

**CITY OF SOMERSWORTH**  
*Office of the City Manager*

**TO:** Mayor Dana Hilliard and City Council Members

**FROM:** Robert M. Belmore, City Manager *RB*

**DATE:** Friday, March 18, 2016

**SUBJECT:** City Manager's Report for Monday, March 21, 2016  
City Council Agenda

---

6:00 p.m. – Workshop  
**Re: Wastewater Treatment Facility Capacity Evaluation**  
**Presented by Wright Pierce Engineer, Tim Vadney**

---

*Unfinished Business (under Section 13 of Agenda)*

**Resolutions**

- A. Resolution 24-16 Authorizing the City Manager to Enter into a Pilot Agreement with Frisbie Memorial Hospital D/B/A Family Care of Somersworth.** The Finance Committee voted to support this action, moving it to the full City Council for consideration. City Attorney has reviewed the Agreement. Mr. Joseph Shields, Senior Vice President, Frisbie Memorial Hospital plans to attend.
- B. Resolution No. 25-16 Increase the Pay of Election Officials and to Add the Position of Assistant Supervisor of the Checklist.** The Government Operations Committee recommends Council approval of this action item. Attached is a suggested amendment from City Attorney Walter Mitchell. We believe this amendment allows the Resolution to read clearer. The Clerk's recommendation would be when assistance is needed. Subsequently, when needed, this new position will be appointed by the Moderator.

*Unfinished Business (under Section 13 of Agenda)*

**Ordinance**

- A. Ordinance No. 15-16 Supplemental Appropriation for Roof Replacement at the Somersworth Career Technical Center.** The Finance Committee met on March 8<sup>th</sup> to discuss this issue with Joint Building Committee members, School and City staff. The recommendation is to appropriate the project amount from the General Fund's Fund Balance. This Supplemental Appropriation requires a Public Hearing and a 2/3<sup>rd</sup>'s vote of City Council to pass. I recommend it be held on Monday, April 4<sup>th</sup> at 6:45 p.m.

## **Resolutions**

- A. Resolution No. 26-16 Authorize the City Manager to Enter into a Contract with Manter Co., Inc., of Danvers, Massachusetts for the Maple Street Culvert Replacement Project.** Both Public Works & Environment and Finance Committee have met and voted in support of the bid award and forwarded their recommendation for full City Council consideration. Attached is information regarding staff recommendations. City Council has appropriated \$155,000. for this project in the General Fund and \$10,000. in the Wastewater Fund.
- B. Resolution No. 27-16 To Request that New Hampshire Fish & Game Ban Hunting On/From Willand Pond.** Sponsored by Mayor Hilliard. FYI: The City of Dover City Council has passed a similar Resolution.
- C. Resolution No. 28-6 Authorize the City Manager to Prepare Bid Specifications for Road Resurfacing and Associated Repairs of Selected Streets.** The Public Works & Environment Committee met on March 15<sup>th</sup> and voted to support this action item. Attached is a memorandum from Public Works Director Mike Bobinsky that was the basis of Staff discussion with the Public Works & Environment Committee. Funding for these street projects would come from available funds in the General Fund Resurfacing Account, Sidewalk Capital Reserve Fund and the Water/Sewer Enterprise Fund. Respectfully, should full Council be in agreement with this project list I recommend a second reading be considered this evening.

## ***City Manager's Items (under section 10 of Agenda)***

### **A. Information Items:**

- 1. City Manager's Proposed Fiscal Year 2016-2017 Budget.** The City Manager Proposed FY 2016/2017 Budget and School Department Budget has been submitted in accordance with the City Charter. Mayor Hilliard has scheduled the Public Hearing for Monday, April 4<sup>th</sup>. The City Manager will provide a Budget Presentation starting at 5:30 p.m. The Budget Hearing will start at 6:00 p.m. Budget workshop is on Saturday, April 2<sup>nd</sup> starting at 8:30 a.m. FYI: This Workshop will be televised.
- 2. Malley Farm Facility Opening.** The plan was to open on Monday, March 21<sup>st</sup>. With the weather forecast predicting snow we will open as soon as we are able. Malley Farm hours will be Monday – Friday 7:30 a.m. - 2:30 p.m. and Saturday from 8:00 a.m. – 3:00 p.m.

### **B. Attachments:**

- 1. City Attorney Certifications (2).
- 2. Department Head Monthly Reports.
- 3. Wastewater Treatment Facility Capacity Evaluation Report.

RESOLUTION 24 – 16 AUTHORIZING THE CITY MANAGER TO ENTER INTO A PILOT AGREEMENT WITH FRISBIE MEMORIAL HOSPITAL D/B/A FAMILY CARE OF SOMERSWORTH.

Somersworth, NH  
March 7, 2016

WHEREAS, the City Council passed Resolution No. 15-05 that authorized the City Manager to enter into a PILOT (Payment in Lieu of Taxes) Agreement with Frisbie for the tax years 2005 through 2015, and

WHEREAS, this Agreement has expired, and

WHEREAS, the City Council's Finance Committee has reviewed Frisbie's request to enter into a new PILOT Agreement as authorized under RSA 72:23-n for the tax year beginning April 1, 2016 and expiring at the conclusion of tax year 2025, and

WHEREAS, the PILOT Agreement states that Frisbie shall make an annual financial contribution consisting of seventy-five percent (75%) of the annual and normal tax assessment assessed against the Family Care facility and in return the City shall award said Frisbie facility a charitable exemption under RSA 72:23 subject to the timely annual filing for exempt status as required by NH State Law,

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SOMERSWORTH THAT the City Manager is authorized to enter into a PILOT Agreement as authorized under RSA 72:23-n under these terms and other conditions spelled out in said PILOT Agreement for the tax years 2016 through 2025.

Introduced by

David A. Witham  
Dale R. Sprague  
Martin Pepin  
Jennifer G. Soldati

Approved

City Attorney

**SETTLEMENT AGREEMENT**

This Agreement (the "Agreement") is dated \_\_\_\_\_, 20\_\_, by and between the Frisbie Foundation ("FF"), Frisbie Memorial Hospital ("FMH"), d/b/a Family Care of Somersworth ("FCS") (collectively "Frisbie") and the City of Somersworth (the "City").

Formatted: CM6, Right: 0.05"

**Preliminary Statement**

By a Settlement Agreement dated February 17, 2005 (the "Former Agreement"), the City and Frisbie resolved their disagreement about the application of the charitable exemption from property taxes to property located at 353 High Street, Somersworth, and identified on the tax records of the City as Tax Map 21, Lot 0195 (the "FCS Facility"). The Former Agreement had a ten-year term which expired ~~at as~~ the end of ~~2015~~the current tax year.

The City and Frisbie have concluded that it is in their respective best interests to renew the Former Agreement in this new Agreement for an additional ten-year term. This Agreement shall be, in all respects, final and shall not be subject to challenge or termination except in accordance with its terms.

**ARTICLE I****Status of FCS Facility**

~~\_\_\_\_\_FCS Facility Subject to Exemption Charitable.~~ The City and Frisbie recognize that the FCS Facility is owned by a charitable entity and is operated for charitable purposes within the meaning of RSA 72:23, V and 72:23-1. Therefore under the laws as they currently exist, the FCS Facility is entitled to a charitable exemption under RSA 72:23 subject to the timely annual filing for exempt status as written in RSA 72:23, VI and 72:23-c.

**ARTICLE II****PILOT AGREEMENT**

1. Frisbie's Annual Contribution to the City. Frisbie and the City agree that this agreement shall ~~also~~ serve as a PILOT Agreement, as authorized by RSA 72:23-n. Pursuant to this PILOT Agreement, Frisbie shall in each real estate tax year during the term of this Agreement make a financial contribution to the City (the "Annual Contribution") and the City shall accept the Annual Contribution ~~notwithstanding any change in New Hampshire law~~. The Annual Contribution shall each year consist of seventy-five percent (75%) of the Annual and Normal Tax Assessment assessed against the FCS Facility pursuant to paragraph 2 below. For each year of the PILOT Agreement, the City shall award the FCS Facility a charitable exemption from real estate taxes. The form for annual presentation from the City to Frisbie of the Annual Contribution is attached as Exhibit A. The amount due shall be based on the final valuation and tax rate that is established for each tax year.



2. Annual and Normal Tax Assessment. The Annual and Normal Tax Assessment shall be equal to the annual real estate property tax assessment pertaining to the FCS Facility as if the FCS Facility were not subject to the real estate property tax exemption pursuant to NH RSA 72:23. The City agrees that, commencing in the 2016 tax year, Frisbie may seek an abatement of the Annual and Normal Tax Assessment if, in the opinion of Frisbie, such assessment is not proportional or is otherwise illegal or unlawful. The City reserves the right, in accordance with applicable law, to make a determination on the amount, if any, or the denial of the abatement application. Upon the ultimate resolution of such an abatement action, whether through agreement or appeal, the resulting assessment shall be the Annual and Normal Tax Assessment against which the Annual Contribution shall be measured.

3. At the end of each real estate tax year the City shall send to Frisbie a reminder billing of its obligations under this agreement. If that billing remains unpaid, it may be collected utilizing the provision under RSA 80.

**Formatted:** Numbered + Level: 1 +  
Numbering Style: 1, 2, 3, ... + Start at: 3 +  
Alignment: Left + Aligned at: 0.5" +  
Indent at: 0.75"

#### ARTICLE III~~4~~ Term and Termination

1. Term. The term of this Agreement shall begin with tax year beginning April 1, 2016 and shall expire at the conclusion of tax year 2025, unless earlier terminated pursuant to the provisions of this Agreement.

2. Termination by Agreement. This Agreement may be terminated at any time upon the mutual agreement of all parties hereto. Such agreement to terminate shall be in writing.

3. Termination Due to Change in FCS Facility. This Agreement shall terminate if FF shall: (1) expressly convert to a for-profit business corporation under New Hampshire law, (2) be acquired by a for-profit organization, (3) substantially change the use of the FCS Facility such that the real estate is no longer owned, used or occupied in a charitable fashion by Frisbie, or (4) failure to timely file annually for exempt status as written in RSA 72:23, VI and 72:23-c.

4. This agreement shall also terminate if there is a change in New Hampshire statutory law such as would have effect on Frisbie's entitlement to charitable exemption or a decision of the New Hampshire Supreme Court clarifying Frisbie's entitlement to charitable exemption.

#### ARTICLE IV~~5~~ Implementation of Agreement

1. Approval by City. The City certifies that it has taken all steps required by applicable New Hampshire law to authorize the City Manager to execute, deliver, and perform this Agreement in accordance with applicable law.

2. Approval by Frisbie. Each of the component organizations of Frisbie has taken all steps as set forth in their respective organizational documents to authorize persons to execute, deliver and perform this Agreement.

Draft February 12 2016

3. Effective Date. The specific terms of this Agreement shall be absolute and binding as of the date of this Agreement.

## ARTICLE V Remedies

1. Inviolability of the Agreement and Stipulated Judgment. Each party acknowledges and agrees that this Agreement constitutes (i) an agreement for the voluntary annual payment in lieu of taxes ("PILOT") pursuant to RSA 72:23-n, which statute the parties construe as authorizing a multi-year PILOT agreement; and (ii) a settlement and compromise of all matters relating to the application of property taxes to the FCS Facility with respect to City tax years during the Term of this Agreement, excepting abatement requests which may arise under Article II, paragraph 2 above. Consequently, each party agrees that no party shall attempt to abrogate this Agreement or any of the terms, conditions, or provisions herein. The parties acknowledge and agree that, if any third party attempts to abrogate this Agreement or any of the terms, conditions or provisions contained herein, then each party shall defend this Agreement.

2. Breach, Notice of Opportunity to Cure and Non-Binding Mediation. Notwithstanding any other obligations in this Agreement, prior to the commencement of any legal proceedings to enforce any claim for a violation of this Agreement, the party alleging any such breach shall first give written notice to the other party of the alleged breach. The party receiving notice of breach shall have ten (10) days to cure such alleged breach. If the alleged breach is not cured, the parties shall then use their good faith efforts to resolve the dispute. If the dispute is not resolved through direct negotiations within a twenty (20) day period, which may be extended by agreement of the parties, the parties shall submit their dispute to a mutually-acceptable mediator. The parties shall, in consultation with the chosen mediator, promptly agree upon a format, timetable, and rules applicable to the mediation, and then promptly mediate. The parties may not commence litigation or seek other remedies with respect to the dispute, including termination of the Agreement, prior to the conclusion of the mediation. Prior to commencing litigation after the conclusion of mediation, the party seeking relief in court shall first notify the party against whom relief is sought in writing of its intent to commence litigation.

## ARTICLE VI Miscellaneous

1. Amendment and Waiver. This Agreement may not be amended or modified and any provision of this Agreement may not be waived, except by a writing executed by all parties to this Agreement or their counsel. No course of dealing between or among any parties having any interest in this Agreement will be deemed effective to amend, modify or waive any part of this Agreement or any rights or obligations of any parties under or by reason of this Agreement.

2. Notices. Except as otherwise expressly set forth in this Agreement, all notices, demands and other communications to be given or delivered under or by reason of the provisions of this Agreement shall be in writing and shall be deemed to have been given when delivered personally or by documented overnight delivery service. Notices, demands and communications

to the City and Frisbie shall, unless another address is specified in writing, be sent to the addresses indicated below:

Notices to Frisbie Memorial Hospital:

President  
Frisbie Memorial Hospital  
11 Whitehall Road  
Rochester, NH 03867-5211

Notices to The Frisbie Foundation: same

Notices to City of Somersworth:

City Manager  
City of Somersworth  
1 Government Way  
Somersworth, NH 03878

3. Entire Agreement. This document contains the entire agreement between the parties relative to its subject matter and supersedes any prior understandings, agreements or representations by or between the parties, written or oral, which may have related to the subject matter hereof in any way.

4. Governing Law. This Agreement and any disputes arising hereunder shall be governed by and interpreted and construed in accordance with the substantive law of the State of New Hampshire.

5. Counterparts. This Agreement may be executed in one or more counterparts, anyone of which need not contain the signatures of more than one party, but all such counterparts together shall constitute one and the same instrument.

6. Ongoing Cooperation of the Parties. The parties recognize that the consummation of this Agreement and the transactions contemplated hereby will benefit from the ongoing cooperation of the parties, and each of the parties hereby agrees to comply in good faith with the reasonable requests of any other party which may be made from time to time in furtherance of the objectives of the parties in entering into this Agreement.

FOR THE CITY OF SOMERSWORTH:  
CITY MANAGER

\_\_\_\_\_  
\_\_\_\_\_ duly authorized

FOR FRISBIE:  
FRISBIE MEMORIAL HOSPITAL

\_\_\_\_\_  
its duly authorized \_\_\_\_\_

FRISBIE FOUNDATION

\_\_\_\_\_  
its duly authorized \_\_\_\_\_

Exhibit A

Frisbie \_\_\_\_ Voluntary Contribution

The City of Somersworth recognizes that Frisbie Health Services d/b/a Family Care of Somersworth, located on property at 353 High Street, Somersworth and identified on the City tax records as Tax Map 21, Lot 0195, is owned by a charitable entity and is operated for charitable purposes, and is therefore entitled to a charitable tax exemption. Pursuant to the Settlement Agreement between Frisbie Memorial Hospital, Frisbie Foundation, Frisbie Health Services d/b/a Family Care of Somersworth (collectively, "Frisbie"), and the City of Somersworth dated \_\_\_\_\_, 20\_\_\_\_, which established a PILOT Agreement between the parties pursuant to RSA 72:23-n, the Annual Contribution from Frisbie for the tax year shall be as follows:

Annual and Normal Tax Assessment for Tax Map 21, Lot 0195 for the tax year \_\_\_\_  
\$ \_\_\_\_\_ [(Annual and Normal Tax Assessment)]

Frisbie's Annual Contribution is 75% of \$ \_\_\_\_\_ [(Annual and Normal Tax  
Assessment)]

The Final Annual Contribution for the tax year \_\_\_\_\_ \$ \_\_\_\_\_

1411184\_1.docx

RESOLUTION NO. 25 – 16 INCREASE THE PAY OF ELECTION OFFICIALS AND  
TO ADD THE POSITION OF ASSISTANT SUPERVISOR OF THE CHECKLIST.

Somersworth, NH  
March 7, 2016

WHEREAS, the City Council of the City of Somersworth recognizes the commitment of the Election Officials who work to maintain the polls during the elections, and

WHEREAS, the City Council wants to encourage participation of residents working the polls during elections by enhancing the remuneration they receive, and

WHEREAS, the Supervisor of the Checklist is a demanding position, and may require assistance, especially during Presidential Elections, and

WHEREAS, the City Council's Government Operations committee examined this issue and supports these changes,

THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SOMERSWORTH THAT the pay for Election Officials be increased as follows:

Pay for the Moderator to increase from \$75 to \$125 per election.  
Pay for the Ward Clerks to increase from \$70 to \$120 per election.  
Pay for the Selectmen to increase from \$60 to \$100 per election

BE IT FURTHER RESOLVED BY THE CITY COUNCIL OF THE CITY OF SOMERSWORTH THAT the position of Assistant Supervisor of the Checklist be created to assist with elections on an as needed basis, subject to the recommendation of the City Clerk and appointed by the Moderator. The pay for this position shall be \$10 per hour (Ten dollars per hour).

Introduced by

Jennifer Soldati  
Martin P. Dumont, Sr.  
Nancie Cameron  
Jessica Paradis

Approved:

City Attorney

*Note: The estimated cost is \$1,250 per election. In Fiscal Year 2017 there are two elections, (cost for FY 17 is \$2,500)*

Proposed Amendment  
Suggested by City Attorney

Formatted: Centered

RESOLUTION NO. 25 – 16 INCREASE THE PAY OF ELECTION OFFICIALS AND  
TO ADD THE POSITION OF ASSISTANT SUPERVISOR OF THE CHECKLIST.

Somersworth, NH  
March 7, 2016

WHEREAS, the City Council of the City of Somersworth recognizes the commitment of the Election Officials who work to maintain the polls during the elections, and

WHEREAS, the City Council wants to encourage participation of residents working the polls during elections by enhancing the remuneration they receive, and

WHEREAS, the Supervisor of the Checklist is a demanding position, and may require assistance, especially during Presidential Elections, and

WHEREAS, the City Council's Government Operations committee examined this issue and supports these changes,

THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SOMERSWORTH THAT the pay for Election Officials be increased as follows:

Pay for the Moderator to increase from \$75 to \$125 per election.  
Pay for the Ward Clerks to increase from \$70 to \$120 per election.  
Pay for the Selectmen to increase from \$60 to \$100 per election

BE IT FURTHER RESOLVED BY THE CITY COUNCIL OF THE CITY OF SOMERSWORTH THAT the position of Assistant Supervisor of the Checklist be created to assist with elections on an as needed basis, subject to the recommendation of the City Clerk, ~~-and appointed by the Moderator.~~ This new position will be appointed by the Moderator. The pay for this position shall be \$10 per hour (Ten dollars per hour).

Introduced by

Jennifer Soldati  
Martin P. Dumont, Sr.  
Nancie Cameron  
Jessica Paradis

Approved:

City Attorney

*Note: The estimated cost is \$1,250 per election. In Fiscal Year 2017 there are two elections,  
(cost for FY 17 is \$2,500)*



ORDINANCE NO. 15 -16 SUPPLEMENTAL APPROPRIATION FOR ROOF  
REPLACEMENT AT THE SOMERSWORTH CAREER TECHNICAL CENTER.

Somersworth, NH  
March 21, 2016

THE CITY OF SOMERSWORTH ORDAINS THAT pursuant to Section 7.7(A) of the City Charter:

The annual budget for the City of Somersworth for Fiscal Year 15-16 is amended as follows:

Appropriate \$371,000 from General Fund Unassigned Fund Balance to the School Department section of the FY 15-16 General Fund budget as follows:

Original Budget	Amendment	Revised Budget
\$ 26,102,271	\$ 371,000	\$ 26,473,271

Approved as to Funding:

Recorded by:

Scott A. Smith  
Director of Finance and Administration

Trish Harris  
City Clerk

Background:

This ordinance appropriates the use of General Fund Unassigned Fund Balance for the purpose of providing funding to the School Department to replace the roof at the Somersworth Career Technical Center.

***This Ordinance requires a public hearing and requires a 2/3 majority vote of the City Council after the public hearing subject to Section 7.4.1 and .Section 7.7 (A) of the City Charter.***

Introduced by Councilors

David A. Witham  
Dale R. Sprague  
Martin Pepin  
Jennifer G. Soldati

Approved

City Attorney

RESOLUTION NO. 26 - 16 TO AUTHORIZE THE CITY MANAGER TO ENTER INTO A CONTRACT WITH MANTER CO., INC. OF DANVERS, MASSACHUSETTS FOR THE MAPLE STREET CULVERT REPLACEMENT PROJECT.

