cracking or peeling due to prior water damage. In the 1959 addition, the interior walls are constructed of structural CMU block walls. Because of the limited insulation within the exterior walls and single-glazed windows, it can be uncomfortable to sit near the exterior walls in winter.

Most ceilings are in good condition although water damage and staining from HVAC units is visible in certain areas. Glue applied perforated ceiling tiles are installed in several of the original areas of the building and are in poor condition. Ceiling tiles in the school kitchen are not washable and therefore inappropriate for that location.

The interior doors throughout the building are largely original to their date of construction. From a handicapped accessibility point of view, many doors in the school lack the clear floor area and proper hardware to meet contemporary codes. Few of the interior doors in the school are fire rated, as would now be required. Many of the doors lack proper handles and panic hardware to meet contemporary accessibility and egress codes. Comprehensive replacement of all interior doors would likely be required as a part of any major renovation.

Building codes have changed significantly since the original construction and additions to the Mitchell School. While the building has several ramped access pathways into the building, not all of the spaces within the single story building are accessible for people with disabilities. The Gymnasium and Music room are only accessible by stairs or by walking outside and around the building. The PE program is forced to use the stage in the Cafeteria twice per week, due to lack of available space in the building. This elevated platform has no ramp or lift access. Retrofits have been attempted to make the bathrooms partially compliant with ADA and MAAB criteria, but many restrooms are still missing proper entrance clearances, stall sizes, grab bars, insulated pipes at the sinks, urinals at proper heights, dispensers at proper heights, entrance and turning radii clearances, pull side clearances at entry doors and the correct door hardware.

Technology

Technology distribution through the building has been retrofitted over the past two decades and is minimal in comparison to other modern classrooms in the District and current MSBA standards. Technology distribution is further constrained by the lack of/and improper location of many power receptacles, as well as the inability to add new power receptacles. White boards typically require rubber floor strips to hide power and IT cables. The school does not have sufficient available space to have a full computer lab. Therefore, an area within the Media Center contains multiple computers for training, but this area has no sound separating walls.

Hazardous Materials

The Public Facilities Department has an ongoing plan for the assessment and remediation of hazardous materials in the school. The floor tiles contain asbestos (ACM) and a program of phased remediation and replacement has been in place for the past decade. Hard joint insulation of heating pipes was found to contain asbestos in various locations. The asbestos has been remediated and removed from the boiler room, but ACM's still remain in the utility tunnels. The exterior and interior window framing and glazing caulking are assumed to contain ACM's and PCB's and would require abatement as a part of repair / replacement. Other locations assumed to contain asbestos are wall and door framing caulking, unit vent grill caulking, blackboard glue, underground waste water pipes, damproofing on foundation wall, and thru-wall flashing.

Tubes within light fixtures, exit signs, switches, and thermostats are assumed to contain Mercury. The painted surfaces are assumed to contain lead. All of these materials would need to be addressed during a comprehensive repair or replacement project.

**PROGRAMS and OPERATIONS: Please provide a detailed description of the current programs offered and grades served, and indicate whether there are program components that cannot be offered due to facility constraints, operational constraints, etc. (maximum of 5000 characters).**

Students in Grades K-5 receive the regular elementary curriculum, including Art, Music, Media, Technology and Physical Education instruction. Special needs instruction is provided on an integrated and pull-out basis.

Currently, Mitchell does not have adequate space to offer full-day Kindergarten. Additionally, due to lack of space, small group instruction often occurs in inappropriate locations, such as stairways, corridors and storage rooms and multiple teachers share special education classroom spaces. The use of shared space to hold parent meetings has created a confidentiality issue for the students being seen at that time. In additional Occupational Therapy (OT) has limited, shared space for gross motor activities and often has to provide services in the hallway, if at all. As a result, Mitchell is not able to house the OT equipment necessary for some students. This leads to inequity among buildings, with regard to OT services. Moreover, due to the shared use of space by service providers, special education, speech and language, and occupational therapy sessions often are interrupted or displaced by team meetings. Finally, the undersized and inadequate spaces mean that, during the two MCAS administration windows, Mitchell lacks sufficient testing areas to accommodate students whose IEPs require separate testing space.

Due to the lack of appropriate specialized program space, Spanish and Media/Technology education are delivered in a way that compromises the educational program. Twice per week, Physical Education (PE) is taught in the cafeteria, on the stage. This arrangement limits the availability of the stage/cafeteria space for school wide events, or special joint classroom events that need larger spaces to only two afternoons per week. Also, the stage is not handicapped accessible, which limits student access and makes it difficult for the PE teacher to move equipment on or off the stage for class. PE classes are bothered by the noise from the kitchen, the motors from the vending machines and milk cooler and the raising and lowering of tables by the custodian. The Media Center size is problematic because the limited size and configuration for computer and media classes to run simultaneously within the same space with no sound separation. The school has no separate performance space.

In addition, there is inadequate space for administrative activities. The Principal's Office is only accessible via an adjacent conference room. Given the lack of alternative meeting spaces, this conference room is used several times/day by lunch groups, special education and reading testing and assessment, parent/teacher conferences, team meetings, and small group work with students. This is problematic because the Principal, and those who come to see him, must walk through and interrupt these meetings and testing situations. It also limits the Principal's access to the conference room for his own meetings with teacher teams, the TST team, School Council, and parent groups. The Psychologist works in a 50 s.f. space next to the nurse's office and bathroom, where work is distracted by conversations and bathroom noises.

Finally, other building deficiencies have a negative impact on the educational program, including: a) the inadequate electrical system, which limits the ability to add technology, since there are no available circuits in any of the electrical panels, or to add hubs that make the building wireless, b) the heating system is insufficient, requiring children to wear coats in classrooms where the temperature drops below 68 degrees, and c) the intercom does not reach all areas of the school in an emergency.

The temporary modular classrooms are separate from the main school requiring students to go out side to get to the art room and for kindergarten classrooms.

**CORE EDUCATIONAL SPACES: Please provide a detailed description of the Core Educational Spaces within the facility, a description of the number and sizes (in square feet) of classrooms, a description of science**

**rooms/labs including ages and most recent updates, a description of the cafeteria, gym and/or auditorium and a description of the media center/library (maximum of 5000 characters).**

The core educational spaces include the following:

Classrooms:
1959 wing (870 avg s.f.): 4 Grade 3, 1 Grade 4, 2 Grade 2, 1 Special Education
1949 wing (780 avg s.f.): 2 Grade 2, 4 Grade 1, 1 Grade 5 (Reading Room, Music Room & SPED Room)
1969 wing (980 avg s.f.): 3 Grade 4, 3 Grade 5
No science room
Four temporary modular classrooms opened in Fall 2014, each 1200 sf: 2 Grade K, 1 Art, 1 classroom split in half for 2 KASE rooms.

Common Areas:
1 Gymnasium
1 Cafeteria/Auditorium (Music instruction delivered on stage, since no dedicated music room), 2400 sf.
1 Kitchen
1 Media Center

Student Support/Other Instructional:
2 Special Education/ Guidance/ Occupational Therapy
1 Nurse Suite

Administration:
3 Administration
1 Teacher Break Room
1 Storage

**CAPACITY and UTILIZATION: Please provide a detailed description of the current capacity and utilization of the school facility. If the school is overcrowded, please describe steps taken by the administration to address capacity issues. Please also describe in detail any spaces that have been converted from their intended use to be used as classroom space (maximum of 5000 characters).**

The calculated capacity of the school is 272 students, based on the total area noted in the Comprehensive Facilities Assessment (DWA, 2011) and current MSBA standards. The current enrollment is 490 students, creating a space deficiency of over 42%. As noted in the Assessment report, all of the existing educational spaces are undersized by the following percentages: 1949 Wing (-18%), 1959 wing (-8%), Library Media Center (-25%), Cafeteria (-31%), Gymnasium (-10%), and former art space (-53%.) The only spaces that meet current MSBA standards are two classrooms at the end of the 1969 wing, and the new classrooms in the modular classroom building. The Media Center also is used concurrently for computer and media instruction.

The administration has addressed the general lack of remedial/tutorial and special education spaces by using non-traditional spaces for small group instruction, such as stairways, corridors and storage rooms. The use of moveable partitions allows special educators to share the same space, while working with students at the same time. Similarly, partitions are used to screen off a classroom from students who walk through the room to access specialized education support. The need for space for student lunch groups and testing during MCAS administration periods has been met by setting up tables and chairs in hallways and entrances. Guidance and other support services meet with students in the repurposed Kindergarten room, but the office style dividers do not provide acoustical separation of the multiple specialties in this room.

To mitigate the lack of storage, many teacher materials have been moved to the basement, or are stored in hallways or mechanical/electrical spaces. In addition, a storage shed was installed near the building, to store auditorium chairs.

To remediate the space shortage at Mitchell School on a temporary basis, the District installed four temporary modular classrooms at the Mitchell School facility, which opened in Fall, 2014. The modular classrooms house the Kindergarten classes, as well as the KASE Program and Art. The rooms previously occupied in the building have been repurposed for Music, Special Education, Occupational Therapy and Reading.

**MAINTENANCE and CAPITAL REPAIR: Please provide a detailed description of the district's current maintenance practices, its capital repair program, and the maintenance program in place at the facility that is the subject of this SOI. Please include specific examples of capital repair projects undertaken in the past, including any override or debt exclusion votes that were necessary (maximum of 5000 characters).**

The Town implemented a structured preventative maintenance program in 2009. This program provides for the quarterly and/or annual maintenance of HVAC, water heating, plumbing, electrical, and general maintenance systems. The Town also funds an annual facility maintenance capital article to address the needs of smaller repairs such as duct cleaning, asbestos abatement, flooring replacement, and HVAC upgrades.

A chronology of capital repairs to the facility follows:

1997 – The intercom, clock, and bells were updated
1998 – Hot water tank was installed
1999 – Master fire alarm panel was upgraded
2000, 2001 – Major structural repairs to concrete block exterior walls in some parts of the building
2004 – Rigid insulation was installed to resolve drafts
2004, 2005 – Window air conditioning units were installed
2004, 2006 – Electrical updates and exterior light fixtures were added
2005 – Media Center was rewired
2006 – Entrance ramp outside room 1 was replaced
2007 – Flat roofing was replaced
2007 – Playground was re-patched and paved, and the rear entrance ramp and handrail were replaced
2009 – Boiler #1 was replaced and mechanical system was upgraded
2009 – Systemic plumbing corrections were made including installing low flow toilets
2009 - In 2009 asbestos abatement was undertaken, floor tiles were replaced, and interior walls were painted
2011 – Motion sensors installed
2012 – Exterior doors were replaced
2012 – All windows in the gym were replaced with polycarbonate windows
2013 - Replaced hot water heater with gas-fired unit, converted boiler burners to natural gas units, asbestos abatement and re-insulation, repaired granite steps at main entrance, installed bathroom occupancy sensors, installed rear door awning, installed induction lights in parking lot, interior painting.
2014 - new modular classrooms installed: free standing, 7,000 s.f. addition, used for 2 Grade K rooms, 1 Art room and one room divided in half for 2 KASE rooms. Former spaces in the building were repurposed for music, special education/occupational therapy, reading, and administrative meeting space.

A Comprehensive Facilities Assessment study was completed in 2011 for the Hillside, Mitchell, and Pollard Schools. Since most of Mitchell School's building systems are nearing the end of life, the study recommended that major upgrades be deferred to a comprehensive school renovation project. Ongoing maintenance is limited to those essential repairs, which are needed to extend the useful life of this facility, and are funded through the Town's five-year Capital Improvement Plan (CIP.)

**Priority 2**

***Question 1: Please describe the existing conditions that constitute severe overcrowding.***

The calculated capacity of the school is 272 students, based on the total area noted in the Comprehensive Facilities Assessment (DWA, 2011) and current MSBA standards. The current enrollment is 490 students, creating a space deficiency of over 42%. As noted in the Assessment report, the existing educational spaces are undersized by the following percentages: 1949 Wing (-18%), 1959 wing (-8%), Library Media Center (-25%), Cafeteria (-31%), Gymnasium (-10%) and former Art space (-53%.) The only spaces that meet current MSBA standards are two classrooms at the end of the 1969 wing, plus the new classrooms in the modular building.

The number and configuration of classroom spaces for Spanish, Science and Media/Instruction are inadequate for the educational program. The size and configuration of the Media Center force computer and media classes to run simultaneously within the same space, with no sound separation. The school has no separate performance space in the building.

Additionally, there are insufficient remedial/tutorial and special education spaces. Small group instruction often occurs in non-traditional areas, such as stairways, corridors and storage rooms. Teachers often share office space. The Reading and Spanish teachers share a small office. In addition, students must walk through general education classrooms to access the math room and special education spaces. Special education parent meetings often occur in spaces that are shared by other service providers, which has created a confidentiality issue for the students being seen at that time. In additional Occupational Therapy (OT) has limited, shared space for gross motor activities and often has to provide services in the hallway, if at all. As a result, Mitchell is not able to house the OT equipment necessary for some students. This leads to inequity among buildings, with regard to OT services. Moreover, due to the shared use of space by service providers, special education, speech and language, and occupational therapy sessions often are interrupted or displaced by team meetings. Finally, the undersized and inadequate spaces mean that, during the two MCAS administration windows, Mitchell lacks sufficient testing areas to accommodate students whose IEPs require separate testing space.

Mitchell does not have adequate space to offer full-day Kindergarten. Additionally, the Kindergarten, KASE and Art classrooms are separated from the main building (in the modular classrooms), requiring students and teachers to go outside Art. There is no continuous covered walkway to shield students from inclement weather.

Finally, there is inadequate space for storage and administrative activities. The Principal's Office is only accessible via an adjacent conference room. Given the lack of alternative meeting spaces, this conference room is used several times/day by lunch groups, special education and reading testing and assessment, parent/teacher conferences, team meetings, and small group work with students. This is problematic because the Principal, and those who come to see him, must walk through and interrupt these meetings and testing situations. It also limits the Principal's access to the conference room for his own meetings with teacher teams, the TST team, School Council, and parent groups.

**Priority 2**

***Question 2: Please describe the measures the School District has taken to mitigate the problem(s) described above.***

To help with overcrowding, the District constructed two temporary modular classroom on the paved playground space adjacent to the school during the Summer of 2014. These modular classrooms accommodate (2) Grade K classrooms, (2) half-sized KASE classrooms and (1) Art room. The rooms previously occupied by these classes have been repainted and refurnished for use as (1) Music room, (1) Special Education/OT room, (1) Reading room and (1) Administration/conference room.

Additionally, since the Gym is small, PE instruction occurs twice per week on the stage in the Cafeteria, which has resulted in compromises to the educational program. Staff must re-arrange the stage daily to accommodate the morning band classes, followed by PE classes and then band classes again the next morning. Before-school string classes have been moved to the Media Center, which limits Media Center prep time and displaces the math groups that otherwise would meet in the Media Center. The Media Center also is used concurrently for computer and media instruction.

The administration has addressed the general lack of remedial/tutorial and special education spaces by using non-traditional spaces for small group instruction, such as stairways, corridors and storage rooms. The use of moveable partitions allows special educators to share the same space, while working with students. Similarly, partitions are used to screen off a classroom from students who walk through the room to access reading or specialized education support. The necessary space for student lunch groups and testing during MCAS administration periods is provided by setting up tables and chairs in hallways and entrances. Guidance and other support services sometimes meet with students in the hallway behind screens.

Additionally, to address the need for storage space, many teacher materials have been moved to the basement, or are stored in hallways or mechanical/electrical spaces. In addition, a storage shed was installed near the building, to store auditorium chairs and janitorial supplies.

**Priority 2**

***Question 3: Please provide a detailed explanation of the impact of the problem described in this priority on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem identified.***

The lack of sufficient space and deficiencies of the facility have created disruptions and compromises to the educational program at Mitchell School.

As noted above, classrooms are undersized and small group instruction is often delivered in stairways, corridors and storage rooms. The dual use of the core spaces often results in one educational program area being shortchanged, or creates conditions that are not conducive to learning. For example, PE instruction is partially delivered on the stage in the cafeteria. This arrangement limits the availability of the stage/cafeteria space for school wide events, or special joint classroom events that need larger spaces. The stage and gym are not accessible, which limits student access and makes it difficult for the gym teacher to move equipment off and on the stage for the gym classes. The lunch-time use of the cafeteria limits the ability of the gym teacher to give extra help to students during the teacher's planning time. The concurrent use of the Media Center for computer and media education creates a congested and noisy learning environment, which is distracting for students.

Additionally, there is a significant lack of remedial/tutorial and special education space. Small group instruction occurs in places which lack privacy and are distracting to students. The fact that classrooms are used as passageways to other spaces, also creates disruption to the learning environment. The use of shared office space for parent meetings has created a confidentiality issue for the students being seen at that time. Finally, the use of hallways and entrances for MCAS testing creates space, but not an environment, which is conducive to focus, concentration and student performance.

Finally, building deficiencies hamper effective administration of the building. As noted above, there is inadequate space for storage and administrative meetings, lunch groups, special education and reading testing and assessment, parent/teacher conferences, team meetings, and small group work with students. The Principal's conference room doubles as an entrance way to the Principal's Office, as well as a space for meetings. The lack of appropriate meeting space leads to disruption and over-scheduling of the conference room. It also limits the Principal's access to the space for his own meetings with teacher teams, the TST team, School Council, and parent groups.

To remediate the space shortage at Mitchell School on a temporary basis, the District installed four temporary modular classrooms at the Mitchell School facility, which opened in Fall, 2014. The modular classrooms house the Kindergarten classes, as well as the KASE and Art programs.

**Please also provide the following:**

**Cafeteria Seating Capacity:** 176

**Number of lunch seatings per day:** 6

**Are modular units currently present on-site and being used for classroom space?:** YES

**If "YES", indicate the number of years that the modular units have been in use:** 1

**Number of Modular Units:** 4

**Classroom count in Modular Units:** 4

**Seating Capacity of Modular classrooms:** 22

**What was the original anticipated useful life in years of the modular units when they were installed?:** 20

**Have non-traditional classroom spaces been converted to be used for classroom space?:** YES

**If "YES", indicate the number of non-traditional classroom spaces in use:** 3

**Please provide a description of each non-traditional classroom space, its originally-intended use and how it is currently used (maximum of 1000 characters).:**

Yes. PE classes are delivered on the stage twice per week, due to the lack of space and the presence of two PE teachers in one small Gymnasium. In addition, the lack of remedial/tutorial and special education spaces has resulted in the use of non-traditional spaces for small group instruction, such as stairways, corridors and storage rooms. The Media Center has dual use for computer training and media/library use.

**Please explain any recent changes to the district's educational program, school assignment polices, grade configurations, class size policy, school closures, changes in administrative space, or any other changes that impact the district's enrollment capacity (maximum of 5000 characters).:**

The School District is committed to a K-5, 6-8, and 9-12 educational program and grade configuration. In 2009, consistent with this policy and to provide adequate space for the growing secondary enrollment, the District opened the High Rock School, a Sixth Grade Center designed to meet the needs of new middle school students, who are transitioning from five elementary schools into one middle school building. After completing the Grade 6 at High Rock, students continue their middle school experience at the Pollard Middle School, where they attend 7th and 8th Grades before transitioning to Needham High School. Both the 6th Grade Center and Pollard Middle Schools are at full capacity. The modular classrooms at Pollard and fully utilized now for 7th and 8th Grades.

Although the stand-alone Sixth Grade Center is a unique component of Needham's middle school model, it has been successfully integrated into the District's overall program and provides a gateway to the middle school experience for our students.

Finally, the School Committee is committed to providing full-day Kindergarten in Needham, through the successful renovation and reconstruction of its two remaining elementary schools. Due to a longstanding lack of space in the elementary schools, Needham has been unable to offer full-day Kindergarten to eligible students. Renovation and/or construction projects at the Hillside and Mitchell schools would ideally incorporate sufficient space to allow full-day Kindergarten in all of the District's schools.

**What are the district's current class size policies (maximum of 500 characters)?:**

School Committee Policy #IHB specifies that student/teacher ratios should be within the guidelines: 18-22 in Grades K-3, 20-24 in Grades 4-5, and 'reasonable class size' in Grades 6-12. These guidelines are recommendations, however, rather than absolute limits requiring strict, literal adherence.

**Priority 7**

***Question 1: Please provide a detailed description of the programs not currently available due to facility constraints, the state or local requirement for such programs, and the facility limitations precluding the programs from being offered.***

The physical constraints of the Mitchell School have impeded the educational program in a variety of ways.

As previously noted, classrooms are undersized, the number and configuration of spaces are problematic, and there is a significant lack of small group instruction space for remedial/ tutorial and special education. Some small group spaces are only accessible by walking through classrooms, which creates disruption in the learning environment. Occupational Therapy has inadequate space for gross motor activities. The school lacks a performance center, which limits student access to creative arts and other school-wide educational programming. Additionally, there is no dedicated computer lab, due to space constraints, and the size and configuration of the Media Center are problematic. Finally, there is inadequate space to implement full-day Kindergarten.

