TOWN OF HENNIKER, NEW HAMPSHIRE

SELECTMEN AGENDA

Place: Henniker Community Center 57 Main Street

Henniker, NH 03242

Tuesday March 21, 2023

6:15 PM

I. CALL TO ORDER

II. PLEDGE OF ALLEGIANCE

III. ANNOUNCEMENTS

IV. CONSENT AGENDA

1) Consent Agenda March 21, 2023

V. PUBLIC COMMENT #1 – (For any comment by any Henniker resident on a topic. Request time limit, up to 3 minutes)

VI. APPOINTMENTS WITH THE BOARD

2) Stephen Smith & David Mercier, Underwood – Wastewater Plant Update on Upgrade Plan
3) Richard Emberley & Mark Kondelis, DES – Update on Wastewater Plant Tour and Assessment

VII. CONTINUED BUSINESS

VIII. NEW BUSINESS

4) Reconstitute the Board of Selectmen
5) Leo Aucoin – Highway Dept. – Crushed Gravel Bid 2023
6) Leo Aucoin – Highway Dept. – Road-Side Mowing Bid 2023
7) Lions' Club request to waive rental fees – TA to present if Ms. Madden is unavailable.
8) Selectboard Policies Review
9) Post Election Committee Assignments

IX. TABLED BUSINESS

- Crosswalk on Main St
- Henniker Handmade and Homegrown request to expand event to parking lot

X. PAST MEETING MINUTES

10) Acceptance of Board of Selectmen meeting minutes March 7, 2023

11) Acceptance of Board of Selectmen non-public minutes 5:45 p.m. March 7, 2023

XI. COMMUNICATIONS

12) Town Administrator Report
13) Correspondence - Letters and Notices
14) Department Reports
15) Selectmen Reports

XII. PUBLIC COMMENT #2 (For any comment by any Henniker resident on a topic. Request time limit, up to 3 minutes)

XIII. NON-PUBLIC – If Necessary Non-public Session 91-A:3 II a, b, c, d, or e

XIV. ADJOURNMENT

XV. UPCOMING DATES 2023

March 22, 2023 – Economic Development Committee Meeting @ 4:30 p.m.
March 22, 2023 – Planning Board Site Walk @ 5:00 p.m.
March 22, 2023 – Planning Board Meeting & Public Hearing @ 5:45 p.m.
April 3, 2023 – SAU 24 Board Meeting @ 6:00 p.m.
April 4, 2023 – Board of Selectmen Meeting @ 6:15 p.m.

Please see the town website www.henniker.org and bulletin boards for meeting dates, times, locations, and agendas. **(**Calendar: Public Meeting + Holiday | Henniker, NH)

Visitor Orientation to the Town Selectman's Meeting

Welcome to this evening's Selectmen's meeting. Please note that the purpose of the meeting is for the Selectmen to accomplish its work within a qualitative timeframe. Meetings are open to the public, but public participation is limited. If you wish to be heard by the board, please note the "Public Comment" at the beginning and end of the meeting to speak to items on a meeting agenda and/or matters pertaining to the business of the Selectmen. In addition, public hearings may be scheduled for public comment on specific matters. Speakers must be residents of the Town of Henniker, property owners in the town of Henniker, and/or designated representatives of recognized civic organizations or businesses located in the Town of Henniker. When they are at the podium, speakers first need to recite their name and address for the record. Visitors should address their comments to the board and not to any individual member. Each speaker shall be provided a single opportunity for comment, limited to three (3) minutes. Public forum shall be limited to fifteen (15) minutes. Visitors should not expect a response to their comments or questions since the Board may not have discussed or taken a position on a matter. Public Comment is not a two-way dialogue between speaker(s), Selectmen, and/or the Town Administrator. The Chair will preserve strict order and decorum at all Board of Selectmen meetings. Outbursts from the public are not permitted.

TOWN OF HENNIKER, NEW HAMPSHIRE
BOARD OF SELECTMEN
CONSENT AGENDA

Tuesday, March 21, 2023

Consent Agenda

Item 1: Payroll Check Register – March 15, 2023
Item 2: Accounts Payable Check Register – March 15, 2023
Item 3: TA Notification of Vacation Request

Board of Selectmen Approval:

_____ _____

_____ _____

_____

*Please note that the Consent Agenda is subject to change until 4:00 pm the day of a scheduled Selectmen's Meeting.

TOWN OF HENNIKER
ACCOUNTS PAYABLE CHECK REGISTER
DATE: MARCH 15, 2023

TOTAL: $61,327.24

BOARD OF SELECTMEN APPROVAL

_____

_____

_____

_____

_____

TOWN OF HENNIKER
PAYROLL CHECK REGISTER
DATE: MARCH 15, 2023

TOTAL: $46,397.34

BOARD OF SELECTMEN APPROVAL

_____

_____

_____

_____

_____

TOWN OF HENNIKER, NEW HAMPSHIRE

Town Hall
18 Depot Hill Road
Henniker, NH 03242
Tel: (603) 428-3221

CONSENT AGENDA

DATE: 3/21/2023

TITLE: Town Administrator Notification of Vacation Time

INITIATED BY: Diane Kendall, Town Administrator

PREPARED BY: Diane Kendall, Town Administrator

DESCRIPTION: Per agreement this memo is to notify the Board of my intent to take 3 or more consecutive vacation days: March 23, 24 and 27th. The office will be adequately staffed during this time. I can be reached by cell phone in the event of an emergency.

Kris Blomback

Scott Osgood

Bill Marko

Neal Martin

Jeff Morse

TOWN OF HENNIKER, NEW HAMPSHIRE

Town Hall
18 Depot Hill Road
Henniker, NH 03242
Tel: (603) 428-3221

STAFF REPORT

DATE: 3/21/2023

TITLE: WWTP Upgrade Status

INITIATED BY: Richard Slager, WWTP Superintendent

PREPARED BY: Diane Kendall, Town Administrator

PRESENTED BY: Underwood Engineering David Mercier, Vice President and Steve Smith, Project Manager

AGENDA DESCRIPTION: Update of project status

Legal Authority: N/A

Financial Details: $3.2M

Background: The Town of Henniker engaged Underwood Engineers to develop an asset management program (AMP) for its sanitary sewer collection and treatment system. Based on the results of that work, $3.625M in critical wastewater upgrades were identified as being needed in the short term 2019-2028. The Town 2022 Warrant Article 4 authorized appropriation of $3.2M to rehabilitate and or replace key elements of the 45-year-old wastewater treatment facility, as well as replace failing components within the wastewater collection, pumping and conveyance systems. The town engaged with Underwood Engineers to conduct the preliminary engineering funded with $100,000 local ARPA funds (Warrant Article 4). The project is now in the Engineering Design Phase of the project. On January 19th, 2023, Superintendent Slager and TA Kendall met with Underwood Project Manager and Executives to review the timeline and identify project priorities. Due to economic conditions and time elapsed since original quoting in 2019, there is an estimated shortfall of $965,416 to accomplish all priorities.

Underwood Engineers will provide an update of the project status and answer questions from the Wastewater Commissioners (Selectboard).

Town Administrator Comment: Town should begin planning for ongoing asset renewals, deferred and future upgrades as identified in the AMP. In addition, the rate structure should be re-evaluated for adequacy to fund operations and replacement costs. See page 16 of the AMP

WWTP Superintendent Comment: To be provided at time of presentation.

Suggested Action/Recommendation: N/A

Town of Henniker, NH
Henniker WWTF Upgrade

Design Meeting No. 2 Minutes

10:30 a.m. – Thursday 19th January 2023

Attendees	Role	Representing
Diane Kendall	Town Administrator	Town of Henniker
Richard Slager	Superintendent	Town of Henniker
David Mercier	Vice President	Underwood Engineers
Steve Smith	Project Manager	Underwood Engineers

1. Project Budget & Funding

- Project total is $3.2M and will be funded as follows:
  - CWSRF Loan $2.14M
  - ARPA Grant $0.96M
  - ARPA (Local) Grant $0.10M
- UEI submitted a waiver for the federal requirement of Build America Buy America (BABA) which has been approved by NHDES.

2. Project Schedule

- 30% Design Documents — January / February 2023
- 90% Design Documents — September 2023
- 100% Final Design Documents — October 2023
- Bidding — November 2023
- Construction Contract Award — December 2023

3. Project Scope of Work

- The scope originally identified 18 priority items (see attached 30% design cost opinion) to be done at the wastewater treatment facility, Ramsdell Rd & West Henniker pumping stations, River siphon and Route 9/202 bridge sewer crossing for a total of $3.2M.

- Based on preliminary engineering using current market values the 18 items identified is now estimated at a project total of $4.2M. A suggested list of priority items to be done with the available budget of $3.2M is shown on the attached 30% design cost opinion. **Delete item #9 effluent flow metering system. Underwood assumed a full replacement for the heat trace on the bridge sewer crossing and anticipates the allocated $86k will potentially be less with only spot repairs subject to an inspection of the sewer, supports and insulation. This would free up budget to do other items on the original priority list. The Towns preference would be to include items #9, West Henniker PS HV upgrade and item #18 dewatering building HV upgrade. Also cost for grit removal includes full replacement, however the Town had previously refurbished the grit paddle and there may be potential to save some costs.**

- Pilot testing of four (4) dewatering equipment vendors (BDP, FKC, Huber Screw Press and Westfalia centrifuge). All four dewatering units performed well in respect of the dewatered sludge cake, which on average ranged from 14% to 18% dry solids content. See attached summary sheet for results of the dewatering piloting and equipment costs. **Town would like replacement dewatering unit to be a screw press and design around BDP (ranked BDP, Huber & FKC).**

- The river siphon has two pipes a 6-inch and 8-inch that were both investigated and inspected. It was found the 6-inch pipe was full of sand / silt debris and was jetted clean.

- **It is understood that the UV channels do suffer from large deposits of sludge debris in the channel and requires cleaning on a daily basis. As an interim the Town had previously suggested modifying the existing baffle for flow to go over the top in lieu of below to capture sludge debris and then be removed. Underwood believes in lieu of the polishing tank installing nitrate recycle pumps would be beneficial.**

- **For the final clarifiers the Town would prefer center feed over the existing peripheral feed. Underwood to review if the existing clarifiers can be converted to a center feed.**

4. Other

- **The ARPA / SRF funding requires an invoice for work on the project to be reimbursed within 6 months of funding agreement, potential miscellaneous costs:**
  - **Pilot testing costs.**
  - **Heat trace power.**
  - **Siphon inspection and cleaning 2nd day. *Submit this cost for reimbursement*.**
  - **Pilot electrical and generator costs.**
-

The next progress meeting will be held at on:
To be Determined at Meeting

Copies to: Attendees

HENNIKER WASTEWATER TREATMENT FACILITY
WWTF UPGRADE PROJECT
OPINION OF PROBABLE COST
30% DESIGN

PRIORITY RANKING	ITEM	BUDGET COST (2019)	PROBABLE COST (2023)	DIFFERENCE [1]
1	WWTF Dewatering Equipment	$ 1,000,000.00	$ 1,076,250.00	$ (76,250.00)
2	WWTF Headworks Screening & Grit Removal [2]	$ 750,000.00	$ 1,646,250.00	$ (896,250.00)
3	Ramsdell Road Pumping Station Valve / Gate Replacement	$ 250,000.00	$ 98,750.00	$ 151,250.00
4	WWTF Clarifier Equipment Upgrade	$ 300,000.00	$ 600,000.00	$ (300,000.00)
5	Rte 9/202 Bridge Sewer Crossing Heat Trace / Insulation	$ 100,000.00	$ 86,250.00	$ 13,750.00
6	River Siphon Blockage [3]	$ 30,000.00	$ 11,062.50	$ 18,937.50
7	WWTF Site Lighting Replacement	$ 15,000.00	*$ 18,750.00*	$ (3,750.00)
8	Ramsdell Road Pumping Station Wetwell HV Upgrade	$ 35,000.00	$ 88,750.00	$ (53,750.00)
9	West Henniker Pumping Station Wetwell & Drywell HV Upgrade	$ 20,000.00	$ 56,250.00	$ (36,250.00)
10	Effluent Polishing Tank	$ 100,000.00	$ -	$ 100,000.00
11	Catwalk Between Aeration Tanks	$ 70,000.00	$ 76,000.00	$ (6,000.00)
12	Sludge Holding Tank Blowers and Motors	$ 80,000.00	$ 65,000.00	$ 15,000.00
13	Aeration Tank Blower VFDs [4]	$ 90,000.00	$ -	$ 90,000.00
14	RAS PumpVFDs [4]	$ 40,000.00	$ -	$ 40,000.00
15	Effluent Flow Metering System	$ 20,000.00	$ 15,000.00	$ 5,000.00
16	Aeration Tank Submersible Mixers	$ 30,000.00	$ 97,500.00	$ (67,500.00)
17	Pad Mounted Transformer [5]	$ 50,000.00	$ -	$ 50,000.00
18	Dewatering Building HV Upgrade	$ 50,000.00	$ 31,250.00	$ 18,750.00
19	Contingency (5%)	$ 170,000.00	$ 198,353.13	$ (28,353.13)
	TOTAL COST	**$ 3,200,000.00**	**$ 4,165,415.63**	**$ (965,415.63)**

UNDERWOOD SUGGESTED PRIORITY LIST

PRIORITY RANKING	ITEM	PROBABLE COST (2023)	PROBABLE COST (2023)
1	WWTF Dewatering Equipment	$ 1,076,250.00	$ 1,076,250.00
2	WWTF Headworks Grit Removal Only	$ 1,003,750.00	$ 1,003,750.00
3	WWTF Clarifier Equipment Upgrade	$ 600,000.00	$ 600,000.00
4	Ramsdell Road Pumping Station Valve / Gate Replacement	$ 98,750.00	$ 98,750.00
5	Ramsdell Road Pumping Station Wetwell HV Upgrade	$ 88,750.00	*$ 20,000.00*
6	River Siphon Blockage	$ 11,062.50	$ 11,062.50
7	Rte 9/202 Bridge Sewer Crossing Heat Trace / Insulation	$ 86,250.00	$ 86,250.00
8	Sludge Holding Tank Blowers and Motors	$ 65,000.00	$ 65,000.00
9	~~Effluent Flow Metering System~~	$ -	$ -
10	Contingency (5%)	$ 151,490.63	$ 187,428.13
Add Alt	West Henniker Pumping Station Wetwell & Drywell HV Upgrade	$ -	$ 56,250.00
Add Alt	Dewatering Building HV Upgrade	$ -	$ 31,250.00
	TOTAL COST	**$ 3,181,303.13**	**$ 3,235,990.63**

NOTES

1. Costs shown in brackets in the difference column represent a negative number i.e. an increase over original budgetary cost.
2. Headworks probable cost equates to **Screen = $642,500** and **Grit = $1,003,750**.
3. Probable cost shown is the actual cost for clearing blockage including associated engineering costs.
4. Electrical inspection of VFDs determined they are in good working order and do not need to be replaced at this time.
5. Town does not own the Transformer it is the responsibility of Eversource.

HENNIKER WWTF
DEWATERING PILOT RESULTS SUMMARY

Sludge Parameters	Units	Huber Screw Press	FKC Screw Press	BDP Screw Press	Westfalia Centrifuge
Equipment Cost	$	$280,000.00 Includes control panel & startup	$338,000.00 Includes floc tank, control panel & startup	$308,500.00 Includes control panel & startup	$175,000.00 Includes control panel
Feed Rate	Range (gpm)	13	5-11.9	11.2-50.7	10.0-35.0
	Average (gpm)	13	8.1	21.6	25
Feed Solids	Range (%)	0.7	.5-.68	.51-.71	.53-.8
	Average (%)	0.7	0.55	0.55	unspecified
Feed Solids Loading	Range (tons/hr)	0.0245	.008255-.015185	.0155-.061	unspecified
	Average (tons/hr)	0.0245	0.011009	0.025	unspecified
Polymer Consumption	Range (lbs active/dry ton)	55-65	15.22-17.05	25.6-45.5	.25-.5 gph
	Average (lbs active/dry tons)	60	16.26	35.5	.25-.5 gph
Polymer Type	-	C-9530 Emulsion	K274FLX and C6266	Unspecified	C-9530 Emulsion
Cake Produced	Range (%)	14-17	14.97-18.6	14.47-25.57	13-14.5
	Average (%)	15.5	16.4825	18.91	13.98
Filtrate Capture	Range (%)	>95	Not Specified in Report	96.8-98.6	<99
	Average (%)	>95	Not Specified in Report	97.64	<99

Notes:

1. Data reported was collected strictly from Vendor reports, no UE testing was performed seperately
2. Westfalia Centrifuge piloting equipment was set up incorrectly for secondary sludge. Results indicated are in best scenario for supplied equipment but not indicitive of actual performance.

TOWN OF HENNIKER, NEW HAMPSHIRE

Town Hall
18 Depot Hill Road
Henniker, NH 03242
Tel: (603) 428-3221

STAFF REPORT

DATE: 3/21/2023

TITLE: WWTP DES Facility Report

INITIATED BY: Richard Slager, WWTP Superintendent

PREPARED BY: Diane Kendall, Town Administrator

PRESENTED BY: Mark A. Kondelis Sr., Certification & Training Manager and Richard "Dick" Emberley, Environmentalist IV Wastewater Engineering Bureau, Water Division, NHDES

AGENDA DESCRIPTION: Update of project status Underwood Engineering David Mercier, Vice President and Steve Smith, Project Manager

Legal Authority: Env-Wq 304.29 Wastewater Treatment Plant Owner Responsibilities
Financial Details: N/A

Background: We received communication from NHDES informing the Permittees of Wastewater Facilities about the site visits that the Operations Group conducts annually.

> *"During the last few years there has been a concerning decline in the number of Certified Wastewater operators. Our visits this coming year will be not only be to assist the operators with issues but to determine adequate staffing of each facility. This includes the required employment of an OIRC and Back Up OIRC as defined below. Please discuss with the OIRC at your Wastewater Treatment Plant these requirements and assess with the succession plan that you have in place. As always the Operations Group is available to assist in any way. We do understand that staffing is a growing concern everywhere, however, be advised that RSA 485 A:4 through 6 carries potential penalties." Mark A. Kondelis Sr., Certification & Training Manager*

A site visit by DES was conducted on Wednesday February 1, 2023. Mr. Emberley and Mr. Kondelis are meeting with the Board of Selectmen (Wastewater Commissioners) to discuss the details of the site visit report.

Legal Authority:

Env-Wq 304.29 Wastewater Treatment Plant Owner Responsibilities.

(a) As specified in RSA 485-A:5-a, wastewater treatment plants shall be operated only by certified operators.

(b) Each wastewater treatment plant owner that is subject to these rules shall designate:

(1) An individual to be the operator in responsible charge who is certified in the grade equal to or greater than the classification of the plant; and

(2) An individual to be the back-up certified operator available to be in responsible charge of the

plant in the absence of the usual certified operator in responsible charge, who is certified in a grade no more than one grade lower than the grade of the facility or an OIT certificate in the grade of the facility, provided that in the case of a grade I plant, the back-up operator shall hold a grade I certificate or higher.

(c) The wastewater treatment plant owner shall notify the certification committee of the following within 10 working days:

(1) The name of the individual designated to be the operator in responsible charge; and

(2) Any termination of the operator in responsible charge.

RSA *485-A:5-a Operator Certification Required.* *– The department shall certify operators of wastewater treatment plants. Wastewater treatment plants shall be operated only by certified operators.*

RSA 485-A:22 Penalties and Other Relief; Failure to Provide Facility. –

I. Any person who willfully or negligently violates any provision of this subdivision or RSA 485-A:4-6; or any rule of the department adopted pursuant to this subdivision or RSA 485-A:4-6 or any condition or limitation in a permit issued under this subdivision or RSA 485-A:4-6; or who knowingly makes any material false statement, representation, or certification in any application, record, report, plan, or other document required to be filed or maintained pursuant to this subdivision or RSA 485-A:4-6 or pursuant to a rule adopted by the department under this subdivision or RSA 485-A:4-6 or who knowingly makes any such statement, representation, or certification in connection with any permit issued under this subdivision or RSA 485-A:4-6; or who knowingly renders inaccurate, falsifies, or tampers with any monitoring device or method required under this subdivision or RSA 485-A:4-6 or rule of the department adopted under this subdivision or RSA 485-A:4-6 or required in connection with any permit issued under this subdivision or RSA 485-A:4-6; or who knowingly fails, neglects, or refuses to obey any lawful order of the department, shall, notwithstanding the provisions of RSA title LXII, be punished by a fine of not more than $25,000 for each day of such violation or imprisoned for not more than 6 months or both.

II. Any person who shall violate any provisions of this subdivision or RSA 485-A:4-6, or any lawful regulation of the department issued pursuant to this subdivision or RSA 485-A:4-6, or any condition or limitation in a permit issued under this subdivision or RSA 485-A:4-6, or who shall fail, neglect, or refuse to obey any order lawfully issued pursuant to this subdivision or RSA 485-A:4-6, shall be subject to a civil penalty not to exceed $10,000 per day of such violation.

Town Administrator Comment: assisting WWTP with recruitment efforts

WWTP Superintendent Comment: To be provided at time of presentation.

Suggested Action/Recommendation: N/A

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

NH DES, Water Division
Wastewater Operations Section
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095

February 07, 2023

Henniker, NH 03242

Subject: NHDES Wastewater Operations Henniker WWTF Site Visit

Dear Rich Slager:

Thank you for meeting on Wednesday, February 1 to discuss the operation and maintenance of Henniker's WWTF. I believe the time was well spent. I especially appreciate your insight into the unique challenges of operating an aging wastewater treatment facility without the level of staffing necessary to do the job properly.

Despite those challenges, it is evident you are doing everything you can to operate and maintain the facility to the best of your ability. You obviously understand the connection that exists between a properly run WWTF and the health of the environment and public. You and Chazz ought to be commended for how well you are performing under these very difficult circumstances. Keep up the good work!

Most importantly we observed and discussed the current condition of each piece of equipment and critical nature of each to the successful operation of the facility. Our overall conclusion is that a complete upgrade of the entire facility is needed as soon as possible. We came to this conclusion based on a concern for operator safety and permit compliance, as well as the treatment requirements anticipated to be included on the next discharge permit. Therefore, as a certified wastewater professional it is imperative for you to start advocating for and documenting what you know needs to get done to remedy this situation.

I know Henniker is moving forward with a plan to deal with these issues one at a time, starting with the most serious issues first, but I don't think you have the time to do things that way. I suggest you consider a more comprehensive and proactive approach. Determine the cost of doing a complete upgrade now and then see what funding options are available to pay for it. There are significant funds available now that probably won't be available later. NHDES grants management section and/or Tracy Wood can give you more information about this approach.

Please feel free to contact me if you have any questions.

Thanks again,

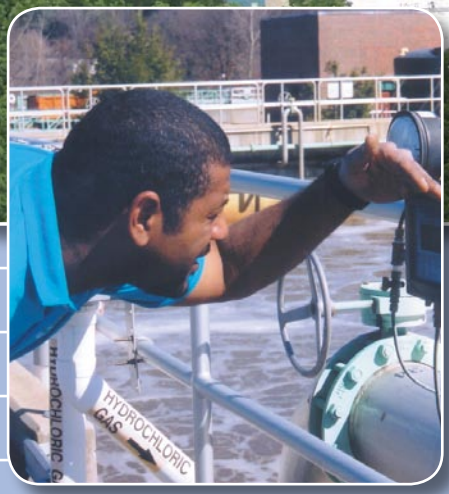
Richard "Dick" Emberley
Environmentalist IV
NHDES Wastewater Operations

PHONE: (603) 271-2940
EMAIL: [redacted]
WEB SITE: WWW.DES.NH.GOV

ec: [redacted]

NEIWPCC

The Northeast Guide for Estimating Staffing at Publicly and Privately Owned Wastewater Treatment Plants



Prepared by the
New England Interstate Water Pollution Control Commission
November 2008

The Northeast Guide for Estimating Staffing at Publicly and Privately Owned Wastewater Treatment Plants

November 2008

Prepared by the

NEW ENGLAND INTERSTATE WATER
POLLUTION CONTROL COMMISSION
116 John Street ■ Lowell, MA 01852-1124

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Ronald F. Poltak, Executive Director

Compact Member States

Connecticut
Maine
Massachusetts
New Hampshire
New York
Rhode Island
Vermont

For additional copies, contact NEIWPCC at the address above.

This document is also available for download at www.neiwpcc.org.

Printed on recycled paper

Acknowledgments

This manual was developed by the New England Interstate Water Pollution Control Commission. Established by an Act of Congress in 1947, NEIWPCC is a not-for-profit interstate agency that utilizes a variety of strategies to meet the water-related needs of its member states—Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. NEIWPCC coordinates activities and forums that encourage cooperation among the states, develops resources that foster progress on water issues, represents the region in matters of federal policy, trains environmental professionals, initiates and oversees scientific research projects, educates the public, and provides overall leadership in water management and protection. NEIWPCC regularly publishes manuals and other important technical reports and guidance; these guides provide tools and information to aid environmental professionals in planning, design, and operation, as well as compliance with regulations. They are intended to be used by individuals such as engineers, operators, and state regulators with specific information needs. Popular NEIWPCC guides include *TR-16 Guides for the Design of Wastewater Treatment Works, Sequencing Batch Reactor Design and Operational Considerations,* and *The Wastewater Treatment Plant Operators Guide to Biosolids Sampling Plans.*

The project manager for this guide was NEIWPCC's John Murphy, Environmental Engineer. He expresses great appreciation for the efforts of Thomas Bienkiewicz of the Massachusetts Department of Environmental Protection, who served as the technical consultant on the project, and Jon Jewett of the Vermont Department of Environmental Conservation, the project's meeting moderator.