Somersworth, NH  
March 21, 2016

WHEREAS the City of Somersworth's Capital Improvement Plan includes a recommendation to replace the Maple Street culvert to address drainage and utility improvements in this area, and

WHEREAS the Somersworth fiscal year 15-16 adopted budget contains an appropriation to accomplish this project, and

WHEREAS the City requested sealed bids from qualified contractors for this project, and,

WHEREAS, the City's consultant engineer reviewed the bids received and recommends contracting with Manter Company, Inc. of Danvers, Mass at a cost of \$154,000 (One Hundred Fifty Four Thousand dollars), and

WHEREAS, the Public Works and Environment Committee for the City of Somersworth has reviewed the recommendation by the City's consultant engineer to award the contract to Manter Co., Inc., and supports the recommendation, and

WHEREAS, the Finance Committee for the City of Somersworth has reviewed the recommendation by the City's consultant engineer to award the contract to Manter Co., Inc., and supports the recommendation,

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SOMERSWORTH THAT the City Manager is authorized to enter into an agreement with Manter Co., Inc. of Danvers, Massachusetts for the Maple Street culvert replacement project at a cost not to exceed \$154,000 (One Hundred Fifty Four Thousand dollars) and take any and all other such actions relative to this project determined to be in the best interest of the City

Introduced by Councilors

David A. Witham  
Dale R. Sprague  
Martin Pepin  
Jennifer G. Soldati  
Denis Messier

Approved:

City Attorney

**Resolution No. 26-16**



March 1, 2016

Michael Bobinsky  
Director of Public Works & Utilities  
Public Works Facility  
18 Lilac Lane  
Somersworth, NH 03878

**RE: Maple Street Culvert Replacement  
Recommendation of Award  
CMA #806**

Dear Mr. Bobinsky:

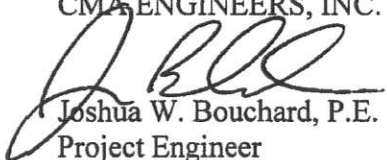
This letter has been prepared to present a summary of bids received for the Maple Street Culvert Replacement construction contract. On February 18, 2016, five bids were received for the project in response to an Advertisement for Bids issued on January 7, 2016. A summary of the bids is attached in a bid tabulation spreadsheet.

Manter Co., Inc. of Danvers, Massachusetts is the apparent low bidder with a bid proposal of \$154,000.00. Manter is a contractor active in construction projects in Massachusetts, and the company's experience includes general site, road, and utility work. CMA Engineers contacted three client/project references provided by Manter, and we received positive feedback from each. In addition, we checked Manter's corporate good standing on the State of MA Corporations Division website as well as their bonding company's good standing on the State of NH Insurance Department website.

We recommend the City issue a Notice of Award to Manter Co., Inc. and proceed with obtaining the appropriate Bonds and Insurance Certificates.

Should you have any questions, please do not hesitate to call.

Very truly yours,  
CMA ENGINEERS, INC.

A handwritten signature in black ink, appearing to read "J. Bouchard".

Joshua W. Bouchard, P.E.  
Project Engineer

JWB:ams

cc: Manter Co., w/o Enc.

Attachment: Bid Proposal  
Bid Tabulation  
Notice of Award

CMA ENGINEERS, INC.  
CIVIL/ENVIRONMENTAL ENGINEERS

35 Bow Street  
Portsmouth, New Hampshire  
03801-3819

Phone: 603/431-6196  
Fax: 603/431-5376  
E-mail: [info@cmaengineers.com](mailto:info@cmaengineers.com)  
Web Site: [www.cmaengineers.com](http://www.cmaengineers.com)

## BID SCHEDULE

BIDDER:

MANTER CO. INC.

PROJECT:

Maple Street Culvert Replacement  
Somersworth, New Hampshire

OWNER:

City of Somersworth

unit prices or lump sum:

BIDS shall include sales tax and all other applicable taxes and fees.

PRICES WRITTEN IN WORDS SHALL GOVERN AND UNIT PRICES SHALL GOVERN OVER EXTENDED TOTALS WHEN  
ALL prices shall be typewritten or written by hand in black ink.

The BIDDER must submit the following additional documents with the bid.

- a. Bid Bond (or certified check)
- b. Statement of Bidder's Qualifications

Bid Item No.	Est. Qty.	Units	Bid Item Description and Unit Price in Words	Unit Price in Figures (Dollars and Cents)	Extended Total in Figures (Dollars and Cents)
1	1	LS	Mobilization, Project Setup & Demobilization, Cofferdam and Water Diversion, Exploratory Test Pits & Protection of Utilities, Excavation, Rock Excavation, Demolition of Existing Culvert and Headwalls, New Culvert and Headwalls, Sewer Pipe, Drain MH, & Drain Pipe Installation, Sewer Manhole Installation, 12" CLDI Water Main Installation, Road Reconstruction and Paving, Guardrail Installation, Traffic Control/Maintenance, General Site Work, Project Cleanup, Site Restoration, Loan & Seed, Other Required Work: <u>(154,000) One Hundred Fifty</u> <u>Four thousand</u> Dollars and <u>Zero</u> Cents per Lump Sum		

**PROJECT BID PROPOSAL:**

ONE HUNDRED FIFTY FOUR THOUSAND  
(written)

dollars

\$ 154,000 -  
(figures)

City of Somersworth  
Maple Street Culvert Bids  
February 18, 2016

Contractor	Bid
Manter Co., Inc Danvers, Ma 978-774-5500	\$154,000.00
Henniker Sewer and Drain Henniker, NH 603-428-8467	\$227,451.69
Brown Industrial Group Berwick, ME 207-698-5598	\$346,655.00
Northeast Earth Mechanics Pittsfield, NH 603-435-7989	\$278,000.00
Aqualine Utility Weymouth, MA 508-690-2009	\$263,555.00

RESOLUTION NO. 27 - 16 TO REQUEST THAT NEW HAMPSHIRE FISH & GAME BAN HUNTING ON/FROM WILLAND POND.

Somersworth, NH  
March 21, 2016

WHEREAS, Willand Pond is located in a densely settled urban area of Somersworth and Dover; and

WHEREAS, The City's property surrounding Willand Pond is open for passive recreation, including trails for walking/running; and

WHEREAS: Given the densely settled urban area and the use of the property for passive recreation, the City of Somersworth banned hunting on its property surrounding Willand Pond; and

WHEREAS, As a jurisdictional water body of the State of New Hampshire the state controls Willand Pond up to the natural mean high water mark and the New Hampshire Department of Fish & Game operates a boat launch on Willand Pond; and

WHEREAS, New Hampshire Fish & Game permits hunting from Willand Pond and is considering a proposal to more clearly define where hunting is permitted; and

WHEREAS, The regulations currently governing hunting at Willand Pond were implemented generations ago, prior to significant development of the immediate surrounding areas with commercial, residential, and recreational use; and

WHEREAS, The City of Somersworth respects the rights of hunters and the jurisdictional authority of New Hampshire Fish and Game; and

WHEREAS, Given the unique urban setting of Willand Pond, including the close proximity of residential structures and passive recreational areas, the City of Somersworth believes, consistent with its own ordinance banning hunting around Willand Pond, that New Hampshire Fish & Game should not permit hunting on/from Willand Pond.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND SOMERSWORTH CITY COUNCIL THAT the City of Somersworth respectfully requests that New Hampshire Fish & Game ban hunting on/from Willand Pond.

Introduced by  
Mayor Dana S. Hilliard

Approved  
City Attorney

RESOLUTION NO. 28 - 16 AUTHORIZE THE CITY MANAGER TO PREPARE BID SPECIFICATIONS FOR ROAD RESURFACING AND ASSOCIATED REPAIRS OF SELECTED STREETS

Somersworth, NH  
March 21, 2016

WHEREAS the City of Somersworth's Capital Improvement Plan recommends road resurfacing streets in the City, and;

WHEREAS the City is beginning to utilize information from a recently completed pavement management assessment tool to assist with selecting streets recommended for pavement upgrade and;

WHEREAS the Public Works and Environment Committee reviewed the following staff recommended list of streets to be included in a work plan for this construction season and supports this recommendation:

Memorial Drive (Cemetery Road to High Street)  
High Street (Blackwater Road to South Street)  
Down Street (Bourque Street to the dead-end)  
Indigo Hill Road (Williams Street to Green Street)  
Indigo Hill Road (Green Street to Union Street)  
with a "bid alternate" of Indigo Hill Road (Union Street to Main Street), and

WHEREAS the recommended listing of streets will use Complete Street concepts addressing road pavement, drainage, sidewalks, pedestrian safety and utility upgrades as needed, and;

WHEREAS, in conjunction with the development of technical project specifications, an estimated \$10,000 is needed to conduct pavement core samples and \$10,000 is needed to conduct utility line investigations where streets will be paved, and;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SOMERSWORTH THAT the City Manager is authorized to prepare bid specifications for road resurfacing of the aforementioned streets using a complete streets concept, and;

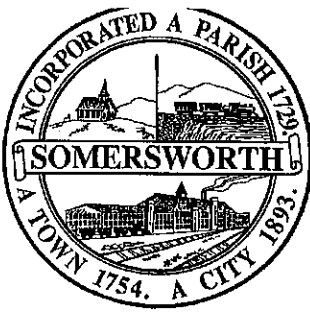
BE IT FURTHER RESOLVED that the City Manager is authorized to spend an amount not to exceed \$20,000 for the purpose of taking core samples and conducting utility line investigations to assist with the preparation of the bid specifications and to take any other action determined to be in the best interest of the City.

Introduced by Councilors

Dale R. Sprague  
David A. Witham  
Denis Messier  
Jennifer G. Soldati

Approved:

City Attorney



DATE: March 4, 2016

TO: Bob Belmore, City Manager

FROM: Michael J. Bobinsky, Director of Public Works and Utilities

COPY: Scott Smith, Director of Finance  
Scott Bourcier, PE, Contract City Engineer (DuBois & King)

SUBJECT: Follow-up – Paving Projects – FY2016 Proposed Work Plan

Based on feedback received during the February 1, 2016 Public Works & Environmental (PW&E) Committee meeting, the Public Works Department re-evaluated the upcoming 2016 road improvements program anticipated to commence in early May, 2016 and conclude November, 2016. The current year work plan was based on the roadway condition analysis results performed by the eRoadInfo software, available Capital Funds for the Road Repair program and input from the PW&E Committee. In addition, we have estimated these projects based on a “complete streets” approach which recognizes the need for anticipated water utility improvements, video inspecting sanitary sewer, sidewalks improvements, and pedestrian safety features. Attached is a map identifying the roads proposed to be part of the FY16 work plan.

The following is the budget breakdown that identifies the repair roads, repair strategy and associated costs in the recommended priority order.

**Road Repair Priority List and Repair**

1. Memorial Drive (Cemetery to Rt.9), 0.37 miles – Shim/Overlay
2. High Street 01 (Blackwater to South), 0.47 miles – Mill/Overlay
3. High Street 02(Blackwater to Sinclair), 0.48 miles – Fog Seal
4. Down Street (Bourque to Dead-end), 0.05 miles – Reclaim/Pave
5. Indigo Hill Road 01 (Williams to Green), 0.50 miles – Reclaim/Pave
6. Indigo Hill Road 02 (Green to Union), 0.14 miles – Reclaim/Pave

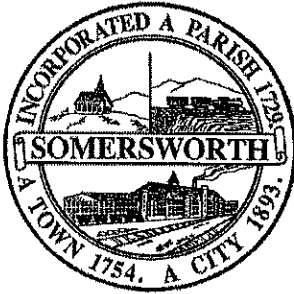
**Road Repair Cost Schedule**

	*Road Improvement	Sidewalk Improvement	Water Utility	School Parking Lot	Total
Memorial Drive	\$108,400	\$ 32,600	\$ 63,600	\$27,300	\$ 231,900
High Street 01	\$135,900	\$ 42,000	\$189,900	\$ -	\$ 367,800
High Street 02	\$ 32,200	\$ -	\$ -	\$ -	\$ 32,200
Down Street	\$ 16,200	\$ -	\$ -	\$ -	\$ 16,200
Indigo Hill Road 01	\$244,500	\$ 19,400	\$191,200	\$ -	\$ 455,100
Indigo Hill Road 02	\$ 70,100	\$ 12,300	\$ 55,900	\$ -	\$ 138,300
Total	\$607,300	\$106,300	\$500,600	\$27,300	\$1,241,500

← *Removed*

\*Contingency is based on the total “complete street” cost estimate and is established at 15%. The road repair costs identified in the memorandum list is the sum of road repair cost and the associated contingency. The road





## Memorandum

---

Daniel Hudson, P.E.  
Contract City Engineer  
Engineering Dept  
Tel: 692-9524  
Fax: 692-9576

**DATE:** 27 Jan. 2016

**TO:** Michael Bobinsky, Director of Public Works & Utilities

**RE:** High Street Cracking Mitigation

Background:

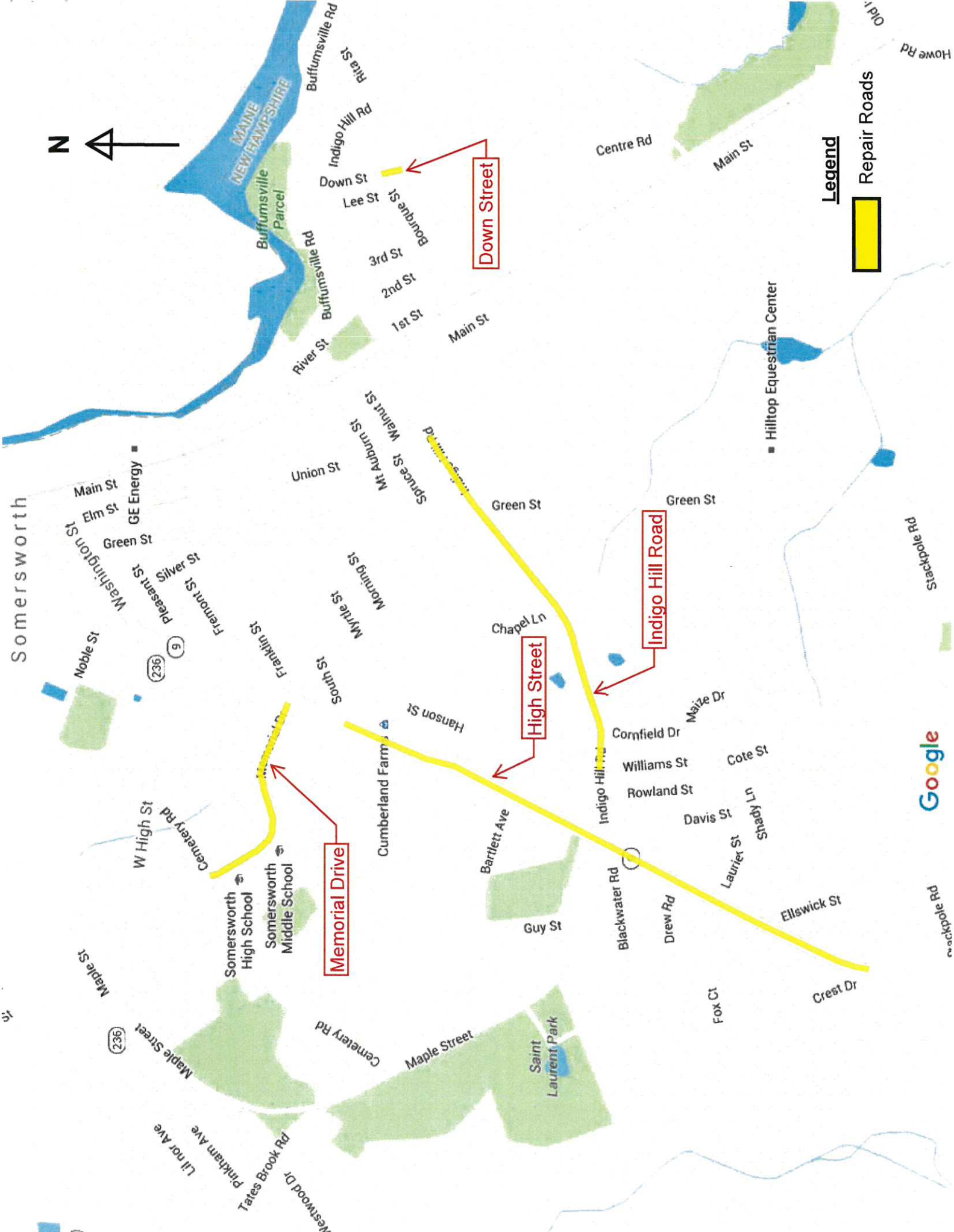
Transverse and longitudinal cracking has occurred on High Street between Blackwater Road and Sinclair Avenue, which received a mill and overlay in 2013. Based on independent test results, cracking appears to be attributable to high prevailing traffic volumes (~13,000 vehicles per day, including heavy trucks), combined with brittle existing pavement layers below the recently installed wearing course. To mitigate cracking, crack sealing was completed in fall 2015 to protect the roadway from water intrusion into the pavement and sub-base. Water intrusion can be highly destructive, leading to additional cracking, potholing, rutting, delaminating of pavement, and other issues. The crack sealant installed last fall appears to be holding up well; however additional measures may be considered, as appropriate.

Additional Measures:

1. Crack Sealing – Complete additional crack routing and sealing of any new or expanded cracks on an annual or biannual basis. (~\$2,000 / application; 1-2 year service life)
2. Fog Seal – Install a light application of diluted asphalt emulsion with a fine cover aggregate to help seal the pavement. This would more broadly seal the surface and protect against pavement deterioration and cracking. (~\$25,000 / application; 5 year service life)
3. Bonded Wearing Course / Thin Overlay – Install a high performance thin (5/8" to 3/4") hot mix asphalt overlay. This would help bridge existing cracks and provide a new wearing surface. (~\$40,000 / application; 10 year service life).

Recommendation:

It is recommended that the roadway be reviewed in the spring to determine the frequency of new cracking and/or propagation of existing cracks. If minimal additional cracking is occurring, option 1. should be followed. If extensive continued cracking persists option 2. or 3. should be further considered.



**Legend**



Repair Roads

Down Street

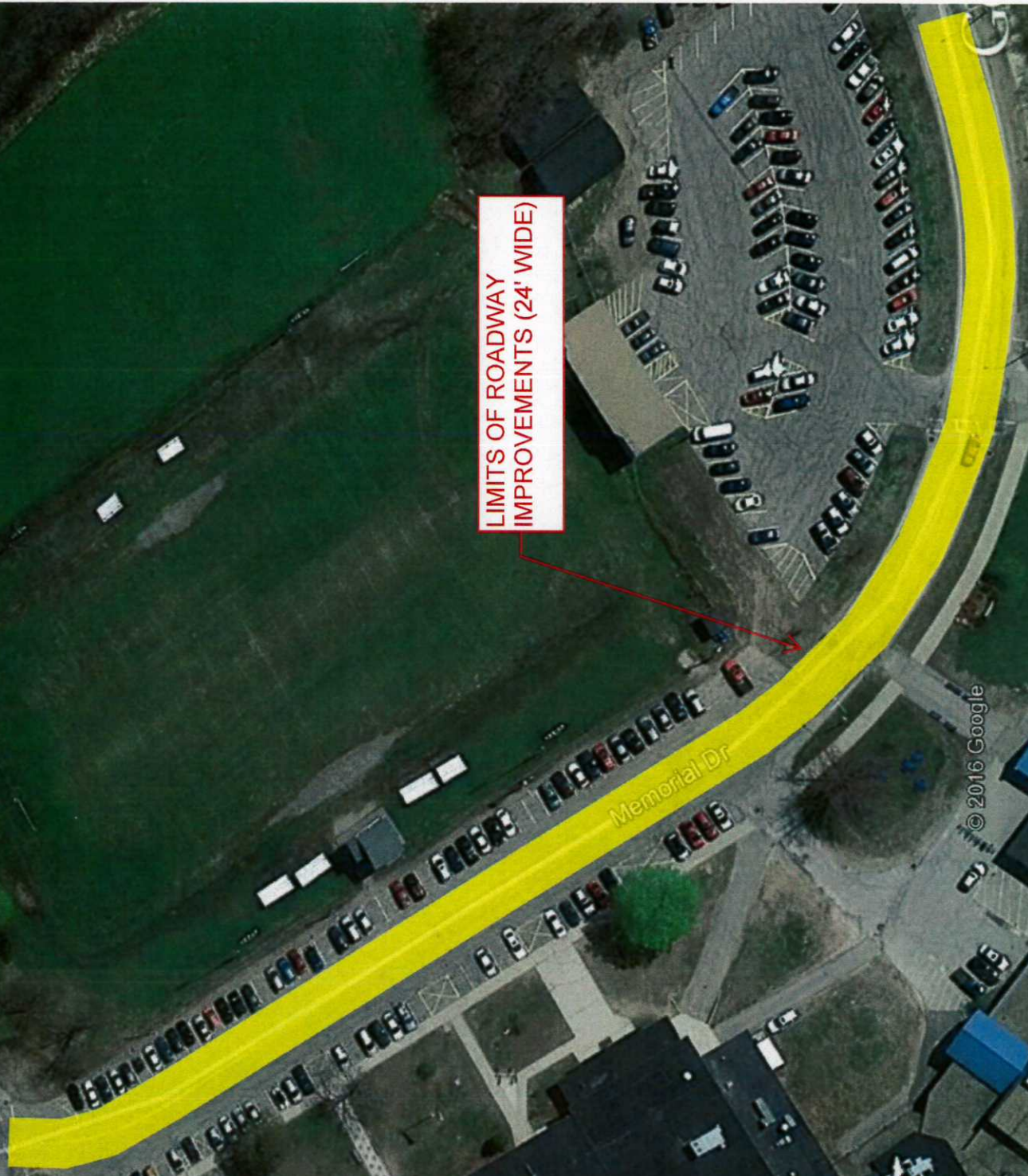
High Street

Indigo Hill Road

Memorial Drive



LIMITS OF ROADWAY  
IMPROVEMENTS (24' WIDE)



Memorial Dr

© 2016 Google





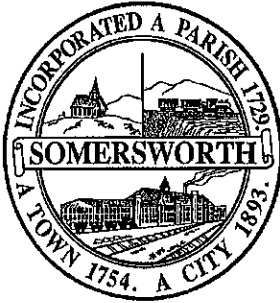
**Standard Crosswalk with pavement striping and signage**



**High-intensity Activated CrossWalk (HAWK)**



**Rectangular Rapid Flashing Beacons (RRFB)**



## MEMORANDUM

---

To: Bob Belmore, City Manager

From: Scott Smith, Director of Finance and Administration

Date: March 17, 2016, 2016

Re: **Monthly Report**

Finance Department:

- Working on FY17 budget document.
- Continued work on MUNIS payroll conversion. Starting Utility Billing conversion in March.
- Worked on State of the City presentation.
- Participated in Union Negotiations.