Deficiencies in the electrical system also cause periodic blackouts, which disrupt educational programming for students. As previously noted, the electrical system is largely original to the building, with no empty circuits. Overloads, created during AC operation, cause the circuits to trip and for portions of the school to lose electricity. The circuit breakers and main service are obsolete and unavailable, making maintenance impossible. Additionally, the lack of/ improper location of power receptacles throughout the building, limit future expansion of electricity and technology. The electrical system and most other building systems are nearing the end of their useful lives. The modular classrooms required a new independent electrical service, so as not to over tax the existing school.

The building is not equipped with an automatic sprinkler system. The existing water line is not large enough to provide sprinklers and the low floor to ceiling heights would likely constrain the installation of sprinklers. A fire suppression system is an important life safety system that should be in place in all public buildings.

The lack of an elevator and specific aspects of the building's layout mean that some areas of the School are not accessible by people with disabilities. The Gymnasium and Music room are only accessible by stairs or by walking outside and around the building. The PE program is forced to use the stage in the Cafeteria, which has no ramp or lift access. Many restrooms lack proper entrance clearances, fixtures and door hardware for accessibility purposes. This lack of accessibility limits access to the educational program for some children.

Finally, there are an insufficient number of meeting and storage spaces in the building. The Principal's Conference Room is used constantly by staff, students and parents. The use of this room also limits access to the Principal's Office, which can only be entered through the conference space. Storage is inadequate for the size of the facility.

**Priority 7**

***Question 2: Please describe the measures the district has taken or is planning to take in the immediate future to mitigate the problem(s) described above.***

The Mitchell School has taken measures to mitigate many of the deficiencies noted above, but has not been able to address all problem areas.

To accommodate growing enrollment, the District constructed additions to the School in 1959 and 1969, which added classrooms, a gymnasium and a library. Additionally, four temporary modular classrooms opened in Fall 2014, to provide additional space for Kindergarten and art. However, teaching and learning continues in a school building that is approximately 42% undersized, for its population. (With the temporary modular units, the building is 32% undersized.) Future enrollment growth would likely require increases in class size, and/or moving music back to the stage. Additionally, small group instruction occurs in stairways, corridors and storage rooms, and classrooms. Service providers share program offices, which also are used for parent meetings.

Due to a lack of common space, the gymnasium, cafeteria/auditorium and Media Centers all are put to dual use, which often leads to conflicts and one program area being shortchanged. The lack of a dedicated computer lab has been partially mitigated by the use of the Media Center for computer instruction, however, the lack of sound separating walls make this a noisy environment for computer training and media instruction.

The lack of administrative and storage space has been only partially mitigated by the shared use of conference space (such as the Principal's conference room), and the use of hallways or mechanical/electrical spaces to store items.

The school has not been able, however, to mitigate deficiencies in many of the building systems or other areas. The Comprehensive Facilities Assessment indicated that a comprehensive repair/ addition project would be needed to address the following significant deficiencies: the age of the building (60+ years), deficiencies in the size and number of core educational spaces, inaccessibility to bathroom and certain core spaces, end-of-life conditions in most building systems, poor energy performance, site constraints, lack of compliance with contemporary building codes, such as automatic sprinklers, seismic structural design and roof snow loading. The report recommended a comprehensive renovation/addition project to address these needs, as well as the associated code-related upgrades that would be triggered, including life safety, energy efficiency, and accessibility improvements.

**Priority 7**

***Question 3: Please provide a detailed explanation of the impact of the problem described in this priority on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem identified.***

Although Mitchell is able to provide its educational program, the deficiencies of the facility and the resulting mitigating measures taken by staff have had a negative impact on the educational program for students.

Despite the fact that the building was enlarged in 1959, 1969 and 2014 to create additional space, the building remains undersized for its population. As previously noted, the calculated capacity of the school is 311 students, based on the total area noted in the Comprehensive Facilities Assessment (DWA, 2011), current MSBA standards and allowing for the new modular classrooms. The current enrollment is 490 students, creating a space deficiency of over 42% (or 32% with the modulars.) As noted in the Assessment report, all of the existing educational spaces are undersized by the following percentages: 1949 Wing (-18%), 1959 wing (-8%), Library Media Center (-25%), Cafeteria (-31%), Gymnasium (-10%), and former Art room (-53%.) The only spaces that meet current MSBA standards are two classrooms at the end of the 1969 wing and the new classroom in the modular building.

The dual use of common space also has created conflicts between program areas and disruptions for students. The Stage is used for gym instruction, which limits the availability of the stage/ cafeteria for school-wide or special joint classroom events. The Stage is not handicapped accessible, which limits student access, and makes it difficult for the gym teacher to move equipment on and off the Stage. The lunch time use of the Cafeteria limits the ability of the music teacher to give extra help to students during the teacher's planning time. PE classes are bothered by the noise from the kitchen, the motors from the vending machines and milk cooler and the raising and lowering of tables by the custodian. Use of the Media Center also is problematic, because the size and configuration force computer and media classes to run simultaneously within the same space, with no sound separation. Before-school strings classes also have been moved to the Media Center, which limits Media Center prep time and displaces math groups that otherwise would meet in the Media Center.

In addition, the use of non-traditional spaces to conduct small group instruction creates space, but not a learning environment, that is conducive to focus, concentration and student performance. As previously noted, remedial/tutorial and special education instruction often occurs in stairways, corridors and storage rooms. Partitions are used to cordon off areas of some classrooms to permit access to the adjacent reading and small group instruction rooms, which creates disruption in the classroom environment. Tables and chairs are set up in hallways and entrances provide locations for student lunch groups to meet, or for MCAS testing, but are not ideal locations for either of these activities.

Service providers also share office space among themselves and parents, creating confidentiality issues for students. Currently, the Reading and Spanish teachers share office space. Special education parent meetings often occur in these shared spaces, where confidential information is being discussed. Moreover, due to the shared use of space by service providers, special education, speech and language, and occupational therapy sessions are often interrupted or displaced by team meetings. Occupational Therapy must provide gross motor activities in the hallway if at all. As a result, Mitchell is not able to house the OT equipment necessary for some students, which leads to inequity among buildings, with regard to OT services.

Finally, the lack of administrative office space and inaccessibility of the Principal's Office has created disruption for administrative personnel. The Principal's Office is only accessible via an adjacent conference room. This conference room is used by lunch groups, special education, reading testing and assessment, parent/teacher conferences, team meetings and small group work with students. This is problematic because the Principal, and those who come to see him, must walk through and interrupt these meetings and testing situations. It also limits the Principal's access to the conference room for his own meetings with teacher teams, the TST team, School Council and parent groups.

# REQUIRED FORM OF VOTE TO SUBMIT AN SOI

**REQUIRED VOTES**

If the SOI is being submitted by a City or Town, a vote in the following form is required from both the City Council/Board of Aldermen **OR** the Board of Selectmen/equivalent governing body **AND** the School Committee.

If the SOI is being submitted by a regional school district, a vote in the following form is required from the Regional School Committee only. FORM OF VOTE Please use the text below to prepare your City's, Town's or District's required vote(s).

**FORM OF VOTE**

Please use the text below to prepare your City's, Town's or District's required vote(s).

Resolved: Having convened in an open meeting on _____, prior to the closing date, the _____ *[City Council/Board of Aldermen, Board of Selectmen/Equivalent Governing Body/School Committee]* of _____ *[City/Town]*, in accordance with its charter, by-laws, and ordinances, has voted to authorize the Superintendent to submit to the Massachusetts School Building Authority the Statement of Interest dated _____ for the _____ *[Name of School]* located at _____ *[Address]* which describes and explains the following deficiencies and the priority category(s) for which an application may be submitted to the Massachusetts School Building Authority in the future

_____

_____

_____

_____

_____

_____; *[Insert a description of the priority(ies) checked off on the Statement of Interest Form and a brief description of the deficiency described therein for each priority]*: and hereby further specifically acknowledges that by submitting this Statement of Interest Form, the Massachusetts School Building Authority in no way guarantees the acceptance or the approval of an application, the awarding of a grant or any other funding commitment from the Massachusetts School Building Authority, or commits the City/Town/Regional School District to filing an application for funding with the Massachusetts School Building Authority.

## CERTIFICATIONS

The undersigned hereby certifies that, to the best of his/her knowledge, information and belief, the statements and information contained in this statement of Interest and attached hereto are true and accurate and that this Statement of Interest has been prepared under the direction of the district school committee and the undersigned is duly authorized to submit this Statement of Interest to the Massachusetts School Building Authority. The undersigned also hereby acknowledges and agrees to provide the Massachusetts School Building Authority, upon request by the Authority, any additional information relating to this Statement of Interest that may be required by the Authority.

| **Chief Executive Officer *** | **School Committee Chair** | **Superintendent of Schools** |
|---|---|---|
| Kate Fitzpatrick | Michael Greis | Dan Gutekanst |
| Town Manager | | |
| (signature) | (signature) | (signature) |
| Date | Date | Date |

* Local Chief Executive Officer: In a city or town with a manager form of government, the manager of the municipality; in other cities, the mayor; and in other towns, the board of selectmen unless, in a city or town, some other municipal office is designated to the chief executive office under the provisions of a local charter. Please note, in districts where the Superintendent is also the Local Chief Executive Officer, it is required for the same person to sign the Statement of Interest Certifications twice. Please do not leave any signature lines blank.

# Supplemental Text for Statement of Interest, William Mitchell Elementary School, Spring 2015:

1. The following text is provided to supplement the description of the BUILDING ENVELOPE, found on page 11 of the SOI. Please add the following text after the description of the roof before the question about Exterior Walls:

   Modular Classrooms:
   The modular classrooms were constructed over the summer of 2014. The prefabricated building was constructed of 10 modular boxes placed on reinforced concrete footings and piers. The modulars are built of a steel frame with plywood deck, 2x6 exterior walls, and metal truss and wood 2x10 roof frame construction. The floor, wall and roof insulation meets or exceeds the Massachusetts energy code requirements. The exterior finish is painted cement board panel and clapboard on plywood sheathing. All exterior windows and doors have double pane energy efficient glazing. The roof is a single membrane EPDM with shallow pitch to gutters. The exterior ramps, stairs, railings and canopy are aluminum. Interior finishes include painted sheetrock walls, vinyl floor tiles, acoustic tile dropped ceiling. All six individual bathrooms are MAAB and ADA compliant - 4 for children and 2 for teachers. The building was designed so that it could be relocated and/or repurposed once a comprehensive redevelopment of the Mitchell School proceeds.

2. The following text is provided to supplement the description of the MECHANICAL & ELECTRICAL SYSTEMS, found on page 15 of the SOI. Please add the following text to the end of this section:

   Plumbing
   The building is supplied with a 4" water service line coming to the 1949 section of building from Brookline St. A 2" turbine water meter is located within the boiler room constraining flow. The water distribution system within the building is largely original piping and equipment. The original piping appears to be threaded red brass with more modern connections made of soldered copper tube and fittings. The main water service is over 50 years old and at the end of its useful life expectancy. The domestic hot water heater is supplied from an oil-fired storage water heater located within the Boiler Room. The vertical 84-gallon storage tank with insulation jacket has a front-mounted 315 MBH burner assembly capable of a recovery capacity of about 264 gallons per hour. While the water heater is functioning, it is nearing the end of its useful life. The cast iron, oakum and lead draining system and vent system are original to the building and at 40 to 60 years old are approaching the end of their useful life. The plumbing fixtures within the bathrooms are largely original with wall mounted sinks, toilets and urinals. The fixtures, faucets, and flow valves have been replaced if broken, but are largely past the end of their useful lives. Numerous deficiencies for handicapped accessibility exist within the bathroom layouts and for plumbing

fixtures within classrooms. These would require replacement to meet contemporary codes if the building were renovated. The modular classroom fixtures are new in 2014 and all six bathrooms are MAAB and ADA compliant.

Fire Protection

The building is not equipped with an automatic sprinkler system. The kitchen cooking hood is not equipped with a fixed fire suppression system. The existing water line is not large enough to provide sprinklers within the building, and the low floor to ceiling heights would likely constrain the installation of sprinklers.

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 3/24/2015**

| | |
|---|---|
| **Agenda Item** | Parking Lot Naming |
| **Presenter(s)** | Kate Fitzpatrick, Town Manager |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|

The Town Manager will recommend that the Board vote to name the new permit parking lot at the corner of Lincoln Street and School Street as the Kimball Lot in observance of the School that was located there in the 19th century. The Kimball School was built in 1871, and named in honor of the Reverend Daniel Kimball. Rev. Kimball was a minister and schoolmaster, as well as the Town's Representative in the General Court and a member of the School Committee. He ran a private school at the corner of Great Plain Avenue and Marked Tree Road, where students could gain an education beyond that which was available in the public schools. The Kimball School was one of two comprehensive schools (i.e. a classroom for each grade) - Avery School in the Heights was the other. The other schools in Town served smaller neighborhoods and were either two-room (Dwight, Eliot) or one-room schools (Harris in Birds Hill, Parker in Chas River Village).

The Kimball School was torn down in 1929, and its students moved to the Stephen Palmer School (built in 1914, and expanded in 1929 to accommodate the new students). The Police and Fire Station was later built on the site.

The Board discussed the naming opportunity at its meeting on February 24, 2015. No additional written comments have been provided since that meeting.

| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | **YES** | **NO** |
|---|---|---|---|

*Suggested Motion*: That the Board vote to name the new permit parking lot at the corner of Lincoln Street and School Street the Kimball Lot.

| **3.** | **BACK UP INFORMATION ATTACHED** | **YES** | **NO** |
|---|---|---|---|

a. Naming of Facilities and Placement of Materials Policy

# Town of Needham Board of Selectmen

| | |
|---|---|
| **Policy Number:** | BOS-DIS-003 |
| **Policy:** | Naming of Facilities and Placement of Materials |
| **Date Approved:** | April 13, 2005 |
| **Date Revised:** | May 11, 2010 |
| **Approved:** | _____ Chairman, Board of Selectman |

***Policy:***

1. The Board of Selectmen is responsible for the naming (or renaming) of any facilities located on parcels of land under the jurisdiction of the Board. A facility is defined as a building, portion of a building, driveway, intersection, walkway, or other parcel or portion of a parcel of land and places or natural features contained therein. Once a facility has been named, renaming will be approved only in extraordinary circumstances.

2. The Board of Selectmen is responsible for approval of the placement of memorial objects, artwork, signs or other fixtures on parcels of land under the jurisdiction of the Board. Examples include, but are not limited to, plaques, memorial or ornamental signs, sculptures, banners, benches, trees or other plantings, fountains, detached structures, and walls.

***Procedure:***

1. A proposal to name a facility must be submitted in writing to the Board of Selectmen and must include a summary outlining the merits of the proposal. The proponent or his or her designee will present the request to the Board of Selectmen at a regularly scheduled meeting. The Board will vote on the proposal no sooner than the next regularly scheduled meeting, after allowing a period of time for public comment. The Board of Selectmen may appoint a committee to assist with its review of any proposal.

2. A proposal for the placement of a memorial object, piece of artwork, sign, or other fixture must be submitted in writing to the Board of Selectmen and must include a summary outlining the merits of the proposal. The Board will vote on the proposal at a regularly scheduled meeting.

3. The Board of Selectmen shall review existing facility names to avoid duplication, confusing similarity or inappropriateness.

4. Approval of the placement of a memorial object, artwork, sign or other fixture will only be made after a determination by the Board of Selectmen that the proposal will not: limit physical access to the site; endanger the peace or safety of the public; interfere with any utility or access thereto; be limited by unacceptable special restrictions, conditions or

covenants; or create a significant budgetary obligation on the Town for which no provision has been made.

5. Donation of funds, memorial objects, artwork, signs, fixtures, or in-kind services must be formally accepted by the Board of Selectmen in accordance with Massachusetts General Laws.

6. Requests for naming of facilities or placement of memorials on land not under the jurisdiction of the Board will be referred to the appropriate Board.

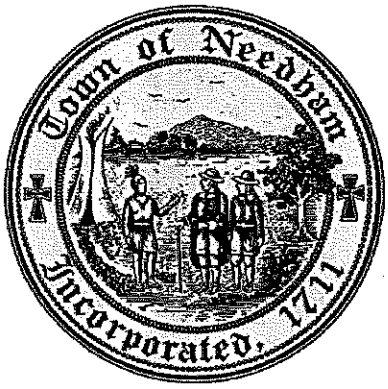
**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 3/24/2015**

| | |
|---|---|
| **Agenda Item** | 2015 Annual Town Meeting Preparation |
| **Presenter(s)** | Kate Fitzpatrick, Town Manager |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|
| The Town Manager and Board members will discuss preparation for the 2015 Annual Town Meeting. Changes to the final draft warrant reflect the final vote of the Community Preservation Committee on the CPA articles, and includes the restructuring of articles to group the two High School construction articles together, a reduction of the Central Avenue/Elliot Street Bridge appropriation from $4 million to $2 million to reflect the commitment by the City of Newton, and a proposed reallocation of funds from the OPEB Trust Fund to the Athletic Facility Stabilization Fund. | | | |
| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | **YES** | **NO** |
| *Suggested Motion:* That the Board vote to amend the 2015 Annual Town Meeting Warrant by changing the amount of the OPEB Trust Fund to $160,000 and the amount of the Athletic Facility Stabilization Fund to $1,026,412. | | | |
| **3.** | **BACK UP INFORMATION ATTACHED** | **YES** | **NO** |
| a. Draft Annual Town Meeting Warrant 3.20.2015 | | | |

# TOWN OF NEEDHAM




# 2015 ANNUAL TOWN MEETING WARRANT

Election: Tuesday, April 14, 2015

Business meeting: Monday, May 4, 2015

7:30 P.M.

JAMES HUGH POWERS HALL, NEEDHAM TOWN HALL

1471 HIGHLAND AVENUE

Draft 3.20.15

# WARRANT FOR THE ANNUAL TOWN MEETING
# TUESDAY, APRIL 14, 2015
# TOWN OF NEEDHAM
# COMMONWEALTH OF MASSACHUSETTS

Norfolk, ss.

To either of the constables in the Town of Needham in said County. Greetings:

In the name of the Commonwealth of Massachusetts you are hereby required to notify and warn the Inhabitants of the Town of Needham qualified to vote in elections and in Town Affairs to meet in their respective voting places in said Town namely:

| | | |
|---|---|---|
| Precinct A | - | The Center at the Heights |
| Precinct B | - | The Center at the Heights |
| Precinct C | - | Newman School - Gymnasium |
| Precinct D | - | Newman School - Gymnasium |
| Precinct E | - | Broadmeadow School - Performance Center |
| Precinct F | - | Needham High School – Gymnasium |
| Precinct G | - | Needham High School – Gymnasium |
| Precinct H | - | Broadmeadow School - Performance Center |
| Precinct I | - | William Mitchell School - Gymnasium |
| Precinct J | - | William Mitchell School - Gymnasium |

on TUESDAY, THE FOURTEENTH DAY OF APRIL, 2015

from forty-five minutes after six o'clock in the forenoon, until eight o'clock in the afternoon, then and there to act upon the following articles, viz:

## ARTICLE 1: ANNUAL TOWN ELECTION

To choose by ballot the following Town Officers:

One Moderator for One Year;
Two Selectmen for Three Years;
One Assessor for Three Years;
Two Members of School Committee for Three Years;
One Trustee of Memorial Park (trustee of soldiers' memorials – veteran) for Three Years;
One Trustee of Memorial Park (trustee of soldiers' memorials – non-veteran) for Three Years;
One Trustee of Memorial Park (trustee of soldiers' memorials – non-veteran) for One Year;
Two Trustees of Needham Public Library for Three Years;
One Member of Board of Health for Three Years;
One Member of Planning Board for Five Years;
One Member of Needham Housing Authority for Five Years;
One Commissioner of Trust Funds for Three Years;
Two Members of Park and Recreation Commission for Three Years;

Eight Town Meeting Members from Precinct A for Three Years;
Eight Town Meeting Members from Precinct B for Three Years;

Eight Town Meeting Members from Precinct C for Three Years;
Eight Town Meeting Members from Precinct D for Three Years;
Eight Town Meeting Members from Precinct E for Three Years;
One Town Meeting Member from Precinct E for One Year
Eight Town Meeting Members from Precinct F for Three Years;
Eight Town Meeting Members from Precinct G for Three Years;
Eight Town Meeting Members from Precinct H for Three Years;
Eight Town Meeting Members from Precinct I for Three Years
One Town Meeting Member from Precinct I for One Year;
Eight Town Meeting Members from Precinct J for Three Years.

## Warrant for the Annual Town Meeting

## Monday, May 4, 2015 at 7:30 p.m. at Needham Town Hall

### ARTICLE 2: COMMITTEE AND OFFICER REPORTS

To hear and act on the reports of Town Officers and Committees.