The following people also played important roles in the manual's development. Thank you to:

Alan Cherubin, NYS DEC

Dick Darling, ME DEP

Rowland Denny, CT DEP

Thomas Groves, NEIWPCC

Carl Hendrickson, Veolia Water

Brent Herring, Bucklin Point WWTF

George Neill, NH DES

Paul Olander, VT DEC

Wiff Peterson, Wastewater Consultant

Tom Walsh, UBWPAD

Margaret Webber, MA DEP

Woodard & Curran Staff

Mark Young, Lowell WWTP

NEIWPCC Project Manager
John Murphy

Design and Production
Ricki Pappo, Enosis –
The Environmental Outreach Group

Editor
Stephen Hochbrunn, NEIWPCC

Application Developer
Ping Yee, Consultant

Additional thanks for reviewing to:

Connecticut Department of Environmental Protection
Craig Motasky

Maine Department of Environmental Protection
Sterling Pierce

Massachusetts Department of Environmental Protection
Kevin Brander
Dave Ferris
Bryan Firmin
Claire Golden
Jeffrey Gould
Robert Kimball
Joseph Nerden
Joseph Shepherd
Mark Schleweiss

New England Interstate Water Pollution Control Commission
Charles Conway
Michael Jennings
Donald Kennedy
James Laliberte

New Hampshire Department of Environmental Services
Tom White

New York State Department of Environmental Conservation
Tim Miller

Rhode Island Department of Environmental Management
Bill Patenaude

Contract Operations and Others
Bill Ames, Aquarion Services
Donald Benz, Veolia Water
Arnie Bevins, Vernon, CT WPCD
Bob Bower, HDR, Inc.
Lisa Boyd-Carlino, United Water
Charles Button, MWRA
Frank Cavaleri, Woodard & Curran
Don Chelton, Metcalf and Eddy
Michael Cherniak, Woodard & Curran
David Chin, U.S. EPA
Al Curran, Woodard & Curran
Jim Dostal, MA Board of Certification
Roland Dupuis, D Cubed Engineering
Fred Gaines, Consultant
Joseph Husband, Malcolm Pirnie
Kirk Laflin, PETE
Bill Luksha, Woodard & Curran
Jeff Marshall, American Water
Mike McBride, HDR, Inc.
Doug McKeown, Woodard & Curran
Bill Pauk, MA Board of Certification
Robert Rio, MA Board of Certification
Jay Sheehan, Woodard & Curran
Erik Teittinen, Woodard & Curran
Nelson Thibault, Hoyle Tanner
Frank Thomas, City of Manchester, NH

ACKNOWLEDGMENTS *continued*

The developers of the guide also wish to thank the wastewater treatment plants in the following communities for assisting with this project:

- Amherst, Massachusetts
- Amherst, New York
- Attleboro, Massachusetts
- Augusta, Maine
- Bristol, Connecticut
- Bucklin Point, Rhode Island
- Concord, New Hampshire
- Cranston, Rhode Island
- Edgartown, Massachusetts
- Falmouth, Maine
- Glastonbury, Connecticut
- Gorham, New Hampshire
- Henniker, New Hampshire
- Keene, New Hampshire
- Kittery, Maine
- Ledyard, Connecticut
- Lowell, Massachusetts
- Milford, Massachusetts
- Mohawk, New York
- Montpelier, Vermont
- Newmarket, New Hampshire
- North Canaan, Connecticut
- North Woodstock, New Hampshire
- Northampton, Massachusetts
- Northbridge, Massachusetts
- Northfield, Vermont
- Pentacook, New Hampshire
- Plymouth, New Hampshire
- Portsmouth, New Hampshire
- Providence, Rhode Island
- Rockland, Maine
- Scarborough, Maine
- Sherlburne, Vermont
- Somers, Connecticut
- Upper Blackstone, Massachusetts
- Upton, Massachusetts
- Uxbridge, Massachusetts
- Watertown, New York
- Waterville Valley, New Hampshire
- West Warwick, Rhode Island

DISCLAIMER

Because personnel and operational efficiencies differ from plant to plant, the staffing estimates generated in accordance with this manual should only be used as a guide. Final staffing decisions for specific plants should be made by a person experienced with similarly situated facilities. This guide is intended to supplement, not supplant, the best professional judgment of experts.

Data and information presented in this document were gathered through a NEIWPCC workgroup process. While the information is technically sound and accurate, the user should understand that every situation is different, and precautions should always be taken where uncertainty exists. NEIWPCC is not responsible for any damages or injury that may occur as a result of using information in this guide.

Contents

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Chapter 1
Introduction

Since the passage of the original Clean Water Act in 1972, the federal government has invested more than $67 billion in building more than 16,000 municipal wastewater treatment facilities nationwide. The result has been a dramatic improvement in the quality of the nation's waters, a true environmental triumph. The plants themselves deserve much of the credit; a modern wastewater treatment facility is a marvel of applied science and technology. But much credit must also go to the men and women who operate and maintain these increasingly complex facilities. Their work is vital to supporting our investment in the nation's environmental infrastructure.

Good operators ensure a plant is run safely, efficiently, effectively. But municipalities have budgets, usually tight, and ideally, a plant has the exact amount of operators it needs—no less and no more. Such a plant is deemed to be "properly staffed." Achieving this is easier said than done.

In a 1999 review of the national 104(g) program, which provides technical assistance to small wastewater treatment plants, the U.S. Environmental Agency found that inadequate staffing was number three on the list of the top five causes of non-compliance at wastewater treatment plants. This guide addresses this problem by providing concrete information that municipal officials, plant superintendents, engineers, regulators, operators, contract operation firms, permittees, and other parties can use to estimate the staffing needs of publicly and privately owned wastewater treatment plants in the northeast United States. It may also be used as a pilot for plants in other regions of the country.

It is possible, of course, to glean some of the information in this guide from complex and expensive benchmarking and engineering operation and maintenance guides. But the goal of this publication is to give municipalities and facilities a quick, easy, and cost-effective way to estimate numerical staffing. It should be particularly helpful to those in the process of planning a new facility, upgrading current operations, or reviewing different treatment plant options, such as the addition of new operations, solids handling, or a reduction of staff.

The charts that begin on page 21 were developed to estimate the amount of staff necessary to operate and maintain wastewater treatment plants of various sizes. Because of the many differences among plants in terms of personnel and operations, the estimates prepared according to this manual should only be used as a guide. The final decision on the staff required for a particular plant is ultimately a matter of judgment, and should be made by a person experienced with similar plants in a similar area. Staffing plans must comply in all instances with the relevant state and federal regulations for operating and maintaining wastewater treatment facilities and publicly and privately owned treatment works.

Please visit our NEIWPCC Technical Guides web page at *www.neiwpcc.org/technicalguides.asp* for the latest version and updates of *The Northeast Guide for Estimating Staffing at Publicly and Privately Owned Wastewater Treatment Plants.* If you would like to comment on the guide or if you have found any errors or omissions, notify NEIWPCC by using the feedback form provided on page 73.

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CHAPTER 2
THE FOUNDATION: EPA'S 1973 GUIDE

While much of the information within this guide is entirely new, its basic premise and structure are not. Credit for that must go to the U.S. Environmental Protection Agency, which in 1973 published the widely referenced guide entitled *Estimated Staffing for Municipal Wastewater Treatment Facilities.* The guide described a four-step method that state regulatory agencies and plant managers successfully used for many years to determine the staffing needs associated with specific treatment plant processes and activities.

Over those years, however, changes in the wastewater industry diminished the guide's usefulness. It covered treatment processes that were no longer widely used. But the main problem was not what was in the guide, but what was missing. The guide, for example, did not adequately address technologies such as rotating biological contactors, oxidation ditches, and aerated lagoons. Entire treatment processes, such as sequencing batch reactors, were not included for the simple reason that they did not exist in 1973. The advent of more stringent discharge limits since the 1970s led to the development of new technologies and treatment processes such as nitrification, denitrification, and phosphorus removal—none of which were covered in the 1973 guide. Also not considered: the programs associated with the National Pretreatment Program, which had not been fully developed by 1973. Under the program, municipal wastewater plants receiving significant industrial discharges must develop local pretreatment programs to control industrial discharges into their sewer system.

Over the years, laboratory practices also grew in complexity; it is possible now to analyze for the character and quantity of a much wider range of contaminants than in the past. No longer do all plants discharge to surface waters, as was the case in the early years of wastewater treatment. There are plants implementing innovative/alternative technologies that use subsurface disposal systems and plants discharging to groundwater. The biosolids industry also grew greatly, with the advent of new practices and technologies that allow for land application and reuse. New methods of odor control at treatment plants allow treatment plants to operate continually in residential and commercial areas.

While the EPA guide does touch upon the topic of automation and the use of computer systems such as Supervisory Control and Data Acquisition (SCADA), it does so only briefly. This contrasts with the tremendous importance of these labor-saving systems in modern facilities. The use of SCADA, Geographical Information System (GIS), telemetry, automated meter-reading, computerized recordkeeping and maintenance, integrated purchasing and inventory has played a major role in improving the efficiency and effectiveness of wastewater treatment.

A review of the 1973 guide also revealed two other areas in need of improvement: the logarithmic graphs were difficult to read and understand, and some of the terminology sent the wrong message. The guide included references to plant staff as "manpower" and "workmen," despite the growing presence of women in the field.

What remained the same over the years, however, was the need for such a guide. Among those connected in any way to wastewater treatment—from consultants and contract operations firms to regulators and technical assistance providers—a strong desire exists for a systematic approach to determining staffing levels at wastewater treatment plants. Operators also recognize and express the need, since they most directly experience the impact of inadequate staff on facility operations, compliance, longevity, and

morale. Furthermore, the expected absence in the future of large federal funding sources suggests that state and local governments will have to carry the burden of upgrading and repairing facilities.

For many years, the 1973 EPA guide provided an inexpensive and effective means of evaluating the staffing needs at wastewater treatment plants. But there was a consensus in the field that a new, updated version was needed—and NEIWPCC's Commissioners agreed. They gave NEIWPCC staff the go-ahead to develop a resource that together with educational opportunities, oversight, and enforcement would help ensure high-quality wastewater treatment in the Northeast long into the future.

CHAPTER 3
GUIDE DEVELOPMENT

To assist in the development of the guide, NEIWPCC formed an Advisory Committee of Regional 104(g) members (technical assistance regulators from the Northeast), state regulators, wastewater treatment plant managers and superintendents, staff from contract operations firms, and local wastewater experts with experience in staffing wastewater treatment plants. Working with the committee, NEIWPCC developed a survey that was sent to 50 plants in New England and New York State. The survey provided an initial look into who was controlling staffing, how it was being handled, whether plants felt they were over- or understaffed, and what documents were being used to estimate staffing. There was a wide range of results, with one clear conclusion: while the 1973 EPA guide was still being used at some plants, no specific document or practice was being widely referenced to estimate staffing. This underscored the need for a new, up-to-date resource.

With input from the Advisory Committee, NEIWPCC developed the first draft of the charts for the guide. These charts, which show the number of staff hours that need to be devoted each year to completing a wide variety of tasks, were then subject to an intensive review process. This included a pilot study, in which NEIWPCC and Massachusetts Department of Environmental Protection staff visited 25 plants in New England with flows ranging from 0.25 million gallons a day up to 56 mgd. The staff visited a wide range of treatment plants, with varying processes and staffing practices. They toured municipal plants, contract operation plants, plants with out-sourced departments, and plants with additional responsibilities, such as operating and maintaining collection systems and pump stations, other wastewater and drinking water plants, landfills, and composting systems. At each stop, the managers and operators of the facility provided feedback on the accuracy of the chart estimates. Plants with detailed computer maintenance records were particularly helpful for reviewing chart estimates.

After the pilot study, NEIWPCC staff compared the actual staff numbers at each pilot study facility to the staffing estimates for that facility derived by using the charts. The Advisory Committee reviewed the results of this exercise as well as the entirety of the feedback received during the pilot study. This review led to a series of adjustments to the charts, which improved their accuracy. The final step in the review process involved sending the revised charts to managers at three wastewater treatment plants, who determined the charts yielded accurate results in all cases.

The final charts, which are published here beginning on page 21, are very detailed and cover most all wastewater activities and processes conducted at a modern wastewater treatment plant in the Northeast. However, the field of wastewater treatment is always evolving, and hence every effort has been made to design the guide so it can be easily updated to reflect changes in the field.

An alternate version of the charts has been developed using Microsoft Excel and is available in this guide. Turn to the “Interactive Excel Application” tab to access the CD. Turn to page 75 for directions on using the CD. This interactive version is user-friendly and eliminates the need for the user to make any mathematical calculations.

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CHAPTER 4
ADDITIONAL CONSIDERATIONS

The charts in this guide are a tool for estimating staffing. The extensive preparation and review process has ensured they are as accurate as possible. But this publication is called a "guide" for good reason; the estimates obtained from the charts provide an indication of a plant's staffing needs, but their accuracy and relevancy in any one particular case can be affected by numerous factors.

Training and Certification

The training of a wastewater operator does not stop when he or she is hired by a plant. The majority of states in the Northeast require some level of training for operators to maintain their certification, since ongoing training reinforces and advances an operator's technical knowledge, skill, and abilities. Training expands an operator's understanding of emerging technologies and best practices. Even in states that do not have a training requirement for recertification, operators are strongly encouraged to attend programs to stay up-to-date on developments in the field.

This commitment to the benefits of training by the industry, regulators, and the operators themselves is admirable, and society reaps the benefits through increased protection of public health and the environment. But it cannot be assumed that the commitment is universal. In fact, an operator's commitment may very well be driven by the certification requirements in the state in which he or she works. The bottom line: not every operator in every plant is trained to the same degree.

The hourly estimates in the charts are, therefore, just that—estimates. They reflect the best assumptions of experts of the hours necessary to perform tasks conducted by operators, who far more often than not are "fully trained" in the tasks. Operators who are less than fully trained in a task will typically take longer to conduct it or will perform it in a less than effective or efficient manner. When using the charts, therefore, it is necessary for the user to fairly consider and appraise the training of a plant's existing staff and those it expects to hire. As stated above, state certification requirements are a factor here, but it was not practical to construct charts that reflect the varying requirements within states for training and their potential impact on the hours necessary to complete tasks.

Staffing and training are inherently intertwined; the level of the former is directly impacted by the level of the latter. This is true in every industry, and wastewater is no exception. Consistent, effective training throughout an operator's career can make a significant difference in on-the-job performance—and a plant's staffing needs.

Range of Job Responsibilities

Often, the best-run wastewater treatment plants are those that employ operators who are well trained in all operations at their facility. They are operating in compliance with the plant's discharge permit and completing all operations and maintenance responsibilities. When this occurs, the staff takes pride in their work and plant, as well as the importance of their job in protecting the environment. The cross-training of operators in areas outside their original responsibility has been found to improve efficiency, heighten motivation, contribute to effective teamwork, and contain costs.

This is not to say that a plant with operators who have strict job responsibilities and training in only certain areas cannot be run effectively. It can be. It is up to each plant's managers to make the decision about the most appropriate range of responsibilities for the facility's operators. Typically, this decision is dependent upon the capabilities not only of the existing operators but also the candidates available when job openings arise. But when considering the staffing estimates derived from the charts in this guide, it is important to contemplate whether a plant's workforce is broadly or narrowly trained. The evidence suggests that a certain number of operators working on all phases of a plant's operations and maintenance can be more efficient than the same number working on specific fixed tasks.

Age of Workforce

Research has shown that the workforce at wastewater treatment plants is aging, and this reliance on older operators is a major concern in estimating staffing. With an older staff, scheduling becomes more difficult due to increased vacation and sick leave. This problem is particularly acute at smaller treatment plants relying on a modest number of older operators, all with a significant amount of accrued time off.

In fact, during certain times of the year, a plant with an older workforce can find itself understaffed as many as three days a week. To accommodate these absences, staffing levels may need to be increased temporarily beyond what the estimates in this guide suggest. This would allow a plant with older operators to not only cover for workers on vacation or sick leave, but to also train replacements to seamlessly assume the responsibilities of the older staff once they reach retirement age.

Outsourcing and Contract Operations

Outsourcing is the practice of contracting out a specific area of work to a service provider. The contracts typically run from 36 to 60 months but can be as long as 20 years.

Areas commonly outsourced are operations, biosolids hauling and spreading, engine generator maintenance, custodial services, mowing, heating and air conditioning service, high voltage power service and repair, and laboratory testing. Outsourcing can provide access to technology, equipment, and expertise that a plant does not have internally, and can be beneficial when there are capital budget restraints or limits on capital spending. The implications for staffing levels are obvious; as tasks are outsourced, fewer staff are needed.

When contemplating outsourcing a process, it is imperative to be aware of the state procurement requirements for soliciting bids for contract operations. It is also prudent to consider the questions in the following list, which is derived from *Benchmarking Wastewater Operations: Collection, Treatment, and Biosolids Management* (Water Environment Research Foundation, 1997).

- Is the required capital investment necessary or excessive?
- Can proper specification writing give the contractor more flexibility than the plant and its municipal ownership would have?
- [If the work is kept in-house], does the amount of work performed justify the increased staffing and training costs?

- Is the work highly specialized or does it require special licensing, equipment, or experience?
- Are there enough local contractors to provide a competitive bidding situation?
- Will the workforce providing the service be of the seasonal or low-wage type?
- Does the work require state wastewater treatment plant operator certification?

Some municipalities forego running a facility and hiring staff altogether by contracting with an operations firm that runs the city's plant in its entirety. The reasons for doing so are similar to those for outsourcing—mounting regulatory and budgetary pressure, scarcity of competent personnel, and potential cost savings. While it can be difficult for a municipality to give up all responsibilities for such a large investment and key component of its infrastructure, it can be an attractive option. The key to achieving maximum benefit from private contract O&M is to select a contractor with a record of successful operations. Contracts must be well developed to ensure that the lines of responsibility between the contract operator and municipality are clearly delineated.

Shared Staffing

Occasionally public entities and contract operation firms will use one person to cover several positions at multiple wastewater plants. This is called shared staffing, and it allows a number of facilities to all benefit from a single individual's expertise. This can make sense when the person's skills do not justify a full-time position at a single plant, but can be utilized at multiple facilities in an area. Often this option is seen as desirable by contract operations firms that control numerous plants in a region. Shared staffing can also occur within a municipality, when wastewater staff are also responsible for other public duties such as operations and maintenance of drinking water facilities or collection systems.

While appealing from a cost-cutting perspective, shared staffing can pose problems during an emergency when the shared individual is needed simultaneously at all the facilities he or she covers. Municipalities considering this approach should carefully weigh the advantages and disadvantages, as well as the impact of shared staffing on their wastewater treatment plants' staffing needs.

Flexible Staffing

Due to budget constraints, strict no-hire policies, and mandates to not fill positions left open by retirement, some plants are forced to operate understaffed—and with far fewer staff than estimated by the charts in this guide. Understaffing should never be a long-term strategy, but when it must occur, it helps to have a flexible management program. Plant management should evaluate how the staff is structured, and consider ways to reconfigure plant personnel. Managers should attempt to identify operators eager to learn new responsibilities and to be cross-trained in areas outside their existing expertise.

If operators are flexible with their hours, they may be willing to work overtime to assist the plant in accomplishing tasks that might otherwise go undone. For many operators, the extra pay associated with each overtime hour is a powerful incentive, making overtime a feasible practice when hiring additional staff is impractical or impossible.

While acceptable options under some conditions, operating understaffed or consistently relying on overtime become unacceptable when the result is a neglect of fundamental operation and maintenance duties. When operator safety becomes an issue, it is even more imperative that steps are taken to increase staffing. During times of budget restraints, this can require extra flexibility on the part of management—and creative thinking.

One way to increase staff temporarily is to use part-time subject-to-call operators, who work only when needed and do not have an assigned work schedule or any guarantee of hours. The use of subject-to-call operators can not only reduce overtime and the strains caused by understaffing, it also allows plant managers to screen individuals who may be candidates for full-time vacancies when they occur. The subject-to-call option is especially attractive in areas with large pools of young candidates interested in entering the wastewater field. (It also helps if there are multiple plants in an area, which can share the talent pool.)

A flexible staffing approach utilized successfully by plants with varying flow patterns is the hiring of seasonal, part-time operators. Plants located in summer recreational areas often carry a larger staff during the summer, while the opposite is true for facilities that experience peak flows in the winter. Part-time help can do routine tasks such as mowing grass, pulling weeds, washing clarifiers, and painting, which allows full-time staff to concentrate on more specialized O&M responsibilities.

It should be noted that the use of some flexible staffing strategies, such as temporarily hiring inexperienced subject-to-call operators, is only an option when there is a numerical need-to-hire—that is, when a plant cannot complete necessary (and often tedious) tasks due to a lack of staff. This contrasts with a certified operator need-to-hire, in which a plant is required by its permit to utilize only operators with appropriate and valid state certification in certain roles. Plant managers obviously have less flexibility in such situations.

Emergency Response and Follow-Up

Although impossible to predict and hence inconceivable to include as a "task" in the staffing charts, emergency response is a fact of life at wastewater treatment plants. Emergencies will occur, and they will tie up staff time, often a great deal of it. Bear in mind that the staff time devoted to emergencies is not confined solely to the response. Invariably, a significant amount of follow-up is involved, as staff prepare appropriate notification to stakeholders and regulatory agencies. This follow-up is typically very time-consuming due to the need to obtain all the facts and ensure their accuracy. Generally the responsible operator-in-charge (also known as the direct responsible charge operator in some jurisdictions) must notify the state regulatory agency verbally and follow-up with a written report of the incident.

Given the inevitability of at least a minor emergency on occasion, it is prudent when utilizing the estimates from this guide's charts to bear in mind that additional hours will be required periodically for emergency response and follow-up.

CHAPTER 5
USING THE CHARTS

The charts that begin on page 21 are designed for publicly and privately owned wastewater treatment plants in New England and New York State with flows ranging from 0.25 million gallons a day to greater than 20 mgd. Regarding the number of hours worked per year, the EPA estimate of 1,500 hours was used. This estimate assumes a five-day work week; 6.5 hours of productive work per day; and an average of 29 days for holidays, vacations, and sick leave. Where conditions at a plant are significantly different from these assumptions, it may be necessary to use a figure other than 1,500 hours when dividing the total hours derived from the charts to determine staffing needs.

Differences in Plant Shifts

In devising the charts, it was necessary to accommodate for the fact that wastewater treatment plants differ in the number of personnel shifts per day. Some have just one shift during weekdays, others operate around the clock, while still others fall somewhere in between. When using the charts to estimate staffing at a plant, it is important to use the series of charts tailored to the staffing schedule utilized by the plant.

The charts are offered in three categories:

One Shift Plant: A facility that has one shift a day, five days a week. To arrive at the numbers on the charts, the daily hour estimates for a task were multiplied by 260 to get annual hours. The One Shift series of charts begin on page 21.

24/7 Plant: A facility that is staffed seven days a week, twenty four hours per day. For the charts, the daily hour estimates for a task were multiplied by 365 to get annual hours. The 24/7 series of charts begin on page 45.

One-Plus Shift Plant: Any facility whose staffing schedule does not fit into the previous two categories. These plants may have one shift a day, seven days a week; or perhaps one shift a day, five days a week, with a reduced number of hours on weekends. For the charts, the daily hour estimates for a task were multiplied by 320 to get annual hours. The One-Plus series of charts begin on page 33.

It must be remembered that the charts are not designed to be the sole factor in determining the number of staff needed to operate a plant, but are only to be used as a guide. Estimating is not an exact science. The staffing total derived from the charts should be looked at as a starting point for further discussion on final staffing levels. There can be no hard-and-fast rule on what jobs there should be at any one treatment plant, and each plant's administration should not feel restricted to a specific selection of job titles or shift staffing. The staffing at a plant must be designed to meet the facility's specific requirements. While the charts in this guide have been meticulously developed through input from experts, pilot testing, and review to give an accurate estimate on staffing publicly and privately owned wastewater treatment plants, the final decision on staffing is the province of each municipality and any other stakeholders in a facility.

Plant Comparisons

A final suggestion: After using the charts to arrive at an estimate of staffing for a plant, it is helpful to compare the results with actual staffing at a plant of similar size and in roughly the same area. The following questions should be helpful when conducting this comparison. The list comes from *The Cost of Clean Water: A Sewer User Rate Survey and Guidance Manual* (Connecticut DEP, 1999).

- Are the treatment processes similar?
- Are both plants of the same level of complexity?
- Are the treatment systems roughly the same age?
- Have the facilities been properly maintained in the past?
- What is the level of automation?
- Is sludge managed on-site or sent off-site for disposal?
- Do the collection systems have roughly the same mileage (within 20-30 percent)?
- Who does the O&M of the collection systems?
- Do the collection systems have roughly the same number of pumping stations?
- Are all functions being carried out by plant staff, or are some done by the public works department or town hall, e.g., maintenance and administrative duties?
- Do the facilities handle similar waste, i.e., what is the percentage of industrial flow, food preparation or processing waste, etc.?
- Is the facility operating in compliance with its NPDES permit?

If the answers to the above questions reveal considerable similarity, the staffing level at the plant being used as a point of comparison can be a tremendously helpful indicator of appropriate staffing.

Detailed Directions

NOTE: *Make copies of charts before using/writing on them.*

1. **To Start** – Choose the correct series of charts based on number of shifts per day at the plant. Select the group of charts that fits the shift set-up of the plant.
   a. One Shift Plant: Staffed for one shift, five days per week or less.
   b. 24/7 Plant: Staffed continuously 24 hours per day, 7 days per week.
   c. One-Plus Shift Plant: All other plants are under this category.

2. **Utilize appropriate design flow for the plant.**
   a. Select from the ranges of flows below:
      i. 0.25-0.5 mgd, 0.5-1.0 mgd, 1.0-5.0 mgd, 5.0-10.0 mgd, 10.0-20.0 mgd, > 20 mgd
      ii. For a flow of 0.5 mgd, use 0.25-0.5 mgd, a flow of 1.0 mgd use 0.5-1.0 mgd, and so on for 5, 10, and 20 mgd.
   b. Use this range for Charts 1, 2, and 4.
   c. After selecting the correct range of flows continue to Chart 1.