City Clerk:

- Prepared for two City Council meetings.
- Attended and recorded minutes at a number of standing committee meetings.
- Prepared for and oversaw the February Presidential Primary election.
- Permits:
  - GSGVM Troop 12325 – Cookie Sale
  - GSGVM Troop 12090 – Cookie Sale
  - GSGVM Troop 10086 – Cookie Sale
  - GSGVM Troop 10904 – Cookie Sale
  - GSGVM Troop 10366 – Cookie Sale
  - GSGVM Troop 12005 – Cookie Sale
  - GSGVM Troop 20253 – Cookie Sale
  - GSGVM Troop 20253 – Cookie Sale
  - GSGVM Troop 10013 – Cookie Sale

- Total receipts for the month were \$10,707.

#### Tax Collector:

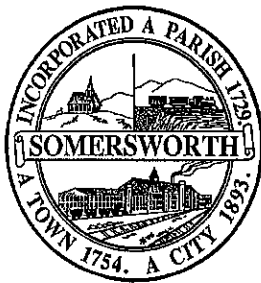
- Impending lien notices are scheduled to go out in March.
- A total of 990 vehicles were registered for a total of \$138,595 during the month.
- Collected \$4,905 for Municipal Transportation Fund during month.
- 15 customers used the drive up window during the month.
- Total receipts for the month were \$1,445,159.

#### Human Services:

- Total assistance for the month was \$7,389. That compares to \$6,239 for the month of January 2016 and \$9,783 for February 2015.
- 2 new cases were opened compared to 5 in 2015.
- 17 cases were approved for varying levels of assistance, with 0 cases still pending and 1 case denied. 23 cases were referred to other agencies for support.

#### Information Technology

- Spent time in general server maintenance, checked systems, checked and cleared logs.



## MEMORANDUM

**TO:** Bob Belmore, City Manager  
**FROM:** Scott A. Smith, Director of Finance  
**DATE:** March 16, 2016  
**SUBJECT:** Cable TV Fund

---

In response to your request for additional information on the Cable TV Fund, please accept the following detail:

Cash – July 1, 2015 \$131,536

Franchise receipts to date 95,165

Expenses to date:

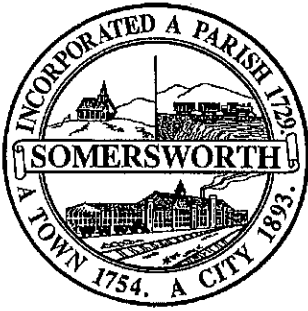
Salaries/Benefits	9,146
Operating Supplies	6,239
Attorney/Legal	1,357
Equipment	<u>13,187</u>

Total expenses 29,929

Cash – March 15, 2016 \$196,772

By way of information, we collect approximately \$31,000 per quarter from the 3% franchise fee in the franchise agreement. For continued operations, I anticipate we will expend approximately an additional \$35,000 by the end of this fiscal year. Additionally, we have included the cable fund in the FY17 proposed budget, and anticipated expenditures for next fiscal year are approximately \$85,000.

If you have any other questions or need any additional information please let me know.



---

## Department of Development Services

Date: March 17, 2016

From: Robert M. Belmore, City Manager  
Interim Director of Planning & Community Development

Re: February 2016 Monthly Report

---

In addition to the Department's various activities listed in the attached staff reports, I attended the following Land Use Board meetings as Interim Director:

- Zoning Board of Adjustment
- Site Review Technical Committee
- Conservation Commission

I also continue to interact on a regular basis with various Development Services Staff.



**Office of Assessing:**

- Sales Verification inspections have taken place in the month of February.
- Permit inspections/checks have taken place in the month of February.
- Resulting from the letters sent in January, appointments for inspections on properties that were not inspected during the first round of the Cycled Inspections were scheduled in February. These inspections will continue into March.
- Data entry continued for these inspections. All changes will be shown on the spring 2016 bill.
- We are currently receiving and processing Elderly Exemptions and Veteran's Credit applications. These applications must be turned in no later than April 15<sup>th</sup> to be reviewed for the 2016 tax year.
- To date this office has received 18 abatement applications for the 2015 tax year. All abatement applications are due no later than March 1<sup>st</sup>, 2016.

## Property Maintenance and Code Enforcement:

Property Maintenance and Code Enforcement Activity Report for February 2016						
Incident Location		Origin of Complaint	Responsible person notified	Compliance	Nature of Concern	Date of Complaint
261	Main St.	DDS	yes	pending	Junkyard	2/9/16
207	High St	DDS	yes	yes	Trash/Recyclables	2/10/16
199	High St	DDS	yes	yes	Trash/Recyclables	2/10/16
36	Market St	DDS	yes	yes	Trash/Recyclables	2/10/16
315	High St	DDS	yes	yes	Trash/Recyclables	2/10/16
36	Prospect St	DDS	yes	yes	Trash/Recyclables	2/10/16
24	Washington St	CC	yes	pending	water damage	2/11/16
74	Crest Dr.	DDS	yes	pending	Junkyard	2/16/16
260	Main St.	DDS	yes	yes	Couch	2/16/16
57-59	Franklin St	DDS	yes	yes	Trash	2/16/16
78	Union St.	DDS	yes	yes	Chair	2/17/16
9	Mt. Auburn St.	DDS	yes	yes	TV, dresser, X-mas Trees	2/22/16
3	Lincoln St.	DDS	yes	yes	futon	2/22/16
41	Union St.	DDS	yes	yes	Trash/Recyclables	2/22/16
24	Union St.	DDS	yes	yes	Trash/Recyclables	2/22/16
15	Union St.	DDS	yes	yes	Trash/Recyclables	2/22/16
14	Union St.	DDS	yes	yes	Trash/Recyclables	2/22/16
5-7	Union St.	DDS	yes	yes	Trash/Recyclables	2/22/16
71	Franklin St	DDS	yes	yes	Trash/Recyclables	2/22/16
77	Franklin St	DDS	yes	yes	Trash/Recyclables	2/22/16
130	Franklin St	DDS	yes	yes	Trash/Recyclables	2/22/16
9	High St	DDS	yes	pending	Trash/Recyclables	2/22/16
475	High St.	DDS	yes	yes	Sign violation	2/24/16
506	High St	DDS	yes	yes	Sign violation	2/24/16
208	Rt. 108	DDS	yes	yes	Site Plan Violation	2/24/16
21	Grove St.	DDS	yes	pending	Trash/Recyclables	2/24/16
22	Union St.	DDS	yes	yes	Trash/Recyclables	2/26/16
256	High St.	DDS	yes	yes	Trash/Recyclables	2/26/16
173	High St.	DDS	yes	yes	Trash/Recyclables	2/26/16
11	Beacon St.	DDS	yes	yes	Trash/Recyclables	2/26/16
117-119	High St.	DDS	yes	yes	Trash/Recyclables	2/26/16
57	High St.	DDS	yes	yes	Trash/Recyclables	2/26/16
90	High St.	DDS	yes	yes	Trash/Recyclables	2/26/16
138-140	High St.	DDS	yes	pending	Mattress/Recyclables	2/26/16
240	Main St.	DDS	yes	pending	Trash	2/26/16
42-46A	Green St.	DDS	yes	yes	Trash bags/trash/rubbish	2/26/16
20	Pleasant St.	DDS	yes	yes	Christmas tree	2/26/16
17	Broad St.	DDS	yes	pending	Couch	2/26/16
9	Central St.	DDS	yes	yes	Chair	2/29/16
26	Union St.	DDS	yes	yes	Mattress/Trash bags	2/29/16
11	Ash St.	DDS	yes	yes	Couches	2/29/16
2	Francoeur Dr.	DDS	yes	yes	Desk	2/29/16
In addition to new complaints received work continues on the Work in Progress (WIP) files from past months						
*Of the 29 pending complainants from January, 8 properties have complied, an agreement has been reached with 1 property and court is pending on the remaining 2 properties*						

**Building and Health Departments:****Major Building Permits issued in February 2016:****Construction cost      Fee**

There were no Major Building Permits issued in February.

--	--	--	--	--

**Minor Building Permits issued in February 2016:**

11	Chesley Ave	Deck/Deck Stairs	\$500.00	\$25.00
290	High	Bathroom addition/Remodel	\$3,000.00	\$34.00
374	High	Window replacement	\$1,000.00	\$25.00
460	High	Tenant fit up	\$210,000.00	\$1,690.00
13	Linden	Solar Photovoltaic system	\$12,644.50	\$114.00
40	Mt. Auburn	Garage	\$25,000.00	\$210.00
34	Midway Park	Solar Photovoltaic system	\$10,523.00	\$94.00
460	High	Bathroom addition/Remodel	\$45,000.00	\$370.00
6	Union	Roof	\$1,900.00	\$25.00
6	Union	Remodel (Remove + upgrade)	\$8,859.00	\$80.00
17	Laurel Ln	Deck/Deck Stairs	\$4,000.00	\$42.00

<b>PERMIT RECEIPTS</b>						
	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>DIFFERENCE this year to last</b>	<b>% OF CHANGE</b>
<b>January</b>	\$1,387.72	\$1,820.00	\$2,157.00	\$6,103.85	\$3,946.85	183.0%
<b>February</b>	\$1,922.02	\$3,864.00	\$2,408.00	\$4,179.00	\$1,771.00	73.5%
<b>March</b>	\$2,974.00	\$2,191.64	\$5,287.28			
<b>April</b>	\$2,470.38	\$4,768.15	\$8,277.80			
<b>May</b>	\$6,979.20	\$26,049.95	\$7,194.16			
<b>June</b>	\$3,609.52	\$24,286.88	\$4,234.80			
<b>July</b>	\$3,968.83	\$3,646.20	\$4,914.41			
<b>August</b>	\$13,916.92	\$6,156.50	\$6,829.37			
<b>September</b>	\$8,522.70	\$6,224.10	\$4,438.20			
<b>October</b>	\$4,336.68	\$6,880.63	\$4,652.40			
<b>November</b>	\$2,930.29	\$2,377.78	\$18,322.40			
<b>December</b>	\$2,990.12	\$2,338.80	\$7,886.00			
<b>Year total</b>	\$56,008.37	\$90,604.63	\$76,601.82	\$10,282.85	\$5,717.85	125.3%
Difference of change this year to last (completed months only)						

Total Permits 2012 to Present							
		2013	2014	2015	2016	DIFFERENCE this year to last	% OF CHANGE
January		31	26	30	33	3	10.0%
February		39	29	24	46	22	91.7%
March		44	29	48			
April		60	48	58			
May		65	66	55			
June		77	66	73			
July		54	47	51			
August		62	55	67			
September		72	67	69			
October		60	63	58			
November		50	47	64			
December		42	38	52			
<b>YTD Totals</b>		656	581	649	79	25	46.3%

### **Land Use Boards:**

#### **Conservation Commission February 2016:**

The workshop and regular meetings were cancelled by the Chairman and the items from those agendas will be heard at the March meetings.

#### **Historic District Commission February 2016:**

- Jim Deyo, 149 High Street, Assessor's Map 10, Lot 131, HDC #01-2016. Application for amendments to the former approval for the chimney was **withdrawn**.
- 335-337 Main Somersworth, LLC, 67-73 High Street, Assessor's Map 11, Lot 63, HDC #02-2016. Application to erect two signs was **approved**.

#### **Planning Board February 2016:**

There were no new applications for review so the Planning Board did not meet in the month of February.

#### **Zoning Board February 2016:**

- MDHF, LLC, 472 High Street, Assessor's Map 40, Lot 04-A, ZBA #12-2015. Application for a variance for a group care facility was **approved**.
- Edwin & Aida Aviles, 500 High Street, Assessor's Map 40, Lot 07, ZBA #01-2016. Application for a variance for a commercial use without required frontage or lot area was **denied**.
- Michael Davis, 433 Route 108, Assessor's Map 56, Lot 3B, ZBA #02-2016. Application for a variance for a building within side setbacks was **approved**.

### **Parks and Recreation**

- Our Biddy Basketball Program began on Saturday, January 30<sup>th</sup> and will run for 6 sessions until Saturday, March 5<sup>th</sup>.



# City of Somersworth

## Summary of 2015 Park Updates

### 2015- A year in review:

#### **Ash Street Park:**

- Added 2 new stone wall bench seats
- Added a new bench
- New stone dust path going through center of park
- Fixed drainage issues by regrading



#### **Noble Pines Park:**

- Camera System installed Dec. 2015
- Esplanade connecting both dugouts
- Rec Building Improvements
- Concession Stand Improvements
- Repairs to stairway leading from SAU 56 office up to the park
- Brick wall below water tower- rehabbed Nov. 2015 (graffiti removed)



#### **Willand Pond Recreation Area:**

- Added 6 new low elements rope course features (Timberland Sept. 2015)
- Added 6 new fitness stations along the trail (Timberland Sept. 2015)
- Added 6 wooden signs naming each low elements stations
- Added 2 new benches along the trail



### ***Mast Point Dam Recreational Area:***

- Added a stone dust path from the parking area to where the boat launch will be constructed
- Added picnic tables to the picnic area
- Added 3 benches along the trail system
- Cleared over a mile of trail systems



### ***Jules Bisson Park:***

- Resurfaced/restriped the basketball court
- Replaced 120' linear section of fence along Indigo Hill Road



### **2016- Park Improvement Forecast:**

**Ash Street Park:** Sundial feature added to the center of the park (fabricated by DPW- installed March 3<sup>rd</sup>)

**Mast Point Dam:** Add park signage, complete boat launch, finish project

**Noble Pines Park:** Add additional permanent trash receptacle (purchased in 2015) & install 6 benches around the ball park from the Timberland Project.

**Millennium Park:** Improvements installed by developer in accordance with the Sunningdale Development approvals. Includes: field improvements, bath house upgrades, regrading access road off Stackpole Road, etc.



New Sundial at Ash Street

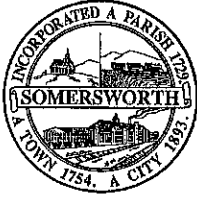
- Travel basketball is winding down. Our annual end of the season banquet is set for Wednesday, March 23<sup>rd</sup> at Idlehurst. This banquet is for all players and their families. We use the revenue generated from our Frosty Tournament to purchase gifts for players and coaches. We also use the money to purchase pizza and goodies for this event.
- The 2016 Frosty Basketball Tournament was held Thursday, Feb. 18<sup>th</sup>-Sunday, Feb. 21<sup>st</sup>. We co-hosted this tournament with Rollinsford Basketball and is for 5/6 grade teams in the Seacoast area. This is a huge fundraiser for our end of the season banquet. We had a great turnout this year with 20 teams participating.
- Our annual Father/Daughter Valentine's Dance was held on Thursday, Feb. 11<sup>th</sup>. We had a lot of couples make it out for this event. We had approximately 240 attendees at the dance this year. The Rec. Dept. provides the DJ, some refreshments, a 4x6 photo to take home, and goody bags for the students.
- Planning is now underway for our 2016 Summer Camp Programs. We will once again be offering Kids Camp for children in grades K-5 and Trends Camp for teens in grades 6-9. Registration will open on March 21<sup>st</sup>.

---

**Monthly Update**

- The department is working with several potential businesses looking at the High Street corridor including the Brixmor Property Group who met with the City in regards to constructing a Dairy Queen at the Tri-City Plaza where there is currently a small vacant building at the front of the lot.
- The Public Works Department will be assisting with the Mast Point Dam improvement project. Bids are being considered for the hand carry boat launch.
- Business outreach and assistance continues through business visits, the monthly e-newsletter and business interviews.
- Redevelopment efforts for the former police station continue.
- Christine attended the Small Business Day in Concord on 2/12 to learn about new resources available to businesses as well as hear about energy and health care initiatives and updates.
- Improvements to the City's website, e-newsletter and other communication tools are underway.
- Christine remains active with the Chamber, Skyhaven Airport, CIBOR, Vision 2020, the Career Technical Center, Seacoast Regional Recruitment Alliance and the Great Falls Development Corporation.
- Business expansion along Route 108 is in full swing for three local businesses and discussions about some redevelopment of other parcels are in the works.





## **MEMORANDUM from Director Public Works & Utilities**

---

**TO:** Robert M. Belmore, City Manager

**DATE:** March 16, 2016

**SUBJECT:** Public Works Department Monthly Report for January/February, 2016

**FROM:** Michael Bobinsky, Director of Public Works & Utilities

---

### **DIRECTOR'S COMMENTS**

#### **Highlights of the Department's activities during this reporting period are as follows:**

- -The mild weather pattern has enabled the Department to initiate early spring like work, including providing temporary repairs to potholes; litter control and beginning clean-up work at Forest Glade Cemetery.
- -Malley Farm will be open as soon as the weather allows. Hours of operation will be from 7:30am -2:30pm Monday-Friday and 8am-6pm on Saturday. Also, the Highway personnel will initiate spring clean-up activities as soon as the weather permits to include street sweeping along our primary streets and downtown sidewalks.
- -Staff has been meeting with Maureen Jackman on plans for the "Spirt Up Day" Community Clean up event scheduled for Saturday, May 7<sup>th</sup>. Also, the regional Household Hazardous Waste Drop off event will be held in Rochester at the Waste Management Turnkey Facility on May 7<sup>th</sup>.
- -The Department worked with the City of Rochester Department of Public Works utilizing their bucket truck and one operator to remove and replace the holiday banners on downtown street lights. The joint effort was very successful. We worked with DPW Director John Storer on the collaborative effort.
- -Recommended contract award to Manter Co of Danvers Massachusetts for the Maple Street Culvert Replacement Project to the Public Works and Environment Committee. Also, initiated discussion with the Committee on recommended streets for repair and resurfacing work.
- -Initiated planning with Kristen Ducharme and Christine Soutter on the future construction of the Mast Point Dam Recreation Enhancement Project Improvements. The Department will be providing in-kind assistance for certain elements of the project.
- -All employees completed an online training program by Primex on harassment in the workplace.

### **HIGHWAY DIVISION**

#### ***Operations/Maintenance:***

- Our new hires attended training regarding Dig Safe procedures put on by MUST and participating utility organization

- Prepared equipment in anticipation of spring clean-up work
  - Street sweeping along the High St. corridor
  - Hartigan Co. is scheduled to begin spring catch basin cleaning of 127 basins beginning March 23<sup>rd</sup>.