## HUMAN RESOURCE ARTICLES

### ARTICLE 3: ESTABLISH ELECTED OFFICIALS' SALARIES

To see if the Town will vote to fix the compensation of the following elected officers of the Town as of July 1, 2015, as required by Massachusetts General Laws, Chapter 41, Section 108:

| | |
|---|---|
| Town Clerk | $90,623 |
| Town Clerk with 6 years of service in that position | $73,310 |
| Selectmen, Chairman | $1,800 |
| Selectman, Others | $1,500 |

(1) In addition, such compensation shall also include payment of longevity in the amount of $6,344, the accumulation of 15 days of non-occupational sick leave per fiscal year, and payment for 25% of unused sick leave at the time of retirement from Town Service in accordance with M.G.L. c. 32 or sooner, in an amount not to exceed $50,312. The annual salary of $90,623 includes compensation for five weeks of vacation leave, any unused portion of which will be paid at the time of separation from Town service in an amount not to exceed $9,324. No later than the time of separation from Town service, the Town Clerk shall also be paid for seven (7) weeks of accrued, unused vacation time in an amount not to exceed $13,054; or take any other action relative thereto.

INSERTED BY: Personnel Board
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting
PERSONNEL BOARD RECOMMENDS THAT: Recommendation to be Made at Town Meeting

Draft 3.20.15

*Article Information:* *In accordance with M.G.L. Chapter 41, Section 108, the Town must annually vote to set the salary and compensation for any elected Town officials who receive compensation. The Town Clerk salary has been separated into two categories, newly elected Town Clerk, and Town Clerk with at least six years of service. This is done because Town elections are held in April and Town Meeting would not have a chance to vote on the salary of a newly elected Clerk until after the incumbent had been receiving a higher rate of pay for several months. It has been the practice of the Personnel Board to provide the Town Clerk, the only full-time elected official, with benefits close to that of other full-time employees. Payment for longevity, as well as buy-back of sick leave and vacation no later than the time of separation from Town service, is included in the recommended salary and compensation article. This article also includes provision for a one-time distribution of accumulated and unused vacation leave as of June 30, 2000; such payment to be made no later than the time of separation from Town service.*

*The annual stipends for the members of the Board of Selectmen have remained unchanged since 1977.*

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**ARTICLE 4: FUND COLLECTIVE BARGAINING AGREEMENT – BCTIA**

To see if the Town will vote to approve the funding of a collective bargaining agreement between the Town and the BCTIA, and to appropriate a sum of money to defray the cost of salary and wages provided for under the agreement for fiscal year 2016; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting
PERSONNEL BOARD RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:* *At the time of the printing of the warrant, the parties had not reached agreement on this contract.*

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**ARTICLE 5: FUND COLLECTIVE BARGAINING AGREEMENT – POLICE UNION**

To see if the Town will vote to approve the funding of a collective bargaining agreement between the Town and the Needham Police Union, and to appropriate a sum of money to defray the cost of salary and wages provided for under the agreement for fiscal year 2016; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting
PERSONNEL BOARD RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:* *At the time of the printing of the warrant, the parties had not reached agreement on this contract.*

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Draft 3/20/15

## ARTICLE 6: FUND COLLECTIVE BARGAINING AGREEMENT – POLICE SUPERIOR OFFICERS

To see if the Town will vote to approve the funding of a collective bargaining agreement between the Town and the Needham Police Superior Officers Union, and to appropriate a sum of money to defray the cost of salary and wages provided for under the agreement for fiscal year 2016; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting
PERSONNEL BOARD RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: At the time of the printing of the warrant, the parties had not reached agreement on this contract.*

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# FINANCE ARTICLES

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## ARTICLE 7: ACCEPT CHAPTER 73, SECTION 4 OF THE ACTS OF 1986

To see if the Town will vote to accept, for fiscal year 2016 the provisions of Section 4 of Chapter 73 of the Acts of 1986, as amended by Chapter 126 of the Acts of 1988, which amends Chapter 59 of the General Laws relative to real estate property tax exemptions, and approve an increase in the amount of 100% for each eligible exemption; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: Acceptance of Section 4 of Chapter 73 of the Acts of 1986, as amended by Chapter 126 of the Acts of 1988, permits the Town to grant an additional exemption to certain taxpayers who are surviving spouses, surviving minors of deceased parents, persons over the age of 70, certain veterans and disabled veterans and their surviving spouses, parents of veterans who died in wartime service and blind individuals, and who qualify for an exemption under any one of the following clauses of Section 5 of Chapter 59 of the General Laws: Clauses 17, 17C, 22, 22A, 22B, 22C, 22D, 22E, 37, 37A, 41, 41B, 41C, 42 or 43. The additional exemption shall be uniform for all exemptions but shall not exceed one hundred percent of a taxpayer's original exemption. No taxpayer may pay less tax than paid on the preceding year, except through the application of General Laws, Chapter 58, Section 8A or Chapter 59, Section 5, clause 18. The taxable valuation of the taxpayer's property shall not be less than ten percent of its fair cash value. Town Meeting must approve the additional exemption on an annual basis. In fiscal year 2015, the cumulative increase above the statutory limit was 100%.*

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## ARTICLE 8: APPROPRIATE FOR NEEDHAM PROPERTY TAX ASSISTANCE PROGRAM

To see if the Town will vote to raise and/or transfer and appropriate the sum of $27,500 for the purpose of funding the Needham Property Tax Assistance Program, said sum to be spent under the direction of the

Draft 3.20.15

Town Manager and to meet this appropriation that $27,500 be transferred from Overlay Surplus; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information:* *The 2009 Annual Town Meeting voted to establish a Property Tax Assistance Program. The goal of the Board of Selectmen is to set a target annual appropriation for the fund equal to the amount of private contributions to the Town's statutory voluntary tax relief program during the preceding fiscal year, up to a maximum appropriation of $25,000 (2008 dollars). The Board of Selectmen voted to recommend a higher amount in fiscal year 2016 given the impact on lower income homeowners of the recent property revaluation and override. The voluntary fund received $10,976 in fiscal year 2014.*

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**ARTICLE 9: APPROPRIATE FOR SENIOR CORPS**

To see if the Town will vote to raise and/or transfer and appropriate the sum of $15,000 for the purpose of funding the Senior Corps program, said sum to be spent under the direction of the Town Manager and raised from the tax levy; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information:* *The Senior Corps is a program whereby qualified elderly and disabled property owners may work up to 100 hours for the Town. In turn, the individuals are paid up to $1,000 per year, which is applied to their property tax bills.*

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**ARTICLE 10: APPROPRIATE FOR MEMORIAL PARK LANDSCAPE IMPROVEMENTS**

To see if the Town will vote to raise and/or transfer and appropriate the sum of $20,000 for the purpose of funding Memorial Park landscape improvements, said sum to be spent under the direction of the Town Manager and to meet this appropriation that $20,000 be transferred from Article 32 of the 2010 Annual Town Meeting; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:* *This article would fund improvements to the Memorial Park Garden at the intersection of Highland Avenue and Rosemary Street. The funding would support the removal of most of the existing plant material that has become unsightly, and the planting of low maintenance and low water use plant varieties.*

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Draft 3.20.15

## ARTICLE 11 : APPROPRIATE FOR AT-GRADE CROSSING FEASIBILITY STUDY

To see if the Town will vote to raise and/or transfer and appropriate the sum of $35,000 for the purpose of funding an at-grade crossing Feasibility Study, said sum to be spent under the direction of the Town Manager , and to meet this appropriation that $35,000 be transferred from Free Cash; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: Renewed interest in evaluating options to the train horn, and the planned infrastructure investment at the Town's at-grade crossings in the coming years, were the basis for the feasibility study. The analysis will include alternatives to train horns at the Town's at-grade crossings and will consider the impact of any changes on pedestrian and motorist safety.*

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## ARTICLE 12: APPROPRIATE FOR SIDEWALK NEEDS ASSESSMENT

To see if the Town will vote to raise and/or transfer and appropriate the sum of $100,000 for the purpose of funding a Sidewalk Needs Assessment, said sum to be spent under the direction of the Town Manager and to meet this appropriation that $100,000 be transferred from Free Cash; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation be Made at Town Meeting

*Article Information: The purpose of the assessment is to evaluate the Town's sidewalk network to determine where sidewalks should be installed (numerous requests to improve pedestrian safety are received each year), and where there may be opportunities to remove sidewalks. The assessment will include a plan to maintain the same or reduce the linear footage of sidewalks throughout the Town.*

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## ARTICLE 13 : APPROPRIATE FOR PUBLIC FACILITIES MAINTENANCE PROGRAM

To see if the Town will vote to raise and/or transfer and appropriate the sum of $570,000 for the purpose of funding the Public Facilities Maintenance Program, said sum to be spent under the direction of the Town Manager and to meet this appropriation that $570,000 be transferred from Free Cash; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: The Public Facilities Maintenance Program has been removed from the cash capital article given that the program supports maintenance activities, and many of the projects do not meet the definition of capital expenditure. The program includes annual maintenance of public buildings throughout the Town and School Department, including, but not limited to, asbestos abatement, duct cleaning, painting, and other repairs and necessary upgrades. Unless circumstances require otherwise, the FY2016 program will fund duct cleaning at the Pollard School, Fire Station #2, and Broadmeadow*

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*School; xeriscape gardening at the High School; wood floor refinishing in various school buildings; asbestos abatement at the Pollard School; flooring replacement at the Pollard School; renovation of two restrooms at the Pollard School; repairs to the auditorium at the Pollard School, and replacement of a portion of the lockers at the Pollard School.*

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## ARTICLE 14: APPROPRIATE FOR DPW/PSAB LOCATION FEASIBILITY STUDY

To see if the Town will vote to raise and/or transfer and appropriate the sum of $40,000 for the purpose of funding the DPW/PSAB Location Feasibility Study, said sum to be spent under the direction of the Town Manager, and to meet this appropriation that $5,168 be transferred from Article 38 of the 2004 Annual Town Meeting; $6,347 be transferred from Article 32 of the 2008 Annual Town Meeting; $5,595 be transferred from Article 5 of the 2011 May Special Town Meeting; $5,000 be transferred from Article 36 of the 2011 Annual Town Meeting; and $17,890 be transferred from Article 30 of the 2012 Annual Town Meeting; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: The Facility Working Group examined the 470/500 Dedham Avenue location for the establishment of a modern and comprehensive Public Works facility, consisting of administrative offices, garage maintenance bays, employee facilities, shops, wash bays, and appropriate vehicle storage, and related support systems. The Working Group concluded that the Dedham Avenue site is not adequate to support the entire facility with or without the location of a school at DeFazio Field Complex. The recommended option in the Facility Master Plan is for the relocation of operations and administration to Parcel 74 on Greendale Avenue at an estimated cost of $45,000,000. The purpose of this study is to further evaluate and identify alternatives to relocating the full program to Greendale Avenue. The evaluation will include opportunities for phasing the project, alternatives to co-location of all facilities, and implication of phasing and scattered site options on Public Works, other departments located at 500 Dedham Avenue, a potential school, and DeFazio Park.*

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## ARTICLE 15: APPROPRIATE FOR RTS ROLL-OFF REPLACEMENT PROGRAM

To see if the Town will vote to raise and/or transfer and appropriate the sum of $48,000 for the purpose of funding the RTS Roll-Off Replacement Program, to be spent under the direction of the Town Manager, and to meet this appropriation that $13,198 be transferred from Article 45 of the 2003 Annual Town Meeting, $19,997 be transferred from Article 68 of the 2006 Annual Town Meeting, $14,805 be transferred from Article 37 of the 2010 Annual Town Meeting; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: A roll-off replacement program was established in the operating budget in FY2015 to ensure appropriate replacement of the containers in future years. This additional funding will support the acquisition of six containers to replace the most severely deficient containers at the site.*

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## ARTICLE 16: APPROPRIATE THE FY2016 OPERATING BUDGET

To see what sums of money the Town will vote to raise, appropriate, and/or transfer for the necessary Town expenses and charges, and further that the operating budget be partially funded by a transfer from the parking meter fund in the amount of $65,000, from Free Cash in the amount of $1,941,264, from the overlay surplus in the amount of $500,000 from amounts reserved for debt exclusion offsets in the amount of $99,550, and $464,438 to be raised from CPA receipts; and further that the Town Manager is authorized to make transfers from line item 9 to the appropriate line items in order to fund the classification and compensation plan approved in accordance with the provisions of Section 20B(5) of the Town Charter, and to fund collective bargaining agreements approved by vote of Town Meeting; and further that the Town Manager is authorized to expend from line item 4 in order to meet expenses for post-employment health and life insurance benefits for eligible retirees from the fund established for that purpose; or take any other action relative thereto.

INSERTED BY: Finance Committee
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted as Shown on Pages X – X

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## ARTICLE 17: APPROPRIATE THE FY2016 RTS ENTERPRISE FUND BUDGET

To see if the Town will vote to raise and/or transfer and appropriate the following sums of money to operate the Solid Waste and Recycling Division of the Department of Public Works during fiscal year 2016, under the provisions of M.G.L. Chapter 44, Section 53F ½:

| Line # | Description | FY2014 | | FY2015 | | FY2016 | | Town Meeting Amendments |
|---|---|---|---|---|---|---|---|---|
| | | Expended | FTE | Current Budget | FTE | Recommended | FTE | |
| | | | | | | | | |
| 101A | Salary & Wages | $602,290 | 9.0 | $731,026 | 10.0 | $739,993 | 10.0 | |
| 101B | Expenses | $1,157,133 | | $1,225,721 | | $1,153,651 | | |
| 101C | Operating Capital | $60,000 | | $81,000 | | $86,000 | | |
| 101D | Debt Service | $149,147 | | $150,000 | | $150,000 | | |
| 102 | Reserve Fund | Transfers Only | | $25,000 | | $25,000 | | |
| | | | | | | | | |
| | | | | | | | | |
| **TOTAL** | | **$1,968,570** | **9.0** | **$2,212,747** | **10.0** | **$2,154,644** | **10.0** | |
| FY2016 Budget Percentage Change from FY2015 Budget | | | | | | | -2.6% | |

and further to meet this appropriation that $1,420,000 be raised from the tax levy and transferred to the RTS Enterprise Fund and that $110,000 be transferred from RTS Enterprise Fund Retained Earning; or take any other action relative thereto.

INSERTED BY: Board of Selectmen & Finance Committee
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: The Town of Needham provides residents with recycling and waste disposal services at the Town's Recycling Center and Transfer Station (RTS). The RTS is a residential drop-off facility with a pay-per-throw program. To use the RTS, residents must obtain a special sticker which is affixed to the windshield of the vehicle transporting recycling and/or trash into the RTS. Residents may*

*purchase special bags for their non-recyclable trash disposal or may haul trash into the center and have it weighed before disposing, paying a fee. These fees combined cover some of the costs for operating the RTS. The RTS is one of the most utilized facilities within the Town - approximately 75% of Needham residents directly utilize the facility. The majority of the remaining 25% of Needham residents utilize the RTS through subscription hauler services. The RTS also provides disposal and recycling services for many Town departments along with material processing and snow dump services for the Department of Public Works. The RTS also provides a variety of other specialty recycling options for residents such as books, clothing, and many others.*

*FY2015 was the first year of the new funding model for the Recycling and Transfer Station Enterprise, which now includes a higher contribution from the General Fund to offset the loss of revenue collected through the annual sticker fee that was paid by residents. This payment, along with pay-per-throw bags and other rubbish disposal fees and miscellaneous revenue, provides the funds to support and operate the center. The General Fund contribution for FY2016 is the same as FY2015, $1,420,000. The contribution was held flat through the use of retained earnings, and an expected rental payment for the land on which the new solar array will be constructed in the coming year. Direct financing of the facility through the tax levy expands access to the facility, and recognizes the "public good" aspect of many of the recycling, yard waste, and waste ban item disposal services.*

*The recommended operating budget for FY2016 is $2,154,644 or $58,103 (2.6%) less than the FY2015 budget. The change is primarily attributable to a new and favorable solid waste disposal contract with Wheelabrator Technologies Inc. The company has an incinerator located in Millbury, Massachusetts where the Town has been transporting its solid waste for many years. FY2016 shows an increase of $8,967 in salary and wages (1.2%), a decrease of $72,070 in non-personnel related costs (5.9% lower), an increase of $5,000 in operating capital, or 6.2% more than the current year, and no change in the debt service and reserve fund lines.*

*The change in salary and wages line reflects the collective bargaining agreement for FY2016 with the DPW union. The RTS has 10 full-time employees, of which 8 are members of the NIPEA union. The decrease in the expense line results from the new contract for the disposal of municipal solid waste, a decrease in the amount for vehicular supplies and fuel, a reduction in the cost of testing services, and the elimination of the annual residential sticker renewal supplies. The decrease in solid waste disposal costs for FY2016 from FY2015 is $69,939, but when compared to what the rate would have been for the Town in FY2016 under the previous contract, the new contract actually saves the Town approximately $120,000. Noteworthy increases within the expense budget for FY2016 include a $10,000 increase for the purchase of pay-per-throw bags which are then distributed for sale through various retailers in Town. The increase is based on an expected greater number of tons of trash that will be brought into the RTS now that there is no annual fee to be paid by residents; however the uptick in volume of trash should also generate an increase in revenue from the sale of the bags. Another increase for FY2016 is approximately $7,000 for the disposal of electronic items that are brought into the center by residents. Those changes, combined with various other adjustments to expenses, result in an overall reduction of $72,070 for the expense line. The operating capital increase of $5,000 is to cover the cost of purchasing one open top trailer and two roll-off containers; these are part of an annual replacement schedule. A separate financial warrant for the replacement and purchase of six additional roll-off containers is also included in this warrant in an effort to get the overall replacement cycle back on schedule.*

*Debt service is level funded at $150,000, and supports the debt capacity requirements to continue the current RTS operations. The reserve fund is level dollar as well for FY 2016.*

*The RTS also reimburses the General Fund for costs incurred and paid by the general fund budgets, e.g., employee benefits, property and casualty insurance, financial and billing expenses, and other administrative and operational support costs.*

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## ARTICLE 18: APPROPRIATE THE FY2016 SEWER ENTERPRISE FUND BUDGET

To see if the Town will vote to raise and/or transfer and appropriate the following sums of money to operate the Sewer Division of the Department of Public Works during fiscal year 2016, under the provisions of M.G.L. Chapter 44, Section 53F ½:

| Line # | Description | FY2014 Expended | FTE | FY2015 Current Budget | FTE | FY2016 Recommended | FTE | Town Meeting Amendments |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 201A | Salary & Wages | $902,486 | 12.0 | $962,166 | 12.0 | $987,170 | 12.0 | |
| 201B | Expenses | $355,518 | | $352,958 | | $402,011 | | |
| 201C | Capital Outlay | $24,799 | | $25,000 | | $50,000 | | |
| 201D | MWRA Assessment | $5,423,810 | | $5,466,144 | | $5,462,757 | | |
| 201E | Debt Service | $1,390,516 | | $1,500,000 | | $1,500,000 | | |
| 202 | Reserve Fund | Transfers Only | | $35,000 | | $35,000 | | |
| | | | | | | | | |
| | **TOTAL** | **$8,097,129** | **12.0** | **$8,341,268** | **12.0** | **$8,436,938** | **12.0** | |
| | | FY2016 Budget Percentage Change from FY2015 Budget | | | | | 1.1% | |

and further to meet this appropriation that $494,488 be raised from the tax levy and transferred to the Sewer Enterprise Fund, and $703,449 be transferred from Sewer Enterprise Fund Retained Earnings; or take any other action relative thereto.