3. **Chart 1 – Basic and Advanced Operations and Processes**
   a. Proceed down the correct range of flows column circling all operations and processes conducted at the plant. Put this number in the "Total Hours for Plant" column on the far right.
   b. When specified multiply the number in the box by number of units. Use this sum for the "Total Hours for Plant" column, not the number in the box. Otherwise use the number designated in each box.
   c. Add all the hours in the "Total Hours for Plant" column and put the number on the Total line.
   d. Put the number from the Total line from Chart 1 next to Chart 1 on the Final Estimate Chart on page 32 for One Shift, page 44 for One-Plus Shift, or page 56 for 24/7.
   e. Continue to Chart 2.

4. **Chart 2 – Maintenance**
   a. Proceed down the column selecting all activities, processes and systems that are maintained at the plant.
   b. Multiply the number in the box by number of units that are available at the plant. Use the "Multiply by" box to determine units to multiply by. Place the new multiplied number in the far right column labeled "Total Hours for Plant."
   c. If the Activity Box is marked with an X, do not multiply by the number of units—just use the number designated in the box.
   d. Add all the hours in the "Total Hours for Plant" column and put the number on the Total line.
   e. Put the number from the Total line from Chart 2 next to Chart 2 on the Final Estimate Chart on page 32 for One Shift, page 44 for One-Plus Shift, or page 56 for 24/7.
   f. Continue to Chart 3.

5. Chart 3 – Laboratory Operations

a. Going down the left side of the chart, circle each parameter that is tested for under the plant's discharge permit. The remaining squares for Lab QA/QC Program, Process Control Testing, Sampling for Contracted Services and Sampling for Monitoring Groundwater Wells are not part of permitting. However, circle if the plant has these programs in use.

b. For each parameter selected, determine how many times the test is run—weekly, monthly, or quarterly (as required by the plant's discharge permit). Write in the appropriate column the frequency of testing. If the test is done less often than quarterly, do not use it for annual hours calculations.

c. To the right of the parameter is an estimate in hours for testing time. Multiply this number by the frequency of the testing and then by 52 for weekly occurrences, 12 for monthly occurrences, or 4 for quarterly occurrences. Place this number in the Annual Hours box on the far right.

d. Follow step c for each parameter.

e. Add the column for annual hours and put the number on the Total line.

f. Put the number from the Total line from Chart 3 next to Chart 3 on the Final Estimate Chart on page 32 for One Shift, page 44 for One-Plus Shift, or page 56 for 24/7.

g. Continue to Chart 4.

6. Chart 4 – Biosolids and Sludge Handling

a. Proceed down the correct range of flows column, selecting all processes conducted at the plant.

b. If the box has a #/shift, multiply the number by the amount of shifts the process is in operation.

c. Add all the hours from the column and put the number on the Total line.

d. Put the number from the Total line from Chart 4 next to Chart 4 on the Final Estimate Chart on page 32 for One Shift, page 44 for One-Plus Shift, or page 56 for 24/7.

e. Continue to Chart 5.

7. Chart 5 - Yardwork

a. Determine if the plant's layout is:
   i. Small: Less than 1.0 mgd design flow
   ii. Average: Greater than 1.0 mgd and less than 10.0 mgd design flow
   iii. Large: Greater than 10.0 mgd design flow

b. Use the selection to determine the correct column.

c. Proceed down the column selecting all work that is conducted at the plant. Put this number in the "Total Hours for Plant" column on the far right.

d. Vehicle maintenance is for all motorized vehicles (i.e., trucks, cars, front and back loaders, etc.). Multiply the total number of vehicles by 25 and put this number in the "Total Hours for Plant" column on the far right.

e. Add all the hours in the "Total Hours for Plant" column and put the number on the Total line.

f. Put the number from the Total line from Chart 5 next to Chart 5 on the Final Estimate Chart on page 32 for One Shift, page 44 for One-Plus Shift, or page 56 for 24/7.

g. Continue to Chart 6.

8. **Chart 6 – Automation and SCADA** (a detailed description of the items in this chart can be found in Appendix A)
   a. Proceed down the column checking Yes or No for all types of automation that are used at the plant.
   b. This chart does not have a numerical effect on the final estimate of staffing but is a good tool to see what level of automation is being used at the plant. See "Appendix A: Automation and SCADA" for more information.
   c. Continue to Chart 7.

9. **Chart 7 – Considerations for Additional Staffing Considerations** (a detailed description of the items in this chart can be found in Appendix B)
   a. Proceed down the chart placing a check mark on every line where additional staff will be needed.
   b. This chart does not have a numerical estimate due to the complexity and wide range of staffing options, but the responsibilities will increase calculated staff hours. See the "Appendix B: Additional Staffing Considerations" for more information.
   c. Continue to Final Estimate Chart.

10. **Final Estimate**
    a. This chart should include the annual hours added up from each chart. If not, go back to each chart and fill in the chart estimate in annual hours with the correct box.
    b. Add the total of the five charts and put this number next to Estimated Operation and Maintenance Hours.
    c. Divide Estimated Operation and Maintenance Hours by 1500 for your Estimated Operation and Maintenance Staff. This is the estimated amount of staff to operate and maintain the plant.
    d. Go back to Chart 7 and for each checked line consider what additional staff will be needed. Put this number next to Estimated Additional Staff from Chart 7.
    e. Add Estimated Operation and Maintenance Staff with Estimated Additional Staff from Chart 7 and put this number next to Total Staffing Estimate. This is the total estimated staff needed to run the plant.

NOTE FOR CHARTS 1, 2, and 4: Interpolating Data Points

Under some flow ranges are a range of annual hours for a specified operation, process, or activity. When a square has a range of annual hours it will be necessary to interpolate the data point.

To interpolate the point we need to find X which is between Min Hours and Max Hours.

$$\text{Set-up: } \frac{\text{Max Hours} - \text{Min Hours}}{\text{Max Flow} - \text{Min Flow}} = \frac{\text{Max Hours} - X}{\text{Max Flow} - \text{Design Flow}}$$

Then calculate for X.

For an example on interpolating a data point, turn to page 16.

Example

NOTE: The user must complete the entire chart including all the plant's units and processes before moving on to the next chart.

Plant Name: NEIWPCC example - Activated Sludge plant with 30/30 discharge permit

Design Flow – 9.0 mgd; **Actual Flow** – 4.2 mgd

One – Plus shift plant: Plant is staffed 7 days a week from 8 a.m. – 5 p.m.

CHART 1

- Select flow range of 5 – 10 mgd.
- Circle all processes from the plant.

CHART 1 (One-Plus Shift)
BASIC AND ADVANCED OPERATIONS AND PROCESSES

	Flow						
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Total Hours for Plant**
Preliminary Treatment	160	160	320	640	960	1280	
Primary Clarification (mult. by # of units)	160	160	160	(320) 3	320	320	**960**
Activated Sludge	640	1280	1920	(1920-2560)	2560-3200	7680	**2432**
Activated Sludge w/BNR	960	1920	2560	2880-3840	3840-7680	8960	
TOTAL							**3392**

- The plant has 3 primary clarification units. When directed, multiply hours by number of units.
- For hourly selections with ranges of numbers, it will be necessary to interpolate the estimated hours.

$$\frac{2560 - 1920}{10 - 5} = \frac{2560 - X}{10 - 9}$$

$$\frac{640}{5} = \frac{2560 - X}{1}$$

$$128 = 2560 - X$$

$$X = 2560 - 128$$

$$X = 2432.0 \text{ hours}$$

Example

CHART 2 (One-Plus Shift)
MAINTENANCE

Activity/Flow	Flow 0.25-0.5 mgd	0.5-1.0 mgd	1.0-5.0 mgd	5.0-10.0 mgd	10.0-20.0 mgd	>20 mgd	Multiply by	Total Hours for Plant
Manually Cleaned Screens	80	80	80	80	160	320	# of screens	
Mechanically Cleaned Screens	80	80	80	320	960	1280	# of screens	**960**
Mechanically Cleaned Screens with grinders/ washer/compactors	80	160	320	640	1280	1600	# of screens	
TOTAL								**960**

3

- The plant has 3 mechanically cleaned screens, so multiply the hourly estimate by 3.

CHART 3 (One-Plus Shift)
LABORATORY OPERATIONS

Test Required by Permit	How often are tests run? Testing Time (hrs.)	Tested Weekly X 52	Tested Monthly X 12	Tested Quarterly X 4	Annual Hours
Acidity	0.75				
Alkalinity, total	0.75		2		**18**
Biochemical Oxygen Demand (BOD)	2.5	5			**650**
Chemical Oxygen Demand (COD)	2.5				
TOTAL					**668**

- The plant runs a BOD test 5 times per week and an alkalinity test 2 times per month.
  - BOD testing time = 2.5 x 5 x 52 = 650 hours
  - Alkalinity testing time = 0.75 x 2 x 12 = 18 hours

- Sampling time is built into testing time estimates.

Example

CHART 4 (One-Plus Shift)
BIOSOLIDS/SLUDGE HANDLING

	Flow					
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**
Belt Press	320	960	1920	(2560)	2560	2560/shift
Plate & Frame Press	320	480	960	2560	2560	2560
Gravity Thickening	80	80	160	160	320	320
TOTAL				**2560**		

- The plant has 2 belt presses. However, since there is no multiplier use the hourly multiplier in the box.

CHART 5 (One-Plus Shift)
YARDWORK

	Size of Plant			
Work Done	**Small**	**Average**	**Large**	**Total Hours for Plant**
Janitorial/Custodial Staff	100	(200)	400	**200**
Snow Removal	60	120	400	
Mowing	100	120	400	
Vehicle Maintenance (per vehicle)	25	(25) **7**	25	**175**
Facility Painting	60	80	160	
Rust Removal	60	80	160	
TOTAL				**375**

- The plant design flow is between 1 – 10 mgd, so the plant size is considered average. The plant handles the janitorial work and has 7 vehicles. They outsource snow removal, mowing, painting and rust removal.

Example

CHART 6 (One-Plus Shift)
AUTOMATION/SCADA

Type of Automation	Yes	No
Automated attendant or Interactive voice recognition (IVR) equipment		✔
Automated Meter Reading (AMR), Touchpad meters or other automated metering technology		✔
Automatic call director (ACD)	✔	

CHART 7 (One-Plus Shift)
CONSIDERATIONS FOR ADDITIONAL PLANT STAFFING

• Management responsibilities (i.e., human resources, budgeting, outreach, training, town/city meetings, scheduling, etc.) and responsibility for clerical duties (i.e., billing, reports, correspondence, phones, time sheets, mailings, etc.)	_____
• Plant staff responsible for collection system operation and maintenance, pump station inspections, and/or combined sewer overflows	✔ _____

FINAL ESTIMATES	
Chart #	**Annual Hours**
1 – Basic and Advanced Operations and Processes	**3392**
2 – Maintenance	**960**
3 – Laboratory Operations	**668**
4 – Biosolids/Sludge Handling	**2560**
5 – Yardwork	**375**
Estimated Operation and Maintenance Hours	**7955**
Estimated Operation and Maintenance Staff	**5.3 (7955 ÷ 1500)**
Estimated Additional Staff from Chart 7	**2.0**
Total Staffing Estimate	**7.3**

Chart 6 – Automation/SCADA (List all "yes" answers from Chart 6)

The plant utilizes an automatic call director.

Chart 7 – Considerations for Additional Plant Staffing (List all "yes" answers from Chart 7).
Attach supporting information to justify additional staffing needs from Chart 7.

The plant is also responsible for 275 miles of collection systems and inspects 7 pump stations.

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Chapter 6
Charts: One Shift Plant

The charts on the following pages apply to publicly and privately owned wastewater treatment facilities where operators are present for only one shift a day, five days a week. To arrive at the numbers on the charts, the daily hour estimates for a task were multiplied by 260 to determine annual hours.

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CHART 1 (One Shift)
BASIC AND ADVANCED OPERATIONS AND PROCESSES

	Flow						
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Total Hours for Plant**
Preliminary Treatment	130	130	260	520	780	1040	
Primary Clarification (mult. by # of units)	130	130	130	260	260	260	
Activated Sludge	520	1040	1560	1560-2080	2080-2600	6240	
Activated Sludge w/BNR	780	1560	2080	2340-3120	3120-6240	7280	
Rotating Biological Contactor	260	390-780	780-1560	1560	X	X	
Sequencing Batch Reactor (per tank)	260	260	260	260	260	260	
Extended Aeration (w/o primary)	650	1300	2080	X	X	X	
Extended Aeration w/BNR	910	1820	2600	X	X	X	
Pure Oxygen Facility	X	X	X	2080-2600	2600	4680	
Pure Oxygen Facility w/BNR	X	X	X	2600-3900	3900	6240	
Trickling Filter	260	260	520	780	1040	2080	
Oxidation Ditch (w/o primary)	650	1300	2080	X	X	X	
Oxidation Ditch w/BNR	910	1820	2600	X	X	X	
Aeration Lagoon	390	390	390	X	X	X	
Stabilization Pond	260	260	260	X	X	X	
Innovative Alternative Technologies	520	780	X	X	X	X	
Nitrification	65	65	130	130	260	520	
Denitrification	65	65	130	130	260	520	
Phosphorus Removal (Biological)	65	65	130	130	260	520	
Phosphorus Removal (Chemical/Physical)	65	130	260	520	780	1040	
Membrane Processes	65	65	130	130	260	260	

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CHART 1 (One Shift) *continued*
BASIC AND ADVANCED OPERATIONS AND PROCESSES

	Flow						
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Total Hours for Plant**
Cloth Filtration	65	65	130	130	130	130	
Granular Media Filters (Carbon, sand, anthracite, garnet)	130	260	260	390	390	780	
Water Reuse	65	65	130	130	130	130	
Plant Reuse Water	26	26	26	39	65	65	
Chlorination	130	130	260	260	260	260	
Dechlorination	130	130	260	260	260	260	
Ultraviolet Disinfection	130	130	260	260	260	260	
Wet Odor Control (mult. by # of systems)	130	130	260	260	260	260	
Dry Odor Control (mult. by # of systems)	65	65	130	130	130	130	
Septage Handling	130	130	260	260	260	260	
TOTAL							

- Activated Sludge process includes RAS and WAS pumping.
- Secondary Clarification has been built into basic operations processes.

CHART 2 (One Shift)
MAINTENANCE

	Flow							
Activity	0.25-0.5 mgd	0.5-1.0 mgd	1.0-5.0 mgd	5.0-10.0 mgd	10.0-20.0 mgd	>20 mgd	Multiply by	Total Hours for Plant
Manually Cleaned Screens	65	65	65	65	130	260	# of screens	
Mechanically Cleaned Screens	65	65	65	260	780	1040	# of screens	
Mechanically Cleaned Screens with grinders/ washer/compactors	65	130	260	520	1040	1300	# of screens	
Comminutors/ Macerators	65	65	65	130	195	260	# of units	
Aerated Grit Chambers	26	26	65	130	195	260	# of chambers	
Vortex Grit Removal	26	26	65	130	195	260	# of units	
Gravity Grit Removal	26	26	39	52	104	130	# of units	
Additional Process Tanks	26	26	26	26	26	26	# of tanks	
Chemical Addition (varying dependent upon degree of treatment)	26	26	26	26-78	78-156	208	# of chemicals added for processes	
Circular Clarifiers	65	65	130	130	195	260	# of clarifiers	
Chain and Flight Clarifiers	65	65	130	130	195	260	# of clarifiers	
Traveling Bridge Clarifiers	X	X	X	X	195	260	# of clarifiers	
Squircle Clarifiers	65	65	130	130	195	260	# of clarifiers	
Pumps	100	100	250	500	750	1500	X	
Rotating Biological Contactor	39	39	65	65	X	X	# of trains	
Trickling Filters	39	39	39	65	104	130	# of TFs	
Sequencing Batch Reactor	39	39	39	65	104	130	# of tanks	
Mechanical Mixers	26	26	26	26	39	52	# of mixers	
Aeration Blowers	52	52	52	52	78	104	# of blowers	
Membrane Bioreactor	26	26	26	52	78	104	# of cartridges	

Continued on page 26

CHART 2 (One Shift) *continued*
MAINTENANCE

	Flow							
Activity	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Multiply by**	**Total Hours for Plant**
Subsurface Disposal System	26	26	26	26	78	104	# of systems	
Groundwater Discharge	26	26	26	26	39	52	X	
Aerobic Digestion	26	26	26	26	39	52	# of digesters	
Anaerobic Digestion	X	52	52	78	156	260	# of digesters	
Gravity Thickening	26	26	26	26	78	104	# of basins	
Gravity Belt Thickening	39	39	39	65	104	130	# of belts	
Belt Filter Press	39	39	39	65	104	130	# of presses	
Mechanical Dewatering (Plate Frame and Centrifuges)	39	39	39	65	104	130	# of units	
Dissolved Air Floatation	X	26	26	26	78	104	# of units	
Chlorination (gas)	26	26	26	52	78	104	X	
Chlorination (liq.)	52	52	52	78	117	156	X	
Dechlorination (gas)	26	26	26	52	78	104	X	
Dechlorination (liq.)	52	52	52	78	117	156	X	
Ultraviolet	26	26	26	39	65	78	# of racks	
Biofilter	130	130	130	130	130	130	# of units	
Activated Carbon	130	130	130	195	195	260	# of units	
Wet Scrubbers	X	X	X	39	65	78	# of units	
Microscreens	26	26	26	39	65	78	# of screens	
Pure Oxygen	X	X	X	52	78	104	# of units	
Final Sand Filters	52	52	52	52	78	156	# of units	
Probes/ Instrumentation/ Calibration	26	26	26	26	26	26	# of probes in-line	
TOTAL								

CHART 3 (One Shift)
LABORATORY OPERATIONS

	How often are tests run?				
Test Required by Permit	**Testing Time (hrs.)**	**Tested Weekly X 52**	**Tested Monthly X 12**	**Tested Quarterly X 4**	**Annual Hours**
Acidity	0.75				
Alkalinity, total	0.75				
Biochemical Oxygen Demand (BOD)	2.5				
Chemical Oxygen Demand (COD)	2.5				
Chloride	0.5				
Chlorine, Total Residual	0.25				
Coliform, Total, Fecal, E.Coli	1.0				
Dissolved Oxygen (DO)	0.25				
Hydrogen Ion (pH)	0.25				
Metals	3.0				
Toxicity	2.0				
Ammonia	2.0				
Total Nitrogen	2.0				
Oil and Grease	3.0				
Total and Dissolved Phosphorus	2.0				
Solids, Total, Dissolved, and Suspended	3.0				
Specific Conductance	0.25				
Sulfate	1.0				
Surfactants	1.0				
Temperature	0.25				
Total Organic Carbon (TOC)	0.25				
Turbidity	0.25				
Bacteriological Enterococci	1.0				
Lab QA/QC Program	1.0				
Process Control Testing	3.0				
Sampling for Contracted Lab Services	0.25				
Sampling for Monitoring Groundwater Wells	0.5				
TOTAL					

• Sampling time is built into testing time estimates.

CHART 4 (One Shift)
BIOSOLIDS/SLUDGE HANDLING

	Flow					
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**
Belt Filter Press	260	780	1560	2080	2080	2080/shift
Plate & Frame Press	260	390	780	2080	2080	2080
Gravity Thickening	65	65	130	130	260	260
Gravity Belt Thickening	65	65	130	130	260	520
Rotary Press	65	65	130	130	260	520
Dissolved Air Floatation	X	130	130	260	260	260
Alkaline Stabilization	65	65	65	65	65	65
Aerobic Digestion	130	130	130	260	390	520
Anaerobic Digestion	65	65	130	390	650	1040
Centrifuges	260	260	780	2080	2080	2080
Composting	260	520-780	1040	2080	2080	2080/shift
Incineration	X	X	X	X	6240	6240
Air Drying – Sand Beds	130	130	X	X	X	X
Land Application	65	130	130	X	X	X
Transported Off-site for Disposal	65	260	1040	2080	2080	2080
Static Dewatering	260	260	X	X	X	X
TOTAL						

CHART 5 (One Shift)
YARDWORK

	Size of Plant			
Work Done	**Small**	**Average**	**Large**	**Total Hours for Plant**
Janitorial/Custodial Staff	100	200	400	
Snow Removal	60	120	400	
Mowing	100	120	400	
Vehicle Maintenance (per vehicle)	25	25	25	
Facility Painting	60	80	160	
Rust Removal	60	80	160	
TOTAL				

CHART 6 (One Shift)
AUTOMATION/SCADA

Type of Automation	Yes	No
Automated attendant or interactive voice recognition (IVR) equipment		
Automated meter reading (AMR), touchpad meters or other automated metering technology		
Automatic call director (ACD)		
Billing system		
Computerized facilities management (FM) system		
Computerized preventative maintenance		
Computerized recordkeeping		
E-mail		
Geographical information system (GIS)		
Integrated purchasing and inventory		
Internet website		
Laboratory information management system (LIMS)		
Local area network (LAN)		
Supervisory control and data acquisition (SCADA)		
Telemetry		
Utility customer information system (CIS) package		

CHART 7 (One Shift)
CONSIDERATIONS FOR ADDITIONAL PLANT STAFFING

• Management responsibilities (i.e., human resources, budgeting, outreach, training, town/ city meetings, scheduling, etc.) and responsibility for clerical duties (i.e., billing, reports, correspondence, phones, time sheets, mailings, etc.)	_____
• Plant staff responsible for collection system operation and maintenance, pump station inspections, and/or combined sewer overflows	_____
• Plant operators responsible for snow plowing, road/sidewalk repair, or other municipal project	_____
• Plant staff involved in generating additional energy	_____
• Plant receives an extra high septage and/or grease load (higher than designed organic and grease loadings) or plant takes in sludge from other treatment plants	_____
• Plant is producing a Class A Biosolid product	_____
• Plant operators responsible for operating generators and emergency power	_____
• Plant responsible for industrial pre-treatment program	_____
• Plant staff responsible for plant upgrades and large projects done both on-site and off-site (i.e., collection systems, manholes, etc.)	_____
• Plant operators responsible for machining parts on-site	_____
• Age of plant and equipment (over 15 years of age)	_____

NEIWPCC

THE NORTHEAST GUIDE FOR ESTIMATING STAFFING AT PUBLICLY AND PRIVATELY OWNED WASTEWATER TREATMENT PLANTS (One Shift)

Plant Name: _____

Design Flow:_____ **Actual Flow:**_____

FINAL ESTIMATES	
Chart #	**Annual Hours**
1 – Basic and Advanced Operations and Processes	
2 – Maintenance	
3 – Laboratory Operations	
4 – Biosolids/Sludge Handling	
5 – Yardwork	
Estimated Operation and Maintenance Hours	
Estimated Operation and Maintenance Staff	
Estimated Additional Staff from Chart 7	
Total Staffing Estimate	

• Divide the total of Annual Hours by 1500 hours per year to get the Estimated Operation and Maintenance Staff needed to operate the plant. This assumes 5-day work week; 29 days of vacation, sick leave, holidays; and 6.5 hours per day of productive work.

Note: The estimate from Charts 1-5 will not be the final amount of staff necessary to run the facility. Please review Chart 7 for additional staffing needs.

Chart 6 – Automation/SCADA (List all "yes" answers from Chart 6.)

Chart 7 – Considerations for Additional Plant Staffing (List all "yes" answers from Chart 7.)
Attach supporting information to justify additional staffing needs from Chart 7.

CHAPTER 7
CHARTS: ONE-PLUS SHIFT PLANT

The charts on the following pages apply to publicly and privately owned wastewater treatment facilities where operators are present for more than one shift a day, five days a week, but less than 24 hours a day, seven days a week. These plants, for example, may have one shift a day, seven days a week, or perhaps one shift a day, five days a week, supplemented by shorter shifts on weekends. To arrive at the numbers on the charts, the daily hour estimates for a task were multiplied by 320 to determine annual hours.

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CHART 1 (One-Plus Shift)
BASIC AND ADVANCED OPERATIONS AND PROCESSES

	Flow						
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Total Hours for Plant**
Preliminary Treatment	160	160	320	640	960	1280	
Primary Clarification (mult. by # of units)	160	160	160	320	320	320	
Activated Sludge	640	1280	1920	1920-2560	2560-3200	7680	
Activated Sludge w/BNR	960	1920	2560	2880-3840	3840-7680	8960	
Rotating Biological Contactor	320	480-960	960-1920	1920	X	X	
Sequencing Batch Reactor (per tank)	320	320	320	320	320	320	
Extended Aeration (w/o primary)	800	1600	2560	X	X	X	
Extended Aeration w/BNR	1120	2240	3200	X	X	X	
Pure Oxygen Facility	X	X	X	2560-3200	3200	5760	
Pure Oxygen Facility w/BNR	X	X	X	3200-4800	4800	7680	
Trickling Filter	320	320	640	960	1280	2560	
Oxidation Ditch (w/o primary)	800	1600	2560	X	X	X	
Oxidation Ditch w/BNR	1120	2240	3200	X	X	X	
Aeration Lagoon	480	480	480	X	X	X	
Stabilization Pond	320	320	320	X	X	X	
Innovative Alternative Technologies	640	960	X	X	X	X	
Nitrification	80	80	160	160	320	640	
Denitrification	80	80	160	160	320	640	
Phosphorus Removal (Biological)	80	80	160	160	320	640	

Continued on page 36

CHART 1 (One-Plus Shift) *continued*
BASIC AND ADVANCED OPERATIONS AND PROCESSES

	Flow						
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Total Hours for Plant**
Phosphorus Removal (Chemical/Physical)	80	160	320	640	960	1280	
Membrane Processes	80	80	160	160	320	320	
Cloth Filtration	80	80	160	160	160	160	
Granular Media Filters (Carbon, sand, anthracite, garnet)	160	320	320	480	480	960	
Water Reuse	80	80	160	160	160	160	
Plant Reuse Water	32	32	32	48	80	80	
Chlorination	160	160	320	320	320	320	
Dechlorination	160	160	320	320	320	320	
Ultraviolet Disinfection	160	160	320	320	320	320	
Wet Odor Control (mult. by # of systems)	160	160	320	320	320	320	
Dry Odor Control (mult. by # of systems)	80	80	160	160	160	160	
Septage Handling	160	160	320	320	320	320	
TOTAL							

- Activated Sludge process includes RAS and WAS pumping.
- Secondary Clarification has been built into basic operations processes.