#### ***Completed Work:***

- Repaired Manhole cover at #286 High St
  - Temporarily patched around cover, to be repaved when hot top Plant opens (first week of April)
- Resolved drainage issue @ First St. culvert
- Re-graded dirt roads throughout the City;
- Dismantled Downtown Christmas decorations; decorations were organized and stored with the former St. Laurent Recreation building adjacent to the Fire Department.
- Patched Potholes at various locations on City streets

#### **WASTEWATER DIVISION**

##### ***Operations/Maintenance:***

- Comcast completed the cable connection to the wastewater treatment facility. Back Bay network completed the internal connection. This will improve the internet connection over the previous DSL network.
- Kohler performed a corrective maintenance repair on the generator under warranty. Staff discovered an oil leak while conducting a monthly inspection.
- Made improvements at Hawthorne Circle (Gerrish Commons) pump station to include an onsite alarm system with call out capabilities.
- Met with Wright Pierce on the Plant capacity study to update presentation materials.
- Treated a total of 58-million gallons of wastewater.

##### ***Industrial Pretreatment Program:***

- Renewal application from ContiTech Thermopol was approved following review of updated flow information. The completed application was sent to NH-DES for their approval in accordance with the NPDES permit. The new Significant Industrial User (SIU) permit will issue once DES approval is obtained.

##### ***Capital Improvements Plan Items:***

- Blackwater Rd pump station upgrade – Underwood Engineers is on track for 100% design completion by the end of March. Full construction is projected to begin later this summer following approval of the plans.

## **WATER DIVISION**

### ***Items completed this month:***

- Conducted required water sampling and testing.
- Responded to dirty water complaint 200 Rt 108, found issue with hot water system
- Pumped 36,688,961 gallons of raw water
- Filtered and pumped to the city 32,718,938 of finished water
- Prepared scope of work for bid documents for cleaning both plant lagoons.

## **WATER DISTRIBUTION**

- Water Distribution personnel responded to 14 emergency calls and completed 48 other customer service requests and work orders in the month of February.
- There was one water main break in February that resulted in the loss of service for some residents on Myrtle Street for several hours.



## *Somersworth Police Department*

*12 Lilac Lane*

*Somersworth, NH 03878*

*Business: (603) 692-3131 Fax: (603) 692-2111*

Dean W. Crombie  
Chief of Police

# MEMORANDUM

Memo To: Bob Belmore, City Manager  
From: Dean Crombie, Chief of Police  
Date: March 1, 2016  
Subject: Monthly Report – Month of February 2016

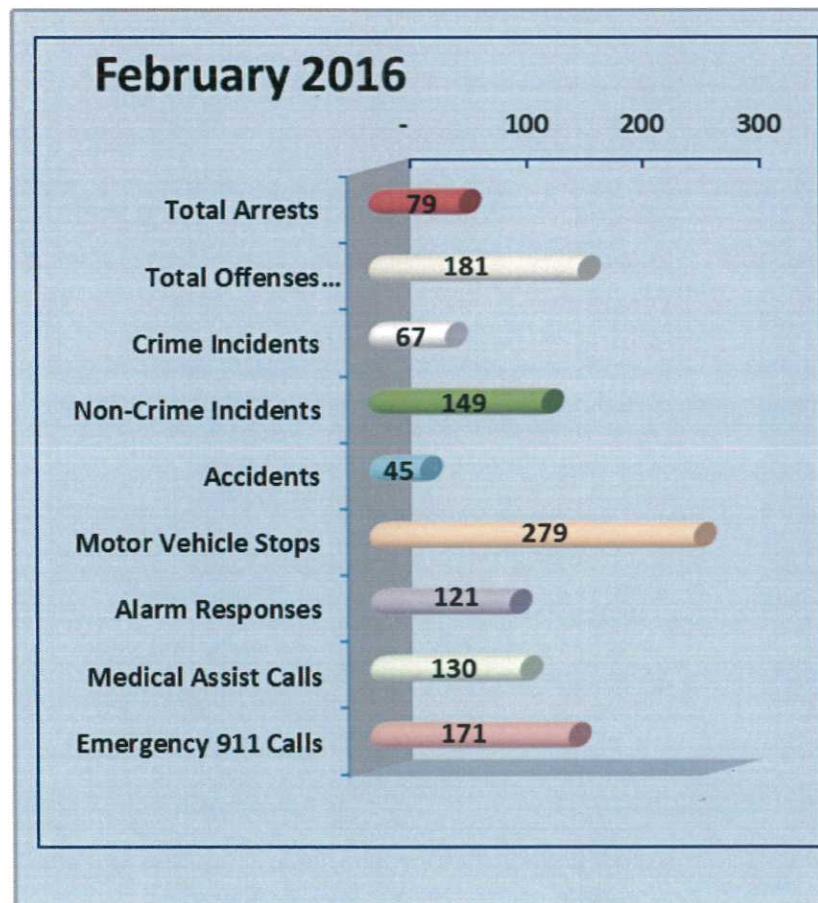
---

### **PERSONNEL (TRAINING & STAFFING):**

- All Department members received City training in the following:
  - Slips-Trips-Falls
  - Harassment
  - Temporary Alternate Duty
  - Code of Conduct
  - Use of Wireless Communications in Vehicles
  - Drug and Alcohol Policy
  - Internet Usage
  - Social Media
- Detective Sunderland attended training at Rochester Police Department for Juvenile Crime, Gang Intervention and Social Media Investigations.
- Officer McMillen attended Monadnock Expandable Baton Instructor training at Hollis Police Department.
- Detective Sunderland attended training for Cell Phone Forensic Investigations through the New England State Police Information Network (NESPIN) in Boston,, Massachusetts.
- Officer Hanson conducted the Agility Training Testing for candidates for hire for the (2) police officer positions that are open. Four applicants passed.

**SPD STATISTICS:**

	Month of Feb-16	Year to Date Totals
Total Arrests	79	165
Calls for Service (Including Items Below)	1,588	3,375
Total Offenses Committed	181	369
Crime Incidents	67	132
Non-Crime Incidents	149	293
Accidents	45	86
Motor Vehicle Stops	279	606
Alarm Responses	121	178
Medical Assist Calls	130	262
Emergency 911 Calls	171	352
Revenues Deposited FY 2015-2016	\$ 9,029.50	\$ 115,478.85





# City of Somersworth

## Fire Department

195 Maple Street – Somersworth, NH 03878-1594



**Keith E. Hoyle**

Fire Chief & Emergency Management Director

[khoyle@somersworth.com](mailto:khoyle@somersworth.com)

**Business: (603) 692-3457**

**Fax: (603) 692-5147**

[www.somersworth.com](http://www.somersworth.com)

---

### **FEBRUARY 2016 MONTHLY REPORT**

#### **EMERGENCY ACTIVITIES**

Building Fires:	5
Vehicle Fires:	0
Outside Fires:	2
Emergency Medical:	61
Motor Vehicle Crash:	15
Malfunction/false alarm:	10
Accidental/public service:	30
Hazardous Condition:	12
Hazardous Materials:	1

#### **NON-EMERGENCY ACTIVITIES**

Burning Permits:	38
Fireworks Permits:	1
Oil Burner Permits:	2
Place of Assembly Permits:	1
Fire Safety Inspections:	8
Fire Drills:	2

#### **CALLS FOR SERVICE**

- We responded to 11 fewer emergency calls this February (136) than in February 2015 – a decrease of 8%.
- We responded to mutual aid fires in Rollinsford and Berwick, Lebanon and South Berwick ME.
- There was a fire at 623 Sherwood Glen that heavily damaged the unit. There were no injuries in the 20 degree below zero fire.
- American Ambulance continues to provide excellent EMS services to the city with an average response time that is approximately 4 minutes.

## **PLANNING/PROJECTS/GRANTS**

- Completed Hazard Mitigation Plan re-write with the Strafford County Regional Planning Commission. They now draft it and give it to us for review and submit it to FEMA for approval.
- Met with municipal EMDs in conjunction with "Ready Strafford" organization as American Ambulance has taken over coordination of the agency's activities in Strafford County.
- Placed 6 new SCBA in service on Engine 3 that we received from the FY16 CIP.
- Finalized draft of FY17 Fire Department budget.
- Reviewed the CTC renovation plans with engineers.
- Met with engineers for a new office building on Route 108.
- Police selected their posters from the FEMA program initiative on "Tell Authorities about Suspicious Activities" and we submitted them to NH Homeland Security for printing and distribution back to us (free of charge).
- Reviewed plans for residential expansion at Canal Street Mills.
- Met with NH Homeland Security officials about CY16 initiatives.
- Prepared amendment for FEMA SAFER Act to spend the remainder of the grant consistent with their rules and our original grant request.
- Assisted many businesses and homes with broken water pipes over the February 12-15 cold snap.

## **TRAINING/MEETINGS**

- The 3 newest call firefighters continue to attend the state Firefighter I course: a 1 year F/F is enrolled in the state Firefighter II curriculum: one call firefighter is enrolled in the NH State EMT basic course while another is in an EMT-Advanced course - all paid for by the federal FEMA SAFER Act grant.
- Chaired JLMC meeting.
- Attended meeting of the Public Safety Committee.
- Attended meeting of the SRTC.
- Attended meeting of the Seacoast Fire Chiefs Association.

## **COMMUNITY SERVICE**

- Attended the "Inaugural" for the Mayor and Council.

Respectfully Submitted:  
Keith E. Hoyle, Fire Chief/EMD

**MITCHELL MUNICIPAL GROUP, P.A.**

ATTORNEYS AT LAW  
25 BEACON STREET EAST  
LACONIA, NEW HAMPSHIRE 03246

WALTER L. MITCHELL  
JUDITH E. WHITELAW  
LAURA SPECTOR-MORGAN  
STEVEN M. WHITLEY

TELEPHONE (603) 524-3885  
FACSIMILE (603) 524-0745

February 26, 2016

**CERTIFICATION**

Re: City of Somersworth, New Hampshire


Resolution No. 24-16

Title: **AUTHORIZING THE CITY MANAGER TO ENTER INTO A PILOT  
AGREEMENT WITH FRISBIE MEMORIAL HOSPITAL D/B/A  
FAMILY CARE OF SOMERSWORTH.**

This is to confirm that in accordance with Somersworth City Council Rules and Regulations #17 (D)1, we have reviewed the above referenced resolution. To our examination it is in correct technical form, and to our understanding is not repugnant to the laws and constitution of the State of New Hampshire nor the Charter and Ordinances of the City of Somersworth.

**MITCHELL MUNICIPAL GROUP, P.A.**  
City Attorney

Date: 2/26/16

By: 



**MITCHELL MUNICIPAL GROUP, P.A.**

ATTORNEYS AT LAW  
25 BEACON STREET EAST  
LACONIA, NEW HAMPSHIRE 03246

WALTER L. MITCHELL  
JUDITH E. WHITELAW  
LAURA SPECTOR-MORGAN  
STEVEN M. WHITLEY

TELEPHONE (603) 524-3885  
FACSIMILE (603) 524-0745

March 14, 2016

**CERTIFICATION**

Re: City of Somersworth, New Hampshire


Resolution No. 25-16

Title: **INCREASE THE PAY OF ELECTION OFFICIALS AND TO  
ADD THE POSITION OF ASSISTANT SUPERVISOR OF THE CHECKLIST.**

This is to confirm that in accordance with Somersworth City Council Rules and Regulations #17 (D)1, we have reviewed the above referenced resolution. To our examination it is in correct technical form, and to our understanding is not repugnant to the laws and constitution of the State of New Hampshire nor the Charter and Ordinances of the City of Somersworth.

**MITCHELL MUNICIPAL GROUP, P.A.**  
City Attorney

Date: 3/14/16

By: 

# WASTEWATER TREATMENT FACILITY CAPACITY EVALUATION

for the  
CITY OF SOMERSWORTH, NH



FEBRUARY 2016

**CITY OF SOMERSWORTH, NH**  
**WASTEWATER TREATMENT FACILITY**  
**CAPACITY EVALUATION**

**FEBRUARY 2016**

**Prepared by:**

**Wright-Pierce  
230 Commerce Way  
Portsmouth, NH 03801**

**CITY OF SOMERSWORTH, NH – WASTEWATER TREATMENT FACILITY  
CAPACITY EVALUATION**

**TABLE OF CONTENTS**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>PAGE</b>
	EXECUTIVE SUMMARY	
ES-1	Background.....	ES-1
ES-2	Results Of Analysis.....	ES-1
ES-3	Recommendations And Cost Estimation.....	ES-3
1	INTRODUCTION	
1.1	Background.....	1-1
1.2	Discharge Permit Limits.....	1-1
1.3	Approach .....	1-2
2	FLOWS AND LOADS.....	2-1
2.1	Basis of Design.....	2-1
3	CAPACITY ANALYSIS	
3.1	Existing Secondary System Process .....	3-1
3.2	Settling Capacity Analysis .....	3-3
3.3	Process Modeling.....	3-6
3.3.1	Existing Plant .....	3-6
3.3.2	Existing Configuration.....	3-6
3.3.3	Operation of Two Trains of Aeration.....	3-9
3.3.4	Design Capacity Evaluation.....	3-12
4	RECOMMENDATION AND COST ESTIMATION	
4.1	Short Term Recommendation and Implementation.....	4-1
4.2	Cost Estimates for Short-Term Recommendation.....	4-4
4.3	Long-Term Recommendations .....	4-5

## LIST OF APPENDICES

APPENDIX	DESCRIPTION
----------	-------------

Appendix A Introduction to State Point Analysis

Appendix B Cost Estimate

Appendix C Industrial Surcharge Analysis

## LIST OF FIGURES

FIGURE	DESCRIPTION	PAGE
--------	-------------	------

2-1	DAILY FLOWS TO SOMERSWORTH WWTF .....	2-3
3-1	DAILY FINAL EFFLUENT TSS AND BOD CONCENTRATIONS .....	3-3
3-2	CURRENT STATE POINT ANALYSIS SOMERSWORTH WWTF .....	3-4
3-3	FUTURE STATE POINT ANALYSIS SOMERSWORTH WWTP .....	3-5
3-4	BIOWIN PROCESS MODEL BASELINE CONFIGURATION .....	3-6
3-5	RECOMMENDED SRT VALUES FOR NITRIFICATION .....	3-8
4-1	AIR PIPING MODIFICATIONS (NOT TO SCALE) .....	4-3

## LIST OF TABLES

TABLE	DESCRIPTION	PAGE
-------	-------------	------

ES-1	REVISED PLANT CAPACITIES .....	ES-2
1-1	CURRENT SOMERSWORTH WWTP EFFLUENT LIMITS .....	1-2
2-1	CURRENT FLOWS AND LOADS FOR SECONDARY SYSTEM EVALUATION .....	2-2
2-2	FUTURE DOMESTIC WASTEWATER CHARACTERISTICS .....	2-4
3-1	BASELINE MODEL RESULTS .....	3-7
3-2	TWO-TRAIN CURRENT CONDITIONS MODEL RESULTS .....	3-10
3-3	PROJECTED SOLIDS HANDLING IMPACTS FOR TWO TRAINS .....	3-11
3-4	TWO-TRAIN FUTURE CAPACITY MODEL RESULTS .....	3-13
3-5	REVISED PLANT CAPACITIES .....	3-14
4-1	ESTIMATED INCREASE IN ANNUAL O&M COSTS .....	4-5
4-2	COST OF RECOMMENDED LONG-TERM IMPROVEMENTS .....	4-6

## **EXECUTIVE SUMMARY**

### **ES-1 BACKGROUND**

The Somersworth Wastewater Treatment Facility (WWTF) is rated for 2.4 MGD and utilizes an activated sludge system to employ either a modified University of Cape Town process (MUCT) or an Anaerobic-Anoxic-Oxic (A2O) process for biological nutrient removal. Of the two aeration trains available at the plant, only one is currently utilized.

The plant receives a high level of soluble biological oxygen demand (BOD) from industrial sources. It is currently operating at 63% of design flow and 96% of design BOD loading. Plans for the connection of two housing developments (Sunningdale and Tara Fields) to the sewer system are currently being reviewed.

The purpose of this report is to evaluate the capacity of the WWTF as operating currently with one aeration train online, and to identify the ultimate plant capacity and modifications required to bring the second train online. In addition, our scope included an analysis of the industrial surcharge that the City is currently charging. The results of this analysis are included as Appendix C.

### **ES-2 RESULTS OF ANALYSIS**

A steady-state process model of the Somersworth liquid treatment system was developed in BioWIN 4.0™ in order to evaluate the capacity of the secondary system with one or two aeration trains operating. Process modeling results of baseline conditions indicate that continued operation of a single train of aeration tanks under current flows and loadings will put the Somersworth plant at risk of NPDES permit violations resulting from partial or total loss of nitrification (which will result in ammonia violations) or violation of total suspended solids/BOD<sub>5</sub> limits due to secondary clarifier upset. The risk is particularly high during above average BOD<sub>5</sub> loadings and colder wastewater temperatures. Such violations have been recently observed in isolated incidents in the summer of 2014.

Modeling results indicate that the Somersworth plant with two aeration trains operating will be able to accommodate additional domestic sewerage of 0.25 MGD (from current annual average flows of 1.44 MGD) with an additional organic loading (BOD<sub>5</sub>) of 1,000 lb/d (from current annual average of 4,748 lb/d) on an annual average basis (580 lb/d after the proposed developments of Sunningdale and Tara Fields). The capacity of the system is limited by its solids settling capacity while maintaining full nitrification during maximum month loading conditions.

Modeling also indicates that due to the high soluble and more readily biodegradable BOD<sub>5</sub> loading from industrial sources, the plant can treat a greater organic load than previously projected (an increase of 8% in maximum BOD<sub>5</sub> loading). However, the high industrial contribution of soluble BOD<sub>5</sub> reduces the capacity of design flows and suspended solids loadings than previously established. Projected capacity of the two-train system is summarized along with current flows and loadings and original plant ratings in Table ES-1.

**TABLE ES-1  
REVISED PLANT CAPACITIES**

	FLOW	BOD <sub>5</sub>	TSS
	MGD	lb/day	lb/day
Current Annual Average	1.44	4,748	2,046
Original Design Rating (Annual Average)	2.40	5,143	4,887
Revised Capacity Projection (Annual Average) <sup>1</sup>	1.69	5,560	2,799

1. The revised capacity projection is limited by organics (BOD<sub>5</sub>) loading due to the significant contribution of high-strength industrial discharges, which utilize more capacity per gallon than domestic waste.

It is important to note that process modeling indicates that the current MUCT process with two aeration trains operating should be able to provide treatment for a future final effluent Total Nitrogen Limit down to 8 mg/L. A lower TN limit would most likely require process modification or further tertiary treatment.

## ES-3 RECOMMENDATIONS AND COST ESTIMATION

### Short-Term Improvements

To mitigate the risk of continued permit violations stemming from secondary clarifier overloading, it is recommended that the City activate the second train of aeration tanks as soon as possible. In order to activate the second train plant modifications are required to remove limitations of the original design and replace non-performing equipment. Specific modifications include the following:

- Installation of new modulating aeration control valves, aeration flow meters, and associated air piping modifications to balance airflow to the two trains;
- Installation of modulating flow control valves and flow meters to the RAS lines to balance combined RAS flows to the two trains;
- Installation of two new dissolved oxygen probes in the second train;
- Installation of existing mixers, nitrified and denitrified recycle pumps (currently in storage);
- Modification of PLC programming and SCADA to incorporate additional monitoring and controls;
- Installation of a second sodium aluminate feed pump and injection quill; and
- Replacement of aging aeration diffuser membranes.

Construction project costs for the modifications are estimated at \$473,000, with total project costs estimated at \$614,000.

Increased operations and maintenance costs from activating the second train are as follows:

- Electrical costs of running a second train of nitrified/denitrified recycle pumps and mixers;
- Maintenance of these pumps and mixers;
- Electrical costs from blowers running during low-loading conditions due to mixing requirements;



- Increased Polymer usage requirements for dewatering thinner waste sludge;
- Operator manhours for extended centrifuge operation;
- Increased electrical costs from running centrifuge longer and more frequently; and
- Increased disposal costs of wetter sludge.

It is estimated that activating the second train will result in an increase in annual O&M costs of \$107,000.

In addition, activating the second train will dilute wastewater sludge to the dewatering centrifuge, resulting in longer operating time, higher throughput and potentially higher polymer usage. Therefore, it is recommended that the City consider replacing the existing Westfalia dewatering centrifuge concurrently with bringing the second aeration train online. The existing centrifuge is roughly 13 years old and is scheduled to be replaced in the next five years. The construction costs for replacing the centrifuge are estimated to be \$1.5 M, which are not included in the construction project cost estimated above. A new centrifuge is expected to save an estimated \$40,000 annually in operating costs, including sludge disposal, polymer usage, and energy and operator hours for centrifuge operation.

### **Long-Term Improvements**

Wright-Pierce identified several issues at the facility during our site visits that, while not specifically required to be addressed at this time for successful operation of the secondary system, should be either investigated further or considered for future improvements.