INSERTED BY: Board of Selectmen & Finance Committee
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: This article funds the operation of the Town's sanitary sewer system. The Town's sewage collection system consists of more than 130 miles of collector and interceptor sewers, 6,500 sewer manholes, and nine sewer pump stations. The Town's sewer system is a collection system that discharges its wastewater to the Massachusetts Water Resources Authority (MWRA) system for treatment. Approximately 65% of the Town's sewer collection system is a gravity-only system, and 35% of the sewer system is pumped into the gravity system. Needham has two principal points of discharge into the MWRA system and nine other public locations where subdivisions discharge to the MWRA system. Personnel maintain and operate 22 sewer pumps, motors, switchgear, gates, valves, buildings, and grounds contained in nine pumping facilities located throughout town.*

*The Division also oversees the collection and transportation of Stormwater (drains program) originating from rain and snow storms for discharge into streams, brooks, rivers, ponds, lakes, flood plains and wetlands throughout town. Stormwater and associated discharges are now considered by the federal government as potentially contaminated, and have come under increasingly severe discharge performance standards. The intention is to reduce or eliminate contaminants contained in the flow washed from ground surfaces considered to be harmful to the environment.*

Draft 3.15

*The operating budget of $8,436,938 for FY2016 is $95,670 more than the current FY2015 budget, an increase of 1.1%. As previously mentioned, the Sewer Enterprise Fund budget includes the costs of the drains program because the daily work is performed by Enterprise Fund staff and operationally it is more effective to budget and monitor this work through the Sewer Enterprise Fund budget. However, the costs not associated with Sewer operations are funded by taxation and not by Sewer use fees. The table below provides a breakout between the sewer operations and the drains program to compare the budget change in the two operations from the current year.*

| Budget Line | FY2016 Sewer Operations | FY2016 Drains Program | FY2016 Recommended Budget | FY2015 Sewer Operations | FY2015 Drains Program | Current FY2015 Sewer Budget |
|---|---|---|---|---|---|---|
| Salary & Wages | $634,673 | $352,497 | $987,170 | $625,281 | $336,885 | $962,166 |
| Expenses | $260,020 | $141,991 | $402,011 | $226,413 | $126,545 | $352,958 |
| Capital Outlay | $50,000 | $0 | $50,000 | $25,000 | $0 | $25,000 |
| MWRA Assessment | $5,462,757 | $0 | $5,462,757 | $5,466,144 | $0 | $5,466,144 |
| Debt Service | $1,500,000 | $0 | $1,500,000 | $1,500,000 | $0 | $1,500,000 |
| Reserve Fund | $35,000 | $0 | $35,000 | $35,000 | $0 | $35,000 |
| Total | $7,942,450 | $494,488 | $8,436,938 | $7,877,838 | $463,430 | $8,341,268 |

| | FY2016 Sewer Operations $ Change | FY2016 Drains Operations $ Change | FY2016 Sewer Enterprise $ Change | FY2016 Sewer Operations % Change | FY2016 Drains Operations % Change | FY2016 Sewer Enterprise % Change |
|---|---|---|---|---|---|---|
| Salary & Wages | $9,392 | $15,612 | $25,004 | 1.5% | 4.6% | 2.6% |
| Expenses | $33,607 | $15,446 | $49,053 | 14.8% | 12.2% | 13.9% |
| Capital Outlay | $25,000 | $0 | $25,000 | 100.0% | | 100.0% |
| MWRA Assessment | -$3,387 | $0 | -$3,387 | -0.1% | | -0.1% |
| Debt Service | $0 | $0 | $0 | 0.0% | | 0.0% |
| Reserve Fund | $0 | $0 | $0 | 0.0% | | 0.0% |
| Total | $64,612 | $31,058 | $95,670 | 0.8% | 6.7% | 1.1% |

*The FY2016 Sewer operations portion of the budget is $64,612 higher, an increase of 0.8% over the current year. The preliminary MWRA assessment for FY2016 is $3,387 less than the current appropriation. The final assessment from the MWRA will be affected by the amount of sewer rate relief that is provided to the Authority by the Commonwealth, which will not be known until after the budget is voted by the Legislature and approved by the Governor. The FY2016 drains operations portion of the budget is $31,058 (6.7%) more than the current year.*

*The salary and wages line is $987,170 for FY2016 which is an increase of $25,004 or 2.6%. The sewer division has 12 full-time employees of which 11 are members of the NIPEA union. The Town and the DPW union have a collective bargaining agreement in place for FY2016. There is no increase in the number of funded positions.*

*The increases in expense and operating capital lines are due to inflationary, regulatory, and monitoring efforts. The expense line is $402,011 which is $49,053 or 13.9% more than the current year. The increase is primarily attributable to higher energy costs, catch basin cleaning and sweeping services and disposal, repairs to drains, and for services related to sewer flow meters. A department request for a $25,000 increase to fund contracted services to inspect, test and calibrate the Town's 12 sewer flow meters (ten permanent and two portable) has been included in the FY2016 recommended budget. The sewer flow meters are used to detect inflow and infiltration into the Town's sewer system and help the Town to identify and monitor flow to verify data that is used by the MWRA to bill the Town for sewer treatment. The operating capital line is $25,000 more than the current year or doubling of the funding. The $25,000 will provide for the replacement of a grinder at the West Street sewer pump station and allow the department to continue its annual $25,000 allocation for sewer pump and small power equipment replacement.*

*The sewer debt service budget line is also level dollar at $1,500,000 for FY2016, based on approved projects, and is in keeping with the overall sewer capital infrastructure-funding plan for long term*

*investments. The reserve fund is level dollar for FY2016. The budget plan for FY2016 includes the use of $703,449 from sewer retained earnings. The $494,488 to be transferred from the tax levy is to pay for drains-related programs.*

*The Sewer Enterprise Fund also reimburses the general fund for costs incurred and paid by General Fund budgets, e.g., employee benefits, property and casualty insurance, financial and billing expenses, and other administrative and operational support costs. The Sewer Enterprise Fund budget is a self-supporting account. Sewer user fees and charges cover the cost of the sewer operations and the general fund payment supports the drains program.*

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## ARTICLE 19: APPROPRIATE THE FY2016 WATER ENTERPRISE FUND BUDGET

To see if the Town will vote to raise and/or transfer and appropriate the following sums of money to operate the Water Division of the Department of Public Works during fiscal year 2016, under the provisions of M.G.L. Chapter 44, Section 53F ½:

| Line # | Description | FY2014 Expended | FTE | FY2015 Current Budget | FTE | FY2016 Recommended | FTE | Town Meeting Amendments |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 301A | Salary & Wages | $1,014,577 | 16.0 | $1,077,972 | 16.0 | $1,105,680 | 16.0 | |
| 301B | Expenses | $990,584 | | $1,079,548 | | $1,034,526 | | |
| 301C | Capital Outlay | $31,500 | | $40,200 | | $30,500 | | |
| 301D | MWRA Assessment | $1,271,018 | | $1,193,697 | | $1,012,962 | | |
| 301E | Debt Service | $1,535,767 | | $1,550,000 | | $1,550,000 | | |
| 302 | Reserve Fund | Transfers Only | | $75,000 | | $75,000 | | |
| | | | | | | | | |
| | **TOTAL** | **$4,843,446** | **16.0** | **$5,016,417** | **16.0** | **$4,808,668** | **16.0** | |
| | FY2016 Budget Percentage Change from FY2015 Budget | | | | | | -4.1% | |

or take any other action relative thereto.

INSERTED BY: Board of Selectmen & Finance Committee
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: This article funds the Town's water system. The Town's water distribution system is a single service pressure zone system supplied by two sources. The Town's primary source of water is the Charles River Well Field which is able to produce up to 4.6 million gallons of water per day (the Town is registered for approximately 4.0 million gallons of water per day). The current water withdrawal permit from the Department of Environmental Protection (DEP) allows approximately 2.9 million gallons of water per day to be pumped. The Charles River Well Field consists of three groundwater-pumping stations. Needham's second water source is a connection to the Massachusetts Water Resources Authority (MWRA) surface water supply originating at the Quabbin Reservoir and delivered through the Metrowest Tunnel and the Hultman Aqueduct. This water is pumped into the Needham system at the St. Mary's Pumping Station located at the corner of St. Mary Street and Central Avenue. This supply is used when the Town's demand for water is greater than the local supply, and serves as a backup should the Town's wells need to be taken off-line. Water Division staff operate the water treatment plant and also operate, maintain, and repair the Town-wide water distribution system. The system is comprised of more than 135 miles of water mains, 1,166 public hydrants, 3,400*

*water gate valves, and 9,800 water service connections. This system supports approximately 14,100 installed meters.*

*The overall operating budget for FY2016 is $207,749 (4.1%) lower than the FY2015 budget. This decrease is mainly due to a reduction in the MWRA assessment for the Town's water use. The MWRA bills the Town for actual water consumption in the calendar year preceding the new fiscal year; the FY2016 water assessment is based on CY2014 water use. The Town's use of MWRA water was down approximately 21% from the prior year. The preliminary water assessment for FY2016 is $1,012,962 which is $180,735 (15.1%) less than the assessment for FY2015. The final assessment from the MWRA is not expected until the end of the State budget process.*

| Water Production | 2012 | 2013 | 2014 |
|---|---|---|---|
| Water Production* | 1,243.7 | 1,267.8 | 1,235.9 |
| Water Production from MWRA | 393.0 | 354.8 | 279.0 |
| Water Production from Town Wells | 850.7 | 913.0 | 956.9 |
| Percentage from MWRA | 31.6% | 28.0% | 22.6% |
| *millions of gallons | | | |
| Water meters replaced | 1,072 | 945 | 1,224 |
| Percentage of the total number of water meters in place for that year | 7.6% | 6.7% | 8.4% |

*The salary and wage expense line shows an increase of $27,708 (2.6%) over the FY2015 budget. The Enterprise Fund has 16 full time employees of which 13 are unionized. Twelve employees are members of the NIPEA union and one employee is a member of the ITWA union. The Town has collective bargaining agreements with both unions for FY2016. There is no increase in the number of funded positions.*

*The Water Enterprise Fund expense line is $45,022 lower than the current budget, approximately 4.2% less. The lower expense line results from decreases in the energy ($8,525), repairs and maintenance ($13,000), fuel for vehicles and equipment ($10,372), and other expenses ($27,425) line items. The lower energy costs are in electricity and heating oil, repairs and maintenance is lower because the FY2015 budget included one-time funding for the replacement of windows at the Charles River Water Treatment Facility with windows that reduce heat loss, and fuel costs for vehicles is lower based on the average over three years. The reductions in other expenses are related to the repair of a backwash system, and some costs that were one-time expenses for FY2015. Some of the decrease was offset by increased costs for professional and technical services ($11,500) and other various expenses ($2,800). The increase for professional and technical services includes $10,000 to hire a company to test and calibrate the commercial and industrial water meters connected to the Town's drinking water system. The program will be designed to evaluate, test, and calibrate all meters that have a 4" diameter or greater water line to ensure they are properly recording water use.*

*The operating capital amount of $30,500 is $9,700 (24.1%) less than budgeted for FY2015. It is anticipated that less small diameter pipe will be repaired during FY2016 so only $10,500 is allocated for this purpose. The budget will also provide $20,000 for the purchase of water leak detection equipment that will be used by Town staff to locate leaks in the water distribution system. The equipment will help to identify unaccounted water that must be reported in the Town's Annual Statistical Report to Massachusetts Department of Environmental Protection. The equipment will allow Town staff on a routine basis to investigate issues that they observe which may indicate a water leak such as unexplained water demand or sudden drops in the level of the water tanks. The equipment can assist in locating water leaks prior to excavation. Debt service is level funded at $1,550,000, which is based on approved*

Draft 3.20.15

*projects, and is in keeping with the overall water capital infrastructure-funding plan for long term investments. The water reserve fund is level dollar for FY2016*

*The Water Enterprise Fund also reimburses the general fund for costs incurred and paid by general fund budgets, e.g., employee benefits, property and casualty insurance, financial and billing expenses, and other administrative and operational support costs. The Water Enterprise Fund budget is a self-supporting account. Water user fees and charges cover the entire cost of operations.*

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**ARTICLE 20: CONTINUE DEPARTMENTAL REVOLVING FUNDS**

To see if the Town will vote to authorize and continue revolving funds for certain Town departments pursuant to the provisions of M.G.L. Chapter 44, Section 53E ½ for the fiscal year beginning July 1, 2015:

| Revolving Fund | Spending Authority | Revenue Source | Use of Funds | FY 2016 Budget |
|---|---|---|---|---|
| Memorial Park | Memorial Park Trustees | Food Concessions | Improvements to Memorial Park | **$4,100** |
| Local Transportation | Council on Aging Director | MBTA, Grants, Program Receipts | Transportation program for COA | **$60,000** |
| Water Conservation | DPW Director | Sale of Water Conservation Devices | Encourage Residential Water Conservation | **$10,000** |
| Home Composting Bin Account | DPW Director | Sale of Bins | Purchase of additional home composting bins | **$3,000** |
| Youth Services Activities | Youth Services Director | Program Receipts | Costs related to youth service and community programs | **$25,000** |
| Traveling Meals Program | Health Director | Program Receipts | Costs related to Traveling meals | **$75,000** |
| Immunization Fund | Health Director | Program Receipts | Costs associated with immunization and educational programs | **$25,000** |
| School Transportation Program | School Committee | Fee-Based Transportation Program Receipts | Pupil and other District-wide transportation | **$819,000** |
| Facility Activity Use | Director of Facility Operations | Fee-Based Facility Use | Community Facility Use | **$250,000** |

or take any other action relative thereto.

Draft 3-3-15

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information and Summary of M.G.L., Chapter 44, Section 53E ½: A revolving fund established under the provisions of M.G.L., Chapter 44, Section 53E ½ must be authorized annually by vote of the Town Meeting. The fund shall be credited only with the departmental receipts received in connection with the programs supported by such revolving fund, and expenditures may be made from the revolving fund without further appropriation, subject to the provisions of Section 53E ½. The Annual Town Meeting authorization for each revolving fund shall specify: (1) the programs and purposes for which the revolving fund may be expended; (2) the departmental receipts which shall be credited to the revolving fund; (3) the board, department or officer authorized to expend from such fund; and (4) a limit on the amount which may be expended from such fund in the ensuing year. In any fiscal year, the Board of Selectmen and the Finance Committee may approve an increase in the amount to be spent from the revolving fund, but in no event shall any agency, board, department or officer be authorized to expend in any one fiscal year more than one percent of the amount raised by the Town by taxation in the most recent fiscal year for which a tax rate has been certified pursuant to M.G.L., Chapter 59, Section 23.*

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## ARTICLE 21: AUTHORIZATION TO EXPEND STATE FUNDS FOR PUBLIC WAYS

To see if the Town will vote to authorize the Town Manager to permanently construct, reconstruct, resurface, alter or make specific repairs upon all or portions of various Town ways and authorize the expenditure of funds received, provided or to be provided by the Commonwealth of Massachusetts through the Massachusetts Highway Department; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: The Town receives funding from the Commonwealth of Massachusetts for road construction projects. Approval of Town Meeting is required in order for the Town to receive and expend the funds. The Massachusetts Department of Transportation (MassDOT) will distribute Chapter 90 funding only after it has been authorized by the Legislature and the Governor. At the time of the printing of the warrant, the FY2016 award amounts had not been released.*

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# ZONING / LAND USE ARTICLES

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## ARTICLE 22: AMEND ZONING BY-LAW – REGISTERED MARIJUANA DISPENSARIES

To see if the Town will vote to amend the Needham Zoning By-Law, as follows:

(a) In Section 1.3, Definitions, by adding the following term and definition in the appropriate alphabetical location as follows:

"Medical Marijuana Treatment Center: A facility operated by a not-for-profit entity registered and approved by the Massachusetts Department of Public Health in accordance with 105 CMR

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725.000 or succeeding regulation pertaining to the registration of such facilities, and pursuant to all other applicable state laws and regulations, also to be known as a Registered Marijuana Dispensary (RMD), that acquires, cultivates, possesses, processes (including development of related products such as edible marijuana infused products, tinctures, aerosols, oils, or ointments), transfers, transports, sells, distributes, dispenses, or administers marijuana, products containing marijuana, related supplies, or educational materials to patients or their personal caregivers registered and qualified under the provisions of 105 CMR 725.00 ("Qualified Patients or Qualified Caregivers") or succeeding regulation pertaining to the registration and qualification of Qualified Patients and Qualified Caregivers. A Medical Marijuana Treatment Center may include facilities which cultivate and/or process marijuana for medical use.

Off-Site Medical Marijuana Dispensary: A facility registered and qualified as a Registered Marijuana Dispensary under the provisions of 105 CMR 725.00 that is located off-site from a separate location of the same RMD or from an affiliated RMD where marijuana or related products are cultivated or processed, and that is controlled and operated by the same registered and approved non-profit entity that operates the separate location or affiliated RMD where marijuana or related products are cultivated or processed, but which dispensary serves only to acquire, possess, transfer, transport, sell, distribute, dispense or administer processed marijuana for medical use, related products and supplies and educational materials to Qualified Patients or Qualified Caregivers, and which dispensary includes no cultivation or processing of such marijuana or related products."

(b) In Section 3.2, Schedule of Use Regulations, Subsection 3.2.1, Uses in the Rural Residence-Conservation, Single Residence A, Single Residence B, General Residence, Apartment A-1, Apartment A-2, Apartment A-3, Institutional, Industrial, and Industrial-1 Districts, by inserting immediately below the row that reads "medical clinic" a new entry, which shall read as follows:

| "Use | RRC SRA | SRB | GR | A-1,2 &3 | I | IND | IND-1 |
|---|---|---|---|---|---|---|---|
| Medical Marijuana Treatment Center | N | N | N | N | N | N | SP* |

*Also subject to Section 7.4 (Site Plan Review)

(c) In Section 3.2.5, Uses in Highland Commercial-128 District, Subsection 3.2.5.2, Uses Permitted by Special Permit, by adding a new paragraph (p) that states "Off-Site Medical Marijuana Dispensary", subject to Section 7.4 (Site Plan Review)" and by renumbering former paragraphs (p), (q) and (r) as paragraphs (q) (r) and (s) respectively.

(d) In Section 3.2.6, Uses in the Mixed Use-128 District, Subsection 3.2.6.2, Uses Permitted by Special Permit, by adding a new paragraph (j) that states "Medical Marijuana Treatment Center", subject to Section 7.4 (Site Plan Review)" and by renumbering former paragraphs (j) and (k) as paragraphs (k) and (l) respectively.

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(e) In Section 6, Special Regulations, by a inserting a new Subsection 6.10, Special Permit Criteria for Registered Marijuana Dispensaries, to read as follows.

"6.10 Special Permit Criteria for Registered Marijuana Dispensaries

In granting a special permit for a Medical Marijuana Treatment Center or Off-Site Medical Marijuana Dispensary, in addition to the general criteria for issuance of a special permit as set forth in Section 7.5.2 of this By-Law, the Planning Board shall find that the following criteria are met:

(a) The site on which the Medical Marijuana Treatment Center or Off-Site Medical Marijuana Dispensary is located is at least one thousand (1,000) feet distant from a public or private elementary school, middle school, or secondary school, or a municipal park or playground, or if not located at such a distance, but located at least five hundred (500) feet distant from such protected use, it is determined by the Planning Board to be sufficiently buffered from such protected use such that its users will not be adversely impacted by the operation of the Medical Marijuana Treatment Center or Off-Site Medical Marijuana Dispensary. The distance under this section is measured in a straight line from the nearest point of the property line of the protected use identified in this section to the nearest point of the proposed Medical Marijuana Treatment Center or Off-Site Medical Marijuana Dispensary.

(b) The Medical Marijuana Treatment Center or Off-Site Medical Marijuana Dispensary is not located in a building that contains a licensed daycare center, or any facility providing educational, recreational or social programs or activities attended primarily by children enrolled with such facility.

(f) In Section 8 Interim Regulations for Medical Marijuana Uses, by deleting the Section in its entirety.

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

PLANNING BOARD RECOMMENDS THAT:

*Article Information:*

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**ARTICLE 23: AMEND ZONING BY-LAW – DEFINITION OF HALF-STORY**

To see if the Town will vote to amend the Needham Zoning By-Law as follows:

(a) In Section 1.3, Definitions, by revising the existing definition of the term "Half-story", so that the entire definition shall now read as follows: (new language underlined):

"Half-Story or ½ Story – For all single-family detached dwellings, two-family detached dwellings, and apartment and multi-family dwelling units permitted by Special Permit in the Center Business District and located in the half-story directly above the second floor, that portion

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of a building included between the upper surface of a floor and the lower surface of a sloping roof next above where the area contained therein has a finished ceiling height exceeding 5'-0". Dormers installed in a sloping roof directly above the second story of a structure shall be limited in size as follows: (1)The total length of the front wall(s) of a dormer(s) shall not exceed fifty percent (50%) of the eve length of the portion of the roof in which the dormer is built. In no case shall a singular dormer exceed twenty feet (20') in width. (2) A roof line overhang shall be continued between the dormer and the story next below so as to avoid the appearance of an uninterrupted wall plane extending beyond two stories. (3) The vertical plane of the side wall of any dormer shall not be closer than eighteen inches (18") from the vertical plane of the intersection of the roof and the main building end wall nearest the dormer. (4) No dormer may project above the main ridgeline of the building. There are no restrictions on dormers installed in a sloping roof directly above the first story of a structure. This definition shall apply to all single-family detached dwellings, two-family detached dwellings, and apartment and multi-family dwelling units permitted by Special Permit in the Center Business District and located in the half-story directly above the second floor. For all other buildings the definition is, that part of a building under a sloping roof where the full-length rafters rest on the top beam of the story below."

(b) In Section 1.3, Definitions, by adding the following term and definition in the appropriate alphabetical location as follows:

"Dormer – A projection built out from a sloping roof, usually containing a window or vent."