CHART 2 (One-Plus Shift)
MAINTENANCE

	Flow							
Activity	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Multiply by**	**Total Hours for Plant**
Manually Cleaned Screens	80	80	80	80	160	320	# of screens	
Mechanically Cleaned Screens	80	80	80	320	960	1280	# of screens	
Mechanically Cleaned Screens with grinders/ washer/compactors	80	160	320	640	1280	1600	# of screens	
Comminutors/ Macerators	80	80	80	160	240	320	# of units	
Aerated Grit Chambers	32	32	80	160	240	320	# of chambers	
Vortex Grit Removal	32	32	80	160	240	320	# of units	
Gravity Grit Removal	32	32	48	64	80	160	# of units	
Additional Process Tanks	32	32	32	32	32	32	# of tanks	
Chemical Addition (varying dependent upon degree of treatment)	32	32	32	32-96	96-192	256	# of chemicals added for processes	
Circular Clarifiers	80	80	160	160	240	320	# of clarifiers	
Chain and Flight Clarifiers	80	80	160	160	240	320	# of clarifiers	
Traveling Bridge Clarifiers	X	X	X	X	240	320	# of clarifiers	
Squircle Clarifiers	80	80	160	160	240	320	# of clarifiers	
Pumps	100	100	250	500	750	1500	X	
Rotating Biological Contactor	48	48	80	80	X	X	# of trains	
Trickling Filters	48	48	48	80	128	160	# of TFs	
Sequencing Batch Reactor	48	48	48	80	128	160	# of tanks	
Mechanical Mixers	32	32	32	32	48	64	# of mixers	
Aeration Blowers	64	64	64	64	96	128	# of blowers	
Membrane Bioreactor	32	32	32	64	96	128	# of cartridges	

Continued on page 38

CHART 2 (One-Plus Shift) *continued*
MAINTENANCE

	Flow							
Activity	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Multiply by**	**Total Hours for Plant**
Subsurface Disposal System	32	32	32	32	96	128	# of systems	
Groundwater Discharge	32	32	32	32	48	64	X	
Aerobic Digestion	32	32	32	32	48	64	# of digesters	
Anaerobic Digestion	X	64	64	96	192	320	# of digesters	
Gravity Thickening	32	32	32	32	96	128	# of basins	
Gravity Belt Thickening	48	48	48	80	128	160	# of belts	
Belt Press	48	48	48	80	128	160	# of presses	
Mechanical Dewatering (Plate Frame and Centrifuges)	48	48	48	80	128	160	# of units	
Dissolved Air Floatation	X	32	32	32	96	128	# of units	
Chlorination (gas)	32	32	32	64	96	128	X	
Chlorination (liq.)	64	64	64	96	144	192	X	
Dechlorination (gas)	32	32	32	64	96	128	X	
Dechlorination (liq.)	64	64	64	96	144	192	X	
Ultraviolet	32	32	32	48	80	96	# of racks	
Biofilter	160	160	160	160	160	160	# of units	
Activated Carbon	160	160	160	240	240	320	# of units	
Wet Scrubbers	X	X	X	48	80	96	# of units	
Microscreens	32	32	32	48	80	96	# of screens	
Pure Oxygen	X	X	X	64	96	128	# of units	
Final Sand Filters	64	64	64	64	96	192	# of units	
Probes/ Instrumentation/ Calibration	32	32	32	32	32	32	# of probes in-line	
TOTAL								

CHART 3 (One-Plus Shift)
LABORATORY OPERATIONS

	How often are tests run?				
Test Required by Permit	**Testing Time (hrs.)**	**Tested Weekly X 52**	**Tested Monthly X 12**	**Tested Quarterly X 4**	**Annual Hours**
Acidity	0.75				
Alkalinity, total	0.75				
Biochemical Oxygen Demand (BOD)	2.5				
Chemical Oxygen Demand (COD)	2.5				
Chloride	0.5				
Chlorine, Total Residual	0.25				
Coliform, Total, Fecal, E.Coli	1.0				
Dissolved Oxygen (DO)	0.25				
Hydrogen Ion (pH)	0.25				
Metals	3.0				
Toxicity	2.0				
Ammonia	2.0				
Total Nitrogen	2.0				
Oil and Grease	3.0				
Total and Dissolved Phosphorus	2.0				
Solids, Total, Dissolved, and Suspended	3.0				
Specific Conductance	0.25				
Sulfate	1.0				
Surfactants	1.0				
Temperature	0.25				
Total Organic Carbon (TOC)	0.25				
Turbidity	0.25				
Bacteriological Enterococci	1.0				
Lab QA/QC Program	1.0				
Process Control Testing	3.0				
Sampling for Contracted Lab Services	0.25				
Sampling for Monitoring Groundwater Wells	0.5				
TOTAL					

- Sampling time is built into testing time estimates.

CHART 4 (One-Plus Shift)
BIOSOLIDS/SLUDGE HANDLING

	Flow					
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**
Belt Press	320	960	1920	2560	2560	2560/shift
Plate & Frame Press	320	480	960	2560	2560	2560
Gravity Thickening	80	80	160	160	320	320
Gravity Belt Thickening	80	80	160	160	320	640
Rotary Press	80	80	160	160	320	640
Dissolved Air Floatation	X	160	160	320	320	320
Alkaline Stabilization	80	80	80	80	80	80
Aerobic Digestion	160	160	160	320	480	640
Anaerobic Digestion	80	80	160	480	800	1280
Centrifuges	320	320	960	2560	2560	2560
Composting	320	640-960	1280	2560	2560	2560/shift
Incineration	X	X	X	X	7680	7680
Air Drying – Sand Beds	160	160	X	X	X	X
Land Application	80	160	160	X	X	X
Transported Off-Site for Disposal	80	320	1280	2560	2560	2560
Static Dewatering	320	320	X	X	X	X
TOTAL						

CHART 5 (One-Plus Shift)
YARDWORK

	Size of Plant			
Work Done	**Small**	**Average**	**Large**	**Total Hours for Plant**
Janitorial/Custodial Staff	100	200	400	
Snow Removal	60	120	400	
Mowing	100	120	400	
Vehicle Maintenance (per vehicle)	25	25	25	
Facility Painting	60	80	160	
Rust Removal	60	80	160	
TOTAL				

CHART 6 (One-Plus Shift)
AUTOMATION/SCADA

Type of Automation	Yes	No
Automated attendant or Interactive voice recognition (IVR) equipment		
Automated Meter Reading (AMR), Touchpad meters or other automated metering technology		
Automatic call director (ACD)		
Billing system		
Computerized facilities management (FM) system		
Computerized preventative maintenance		
Computerized recordkeeping		
E-mail		
Geographical information system (GIS)		
Integrated purchasing and inventory		
Internet website		
Laboratory information management system (LIMS)		
Local area network (LAN)		
Supervisory control and data acquisition (SCADA)		
Telemetry		
Utility customer information system (CIS) package		

CHART 7 (One-Plus Shift)
CONSIDERATIONS FOR ADDITIONAL PLANT STAFFING

• Management responsibilities (i.e., human resources, budgeting, outreach, training, town/ city meetings, scheduling, etc.) and responsibility for clerical duties (i.e., billing, reports, correspondence, phones, time sheets, mailings, etc.)	_____
• Plant staff responsible for collection system operation and maintenance, pump station inspections, and/or combined sewer overflows	_____
• Plant operators responsible for snow plowing, road/sidewalk repair, or other municipal project	_____
• Plant staff involved in generating additional energy	_____
• Plant receives an extra high septage and/or grease load (higher than designed organic and grease loadings) or plant takes in sludge from other treatment plants	_____
• Plant is producing a Class A Biosolid product	_____
• Plant operators responsible for operating generators and emergency power	_____
• Plant responsible for industrial pre-treatment program	_____
• Plant staff responsible for plant upgrades and large projects done both on-site and off-site (i.e., collection systems, manholes, etc.)	_____
• Plant operators responsible for machining parts on-site	_____
• Age of plant and equipment (over 15 years of age)	_____

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THE NORTHEAST GUIDE FOR ESTIMATING STAFFING AT PUBLICLY AND PRIVATELY OWNED WASTEWATER TREATMENT PLANTS (One-Plus Shift)

Plant Name: _____

Design Flow:_____ **Actual Flow:**_____

FINAL ESTIMATES	
Chart #	**Annual Hours**
1 – Basic and Advanced Operations and Processes	
2 – Maintenance	
3 – Laboratory Operations	
4 – Biosolids/Sludge Handling	
5 – Yardwork	
Estimated Operation and Maintenance Hours	
Estimated Operation and Maintenance Staff	
Estimated Additional Staff from Chart 7	
Total Staffing Estimate	

• Divide the total of Annual Hours by 1500 hours per year to get the Estimated Operation and Maintenance Staff needed to operate the plant. This assumes 5-day work week; 29 days of vacation, sick leave, holidays; and 6.5 hours per day of productive work.

Note: The estimate from Charts 1-5 will not be the final amount of staff necessary to run the facility. Please review Chart 7 for additional staffing needs.

Chart 6 – Automation/SCADA (List all "yes" answers from Chart 6.)

Chart 7 – Considerations for Additional Plant Staffing (List all "yes" answers from Chart 7.)
Attach supporting information to justify additional staffing needs from Chart 7.

CHAPTER 8
CHARTS: 24/7 PLANT

The charts on the following pages apply to publicly and privately owned wastewater treatment facilities where operators are present seven days a week, 24 hours a day. To arrive at the numbers on the charts, the daily hour estimates for a task were multiplied by 365 to determine annual hours.

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CHART 1 (24/7 Plant)
BASIC AND ADVANCED OPERATIONS AND PROCESSES

	Flow						
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Total Hours for Plant**
Preliminary Treatment	182.5	182.5	365	730	1095	1460	
Primary Clarification (mult. by # of units)	182.5	182.5	182.5	365	365	365	
Activated Sludge	730	1460	2190	2190-2920	2920-3650	8760	
Activated Sludge w/BNR	1095	2190	2920	3285-4380	4380-8760	10220	
Rotating Biological Contactor	365	547.5-1095	1095-2190	2190	X	X	
Sequencing Batch Reactor (per tank)	365	365	365	365	365	365	
Extended Aeration (w/o primary)	912.5	1825	2920	X	X	X	
Extended Aeration w/BNR	1277.5	2555	3650	X	X	X	
Pure Oxygen Facility	X	X	X	2920-3650	3650	6570	
Pure Oxygen Facility w/BNR	X	X	X	3650-5475	5475	8760	
Trickling Filter	365	365	730	1095	1460	2920	
Oxidation Ditch (w/o primary)	912.5	1825	2920	X	X	X	
Oxidation Ditch w/BNR	1277.5	2555	3650	X	X	X	
Aeration Lagoon	547.5	547.5	547.5	X	X	X	
Stabilization Pond	365	365	365	X	X	X	
Innovative Alternative Technologies	730	1095	X	X	X	X	
Nitrification	91.25	91.25	182.5	182.5	365	730	
Denitrification	91.25	91.25	182.5	182.5	365	730	
Phosphorus Removal (Biological)	91.25	91.25	182.5	182.5	365	730	

Continued on page 48

CHART 1 (24/7 Plant) *continued*
BASIC AND ADVANCED OPERATIONS AND PROCESSES

	Flow						
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Total Hours for Plant**
Phosphorus Removal (Chemical/Physical)	91.25	182.5	365	730	1095	1460	
Membrane Processes	91.25	91.25	182.5	182.5	365	365	
Cloth Filtration	91.25	91.25	182.5	182.5	182.5	182.5	
Granular Media Filters (Carbon, sand, anthracite, garnet)	182.5	365	365	547.5	547.5	1095	
Water Reuse	91.25	91.25	182.5	182.5	182.5	182.5	
Plant Reuse Water	36.5	36.5	36.5	54.75	91.25	91.25	
Chlorination	182.5	182.5	365	365	365	365	
Dechlorination	182.5	182.5	365	365	365	365	
Ultraviolet Disinfection	182.5	182.5	365	365	365	365	
Wet Odor Control (mult. by # of systems)	182.5	182.5	365	365	365	365	
Dry Odor Control (mult. by # of systems)	91.25	91.25	182.5	182.5	182.5	182.5	
Septage Handling	182.5	182.5	365	365	365	365	
TOTAL							

- Activated Sludge process includes RAS and WAS pumping.
- Secondary Clarification has been built into basic operations processes.

CHART 2 (24/7 Plant)
MAINTENANCE

	Flow							
Activity	0.25-0.5 mgd	0.5-1.0 mgd	1.0-5.0 mgd	5.0-10.0 mgd	10.0-20.0 mgd	>20 mgd	Multiply by	Total Hours for Plant
Manually Cleaned Screens	91.25	91.25	91.25	91.25	182.5	365	# of screens	
Mechanically Cleaned Screens	91.25	91.25	91.25	365	1095	1460	# of screens	
Mechanically Cleaned Screens with grinders/ washer/compactors	91.25	182.5	365	730	1460	1825	# of screens	
Comminutors/ Macerators	91.25	91.25	91.25	182.5	273.75	365	# of units	
Aerated Grit Chambers	36.5	36.5	91.25	182.5	273.75	365	# of chambers	
Vortex Grit Removal	36.5	36.5	91.25	182.5	273.75	365	# of units	
Gravity Grit Removal	36.5	36.5	54.75	73	91.25	182.5	# of units	
Additional Process Tanks	36.5	36.5	36.5	36.5	36.5	36.5	# of tanks	
Chemical Addition (varying dependent upon degree of treatment)	36.5	36.5	36.5	36.5-109.5	109.5-219	292	# of chemicals added for processes	
Circular Clarifiers	91.25	91.25	182.5	182.5	273.75	365	# of clarifiers	
Chain and Flight Clarifiers	91.25	91.25	182.5	182.5	273.75	365	# of clarifiers	
Traveling Bridge Clarifiers	X	X	X	X	273.75	365	# of clarifiers	
Squircle Clarifiers	91.25	91.25	182.5	182.5	273.75	365	# of clarifiers	
Pumps	100	100	250	500	750	1500	X	
Rotating Biological Contactor	54.75	54.75	91.25	91.25	X	X	# of trains	
Trickling Filters	54.75	54.75	54.75	91.25	146	182.5	# of TFs	
Sequencing Batch Reactor	54.75	54.75	54.75	91.25	146	182.5	# of tanks	
Mechanical Mixers	36.5	36.5	36.5	36.5	54.75	73	# of mixers	
Aeration Blowers	73	73	73	73	109.5	146	# of blowers	
Membrane Bioreactor	36.5	36.5	36.5	73	109.5	146	# of cartridges	

Continued on page 50

CHART 2 (24/7 Plant) *continued*
MAINTENANCE

	Flow							
Activity	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**	**Multiply by**	**Total Hours for Plant**
Subsurface Disposal System	36.5	36.5	36.5	36.5	109.5	146	# of systems	
Groundwater Discharge	36.5	36.5	36.5	36.5	54.75	73	X	
Aerobic Digestion	36.5	36.5	36.5	36.5	54.75	73	# of digesters	
Anaerobic Digestion	X	73	73	109.5	219	365	# of digesters	
Gravity Thickening	36.5	36.5	36.5	36.5	109.5	146	# of basins	
Gravity Belt Thickening	54.75	54.75	54.75	91.25	146	182.5	# of belts	
Belt Press	54.75	54.75	54.75	91.25	146	182.5	# of presses	
Mechanical Dewatering (Plate Frame and Centrifuges)	54.75	54.75	54.75	91.25	146	182.5	# of units	
Dissolved Air Floatation	X	36.5	36.5	36.5	109.5	146	# of units	
Chlorination (gas)	36.5	36.5	36.5	73	109.5	146	X	
Chlorination (liq.)	73	73	73	109.5	164.25	219	X	
Dechlorination (gas)	36.5	36.5	36.5	73	109.5	146	X	
Dechlorination (liq.)	73	73	73	109.5	164.25	219	X	
Ultraviolet	36.5	36.5	36.5	54.75	91.25	109.5	# of racks	
Biofilter	182.5	182.5	182.5	182.5	182.5	182.5	# of units	
Activated Carbon	182.5	182.5	182.5	273.75	273.75	365	# of units	
Wet Scrubbers	X	X	X	54.75	91.25	109.5	# of units	
Microscreens	36.5	36.5	36.5	54.75	91.25	109.5	# of screens	
Pure Oxygen	X	X	X	73	109.5	146	# of units	
Final Sand Filters	73	73	73	73	109.5	219	# of units	
Probes/ Instrumentation/ Calibration	36.5	36.5	36.5	36.5	36.5	36.5	# of probes in-line	
TOTAL								

CHART 3 (24/7 Plant)
LABORATORY OPERATIONS

	How often are tests run?				
Test Required by Permit	**Testing Time (hrs.)**	**Tested Weekly X 52**	**Tested Monthly X 12**	**Tested Quarterly X 4**	**Annual Hours**
Acidity	0.75				
Alkalinity, total	0.75				
Biochemical Oxygen Demand (BOD)	2.5				
Chemical Oxygen Demand (COD)	2.5				
Chloride	0.5				
Chlorine, Total Residual	0.25				
Coliform, Total, Fecal, E.Coli	1.0				
Dissolved Oxygen (DO)	0.25				
Hydrogen Ion (pH)	0.25				
Metals	3.0				
Toxicity	2.0				
Ammonia	2.0				
Total Nitrogen	2.0				
Oil and Grease	3.0				
Total and Dissolved Phosphorus	2.0				
Solids, Total, Dissolved, and Suspended	3.0				
Specific Conductance	0.25				
Sulfate	1.0				
Surfactants	1.0				
Temperature	0.25				
Total Organic Carbon (TOC)	0.25				
Turbidity	0.25				
Bacteriological Enterococci	1.0				
Lab QA/QC Program	1.0				
Process Control Testing	3.0				
Sampling for Contracted Lab Services	0.25				
Sampling for Monitoring Groundwater Wells	0.5				
TOTAL					

CHART 4 (24/7 Plant)
BIOSOLIDS/SLUDGE HANDLING

	Flow					
Process	**0.25-0.5 mgd**	**0.5-1.0 mgd**	**1.0-5.0 mgd**	**5.0-10.0 mgd**	**10.0-20.0 mgd**	**>20 mgd**
Belt Press	365	1095	2190	2920	2920	2920/shift
Plate & Frame Press	365	547.5	1095	2920	2920	2920
Gravity Thickening	91.25	91.25	182.5	182.5	365	365
Gravity Belt Thickening	91.25	91.25	182.5	182.5	365	730
Rotary Press	91.25	91.25	182.5	182.5	365	730
Dissolved Air Floatation	X	182.5	182.5	365	365	365
Alkaline Stabilization	91.25	91.25	91.25	91.25	91.25	91.25
Aerobic Digestion	182.5	182.5	182.5	365	547.5	730
Anaerobic Digestion	91.25	91.25	182.5	547.5	912.5	1460
Centrifuges	365	365	1095	2920	2920	2920
Composting	365	730-1095	1460	2920	2920	2920/shift
Incineration	X	X	X	X	8760	8760
Air Drying – Sand Beds	182.5	182.5	X	X	X	X
Land Application	91.25	182.5	182.5	X	X	X
Transported Off-Site for Disposal	91.25	365	1460	2920	2920	2920
Static Dewatering	365	365	X	X	X	X
TOTAL						

CHART 5 (24/7 Plant)
YARDWORK

	Size of Plant			
Work Done	**Small**	**Average**	**Large**	**Total Hours for Plant**
Janitorial/Custodial Staff	100	200	400	
Snow Removal	60	120	400	
Mowing	100	120	400	
Vehicle Maintenance (per vehicle)	25	25	25	
Facility Painting	60	80	160	
Rust Removal	60	80	160	
TOTAL				

CHART 6 (24/7 Plant)
AUTOMATION/SCADA

Type of Automation	Yes	No
Automated attendant or Interactive voice recognition (IVR) equipment		
Automated Meter Reading (AMR), Touchpad meters or other automated metering technology		
Automatic call director (ACD)		
Billing system		
Computerized facilities management (FM) system		
Computerized preventative maintenance		
Computerized recordkeeping		
E-mail		
Geographical information system (GIS)		
Integrated purchasing and inventory		
Internet website		
Laboratory information management system (LIMS)		
Local area network (LAN)		
Supervisory control and data acquisition (SCADA)		
Telemetry		
Utility customer information system (CIS) package		

CHART 7 (24/7 Plant)
CONSIDERATIONS FOR ADDITIONAL PLANT STAFFING

• Management responsibilities (i.e., human resources, budgeting, outreach, training, town/ city meetings, scheduling, etc.) and responsibility for clerical duties (i.e., billing, reports, correspondence, phones, time sheets, mailings, etc.)	_____
• Plant staff responsible for collection system operation and maintenance, pump station inspections, and/or combined sewer overflows	_____
• Plant operators responsible for snow plowing, road/sidewalk repair, or other municipal project	_____
• Plant staff involved in generating additional energy	_____
• Plant receives an extra high septage and/or grease load (higher than designed organic and grease loadings) or plant takes in sludge from other treatment plants	_____
• Plant is producing a Class A Biosolid product	_____
• Plant operators responsible for operating generators and emergency power	_____
• Plant responsible for industrial pre-treatment program	_____
• Plant staff responsible for plant upgrades and large projects done both on-site and off-site (i.e., collection systems, manholes, etc.)	_____
• Plant operators responsible for machining parts on-site	_____
• Age of plant and equipment (over 15 years of age)	_____

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THE NORTHEAST GUIDE FOR ESTIMATING STAFFING AT PUBLICLY AND PRIVATELY OWNED WASTEWATER TREATMENT PLANTS (24/7 Plant)

Plant Name: _____

Design Flow:_____ **Actual Flow:**_____

FINAL ESTIMATES	
Chart #	**Annual Hours**
1 – Basic and Advanced Operations and Processes	
2 – Maintenance	
3 – Laboratory Operations	
4 – Biosolids/Sludge Handling	
5 – Yardwork	
Estimated Operation and Maintenance Hours	
Estimated Operation and Maintenance Staff	
Estimated Additional Staff from Chart 7	
Total Staffing Estimate	

• Divide the total of Annual Hours by 1500 hours per year to get the Estimated Operation and Maintenance Staff needed to operate the plant. This assumes 5-day work week; 29 days of vacation, sick leave, holidays; and 6.5 hours per day of productive work.

Note: The estimate from Charts 1-5 will not be the final amount of staff necessary to run the facility. Please review Chart 7 for additional staffing needs.

Chart 6 – Automation/SCADA (List all "yes" answers from Chart 6.)

Chart 7 – Considerations for Additional Plant Staffing (List all "yes" answers from Chart 7.)
Attach supporting information to justify additional staffing needs from Chart 7.

APPENDIX A
AUTOMATION AND SCADA OPTIONS

Automation and SCADA have had a major impact on the wastewater industry, increasing efficiency and providing for a higher level of safety. They also have had an impact on staffing. A plant with a large amount of automation will need a highly skilled staff and most likely a person directly responsible for maintaining the system. A higher amount of automation may allow a plant to reduce staffing during evening and overnight shifts, with approval from the appropriate regulatory group.

There are many options available to wastewater treatment plants for automation, and a number of them are included in Chart 6 of this guide. An explanation of each item in the chart—and the benefits provided—appears below.

Automated attendant or interactive voice recognition (IVR) equipment – A phone technology that allows a computer to detect voice and touch tones during a normal phone call. An IVR system can respond with pre-recorded or dynamically generated audio to further direct callers on how to proceed. IVR systems can be used to control almost any function where the interface can be broken down into a series of simple menu choices. Once constructed, IVR systems generally scale well to handle large call volumes.

Automated meter reading (AMR), touchpad meters, or other automated metering technology – The technology of automatically collecting data from water or energy metering devices and transferring that data to a central database for analyzing and billing. This virtually eliminates the need for meter readers to visit premises, and allows for billing to be based on actual consumption rather than on estimates based on previous consumption. AMR technologies include handheld, mobile and network technologies based on telephony platforms (wired and wireless), radio frequency (RF), or power-line transmission.

Automatic call director (ACD) – A device or system that distributes incoming calls to a specific group of terminals that agents use. It is often part of a computer telephony integration (CTI) system.

Billing system – A computer program set up to handle bill printing, payment processing, accounting reports, and delinquent payments. The system can provide demand letters, shut-off notices, and mailing label printing.

Computerized facilities management (FM) system – A software package that maintains a computer database of information about a wastewater plant's maintenance operations. This information is intended to help maintenance workers do their jobs more effectively and to help management make informed decisions. For example, it can help workers determine which storerooms contain the spare parts they need, and help managers calculate the cost of maintenance for each piece of equipment used by a plant, possibly leading to better allocation of resources. These packages may be used by any organization that must perform maintenance on equipment and property.

Computerized maintenance management system (CMMS) – A computerized process that incorporates a work order system which allows operators to write work orders without the familiar paper trail. This system eliminates the problem of duplicate work orders, and facilitates accurate cost accounting by allowing for efficient recordkeeping of labor hours, parts, and other inventory items. Preventative maintenance management, such as deciding what equipment needs maintenance and how much the work will cost, is improved by using the computerized work order system.