- Improve cooling system in the blower building electrical room to prevent blower drive overheating.
- Address code related issues in the blower building electrical room concurrently with the ventilation system.
- Replace submersible mixers with gear-driven units or an alternative mixing system to reduce maintenance costs.
- Add ORP probes to anaerobic/anoxic zones (four total).

In addition, it is recommended that the City plan for required improvements due to future modification to its NPDES permit with the addition of a total nitrogen discharge limit. The City can expect to have their NPDES permit modified in the next few years (less than 10) to include a total nitrogen limit of 3.0 mg/L. The current nutrient removal process was simulated to reduce effluent total nitrogen concentrations to below 8 mg/L, however the current process cannot be expected to achieve effluent total nitrogen levels in the 3.0 mg/L range. Thus, it is recommended that the City plan for a future nitrogen removal upgrade (a future enhanced nitrogen removal upgrade could be in the \$5.0M to \$8.0M range (in 2015 dollars)).

# **SECTION 1**

## **INTRODUCTION**

### **1.1 BACKGROUND**

The Somersworth wastewater treatment facility (WWTF) is rated for 2.4 MGD and utilizes an activated sludge system to employ either a modified University of Cape Town process (MUCT) or an Anaerobic-Anoxic-Oxic (A2O) process for biological nutrient removal. Of the two aeration trains available at the plant, only one is currently utilized.

The plant receives a high level of soluble biological oxygen demand (BOD) from industrial sources. It is currently operating at 63% of design flow and 96% of design BOD loading. Plans for the connection of two housing developments (Sunningdale and Tara Fields) to the sewer system are currently being reviewed.

The purpose of this report is to evaluate the capacity of the WWTF as operating currently with one aeration train online, and to identify the ultimate plant capacity and modifications required to bring the second train online. In addition, our scope included an analysis of the industrial surcharge that the City is currently charging. The results of this analysis are included as Appendix C.

### **1.2 DISCHARGE PERMIT LIMITS**

Table 1-1 presents NPDES effluent limits for the Somersworth WWTF. The plant is currently subject to seasonal restrictions on Total Phosphorus as well as reduced Ammonia concentrations during the period of June 1 through September 30.

**TABLE 1-1  
CURRENT SOMERSWORTH WWTP EFFLUENT LIMITS**

PARAMETER	MONTHLY AVERAGE	WEEKLY AVERAGE	DAILY MAXIMUM
Flow, MGD	—	—	—
BOD <sub>5</sub> , mg/l (lb./d), Jun. 1 – Sep. 30	10(190)	15 (285)	17 (317)
BOD <sub>5</sub> , mg/l (lb./d), Oct. 1 – May. 31	30(600)	45 (901)	50 (1,001)
TSS, mg/l (lb./d), Jun. 1 – Sep. 30	10(190)	15 (285)	17 (317)
TSS, mg/l (lb./d), Oct. 1 – May. 31	30(600)	45 (901)	50 (1,001)
pH, Std. Units	6.5 - 8.0		
Dissolved Oxygen, mg/l, Jun. 1 – Sep. 30	min. 6.5		
E.Coli, cfu/100 MI	126		406
Total Residual Chlorine, mg/L	0.08	—	0.14
Total Phosphorus mg/l (lb./d), Jun. 1 – Sep. 30	0.75 (9.5)	—	—
Ammonia, lb./d, Jun. 1 – Sep. 30	—	143	—
Ammonia, mg/l (lb./d), Oct. 1 – May. 31	13 (264)	—	—
Whole Effluent Toxicity	Various		

The WWTF discharges into the Salmon Falls River which discharges into the Great Bay Estuary, which is a subject of efforts to improve water quality by reducing nitrogen loadings to the Bay. Several municipal wastewater treatment plants have received proposed interim total nitrogen discharge limits of 8 mg/L with a potential ultimate nitrogen concentration limit of 3 mg/L. Therefore, Somersworth may expect to receive a total nitrogen discharge limit as a modification to its NPDES permit in the near future, with a potential expansion to its nutrient removal period (possible from May 1 to October 31). The facility is currently operating under a NPDES permit with modifications issued in 2003, that expired in 2005.

### 1.3 APPROACH

Wright-Pierce staff met with WWTF operations in August, 2015, to understand current operations and verify project objectives. Wright-Pierce obtained the following information for our evaluation:

- WWTP Improvements Record Drawings (Underwood Engineers, August 2003)
- NPDES Permit No. NH0100277 for the City's WWTF

- Request for Proposals for this project including growth projections for Sunningdale Development and Tara Fields
- Nitrification Notice of Non-Compliance - Evaluation (W&S, June 2009)
- WWTF operating data 2014 through June 2015
- Shop drawings Sanitaire air diffusers 2005
- Proposed wastewater division operations budget 2015-2016

Wright-Pierce reviewed all collected information to establish current flows and loadings to the City's treatment facility. Based on the information received, current and future WWTF flows and loads and our understanding of current and potential future NPDES permit requirements, current and future capacity (with a second aeration train online) of the facility was evaluated. Improvements required for activating the second train were identified along with associated capital and O&M costs, and are presented in Section 4.

## SECTION 2

### FLOWS AND LOADS

#### 2.1 BASIS OF DESIGN

Current flows and loadings for the WWTF were established by review of Monthly Operating Reports from January 2014 to June 2015. The resulting current flows and loads are summarized in Table 2-1. The data were analyzed for the following conditions:

- *Minimum Daily:* Minimum flow or load during the period. The minimum daily value is presented for each parameter independently, i.e., the minimum value presented in Table 2-1 does not necessarily occur during the same day for each parameter listed.
- *Annual Average:* Average of all daily data for the entire period.
- *Maximum Month:* To accurately predict the secondary treatment system's response to a maximum month loading condition, the values selected must not be mutually exclusive. That is, the maximum month loading condition should reflect actual historical loading events. The maximum 30-day period (i.e. maximum month) BOD<sub>5</sub> loading of 5,671 pounds per day (lb/day) was selected which occurred historically from August 13 to September 13, 2014.



**TABLE 2-1**  
**CURRENT FLOWS AND LOADS FOR SECONDARY SYSTEM EVALUATION**  
**JANUARY 1, 2014 TO JULY 31, 2015**

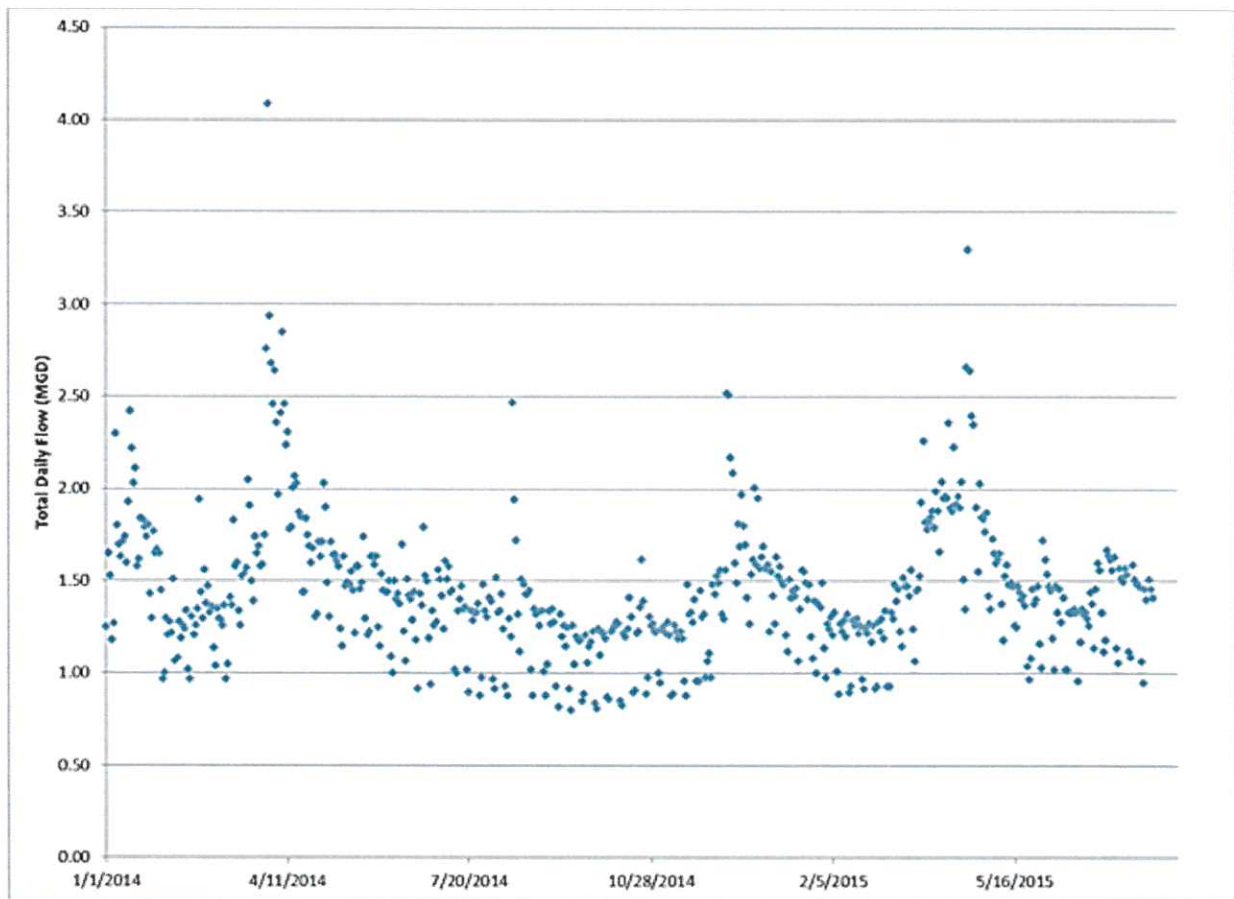
PARAMETER	FLOW		BOD		TSS		NH <sub>3</sub> -N		TKN		P	
	MGD	P.F. <sup>3</sup>	mg/L	lb/day	mg/L	lb/day	mg/L	lb/day	mg/L	lb/day	mg/L	lb/day
Minimum Daily	0.80		423	2,820	167	1113	22	148	-	197	8.5	56
Annual Average	1.44	—	395	4,748	170	2,046	20.8	249	27.7	332	7.9	95
Maximum Month BOD Loading <sup>1</sup>	1.22	0.85	557	5,671	247	2,512	29.3	298	39.0	397	11.1	113
Maximum Day <sup>2</sup>	2.94	2.04	616	7,192	340	3,970	32.3	378	43.1	503	12.3	144

**Notes:**

1. Maximum Month BOD loadings recorded for Sep. 2014
2. Maximum Day values for BOD observed 5/28/15
- Maximum Day Flows occurred on 4/1/14, excluding outliers
3. Peaking Factor

- *Maximum Day:* Maximum single day that occurs for each parameter during the period. As with the minimum day, the maximum day does not occur on the same day for each parameter. Maximum daily flow listed in Table 2-1 of 2.94 MGD occurred on April 1, 2014, as shown in Figure 2-1. Although this flow was exceeded twice during the period, the April 1st flow was considered most representative for the purpose of establishing a peaking factor for the parameter.

**FIGURE 2-1**  
**DAILY FLOWS TO SOMERSWORTH WWTF**  
**JANUARY 1, 2014 TO JULY 31, 2015**



- **Nutrient Loading:** Nutrient loadings were calculated based on estimating a percentage of BOD<sub>5</sub> loadings from limited sampling. Total Kjeldahl Nitrogen (TKN) loading was assumed to be 7 percent of BOD<sub>5</sub> loading, whereas phosphorus was estimated at 2 percent of BOD<sub>5</sub> loading. Although the TKN percentage is low as compared to typical municipal influent (typically TKN:BOD ratio of 15-20%), Somersworth receives large concentrations of soluble BOD from industrial discharges which are typically nitrogen-deficient. This assumption is validated by the limited influent nitrogen grab sampling.

In order to estimate the design capacity of the plant, characteristics of future domestic sewerage were calculated from guidelines provided by NHDES Env-Wq Section 707.03 *Basis of Design Report*. This section provides recommended sewerage flows and loads per capita, which are summarized in Table 2-2.

**TABLE 2-2  
FUTURE DOMESTIC WASTEWATER CHARACTERISTICS**

FLOW	BOD <sub>5</sub>		TSS		TN		P	
gpd/cap	mg/L	lb/day/cap	mg/L	lb/day/cap	mg/L	lb/day/cap	mg/L	lb/day/cap
80	330	0.22	375	0.25	60	0.04	9	0.006

It was further assumed that all expansion to Somersworth sewerage would be from domestic sources as the City has indicated that this is most likely the source of future growth. Industrial sources will likely consist of higher concentration of organics (BOD<sub>5</sub>) or solids than domestic wastewater and would utilize greater plant capacity per gallon.

## SECTION 3

### CAPACITY ANALYSIS

#### 3.1 EXISTING SECONDARY SYSTEM PROCESS

##### *System Description*

The Somersworth WWTF utilizes an activated sludge system to employ either a modified University of Cape Town process (MUCT) or an Anaerobic-Anoxic-Oxic (A2O) process for biological nutrient removal. The plant generally operates with the MUCT process from April through October, and switches to the A2O process for the remainder of the year. The two aeration trains are subdivided into five zones with a total volume of 0.91 million gallons each. Only one aeration train is currently utilized. Anaerobic and anoxic mixing is provided by submersible mixers, while nitrified and denitrified recycle pumping is provided by propeller pumps with capacities of 1740 gpm and 868 gpm, respectively. Sludge is wasted from the bottom of the secondary clarifiers to the sludge holding tanks. The aeration system consists of four variable speed, 50 HP positive-displacement blowers with membrane disk diffusers for fine-bubble aeration. Mixed liquor suspended solids concentrations (MLSS) have recently ranged from 2,600 to 4,000 mg/L while maintaining an aerobic solids residence time (SRT) of 6 days.

The aeration tanks are followed by two 80-foot diameter secondary clarifiers with 10.5 feet sidewater depth. The depth of the clarifiers is considered inadequate for proper clarifier operation (as a comparison, NHDES Env-Wq 711.04 recommends a sidewater depth of 16 feet for clarifiers with a diameter of 80 feet). Settled mixed liquor is recycled back to the head of the aeration tanks via a recycled activated sludge (RAS) pump system consisting of three variable-speed centrifugal units, with a firm capacity of 400 to 2,000 gpm. Sodium aluminate is added to the recycled activated sludge (RAS) flow for alkalinity and as a coagulant for chemical phosphorus removal. Tertiary treatment for solids/phosphorus removal is provided by cloth disk filters, followed by disinfection and post-aeration.

Waste activated sludge (WAS) is stored briefly (less than 24 hours) in aerated sludge holding tanks prior to being dewatered by a centrifuge. Major plant recycle streams include dewatering centrate and tertiary filter backwash, which is collected at the building drain wetwell and returned to the head of the aeration tanks.

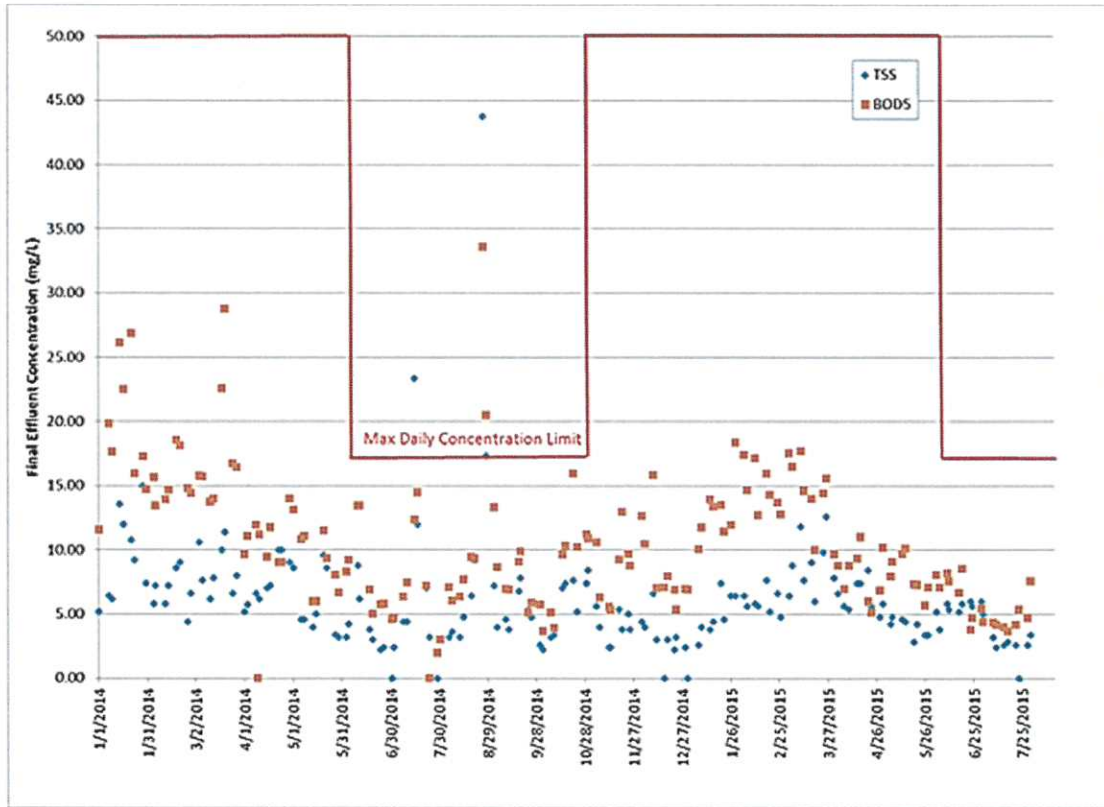
#### Current Performance

A review of operating data from January 2014 to June 2015 indicates the following:

- High level of influent soluble BOD (from industrial sources)
- The plant was able to obtain full nitrification in the aeration tanks June through October with the exception of several weeks in July and August 2014
- The plant exceeded daily maximum final effluent TSS concentration limits once in July 2014 and once in August 2014 from clarifier overload due to wet weather flows, with both exceedances corresponding to an apparent loss in nitrification
- The combination of the Enhanced Biological Phosphorus Removal and chemical/tertiary treatment using sodium aluminate and cloth filters is able to keep effluent total phosphorus below the permit limit of 0.75 mg/L

Daily final effluent TSS and BOD concentrations for the period observed are shown in Figure 3-1.

**FIGURE 3-1**  
**DAILY FINAL EFFLUENT TSS AND BOD5 CONCENTRATIONS**  
**JANUARY 1, 2014 TO JULY 31, 2015**



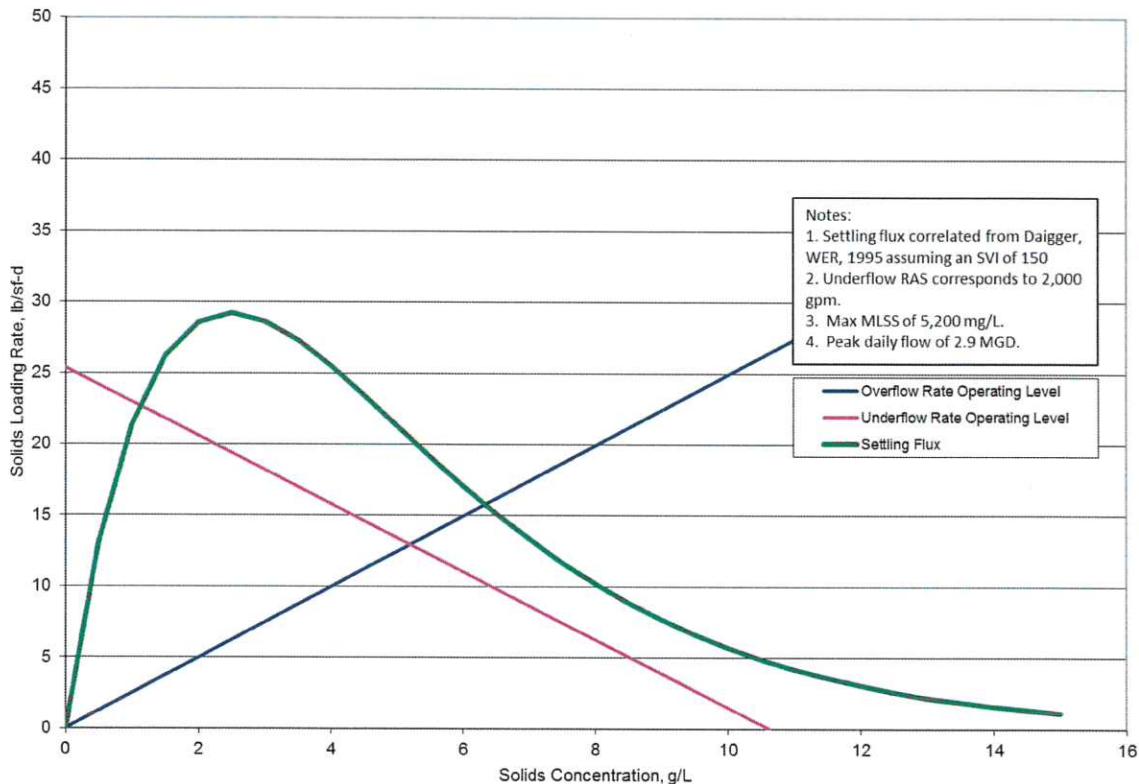
### 3.2 SETTLING CAPACITY ANALYSIS

NHDES Env-Wq Section 711.04 *Secondary Settling Tanks* stipulates that secondary clarifiers shall be designed/evaluated using a solids flux analysis. Wright-Pierce utilizes State Point Analysis for evaluating settling capacity. From this analysis, maximum operating mixed liquor suspended solids (MLSS) concentrations and required RAS pumping capacity can be determined based on the capacity of the clarifier settling area.