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting
PLANNING BOARD RECOMMENDS THAT:

*Article Information:*

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**ARTICLE 24: AMEND ZONING BY-LAW – DEFINITION OF HALF-STORY AND DIMENSIONAL REQUIREMENTS FOR THE CHESTNUT STREET BUSINESS DISTRICT**

To see if the Town will vote to amend the Needham Zoning By-Law, as follows:

(a) In Section 1.3, Definitions, by revising the existing definition of the term "Half-Story or ½ Story", so that it shall now read as follows: (new language underlined):

"Half-Story or ½ Story – For all single-family detached dwellings, two-family detached dwellings, and apartment and multi-family dwelling units permitted by Special Permit in the Center Business District and Chestnut Street Business districts and located in the half-story directly above the second floor, that portion of a building included between the upper surface of a floor and the lower surface of a sloping roof next above where the area contained therein has a finished ceiling height exceeding 5'-0". Dormers installed in a sloping roof directly above the second story of a structure shall be limited in size as follows: (1) The total length of the front wall(s) of a dormer(s) shall not exceed fifty percent (50%) of the eve length of the portion of the roof in which the dormer is built. In no case shall a singular dormer exceed twenty feet (20') in

width. (2) A roof line overhang shall be continued between the dormer and the story next below so as to avoid the appearance of an uninterrupted wall plane extending beyond two stories. (3) The vertical plane of the side wall of any dormer shall not be closer than eighteen inches (18") from the vertical plane of the intersection of the roof and the main building end wall nearest the dormer. (4) No dormer may project above the main ridgeline of the building. There are no restrictions on dormers installed in a sloping roof directly above the first story of a structure. This definition shall apply to all single-family detached dwellings, two-family detached dwellings, and apartment and multi-family dwelling units permitted by Special Permit in the Center Business District and Chestnut Street Business districts and located in the half-story directly above the second floor. For all other buildings the definition is, that part of a building under a sloping roof where the full-length rafters rest on the top beam of the story below."

(b) In Section 3.2, Schedule of Use Regulations, Subsection 3.2.2, Uses in the Business, Chestnut Street Business, Center Business, Avery Square Business and Hillside Avenue Business Districts, by revising the entry which reads in part "Apartment or multifamily dwelling", so that it shall now read as follows:

| "USE | B | CSB | CB | ASB | HAB |
|---|---|---|---|---|---|
| Apartment or multifamily dwelling<br>* Allowed on second floor and in half-story directly above second floor only;<br>consistent with density requirements for A-1 | N | SP* | SP* | SP | SP" |

(c) In Section 4.4, Dimensional Requirements for Commercial Districts, Subsection 4.4.3, Height Limitation, by deleting the phrase "Chestnut Street Business," from the first sentence of the second paragraph and by adding a new third paragraph so that the second and third paragraph of the subsection shall now read as follows:

"Notwithstanding the above, no building or structure which is located on property in the Avery Square Business, Hillside Avenue Business, or Neighborhood Business districts shall exceed two and one-half (2 ½) stories, including ground level covered or enclosed parking, no more than two (2) stories of which shall be occupied except for storage, nor shall the building or structure exceed a total height of thirty-five (35) feet.

Notwithstanding the above, in the Chestnut Street Business District, the limit of height of a building or structure shall be two and one-half (21/2) stories not to exceed thirty-five (35) feet, including ground level covered or enclosed parking, provided that in no event shall any building contain more than two floors used for non-residential occupancy other than storage, residential occupancy being permitted on the second floor and in the half-story directly above the second floor consistent with the use and density requirements of Section 3.2.2."

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting
PLANNING BOARD RECOMMENDS THAT:

*Article Information:*

## ARTICLE 25: AMEND ZONING BY-LAW – ALLOWING MORE THAN ONE MUNICIPAL BUILDING AND/OR USE ON A LOT

To see if the Town will vote to amend the Needham Zoning By-Law as follows:

(a) In Section 3.2, Schedule of Use Regulations, Subsection 3.2.1, Uses in Rural Residence-Conservation, Single Residence A, Single Residence B, General Residence , Apartment A-1, Apartment A-2, Apartment A-3, Institutional, Industrial and Industrial 1 Districts, by inserting the following before the subheading "**ACCESSORY**": "More than one municipal building and/or use on a lot" and the letter "Y" across all zoning districts in the table.

(b) In Section 3.2, Schedule of Use Regulations, Subsection 3.2.2, Uses in Business, Chestnut Street Business, Center Business, Avery Square Business, and Hillside Avenue Business, by inserting the following before the subheading "**ACCESSORY**": "More than one municipal building and/or use on a lot" and the letter "Y" across all zoning districts in the table.

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting
PLANNING BOARD RECOMMENDS THAT:

*Article Information:*

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## ARTICLE 26: AMEND ZONING BY-LAW – DESCRIPTION OF FLOOD PLAIN DISTRICT

To see if the Town will vote to amend the Needham Zoning By-Law as follows:

(a) In Section 2.3, Description of Flood Plain Districts, by deleting Sections 2.3.4, 2.3.5, 2.3.6, 2.3.7 and 2.3.8 thereof.

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting
PLANNING BOARD RECOMMENDS THAT:

*Article Information:*

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## ARTICLE 27: AMEND ZONING BY-LAW – MAP CHANGE TO FLOOD PLAIN OVERLAY DISTRICT

To see if the Town will vote to amend the Needham Zoning By-Law by amending the Zoning Map to revise the boundaries of the Flood Plain Overlay District so that the District now comprises the following:

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(a) All special flood hazard areas within the Town of Needham designated as Zone A, AE, or AH on the Norfolk County Flood Insurance Rate Map (FIRM) issued by the Federal Emergency Management Agency (FEMA) for the administration of the National Flood Insurance Program. The map panels of the Norfolk County FIRM that are wholly or partially within the Town of Needham are panel numbers 25021C0016E, 25021C0017E, 25021C0018E, 25021C0019E, 25021C0028E, 25021C0036E, 25021C0037E, 25021C0038E, and 25021C0039E dated July 17, 2012. The exact boundaries of the District may be defined by the 100-year base flood elevations shown on the FIRM and further defined by the Norfolk County Flood Insurance Study (FIS) report dated July 17, 2012.

(b) All that land along or sloping toward that portion of Rosemary Brook between Rosemary Lake and Central Avenue that is at or below the following elevations: (i) Ninety (90) feet above mean sea level upstream of West Street; and (ii) Eighty-eight (88) feet above mean sea level between West Street and Central Avenue.

(c) All that land along or sloping toward that portion of Rosemary Brook between Central Avenue and the Needham-Wellesley town line that is at or below an elevation of eighty-five (85) feet above mean sea level.

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting
PLANNING BOARD RECOMMENDS THAT:

*Article Information:*

## GENERAL ARTICLES / CITIZENS' PETITIONS / COMMITTEE ARTICLES

### ARTICLE 28: ACCEPT PROVISIONS OF MGL – INCREASE IN RETIREE COLA BASE

To see if the Town will vote to increase the maximum base on which the retiree cost of living (COLA) is calculated from $12,000 per year to $14,000 in accordance with Chapter 32, Section 103(j) and Section 19 of Chapter 188 of the Acts of 2010; or take any other action thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: The purpose of this article is to increase the base amount upon which the Cost of Living benefit is paid to Town of Needham retirees. Currently, the maximum base upon which retiree pension COLA is calculated is $12,000; therefore, the maximum amount that a retiree can receive, even if his/her pension exceeds $12,000, is $360. Approval of this article will increase the COLA base from $12,000 to $14,000. The decision as to whether to grant a COLA and at what amount is made annually by vote of the Retirement Board.*

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## ARTICLE 29: HOME RULE PETITION/AMEND TOWN OF NEEDHAM CHARTER PART 3, TOWN OFFICERS, SECTION 18. MODERATOR

To see if the Town vote to authorize the Board of Selectmen to petition the General Court, in compliance with Clause (1), Section 8 of Article LXXXIX of the Amendments of the Constitution, to the end that legislation be adopted precisely as follows;

"An act amending the Charter of the Town of Needham, Part 3, Section 18. Moderator, by deleting the words "A moderator shall be elected by ballot at each annual town election"; and inserting in place thereof the words "A moderator shall be elected by ballot at the annual town election for a term of three years".

Be it enacted by the Senate and House of Representatives in the General Court assembled, and by authority of same, as follows:

Section 1. Part 3 TOWN OFFICERS, Section 18. Moderator is amended in line 1 of Section 18 by deleting the words "A moderator shall be elected by ballot at each annual town election"; and inserting in place thereof the words "A moderator shall be elected by ballot at the annual town election for a term of three years".

Section 2. This act shall become effective upon passage."

Or take any other action relative thereto.

INSERTED BY: Town Clerk
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: The term of the Town Moderator in Needham is one year. Needham's moderators have a history of running for the office annually, and State Law allows for a term of three years. Changing the term of the Moderator to three years would be consistent with most other elected offices in Needham. Because the term of the Moderator is set forth in the Town Charter, a home rule petition seeking State approval is required. The Town Charter was established as a Special Act of the Legislature.*

# COMMUNITY PRESERVATION ACT ARTICLES

## ARTICLE 30: APPROPRIATE FOR ROSEMARY POOL

To see if the Town will vote to raise and/or transfer and appropriate the sum of $1,450,000 for design and engineering of Rosemary Pool and site, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from CPA Free Cash; or take any other action relative thereto.

INSERTED BY: Community Preservation Committee
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: The Park and Recreation Commission is requesting $1,000,000 to design a new outdoor pool at the Rosemary site, and design improvements to the building and the parking lot. This*

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*project underwent a year-long feasibility study, with input from residents throughout the process at public meetings and through surveys. The design process will include final decisions on the specific location on the Rosemary site for the pool, as well as the size of the pool and amenities such as a splash pad and boating on the lake. It is hoped that space within the building will be available for year-round use. The design process will also include the permitting process.*

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## ARTICLE 31: APPROPRIATE FOR NEWMAN ATHLETIC FIELDS

To see if the Town will vote to raise and/or transfer and appropriate the sum of $1,527,000 for Newman Athletic Fields renovation, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from CPA Free Cash; or take any other action relative thereto.

INSERTED BY: Community Preservation Committee
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: The School Committee is requesting $1,527,000 to construct replacement athletic fields at the back of the Newman School. Two 60' diamonds and a large multi-purpose field will be rebuilt, solving a constant issue with water retention, and providing drier fields for more consistent use. A pedestrian path would be added around the fields for personal fitness and school activities. The project has gone through a year-long design process, including permitting.*

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## ARTICLE 32: APPROPRIATE FOR EASTMAN CONSERVATION

To see if the Town will vote to raise and/or transfer and appropriate the sum of $800,000 for the reconstruction of the Eastman Conservation Area, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from the FY2015 Free Cash; or take any other action relative thereto.

INSERTED BY: Community Preservation Committee
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: The School Committee is requesting $800,000 to construct improvements on the trail system that is part of the Science Center curriculum for the schools, with a variety of natural habitats located within the trail. The Eastman Conservation Area is located at the Newman School, and the project was designed with the Newman Athletic Fields project. The existing boardwalks would be removed and ADA access would be included throughout the trail, so that all students can reach the teaching spots. The project has gone through a year-long design process, including permitting.*

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## ARTICLE 33: APPROPRIATE FOR MILLS FIELD

To see if the Town will vote to raise and/or transfer and appropriate the sum of $510,000 for Mills Field Improvements, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from the CPA Free Cash; or take any other action relative thereto.

INSERTED BY: Community Preservation Committee

FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:* *The Park and Recreation Commission is requesting $510,000 to make improvements to parking at Mills Field, renovate the basketball court, add a single unit restroom, and replace the sod on the 60' diamond. The project has gone through a year-long design process.*

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**ARTICLE 34: APPROPRIATE FOR RIDGE HILL/STUDENT CONSERVATION ASSOCIATION**

To see if the Town will vote to raise and/or transfer and appropriate the sum of $10,000 for Ridge Hill Loop Trail Improvements, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from the Open Space Reserve; or take any other action relative thereto.

INSERTED BY: Community Preservation Committee
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:* *The Conservation Commission is requesting $10,000 to bring the MA Student Conservation Association to Ridge Hill to work on up to 10 days of projects, including trail improvements and building a small bridge. A volunteer day would be scheduled while the students are on site. The funds will cover the fee for the group, plus materials needed for the projects. The Town will provide a location for the team to camp while working on the projects.*

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**ARTICLE 35: APPROPRIATE FOR BOAT LAUNCH**

To see if the Town will vote to raise and/or transfer and appropriate the sum of $30,000 for Boat Launch Improvements, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from the FY2015 Free Cash; or take any other action relative thereto.

INSERTED BY: Community Preservation Committee
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:* *The Park and Recreation Commission is requesting $30,000 for design funds for improvements to the existing Charles River canoe/kayak launch on South Street, near Dedham Avenue. The intention is for the area to be pedestrian-friendly, and to make it easier to access the river to launch small boats.*

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**ARTICLE 36: APPROPRIATE FOR RAIL TRAIL**

To see if the Town will vote to raise and/or transfer and appropriate the sum of $100,000 for the Bay Colony Rail Trail construction, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from the FY2015 Free Cash; or take any other action relative thereto.

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INSERTED BY: Community Preservation Committee
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:* *The Town Manager has requested up to $100,000 for construction of the rail trail from the Town Forest to the Charles River. The rails and wooden ties will be removed before the summer, providing a passable path, and the bid documents are being developed for the construction, including a stone dust surface, safety fencing and road crossings. The Bay Colony Rail Trail Association has donated $115,000 to the Town towards this project, and the state is contributing $70,000. Additional fundraising is underway.*

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## ARTICLE 37: APPROPRIATE FOR PURCHASE OF OPEN SPACE

To see if the Town will vote to raise and/or transfer and appropriate a sum for the purchase of open space, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from the Open Space Reserve; or take any other action relative thereto.

INSERTED BY: Community Preservation Committee
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:*

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## ARTICLE 38: APPROPRIATE TO COMMUNITY PRESERVATION FUND

To see if the Town will vote to hear and act on the report of the Community Preservation Committee; and to see if the Town will vote to appropriate a sum pursuant to M.G.L. Chapter 44B from the estimated FY2016 Community Preservation Fund revenues, or to set aside certain amounts for future appropriation, to be spent under the direction of the Town Manager, as follows:

**Appropriations:**

| | |
|---|---|
| A. Administrative and Operating Expenses of the Community Preservation Committee | $82,000 |

**Reserves:**

| | |
|---|---|
| B. Community Preservation Fund Annual Reserve | $1,448,606 |
| C. Community Housing Reserve | $281,353 |
| D. Historic Resources Reserve | $0 |
| E. Open Space Reserve | $281,353 |

or take any other action relative thereto.

INSERTED BY: Community Preservation Committee
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:* *Town Meeting and voters approved the Community Preservation Act in 2004. The Fund receives monies through a 2.0% surcharge on local real estate property tax bills with certain exemptions. Adoption of the Act makes the Town eligible to receive additional monies on an annual basis from the Massachusetts Community Preservation Fund. Any expenditure from the Community*

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*Preservation Fund must be both recommended by the CPC and approved by Town Meeting. The law requires that at least 10% of the revenue be appropriated or reserved for future appropriation for each of the following purposes: community housing, historic preservation and open space. The Town traditionally sets aside 11% to account for any changes to the revenue estimate or State match that may occur during the year. Up to 5% of the annual revenue estimate may be utilized for the administrative and operational expenses of the Community Preservation Committee. At the end of the fiscal year, unspent administrative funds return to the CPA Annual Reserve.*

## HIGH SCHOOL ARTICLES

### ARTICLE 39: HOME RULE PETITION/CONSTRUCT ADDITIONS TO HIGH SCHOOL UNDER GL CH 149A

To see if the Town will vote to authorize the Board of Selectmen to petition the General Court, in compliance with Clause (1), Section 8 of Article LXXXIX of the Amendments of the Constitution, to the end that legislation be adopted precisely as follows. The General court may make only clerical or editorial changes of form to the bill, unless the Town Manager approves amendments to the bill before enactment by the General Court. The Town Manager is hereby authorized to approve amendments that shall be within the scope of the general public objectives of this petition.

AN ACT AUTHORIZING THE TOWN OF NEEDHAM TO AWARD A CONTRACT AND CONSTRUCT AN ADDITION AND ALTERATIONS TO NEEDHAM HIGH SCHOOL UNDER THE PROVISIONS OF GENERAL LAWS CHAPTER 149A.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. The provisions of General Laws Chapter 149A Section 1 not withstanding, the Town of Needham is authorized to construct an addition and alterations to the Needham High School that includes permanent classrooms and an expansion of the cafeteria under the provisions of General Laws Chapter 149A even though the costs are estimated to be less than $5,000,000.

SECTION 2. This act shall become effective upon final passage.

INSERTED BY:
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: The PPBC is currently studying the need for the renovation and addition to Needham High School, including expansion of the cafeteria and the addition of classroom space. The project schedule would require construction during the summer to open the school in September. Due to the compressed schedule, the PPBC recommends that the project be constructed under the "Construction Manager at Risk" method. Because State law does not allow the Town to utilize this method for projects estimated to cost less than $5 million, a home rule petition seeking Legislative approval is required.*

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## ARTICLE 40: APPROPRIATE FOR HIGH SCHOOL EXPANSION

To see if the Town will vote to raise and/or transfer and appropriate the sum of $500,000 for engineering and design for High School expansion, to be spent under the direction of the Town Manager, and that $276,000 be transferred from Free Cash, $38,046 be transferred from Article 3 of the 2008 May Special Town Meeting, $10,086 be transferred from Article 32 of the 2008 Annual Town Meeting, $11,319 be transferred from Article 5 of the 2008 October Special Town Meeting, $17,070 be transferred from Article 45 of the 2009 Annual Town Meeting, $6,076 be transferred from Article 33 of the 2010 Annual Town Meeting, $68,385 be transferred from Article 9 of the 2009 November Special Town Meeting, $12,305 be transferred from Article 39 of the 2013 Annual Town Meeting, and $60,713 be transferred from Article 1 of the 2013 November Special Town Meeting; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: This project funding would be for design of added classroom and cafeteria space at Needham High School. The preliminary concept for classroom expansion would include the installation of new classroom, storage space, and circulation representing between 6,500 - 8,100 s.f. of space. The Permanent Public Building Committee is in the process of overseeing a feasibility study to determine the best plan for the installation of classrooms. The cafeteria project includes the expansion of the existing cafeteria and servery area. The preliminary scope includes: adding 2500 s.f. to the existing cafeteria space and creating an expanded seating area; reconfiguring the seating by replacing round tables with bench-style seats; reconfiguring table placement and installing counters with moveable chairs around the periphery of the dining room; adding a sixth cash register and pushing the cash register lines out of the servery area and into the dining room; reconfiguring the serving line to allow for better student flow; and upgrading furnishings and fixtures in the dining room area. All features of the High School classroom expansion project are subject to decisions made after the feasibility report is complete.*

*It is anticipated that project funding for construction would be brought before STM in November after bids are received.*

# CAPITAL ARTICLES

## ARTICLE 41: RESCIND DEBT AUTHORIZATIONS

To see if the Town will vote to rescind a portion of certain authorizations to borrow, which were approved at prior town meetings, where the purposes of the borrowing have been completed, and/or it was unnecessary to borrow the full authorization:

| Project | Town Meeting | Article | Authorized | Rescind |
|---|---|---|---|---|
| Rosemary Pool Complex | 2000 ATM | 63 | $100,000 | $7,500 |
| Public Services Administration Bldg. | 2008 STM (OCT) | 5 | $5,725,000 | $49,000 |
| RTS Construction Equipment | 2011 ATM | 42 | $86,000 | $12,000 |
| Town Hall (CPA Portion) | 2009 ATM | 35 | $7,200,000 | $1,210,000 |

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| | | | | |
|---|---|---|---|---|
| Pollard School Boiler Replacement | 2013 ATM | 40 | $800,000 | $140,000 |

or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: When a project is financed by borrowing, the project has been completed, and the bills have been paid, the balance of the authorization that was not borrowed and not reserved for other project obligations may be rescinded. A Town Meeting vote to rescind prevents the Town from borrowing the amount rescinded, and frees up borrowing capacity. In some cases, the full appropriation for a project is not required, due to changes in scope, cost saving measures, or favorable bids.*

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## ARTICLE 42: APPROPRIATE FOR GENERAL FUND CASH CAPITAL

To see if the Town will vote to raise and/or transfer and appropriate $1,941,411 for General Fund Cash Capital, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from Free Cash; or take any other action relative thereto:

| Group | Description | Recommended | Amendment |
|---|---|---|---|
| | | | |
| General Government | Mail Processing Machines | 30,645 | |
| General Government | Network Hardware, Servers & Switches | 30,000 | |
| Public Schools | Copier Replacement | 62,740 | |
| Public Schools | Furniture | 45,405 | |
| Public Schools | Technology Replacement | 403,000 | |
| Public Works | Fuel System Software/Hardware Upgrade | 94,500 | |
| Public Works | Mobile Column Lifts | 73,500 | |
| Public Works | Fleet Replacement Program | 1,077,249 | |
| Public Facilities | Energy Efficiency Upgrade Improvements | 96,323 | |
| Public Facilities | Fleet Replacement Program | 28,049 | |
| | | 1,941,411 | |