Computerized preventative maintenance – A computerized process for keeping track of preventative maintenance inspections and jobs, including step-by-step instructions or check lists, lists of materials required, and other pertinent details. Typically, an FM program (see above) schedules preventative maintenance jobs automatically based on schedules or meter readings. Different software packages use different techniques for reporting when a job should be performed.

Computerized recordkeeping – The use of computer software to keep track of all plant records. Plants utilizing computerized recordkeeping must have someone available to do data-entry on a regularly scheduled basis.

E-mail – A method of composing, sending, receiving, and storing messages over electronic communication systems.

Geographical information system (GIS) – A computer program that combines mapping with detailed information about the physical locations of structures such as pipes, valves, and manholes. A GIS helps operators and maintenance personnel locate utility system features or structures, and assists with the scheduling and performance of maintenance activities.

Integrated purchasing and inventory – A software product that offers a complete inventory control and warehouse management system, and is considered very beneficial to asset management. It allows users to view inventory items and assets, and provides the ability to browse purchase orders, list outstanding purchase orders, and generate reports based on purchase orders.

Internet website – A collection of pages on the World Wide Web, accessible through the Internet, that represent the work of an individual, business, or organization. A wastewater treatment plant may have its own website as a convenient means of disseminating information to the public and providing answers to frequently asked questions. A site may be set up by the municipality or by the plant itself, and will require occasional maintenance and updating by a person knowledgeable of web design and programming.

Laboratory information management system (LIMS) – A computer software program used in the laboratory for the management of samples, laboratory users, instruments, standards, and other laboratory functions such as invoicing, plate management, and work flow automation.

Local area network (LAN) – A computer network covering a small geographic area, such as a home, office, or group of buildings. When compared to larger computer networks, the defining characteristics of LANs are their much higher data-transfer rates, smaller geographic range, and lack of a need for leased telecommunication lines.

Supervisory control and data acquisition (SCADA) – A computer-monitored alarm, response, control and data acquisition system used by operators to monitor and adjust wastewater treatment processes and facilities. A SCADA system also provides for remote monitoring of lift stations and other facilities, thereby reducing personnel needs while cost-effectively checking equipment, operations, and site security. Use of remote monitoring allows a plant to deploy personnel where they are most needed and to detect problems before they escalate into major costs.

Telemetry – The process of transmitting measured data by radio to a distant station.

Utility customer information system (CIS) package – A package developed by a municipality or plant to give to citizens that contains information on the plant's treatment processes, contact phone numbers, hours of operation, etc.

APPENDIX B
CONSIDERATIONS FOR ADDITIONAL PLANT STAFFING

Chart 7 of this guide contains a list of considerations not included in Charts 1-6. Detailed descriptions of the entries requiring explanation are given here. While it is difficult to provide numerical estimates of staff hours for the work associated with the entries in the Chart 7 list, the impact on operator workload must be taken into consideration when coming up with the final staffing estimate.

- **Management responsibilities (i.e., human resources, budgeting, outreach, training, town/city meetings, scheduling, etc.) and responsibility for clerical duties (i.e., billing, reports, correspondence, phones, time sheets, mailings, etc.)**

  At many plants, the chief operator also performs a wide range of functions encompassing managerial, operational, and administrative tasks. Budgeting, recordkeeping, general clerical work, and public relations often fall under the chief operator's responsibilities. The amount of time a chief operator spends on this non-hands-on work must be taken into consideration when making staffing decisions, and these additional responsibilities should be reflected in a managerial and clerical diagram, which all plants should develop in conjunction with their major stockholders. Bear in mind there are situations where plant superintendents and chief operators are almost exclusively involved in managerial tasks, and therefore they should not be included in staffing estimates developed by the charts in this guide. There are also situations where plants have the opportunity to add staff specifically to handle clerical duties. In some cases, this can be accomplished by sharing clerical staff with other town departments.

- **Plant staff responsible for collection system operation and maintenance, pump station inspections, and/or combined sewer overflows**

  Operators at many plants visited in the pilot study conducted for this guide are also responsible for maintaining the associated collection system. This is an increase in workload, and depending upon the level of automation the increase can be significant. Many operators are also responsible for the inspection and maintenance of pump stations as well as home and business sewer connections. As with collection system O&M, these additional responsibilities increase an operator's workload, often substantially. The increase is even greater if a city or town has combined sewers and plant operators are responsible for addressing combined sewer overflows (CSOs); during storm events, it may even be necessary to add additional staff to cope with the challenges posed by CSOs.

- **Plant operators responsible for snow plowing, road/sidewalk repair, or other municipal projects**

  During the pilot study, it was observed that at some plants, staff are responsible for municipal tasks entirely unrelated to wastewater treatment. These include operating their community's drinking water plant; plowing snow; assisting with composting and recycling; working at landfills and cemeteries; repairing roads and sidewalks; and doing mark-outs for Dig Safe. All these additional responsibilities put extra demands on operators, and therefore should be factored into staffing decisions.

- **Plant staff involved in generating additional energy**

  For plants using complex methods for co-generation of energy, additional staff are generally needed due to the intricate processes.

- **Plant receives an extra high septage and/or grease load (higher than designed organic and grease loadings) or plant takes in sludge from other treatment plants**

  An evaluation of available plant operator staff and the staffing necessary to meet these needs must be conducted. Plant staff should be present when septage is received and unloaded. The added laboratory work associated with receiving septage for treatment should be included in the staffing and laboratory facilities evaluation.

- **Plant is producing a Class A Biosolid product**

  Biosolids are residual solids resulting from wastewater treatment, which have been carefully treated and tested. They contain organic matter as well as plant nutrients, such as nitrogen and phosphorus, and make a good soil amendment. The quality of biosolids must be carefully managed to minimize the presence of trace toxic materials and disease-causing organisms. Producing a Class A Biosolid product is a complex process, and a plant doing so can expect to see a large increase in operations and maintenance time.

- **Plant operators responsible for operating generators and emergency power**

  These tasks can be outsourced but at plants that operate and test their generators, the impact on staff time needs to be considered.

- **Plant responsible for industrial pre-treatment program**

  In areas that have a large amount of industry discharges, a person at the receiving plant must be responsible for the industrial pre-treatment program. The amount of time this will take is directly related to the amount of industry discharges to the plant.

- **Plant staff responsible for plant upgrades and large projects done both on-site and off-site (i.e., collection systems, manholes, etc.)**

  Many plants have staffs that are responsible for major projects that are done at the facility. Some are also responsible for assisting in town/city projects. Whether these responsibilities will be given to the plant will depend on the municipality's set-up and the knowledge of the wastewater plant staff.

- **Plant operators responsible for machining parts on-site**

  For many larger plants it is more economical to have machinists on-site to machine parts than to purchase parts each time something is needed.

- **Age of plant and equipment**

  When a plant and its equipment are 15 years old or more, maintenance issues will become more prominent and will need to be addressed more often. Consequently, there will be an increase in maintenance labor hours.

APPENDIX C
TOOLS TO ASSIST STAFF

Having the appropriate number of staff at a wastewater treatment plant is critical, but it is only one factor in ensuring that a plant is run efficiently, effectively, and safely. The staff must also be well managed and well trained, and they should have access to tools that can assist them in their jobs. Two such tools are described below.

Operations and Maintenance (O&M) Manuals

Operation and maintenance manuals provide information and guidance for day-to-day operation of a wastewater treatment plant. It is important to check state regulations for specific O&M manual requirements and approval procedures. However, the New Hampshire Department of Environmental Services' publication, *Code of Administrative Rules* (1999) states that an O&M manual should include, at a minimum, the following:

- Information on process design assumptions
- Unit process information that includes control measures and monitoring procedures for the various processes
- Start-up procedures for each unit operation and piece of equipment
- Maintenance management systems
- Laboratory test procedures
- Safety procedures
- Organizational structure and administrative procedures
- Troubleshooting procedures
- Emergency response and operation plan
- Staffing requirements
- Process and instrumentation diagrams
- Checklists for systems and components for the operator's use in developing a maintenance program for pump stations and wastewater treatment plants

It is important that O&M manuals remain up-to-date and accessible to employees. Changes to an O&M manual should only be done by one authorized person on a set schedule. This prevents the problem of a plant possessing multiple versions of the same document, each with different information and practices.

Many treatment plants are now going to interactive computerized O&M manuals for ease of use and the ability to quickly search through multiple manuals at one time. During the conversion of manuals from their original printed form to digital, computerized versions, plants typically also convert all plant drawings, records, and specifications, thereby making them also accessible in one searchable area.

Standard Operating Procedures (SOPs)

A standard operating procedure is a set of written instructions that document a routine or repetitive activity that is done at a wastewater treatment plant. SOPs are not photocopies of test methods or equipment manuals. Instead they provide very specific directions on how personnel should perform certain tasks. An SOP is a "how-we-do-it" document, which incorporates laboratory set-up, plant layout, equipment and chemicals, and any special conditions that need to be noted.

The development and use of SOPs is an integral part of a successful quality system since they provide staff with the information to perform a job properly and facilitate consistency in the quality and integrity of a product or end-result. They may describe, for example, fundamental programmatic actions and technical actions such as analytical processes, and processes for maintaining, calibrating, and using equipment. SOPs are intended to be specific to each individual wastewater treatment plant, and if properly done, will allow the plant to maintain its quality control and quality assurance processes, and ensure compliance with governmental regulations and permits.

SOPs should be written in a concise, step-by-step, easy-to-read format. If not written correctly, they are of limited value. Of course, even the best written SOPs will fail if they are not followed. Therefore, the use of SOPs needs to be reviewed and reinforced by management. Copies of SOPs need to be readily accessible for reference in the work areas of staff actually performing the activity, either in hard copy or electronic format. And they need to remain current to be useful. Whenever procedures are changed, SOPs should be updated and re-approved. Also SOPs should be systematically reviewed on a periodic basis, e.g., every 1-2 years, to ensure that the policies and procedures remain current and appropriate.

Valid SOPs help minimize variation and promote quality through consistent implementation of a process or procedure within a plant, even when there are personnel changes. SOPs can indicate compliance with organizational and governmental requirements and can be used as a part of a personnel training program, since they provide detailed work instructions. They minimize opportunities for miscommunication and can address safety concerns. When historical data are being evaluated for current use, SOPs can also be valuable for reconstructing project activities when no other references are available. In addition, SOPs are frequently used as checklists by inspectors when auditing procedures. Ultimately, the benefits of a valid SOP are reduced work effort, along with improved comparability, credibility, and legal defensibility.

It should be noted that the term "SOP" may not always be appropriate for any one specific document, and other terms, such as protocols, instructions, worksheets, and laboratory operating procedures, may also be used. Also, please note that the recommendations here for SOPs are very general. Always check state and local regulations for additional SOP requirements that must be met. Also, be aware that a national laboratory accreditation program is being adopted by many states, which may impact the contents of an SOP.

For more specific directions on how to write an SOP, consult the various resources on the subject, such as U.S. EPA's *Guidance for Preparing Standard Operating Procedures (SOPs)* (March, 2001).

APPENDIX D
GLOSSARY OF TERMS

A

Acidity – The capacity of water or wastewater to neutralize bases. Acidity is expressed in milligrams per liter of equivalent calcium carbonate. Acidity is not the same as pH because water does not have to be strongly acidic (low pH) to have a high acidity. Acidity is a measure of how much base must be added to a liquid to raise the pH to 8.2.

Activated carbon – A highly adsorbent form of carbon used to remove dissolved organic matter from water and wastewater or to remove odors and toxic substances from gaseous emissions.

Activated sludge – A biological wastewater treatment process that speeds up the decomposition of wastes in the wastewater being treated. Activated sludge is added to the wastewater and the mixture (mixed liquor) is aerated and agitated. After some time in the aeration tank, the activated sludge is allowed to settle out by sedimentation and is disposed of (wasted) or reused (returned to the aeration tank) as needed. The remaining wastewater then undergoes more treatment.

Activated sludge w/BNR – Biological nutrient removal is the removal of nitrogen and phosphorus by biological reactions instead of chemical processes. Biological nitrogen removal is done in two steps. In the first step ammonia is oxidized to nitrate (nitrification) and various process configurations are then employed to provide the nitrate as an electron acceptor for biological respiration so that it can be reduced to molecular nitrogen (denitrification). The removal of phosphorus by BNR requires the organisms to pass through an anaerobic stage in the absence of both nitrates and dissolved oxygen.

Additional process tanks – Storage tanks for wastewater or septage. An alarm on a tank signals when the tank is full and the contents need to be pumped and properly disposed. Examples of such tanks include equalization tanks, storage tanks, hauling tanks and sludge holding tanks.

Aerated grit chamber – A chamber that offers a mechanical way to remove grit from a wastewater stream by introducing air near the bottom of the chamber creating a toroidal flow pattern. This flow pattern causes the grit to settle to the bottom of the chamber while keeping lighter organic material in suspension to be processed further downstream.

Aeration blower – The process of adding air to wastewater to keep it fresh and to keep solids in suspension is done by blowers, typically rotary positive displacement blowers and multi-stage centrifugal blowers. When dealing with mixtures of wastewater and activated sludge, adding air provides mixing and oxygen for the microorganisms treating the wastewater.

Aeration lagoon – A holding or treatment pond provided with artificial aeration to promote the biological oxidation of wastewater.

Aerobic digestion – The breakdown of wastes by microorganisms in the presence of dissolved oxygen. This digestion process may be used to treat only waste activated sludge, trickling filter sludge and primary (raw) sludge, or waste sludge from activated sludge treatment plants designed without primary settling. The treated sludge is placed in a large aerated tank where aerobic microorganisms decompose the organic matter. This is an extension of the activated sludge process.

Air drying (sand beds) – A partitioned area consisting of sand or other porous material on which sludge is dewatered by drainage and evaporation.

Alkaline stabilization – Adding an alkaline material to waste to create beneficial by-products. The alkaline stabilization process is used to treat biosolids prior to beneficial re-use.

Alkalinity – The capacity of wastewater to neutralize acids. Alkalinity is expressed in milligrams per liter of equivalent calcium carbonate. Alkalinity is not the same as pH because water

does not have to strongly basic (high pH) to have a high alkalinity. Alkalinity is a measure of how much acid must be added to a liquid to lower the pH to 4.5.

Ammonia – A compound of hydrogen and nitrogen that occurs extensively in nature.

Anaerobic digestion – The solids and water in wastewater (about 5 percent solids, 95 percent water) are placed in a large tank where bacteria decompose the solids in the absence of dissolved oxygen. At least two general groups of bacteria act in balance: (1) saprophytic bacteria break down complex solids to volatile acids, the most common of which are acetic and propionic acids; and (2) methane fermenters break down the acids to methane, carbon dioxide, and water.

Automated attendant or interactive voice recognition (IVR) equipment – A phone technology that allows a computer to detect voice and touch tones during a normal phone call. Once constructed, IVR systems generally scale well to handle large call volumes.

Automated meter reading (AMR), touchpad meters, or other automated metering technology – The technology of automatically collecting data from water or energy metering devices and transferring that data to a central database for analyzing and billing.

Automatic call director (ACD) – A device or system that distributes incoming calls to a specific group of terminals that agents use. It is often part of a computer telephony integration (CTI) system.

B

Bacteriological enterococci – Indicator bacteria used to determine the presence of fecal contamination.

Belt filter press – A dewatering device that uses two fabric belts revolving over a series of rollers to squeeze water from the sludge.

Billing system – A computer program set up to handle bill printing, payment processing, accounting reports, and delinquent payments. The system can provide demand letters, shut-off notices, and mailing label printing.

Biochemical oxygen demand (BOD) – The rate at which organisms use the oxygen in water or wastewater while stabilizing decomposable organic matter under aerobic conditions. In decomposition, organic matter serves as food for the bacteria and energy results from its oxidation. BOD measurements are used as a measure of organic strength of wastes in water.

Biofilter – Odorous air is blown through organic media, e.g., wood chips, or inorganic media, e.g., plastics. Odors are eliminated through a natural biological oxidation process.

C

Centrifuge – A mechanical device that uses centrifugal or rotational forces to separate solids from liquids.

Chain and flight clarifier – A sludge collection mechanism used in rectangular sedimentation basins or clarifiers.

Chemical addition – Any water or wastewater treatment process involving the addition of chemicals to obtain a desired result, such as precipitation, coagulation, flocculation, sludge conditioning, or disinfection.

Chemical oxygen demand (COD) – A measure of the oxygen-consuming capacity of organic matter present in wastewater. COD is expressed as the amount of oxygen consumed from a chemical oxidant in mg/l during a specific test. Results are not necessarily related to the biochemical oxygen demand (BOD) because the chemical oxidant may react with substances that bacteria do not stabilize.

Chloride – The chloride ion is formed when the element chlorine picks up one electron to form an anion (negatively-charged ion). It can also refer to a chemical compound in which one or more chlorine atoms are covalently bonded in the molecule.

Chlorination – The application of chlorine to water or wastewater, generally for the purpose of disinfection, but frequently for accomplishing other biological or chemical results.

Chlorination (gas) – Chlorination done by using a gaseous form of chlorine.

Chlorination (liq.) – Chlorination done by adding liquid chlorine.

Chlorine, total residual – The concentration of chlorine present in water after the chlorine demand has been satisfied. The concentration is expressed in terms of the total chlorine residual, which includes both the free and combined or chemically bound chlorine residuals.

Circular clarifier – A circular tank used as a settling tank or sedimentation basin in which wastewater is held for a period of time during which the heavier solids settle to the bottom and the lighter materials float to the water surface.

Clarifier – A quiescent tank used to remove suspended solids by gravity settling.

Cloth filtration – An alternative to conventional granular media filtration technologies. Wastewater enters the tank or basin, completely submerging the cloth media. By gravity, liquid passes through the cloth media. Heavier solids are allowed to settle to the bottom portion of the filter tank. These solids are then pumped on an intermittent basis back to the headworks, digester, or other solids collection area of the treatment plant.

Coliform, total, fecal, E.Coli – One type of bacteria. The presence of coliform-group bacteria is an indication of possible pathogenic bacterial contamination. The human intestinal tract is one of the main habitats of coliform bacteria. They may also be found in the intestinal tracts of warm-blooded animals, and in plants, soil, air, and the aquatic environment. Fecal coliforms are those coliforms found in feces of various warm-blooded animals, whereas the term "coliform" also includes other environmental sources.

Comminutor – A device used to reduce the size of the solid chunks in wastewater by shredding (comminuting). The shredding action can be likened to many pairs of scissors cutting or chopping to shreds all the large solids materials in wastewater.

Composting – Stabilization process relying on the aerobic decomposition of organic matter in sludge by bacteria and fungi.

Computerized facilities management (FM) system – A software package that maintains a computer database of information about a wastewater plant's maintenance operations.

Computerized preventative maintenance – A computerized process for keeping track of preventative maintenance inspections and jobs, including step-by-step instructions or check lists, lists of materials required, and other pertinent details.

Computerized recordkeeping – The use of computer software to keep track of all plant records. Plants utilizing computerized recordkeeping must have someone available to do data-entry on a regularly scheduled basis.

D

Dechlorination – The removal of chlorine from the effluent of a treatment plant. Chlorine needs to be removed because it is toxic to fish and other aquatic life.

Dechlorination (gas) – Dechlorination done by gas.

Dechlorination (liq.) – Dechlorination done by liquid.

Denitrification – (1) The anoxic biological reduction of nitrate nitrogen to nitrogen gas. (2) The removal of some nitrogen from a system. (3) An anoxic process that occurs when nitrite or nitrate ions are reduced to nitrogen gas and nitrogen bubbles are formed as a result of this process. The bubbles attach to the biological floc in the activated sludge process and float the floc to the surface of the secondary clarifiers. This condition is often the cause of rising sludge observed in secondary clarifiers and gravity thickeners.

Dissolved air floatation – The clarification of flocculated material by contact with minute bubbles causing the air/floc mass to be buoyed to the surface, leaving behind a clarified water.

Dissolved oxygen (DO) – Molecular atmospheric oxygen dissolved in water or wastewater.

E

E-mail – A method of composing, sending, receiving, and storing messages over electronic communication systems.

Extended aeration (w/o primary) – A variation of the activated sludge process with an increased detention time to allow endogenous respiration to occur.

Extended aeration w/BNR – Biological nutrient removal is the removal of nitrogen and phosphorus by biological reactions instead of chemical processes. Biological nitrogen removal is done in two steps. In the first step, ammonia is oxidized to nitrate (nitrification) and various process configurations are then employed to provide the nitrate as an electron acceptor for biological respiration so that it can be reduced to molecular nitrogen (denitrification). The removal of phosphorus by BNR requires the organisms to pass through an anaerobic stage in the absence of both nitrates and dissolved oxygen.

F

Facility painting – The physical act of painting a wastewater treatment plant. This can be done for walls, railings, floors, etc. Painting gives the plant a more hygienic feel.

Final sand filter – Rectangular or cylindrical in cross section, typically 1 to 2 meters deep of sand, and used in treating wastewater to produce a potable product. Sand filters use biological processes to clean the water, and are nonpressurized systems. In the base of each bed is a series of herringbone drains that are covered with a layer of pebbles which in turn is covered with coarse gravel. Further layers of sand are placed on top followed by a thick layer of fine sand. The whole depth of filter material may be more than 1 meter in depth, the majority of which will be fine sand material. On top of the sand bed sits a supernatant layer of raw, unfiltered water.

G

Geographical information system (GIS) – A computer program that combines mapping with detailed information about the physical locations of structures such as pipes, valves, and manholes.

Granular media filter (carbon, sand, anthracite, garnet) – A tank or vessel filled with sand or other granular media to remove suspended solids and colloids from water or wastewater that flows through it.

Gravity belt thickening – A sludge dewatering device that uses a porous filter belt to promote gravity drainage of water.

Gravity grit removal – A preliminary wastewater treatment process to remove sand, gravel, cinders, and other heavy solid matter that have settling velocities substantially higher than those of organic putrescible solids in wastewater by sedimentation.

Gravity thickening – A process that uses a sedimentation basin designed to operate at high solids rates, usually with vertical pickets mounted to the revolving sludge scrapers to assist in releasing entrained water.

Groundwater discharge – The discharge of wastewater into the ground, as opposed to a surface waterway. It usually requires a state permit depending on flow and state.

H

Hydrogen ion (pH) – The weight of hydrogen ions in moles per liter of solution.

I

Incineration – The conversion of dewatered wastewater solids by combustion (burning) to ash, carbon dioxide, and water vapor.

Innovative alternative technologies – Onsite treatment systems that are not based on a conventional septic tank and leach field design. Alternative systems are used to accommodate a variety of site conditions (e.g., high ground water, soil with low permeability) or to provide additional treatment.

Integrated purchasing and inventory – A software product that offers a complete inventory control and warehouse management system, and is considered very beneficial to asset management.

Internet website – A collection of pages on the World Wide Web, accessible through the Internet, that represent the work of an individual, business, or organization. A wastewater treatment plant

may have its own website as a convenient means of disseminating information to the public and providing answers to frequently asked questions. A site may be set up by the municipality or by the plant itself, and will require occasional maintenance and updating by a person knowledgeable of web design and programming.

J

Janitorial/custodial staff – Individuals responsible for maintaining the building, removing trash, sweeping, mopping, and general upkeep of the building.

L

Lab Quality Assurance/Quality Control (QA/QC) – Refers to the protocol that ensures all lab measurements are accurate and reproducible, and that all tests have been run according to proper procedures. Every lab should have a detailed, documented QA/QC program in place. Without one, there is no documentation to prove that the data gathered are usable.

Laboratory information management system (LIMS) – A computer software program used in the laboratory for the management of samples, laboratory users, instruments, standards, and other laboratory functions such as invoicing, plate management, and work flow automation.

Land application – The disposal of wastewater or municipal solids onto land under controlled conditions.

Local area network (LAN) – A computer network covering a small geographic area, such as a home, office, or group of buildings. When compared to larger computer networks, the defining characteristics of LANs are their much higher data-transfer rates, smaller geographic range, and lack of a need for leased telecommunication lines.

M

Macerators – A device used to reduce the size of solid chunks in wastewater by chopping or tearing. The tearing action can be likened to many pairs of scissors cutting or chopping to shreds all the large solids materials in wastewater.

Manually cleaned screens – A treatment process using a device with uniform openings to retain coarse solids. Maintenance is done by hand and rake.

Mechanical dewatering – see definitions at "Plate and frame press" and "Centrifuges."

Mechanical mixers – The use of machinery to mix air and water so oxygen can be absorbed into the water.

Mechanically cleaned screens – A treatment process using a device with uniform openings to retain coarse solids combined with a device that cleans the rack and distributes waste in a specified area.

Mechanically cleaned screens with grinders/washer/compactor – A treatment process using a device with uniform openings to retain coarse solids combined with a device that grinds and compacts solids and then cleans the bars by washing them down.

Membrane bioreactor – A surface filtration process that has the ability to produce product water with virtually no suspended solids and can remove microorganisms including viruses. The two main types of MBRs are hollow fiber and flat plate.

Membrane processes – Systems that utilize membranes to remove pollutants from wastewater.

Metals – In general, those elements that easily lose electrons to form positive ions.

Microscreen – A device with a fabric-straining media with openings between 20 and 60 microns. The fabric is wrapped around the outside of a rotating drum. Wastewater enters the open end of the drum and flows out through the rotating screen cloth. At the highest point of the drum, the collected solids are backwashed by high-pressure water jets into a trough located within the drum.

Mowing – Encompasses the cutting of grass and routine yardwork at a wastewater treatment plant, which is typically performed by plant staff.

N

Nitrification – An aerobic process in which bacteria change the ammonia and organic nitrogen

in wastewater into oxidized nitrogen (usually nitrate).

O

Odor control – Systems or chemicals used to reduce the odor dispersed to the areas surrounding a wastewater treatment plant.

Oil and grease – Common term used to include fats, oils, waxes, and related constituents found in wastewater.