The State Point Analysis using a current maximum daily flow of 2.9 MGD is shown in Figure 3-2.



**FIGURE 3-2**  
**CURRENT STATE POINT ANALYSIS SOMERSWORTH WWTF**  
**JANUARY 1, 2014 TO JULY 31, 2015**

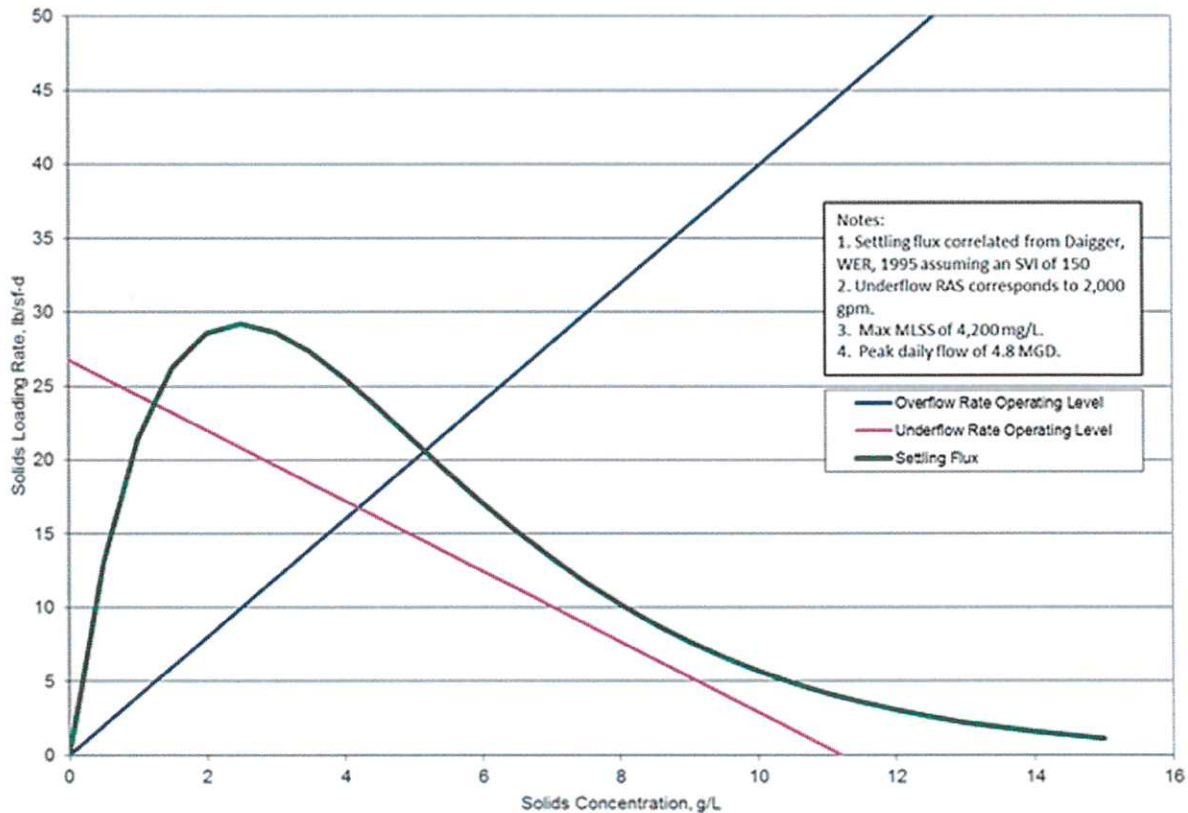


This analysis assumes a RAS pumping rate of 2,000 gpm, a MLSS concentration of 4,200 mg/L, and a Sludge Volume Index (SVI) of 150 mL/g, which is recommended for establishing design capacity by NHDES Env-Wq Section 711.04 *Secondary Settling Tanks: Design Criteria for Overflow Rates*. Furthermore, Section 711.03 *Secondary Settling Tanks: Design Criteria for Solids Loading* recommends a settling tank safety factor of 1.3 to 1.5. Due to the shallow depth of the secondary clarifiers, a safety factor of 1.5 is recommended. Figure 3-2 indicates that the settling area of the two existing clarifiers, as well as the return sludge pumping capacity from the two existing clarifiers should be sufficient for current conditions, *given a maximum MLSS of 5,200 mg/L and a peak RAS pumping capacity of 2,000 gpm*. The state point provides a safety factor of roughly 1.5, meeting NHDES guidelines.

The future maximum daily design flow for the Somersworth WWTF was projected using the peaking factor of 2.0 established using current flows (refer to Table 2-1). Therefore, given the design rated average flow of 2.4 MGD, the future (2020) maximum daily flow is 4.8 MGD. The

State Point Analysis using this maximum daily influent flow is shown in Figure 3-3. Figure 3-3 indicates that the settling area of the two existing clarifiers, as well as the return sludge pumping capacity from the two existing clarifiers should be sufficient for future flows and loadings, *given a maximum MLSS of 4,200 mg/L and a peak RAS pumping capacity of 2,000 gpm.*

**FIGURE 3-3  
FUTURE STATE POINT ANALYSIS SOMERSWORTH WWTP**



At the Somersworth WWTF additional protection against permit violation by solids is provided by tertiary treatment utilizing cloth disk filters. However, at a peak hourly flow of 6 MGD the allowable solids loading to the filters would be less than 12 mg/L, and therefore any upset of the secondary clarifiers would exceed the solids handling capacity of the filters (assuming a recommended solids loading flux rate of 0.7 lb TSS/ft<sup>2</sup>/day). Therefore, the filters will not provide sufficient protection to provide additional sustained capacity to the treatment facility.

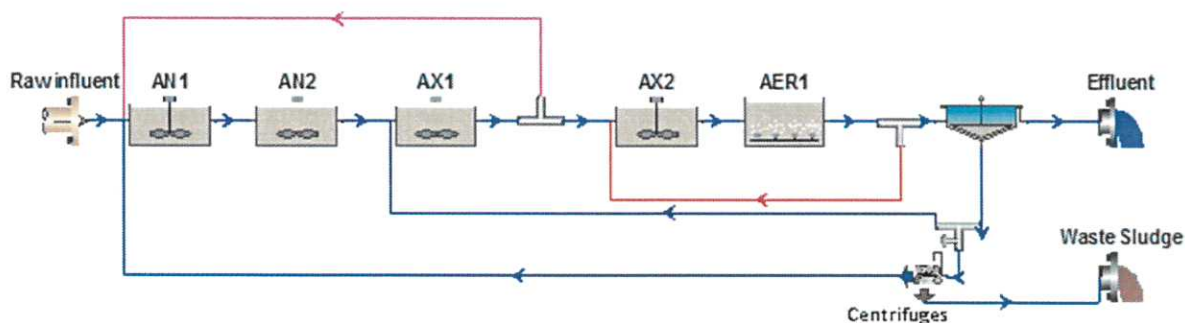
### 3.3 PROCESS MODELING

#### 3.3.1 Existing Plant

A steady-state process model of the Somersworth liquid treatment system was developed in BioWIN 4.0™ in order to evaluate the capacity of the secondary system. For this study, the model was developed using model-default kinetic and stoichiometric process parameters. The baseline model utilized a single train operating in the MUCT configuration as currently operated during July through October.

The temperature of the wastewater was modeled at both minimum and annual average temperatures observed at the plant of 54°F (12°C) and 61° F (16°C), respectively. Sludge storage time was assumed to be negligible, and solids capture of the centrifuge was modeled at 95%. A process schematic of the existing (modeled) system is shown in Figure 3-4.

**FIGURE 3-4  
BIOWIN PROCESS MODEL BASELINE CONFIGURATION**



#### 3.3.2 EXISTING CONFIGURATION

The model of the existing system was used to simulate the plant under both annual average and maximum month loadings for current conditions. A summary of the results is shown in Table 3-1.



**TABLE 3-1  
BASELINE MODEL RESULTS**

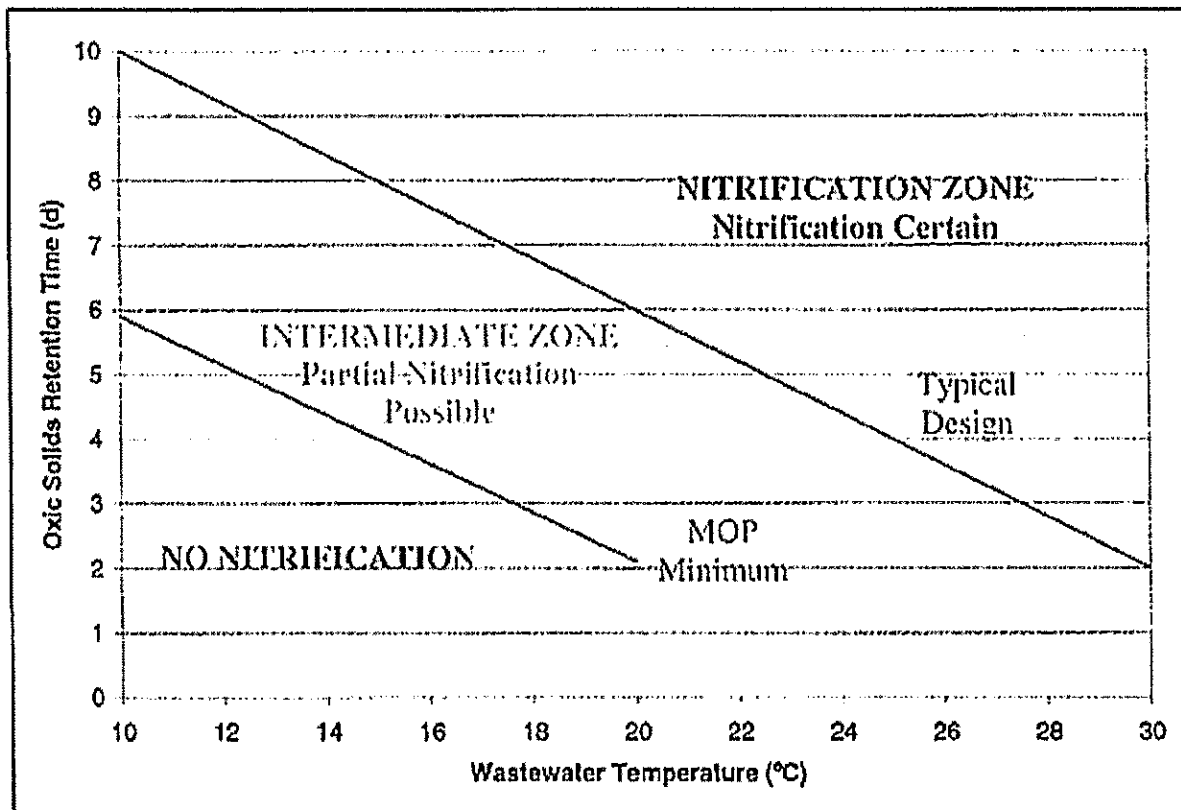
	ANNUAL AVERAGE	MAXIMUM MONTHLY BOD <sub>5</sub> LOADING
<b>Aeration Tanks</b>		
Number of trains in operation	1	1
Wastewater temperature, °C	16	12
Process configuration	MUCT	MUCT
Aerobic SRT, d	6	8
MLSS, mg/L	3,770	<b>5,750</b>
Airflow required, scfm	2,330	2,970
Diffuser flux, scfm/diffuser	2.0	2.5
<b>Secondary Clarifier</b>		
Number of clarifiers in operation	2	2
Peak Daily Flow, MGD	2.9	2.9
Peak Day RAS rate, MGD	2.9	2.9
Peak day SLR, lb/d/ft <sup>2</sup>	18	<b>28</b>
Underflow TSS, mg/L	10,050	15,300
<b>Final Effluent</b>		
Effluent CBOD <sub>5</sub> , mg/L	5	5
Effluent pH	6.7	6.7
Effluent TKN, mg/L	2.5	2.9
Effluent NH <sub>3</sub> , mg/L	1.0	1.0
Effluent NO <sub>x</sub> , mg/L	1.9	3.1
Effluent TN, mg/L	4.4	6.0
Effluent P, mg/L	0.3	0.3
Effluent TSS, mg/L	5	5
Effluent TN, lb./d	53	61
Effluent P, lb./d	4	3

Annual average conditions were modeled using a wastewater temperature of 16°C and the current aerobic solids retention time of 6 days. Critical design conditions (i.e. maximum month loading) to determine plant capacity were established using conservative assumptions including the following:

- Maximum month BOD<sub>5</sub> loadings
- Temperatures typical of early spring (12°C)
- Aerobic SRTs of 8 days in order to ensure sufficient growth of nitrifiers just prior to the stringent nutrient removal season (June through October). Note that according to WEF

Manual of Practice No. 8, this minimum SRT provides a safety factor of 1.8 as shown in Figure 3-5, which is less conservative than recommended to ensure full nitrification. However, maintaining higher aerobic SRT would result in excessive MLSS concentrations ( $>6,000$  mg/L) given the limited volume of one aeration train. It has also been noted by plant operators that increasing SRTs above 6 days and corresponding MLSS has resulted in proliferation of filamentous bacteria and foaming. This may be in part due to low dissolved oxygen concentrations, resulting from poor oxygen transfer while overloading of a single-train of diffusers (as discussed further in the model results).

**FIGURE 3-5**  
**RECOMMENDED SRT VALUES FOR NITRIFICATION**



Model results indicate that under annual average loadings, in order to maintain a sufficient aerobic SRT (6 days) to maintain full nitrification in the aeration tanks, the MLSS is elevated to 3,800 mg/L, which is below the 4,200 mg/L maximum capacity established by the State Point

Analysis for current conditions. During critical design conditions, the MLSS required to maintain an aerobic SRT of 8 days (5,800 mg/L) exceeds the settling capacity of the clarifiers during peak daily flow conditions as established by the State Point Analysis.

The baseline model also indicated that pushing the airflow required for processing current maximum month loads through the aeration diffusers of one train exceeds the diffuser design capacity. The diffusers were designed for a maximum day flux of 1.9 scfm/diffuser, whereas the modeled required flux for maximum month conditions (which is less than maximum day conditions) is 2.5 scfm/diffuser. This results in loss of oxygen transfer efficiency and the inability of the aeration system to maintain dissolved oxygen setpoints during heavy organic loadings, which has been observed at the plant.

The MUCT process was shown to be effective for fostering Enhanced Biological Phosphorus Removal (EBPR) for both annual average and maximum month conditions, with resulting TP effluent concentrations of 0.5 mg/L or less.

Therefore, process modeling results of baseline conditions indicate that continued operation of a single train of aeration tanks under current flows and loadings will put the Somersworth plant at risk of NPDES permit violations resulting from partial or total loss of nitrification (which will result in ammonia violations) or violation of total suspended solids/BOD<sub>5</sub> limits due to clarifier upset. The risk is particularly high during above average BOD<sub>5</sub> loadings and colder wastewater temperatures. Such violations have been recently observed in isolated incidents in the summer of 2014.

### **3.3.3 Operation of Two Trains of Aeration**

A second process model was developed to simulate the plant under both annual average and maximum month loadings for current conditions with two trains of aeration operating. For the critical design condition (i.e. maximum month loading), operating SRTs were modeled using an aerobic SRT of 10 days, which provides a safety factor of 2 at wastewater temperatures of 12°C to ensure full nitrification, according to the WEF Manual of Practice No. 8 as shown in Figure 3-5.

The average condition was modeled with an SRT of 8 days for a wastewater temperature of 16 °C. A summary of the results is shown in Table 3-4.

**TABLE 3-2**  
**TWO-TRAIN CURRENT CONDITIONS MODEL RESULTS**

	ANNUAL AVERAGE	MAXIMUM MONTHLY BOD <sub>5</sub> LOADING
<b>Aeration Tanks</b>		
Number of trains in operation	2	2
Wastewater temperature, °C	16	12
Process configuration	MUCT	MUCT
Aerobic SRT, d	8	10
MLSS, mg/L	2,330	3,460
Airflow required, scfm	2,330	2,660
Diffuser flux, scfm/diffuser	1.0	1.1
<b>Secondary Clarifier</b>		
Number of clarifiers in operation	2	2
Peak Daily Flow, MGD	2.9	2.9
Peak Day RAS rate, MGD	2.9	2.9
Peak day SLR, lb/d/ft <sup>2</sup>	11	17
Underflow TSS, mg/L	6,190	9,220
<b>Final Effluent</b>		
Effluent CBOD <sub>5</sub> , mg/L	5	5
Effluent pH	6.7	6.7
Effluent TKN, mg/L	2.3	2.7
Effluent NH <sub>3</sub> , mg/L	1.0	1.0
Effluent NO <sub>x</sub> , mg/L	2.4	3.6
Effluent TN, mg/L	4.7	6.3
Effluent P, mg/L	0.40	0.40
Effluent TSS, mg/L	5	5
Effluent TN, lb./d	58	66
Effluent P, lb./d	5	4

Model results indicate that operating with two trains will provide sufficient aeration tank volume to ensure complete nitrification during current critical design conditions while reducing MLSS concentrations below the ultimate settling capacity of the clarifiers. The diffuser flux in the two aeration trains is reduced below design capacity, removing limitations in oxygen delivery. In addition, operating with two trains will reduce mixed liquor concentrations to allow short-term



operation with only one clarifier, in order to take one down for maintenance (during average loadings).

The MUCT process was shown to be effective for fostering Enhanced Biological Phosphorus Removal (EBPR) for both average annual and maximum month conditions, with resulting TP effluent concentrations of 0.5 mg/L or less. Furthermore, the process was simulated to reduce effluent total nitrogen concentrations to below 8 mg/L.

The activation of the second train will reduce waste sludge concentrations for dewatering by roughly 50 percent (average 1 percent TSS with one train to 0.5 percent TS with two trains). This will likely increase dewatering centrifuge operation duration and polymer usage, and possibly reduce centrifuge cake solids using the existing centrifuge, resulting in increased dewatered cake for disposal. Potential ramifications of two-train operation on solids handling is presented in Table 3-3.

**TABLE 3-3  
PROJECTED SOLIDS HANDLING IMPACTS FOR TWO TRAIN OPERATION**

	One aeration train (existing centrifuge)	Two aeration trains (existing centrifuge)	Two aeration trains (new centrifuge)
Average dry solids produced, lb/d	3,247	3,004	3,004
Average thickened feed sludge conc, % TS	1.5	0.9	0.9
Centrifuge feed flow, gpm	175	175	225
Cake conc, %TS	21	19	21
Cake quantities, wtpd	7.7	7.9	7.2
Centrifuge hours of operation, weekly	17.3	26.7	20.8
Polymer dosage (lb/dt)	30	40	35
Annual polymer usage (lb)	17,777	21,929	19,188

Although the existing Westfalia centrifuge is currently performing well, it is roughly 13 years old and is scheduled to be replaced in the next 5 years. Wright-Pierce evaluated two different alternatives for handling the thinner waste sludge:

- *Installing a new centrifuge.* Replacing the centrifuge with a unit sized for the greater volume of thinner sludge generated by two aeration trains. The new centrifuge would run 12 to 18 hours a week and result in dewatered cake of 20 to 22% TS, similar to current operations.
- *Installing a screw press.* A dewatering screw press is often more economical than a centrifuge and utilizes less energy. In addition, it can be automated to run without supervision. Due to the thin sludge anticipated, feed flow to the screw press would have to be reduced so that the press operates greater than 30 hours/week to produce a maximum cake solids of 18 to 20% TS.

Due to the higher dewatering capability and high throughput of the centrifuge, continuing with centrifuge technology for dewatering technology at Somersworth is recommended. Estimated costs for centrifuge replacement are provided in Section 4.