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information:*

***MAIL PROCESSING MACHINE REPLACEMENT*** *This article would fund the replacement of two pieces of equipment - folding/stuffing and mail - used by the Information Technology Center (ITC) to support multiple departments. The folding/stuffing machine is used for various tasks by the ITC in support of the Finance Department and in response to requests from external departments. The mail machine is used daily in support of multiple departments for postage and mailing.*

***NETWORK HARDWARE SERVERS AND SWITCHES*** *The request is to replace older servers, both application and data, with newer, faster, and more energy efficient models including hardware to install virtualization software. This funding also supports the replacement of the spam filter, virus firewall, and internet filtering, and older network switches that connect buildings, departments, and workstations throughout the Town. Newer models of both servers and switches will be better able to take advantage of the Town fiber and increase the speed of data within the Town's fiber network. Not replacing or updating this equipment can have an adverse effect on email operability, financial applications, internet access, data accessibility, and backups between the Town's datacenters.*

***SCHOOL COPIER REPLACEMENT*** *In May 2003, Town Meeting authorized $60,000 in first-year funding to establish a replacement cycle for school photocopiers. School photocopiers are located in all of the schools and the administration building, and are used both by administrative and teaching staff. Teachers use the machines to reproduce classroom materials, including homework sheets, exams, teaching packets, etc. Currently, the School Department owns 48 copy machines. The FY2016 request replaces four copy machines. Copier replacement is planned on a lifecycle analysis, which projects when a copier should be replaced based on actual usage and the manufacturer's total estimated capacity. Copiers that are heavily used are replaced more frequently than copiers that are lightly used. A seven-year maximum duty life is assumed for most machines, even if they have not yet reached maximum copy allowances, given the additional operating expense associated with servicing and maintaining older equipment, as well as the difficulty in obtaining replacement parts. This analysis assumes that copiers are redeployed around the District, as needed, to match copier use with equipment capacity.*

***SCHOOL FURNITURE*** *This request continues the replacement cycle for school furniture in poor and fair condition at Hillside, Mitchell, Newman and Pollard Schools. In these schools, furniture is 10-20+ years old and in a state of disrepair after decades of heavy use. In FY2005, Town Meeting approved funding to begin the replacement of furniture in poor condition. By FY2015, all furniture in poor condition will have been replaced at these schools. The FY2016 funding request will continue with the replacement of furniture in fair condition at these schools and will allow for the purchase of furniture needed for enrollment growth. In addition, these funds would be used for new classroom furniture as needed.*

***TECHNOLOGY REPLACEMENT*** *The Technology Replacement Program includes the School Department's regular replacement cycle for technology devices, including computers, printers, and servers. The request includes:*

*<u>Hardware Replacement</u> The FY2016 request is $222,000 for 226 replacement devices: 35 teacher and administrator computers and 191 lab/classroom computers at Broadmeadow, Mitchell, Newman, and the High School. The majority of the computers being purchased will be deployed at the High School – FY2016 represents the second year of the anticipated five-year timeframe to replace the High School computers. The student stations will be replaced in critical lab locations.*

*<u>Printer Replacement</u> This portion of the request totals $12,000 in FY2016. The School Department is in the process of changing its printer replacement strategy to incorporate fewer, more efficient and more cost effective printers. The Department has moved to a shared printing model for Pollard teachers and is planning to do the same for the Mitchell School. The FY2016 request includes the replacement of 36 printers throughout the District.*

*<u>Interactive Whiteboard and Projector Replacements</u> This is a new category of the technology replacement program. During the past year, the Department has experienced the failure of some of the early installations of LCD projectors and SMART Boards. Summer maintenance has revealed a significant*

*number of possible failures that are still being assessed at Eliot, Hillside, Newman, Pollard and the High School. The FY2016 funding request for replacement is $75,000.*

*Infrastructure Hardware Infrastructure hardware includes servers, network hardware and wireless infrastructure. The server request for FY2016 is $30,000 and includes the replacement of servers that have been running 24/7 for three and four years. The servers will be repurposed to less critical functions for two and three years respectively. The network hardware request includes $27,000 in FY2016: $5,000 for UPS replacements and upgrades, as well as funds to update switches. Last year, the District began to update its switches to accommodate growing Internet bandwidth requirements, completing the 1 GB to 10 GB upgrade at the core and the head end room. In FY2016, $12,000 is allocated to complete the Eliot backup installation. In addition, there is a need to replace many of the switches around the district. Switches are typically installed as part of building projects and have not been included as part of the replacement cycle in the past. The request includes $10,000 for this purpose. Finally, the request includes $37,000 for the expansion of wireless infrastructure to support Internet functions at the Broadmeadow and Eliot elementary schools.*

***FUEL SYSTEM SOFTWARE/HARDWARE UPGRADE*** *This project will improve the Town's fuel management system. The Town currently utilizes a fuel dispensing system ("Gasboy") that is outdated and requires manual entry and authentication by vehicle drivers. The current operating system is outdated and is no longer fully supported by the manufacturer. This upgrade of the fuel management system and software will provide more automated control of fuel. It will allow for quicker fueling by eliminating manual entry, reduce input errors, and will provide for more accurate reporting data of fuel usage. Additionally, hardware installed in late model equipment (1996 and newer) will automatically report vehicle information to the system for maintenance planning at the time of fueling, including: mileage, maximum vehicle speed, oil level and pressure, check engine light status, and any faults. The fuel system hardware can be removed and installed at a new location if deemed appropriate in the future, and the software is capable of managing multiple fueling locations. This upgrade will provide for the installation of 140 automotive modules into vehicles/equipment, 240 fuel keys for vehicles/equipment, new nozzles, fuel island controls and kiosk, and a hard and/or wireless data connection.*

***MOBILE COLUMN LIFT*** *This request would be to replace an existing permanently-mounted above ground automotive lift with a portable mobile four column lift. The existing 7,000 lb. two post automotive lift is unable to lift many vehicles and equipment serviced by the DPW. The lift is also outdated and in need of repairs. Parts are unavailable, and would need to be manufactured for needed repairs. The original lift was acquired second hand from a school program. A mobile four column lift will lift all the vehicles currently serviced, and will provide greater flexibility by allowing vehicles to be lifted on any flat surface. It can be used in any of the bays, and can be used to service vehicles in the DPW yard. This lift will come with additional jack stands so that vehicles can be raised, evaluated, and remain on those stands while waiting for parts. This will increase efficiency as vehicles will not need to be raised and lowered more than once in order to perform maintenance on multiple pieces of equipment.*

***FLEET REPLACEMENT - SPECIALIZED EQUIPMENT*** *Unless circumstances require otherwise, the fleet replacement – Specialized Equipment planned for FY2016 includes the following;*

| Unit | Division | Year | Existing Description | Request Description | Miles/Hours | Cost |
|---|---|---|---|---|---|---|
| 7 | DPW Highway | 2000 | International 4900 Dump | International 7300 Dump | 43,414 | $219,746 |
| 49 | DPW Highway | 2002 | Volvo Tractor | International 7600 Multi- | 98,562 | $269,930 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | body Dump | | |
| 73 | DPW Parks | 2008 | Ford F-350 Dump | Ford F-550 | 42,648 | $78,296 |
| 74 | DPW Parks | 2008 | Ford F-350 Dump | Ford F-550 / Hook Loader | 48,043 | $104,102 |
| 75 | DPW | 2008 | Ford F-550 Dump | Ford F -550 | 37,353 | $78,296 |

***FLEET REPLACEMENT - SNOW AND ICE EQUIPMENT*** *Unless circumstances require otherwise, the fleet replacement – Snow & Ice Equipment planned for FY2016 includes the following;*

| Unit | Division | Year | Existing Description | Request Description | Miles/Hours | Cost |
|---|---|---|---|---|---|---|
| 106 | DPW Highway | 2002 | Sidewalk Tractor/Track | Same or Similar | 1,017 | $152,912 |
| 117 | DPW Highway | 2000 | Sidewalk Tractor | Same or Similar | 1,135 | $173,967 |

***CORE FLEET REPLACEMENT*** *Unless circumstances require otherwise, the core fleet replacement planned for FY2016 includes the following;*

| Unit | Division | Year | Existing Description | Request Description | Miles/Hours | Cost |
|---|---|---|---|---|---|---|
| 705 | Public Facilities | 2006 | Ford Econ Van E250 | Same or Similar | 57,460 | $28,049 |

***PUBLIC FACILITIES ENERGY EFFICIENCY UPRADE IMPROVEMENTS*** *The May, 2011 Special Town Meeting appropriated funding for an engineering study for energy upgrades at ten key buildings. The results of this study illustrate that the Town's investment in selected and recommended energy upgrades will pay for themselves within 10 years. Unless circumstances dictate otherwise, In FY2016, the third year of a five year plan, includes funding targeted for retro-commissioning the HVAC controls at the Eliot School and converting lighting to more energy efficient induction lighting at the Eliot School and at Fire Station #2.*

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**ARTICLE 43: APPROPRIATE FOR PUBLIC WORKS INFRASTRUCTURE PROGRAM**

To see if the Town will vote to raise and/or transfer and appropriate the sum of $1,453,500 for improvements and repairs to the Town's infrastructure including but not limited to roads, bridges, sidewalks, intersections, drains, brooks and culverts, to be spent under the direction of the Town Manager, and to meet this appropriation that $453,500 be transferred from Free Cash and that the Treasurer, with the approval of the Board of Selectmen, is authorized to borrow $1,000,000 under M.G.L., Chapter 44, Section 7; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:* *The Public Works Infrastructure Program allows the Department of Public Works to make improvements and repairs to Town infrastructure, including but not limited to roads, bridges, sidewalks, intersections, drains, brooks and culverts.*

***STREET RESURFACING*** *This program is intended to improve the structural and surface integrity of the Town's 123 linear miles of accepted streets. The primary strategy of this program is asphalt paving and incidental work. Incidental work may include asphalt berm curb, new grass shoulders, corner reconstruction including handicapped ramps, minor drainage improvements, street sign replacement, traffic markings, and signs. Applying this repair strategy in a timely manner will extend the useful life of roadways for up to 15 years. Installing a monolithic asphalt berm curb better defines the edge of road, improves drainage and protects the shoulder from erosion. In the summer of 2014, the Town received additional funding from the Commonwealth ($137,000) for crack filling and pothole repair which supplemented the Town's efforts in those areas. Target funding for street resurfacing in FY2016 is $475,000.*

***TRAFFIC SIGNAL & INTERSECTION IMPROVEMENTS*** *This program funds traffic signal improvements and intersection improvements, and new traffic signal installations where none currently exist. No funding is targeted for this program in FY2016.*

***SIDEWALK PROGRAM*** *This Program funds improvements to the network of sidewalks throughout the community. There are over 160 miles of accepted sidewalks in Needham, and more than half do not comply with current standards and require significant improvements including the installation of handicapped ramps. All sidewalk improvements must comply with Federal and State laws and construction standards. Current estimates have identified over $20,000,000 in backlogged sidewalks in need of repair. Unless circumstances dictate otherwise, the target funding for the sidewalk program in FY2016 is $225,000.*

***STORM DRAIN CAPACITY IMPROVEMENTS*** *This program provides funding to improve roadway drainage capacity. The 2002 Stormwater Master Plan identified a number of areas throughout Needham where improvements are required to resolve flooding problems and remove illicit discharge. Locations for improvements have been prioritized within the plan. Since the issuance of the Stormwater Master Plan, numerous multi-unit developments have been built or are planned in the Town. These developments include new roads with drainage structures and roof or sump connections that are then connected to existing Town systems. These new connections have increased the load on the Town's drainage system and caused flooding in some areas. Unlike circumstances dictate otherwise, FY2016 funding is targeted for the Greendale Avenue area (engineering - $120,000 and construction - $350,000).*

***STORM DRAIN SYSTEM REPAIRS*** *This program provides funding to repair failing storm drainage infrastructure within Town easements that have been discovered through investigation work. These projects will include the replacement of existing culverts that have deteriorated over time and are restricting flow. This work will eliminate flooding and capacity issues in the immediate vicinity. FY2016 funding is targeted for the replacement of ten feet of pipe underneath a culvert on Edgewater Drive, the replacement of a badly damaged 100 foot section of 18" reinforced concrete drain pipe within a Town easement adjacent to 470 South Street, and various small projects related to the Labor Day 2013 storm drainage remediation ($203,500).*

***BROOKS AND CULVERTS – REPAIR AND MAINTENANCE*** *This program addresses poorly draining brooks, streams, waterways and culverts throughout the Town that have been severely damaged by heavy rains/storms in the past. Flooding has caused the failure of retaining walls, resulting in extensive erosion and silt deposits in brooks and streams. The silt has provided a medium for vegetation*

*and affected the flow of water, and the situation has resulted in the loss of useable abutting property and flooded basements. Brook and culvert repair and maintenance is a component of the Town's NPDES permit under Environmental Protection Agency (EPA) regulations. Unless circumstances dictate otherwise, FY2016 funding is planned for continued wall repair along Rosemary Brook ($80,000).*

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## ARTICLE 44: APPROPRIATE FOR CENTRAL AVENUE/ELLIOT STREET BRIDGE CONSTRUCTION

To see if the Town will vote to raise and/or transfer and appropriate the sum of $2,000,000 for reconstruction and repair of the Central Avenue/Elliot Street bridge, to be spent under the direction of the Town Manager, and to meet this appropriation the Treasurer, with the approval of the Board of Selectmen, is authorized to borrow said sum under M.G.L., Chapter 44, Section 7; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: In the spring of 2013, the Central Avenue/Elliot Street ("Cooks") Bridge was identified by the state as having structural deficiencies. The Town of Needham and the City of Newton engaged a structural engineer to further evaluate the bridge. The monitoring that was conducted provided sufficient information for the two communities to determine the type of repairs needed. While less extensive than the worst case scenario of a total replacement, the repairs will require that the bridge be shut down for a period of time. The construction estimate for the project is based on the cost of rehabilitation, which is referred to as the "root canal" approach. This will require supporting the structure, removing the asphalt and dirt interior of the bridge and the replacing it with concrete. This methodology also accounts for the need to preserve the historic nature of the bridge. The requested funding is for the Town's share of the project - costs will be shared equally with the City of Newton.*

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## ARTICLE 45: APPROPRIATE FOR SEWER ENTERPRISE FUND CASH CAPITAL

To see if the Town will vote to raise and/or transfer and appropriate the sum of $120,500 for Sewer Enterprise Fund Cash Capital, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from Sewer Enterprise Fund retained earnings; or take any other action relative thereto:

| Group | Description | Recommended | Amendment |
|---|---|---|---|
| Sewer | Specialty Equipment | 70,500 | |
| Sewer | Sewer Service Connections | 50,000 | |
| | | 120,500 | |

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information:*

***SEWER SPECIALIZED EQUIPMENT*** *This request is for a new piece of equipment that will be used to clean sewer lines and drains in difficult to access and/or remote locations that cannot be reached by standard methods using existing equipment. This easement machine will attach to the existing vactor truck or jet truck and is able to jet clear sewers and drains that cannot be reached by the existing equipment. This would be used to perform preventative maintenance in areas that are not presently being reached by machinery and must be hand-serviced, and to respond more effectively to sewer back-ups.*

***SEWER SERVICE CONNECTIONS*** *The primary purpose of this program is to install sewer service connections in advance of roadway resurfacing or reconstruction. There are 108 homes that have access to sewer mains, but which have no lateral connections to the street. These residents have chosen not to connect to the sewer system at this time. The purpose of this request is to provide the lateral sewer line from the sewer main to the property line so that the homeowners may connect should they choose to or should their septic systems fail. The lateral sewer line is to be installed at least one year prior to a road reconstruction/paving project. If the services are not replaced prior to roadway improvements, an element of the subsurface infrastructure remains susceptible to failure before the useful life of the reconstructed roadway has been realized.*

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## ARTICLE 46: APPROPRIATE FOR SEWER PUMP STATION IMPROVEMENTS

To see if the Town will vote to raise and/or transfer and appropriate the sum of $550,000 for Sewer Pump Station Improvements, to be spent under the direction of the Town Manager, and to meet this appropriation that $116,143 be transferred from Article 59 of the 1998 Annual Town Meeting, and $433,857 be transferred from Sewer Enterprise Fund retained earnings; or take any other action relative thereto:

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: As part of the Wastewater System Master Plan, several of the wastewater pumping stations were evaluated to assess their physical condition and capacity, and to evaluate current and future flow projections. Canister pump stations at Lake Drive, Cooks Bridge (Milo Circle), Alden Rd and Reservoir "A" are each either at or beyond their design life. Constant maintenance and emergency shutoffs occur more frequently, and the stations require an increasing level of resources to remain operational. . FY2016 funding is targeted for engineering, design and construction of the Reservoir Street "A" Station.*

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## ARTICLE 47: APPROPRIATE FOR WATER ENTERPRISE FUND CASH CAPITAL

To see if the Town will vote to raise and/or transfer and appropriate the sum of $976,604 for Water Enterprise Fund Cash Capital, to be spent under the direction of the Town Manager, said sum to be transferred from Water Enterprise Fund retained earnings; or take any other action relative thereto:

| Group | Description | Recommended | Amendment |
|---|---|---|---|
| Water | Fleet Replacement Program | 41,604 | |
| Water | Mobile Record Keeping Devices GIS | 35,000 | |

| | | | |
|---|---|---|---|
| Water | Service Connections | 200,000 | |
| Water | Water Supply Development | 700,000 | |
| | | 976,604 | |

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information*:

***CORE FLEET REPLACEMENT*** *Unless circumstances require otherwise, FY2016 Water Core Fleet replacement includes the following:*

| Unit | Division | Year | Existing Description | Request Description | Miles/Hours | Cost |
|---|---|---|---|---|---|---|
| 21 | Water | 2010 | F-150 Pick-up | F-250 Pick-up | 31,729 | $41,604 |

***MOBILE RECORD KEEPING DEVICES*** *This funding will support an upgrade in the manner in which the Department of Public Works conducts data collection, data retrieval, and work order completion in the field. The Department is presently working with updated Geographic Information System (GIS) and database software that will interact with portable devices to provide Department field staff on-site access to valuable data. The software will enable personnel to upload and update record drawings within hours as opposed to the months that it currently takes to update these same records. The mobile record-keeping devices will enable personnel to retrieve information at the scene of a job site rather than traveling to the Public Works Department to search out the information, thereby reducing response time. This will allow employees to more quickly locate shut off valves during emergency situations that could negatively impact homeowners and business owners. Additionally, these devices will provide onsite access to work orders and records, such as catch basin records, that will allow real time updating and retrieval of data. These devices will be placed in a pool, and staff who requires them to conduct their daily functions will sign them out as needed. This request is to purchase mobile devices and to scan existing drawings into the network for remote access. Project funding will support 12 devices ($20,000) and scanning and coding ($15,000).*

***WATER SERVICE CONNECTIONS*** *The primary purpose of this program is to remove old iron pipe water services that may contain lead from the water distribution system. Old water services are to be replaced at least one year prior to a road reconstruction/paving project. If the services are not replaced prior to roadway improvements, an element of the subsurface infrastructure remains susceptible to failure before the useful life of the reconstructed roadway has been realized. The FY2016 funding will provide approximately one year's value of water service replacements, which will fall in line with the road resurfacing program schedule. System wide, there are approximately 2,500 services that still need to be replaced.*

***WATER SUPPLY DEVELOPMENT*** *In April 2013, the Town redeveloped Well #3, restoring the yield of the well to approximately one third of its original capacity. The original capacity of the well was 50 gallons per foot, and the redevelopment brought the well up to 18 gallons per foot. (Prior to the redevelopment the yield of the well was as low as five gallons per foot). Since this last redevelopment in April 2013, the well is already showing signs of losing further capacity, and is pumping seven gallons per foot as of September 2014. Water supply development funds for FY2015 had been intended for the design and engineering of a new fourth well. Based on the condition of Well #3, this funding has been redirected*

*to the replacement of Well #3. The permitting process with the Massachusetts Department of Environmental Protection (DEP) for this replacement would be considerably shorter - approximately one year - rather than the seven to ten year process for establishing a new well. Once the capacity in Well #3 has been reestablished, planning for the fourth well will begin. The fourth well at the Charles River Well Field would provide reliability and redundancy while other wells are taken offline for routine maintenance or repair.*