Oxidation ditch (w/o primary) – An extended aeration waste treatment process that occurs in an oval-shaped channel or ditch (also called a "race-track"), with aeration provided by a mechanical brush aerator.

Oxidation ditch w/BNR – Biological nutrient removal is the removal of nitrogen and phosphorus by biological reactions instead of chemical processes. Biological nitrogen removal is done in two steps. In the first step, ammonia is oxidized to nitrate (nitrification) and various process configurations are then employed to provide the nitrate as an electron acceptor for biological respiration so that it can be reduced to molecular nitrogen (denitrification). The removal of phosphorus by BNR requires the organisms to pass through an anaerobic stage in the absence of both nitrates and dissolved oxygen.

P

Phosphorus removal (Chemical/Physical) – The removal of phosphorus using treatment processes that are nonbiological in nature.

Phosphorus removal (Biological) – The removal of phosphorus by BNR requires the organisms to pass through an anaerobic stage in the absence of both nitrates and dissolved oxygen.

Plant reuse water – Using treated effluent for toilet flushing, cooling tanks, irrigation, and nonpotable purposes at a treatment plant.

Plate and frame press – A batch process dewatering device in which sludge is pumped through a series of parallel plates fitted with filter cloth.

Preliminary treatment – The removal of metal, rocks, rags, sand, egg shells, and similar materials that may hinder the operation of a treatment plant. Preliminary treatment is accomplished by using equipment such as racks, bar screens, comminutors, and grit removal systems.

Primary clarification – A sedimentation basin that precedes secondary wastewater treatment.

Primary treatment unit – A wastewater treatment process that takes place in a rectangular or circular tank and allows those substances in wastewater that readily settle or float to be separated from the water being treated.

Probes, instrumentation, calibration – The process of establishing the relationship between a measuring device and the units of measure. This is done by comparing a device or the output of an instrument to a standard with known measurement characteristics.

Process control testing – Wastewater treatment plants are unstable systems that require monitoring and adjustments. By sampling wastewater at various points during treatment and running basic lab tests, it can be verified quickly that the correct treatment steps are being made.

Pump estimates – Estimated time required to maintain all pumps at a plant for a year.

Pure oxygen facility – Variation of the activated sludge process using pure molecular oxygen for microbial respiration rather than atmospheric oxygen.

Pure oxygen facility w/BNR – Biological nutrient removal is the removal of nitrogen and phosphorus by biological reactions instead of chemical processes. Biological nitrogen removal is done in two steps. In the first step ammonia is oxidized to nitrate (nitrification) and various process configurations are then employed to provide the nitrate as an electron acceptor for biological respiration so that it can be reduced to molecular nitrogen (denitrification). The removal of phosphorus by BNR requires the organisms to pass through an anaerobic stage in the absence of both nitrates and dissolved oxygen.

R

Rotary press – Sludge is fed into a rectangular channel, and rotated between two parallel

revolving stainless steel chrome plated screens. The filtrate passes through the screens as the flocculated sludge advances within the channel. The sludge continues to dewater as it travels around the channel, eventually forming a cake near the outlet side of the press. The frictional force of the slow-moving screens, coupled with the controlled outlet restriction, results in the extrusion of a very dry cake.

Rotating biological contactor (RBC) – A secondary biological treatment process for domestic and biodegradable industrial wastes. Biological contactors have a rotating "shaft" surrounded by plastic discs called the "media." The shaft and media are called the "drum." A biological slime grows on the media when conditions are suitable and the microorganisms that make up the slime (biomass) stabilize the waste products by using the organic material for growth and reproduction.

Rust removal – The removal of rust from tanks, walls, etc. (typically a responsibility of plant staff).

S

Sampling for contracted lab services – At plants where lab work is done by a contracted agency, operators are required to collect samples for testing.

Septage handling – The process whereby a wastewater treatment plants takes in septage from outside sources, i.e., septic tanks, campgrounds, other wastewater plants, etc.

Sequencing batch reactor – A variation of the activated sludge process where all the treatment steps and processes are combined into a single basin or tank. The operation of an SBR is based on a fill-and-draw principle, which consists of five steps —fill, react, settle, decant, and idle. These steps can be altered for different operational applications.

Snow removal – The removal of snow at a wastewater treatment plant (typically a responsibility of plant staff).

Solids: total, dissolved, and suspended – Total solids are the sum of dissolved solids and suspended solids in a water or wastewater (matter remaining as residue on evaporation at 103 to 105 degrees Celsius) sample. Total suspended solids are the measure of the amount of suspended solids found in a sample of wastewater effluent. After filtering a sample of a known volume, the filter is dried and weighed to determine the residue retained. Total dissolved solids are the sum of all volatile and nonvolatile solids dissolved in a water or wastewater.

Specific conductance – Rapid method of estimating the dissolved solid content of a water supply by testing its capacity to carry an electrical current.

Squircle clarifiers – Square clarifiers with a circular tank inside.

Stabilization pond – A lagoon that is sufficiently deep (i.e., 5 to 6 feet) where organic solids settle to the bottom as sludge and decay anaerobically; a liquid layer forms above the sludge where facultative and aerobic bacteria oxidize the incoming organics and products of anaerobic sludge decomposition.

Static dewatering – Simple process where a polymer is added to the sludge and pumped into a container (typically made of steel). The polymer helps to separate the liquid from the solids. The solids are held in the container by a filter screen while the free water drains out of the container by gravity. Once the container is full, a truck can haul the sludge cake away.

Subsurface disposal system – A subsurface land area with relatively permeable soil designed to receive pretreated wastewater from a septic tank or intermediate treatment unit, e.g., sand filter. The soil further treats the wastewater by filtration, sorption, and microbiological degradation before the water is discharged to groundwater. A typical soil absorption system consists of perforated piping and gravel in a field or trench, although gravel-less systems can also be used. Soil absorption systems are normally placed at relatively shallow depths, i.e., less than two feet. Excellent TSS, BOD, phosphorus, and pathogen removal is provided in the unsaturated soil that surrounds the infiltrative surfaces. Subsurface disposal systems are also known as soil absorption systems (SAS).

Sulfate – The sulfate ion is a polyatomic anion that consists of a central sulfur atom surrounded by four equivalent oxygen atoms in a tetrahedral arrangement.

Supervisory control and data acquisition (SCADA) – A computer-monitored alarm, response, control and data acquisition system used by operators to monitor and adjust a wastewater treatment plant's processes and facilities.

Surfactant – The active agent in detergents that possesses a high cleaning ability.

T

Telemetry – The process of transmitting measured data by radio to a distant station.

Temperature – A measure of the kinetic energy of a sample of matter. In this case, the matter is wastewater, and the temperature is measured in degrees Fahrenheit and degrees Celsius.

Total and dissolved phosphorus – The total phosphorous content of all material that will pass through a filter, which is determined as orthophosphate without prior digestion or hydrolysis.

Total nitrogen – The combination of organically bound nitrogen and ammonia in wastewater.

Total organic carbon (TOC) – The amount of carbon bound in an organic compound and often used as a non-specific indicator of water quality.

Toxicity – The relative degree of being toxic or poisonous. When present in wastes, toxicity will inhibit or destroy the growth or function of certain organisms.

Transported off-site for disposal – At wastewater treatment plants that do not handle sludge onsite, plant staff are responsible for transporting it to a disposal area.

Traveling bridge clarifier – A traveling bridge sludge collector is a machine mobilized by a high-torque, slow-speed drive system that is used mainly in rectangular basins.

Trickling filter – A treatment process in which wastewater trickles over media (rocks or other durable material) that provide the opportunity for the formation of slimes or biomass which contain organisms that feed upon and remove wastes from the water being treated.

Turbidity – A measure of the cloudiness of water.

U

Ultraviolet disinfection – In this process, high intensity lamps that emit ultraviolet light are submerged in wastewater or the lamps may surround tubes that carry wastewater. Disinfection occurs when the ultraviolet light damages the genetic material of the bacterial or viral cell walls so that replication can no longer occur. Care must be taken to keep the surface of the lamps clean because surface deposits can shield the bacteria from the radiation, thus reducing the performance of the system.

Utility customer information system (CIS) package – A package developed by a municipality or plant to give to citizens that contains information on the plant's treatment processes, contact phone numbers, hours of operation, etc.

V

Vehicle maintenance – The maintenance of vehicles at a wastewater treatment plant, i.e., washing, tire rotation, oil and grease, minor repairs, etc.

Vortex grit removal – A grit removal system that relies on a mechanically induced vortex to capture grit solids in the center hopper of a circular tank.

W

Water reuse – The restoration of wastewater to a state that will allow its beneficial reuse for some agricultural, industrial or municipal applications. This reuse occurs outside of the treatment plant.

Wet scrubbers – An air pollution control device used to remove particulates and fumes from air by entraining the pollutants in a water spray.

REFERENCES

A literature review was conducted to obtain information on wastewater treatment plant staffing and operation and maintenance of wastewater treatment plants. Wherever practical, information was taken directly from the literature compiled under the review. Reference information is provided to allow users of this guidance document to obtain the source documentation in order to find additional and more detailed information.

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U.S. EPA, Program of Quality Assurance. March 2001. Guidance for Preparing Standard Operating Procedures (SOPs).

Water Environment Research Foundation. 1997. *Benchmarking Wastewater Operations – Collection, Treatment, and Biosolids Management.*

Water Professionals Site. March 2006. "Outsourcing Water Treatment." <http://www.waterprofessionals.com/wpOutsourcing.php>

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We Value Your Feedback

Please provide us feedback on this document. Submissions can be sent electronically, mailed, or faxed to:

New England Interstate Water Pollution Control Commission
ATTN: Estimating Staffing Guide
116 John Street
Lowell, MA 01852-1124
Tel: 978/323-7929
Fax: 978/323-7919
[redacted]

Has this guide been useful in estimating staffing at your plant? Does it agree with your staffing needs?

_____

_____

_____

Brief description of error or omission:

_____

_____

_____

Suggested improvement:

_____

_____

_____

General comments:

_____

_____

_____

Can we contact you for additional information? If so please provide contact information:

_____

_____

_____

Please visit our NEIWPCC Technical Guides web page at *www.neiwpcc.org/technicalguides.asp* for the latest version and updates of *The Northeast Guide for Estimating Staffing at Publicly and Privately Owned Wastewater Treatment Plants.*

Thank You.

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USING THE INTERACTIVE EXCEL APPLICATION

The Advisory Committee for this project thought it would be beneficial to also offer *The Northeast Guide for Estimating Staffing at Publicly and Privately Owned Wastewater Treatment Plants* on CD. Available here is the complete guide in Adobe Portable Document Format (PDF) as well as the charts in an interactive Excel format. This alternate version of the charts is user-friendly and eliminates the need for the user to make any mathematical calculations. Below are directions on getting started using the interactive staffing charts.

PC USERS:

Step 1 – Insert the CD in your computer's CD drive.

Step 2 – If the CD does not begin automatically:

a. At your desktop, double-click on the "My Computer" icon.

b. Double-click on the icon for your CD drive.

c. Double-click on the file called "NEIWPCC Staffing Charts."

Step 3 – Depending on your version of Excel you must enable Macros by:

a. Microsoft Office 2000-2007, click on the Tools Menu:

   a. Go to Macros

   b. Go to Security

      i. Then click on Medium.

b. Microsoft Office 2007 or newer:

   a. Click on the pop up menu above the charts titled "Options"

      i. Check the box enabling all Macros.

Step 4 – You are now able to start using the Interactive Staffing Charts. Click on the Instructions box to begin.

Note: When you click on "NEIWPCC Staffing Charts" this will open a new file each time, so that the original information will never be saved over. It is recommended when starting a new staffing report to go to "Save as" and rename your file. When using Microsoft Office 2007 or newer, save your workbook as an Excel Macro-Enabled workbook. When saving with an older version of Microsoft Office, save your workbook as a Microsoft Excel workbook (*.xls).

MAC USERS:

Due to the file containing Visual Basic macros, we regret that this file will not run properly on Mac computers. Please refer to the charts on page 21 for One Shift plants, page 33 for One-Plus Shift plants, or page 45 for 24/7 plants.

WW OPERATION SITE VISIT CHECKLIST
NPDES OR GWDP PERMIT

FACILITY NAME: HENNIKER WWTF

PERMIT NUMBER: NH NH0100102draftNHG580018 GW

PERMIT EXPIRATION DATE: 4/29/2011

I. PRE-INSPECTION INFORMATION

Permittee's Name: HENNIKER WWTF

Name and Title of Responsible Official: DIANE KENDALL – TOWN ADMINISTRATOR

Inspection Date: 2/1/2023 Time in: Time out:

Treatment Process: AS Disinfection Process: UV Grade of Facility: 2

Date of Last Inspection: Last Inspection Performed by:

Name/Grade of Operator in Responsible Charge: RICHARD SLAGER - 4

Name/Grade of Back-up Operator in Responsible Charge: CHAZZ FREEMAN - 1

Contact (Name/Phone) for Information Regarding Collection System: RICHARD SLAGER 6[redacted]

REASON FOR VISIT: [X] Annual [ ] Compliance Request [ ] OIRC Request [ ] Other

II. ATTENDEE CONTACT INFORMATION

1. List people present (include Inspector Name(s)):

NAME	TITLE	PHONE #
RICHARD EMBERLEY	NHDES – OPERATIONS	[redacted]
MARK KONDELIS, SR	NHDES - OPERATIONS	[redacted]
RICH SLAGER	HENNIKER – WWTF Superintendent	[redacted]
CHAZZ FREMAN	HENNIKER – WWTF Back-up Operator	[redacted]

2. Permittee's E-mail address: [redacted]

3. Permittee's mailing address: 18 DEPOT HILL RD, HENNIKER, NH 03242

4. Facility's physical address: 199 RAMSDELL RD, HENNIKER, NH 03232

III. PERMIT

1. (YES) NO NA Is a copy of the current permit accessible electronically or as a hard copy onsite or with the operator?

PERMIT COMPLIANCE CHALLENGES

1. None with current permit (next permit is likely to have total phosphorus and copper limits)
2.
3.
4.

V. GENERAL SITE/FACILITY APPEARANCE

1. (YES) NO NA Facility properly operates and maintains treatment units (no excessive scum buildup, grease, foam, or floating sludge in or on any of the treatment units)?
   If no, explain:
2. (YES) NO NA All treatment units, other than backup units, are in service.
   If no, explain: All treatment units in service but in questionable condition.
3. YES (NO) NA Is there any indication of a hydraulic overload or surcharging of influent lines, overflow weirs or other structures?
   If yes, explain:
4. (YES) NO Plant has general safety structures such as rails around or over tanks, pits or wells.
   If no, explain: Signs of safety structures aging and possibly no longer being adequate
5. (YES) NO NA Is there any evidence of severe corrosion and/or breaks or leaks in any chemical feed lines, piping or equipment?
   If yes, explain: Grit screw has serious corrosion issues
6. YES (NO) NA Is there any evidence of septage spills at the septage receiving facility?
   If yes, explain:
7. YES (NO) Are there any unpermitted flows (including facility floor drains, spills, dry weather drainage flow) entering the groundwater or surface water from the facility?
   If yes, explain:
8. YES (NO) Are there proper spill containment for all containers?
   If no, explain: Polymer containers need spill containment
9. YES (NO) Any evidence of potential spills or inappropriate storage of chemicals/oils/wastes in the vicinity of floor drains that discharge to the headworks?
   If yes, explain:

VII. EFFLUENT/RECEIVING WATER (Observation)

1. YES (NO) NA Are there any floating solids, oil sheen, color, or foam **in the effluent**?
If yes, explain:

2. YES NO (NA) Are there any floating solids, oil sheen, color, foam or a recognizable plume **in the receiving water**?
If yes, explain: None observed due to winter conditions

VIII. FLOW MEASUREMENT

1. (YES) NO Are all critical plant flows metered (influent, effluent, RAS, WAS, recycle, septage)?
If no, explain:

IX. SELF MONITORING

1. (YES) NO Influent and effluent sampling locations are representative of the permitted discharge.
If no, explain:

2. YES (NO) The facility is adequately staffed?
If no, explain: NEIWPCC Staffing Guide suggests 5+ operators needed (The plant only has 2 staff).
Facility is seriously understaffed putting operator safety and permit compliance in jeopardy.

How many employees are needed to operate the facility? 4

How many certified operators does the facility employ? 2

3. YES (NO) Does the facility have any uncertified employees?
If yes, explain:

X. OPERATIONS AND MAINTENANCE

1. YES (NO) The facility has an adequate alarm system for power or essential equipment failures.
If no, explain: Adequacy of UV system alarms uncertain.

2. (YES) NO Routine and preventive maintenance is scheduled, performed and recorded.
If no, explain: Manual card file system used for recording work

3. YES (NO) The facility has an Asset Management Program. Program Name: NONE
If no, explain: Facility would benefit from a software-based program to manage assets, especially in light of the age of assets.

4. (YES) NO A logbook is kept which documents all facility activities on a daily basis.
If no, explain:

5. YES (NO) The facility maintains written procedures (SOPs) for operations and maintenance activities.
If no, explain: No SOP's were written by the past Superintendent leaving the current operators without adequate understanding of some procedures (written SOP's are being created as time allows)

6. YES (NO) The facility maintains an inventory of spare parts, either at the facility or close by, sufficient to keep all of its critical treatment units operational.
If no, explain: Limited to no spare parts for critical equipment like the Belt Press, Lift station and RAS pumps

7. (YES) NO Adequate process control testing is being done.
If no, explain: Currently process control testing is adequate but much more testing will need to be done under the upcoming permit (lab equipment and test kits will need to be added to the budget, as well as staff)

8. (YES) NO The facility provides an alternative power source sufficient to operate the portion of the publicly owned treatment works (devices and systems used in storage, treatment and conveyance) it owns and operates.
If no, explain:

9. YES (NO) The facility has Uninterruptible Power Supply (UPS) for disinfection equipment as to prevent undisinfected bypass discharge during power transfer.
If no, explain: It appears that the UV system doesn't provide continuous disinfection during power switching to generator. UV disinfection may not work properly during low flow conditions.

XI. HANDLING AND DISPOSAL OF WASTES

1. YES (NO) Is septage accepted at the facility? How much?

2. YES (NO) Is leachate accepted at the facility? Source & Amount:

3. How are wastewater solids treated/disposed of? Sludge cake to Merrimack for composting

XII. COLLECTION SYSTEM

1. YES (NO) Does the system collect wastewater from any surrounding towns?
If yes, name & volume:

2. YES (NO) Does the system receive flows from a significant industry?
If yes, list & explain: New England College is a significant contributor to the facility

3. YES (NO) Are any parts of the collection system connected to stormwater flows (CS)?
If yes, explain:

4. YES (NO) Does the system receive significant infiltration or inflow (I/I)?
If yes, explain & quantify: Significant I&I (200 – 300 % increase to flows during wet weather). As part of facility upgrade I&I needs to be addressed.

XIII. SUMMARY

Major observations:
The staff are knowledgeable, dedicated, and hardworking.
Even though the facility has been well maintained, it is past design life-expectancy and in desperate need of upgrade.
The facility will need to be upgraded to meet the upcoming permit discharge limits (Phosphorous and copper).
The facility is seriously understaffed creating a dangerous situation for the staff and the health of the environment and public.

Recommendations:
Increase staff ASAP.
Upgrade plant ASAP: critical equipment includes grit screw, clarifiers, belt filter press, UV disinfection. Facility should include with any upgrade screening capability at the Ramsdell pumpstation, chemical feed for metal and nutrient removal and a more comprehensive SCADA and alarm system.
Any equipment not immediately upgraded should have of on-site spare parts.

THE NORTHEAST GUIDE FOR ESTIMATING STAFFING AT PUBLICLY AND PRIVATELY OWNED WASTEWATER TREATMENT PLANTS (One Plus Shift)

Plant Name: HENNIKER WWTF (Actual Design Flow 0.51 mgd)

Design Flow: 0.25-0.5 mgd	**Actual Flow: 0.1 - 0.2 mgd**

FINAL ESTIMATES

Chart #	**Annual Hours**
Chart 1 – Basic and Advanced Operations and Processes	1360.00
Chart 2 – Maintenance	1460.00
Chart 3 – Laboratory Operations	4589.00
Chart 4 – Biosolids/Sludge Handling	320.00
Chart 5 – Yardwork	455.00
Estimated Operation and Maintenance Hours	8184.00
Estimated Operation and Maintenance Staff	5.46
Estimated Additional Staff from Chart 7	
TOTAL STAFFING ESTIMATE	**5.46**

Note: The Total Staff estimate from Charts 1-5 will not be the final amount of staff necessary to run the facility. Please review Chart 7 for additional staffing needs.

Chart 6 - Automation/SCADA

Automatic Call Director (ACD)
Computerized recordkeeping
E-mail

Chart 7 - Considerations for Additional Plant Staffing

Management responsibilities (i.e., human resources, budgeting, outreach, training, town/city meetings, scheduling, etc.) and responsibility for clerical duties (i.e., billing, reports, correspondence, phones, time sheets, mailings, etc.)
Plant staff responsible for collection system operation and maintenance, pump station inspections, and/or combined sewer overflows
Plant operators responsible for operating generators and emergency power
Plant responsible for industrial pre-treatment program
Plant staff responsible for plant upgrades and large projects done both on-site and off-site (i.e., collection systems, manholes, etc.)
Age of plant and equipment (over 15 years of age)

Note: The user should attach supporting information to justify additional staffing needs from Chart 7.

Final Comments:

Choose Staffing Shifts: One Plus Shift

Enter Plant Design Flow: 0.25-0.5 mgd

Total Staffing Hours: 8184.00

Data Notes	# of Units	Process/Activity/Flow	Hours	Calculated	Subtotal
		Begin Chart 1 – Basic and Advanced Operations and Processes			
Data Notes	**# of Units**	**Process**	**Hours**	**Calculated**	**Subtotal**
	1	Preliminary Treatment	0.50	160.00	
# of units		Primary Clarification	0.50	0.00	
		Activated Sludge	2.00	0.00	
		Activated Sludge w/BNR	3.00	0.00	
		Rotating Biological Contactor	1.00	0.00	
# of tanks		Sequencing Batch Reactor	1.00	0.00	
	1	Extended Aeration (w/o primary)	2.50	800.00	
		Extended Aeration w/BNR	3.50	0.00	
		Pure Oxygen Facility	*X*		
		Pure Oxygen Facility w/BNR	*X*		
		Trickling Filter	1.00	0.00	
		Oxidation Ditch (w/o primary)	2.50	0.00	
		Oxidation Ditch w/BNR	3.50	0.00	
		Aeration Lagoon	1.50	0.00	
		Stabilization Pond	1.00	0.00	
		Innovative Alternative Technologies	2.00	0.00	
		Nitrification	0.25	0.00	
		Denitrification	0.25	0.00	
		Phosphorus Removal (Biological)	0.25	0.00	
	1	Phosphorus Removal (Chemical/Physical)	0.25	80.00	
		Membrane Processes	0.25	0.00	
		Cloth Filtration	0.25	0.00	
		Granular Media Filters (Carbon, sand, anthracite, garnet)	0.50	0.00	
		Water Reuse	0.25	0.00	
		Plant Reuse Water	0.10	0.00	
		Chlorination	0.50	0.00	
		Dechlorination	0.50	0.00	
	1	Ultraviolet Disinfection	0.50	160.00	
# of units		Wet Odor Control	0.50	0.00	
# of units		Dry Odor Control	0.25	0.00	
	1	Septage Handling	0.50	160.00	
		End of Chart 1 – Basic and Advanced Operations and Processes SUBTOTAL:			**1360.00**

** Secondary Clarification has been built into basic operations processes.*
** Activated Sludge process includes RAS and WAS pumping.*

Begin Chart 2 – Maintenance

Unit Descriptons	# of Units	Activity/Flow	Hours	Calculated	Subtotal
# of screens	2	Manually Cleaned Screens	0.25	160.00	
# of screens		Mechanically Cleaned Screens	0.25	0.00	
# of screens		Mechanically Cleaned Screens with grinders/washer/ compactors	0.25	0.00	
# of units		Comminutor/Macerator	0.25	0.00	
# of chambers		Aerated Grit Chambers	0.10	0.00	
# of units		Vortex Grit Removal	0.10	0.00	
# of units	2	Gravity Grit Removal	0.10	64.00	
# of tanks		Additional Process Tanks	0.10	0.00	
# of chemicals added for processes	2	Chemical Addition (varying dependent upon degree of treatment)	0.10	64.00	
# of clarifiers	2	Circular Clarifiers	0.25	160.00	
# of clarifiers		Chain and Flight Clarifiers	0.25	0.00	
# of clarifiers		*Traveling Bridge Clarifiers*	*X*		
# of clarifiers		Squircle Clarifiers	0.25	0.00	
X	1	Pumps	100.00	100.00	
# of trains		Rotating Biological Contactor	0.15	0.00	
# of TFs		Trickling Filters	0.15	0.00	
# of tanks		Sequencing Batch Reactor	0.15	0.00	
# of mixers	5	Mechanical Mixers	0.10	160.00	
# of blowers	5	Aeration Blowers	0.20	320.00	
# of cartridges		Membrane Bioreactor	0.10	0.00	
# of systems		Subsurface Disposal System	0.10	0.00	
X		Groundwater Discharge	0.10	0.00	
# of digesters		Aerobic Digestion	0.10	0.00	
# of digesters		*Anaerobic Digestion*	*X*		
# of basins		Gravity Thickening	0.10	0.00	
# of belts		Gravity Belt Thickening	0.15	0.00	
# of presses	1	Belt Filter Press	0.15	48.00	
# of units		Mechanical Dewatering (Plate Frame and Centrifuges)	0.15	0.00	
# of units		*Dissolved Air Floatation*	*X*		
X		Chlorination (gas)	0.10	0.00	
X		Chlorination (liq.)	0.20	0.00	
X		Dechlorination (gas)	0.10	0.00	
X		Dechlorination (liq.)	0.20	0.00	
# of racks	8	Ultraviolet	0.10	256.00	
# of units		Biofilter	0.50	0.00	
# of units		Activated Carbon	0.50	0.00	
# of units		*Wet Scrubbers*	*X*		
# of screens		Microscreens	0.10	0.00	
# of units		*Pure Oxygen*	*X*		
# of units		Final Sand Filters	0.20	0.00	
# of different types of probes	4	Probes/Instrumentation/Calibration	0.10	128.00	
		End of Chart 2 – Maintenance SUBTOTAL:			**1460.00**
		Begin Chart 3 – Laboratory Operations			