#### **3.3.4 Design Capacity Evaluation**

In order to handle expansion of the Somersworth sewer service area, expansion of the treatment plant to utilize two aeration trains is recommended. The process model was utilized to determine the ultimate loading capacity of the two-train secondary system with respect to organics ( $\text{BOD}_5$ ). Flow of domestic wastewater (with characteristics described in Table 2-2) was added to current flows and loads until the MLSS required to achieve full nitrification during critical design conditions reached the settling capacity of the clarifiers. The resulting total influent flows and loadings during maximum month conditions were then reduced by a peaking factor of 1.2 to establish rating capacity of organic loading at annual average conditions. The rating annual average conditions were also modeled to simulate performance. A summary of the results is shown in Table 3-4.

**TABLE 3-4  
TWO-TRAIN FUTURE CAPACITY MODEL RESULTS**

	ANNUAL AVERAGE	MAXIMUM MONTHLY BOD <sub>5</sub> LOADING
<b>Influent</b>		
Additional domestic sewerage, MGD	0.25	0.3
Additional domestic BOD <sub>5</sub> , lb/d	813	1,000
Total BOD <sub>5</sub> , lb/d	5,560	6,670
Additional BOD <sub>5</sub> from Sunningdale and Tara Fields, lb/d	233	280
<b><i>Remaining additional BOD<sub>5</sub> after Sunningdale and Tara Fields expansion, lb/d</i></b>	<b>580</b>	<b>720</b>
Max month: Annual Average Peaking Factor	1.2	1.2
<b>Aeration Tanks</b>		
Number of trains in operation	2	2
Process configuration	MUCT	MUCT
Aerobic SRT, d	8	10
MLSS, mg/L	2,870	4,200
Airflow required, scfm	2,690	3,410
Diffuser flux, scfm/diffuser	1.1	1.4
<b>Secondary Clarifier</b>		
Number of clarifiers in operation	2	2
Peak Daily Flow, MGD	4.8	4.8
Peak Day RAS rate, MGD	2.9	2.9
Peak day SLR, lb/d/ft <sup>2</sup>	18	28
Underflow TSS, mg/L	8,470	13,030
<b>Final Effluent</b>		
Effluent CBOD <sub>5</sub> , mg/L	5	5
Effluent pH	6.7	6.7
Effluent TKN, mg/L	2.3	2.7
Effluent NH <sub>3</sub> , mg/L	1.0	1.0
Effluent NO <sub>x</sub> , mg/L	3.3	4.7
Effluent TN, mg/L	5.6	7.4
Effluent P, mg/L	0.40	0.40
Effluent TSS, mg/L	5	5
Effluent TN, lb./d	81	96
Effluent P, lb./d	6	5

Modeling results indicate that the Somersworth plant with two aeration trains operating will be able to accommodate additional domestic sewerage of 0.25 MGD (from current annual average flows of 1.44 MGD) with an additional organic loading (BOD<sub>5</sub>) of 1,000 lb/d (from current

annual average of 4,748 lb/d) on an annual average basis (580 lb/d after the proposed developments of Sunningdale and Tara Fields). The capacity of the system is limited by its solids settling capacity while maintaining full nitrification during maximum month loading conditions.

Modeling also indicates that due to the high soluble and more readily biodegradable BOD<sub>5</sub> loading from industrial sources, the plant can treat a greater organic load than previously projected (an increase of 8% in BOD<sub>5</sub> loading). The original design organic loading for the plant in year 2020 was rated at 5,143 lb/day for annual average conditions. The wastewater characteristics assumed for the original design loading assumed reflect typical domestic sewerage with less soluble BOD<sub>5</sub> than is currently observed due to the high industrial contribution to the wastewater. As a result, modeling with wastewater characteristics currently observed indicates that the plant can treat a revised maximum organic loading of 5,560 lb/d. However, the high industrial contribution of soluble BOD<sub>5</sub> reduces the capacity of design flows and suspended solids loadings. Projected capacity of the two-train system are summarized along with current flows and loadings and original plant ratings in Table 3-5.

**TABLE 3-5  
REVISED PLANT CAPACITIES**

	FLOW	BOD	TSS
	MGD	lb/day	lb/day
Current Annual Average	1.44	4,748	2,046
Original Design Rating (Annual Average)	2.40	5,143	4,887
Revised Capacity Projection (Annual Average) <sup>1</sup>	1.69	5,560	2,799

1. The revised capacity projection is limited by organics (BOD<sub>5</sub>) loading due to the significant contribution of high-strength industrial discharges, which utilize more capacity per gallon than domestic waste.

Additional capacity beyond that listed in Table 3-5 could be best obtained by installing a third clarifier, though that would be subject to constraints in available footprint at the site.

It is also important to note that process modeling indicates that the current MUCT process with two aeration trains operating should be able to provide treatment for a future final effluent Total Nitrogen Limit down to 8 mg/L. A lower TN limit would most likely require process modification or further tertiary treatment.



## SECTION 4

### RECOMMENDATION AND COST ESTIMATION

#### 4.1 SHORT TERM RECOMMENDATION AND IMPLEMENTATION

To mitigate the risk of continued permit violations stemming from secondary clarifier overloading, it is recommended that the City activate the second train of aeration tanks as soon as possible. In order to activate the second train, modifications are required to remove limitations of the original design and replace non-performing equipment. Specific modifications include the following:

- Installation of new modulating aeration control valves, aeration flow meters, and associated air piping modifications to balance airflow to the two trains; and
- Installation of modulating flow control valves and flow meters to the RAS lines to balance combined RAS flows to the two trains.

Aeration Control: Installation of automated aeration control valves will enable proper distribution of airflow to the two trains, as well as the two grids of each train. In addition, it will prevent over-aeration to save electricity costs due to blower operation and improve process control to optimize nutrient removal in the anoxic zones.

Proposed modifications to aeration piping are shown in Figure 4-1. Each aeration grid is supplied by two drop legs. These drop legs will be joined with a common header that is controlled by one meter and control valve. Four sets of meters (thermal mass) and control valves will be required.

RAS Control: Automated control valves will be installed after the RAS flow meters in the Operations Building. The valves will allow operators to evenly distribute the biomass between the two aeration trains. Two 6-inch automated butterfly valves will be required.

Additional items required to activate the second train include the following:

- Installation of two new dissolved oxygen probes in the second train;
- Installation of existing mixers, nitrified and denitrified recycle pumps (currently in storage);
- Modification of PLC programming and SCADA to incorporate additional monitoring and controls;
- Installation of a second sodium aluminate feed pump and injection quill; and
- Replacement of aging aeration diffuser membranes.

In addition, activating the second train will dilute wastewater sludge to the dewatering centrifuge, resulting in longer operating time, higher throughput and potentially higher polymer usage. It is recommended that the City consider replacing the existing Westfalia dewatering centrifuge concurrently with bringing the second aeration train online. The existing centrifuge is approximately 13 years old and is scheduled to be replaced in the next five years. The estimated construction costs for replacing the centrifuge is \$1.5 M, which includes a multi-point discharging conveyor and interface with the plant SCADA system. Wright-Pierce recommends that the City retain the existing centrifuge to use as a spare; however, if demolition and removal is desired, it is estimated that this would cost an additional \$75,000. These costs are not included in the total project estimate presented below.



## 4.2 COST ESTIMATES FOR SHORT-TERM RECOMMENDATION

Construction Costs. Construction costs and total project costs were estimated for the improvements noted above to activate the second train of aeration tanks. The cost estimates presented herein were developed using standard cost estimating procedures consistent with industry standards utilizing concept level facility layouts, unit cost information, and planning-level cost curves, as necessary. Industry standard allowances were made for general contractor overhead and profit, undeveloped items and construction contingency. The conceptual cost estimates incorporate the following allowance items:

- 15 percent General Contractor overhead and profit
- 20 percent Technical Services
- 20 percent design contingency on un-identified work items and difficulties often associated with facility retrofit work
- 7 percent project inflation allowance (to inflate the presented cost an assumed mid-point of construction (assumed to be February, 2017 for the purposes of our evaluation). We assumed 3-4 percent inflation per year.

The opinion of probable construction cost information presented herein is in current dollars and is based on Engineering News Record (ENR) Construction Cost Index for September, 2015 (ENR CCI 20 Cities – 10,037). Escalations to future dates can easily be made using this current date and associated ENR index as the basis.

Many factors arise during final design (i.e., owner-selected features and amenities, code issues, etc.) that cannot be definitively identified and estimated at this time. These factors are typically covered by the allowances described above. However, this allowance may not be adequate for all circumstances.

Construction project costs for the modifications are estimated at \$473,000, with total project costs estimated at \$614,000. The detailed estimate is provided as Appendix B.



### O&M Cost Increase

Activation of the second train will result in the increase in operation and maintenance costs which are identified along with estimated annual cost increase in Table 4-1.

**TABLE 4-1  
ESTIMATED INCREASE IN ANNUAL O&M COSTS  
DUE TO ACTIVATION OF SECOND TRAIN**

Item	Annual Estimated Increase in O&M cost
Energy costs of nitrified/denitrified recycle pumps and mixers	\$18,000
Maintenance of pumps and mixers	\$15,000
Energy from blowers running during low-loading conditions due to mixing requirements	\$9,000
Polymer usage requirements for dewatering thinner waste sludge	\$11,300
Operator manhours for extended centrifuge operation	\$20,800
Energy from running centrifuge longer and more frequently	\$4,000
Disposal of wetter sludge	\$28,400
<b>TOTAL</b>	<b>\$106,500</b>

It is estimated that activating the second train will result in an increase of annual O&M costs of \$107,000. A new centrifuge is expected to save an estimated \$40,000 annually in operating costs, including sludge disposal, polymer usage, and energy and operator hours for centrifuge operation.

### **4.3 LONG-TERM RECOMMENDATIONS**

Wright-Pierce identified several issues at the facility during our site visits that while not specifically required to be addressed at this time for successful operation of the secondary system, should be either investigated further or considered for future improvements.

- Improve cooling system in the blower building electrical room. The existing ventilation system is inadequate to provide proper cooling of the electrical space potentially leading to variable frequency drive failures and ultimately the inability to properly aerate the

secondary treatment process which could result in effluent permit violations. Plant staff indicate that during the warmer periods the electrical room exterior doors are left open in an effort to help cool the space.

- In addition to the blower building electrical room ventilation issues, there are several code related issues that should be addressed concurrently with the ventilation system.
- The existing submersible direct-drive mixers are prone to ongoing maintenance (which are currently approximately \$16,500 total annually). Potentially these could be replaced with gear driven units or an alternative mixing system. A cost benefit analysis should be conducted to ascertain if a reduction in the annual costs could be reduced through the use of an alternative mixing technology.
- Add ORP probes to anaerobic/anoxic zones (four total).

Estimated costs for these improvements are listed in Table 4-2.

**TABLE 4-2  
COST OF RECOMMENDED LONG-TERM IMPROVEMENTS**

<b>Item</b>	<b>Estimated Construction Cost</b>
Improved cooling system for the blower electrical room	\$20,000
Code-related issues in the electrical room	\$20,000
Replace direct-drive submersible anoxic mixers with gear-driven submersibles	\$500,000
Add ORP probes to anaerobic/anoxic zones	\$25,000
<b>TOTAL</b>	<b>\$565,000</b>

In addition, it is recommended that the City plan for required improvements due to future modification to its NPDES permit with the addition of a total nitrogen discharge limit. The City can expect to have their NPDES permit modified in the next few years (less than 10) to include a total nitrogen limit of 3.0 mg/L. The current nutrient removal process was simulated to reduce effluent total nitrogen concentrations to below 8 mg/L, however the current process cannot be expected to achieve effluent total nitrogen levels in the 3.0 mg/L range. Thus, it is recommended that the City plan for a future nitrogen removal upgrade (a future enhanced nitrogen removal upgrade could be in the \$5.0M to \$8.0M range (in 2015 dollars)).

## **Appendix A**

### **Introduction to State Point Analysis**

## INTRODUCTION TO STATE-POINT ANALYSIS

NHDES Env-Wq Section 711.04 *Secondary Settling Tanks* stipulates that secondary clarifiers shall be designed/evaluated using a solids flux analysis. Wright-Pierce utilizes State Point Analysis for evaluating settling capacity.

The capacity of the activated sludge secondary system is a function of aeration tank volume and clarifier capacity. Capacity of the secondary clarifiers and recycle activated sludge (RAS) pumps was evaluated using State Point Analysis. State Point Analysis (SPA) is a graphical technique that can be used to examine the performance of the secondary clarifier under peak flow conditions, and can be used as an operational tool to estimate secondary system capacity for a given set of process conditions, and the impacts of changes in process parameters including mixed liquor concentration, sludge settling velocity, return sludge concentration, and return sludge rate. The SPA incorporates the impact of both factors into a graph of solids flux (mass of solids per unit area per unit time) versus solids concentration. A typical SPA graph is shown in Figure 1. Many rules of thumb for secondary system capacity are meant to be conservative in order to be applicable over a reasonable range of operating conditions. The SPA allows a more precise assessment of secondary system capacity based on actual operating conditions.

The settling flux curve of the SPA chart was developed for Type III zone settling (the predominant solids removal mechanism in secondary clarifiers). The zone settling velocity ( $V_i$ ) is a function of MLSS concentration ( $X$ ) and is commonly expressed by the Vesilind equation:

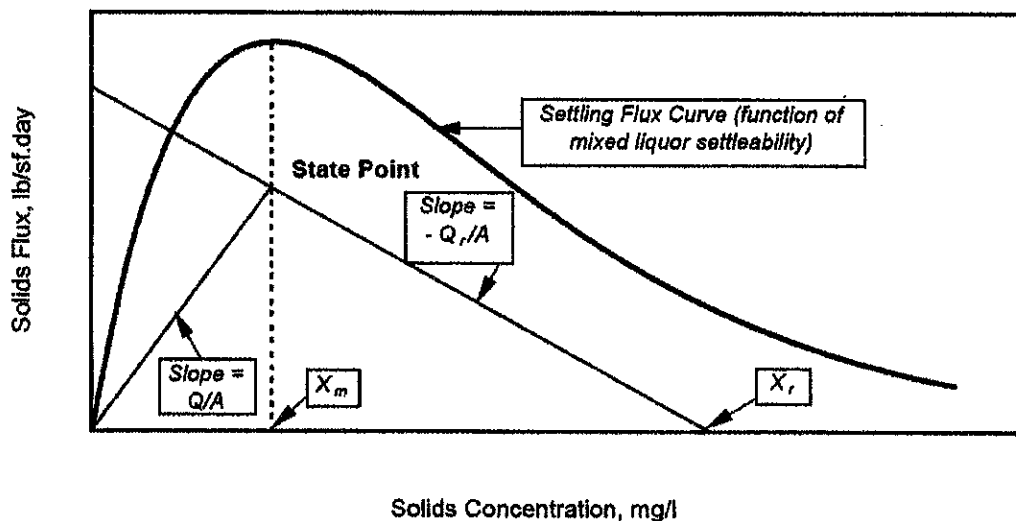
$$V_i = V_o e^{-kX}$$

The solids flux ( $G$ ), lb./ft<sup>2</sup>/d, is obtained by multiplying the zone settling velocity by the solids concentration:

$$G = V_i X = X V_o e^{-kX}$$

For any given sludge, the zone settling velocity at different solids concentrations can be generated using the initial settling velocity test (Wahlberg, 2001). By conducting a series of initial settling velocity tests at different MLSS, several combinations of X and G values can be generated. This data set can then be fitted to the exponential Vesilind equation using least-squares regression techniques to yield values for the settling constants  $V_0$  and  $k$ . Knowing these constants, the settling flux curve for the particular sludge can then be generated.

**FIGURE 1**  
**BASIC CONCEPTS OF STATE POINT ANALYSIS**



One of the main constraints in the application of the SPA has been the difficulty in developing a settling flux curve that can be easily updated to address changes in sludge settleability. The initial settling velocity test is only representative of the settling characteristics of the MLSS at the time the test was conducted, and changes with changes in MLSS settling properties. For this evaluation, an empirical correlation between the SVI of the sludge and the settling constants of the sludge ( $V_0$  and  $k$ ) has been chosen based on Giokas, *et. al.*, (2003) using the correlation from Daigger (1995) where:

$$V_0 = 6.5 \text{ in m/h}$$

$$K = 0.165 + 0.00058 \text{ SVI in kg/m}^3$$

It is important to note that this correlation is effective in allowing the State Point Analysis to be carried out without site specific settling velocity data. However, the results using this correlation need to be compared to real world experience to determine whether there is a skew either upward or downward in the results. In addition, this correlation may give appropriate results for certain times of the year, but over or under predict for other times of the year. The initial settling velocity is known to decrease at lower wastewater temperatures, which results in lower capacity. Wahlberg (2007) has noted that the SVI test may not be a good correlation with settleability. Ultimately, field testing of the settling velocity is always recommended for site specific data.

After establishing the solids flux curve, the next step in developing the SPA is to superimpose the SOR and return activated sludge (RAS) underflow rate. The SOR line represents the upward velocity (positive slope) of the water flowing through the clarifier and is drawn from the origin with a slope of  $Q/A$ . The RAS line represents the downward velocity (negative slope) of the solids due to sludge withdrawal and originates on the y-axis of the SPA graph at an ordinate equal to the total solids loading rate on the clarifier:

$$G_{\text{tot}} = (Q + Q_r) X/A$$

The line is then drawn with a negative slope of  $-Q_{\text{ras}}/A$ . The intersection of the RAS line and the x-axis corresponds to the RAS concentration. The point of intersection of the overflow and underflow lines is the State Point. The x-coordinate of the State Point will equals the MLSS concentration entering the clarifier, while the y-coordinate of the SP will equals the solids flux loading on the clarifier from the influent flow,  $G_{\text{inf}} = Q X/A$ .

The relative location of the State Point and the RAS line with respect to the settling flux curve can be used to evaluate the operational status of the secondary clarifier with respect to its clarification and its thickening operations, respectively. Table 1 and Figures 2, 3, and 4 describe

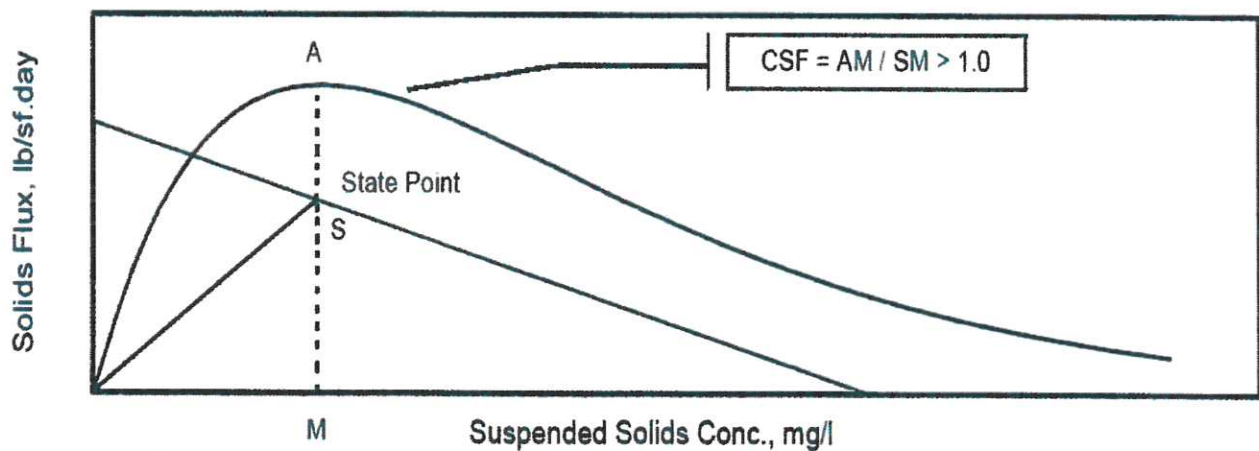


how State Point Analysis can be used to identify the operational status of the secondary clarifier under different loading conditions.