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**ARTICLE 48: APPROPRIATE FOR WATER SYSTEM REHABILITATION PROGRAM**

To see if the Town will vote to raise and/or transfer and appropriate the sum of $820,500 for the Water System Rehabilitation Program, to be spent under the direction of the Town Manager, and to meet this appropriation that $3,575 be transferred from Water Retained earnings, that $12,703 be transferred from Article 56 of the May 2001 Annual Town Meeting, that $15,000 be transferred from Article 58 of the 2001 Annual Town Meeting, that $9,131 be transferred from Article 51 of the 2003 Annual Town Meeting, that $13,082 be transferred from Article 53 of the 2003 Annual Town Meeting, that $14,583 be transferred from Article 52 of the 2004 Annual Town Meeting, that $10,025 be transferred from Article 50 of the 2005 Annual Town meeting, that $11,409 be transferred from Article 46 of the 2007 Annual Town Meeting, that $18,000 be transferred from Article 46 of the 2008 Annual Town Meeting, that $9,740 be transferred from Article 48 of the 2008 Annual Town Meeting, that $58,166 be transferred from Article 39 of the 2010 Annual Town Meeting, that $10,086 be transferred from Article 45 of the 2011 Annual Town Meeting, and that the Treasurer, with the approval of the Board of Selectmen, is authorized to borrow $635,000 under M.G.L. Chapter 44, Chapter 29C or any other enabling authority; that the Treasurer, with the approval of the Board of Selectmen, is authorized to borrow all or a portion of the amount from the Massachusetts Water Pollution Abatement Trust (MWPAT) established pursuant to M.G.L. Chapter 29C and/or the Massachusetts Water Resources Authority (MWRA) and in connection therewith, to enter into a loan agreement and/or security agreement with the MWPAT and/or loan agreement and financial assistance agreement with the MWRA with respect to such loan; that the Town Manager be authorized to contract with the MWPAT, the MWRA and the Department of Environmental Protection with respect to such loan and for any federal, state or other aid available for the project or for the financing thereof; that the Town Manager is authorized to enter into a project regulatory agreement with the Department of Environmental Protection; and that the Town Manager is authorized to expend all funds available for the project; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: The Town's water infrastructure is routinely analyzed to assess functionality and performance, and to identify areas in need of repair. Water infrastructure requires ongoing attention and periodic replacement. Portions of the Town's water infrastructure are 75+ years old and approaching the end of their useful life. A diligent rehabilitation program encompassing maintenance, repair, and replacement ensures a reliable supply of water to the public. The Department of Public Works prioritizes replacement of water pipes based upon pipe condition, water break history, and adequacy of water flow to fire hydrants. Unless circumstances require otherwise, FY2016 funding will support the construction of new 8 inch water mains on Pleasant Street from Howland Street to Dedham Avenue (1,160 lf) and on Norfolk Street from Warren Street to Webster Street (1,300 lf).*

## TOWN RESERVE ARTICLES

### ARTICLE 49: APPROPRIATE TO THE OPEB TRUST FUND

To see if the Town will vote to raise and/or transfer and appropriate the sum of $160,000 to the OPEB Trust Fund, and to meet this appropriation that said sum be transferred from Overlay Surplus; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: The purpose of the OPEB (Other Post Employment Benefits) Trust is to set aside funds for the Town's retiree health and life insurance obligations. The Town began funding this program in 2002, and converted to fully-funding the plan on an actuarial basis in FY2008. From time to time, as funds become available for one-time use, the Town supplements the Annual Required Contribution (ARC) that is appropriated in the Townwide Expenses section of the operating budget. This has the effect of reducing the Town's unfunded liability more quickly.*

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### ARTICLE 50: APPROPRIATE TO ATHLETIC FACILITY IMPROVEMENT FUND

To see if the Town will vote to raise, and/or transfer and appropriate the sum of $1,026,412 to the Athletic Facility Improvement Fund, as provided under Chapter 46 of the Acts of 2003, and as further amended by Section 19 of Chapter 140 of the Acts of 2003, and to meet this appropriation that $20,712 be transferred from Article 4 of the March 3, 2008 Special Town Meeting. $160,000 be transferred from Overlay Surplus, and $845,700 be transferred from Free Cash; or take any other action relative thereto.

INSERTED BY: Board of Selectmen
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: The 2012 Annual Town Meeting authorized the creation of an athletic facility stabilization fund to set aside capital funds for renovation and reconstruction of the Town's athletic facilities and associated structures. The November, 2014 balance in the fund was $942,000. The replacement of the synthetic turf fields at Memorial park and DeFazio Field Complex is estimated to be $2.5 million in the 2020 timeframe, and $366,412 of the recommended appropriation is intended for these fields: $45,700 from the annual method of benchmarking to the Park and Recreation administrative fee receipts, $20,712 to be transferred from the balance of the DeFazio track article, and $300,000 from Free Cash. An additional $300,000 per year will be recommended over the next four years, if circumstances permit, to fully fund the synthetic turf replacement. The recommended appropriation also includes $660,000 intended for the for the renovation or reconstruction of the Memorial Park Building, Additional funds will be recommended over the next several years, as circumstances permit, and a feasibility study will be included in the FY2017 – FY2021 capital improvement planning process.*

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Draft 3.20.15

**ARTICLE 51: OMNIBUS**

To see if the Town will vote to raise by taxation, transfer from available funds, by borrowing or otherwise, such sums as may be necessary for all or any of the purposes mentioned in the foregoing articles, especially to act upon all appropriations asked for or proposed by the Selectmen, or any Town officer or committee, to appoint such committees as may be decided upon and to take action upon matters which may properly come before the meeting; or take any other action relative thereto.

INSERTED BY: Board of Selectmen

And you are hereby directed to serve this Warrant by posting copies thereof in not less than twenty public places in said Town at least 7 days before said meeting.

Hereof fail not and make due return of this Warrant with your doings thereon unto our Town Clerk on or after said day and hour.

Given under our hands at Needham aforesaid this 10th day of February 2015.

**JOHN A. BULIAN,** ***Chairman***
**MAURICE P. HANDEL,** ***Vice Chairman***
**MATTHEW D. BORRELLI,** ***Clerk***
**MARIANNE B. COOLEY**
**DANIEL P. MATTHEWS**

***Selectmen of Needham***

**A true copy,**
**ATTEST** _____ **2015**
**Constable (month) (day**

Draft 3.20.15

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 3/24/2015**

| | |
|---|---|
| **Agenda Item** | Town Manager's Report |
| **Presenter(s)** | Kate Fitzpatrick, Town Manager |

| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
|---|---|---|---|
| The Town Manager will update the Board on issues not covered on the agenda, as needed. | | | |
| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | **YES** | **NO** |
| | | | |
| **3.** | **BACK UP INFORMATION ATTACHED** | YES | **NO** |
| **(Describe backup below)**<br><br>none | | | |

**Board of Selectmen**
**TOWN OF NEEDHAM**
**AGENDA FACT SHEET**

**MEETING DATE: 03/24/2015**

| | |
|---|---|
| **Agenda Item** | Committee Reports |
| **Presenter(s)** | Board Discussion |

| | | | |
|---|---|---|---|
| **1.** | **BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED** | | |
| *Board members will report on the progress and / or activities of their Committee assignments.* | | | |
| **2.** | **VOTE REQUIRED BY BOARD OF SELECTMEN** | YES | **NO** |
| | | | |
| **3.** | **BACK UP INFORMATION ATTACHED** | YES | **NO** |
| **(Describe backup below)**<br><br>None | | | |

NEEDHAM
CROSSING

The Town of Needham welcomes the NAIOP Massachusetts tour of the newly invigorated Needham Crossing area. Needham is located approximately 10 miles southwest of Boston and will soon be served by three exits off I95/Route128, two of which will provide direct access into and egress from Needham Crossing. Existing infrastructure together with improvements already funded will support up to three million square feet of new development with good highway visibility and access.

Needham Crossing welcomes world-class businesses and complimentary retailers in a modern, connected, mixed-use urban layout that embraces contemporary architecture and urban design. Needham Crossing is unique in its mix of residential, office and other commercial uses (including retail, restaurant, and consumer services allowed on the first floor of multistory buildings), as well as the natural amenities which surround it—Cutler Lake Park and the Charles River. Already a high tech center with PTC, TripAdvisor, and other companies, Needham Crossing is home to many life science companies including Verastem, which recently relocated from Cambridge. Two first class hotels, Sheraton Needham Hotel and Marriott Residence Inn Needham, provide the business community with amenities for business visitors, employees, and conferences.

Needham Crossing is serviced by infrastructure undergoing expansion and improvement through the Add-A-Lane expansion project, including a new Kendrick Street interchange, reconstruction of Highland Avenue from the Route 128 Interchange to the Charles River, including a new traffic signal at First Avenue and the widening and related improvements at Second Avenue.

Additional development is already in the works. Normand Real Estate has recently purchased 27 acres of property adjacent to its existing development at Center 128, which will include a mix of upscale residential and commercial uses. This will undoubtedly incent more businesses and complimentary merchants and restaurants to join our envisioned modern urban environment. Needham Crossing is unique in its ability to provide not only a connected mixed-use urban layout that embraces contemporary architecture and urban design, but also unique natural amenities in the Charles River and Cutler Lake Park.

Recent changes in Needham Crossing have not occurred by accident; they reflect the Town's commitment to economic development via zoning and permitting changes and other assistance to businesses locating or expanding in Needham. The Town's Council of Economic Advisors provides zoning, permitting, and other recommendations to the Board of Selectmen to maintain and encourage development. The Town's Economic Development Director provides permitting and other assistance to businesses and/or developers. The Development Review Team allows for simultaneous multi-departmental staff reviews of projects with applicants. For additional information, please refer to the Commercial Permitting Guide, which is available online at www.needhamma.gov.

The Town of Needham and the City of Newton have identified the area along I-95/Route 128 as the $N^2$ Innovation Corridor, which is currently home to more than 150 companies in the high tech/life sciences/innovation sector, and continues to grow. The Town and the City are working collaboratively to make this area a destination for technology companies, start-ups and other innovators.

The Town of Needham welcomes you to Needham Crossing and invites you to explore an area where one can truly live, work and play.

Very truly yours,

John A. Bulian
Chairman, Needham Board of Selectmen

**Town of Needham**
**Board of Selectmen**
**Minutes for March 10, 2015**
**Selectmen's Chamber**
**Needham Town Hall**

6:30 p.m. Informal Meeting with Citizens:
Priscilla Murray and Curt Runnels, 58 Curve Street, spoke with the Board about the building boom in Needham and its impact on the health of seniors. They asked the Board about mitigation, and to consider enforcing current by-laws, larger fines, and limiting the size of new homes on small lots.

7:00 p.m. Call to Order:
A meeting of the Board of Selectmen was convened by Chairman John A. Bulian. Those present were Maurice P. Handel, Matthew D. Borrelli, Daniel P. Matthews, Marianne B. Cooley, Town Manager Kate Fitzpatrick, and Recording Secretary Mary Hunt.

7:00 p.m. Public Hearing - Consolidation of the Planning and Community Development Departments:
Ms. Fitzpatrick reminded the Board the Town consolidated the budgets of the Conservation Commission and the Zoning Board of Appeals in 2010, and created the position of Director of Planning and Community Development. At that time, Ms. Fitzpatrick said the budgets for both departments were never combined. She stated the consolidation would enable the smooth transfer of funds between departments. Ms. Fitzpatrick said the Planning Board, Conservation Commission, and Board of Appeals all voted to support the plan, and asked the Board of Selectmen for its support.

Mr. Bulian invited public comment. No public comments were made, however, Ms. Fitzpatrick stated written support was received from the Planning Board, Conservation Commission, and Board of Appeals.

**Motion by Mr. Handel that the Board vote to approve the creation of a Planning & Community Development Department as presented by the Town Manager in a proposal dated March 3, 2015.**
**Second: Ms. Cooley. Unanimously approved 5-0.**

Mr. Handel noted approval does not change the operation or responsibilities of each Board.

Mr. Matthews commented that while no public testimony was given tonight, the issue is not new. He said there has been a fair amount of discussion, and interested parties have had an opportunity to be heard publicly or otherwise.

7:05 p.m. Appointments and Consent Agenda:

**Motion by Mr. Handel that the Board of Selectmen vote to approve the Appointments and Consent Agenda as presented.**

**APPOINTMENTS**

1. **Rail Trail Advisory Committee** **Mike Retzky (term expires 6/30/2017)**
   **Gerry Koss (term expires 6/30/2017)**

**CONSENT AGENDA *=Backup attached**

1. **Ratify a request for a Special One Day Wines & Malt Beverages Only license from Sandra Rizkallah of Plugged In Band Program for its "British Invasion of Needham with Beatlejuice and Friends" event that was held on March 7, 2015 from 5:00 p.m. to 12:00 a.m. The event was held in Powers Hall at Town Hall, 1471 Highland Avenue, Needham.**
2. **Approve a request for a Special One Day Wines & Malt Beverages Only license from Carol Stento, of the Needham Women's Club to host its Needham Grand Tasting on Sunday, April 12, 2015 from 3:00 p.m. to 6:00 p.m. The event will be held in Powers Hall at Town Hall, 1471 Highland Avenue, Needham.**
3. **Upon the recommendation of the Town Engineer, approve the request of Steve and Heather Horan to construct a small addition within the limits of the Town's sewer easement at 122 Grant Street.**
4. **Approve an increase in the number of members of the Needham Community Revitalization Trust Fund from five (5) to seven (7).**
5. **Approve minutes of February 24, 2015 Open and Executive Session meetings.**
6. **Approve release of Executive Session minutes for the periods of February 25, 2009 through December 31, 2009 and April 8, 2003 through December 12, 2005.**
7. **Water & Sewer Abatement Order #1194.**
8. **Approve a request from Arik Grier of Bikes Not Bombs for its event to be held on June 7, 2015. It is a bike-a-thon event that will have cyclists riding through a portion of Needham during the 40 mile route of the ride, as well as the return path of the 60 mile ride. They will be in Needham around 11:45 a.m. The Needham portion of the route has been approved by the DPW, Police, Fire and Park and Recreation departments.**
9. **Approve a request from Michelle Harris, of PLGA Foundation d/b/a A Kids' Brain Tumor Cure, to ride a portion of its "Geared Up for Kids 2015" bike ride through Needham. The bike ride will be starting at 8:30 a.m. and ending at 10:30 a.m. at PTC, 140 Kendrick Street. Riders will take a right out of the parking lot and proceed into Newton where the ride will primarily take place. A Needham Police detail has been hired for the Needham portion of the event.**
10. **Approve a Special One Day All Alcoholic Beverages request from Karen Calton of St. Joseph Parish to hold its St. Joseph Parish Spring Gala on Saturday, March 28, 2015 from 6:00 p.m. to 10:00 p.m. The event will be held in Powers Hall at Needham Town Hall, 1471 Highland Avenue, Needham.**

**11. Accept gift of $225,000 from the Needham Crossing Improvement Corporation for 2nd Avenue improvements.**

**Second: Mr. Borrelli. Unanimously approved 5-0.**

7:10 p.m. Property Tax Relief & Assistance for the Elderly and Disabled:
Evelyn Poness, Treasurer/Collector, Dave Davison, Assistant Town Manager/Finance, and members of the Property Tax Assistance and Taxation Aid Committees appeared before the Board to discuss the efforts underway to increase contributions to the relief funds. Members of the two committees include: Thomas Mulhern, Patricia Harris, Elizabeth Handler, Jill Kahn-Boesel, Helen Newton, and Peter Hess.

Ms. Poness thanked residents who contributed over the years and said the funds have helped many senior citizens. She said the Property Tax Relief for the Elderly and Disabled Fund was established in 2004 and has awarded $161,830 to 381 recipients since 2005. Ms. Poness said contributions have gradually dropped since 2008 and 2009 resulting in a letter writing campaign to the newspapers as well as inserting envelopes into monthly bills. Ms. Poness said awards for 2015 may be lower than prior years. Ms. Poness mentioned possible ways to encourage donations to the fund, including the ability to make donations on the Town's website, public service announcements on the Needham Channel, utilizing the Town's Facebook page, placing envelopes at Town Meeting, and soliciting donations from local businesses.

Ms. Poness said that the Property Tax Assistance Program was established in 2009 and since that time $60,144 has been awarded to 161 recipients.

Mr. Bulian said the issue of increasing the Property Tax Assistance Program contribution was discussed at the Board of Selectmen meeting on January 13, 2015. He noted the amount was set at $27,500 for the Property Tax Assistance Program for FY2016.

Mr. Matthews said he likes the creative thinking to raise funds and feels the two funds should be linked, as in previous years. He suggested focusing on raising funds during one quarter a year. He said the fund would do better if residents are able to donate using the Town's website.

Ms. Cooley suggested changing the color of the contribution envelop every year. She asked about advertising restrictions.

Mr. Davison said the Town is allowed to insert an envelope, but cannot advertise, promote, or incentivize people to donate. He said using the website is allowed, but the Town must be mindful of the limitations and the perception of conflict of interest.

Mr. Bulian said a private organization could raise funds as part of a fundraising event.

Mr. Borrelli said getting the word out is critical, as many people did not realize the need or the decrease in funds. He suggested putting information in the annual Exchange Club phone book.

Mr. Bulian said awareness is critical as there is competition for many worthy causes. He thanked the committee members for their work.

7:30 p.m. Statement of Interest - Mitchell & Pollard School:
Daniel Gutekanst, Superintendent of Schools and Michael Greis, Chairman of the School Committee appeared before the Board to review Statements of Interest for Mitchell School and Pollard School.

Mr. Greis said that at its meeting on March 3, 2015, the School Committee reviewed draft MSBA Statements of Interest for the Mitchell School and Pollard School. He said the School Committee is very supportive, and hopes the Board of Selectmen would vote on it in time for the April 9, 2015 deadline with the MSBA.

Mr. Handel said he is concerned the Town may overextend itself as the Hillside School has already been accepted for participation in the MSBA process.

Mr. Borrelli asked if there were a penalty should Needham need to withdraw, even though it is unlikely the Town would get to that position. He said the Town has its capital plan in place and could not sustain multiple projects. He also asked about full day kindergarten.

Mr. Greis said the more transparent and forward thinking the Town is with the MSBA, the easier it is to have ongoing conversations and not get to the point of withdrawing. Mr. Greis said a sub-committee is beginning to plan for full day kindergarten, but it could take years to implement.

Mr. Matthews asked about material changes in the SOI for each school, which were also filed in prior years. He said over time there will be an increasing number of legitimate requests for funding. He said he is inclined to think that if the Town found itself to have the opportunity to do two projects at once, it would be well advised to consider ways to manage it, although he does not think that will happen anytime in the near future. He commented he is more concerned with the list of projects vying for the same dollars increasing the timeline. He said the Town should "put its best foot forward," but should be prepared to act.

Dr. Gutekanst commented the SOI's are essentially the same but include upgrades and maintenance that have occurred, citing the modular classrooms at the Mitchell School as an example.

Ms. Cooley said she supports both SOI proposals, as they are an important part of keeping the MSBA up to date with the most recent information. She commented Mr. Matthews points are well taken.

Mr. Bulian said he supports both SOI proposals. He said the Board of Selectmen will vote on the issue on March 24, 2015.

7:45 p.m. Local Initiative Program Housing Proposal:
Roy Cramer, Attorney, Mark Roopenian, Principal, Normandy Real Estate Partners, and Kevin Daley, Vice President, Development & Construction, Normandy Real Estate Partners appeared before the Board to present additional information in support of their request for the Board's consideration of a Local Initiative Program ("friendly 40B") for construction of an apartment complex at the newly acquired General Dynamics site near Second Avenue. Representatives from Normandy's project team were also in attendance to answer any questions.

Mr. Cramer said topics for discussion include Normandy's vision for the park, density, updated design, traffic, and fiscal analysis. He introduced representatives from Normandy's consulting team including Mark Roopenian, Kevin Daley, Brian Roessler from Elkus Manfredi Architects, Nancy Doherty from Tetra Tech, John Connery from Connery Associates, and Geoff Engler from SEB, LLC.

Mr. Roopenian described Normandy's vision for the park is a true "Live, Work, Play" environment on the forty acre property. He said the idea addresses many consumer needs, including residential, commercial, and retail. Mr. Roopenian said renovation of the current General Dynamics will serve different segments of the market, and can be renovated within a twelve month time frame. He said a true "Live, Work, Play" environment will have more people in the area on Saturdays and Sundays.

Mr. Daley spoke about density across the forty acre site with high end, mid level, and residential buildings in the mixed use area. He said a 400 unit apartment complex is scaled appropriately for the area.

Mr. Roessler reminded the Board of the schematic presented at the February 10, 2015 meeting. He proposes a redesigned plan that reduces the height of the building and exposure of parking along Second Avenue and A Street.

Ms. Doherty presented an analysis of the trip generation for the entire General Dynamic site. She said most traffic today comes in to the site in the morning, but with an apartment complex much of the traffic would be leaving and not adding to existing traffic.

Mr. Connery summarized the fiscal impact of the residential and commercial components of the project. He said net annual benefit to the Town is projected to

be approximately $1.65 million. He discussed school costs, as well as non-school costs including Police, Fire, and Health departments.

Mr. Handel asked for the anticipated number of park employees likely to live in the apartment complex.