Frequency of test	# of times test is run for selected time frame	Tests	Hours	Calculated	Subtotal
		Acidity	0.75	0.00	
52	2	Alkalinity, total	0.75	78.00	
52	3	Biochemical Oxygen Demand (BOD)	2.50	390.00	
		Chemical Oxygen Demand (COD)	2.50	0.00	
		Chloride	0.50	0.00	
		Chlorine, Total Residual	0.25	0.00	
52	3	Coliform, Total, Fecal, E.Coli	1.00	156.00	
		Dissolved Oxygen (DO)	0.25	0.00	
52	12	Hydrogen Ion (pH)	0.25	156.00	
		Metals	3.00	0.00	
		Toxicity	2.00	0.00	
		Ammonia	2.00	0.00	
		Total Nitrogen	2.00	0.00	
		Oil and Grease	3.00	0.00	
		Total and Dissolved Phosphorus	2.00	0.00	
52	12	Solids, Total, Dissolved, and Suspended	3.00	1872.00	
		Specific Conductance	0.25	0.00	
		Sulfate	1.00	0.00	
		Surfactants	1.00	0.00	
52	12	Temperature	0.25	156.00	
		Total Organic Carbon (TOC)	0.25	0.00	
52	5	Turbidity	0.25	65.00	
		Bacteriological Enterococci	1.00	0.00	
52	12	Lab QA/QC Program	1.00	624.00	
52	7	Process Control Testing	3.00	1092.00	
		Sampling for Contracted Lab Services	0.25	0.00	
		Sampling for Monitoring Groundwater wells	0.50	0.00	
		End of Chart 3 – Laboratory Operations SUBTOTAL:			**4589.00**
		**Sampling time is built into testing time estimates.*			
		Begin Chart 4 – Biosolids/Sludge Handling			
Unit Descriptons	**# of Units**	**Process**	**Hours**	**Calculated**	**Subtotal**
	1	Belt Filter Press	1.00	320.00	
		Plate & Frame Press	1.00	0.00	
		Gravity Thickening	0.25	0.00	
		Gravity Belt Thickening	0.25	0.00	
		Rotary Press	0.25	0.00	
		Dissolved Air Floatation	*X*		
		Alkaline Stabilization	0.25	0.00	
		Aerobic Digestion	0.50	0.00	
		Anaerobic Digestion	0.25	0.00	
		Centrifuges	1.00	0.00	
		Composting	1.00	0.00	
		Incineration	*X*		
		Air Drying – Sand Beds	0.50	0.00	
		Land Application	0.25	0.00	
		Transported Off-Site for Disposal	0.25	0.00	
		Static Dewatering	1.00	0.00	
		End of Chart 4 – Biosolids/Sludge Handling SUBTOTAL:			**320.00**
		Begin Chart 5 – Yardwork			

Unit Descriptons	# of Units	Process	Hours	Calculated	Subtotal
	1	Janitorial/Custodial Staff	100	100.00	
	1	Snow removal	60	60.00	
	1	Mowing	100	100.00	
# of vechicles	3	Vehicle Maintenance	25	75.00	
	1	Facility Painting	60	60.00	
	1	Rust removal	60	60.00	
		End of Chart 5 – Yardwork SUBTOTAL:			**455.00**
		Begin Chart 6 – Automation/SCADA			
		Automation/SCADA	**Yes/No**		
		Automated attendant or Interactive voice recognition (IVR) equipment	**No**		
		Automated Meter Reading (AMR), Touchpad meters or other automated metering technology	**No**		
		Automatic Call Director (ACD)	**Yes**		
		Billing system	**No**		
		Computerized Facilities Management (FM) System	**No**		
		Computerized preventative maintenance	**No**		
		Computerized recordkeeping	**Yes**		
		E-mail	**Yes**		
		Geographical Information System (GIS)	**No**		
		Integrated purchasing and inventory	**No**		
		Internet website	**No**		
		Laboratory Information Management System (LIMS)	**No**		
		Local Area Network (LAN)	**No**		
		Supervisory Control and Data Acquisition (SCADA)	**No**		
		Telemetry	**No**		
		Utility customer information system (CIS) package	**No**		
		End of Chart 6 – Automation/SCADA			
		Begin Chart 7 – Considerations for Additional Plant Staffing			
		Activities	**Yes/No**		
		Management responsibilities (i.e., human resources, budgeting, outreach, training, town/city meetings, scheduling, etc.) and responsibility for clerical duties (i.e., billing, reports, correspondence, phones, time sheets, mailings, etc.)	**Yes**		
		Plant staff responsible for collection system operation and maintenance, pump station inspections, and/or combined sewer overflows	**Yes**		
		Plant operators responsible for snow plowing, road/sidewalk repair, or other municipal project	**No**		
		Plant staff involved in generating additional energy	**No**		
		Plant receives an extra high septage and/or grease load (higher than designed organic and grease loadings) or plant takes in sludge from other treatment plants	**No**		
		Plant is producing a Class A Biosolid product	**No**		
		Plant operators responsible for operating generators and emergency power	**Yes**		
		Plant responsible for industrial pre-treatment program	**Yes**		

	Plant staff responsible for plant upgrades and large projects done both on-site and off-site (i.e., collection systems, manholes, etc.)	**Yes**
	Plant operators responsible for machining parts on-site	**No**
	Age of plant and equipment (over 15 years of age)	**Yes**
	End of Chart 7 – Considerations for Additional Plant Staffing	

TOWN OF HENNIKER, NEW HAMPSHIRE

STAFF REPORT

DATE: 3/21/2023
TITLE: Reconstitute Board of Selectmen
INITIATED BY: Diane Kendall, Town Administrator
PREPARED BY: Diane Kendall, Town Administrator
PRESENTED BY: Diane Kendall, Town Administrator
AGENDA DESCRIPTION:

Board Members to elect Selectboard Chairman and Vice Chairman
Current Chair: Kris Blomback
Current Vice Chair: Vacated by Peter Flynn

Legal Authority: RSA 41:8; RSA 91-A:2

Financial Details: N/A

Town Administrator Comments:

"The method of selecting a chair varies from town to town. Some towns have a tradition that the longest-serving member or the one whose term expires next is the chair. Others elect a chair at the first meeting from among all members. No matter how the chair has been chosen in the past, a board may vote to change the method. A board may also vote to change which selectman is the chair at any time." NHMA Town & City Magazine June 2010 by Christine Fillmore

Town Hall
18 Depot Hill Road
Henniker, NH 03242

Tel: (603) 428-3221
Fax: (603) 428-4366

Incorporated November 10, 1768
"Only Henniker on Earth"

TOWN OF HENNIKER, NEW HAMPSHIRE

STAFF REPORT

DATE: 3/8/2023

TITLE: Crushed Gravel Bid Acceptance

INITIATED BY: Leo Aucoin, Highway Superintendent

PREPARED BY: Leo Aucoin, Highway Superintendent

PRESENTED BY: Leo Aucoin, Highway Superintendent

AGENDA DESCRIPTION: Superintendent would like the Board to accept bids for 2023 season crushing of gravel for use on town roads. Four bids were submitted, and the low bidder was Henniker Crushed Stone at $6 per cubic yard, to whom I would like to award the bid. Also, I would like the Board to give the Highway Superintendent the ability to sign the contract.

Legal Authority:

Financial Details:

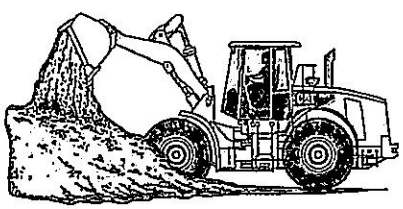
Town Administrator Comment:

N/A

Suggested Action/Recommendation:

Suggested Motion:

No formal action is required.



Henniker
CRUSHED STONE CO., INC.
44 BRADFORD ROAD • P.O. BOX 2040
HENNIKER, NH 03242-2040 • 603-428-7756

February 21, 2023

TOWN OF HENNIKER
18 DEPOT HILL ROAD
HENNIKER, NH 03242

CRUSHED GRAVEL BID 2023

PORTABLE CRUSHING:

- 4,000 cubic yards of gravel to be crushed down to 1.5 inch
- Gravel to be from existing tailing, salvage pile and open embankment

$6.00 per cubic yard

Thomas Patenaude
Thomas Patenaude, President

2-21-23
Date

Fuzzy Brothers LLC
232 Cheney Hill Road
Walpole, NH 03608
603-756-3790 (Office)
603-852-6728 (Ben Northcott)

Town of Henniker, NH
Crushed Gravel Bid 2023

4000 Cubic Yards of Crushed Gravel

1.5" crushed gravel - $6.50 per cubic yard

References:

Town of Hillsborough, NH
Foreman: Ernie Butler
603-464-7986

Town of Francestown, NH
Road Agent: Gary Paige
603-547-8841

Town of Bradford, NH
Road Agent: Steve Hall
603-938-5916

Benjamin Northcott - Owner

NORTHEAST EARTH MECHANICS, LLC

159 Barnstead Road
Pittsfield, NH 03263
P. (603) 435-7989 F. (603)435-7950
www.neearth.com

February 20, 2023

Town of Henniker
18 Depot Hill Road
Henniker, NH 03242

Re: "Crushed Gravel Bid 2023"

Dear Mr. Aucoin,

We are pleased to quote you as follows for crushing services at your pit:

- Mobilization of CAT 330 Excavator, Metso LT106 Jaw Crusher, Finlay C1540P Cone Crusher, Finlay T-65 Stacker and CAT 966H Wheel Loader.
- We shall provide all consumables, fuel, labor and machine time to primary crush, secondary crush material to an effective size 1 1/2" minus.
- The crushed material will be stockpiled within 50' of the secondary crusher discharge.
- The material to be crushed is gravel tailings, salvage pile and bank run gravel.
- The maximum particle size we can crush is about 21" and any oversized will be culled out and put to one side to be reduced or removed by others.
- 4,000 cy minimum to be crushed.

We will provide these services for a processing fee of $7.88/cy for primary and secondary crushing.

Measurement will be by counting heaped buckets as they are taken to the stockpile.

Payment Terms: Invoiced upon completion with payment within 30 days.

We will complete this crushing by June 30th, 2023. This proposal is valid for 30 days.

If you have any questions or need any additional information, please do not hesitate to contact me at (603) 234-4243 or at my office at (603) 435-7989 x 213.

Respectfully Submitted,
NORTHEAST EARTH MECHANICS, INC.

James N. Locke, II
President

Accepted:_____ Date: February 20, 2023

GORDON SERVICES
PROPERTY MAINTENANCE LLC

250 NORTH ST. JAFFREY, NH 03452 Office: 603-325-8457 or 603-532-7397

TO: Town of Henniker

SUBJECT: Crushed Gravel Bid

DATE: February 15, 2023

Bid specification:

- Gravel to be crushed down to 1.5 inch.
- Gravel to be from existing tailing, salvage pile and open embankment.
- Price per cubic yard - **$8.00**

Cody Gordon- 603-325-8916(c)

Cody Gordon

Town of Henniker

Request for Bid Proposal

Crushed Gravel

The Town of Henniker is inviting bid proposals for the portable crushing of 4000 cubic yards of gravel. Bid proposals must be on company letterhead clearly stating price, specifications, and accompanied with a certificate of insurance. **Bid envelopes must be sealed and marked, "Crushed Gravel Bid 2023" and be delivered to Town of Henniker Town Hall 18 Depot Hill Road, Henniker NH 03242 by March 1, 2023, at 12:00 PM, when they will be opened publicly and read aloud. Contact person: Leo Aucoin, Highway Superintendent 603-428-7200.**

Minimum bid specification

- Gravel to be crushed down to 1.5 inch.
- Gravel to be from existing tailing, salvage pile and open embankment.
- Bid must specify price per cubic yard.
- Crusher must be equipped with a min. 30 by 42-inch primary jaw and secondary cone crusher to size material.
- Crushing must be completed by the end of June 2023.

The Board of Selectmen reserves the right to reject all bids and issue a new Request for Bids if less than three bids are received. The Board of Selectmen also reserve the right at their sole discretion to reject any and all bids, wholly or in part, to waive any informalities or any irregularities therein, to accept any bid even though it may not be the lowest bid, to call for rebids, to negotiate with any bidder, and to make an award which in its sole and absolute judgment will best serve the Town's interest.

Bidders shall bid to specifications. However, deviation from specifications may be made but any exceptions must be noted. A bidder submitting a bid thereby certifies that the bid is made in good faith without fraud, collusion, or connection of any kind with any other bidder for the same work; and that the bidder is competing solely on his/her behalf without connection with or obligation to any undisclosed person or firm.

The minutes of the meeting at which the selection is made shall indicate the bid selected and the factors upon which the selection was made. All major bids submitted must specify time frame of bid quote amount and must guarantee bid amount for a minimum of thirty (30) days from bid opening date. This requirement must be included in all advertisements and written specifications issued by the Town of Henniker. Any increase in cost estimates following bid award or signing of a contract shall be absorbed by the bidder.

Advertised

Town Hall
18 Depot Hill Road
Henniker, NH 03242

Tel: (603) 428-3221
Fax: (603) 428-4366

Incorporated November 10, 1768
"Only Henniker on Earth"

TOWN OF HENNIKER, NEW HAMPSHIRE

STAFF REPORT

DATE: 3/8/2023

TITLE: Road-Side Mowing

INITIATED BY: Leo Aucoin, Highway Superintendent

PREPARED BY: Leo Aucoin, Highway Superintendent

PRESENTED BY: Leo Aucoin, Highway Superintendent

AGENDA DESCRIPTION: Superintendent of Highway would like the Board to award the bid for road-side mowing to the sole bidder Field Works of New Hampshire for the sum not to exceed $27,524.00 and allow the Highway Superintendent to sign the contract.

Legal Authority:

Financial Details:

Town Administrator Comment:

N/A

Suggested Action/Recommendation:

Suggested Motion:

No formal action is required.

FIELD WORKS

NEW HAMPSHIRE

Field Works of New Hampshire
PO Box 392
Bradford, NH 03221
(603) 345 2224

Roadside Mowing Bid
Prepared for the Town of Henniker, NH
2023

FIELD WORKS
NEW HAMPSHIRE

(603) 345-2224

Field Works of New Hampshire is a specialty rough-cut mowing company. We are family owned and operated with the ability and experience to handle your project, whether it is municipal, commercial, or residential. Together we can develop a maintenance program that is tailored to fit your project's needs. From one time annual mowing to properties and projects that require several mowings a year to maintain a desired look. Field Works of New Hampshire has the capability of taking on projects from small parcels to large acreage. We pride ourselves on our attention to details to help ensure we meet the goals of the project.

Field Works of New Hampshire is operating modern equipment, equipped with a variety of mowers, to help ensure dependability and that your project will be completed in a timely manner. We have equipment ranging from 100+ h.p. boom mowers, all the way down to equipment that is hand held. This help to make sure we bring the right equipment the first time.

Here are some projects that we have been involved with in the past:

- Roadside Mowing
- Landfills
- Wildlife Areas
- Recreational Trails
- Pastures/Fields
- Orchards
- Berry Patches
- Drainage Areas/ Ditch Lines
- Conservation Property

Field Works of New Hampshire like to thank you for your consideration on your next project.

FIELD WORKS
NEW HAMPSHIRE
(603) 345-2224

Bid Information

This proposal has been prepared for the Town of Henniker, NH for roadside mowing. The scope of work is as outlined by the Town of Henniker's request for proposal for right of way mowing along the class V Town roads. Mowing to include a minimum mow width of 8-10 feet of horizontal mowing from the road edges. Additional mowing maybe required in intersections and corners to obtain and maintain line of sight requirements. Field Works of New Hampshire will assist in the removal of debris deemed hazardous from the travels lanes of the roadway as a result of mowing operations. Pricing provided is for the 2023 season and is valid for one mowing.

Given the current fluctuations that surrounding the global markets today, Field Works of New Hampshire is submitting a **Not To Exceed Price of $27524.00**. If there is ample reduction in inflation at time of service, Field Works of New Hampshire is willing to work with the Town to reduce the price of services.

The price provided is an all-inclusive price, including but not limited to, machines with operators and any consumable items including fuel, blades and mobilization.

Any additional work outside the scope, or changes, to the scope of work outlined by the Town of Henniker, as described in this bid, will be discussed with the Town of Henniker Road Agent. At which time an agreed upon price will be established prior to work being started.

Field Works of New Hampshire is to provide "Mowing Ahead", or similar signage for this project, and maintain signage throughout the length of the project.

Field Works of New Hampshire will work in conjunction with the Town of Henniker's Road Agent to schedule the scope of work in in a timely manner that meets the scheduling needs of the Town and that of Field Works of New Hampshire with completion by September 28, 2023.

Town of Henniker is responsible for maintaining a smooth road surfaces during mowing operations, where possible. Dirt roads need to be free of potholes and excessive wash boarding. The purpose of this is to provide a higher quality job, in conjunction with, reducing excessive wear and damage to mowing equipment.

Acceptance of this bid becomes a contract between Field Works of New Hampshire and that of the Town of Henniker. Payment requirements are within 30 days from the date of invoice.

Thank you for your consideration.

Chris Aiken --owner
Field Works of New Hampshire
(603) 345 2224

Town of Henniker

Request for Proposal

Roadside Mowing

The Town of Henniker NH is inviting bid pricing for roadside mowing in Henniker. Bid proposals must be on company letterhead clearly stating price and specifications. **Bids must be sealed and marked "Mowing 2023" and be delivered to Town of Henniker Town Hall, 18 Depot Hill Road, Henniker NH 03242 by March 1, 2023, at 12:00 PM, when they will be opened publicly and read aloud. Contact person: Leo Aucoin, Highway Superintendent 603-428-7200.**

The Scope of work:

Roadside mowing of all class 5 town roads roughly 80 plus miles. Mowing to include a minimum of 8-10 feet of horizontal mowing from edge of pavement or gravel road. Additional mowing may be required in intersections and corners to obtain and maintain line of sight. The removal of debris deemed hazardous from travel lanes of roadways because of mowing operations.

Certified traffic control personnel or signage to be provided by the contractor, with the understanding that emergency vehicles and school buses will not be delayed.

The Town of Henniker requests that the work be performed by the successful bidders' own personnel. Any subcontractors must be pre-approved by the Road Agent.

Bid price proposals must be on company letterhead clearly stating the price per mile. The bid price shall include all increases for the duration of the contract with a completion date of September 28, 2023. No request for increase in contract price shall be entertained by the Town of Henniker.

All work to be done under the direction of the Highway Superintendent. The Town of Henniker reserves the right to modify road lengths. Additional work may be added by the Town.

The contractor will be required to provide an insurance certificate confirming the following insurance coverage; worker's compensation insurance as required by the State of NH; broad-form comprehensive general liability insurance in the amount no less than $ 1,000,000 combined single limit per occurrence; and motor vehicle insurance to include bodily injury, property damage, uninsured motorist, and employer's non-ownership coverage in the amount no less than $1,000,000 combined single limit per occurrence. The Town of Henniker shall be named as an additional insured on all policies.

The Board of Selectmen reserves the right to reject all bids and issue a new Request for Bids if less than three bids are received. The Board of Selectmen also reserve the right at their sole discretion to reject any and all bids, wholly or in part, to waive any informalities or any irregularities therein, to accept any bid even though it may not be the lowest bid, to call for rebids, to negotiate with any bidder, and to make an award which in its sole and absolute judgment will best serve the Town's interest.

Bidders shall bid to specifications. However, deviation from specifications may be made but any exceptions must be noted. A bidder submitting a bid thereby certifies that the bid is made in good faith without fraud, collusion, or connection of any kind with any other bidder for the same work; and that the bidder is competing solely on his/her behalf without connection with or obligation to any undisclosed person or firm.

The minutes of the meeting at which the selection is made shall indicate the bid selected and the factors upon which the selection was made. All major bids submitted must specify time frame of bid quote amount and must guarantee bid amount for a minimum of thirty (30) days from bid opening date. This requirement must be included in all advertisements and written specifications issued by the Town of Henniker. Any increase in cost estimates following bid award or signing of a contract shall be absorbed by the bidder.

TOWN OF HENNIKER, NEW HAMPSHIRE

Town Hall
18 Depot Hill Road
Henniker, NH 03242
Tel: (603) 428-3221

Request for Board of Selectman Agenda Item Consideration

Per Town of Henniker Selectmen's Polices Section II .1 Meeting, Board & Committee Policies, Board of Selectmen Meeting Procedures and Section II.3 Citizen Participation at Meetings.

- Persons may request an addition to the Board of Selectman Agenda until noon on the Thursday preceding the scheduled Selectman meeting. Depending upon the boards schedule, appearances will be scheduled within the next two regularly scheduled board meetings whenever possible.
- Purpose of this policy is for the notification in advance of the Board of Selectmen and the public to review supporting materials prior to the meeting.
- This form will provide the board with basic information of the topic or request.
- Persons who have been pre-scheduled to appear before the Board will normally speak during the New Business section of the agenda. Please see the policy for more information.

SUBMIT FORM TO THE TOWN ADMINISTRATOR [redacted] or mail to address at top of form.

Requested Meeting Date:	March 21, 2023
REQUESTOR CONTACT INFORMATION	
Name:	Carolyn J. Madden
Address:	[redacted]
Email:	[redacted]
Phone:	[redacted]
DESCRIPTION OF TOPIC OR REQUEST	
TITLE:	Request to waive rental fee for the Grange
PERSON PRESENTING TO THE SELECTBOARD AND CONTACT INFORMATION IF DIFFERENT:	Carolyn Madden, see above

DESCRIPTION OF QUESTION OR PROBLEM:

The Henniker Lions club would like to rent the Grange from 6-9 PM on 3/23/2023 and again on 4/27/2023. The rental fee for each evening is $50. As a local non-profit, supporting the community, we respectfully request that the rental fee be waived for these two meetings. The Lions club is a 501(c)(3) and donates all funds raised back to the Henniker community.

We also request that the rental fee be waived, should the Henniker Lions club apply to rent the Grange for monthly meetings scheduled for May- December 2023. Our meeting is usually the 3rd Thursday of the month in the evening.

PREVIOUS ACTIONS TAKEN BY REQUESTER OR OTHERS: (include attempts to resolve prior to coming to BoS)

EXPECTED OUTCOME, ACTION OR DECSION: (be specific**)**

We hope the BOS will waive the rental fee for the Henniker Lions Club use of the Grange on 3/23/2023 and 4/27/2023. We also hope the rental fee would be waived in the months of May- Dec 2023 should the Lions apply to use the Grange for meetings.

KNOWN FINANCIAL IMPACT:

OTHER SUPPORTING INFORMATION: (attach supporting documentation or add additional comments here)

FOR OFFICE USE ONLY

DATE RECEIVED: March 9, 2023	**DATE SCHEDULED:** March 21, 2023

TOWN ADMINISTRATOR COMMENT:

Recommends waiving all rental fees for Henniker Lions Club non-profit; must provide certificate of insurance and indemnify the town

DEPARTMENT HEAD AND COMMITTEE COMMENTS:

N/A

LEGAL AUTHORITY: Selectmen's Policy III.7 Rental of Community Ctr., Grange Hall & Bandstand/Comm. Park ...

FINANCIAL DETAILS: See policy III.7

SUGGESTED ACTION/MOTIONS/RECOMMENDATIONS:

Motion to waive all facility rental fees for the Henniker Lions Club for 2023

POST MEETING NEXT STEPS AND FOLLOW-UP

RESOLUTION:

TOWN OF HENNIKER, NEW HAMPSHIRE

STAFF REPORT

DATE: 3/21/2023
TITLE: Review Selectboard Policies
INITIATED BY: Diane Kendall, Town Administrator
PREPARED BY: Diane Kendall, Town Administrator
PRESENTED BY: Diane Kendall, Town Administrator
AGENDA DESCRIPTION:

Board Members to review current selectboard policies for effectiveness, obsolescence, or updating

Legal Authority: Selectboard Policies
Financial Details: N/A
Town Administrator Comments:

The following policies may be considered obsolete or inexpedient. The board may consider motions to rescind.

- **I.2 Certificate of Zoning Compliance – Permits:** policy is obsolete and replaced by Chapter 133 Zoning Regulations Article XXX Building Code
  Recommended Selectboard Action: *Motion and vote to rescind Selectmen's Policy I.2 Certificate Zoning Compliance*

- **I.4 Assessing Policy:** Policy is obsolete. There is no leeway for the Board of Selectmen. Regulated by NH RSA 72:6 – 72:7-b and -d
  Recommended Selectboard Action: *Motion and vote to rescind Selectmen's Policy I.4 Assessing Policy*

- **II.11 Temporary Policy on Public Meetings Attendance:** COVID-19 Emergency Order #12 expired July 11, 2021
  Recommended Selectboard Action: *Motion and vote to rescind Selectmen's Policy II.11 Temporary Policy on Public Meetings Attendance*

- **IV.7 Temporary Teleworking Policy:** COVID-19 Emergency Order #12 expired July 11, 2021
  Recommended Selectboard Action: *Motion and vote to rescind Selectmen's Policy IV.7 Temporary Teleworking Policy*

The following polices may considered for amendment: *(see Section I Policy Adoption)*

II.6 Requests for Legal Inquiries or Opinions from Town Counsel: Change LGC to NH Municipal Association NHMA and LGC Insurance Trust to Primex.