**TABLE 1**  
**INTERPRETATION OF THE STATE POINT ANALYSIS**

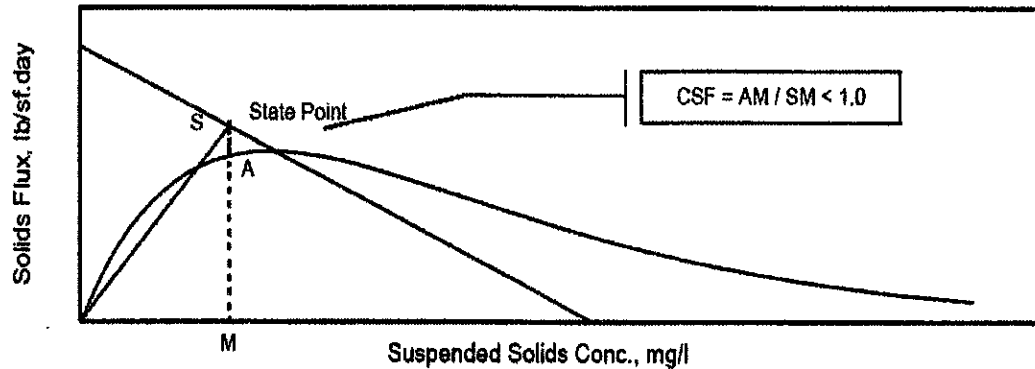
	CLARIFICATION		THICKENING	
	State Point	Settling Velocity	RAS Underflow Rate	Solids Loading Rate
Under loaded	within the flux curve	< SOR	within the flux curve	< Limiting Flux
Critically Loaded	on the flux curve	= SOR	tangent to the descending arm of the sludge curve	= Limiting Flux
Overloaded (Failure)	outside the flux curve	> SOR	intersects the descending arm of the sludge curve	> Limiting Flux

**FIGURE 2**  
**STATE POINT ANALYSIS: NORMAL OPERATION - UNDERLOADED**

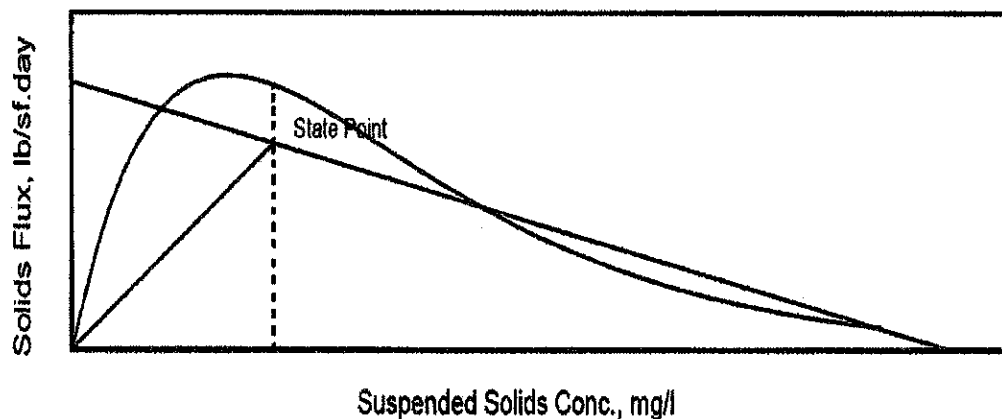




**FIGURE 3  
STATE POINT ANALYSIS: CLARIFICATION FAILURE**



**FIGURE 4  
STATE POINT ANALYSIS: THICKENING FAILURE**



The distance of the State Point from the flux curve is defined as the Clarifier Safety Factor (CSF). The CSF is the ratio of the y-coordinate of the settling flux curve to the y-coordinate of the State Point, or the ratio of the MLSS settling velocity and the SOR. A CSF ratio greater than 1.0 indicates normal operation, while a CSF ratio less than 1.0 indicates clarification failure. CSF ratio depends mainly on the sludge settleability and the MLSS concentration. However, it is important to note that thickening failure must be checked separately, and depends in part on the return sludge capacity.

A good settling mixed liquor (low SVI) will have a greater allowable solids flux than a poor settling mixed liquor (high SVI). This will be reflected in the solids flux curve. In addition, a poor settling mixed liquor (high SVI) typically requires a higher RAS underflow rate, because the return sludge does not achieve as high a concentration as a good settling mixed liquor. The necessary return sludge rate can be determined as follows:

$$Q_{ras} = Q X / (X_{ras} - X).$$

**Appendix B**  
**Cost Estimate**

PROCESS EQUIPMENT COST ESTIMATE

City of Somersworth, NH  
Capacity Analysis  
[ W-P PROJECT NO. 13273]  
CAPACITY ANALYSIS  
September 2015 (ENR INDEX 10037 - 20 CITIES CC) ]

PROCESS - EQUIPMENT & INSTALLATION  
NOTE: 1. THIS ESTIMATE EXCLUDES ALL STRUCTURAL, HVAC/PLUMBING, INSTRUM. ELECTRICAL COSTS, UNLESS SPECIFICALLY NOTED.

EQUIP. NAME	TAG	QUAN.	UNIT	DESIGN BASIS	Unit Cost		Installation Cost	Extended System Subtotal	Misc. Unaccounted For Items	System Extended Cost, Total	Installation Cost	Source (Do not print for Client)	Date of Budget Quote
DEMOLITION													
\$0													
SECONDARY SYSTEM													
AERATION CONTROL VALVES		4	EA		\$10,000		\$2,000	\$48,000	\$50,400		\$8,000		
AERATION THERMAL MASS FLOW METERS		4	EA		\$2,500		\$500	\$12,000	\$12,600		\$2,000		
AERATION TANK PIPING MODIFICATIONS		1	LS		\$10,000		\$2,000	\$12,000	\$12,600		\$2,000		
RAS FLOW CONTROL VALVES (6")		2	EA		\$10,000		\$2,000	\$24,000	\$25,200		\$4,000		
DISSOLVED OXYGEN PROBES		2	EA		\$2,500		\$500	\$6,000	\$6,300		\$1,000		
INSTALLATION OF MIXERS, RECYCLE PUMPS		1	LS		\$10,000		\$2,000	\$12,000	\$12,600		\$2,000		
6-INCH RAS FLOW METERS		2	EA		\$5,000		\$1,000	\$12,000	\$12,600		\$2,000		
REPLACE MEMBRANE DIFFUSERS		2,500	EA		\$5		\$2	\$16,250	\$17,063		\$3,750		
										\$149,363			
CHEMICAL FEED SYSTEMS													
SODIUM ALUMINATE FEED PUMP		1	EA		\$3,000		\$600	\$3,600	\$3,780		\$600		
INJECTION QUILL AND PIPING		1	EA		\$500		\$100	\$600	\$630	\$4,410	\$100		
PROCESS EQUIPMENT AND PIPING FINISHES													
				IN DIVISION 9	2.0%		\$128,323	\$2,600	\$2,730		\$2,730		
				RANGE: 2.0-3.0% OF EQUIP COST									
										\$2,730	\$2,730		
										\$153,773	\$25,450		
TOTAL, EXCLUDING EQUIP. AND PIPING FINISH PAINT													

TOTAL PROJECT COST ESTIMATE - TWO TRAINS  
City of Somersworth, NH  
Capacity Analysis  
[ W-P PROJECT NO. 13273 ]  
CAPACITY ANALYSIS  
September 2015 [ (ENR INDEX 10037 - 20 CITIES CC) ]  
PROJECT COST ESTIMATE

PROJECT COMPONENT	Two Trains COST	
CONSTRUCTION		\$473,000
CONSTRUCTION CONTINGENCY	5.0%	\$20,000
TECHNICAL SERVICES	20.0%	\$95,000
MATERIALS TESTING	1.0%	\$5,000
ASBESTOS & LEAD PAINT ABATEMENT		\$0
DIRECT EQUIPMENT PURCHASE		\$0
LAND ACQUISITION/ EASEMENTS		\$0
LEGAL/ ADMINISTRATIVE	2.0%	\$9,000
	SUBTOTAL	\$602,000
FINANCING	2.0%	\$12,000
ENGINEER'S ESTIMATE OF PROJECT COST		\$614,000

**CONSTRUCTION COST ESTIMATE**

Capacity Analysis  
 [ W-P PROJECT NO. 13273 ]  
 CAPACITY ANALYSIS  
 September 2015 [ (ENR INDEX 10037 - 20 CITIES CC) ]  
 CONSTRUCTION COST ESTIMATE

DESCRIPTION	2-ST TN=8	ESTIMATED COST
<b>CIVIL</b>		
SITE WORK		0
SITE PIPING		0
<b>ARCHITECTURAL</b>		
PROCESS BUILDING		
MISCELLANEOUS MODIFICATIONS AND FINISHES		
FINISH PIPING AND PAINTING		2,730
<b>STRUCTURAL</b>		
STRUCTURAL		0
<b>PROCESS</b>		
DEMOLITION		5,000
SECONDARY SYSTEM		149,363
CHEMICAL FEED SYSTEMS		4,410
<b>HVAC/ PLUMBING</b>		
<b>INSTRUMENTATION</b>		
INSTRUMENTATION - INCLUDED IN PROCESS		0
SCADA SYSTEM HARDWARE/ SOFTWARE		30,000
<b>ELECTRICAL</b>		
POWER & LIGHTING - GENERAL		100,000
STANDBY POWER		0
<b>SPECIALS</b>		
MOBILIZATION		\$25,000
DEMOBILIZATION		\$0
PROCESS BY-PASS PUMPING		\$0
SHEETING		\$0
PILES		\$0
GROUNDWATER DEWATERING (OPEN)		\$0
TEMPORARY SLUDGE THICKENING/ DEWATERING		\$0
TEMPORARY FACILITIES (OWNER)		\$0
SITE SECURITY		\$0
WINTER CONSTRUCTION		\$0
<b>SUBTOTAL, CONSTRUCTION</b>		<b>\$186,503</b>
GENERAL CONTRACTOR OH&P AND GENERAL CONDITIONS	15.0%	\$28,000
<b>SUBTOTAL, SUBCONTRACTORS</b>		<b>\$130,000</b>
GENERAL CONTRACTOR MARKUP	5.0%	\$7,000
ELECTRICAL/ TELEPHONE ALLOWANCE		\$10,000
BONDS & INSURANCES	1.5%	\$5,000
UNIT PRICE ITEMS	1.0%	\$2,000
<b>SUBTOTAL, CONSTRUCTION COSTS</b>		<b>\$368,503</b>
PROJECT MULTIPLIER, DESIGN CONTINGENCY	1.20	
PROJECT MULTIPLIER, INFLATION TO MIDPT CONST.	1.07	
<b>ENGINEERS ESTIMATE OF CONSTRUCTION COST</b>		<b>\$473,000</b>

## **Appendix C**

### **Industrial Surcharge Analysis**



---

TO:	City of Somersworth	DATE:	January 27, 2016
FROM:	Wright-Pierce	PROJECT NO.:	13273A
SUBJECT:	City of Somersworth, NH Wastewater Treatment Facility Capacity Evaluation Industrial Surcharge Analysis		

---

Based on the adopted Fiscal Year 2015-2016 Wastewater Budget, the annual influent organic loading received at the WWTF, and the City of Somersworth's current industrial surcharge rate for discharges containing BOD in excess of 200 milligrams per liter (mg/l), Wright-Pierce calculated a recommended industrial surcharge rate for such discharges. The calculations involved allocating the cost of each line item in the FY 15-16 Wastewater Budget to flow volume, BOD, and TSS based on the estimated percent of the cost attributed to each of these parameters. The sum of all of the costs attributed to BOD were then divided by the total annual influent BOD loading at the WWTF in order to arrive at the estimated cost to treat each pound of BOD.

Based on these calculations, industrial BOD surcharges should be assessed at the rate of \$0.55 per pound of BOD, or \$55.00 per 100 pounds, for all industrial discharges with BOD concentrations in excess of 200 mg/l. BOD charges in other communities are typically in the range of \$20.00 to \$100.00 per 100 pounds, as summarized in the table below. Please note that every community handles these surcharges slightly differently and it is difficult to make a direct comparison.

Community	Industrial Surcharge Rate Fee/ 100 pounds BOD
Merrimack, NH	\$50.70
Brunswick, ME	\$80.00
Rockland, ME	\$91.17
Dover, NH (requires pretreatment)	\$1,500 per year
Rochester, NH	TKN surcharge
Portsmouth, NH (Pease and Pierce Island)	\$20.00
Exeter, NH	\$17.57
Portland Water District (Portland, Maine)	\$16.33

A copy of the allocation of the annual O&M costs with the calculation of the recommended BOD surcharge is provided as Attachment A. Article XV, Section 7C from the City of Somersworth Sewer Ordinance Chapter 8A, which indicates that the City currently charges \$7.00 per 100 pounds for all industrial discharges with BOD concentrations in excess of 200 mg/l, is provided as Attachment B.

## **ATTACHMENT A**

**ATTACHMENT A**  
**CITY OF SOMERSWORTH, NH ANNUAL O&M COSTS**  
**WASTEWATER BUDGET SURCHARGE ALLOCATION**

**WASTE WATER FUND FY 2015-2016 ADOPTED BUDGET**  
**406 ENTERPRISE FUNDS**

695 WASTE WATER			Flow Volume		BOD		TSS	
ACCT NUMBER	DESCRIPTION	FY 15-16	% Allocation	\$	% Allocation	\$	% Allocation	\$
0400	Clerk 40%	\$15,242	30%	\$4,573	40%	\$6,097	30%	\$4,573
0802	WW Plant Operators	\$243,818	20%	\$48,764	50%	\$121,909	30%	\$73,145
0901	WW Plant Overtime	\$25,000	20%	\$5,000	50%	\$12,500	30%	\$7,500
0906	Clothing Allowance	\$1,500	30%	\$450	40%	\$600	30%	\$450
0908	Educational	\$3,500	30%	\$1,050	40%	\$1,400	30%	\$1,050
1100	Health Insurance	\$119,239	30%	\$35,772	40%	\$47,696	30%	\$35,772
1200	Life & Disability	\$3,515	30%	\$1,055	40%	\$1,406	30%	\$1,055
1700	FICA/Medicare	\$22,113	30%	\$6,634	40%	\$8,845	30%	\$6,634
1750	Unemployment Insurance	\$290	30%	\$87	40%	\$116	30%	\$87
1775	Workers Compensation	\$8,577	30%	\$2,573	40%	\$3,431	30%	\$2,573
1780	State Retirement	\$32,120	30%	\$9,636	40%	\$12,848	30%	\$9,636
3500	Training/Licenses	\$1,200	30%	\$360	40%	\$480	30%	\$360
4100	Materials and Supplies	\$2,500	30%	\$750	40%	\$1,000	30%	\$750
4101	Office Supplies	\$1,800	30%	\$540	40%	\$720	30%	\$540
4400	Vehicle Fuel	\$2,500	30%	\$750	40%	\$1,000	30%	\$750
4500	Postage	\$300	30%	\$90	40%	\$120	30%	\$90
4662	Sodium Hypochloride	\$22,000	0%	\$0	60%	\$13,200	40%	\$8,800
4663	Polymer	\$35,758	0%	\$0	50%	\$17,879	50%	\$17,879
4668	Defoaming/Other Chemicals	\$3,678	0%	\$0	50%	\$1,839	50%	\$1,839
4669	Magnesium	\$23,000	30%	\$6,900	40%	\$9,200	30%	\$6,900
4670	Sodium Bisulfite	\$30,205	0%	\$0	60%	\$18,123	40%	\$12,082
4800	Uniforms	\$1,500	30%	\$450	40%	\$600	30%	\$450
4900	Safety Equipment and Supplies	\$1,500	30%	\$450	40%	\$600	30%	\$450
5100	Litigation	\$5,000	30%	\$1,500	40%	\$2,000	30%	\$1,500
5200	Audit	\$6,500	30%	\$1,950	40%	\$2,600	30%	\$1,950
5421	Collection System Maintenance	\$25,000	80%	\$20,000	10%	\$2,500	10%	\$2,500
5444	Reimburse City/PW Director	\$20,000	30%	\$6,000	40%	\$8,000	30%	\$6,000
5445	Reimburse City/City Manager	\$25,000	30%	\$7,500	40%	\$10,000	30%	\$7,500
5446	Reimburse City/Finance Dir.	\$10,000	30%	\$3,000	40%	\$4,000	30%	\$3,000
5600	Telephone & Fire Line	\$3,000	30%	\$900	40%	\$1,200	30%	\$900
5702	Lab Supplies & Testing	\$25,506	0%	\$0	50%	\$12,753	50%	\$12,753
5705	Title Search Fees	\$2,000	30%	\$600	40%	\$800	30%	\$600
5910	Physicals	\$2,500	30%	\$750	40%	\$1,000	30%	\$750
5905	IT Consultant	\$2,500	30%	\$750	40%	\$1,000	30%	\$750
5908	Diesel and Petroleum Fuels	\$1,260	30%	\$378	40%	\$504	30%	\$378
5950	Rent	\$2,000	30%	\$600	40%	\$800	30%	\$600
6000	Outside Services	\$27,325	30%	\$8,198	40%	\$10,930	30%	\$8,198
6001	Repairs and Maintenance	\$52,000	30%	\$15,600	40%	\$20,800	30%	\$15,600
6002	Solid Waste Disposal	\$160,000	0%	\$0	60%	\$96,000	40%	\$64,000
6100	Property/Liability Insurance	\$56,229	30%	\$16,869	40%	\$22,492	30%	\$16,869
6300	Fleet & Equipment Insurance	\$665	30%	\$200	40%	\$266	30%	\$200
7201	Office Equipment (Computers)	\$9,200	30%	\$2,760	40%	\$3,680	30%	\$2,760
8101	Electricity	\$170,000	20%	\$34,000	60%	\$102,000	20%	\$34,000
8102	Water	\$7,500	30%	\$2,250	40%	\$3,000	30%	\$2,250
8103	Natural Gas	\$32,020	30%	\$9,606	40%	\$12,808	30%	\$9,606
8109	Propane	\$880	30%	\$264	40%	\$352	30%	\$264
9313	Blackwater Road PS Improve.	\$0	30%	\$0	40%	\$0	30%	\$0
9321	SCADA Upgrade	\$0	30%	\$0	40%	\$0	30%	\$0
9324	Maple Street Culvert	\$10,000	80%	\$8,000	10%	\$1,000	10%	\$1,000
9235	Payload - Tractor Replacement	\$95,000	30%	\$28,500	40%	\$38,000	30%	\$28,500
9777	SRF Loan Payment - Principal	\$537,605	30%	\$161,282	40%	\$215,042	30%	\$161,282
9778	SRF Loan Payment - Interest	\$185,392	30%	\$55,618	40%	\$74,157	30%	\$55,618
9779	Downtown Improvements Bond - I	\$25,162	30%	\$7,549	40%	\$10,065	30%	\$7,549
9780	Downtown Improvements Bond - P	\$37,400	30%	\$11,220	40%	\$14,960	30%	\$11,220
9782	Downtown Imp. Bond 2 - I	\$0	30%	\$0	40%	\$0	30%	\$0

<b>Total</b>	<b>\$2,137,499</b>	<b>\$531,724</b>	<b>\$954,317</b>	<b>\$651,459</b>
<b>Percent of Total</b>		<b>24.9%</b>	<b>44.6%</b>	<b>30.5%</b>

**BOD Cost/Pound (1,728,915 lb/yr)      \$0.55**  
**BOD Cost/100 Pound                      \$55.00**

## **ATTACHMENT B**

2. Two dwelling units	\$ 8.50 per unit
3. Multiple dwelling units 3 or more	\$ 7.50 per unit
4. Commercial Establishments	\$25.00 per establishment
5. Industrial Establishments	\$50.00 per establishment

(B) Sewer Use Volume Charges: All sewer users will be charged at a rate of \$3.64 per 100 cubic feet of water used beginning July 1, 2008; \$4.55 per 100 cubic feet of water used beginning July 1, 2009; \$5.00 per 100 cubic feet of water used beginning July 1, 2010; \$5.50 per 100 cubic feet of water used beginning July 1, 2011. (Amended 05/03/1999.) (Amended 03/01/2004.) (Amended 06/16/2008.)

(C) Industrial User Charges: (Effective July 1, 2004.) Industrial users whose wastes entering the City's sewer system exceed the following standards will be charged at the rates shown for the amount by which the standard is exceeded.

<u>Parameter</u>	<u>Standard</u>	<u>Surcharge</u>
BOD	200 mg/l	\$ 7.00 per 100 lbs

All testing and reporting shall be the responsibility of the industrial user at no cost to the City. Reports submitted by industrial users and approved by the Director will be used for calculating industrial user charges.

Industrial User testing for required parameters is stated individually in each Industrial User's Industrial User Permit.

(Amended 03/01/2004.)

(D) Access and Connection Fees. Pursuant to RSA 149-1:7, the owners of real property shall be assessed a fee upon connection with the City sewer system for the right to connect and utilize a portion of the capacity of that system.

(Amended 03/01/2004.)

Upon adoption of the Ordinance establishing the Dover Rd. (Route 108) Sewer Special Assessment District, the access fee for all structures on properties in that district shall be two hundred and fifty dollars (\$250) per bedroom or bedroom equivalent. (Amended 03/01/2004.)

All Other Sewer Connection – Fees. The owner of any structure which connects to a City sewer line, which is outside of the Sewer Special Assessment District, shall upon connecting to that sewer line pay a fee of one thousand eight hundred dollars (\$1,800) per bedroom or bedroom equivalent (defined as the use of 75 gallons of water per day). (Added 03/01/2004.)