Mr. Borrelli said he appreciates the new design and numbers. He asked about the timing of the full build out and its benefit to the Town. He commented about the number of units and said he is concerned about its impact to the Town. He suggested reducing the number of units. He asked about proposed mitigation to the Town and about traffic signals.

Mr. Matthews said the information is very helpful. He said time is a value and that he is hopeful an agreement can be reached.

Ms. Cooley said she appreciates the additional traffic information presented.

Mr. Bulian said he likes the redesign and the vision for the park.

8:25 p.m. Town Manager:
Kate Fitzpatrick, Town Manager appeared before the Board with 2 items to discuss:

1. Accept and Refer Zoning Amendment
Ms. Fitzpatrick said that at its meeting on March 10, 2015, the Planning Board voted to place an article on the warrant for the 2015 Special Town Meeting amending the zoning by-law regarding retaining walls. She said under State law, the Board has fourteen days to accept the proposed amendment and refer the amendment back to the Planning Board for its review, public hearing, and report. She said the Board's action in this matter is not discretionary.

**Motion by Mr. Handel that the Board vote to accept the proposed zoning amendment and to refer the proposed amendment to the Planning Board for review, public hearing, and report.**
**Second: Mr. Borrelli. Unanimously approved 5-0.**

2. 2015 Annual Town Meeting Preparation
Ms. Fitzpatrick discussed with the Board preparation for the 2015 Annual Town Meeting. She said the last opportunity to discuss the draft warrant will be on March 24, 2015, and several Town Meeting presentations are scheduled on that evening including Public Works, Solid Waste, Central Avenue bridge, sidewalk needs assessment, and the Retirement Board. She said on April 15, 2015 the Board will meet with the Planning Department, the PPBC, and School Committee regarding the high school project.

Ms. Fitzpatrick reviewed changes made to the warrant since the Board's last meeting.

8:30 p.m. Board Discussion:

1. Committee Reports

Mr. Handel reported the Council of Economic Advisors discussed the mixed use Route 128/Highland Avenue retail zoning and potential residential overlay district, and its economic potential for the area. He said the Planning Board is also analyzing the area.

8:35 p.m. Executive Session: (Exception 6)

**Motion by Mr. Handel that the Board of Selectmen vote to enter into Executive Session.**

**Exception 6 - To consider the purchase, exchange, lease or value of real estate, if the chair declares that an open meeting may have a detrimental effect on the negotiating position of the public body. Not to return to open session prior to adjournment.**

**Second: Mr. Borrelli. Mr. Bulian polled the Board. Unanimously approved 5-0.**

A list of all documents used at this Board of Selectmen meeting are available at: http://www.needhamma.gov/Archive.aspx?AMID=99&Type=&ADID=

Note: The meeting adjourned at 9:00 p.m.

pd $25 3/18/15

# ONE DAY SPECIAL LICENSE
# TOWN OF NEEDHAM BOARD OF SELECTMEN
# EVENT INFORMATION SHEET
***(Please complete and attach event flyer or other information.)***

| | |
|---|---|
| Event Manager Name (Name that will appear on license) | John Grugan |
| Event Manager Address | 59 E. Militia Heights Drive |
| Event Manager Phone Number | (781) 972-1022 |
| Organization Representing (if applicable) | Charles River Center |
| Is the organization (if applicable) you are representing non-profit? If so, please attach proof of non-profit status. | ☒ Non-profit ☐ For profit<br>☐ Proof of non-profit status is attached<br>Form of Proof: _____ |
| Name of Event | Charles River Center 5K Run/1M walk |
| Date of Event | September 27, 2015 |

License is for Sale of:
☒ Wines & Malt Beverages Only
☐ All Alcoholic Beverages (for non-profit groups only)

Requested Time for Liquor License FROM: 12:00pm TO: 3:00pm

Are tickets being sold in advance for this event? ☐ YES $ /per ticket ☒ NO

Is there an admission fee for this event? ☐ YES $ /per ticket ☒ NO

Are you using dues collected to purchase alcohol for this event? ☐ YES ☒ NO

How many people are you expecting at this event? 600

Name & address of event location. Please attach proof of permission to use this facility.

59 E. Militia Heights Drive Needham, MA

Who will be serving the alcohol to your guests?

Certified bartenders from VFW Post 2498 Needham

Bartenders and/or servers of alcohol, beer and/or wine must have completed in the past three years an appropriate Massachusetts alcoholic beverages server-training program. Please state below who will be serving alcohol, beer and/or wine and attach proof of their training (certificate).

Please use the space below to describe the manner in which alcohol will be served to your guests. (For example, will guests be served alcohol or will they need to purchase it from the bar?) Please attach floorplan (can be hand drawn) of the event facility with liquor delivery plan.

See attached information

☒ I understand that the alcohol purchased for this event must be purchased from a licensed wholesaler/importer, manufacturer, farmer-winery, farmer-brewery or special permit holder and that I have received a current list of wholesalers. (*A person holding a Section 14 license cannot purchase alcoholic beverages from a package store.* (MGL Ch. 138, Sec 14, 23; 204 CMR 7.04))

**Event Manager Signature:** _____ **Date:** 3/17/15

**Looking for a fun way to give back?**

**Need a goal to get yourself in shape?**

**Grab your friends, family, neighbors and coworkers to come support**

# THE CHARLES RIVER CENTER

# 5K RUN/1MI WALK

## WHEN

**September 27, 2015**
**11:00 am**

## WHERE

**The Charles River Center**
**59 East Militia Heights Drive**
**Needham, MA**

5k run 1mi walk
The Charles River Center

**WWW.CHARLESRIVERCENTERROADRACE.COM**

**ALL AGES & ABILITIES EVENT**

## ADVANCE REGISTRATION

$28.00 Runner (12+)
$23.00 Walker
$15.00 Youth (under 12)
*processing fees not included

## RACE DAY

$35.00 Runner (12+)
$30.00 Walker
$15.00 Youth (under 12)

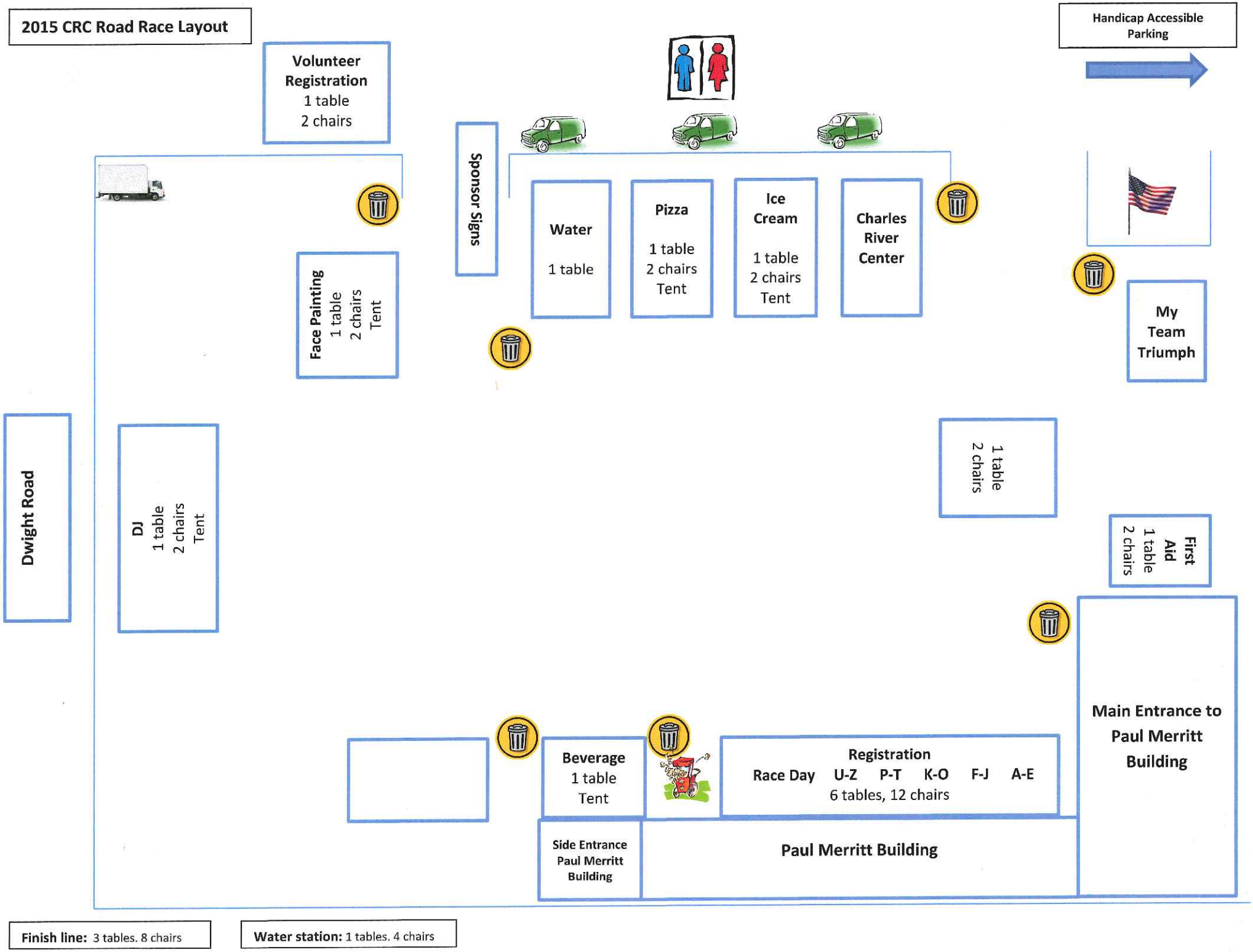
## FEATURING

- 5K Run
- 1Mile Walk
- swag bags
- tech t-shirts
- post-race event with music food & festivities

## BENEFITING

The Charles River Center supporting individuals with developmental disabilities since 1956

# 2015 CRC Road Race Layout




**Finish line:** 3 tables. 8 chairs

**Water station:** 1 tables. 4 chairs

CERTIFICATION NUMBER:

76331

**ALCOHOL INTERVENTION METHODS**
CERTIFIES:

JACK CAFFREY

CAMPBELL TRENT
508-756-8542

EXPIRES:
APR 13 2016

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CERTIFICATION NUMBER:

76324

**ALCOHOL INTERVENTION METHODS**
CERTIFIES:

Karen Connell

AMPBELL TRENT
508-756-8542

EXPIRES:
APR 13 2016

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76325

**LCOHOL INTERVENTION METHODS**
CERTIFIES:

Dino Guarino

PBELL TRENT
8-756-8542

EXPIRES:
APR 13 2016

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CERTIFICATION NUMBER:

76326

**ALCOHOL INTERVENTION METHODS**
CERTIFIES:

CHARLES W KEITH

CAMPBELL TRENT
508-756-8542

EXPIRES:
APR 13 2016

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CERTIFICATION NUMBER:

76322

**ALCOHOL INTERVENTION METHODS**
CERTIFIES:

MATTHEW L. CHING

CAMPBELL TRENT
508-756-8542

EXPIRES:
APR 13 2016

**ONE DAY SPECIAL LICENSE**
**TOWN OF NEEDHAM BOARD OF SELECTMEN**
**EVENT INFORMATION SHEET**
***(Please complete and attach event flyer or other information.)***

RECEIVED
TOWN OF NEEDHAM
BOARD OF SELECTMEN
2015 MAR 19 PM 3

| | |
|---|---|
| Event Manager Name (Name that will appear on license) | Volante Farms (David Volante) |
| Event Manager Address | 292 Forest St. |
| Event Manager Phone Number | 781-405-9827 |
| Organization Representing (if applicable) | |
| Is the organization (if applicable) you are representing non-profit? If so, please attach proof of non-profit status. | ☐ Non-profit ☒ For profit<br>☐ Proof of non-profit status is attached<br>Form of Proof: _____ |
| Name of Event | Designs and Drinks: Container Gardening |
| Date of Event | 4/11/15 |

License is for Sale of:
☒ Wines & Malt Beverages Only
☐ All Alcoholic Beverages (for non-profit groups only)

Requested Time for Liquor License FROM: 3 PM TO: 5 PM

Are tickets being sold in advance for this event? ☒ YES $50+ 15 (wine) /per ticket ☐ NO

Is there an admission fee for this event? ☐ YES $ /per ticket ☒ NO

Are you using dues collected to purchase alcohol for this event? ☐ YES ☒ NO

How many people are you expecting at this event? 30

Name & address of event location. Please attach proof of permission to use this facility.
292 Forest St.

Who will be serving the alcohol to your guests?
David Volante and Lisa Pierce

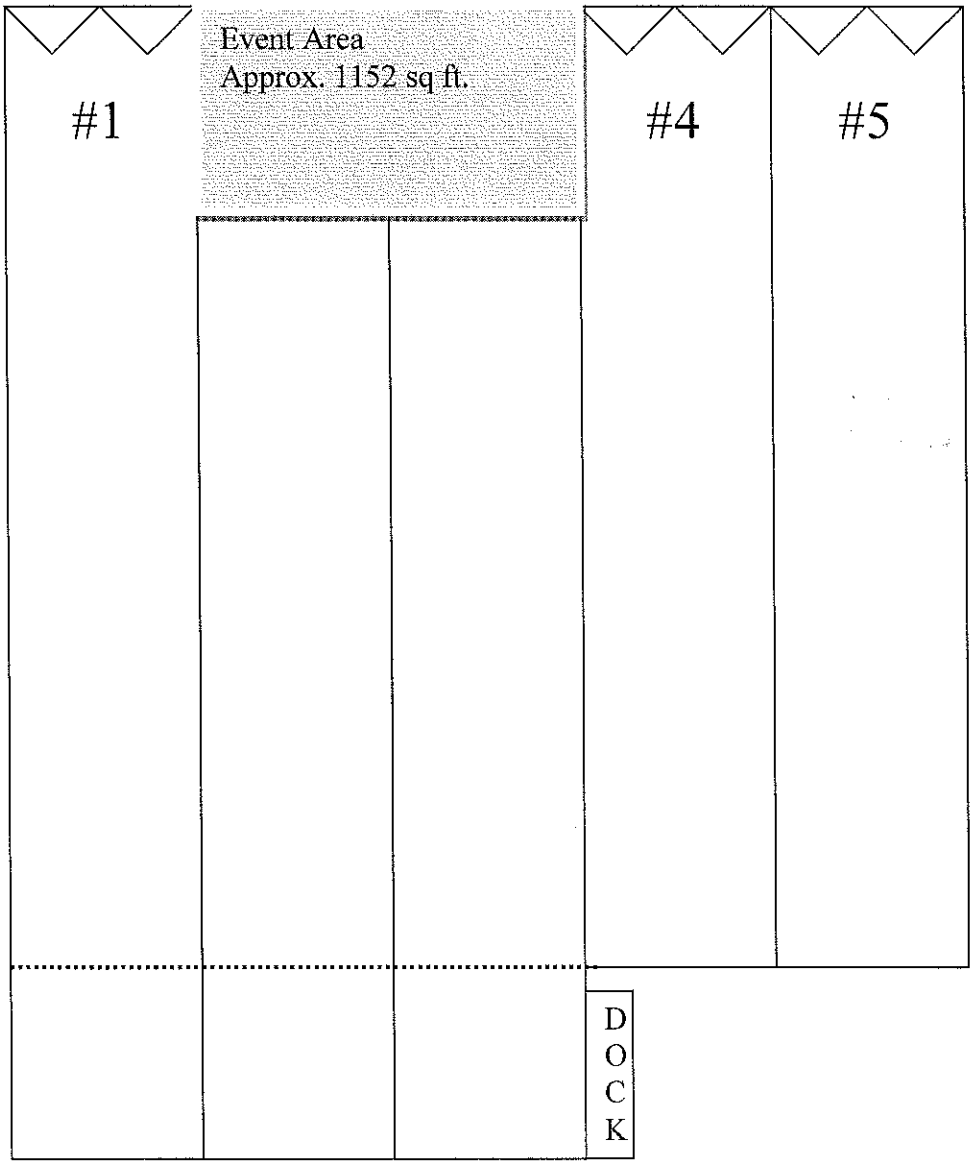
Bartenders and/or servers of alcohol, beer and/or wine must have completed in the past three years an appropriate Massachusetts alcoholic beverages server-training program. Please state below who will be serving alcohol, beer and/or wine and attach proof of their training (certificate).

Please use the space below to describe the manner in which alcohol will be served to your guests. (For example, will guests be served alcohol or will they need to purchase it from the bar?) Please attach floorplan (can be hand drawn) of the event facility with liquor delivery plan.
2 glasses of wine during the 2 hour class.

☒ I understand that the alcohol purchased for this event must be purchased from a licensed wholesaler/importer, manufacturer, farmer-winery, farmer-brewery or special permit holder and that I have received a current list of wholesalers. (*A person holding a Section 14 license cannot purchase alcoholic beverages from a package store.* (MGL Ch. 138, Sec 14, 23; 204 CMR 7.04))

**Event Manager Signature:** **Date:** 3/18/15

# Greenhouse Layout for Special License Events



eTIPS On Premise 2.0

SSN: XXX-XX-XXXX

Issued: 01/08/2015

Expires: 01/08/2018

ID#: 3895375

D.O.B.: XX/XX/XXXX

**Lisa Pierce**
Volante Farms
292 Forest St
Needham, MA 02492-1329 USA

FOR ONLINE USE ONLY
NOT AUTHORIZED IF PRINTED

Print | Main Menu | Close Window

# Certificate of Completion

This Certificate of Completion of

**eTIPS On Premise 2.0**

**For coursework completed on February 1, 2015**

provided by Health Communications, Inc.

is hereby granted to:

**David Volante**

Certification to be sent to:

**Volante Farms**

**292 Forest St**

**Needham MA, 02492-1329 USA**

HEALTH COMMUNICATIONS INC.

This document is not proof of TIPS certification. It signifies only that you have completed the course. Valid certification documents will be forwarded to you.

**Town of Needham**
**Water Sewer Billing System**
**Adjustment Form**

DEPARTMENT OF PUBLIC WORKS

TO: TOWN TREASURER AND COLLECTOR
cc: TOWN ACCOUNTANT, WATER AND SEWER SUPERINTENDENT

WHEREAS the appropriate divisions of the Department of Public Works have submitted to you the following commitment(s) on the dates listed below for the collection of water, sewer revenue and

WHEREAS certain inadvertent error(s) were made in said commitment(s), it is hereby requested that you abate these particular account(s) in the amount(s) stated below.

| | |
|---|---|
| Water Sales: | -$704.63 |
| Water Irrigation: | $0.00 |
| Water Admin Fees | $0.00 |
| Sewer Sales: | -$1,414.71 |
| Transfer Station Charges: | $0.00 |
| Total Abatement: | -$2,119.34 |

Order #: 1195

Read and Approved:

3/20/2015

Assistant Director of Public Works

3/20/15

Director of Public Works

For the Board of Selectmen

Date: 3/24/15

**Town of Needham**
**Water Sewer Billing System**
**Adjustment Form**

| Prepared By: | Last Name | First Name | Customer ID# | Location ID# | Street Number | Street Name | Irrigation Water | Domestic Water | Sewer | Total | Reason | Corrected Last Read Y/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DB | Seriy | Alex & Vicki | 30201 | 14248 | 16 | Ludwig Road | $0.00 | -$55.98 | -$96.66 | -$152.64 | ACC | N |
| DB | Tobasky | Evan | 35653 | 20104 | 68 | Bridle Trail Road | $0.00 | -$50.74 | -$87.58 | -$138.32 | ACC | N |
| DB | Riordan | Aidan | 36563 | 23938 | 857 | South Street | $0.00 | -$97.01 | -$169.17 | -$266.18 | ACC | N |
| DB | Casey | John E | 4697 | 17366 | 69 | Edgewater Lane | $0.00 | -$53.36 | -$92.12 | -$145.48 | ACC | N |
| DB | E.V. Realty | | 37295 | 15556 | 63 | Oak Street | $0.00 | -$40.26 | -$69.42 | -$109.68 | ACC | N |
| DB | Flanagan | Dominic | 26803 | 4456 | 48 | Sutton Road | $0.00 | -$75.63 | -$130.71 | -$206.34 | ACC | N |
| JO | Council on Aging (3) | | | | | | $0.00 | -$331.65 | -$769.05 | -$1,100.70 | COA | N |

**Total:** -$2,119.34

ALSO, LET THIS SERVE AS AUTHORIZATION TO ABATE ANY PENALTY OR INTEREST WHICH HAS ACCRUED DUE TO THE NON-PAYMENT OF AMOUNTS AS STATED ABOVE.

Legend:
O.I. = O.I. reading slower than inside meter causing large bill when inside meter is read.
TWN = Town Project caused damage to private property
EC = Extenuating Circumstances
Equip = Equipment Malfunction
UEW = Unexplained water loss
ACC = Accidental Water Loss
BP = Billing Period beyond 100 days
COA - Council on Aging