II.7 Budget Advisory Committee Operation Policy: The Board of Selectmen voted on (date) to repeal the functional time of the committee, thereby allowing the committee to meet year-round. Suggest the following language be struck from the policy ~~*"the Budget Advisory Committee shall only function*~~

~~*from the time of its receipt of the Board of Selectmen's annual proposed budget through the final completion of its written report of recommendations to the Board of Selectmen."*~~

III.1 Procurement Policy: consider input from department heads regarding non-major and major purchase thresholds.

III.3 Cash Receipts Policy: to be reviewed and edit suggestion from Finance Department and Town Administrator.

III.5 Investment Policy: to be reviewed and edit suggestion from Finance Department and Town Administrator.

III.7 Rental of Community Center, Grange Hall, and Bandstand/Community Park:

- Teen Center not active; Community Center Activities Committee discharged and replaced by Teen Center Committee (no members)
- Item 9 Add insurance liability limit requirements and name Town of Henniker as additional insured
- Fees

IV.5 EMT/Ambulance Standby's Policy: update fees

Personnel Policies and Procedures: Several edits may be required, no immediate action. Finance and Town Administrator to review and suggest amendments.

TOWN OF HENNIKER, NEW HAMPSHIRE

STAFF REPORT

DATE: 3/21/2023
TITLE: Post Election Committee Assignments
INITIATED BY: Diane Kendall, Town Administrator
PREPARED BY: Diane Kendall, Town Administrator
PRESENTED BY: Diane Kendall, Town Administrator
AGENDA DESCRIPTION:
This is the opportunity for Board Members to discuss and change standing committee assignments.

Committee	Current Assignment	Meeting Schedule
Azalea Park/Riverwalk Comm	D. Scott Osgood	
Broadband Committee	D. Scott Osgood	
Byway Advisory (Currier & Ives Scenic)	D. Scott Osgood	Quarterly
Capital Improvements Committee (CIP)	Tia Hooper/Bill Marko	
Central NH Regional Planning Commission	D. Scott Osgood	
Teen Center Activities Committee		1st Monday 7:00pm
CRSW/RRC Resource Recovery Coop* See attached	Bill Marko/Osgood (Alt)	
Concert Committee	Kris Blomback	
Conservation Commission	D. Scott Osgood	1st & 3rd Wednesday 7:00pm
Economic Development Committee	Kris Blomback	4th Wednesday 4:30pm
Energy Committee	Bill Marko	3rd Wednesday 6:30pm
Highway Safety Committee	Tia Hooper	As Needed
Historic District Commission		Quarterly
Municipal Records Committee	Tia Hooper	As Needed
OHRV Committee	Kris Blomback	As Needed (Min. 2x year)
Planning Board (Elected) *see attached	Bill Marko/Tia Hooper Alt	2nd and 4th Wednesday 7:00pm
Police Facility Assessment Committee	Kris Blomback	
Road Management Committee	Bill Marko/Tia Hooper	2nd and 4th Tuesday 6:30pm
Safety and Loss Prevention Committee		Quarterly
Solid Waste and Recycling Committee		
Spirit of Henniker Team – SHOT	D.Scott Osgood	
Youth Athletic Committee		3rd Monday 7:00pm

Legal Authority: Chapter 673 Local Land Use Boards
Financial Details: N/A
Town Administrator Comments: N/A

DRAFT

Disclaimer – The following are Draft Minutes, which could include errors and are subject to change upon approval of the Select Board.

Town of Henniker
Board of Selectmen Meeting
Tuesday March 7th, 2023, 5:45PM
Henniker Community Center

Members Present: Chairman Kris Blomback, Vice Chair Peter Flynn, Selectwoman Tia Hooper, Selectman Bill Marko, Selectman Scott Osgood

Member's Excused:

Town Administrator: Diane Kendall

Recording Secretary: Hank Bernstein

Guests: See attached Sign-In Sheet

NON-PUBLIC #1:

Item #1 – RSA 91-A:3 (b) Chief French - Police Department Personnel

Motion to enter Nonpublic Session made by Selectman Osgood, seconded by Selectman Flynn. Specific Statutory Reason cited as foundation for the nonpublic session: RSA 91-A:3, II(b) The hiring of any person as a public employee. Roll call vote to enter nonpublic session**: Chairman Blomback, yes; Peter Flynn, yes; Scott Osgood, yes; Tia Hooper, yes; Bill Marko, yes**. Public meeting recording stopped. Entered nonpublic session at 5:45PM.

Motion to leave Nonpublic Session made by Selectwoman Hooper, seconded by Selectman Marko. The motion passed unanimously.

Public session reconvened at 5:51PM.

CALL TO ORDER/PLEDGE OF ALLEGIANCE

Chairman Kris Blomback opened the meeting with recitation of the Pledge of Allegiance and called the meeting to order at 6:15pm.

CONSENT AGENDA

Item #2 – ***Selectwoman Hooper motioned to approve the Consent Agenda March 7th, 2023, with the item for Azalea Park pulled for further detail, seconded by Selectman Flynn. The motion passed, unanimously.***

PUBLIC COMMENT #1

No public comment.

ANNOUNCEMENTS

Item #3 – Police Chief: New Hire, Retirements, and Condolence

Police Chief Matt French announced the hiring of two officers, Franky Ramsdell and Cameron Gebo. He took this time to inform the public that they have both passed background checks, as well as physical and psychological evaluations. Starting pay is labor grade 19 entry level, and they are eligible for $2,500 sign on

bonuses because they are noncertified. **Selectwoman Hooper moved to hire both candidates at grade 19 entry level with a $2,500 sign on bonus, seconded by Selectman Marko. The motion passed unanimously.**

Chief French also announced that Gail Abramowicz is retiring effective June 1st. Ms. Abramowicz has worked for the town for 25 years and at the Police Department for 20 years. The ad for her replacement has been posted. Officer Ami Bossi is retiring effective August 1st. She has been with the department since 1997. She plans to return on a part-time basis. **Selectwoman Hooper moved to approve the advertisement for the positions that will be vacated, seconded by Selectman Marko. Motion carried unanimously.**

Chief French sadly announced the passing of Terri Grieder. Ms. Grieder worked for the Police Department for ten years and has been battling cancer for four. Our thoughts and prayers go out to her family. Chairman Blomback, on behalf of the Board, expressed condolences to the Police Department and Ms. Grieder's family.

NEW BUSINESS

Item #4 – Leo Aucoin – Highway Department 2023 Paving Contract

Highway Superintendent Leo Aucoin requested waiver of the procurement policy and accept 2023 paving quote from Busby Construction Co., Inc. Selectman Marko shared that this item had been discussed at the Road Management Committee Meeting. The Road Management Committee voted unanimously in support of the Busby quote. **Selectwoman Hooper moved to accept and approve the Busby proposal for the 2023 Paving Projects as submitted, Selectman Osgood seconded. The motion carried unanimously. Selectwoman Hooper moved to authorize the Highway Superintendent to sign the 2023 Busby proposal, seconded by Selectman Marko. Motion carried unanimously.**

Selectman Flynn thanked Superintendent Aucoin for his hard work over the past few snowstorms. Superintendent Aucoin thank the Selectboard, and the public for their continued support.

Item #5 – Selectmen Schedule for Town/School Election Day – March 14, 2023

The Selectboard determined the schedule for the election on March 14th. Selectwoman Hooper recused because she is an election candidate.

Chairman Blomback: 2PM – 7PM
Selectman Flynn: 7AM – NOON, 5PM – 7PM
Selectman Osgood: 7AM – 7PM
Selectman Marko: NOON – 7PM

TABLED BUSINESS

- **Crosswalk on Main St**
- **Henniker Handmade and Homegrown request to expand event to parking lot**

Monica Rico spoke briefly on this item. She might be seeking alternative options and would like this item to remain tabled until she has more information.

Past Meeting Minutes

Item #6 – Acceptance of Board of Selectmen meeting minutes February 21, 2023

Selectman Marko moved to approve these minutes; Selectwoman Hooper seconded. Motion carried unanimously.

Item #7 – Acceptance of Board of Selectmen non-public minutes 8:13 p.m. February 21, 2023

Selectman Marko moved to approve these minutes; Selectwoman Hooper seconded. Motion carried unanimously.

Item #8 – Acceptance of Board of Selectmen non-public minutes 8:20 p.m. February 21, 2023

Selectman Flynn moved to approve these minutes; Selectman Marko seconded. Motion carried unanimously.

Communications

Item #9 – Town Administrator Report:

Town Administrator read from the report included in the agenda package.

Item #10 - Selectmen Reports:

- Selectman Marko reported on the Road Management Committee Meeting discussed earlier and an Energy Committee meeting. The Energy Committee is looking into the energy efficiency of Town buildings.
- Selectman Flynn had nothing to report.
- Selectwoman Hooper thanked the Chamber of Commerce and N.E.C. for hosting the Meet the Candidates event.
- Chairman Blomback had nothing to report.
- Selectman Osgood reported on the Broadband Committee and the Conservation Commission.

PUBLIC COMMENT #2

No public comment.

Selectwoman Hooper moved to adjourn at 6:54PM, seconded by Selectman Marko. Motion carried unanimously.

Respectfully submitted,

Hank Bernstein
Minute Taker

Minutes Approved:

Meeting: BOARD OF SELECTMEN

Date: March 7, 2023

PLEASE PRINT

Name	Address
H French	Henniker PD
Dawn Allen	2760 Weare Rd
Joan O Connor	7 Echo Lane
Lori Markle	Henniker
Monica Rico	Henniker

DRAFT

Disclaimer – The following are Draft Minutes, which could include errors and are subject to change upon approval of the Select Board.

Town of Henniker
Board of Selectmen NON-PUBLIC SESSION
Tuesday March 7th, 2023, 5:45 PM
Henniker Community Center

Members Present: Chairman Kris Blomback, Vice Chair Peter Flynn, Selectwoman Tia Hooper, Selectman Bill Marko, Selectman Scott Osgood
Member's Excused:
Town Administrator: Diane Kendall
Recording Secretary: Hank Bernstein
Guests: Chief Matthew French

NON-PUBLIC:

Motion to enter Nonpublic Session made by Selectman Osgood, seconded by Selectman Flynn. Specific Statutory Reason cited as foundation for the nonpublic session: RSA 91-A:3, II(b) The hiring of any person as a public employee. Roll call vote to enter nonpublic session**: Chairman Blomback, yes; Peter Flynn, yes; Scott Osgood, yes; Tia Hooper, yes; Bill Marko, yes**. Public meeting recording stopped. Entered nonpublic session at 5:45PM.

Police Chief Matt French informed the Board of a candidate, Cameron Gebo of Newport, for the open full time police officer position. The candidate has already passed the physical, psychological, and background check. Mr. Gebo would be hired at an hourly rate of $20.27 (Grade 19 entry level) and would qualify for the $2,500 sign on bonus. **Selectwoman Hooper moved to hire Cameron Gebo at Grade 19 entry level $20.27 an hour, seconded by Selectman Marko. The motion carried unanimously.**

Motion to leave Nonpublic Session made by Selectwoman Hooper, seconded by Selectman Marko. The motion passed unanimously.
Public session reconvened at 5:51PM.

Respectfully submitted,

Hank Bernstein
Minute Taker

Minutes Approved:

"The only Henniker on Earth."

Office of the Town Administrator

Diane Kendall

To: Board of Selectmen
From: Diane Kendall, Town Administrator
Date: March 21, 2023
Ref: Town Administrator's Report

This report encompasses updates, activities, projects, and meetings March 4 to March 17.

Congratulations to our newly elected Selectboard members Neal Martin and Jeff Morse. I look forward to working with you. Thank you to Mr. Flynn and Ms. Hooper for your many years of service to the community. It has been a pleasure to work with you.

Congratulations and thank you Highway, Buildings & Grounds, Fire/EMS and Police for extraordinary service during and after the epic storm this week. Thank you to the entire staff for going the extra mile to provide service and conduct an election while coping with power outages and difficult commutes. Kudos!

Administration:

- Preparation for Town Meeting
- Onboarding new Selectboard members
- Reviewing policies for 2023 amendments

Finance/IT

- Assisting with launch of Invoice Cloud property tax online payment processing
- Town will migrate to a .gov domain name in by the end of the month

Wastewater:

- Assisting with recruitment efforts 8+ candidates have applied for the Operator position (Grade I Operator in Training)
- Facilitating communication for upgrade

Highway:

- Assisted with communication for snow removal, and policy enforcement and questions about snow removal from residents on Class VI roads

Transfer Station:

- Superintendent Boisvert installed chains across the access to the hopper. This is an enhanced safety measure to prevent falls.
- Next meeting of the Safety and Loss Prevention meeting will be held at the Transfer Station for site review.
- The Solid Waste and Recycling Committee is recruiting members. Please contact me for more information.

State and NHMA:

- NHMA NewsLink Your Source for Local Government Information
- 2023 NHMA Legislative Bulletin 10 | New Hampshire Municipal Association (nhmunicipal.org)
- state_aid_to_municipalities.pdf (nhmunicipal.org)
- NHMA Important Dates Calendar
- OSI Planning and Zoning Training | Planning Division | NH Office of Strategic Initiatives
- Town by Town Public Tax Rates
- 2023 Local Officials Workshop
- Academy for Good Governance
- Events and Training

February 2023 Department Reports

Assessing Department

Building Department

Fire Department

Highway Department

Human Services Department

Town Clerk/Tax Collector's Office

Transfer Station

Wastewater Department

MEMORANDUM

Helga Winn, Assessing Technician
18 Depot Hill Road
Henniker, NH 03242
Phone 603-428-3221 x 101 ≈≈ Fax 603-428-4366
[redacted]

TO: Diane Kendall, Town Administrator
DATE: March 10, 2023
RE: Monthly Report

Assessing Report for February 2023

- Monthly maintenance of new deeds and address changes.
- Permit tracking in Avitar as needed.
- Loggers/Foresters with open Intents To Cut notified of Road Postings.
- Loggers/Foresters with open Intents To Cut notified of Report Of Cut due dates and deadline for extensions.
- Ongoing compilation and review of abatement, exemption, and credit applications.
- Ongoing notifications sent to taxpayers with approved/denied exemptions/credits/abatements.
- Taxpayers with elderly or permanently disabled exemptions who had last review in 2018 notified of 5-year review.
- DRA file review of 2022 revaluation completed.
- DRA field review of 2022 revaluation completed.
- Three Reports To Excavate received.
- Two Intents To Cut approved.
- Religious, Educational, and Charitable Organizations notified of annual filing due pursuant to RSA 72:23-c (BTLA A-9 & BTLA A-12).

Monthly Building Department Report
February 2023

TO: Diane Kendall, Town Administrator

FROM: Helga Winn, Land Use Coordinator

The following is a record of permits, certificates of occupancy, inspections and revenue collected for the month listed above.

Permits /COs/Inspections	Quantity	Revenue
Building Permits - Residential	3	$430.50
Building Permits - Commercial	0	$0.00
Electrical Permits	8	$400.00
Plumbing Permits	1	$100.00
Mechanical Permits	1	$50.00
Demolition Permits	0	$0.00
Driveway Permits	0	$0.00
Trench Permits	0	$0.00
Sign Permits	0	$0.00
Assembly Permits	0	$0.00
Raffle Permits	1	$0.00
Tent Permits	0	$0.00
Hawk & Peddler	0	$0.00
Certificates of Occupancy	0	$0.00
Inspections Performed	27	
Total		**$980.50**

Town building rental/use:

Town Buildings	Rented/Reserved	Revenue
Community Center (upstairs)	0	$0.00
Grange (Does not include Caseworker & CAP)	4 Food Pantry open 2x week	N/C for AA Food Pantry- permanent
Bandstand/Community Park	0	

Respectfully submitted,

Helga Winn

Town of Henniker, NH

Permits Issued February 2023

Date In	Owner	Address	Map/Lot	Type	Description	Contractor	Fees	Issued
2/7/2023	Marsland, Phillip	271 Tanglewood	5B-110-A7	Building	Roof mounted solar array	Venture Home Solar	$140.00	2/13/2023
2/16/2023	Lapointe, John	12 Dodge Hill Rd	6-306-H	Building	Remove interior load bearing wall dividing kitchen and living room	Dustin Taylor	$50.00	2/17/2023
2/22/2023	Grossman, Arnon	294 Foster Hill Rd	6-278-X1	Building	Solar Array	ReVision Energy	$240.50	2/22/2023
2/6/2023	Henniker Congregational Church	43 Maple Street	5D-204	Electrical	200A to 320amp single phase. Kitchen/ bath renovations	Marc Aucoin	$100.00	2/7/2023
2/7/2023	Marsland, Phillip	271 Tanglewood	5B-110-A7	Electrical	Roof mounted solar array	Venture Home Solar	$50.00	2/13/2023
2/16/2023	Lapointe, John	12 Dodge Hill Rd	6-306-H	Electrical	Couple outlets removed, switches moved	Alex Chase	$50.00	2/17/2023
2/21/2023	Marian Towle Revocable Trust	89 Goss Drive	5D-148-B	Electrical	Wire addition	Stephen B Bradley Jr.	$50.00	2/21/2023
2/21/2023	Gorgol, Joseph	127 Shore Drive	3-110-C12	Electrical	Wire New Geothermal Furnace	Ryan L Simard	$50.00	2/21/2023
2/22/2023	Grossman, Arnon	294 Foster Hill Rd	6-278-X1	Electrical	Solar Array	ReVision Energy	$50.00	2/22/2023
2/23/2023	Holmes, David	152 Depot Hill Rd	8-431	Electrical	100A -> 200A	Moonlight Electric	$50.00	2/24/2023
2/9/2023	Gorgol, Joseph	127 Shore Drive	3-110-C12	Mechanical	Waterfurnace Geothermal Ground Source Heat Pump	Bill Wenzel Heating & A/C	$50.00	2/9/2023
2/15/2023	Henniker Congregational Church	43 Maple Street	5D-204	Plumbing	Installations, upgrades, and heating system	Charlie Kenney	$100.00	2/15/2023
2/27/2023	Gage, Rusty	51 Hall Ave		Raffle	Toy Car Raffle	White Birch	$0.00	2/27/2023

The month of February 2023 consisted of 19 calls for Henniker Fire Department. The calls ranged from the following :

- 4 Fire Alarm Activations
- 3 EMS Assists
- 3 Motor Vehicle Accidents
- 1 Water problem
- 3 Building Fires
- 1 Appliance Fire
- 3 Co calls
- 1 Smoke in Building

This month training consisted of mayday training.

Thank you,
Chief Morse

2/31/2023

To Town Administrator Diane Kendall and Henniker Board of Selectmen,

Henniker Highway had a very quiet start to the month. The first ten days consisted of repairs and maintenance of equipment. The middle of the month we posted all roads to weight restrictions and also started adding gravel to some of the rough and muddy areas on some of the back dirt roads. Twenty-seven loads of gravel were spread out. The winter weather this year was rough on the dirt roads, freezing and thawing out several times brought out the ugly. On the twenty-second winter returned with two weeks of bad weather, as always Highway worked through it and we are currently enjoying a lull in the action.

This is a snapshot of the new Bottomless Culvert which will be installed under Liberty Hill Road this spring by Hall Construction.

Leo Aucoin
Superintendent
Henniker Highway

Henniker Human Service Department
Monthly Report - February 2023

Total encounters 26

- Categories of requests for assistance
  - 2 Housing issues
  - 3 Rent request
  - 3 Utilities and fuel still following up on CAP assistance
  - 1 NH Department of Health and Human Services
    - Sign up / redetermination.
  - 0 SSA assistance with client
  - 2 Assistance with outside agency applications
  - 3 Budgeting sessions
  - 3 Homelessness 2 with multiple children
  - 0 Domestic violence
  - 10 household information and referral
  - 6 Vouchers approved.

Concerns
2 – ongoing Elderly homeowners having financial difficulty. I have been working trying to find outside resources to assist them.

Submitted Carol Conforti-Adams

MEMORANDUM

To: Diane Kendall, Town Administrator

From: Kimberly I. Johnson – Town Clerk/Tax Collector

Date: March 11, 2023

Subject: Town Clerk/Tax Collector Report as of 02/28/2023

PROPERTY TAXES

Total Committed 2022	$15,460,954.00
Uncollected	$ 381,523.69

TAX LIENS

	2021 LIENS	2020 LIENS	2019/PRIOR LIENS
Liened Amount	$208,703.03	$190,769.84	
Uncollected	$92,492.94	$65,348.29	$153,507.99

WATER & SEWER -

	2022	2023
Water Billed	$521,946.26	$288,706.05
Sewer Billed	$604,693.36	
Uncollected	$ 57,449.98	$149,558.04

TOWN CLERK REVENUE

	2023	2022
MV	$147,775.20	$133,873.82
non-MV	$768.13	$ 1,372.16

Marc Boisvert
Transfer Station Superintendent
1393 Weare Rd.
Henniker. NH.
(603)428-7604
http://www.henniker.org/
[redacted]

Monthly Report-

2/1. Trash/recycling run. Crushed cans, worked on rack body for work truck. Removed starter from yard truck, discovered inner components broken. Installed new hardware on gate to can bin.

2/2. I brought the starter from the yard truck to Manchester to get rebuilt. I also spent time at the community center shutting down the H-vac system. Matt and Zach removed boxes from upstairs at town hall, Zach did the dump run. Matt removed wreaths from Town Hall and attempted to repair flagpoles to keep them from getting all wrapped up, and other than that we opened for business for that day

2/4. Marc went around to the town owned buildings and checked to make sure the heat was working, they were all set. I did put the heat on medium at the teen center. I received a message that the pipes may have frozen at town hall Sure enough they were. I found that the heat tape I had put on a few years back had been removed on one pipe and the other was unplugged I placed a small electric heater in the crawl space

2/5. Normal operations. Matt worked on recycling spreadsheet.

2/7. Marc met up with Marc Aucoin at transfer station to remove light fixture in hopper control room to get access to the sheetrock so it can be removed, still have odor coming from that area. Marc and I went to the community center to replace one emergency light over the fire panel, Marc suggested replacing the battery rather than the whole unit, in this case the battery would be more cost effective, there is a battery on order. Marc and I also went down to the teen center where an emergency light was not working this was located on the south wall left of the door entrance in this case the whole fixture was replaced. Cleaned storage trailers and reorganized storage areas to make more room for bales. Drained water from heating oil tanks and refilled with used oil.

2/8. Trash/recycling run. Loaded up electronic scrap, computer components, electrical cords and Christmas lights and brought them to Aurum recycling. Rearranged recycling building to make space and improve efficiency.

2/9. The trash run was completed Matt and Zach cleaned around the shop and made sure containers were ready to be switched out for the weekend

2/12. Normal operations, open for business

2/14 Marc went to the community center and put all the extra chairs back against the wall, then turned the heaters off, Marc Aucoin showed up and put a new battery in the emergency exit lights

2/15. Dump/recycling run. Crushed cans. Zach greased equipment including trash trailer doors. Matt replaced hydraulic drive motor on Toro mower.

2/16. Trash run. Marc picked up repaired starter for yard truck. Matt replaced the chimney on the Incino-let. Zach and Starr cleaned building and yard. Opened for business in the afternoon.

2/18. Zach went out an did the trash run Marc got the transfer station ready to open

2/19. Zach out sick. Matt and Starr opened for business.

2/21. Marc met up with Fitzpatrick plumbing and H-Vac to replace the thermostat at the grange, we also went to the community center to check up on the ongoing concerns why the H-vac units continuously

come on when nobody is around. The town admin met with us Fitzpatrick may have found the problem he had the ok to repair so the units will run more efficient. Star picked up supplies for the transfer station also did some scrapping to bring in more revenue for the town. Matt put the starter back into the yard truck after the starter failed, it was sent out for a rebuild 2/2/23
2/22. Snowed overnight. Trash and recycling run. Checked downtown areas and treated icy/snowy spots. Arranged chairs at community center for energy committee meeting. Serviced Kubota skidsteer. Put plow on pick-up and loaded with salt and snowblowers for upcoming storm.
2/23. Snowstorm. Zach and Starr shoveled and treated around town. Matt cleaned transfer station yard. Moved chairs tables and podium off to the sides at community center for a private kids party on Sat. Opened for business at Noon.
2/24. Snowstorm. Matt and Zach came in and shoveled/treated downtown areas.
2/25. Marc off. Zach and Starr cleaned and salted Transfer station yard and opened for business. Matt came in at noon and Starr went home.
2/26. Snow. Cleaned and salted yard to open. Cleaned Main St. steps, library and grange.
2/27. Snow. Matt, Zach and Starr came in and cleaned/treated downtown areas.
2/28. More snow. Shoveled downtown areas. Opened at noon. Had to keep up with plowing as day went on. Loaded up cardboard and paper bales to be trucked away. Marc passed in paper work for himself and Star to get certificates, also called Naughton to inform them that our yard truck was back in service, we will call them when we have trailer switched and ready to empty out

Henniker Wastewater Treatment Plant

February Monthly Report

- During the month Chazz and Richard did snow removal.
- Daily and monthly lab work throughout the month.
- Chazz helped with the monthly DMRs.
- We finally received the blower motor for the aeration blower number 2. Chazz rebuilt it and taught Richard how to rebuild it.
- Belt press was run multiple times throughout the month.
- Had a meeting with DES, Town Administrator Diane Kendall, and Selectman Blomback to discuss the plants' short staffing and low morale, which is still a major problem and concern.
- Ramsdell Road pump station was cleaned as well as West Henniker pump station.
- SOPs continued to be worked on in spare time.
- Chazz continued to study for test in June, Richard has been helping.
- Had to get a new battery for the work truck, Chazz installed it.
- Richard cleaned downstairs in scum pump area.

Richard Slager
Wastewater Superintendent