



**Request for Proposals
Survey Services
Town of Salem, NH
April 2017
RFQ (2017-009)**

**Purchasing Agent
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Leon I. Goodwin III, Town Manager

Prepared for and in coordination with the
Salem NH Municipal Services Department
Frank Giordano, Director of Utilities
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REQUEST FOR QUALIFICATIONS (RFQ)
MAINTENANCE AND REPAIR OF SEWER LIFT STATIONS
APRIL 2017

The Town of Salem, New Hampshire is requesting qualifications from a company (CONTRACTOR) for professional services to provide maintenance and repair of sewer lift stations. There are currently ten sewer lift stations located throughout the town.

The CONTRACTOR must be a qualified company, with certified technicians and licensed if applicable with the ability to provide sufficient documentation and references as to their abilities to execute the desired work including installation, service, maintenance, repair, and retrofitting in as indicated.

Contract duration shall be thirty six (36) months. The Town may, at its sole option and discretion, extend the contract with the CONTRACTOR on an annual basis for up to two (2) additional years. The Town reserves the right to pursue services with other companies at any time, should it determine it to be in its best interest.

Any change to the provisions or specifications of this RFQ shall be made by written addendum issued no later than five (5) working days prior to the RFQ acceptance date. Prospective vendors shall have complete responsibility for being aware of any and all addenda. One (1) original and three (3) copies must be clearly labeled as **'RFQ – MAINTENANCE AND REPAIR OF SEWER LIFT STATIONS'** and must be received at the office of the Purchasing Agent, at the address below, no later than **11:00 AM on Friday April 21, 2017**. Late proposals will not be considered. A pre-proposal meeting will not be conducted. Qualifications received after the aforementioned date and time shall not be considered.

Copies of the RFQ may be obtained from the Town's purchasing website
(<http://www.townofsalemnh.org/purchasing/pages/current-bids-proposals-and-awards>)

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Consultants requiring additional information or clarification relative to the contents of the RFQ may direct inquiries to Frank Giordano, Deputy Director – Utilities Division at 603-890-2179 or fgiordano@ci.salem.nh.us.

Following review of all proposals by a review committee, a recommendation will be made to the Town Manager, and that official will award the contract to the best responsible CONTRACTOR. The Town Manager's judgment shall be final and the right is reserved by the Town, through its Town Manager, to reject any or all proposals as he may determine and to waive defects in form or minor irregularities where the best interest of the Town would be served.

Section 1: Background

The Town of Salem NH, through the Municipal Services Department, is soliciting proposals for qualifications to provide scheduled preventative mechanical maintenance and emergency repairs to the Town's wastewater pump stations and related facilities. The CONTRACTOR must be able to respond to emergency repairs within 24 hours and within 48 hours for non-emergency repairs. The work includes, but is not limited to, all labor and equipment to repair, replace, retrofit, adjust, and maintain pumps, motors, and related mechanical systems; inspection; testing; and emergency response. Primary work will be at the ten (10) wastewater pump stations.

Section 2: Scope of Services

The intent of this Contract is to rehabilitate, restore, and/or maintain production to the Town of Salem NH municipal wastewater pump stations and related facilities utilizing materials and methods as herein specified.

The work includes the furnishing of all materials, labor, equipment, fuel, tools, transportation, and services for the successful redevelopment, rehabilitation, and repair of a wastewater pump station; and includes scheduled rehabilitation and maintenance as well as emergency repair services.

The CONTRACTOR is free to propose modifications to the scope that may result in cost savings and/or a better product. Any modifications shall be clearly spelled out in the Proposal and approved by the Town.

The general work and requirements for this Contract include, but not limited to, the following:

A. Pump Station Maintenance and Repair

Comprehensive pump station, pump, and motor repair and maintenance at the Town's ten (10) wastewater pump stations and related facilities as needed.

Work may include the following but not limited to:

1. Mobilize equipment and materials and prepare job site
2. Remove existing pump, motor, and related equipment, and transport and store at the Contractor's Yard and/or Town Yard
3. Disassemble the surface plumbing
4. Pump repair and reassembly, or full replacement, as needed
5. Motor repair and reassembly, or full replacement, as needed
6. Reinstall the existing pump assembly and reconnect motor
7. Pipe, valve, control repair and reassembly, or full replacement, as needed
8. Furnish logs, daily records, and other items requested by the Town

B. Equipment Types

Troubleshoot and work on multiple types of pumps and motors, to include, but not limited to:

1. Pumps: Fairbanks Morse, Gormann Rupp, Smith and Loveless, Yeoman
2. Motors: Fairbanks Morse, Gormann Rupp, Smith and Loveless, Yeoman
Marathon Electric

REFERENCE: Appendix A for specifications and details

C. Facility Types

Primary work for this contract is at the Town's ten (10) wastewater pump stations, with possible secondary work at other facilities with similar equipment as needed.

D. Response Time

Able to respond to emergency repairs within 24 hours and within 48 hours for non-emergency repairs.

E. Contractor Service Responsibilities

The CONTRACTOR shall provide all labor, tools, equipment and all incidentals required and/or implied for the complete and satisfactory performance of the maintenance, and repair of Town pumps.

F. Personnel Requirement

Personnel used for the performance of this work shall be properly trained and qualified to perform pump or motor work on the variety and complexity of the systems in the Town facilities. The Town reserves the right to refuse to accept and authorize payment for services from any personnel deemed by the Town to be unqualified, disorderly, or otherwise unable to perform assigned work. The CONTRACTOR shall provide and keep up to date a list of all personnel performing work under this contract with classifications denoted, as well as written evidence of the personnel's qualifications for those classifications.

G. Project Cost Estimates

Estimates of individual project work requests shall be provided in writing to the Town via email, fax, or mail with adequate plans and specifications or written directions. The estimate should include all labor, equipment, parts and/or materials required to perform the work specified under this contract. This, or any work under this contract, shall only be performed with the Town's consent. Upon authorization, actual work shall not exceed the CONTRACTOR'S estimate without the Town's approval.

H. Quality of Work

1. All work shall be quality work, performed according to the standards of the industry and to the complete satisfaction of the Town. All parts used for repair and in reassembly of equipment (example: pumps) shall be the

manufacturer's authorized parts or specifically approved by the Town prior to installation.

2. Unsatisfactory work shall be immediately corrected by the CONTRACTOR at no additional cost to the Town.
3. All work shall be performed in accordance with the plans, drawings or instructions provided by the Town for each project or work assignment. Any discrepancies or previously unknown field conditions shall be brought to the attention of the Town and resolved before continuing the work.
4. All work shall be performed in accordance to Town code.

I. Provide All Work Tools & Equipment

The CONTRACTOR shall provide each crew and personnel ALL of the hand tools, power tools, truck, and equipment necessary for the performance of the work.

J. Removing and Returning Completed Repaired Equipment

Contractor shall provide service to load and pick-up pumps, motors, and related equipment for repairs within three (3) business days of being contacted by the City and return and unload repaired pumps and motors to the Town within three (3) business days after completion of repairs. Pickups and returns may be at the Town Water Treatment Plant Yard, well, or pump station location as identified by the Town.

Section 3: Submission Format & Content of Proposal

To enable the Town to perform a fair comparative analysis and evaluation of proposals, CONTRACTORS shall structure and compose their proposals in the format outlined below. *Promotional materials shall not be included in the body of the proposal, but if deemed necessary and appropriate by the CONTRACTOR, shall be included as an Appendix (references to appendix information **will not** be considered satisfactory response to the items identified below).*

The proposal shall be brief, precise, and not include unnecessary promotional material. The proposal shall include the following items and organized as follows:

A. Cover Letter

Describe your company's interest and commitment in providing repair and maintenance services for the Town of Salem NH. An officer of the company who is authorized to contractually bind the firm and to negotiate a contract with the Town shall sign the letter. Provide name, title, address, email, and telephone number of this officer.

- B. Knowledge and Experience**
Includes a summary of experience that pertains to the disciplines described in the Scope of Services (**Section 2**). Provide summaries of the location and scope of similar recent projects that show experience in any of the tasks.
- C. Work Plan and Approach**
Discuss your company's understanding of the Scope of Services (**Section 2**) to be performed. Describe the method for management of overall project costs, schedule, quality assurance/quality control, and other issues critical to this project.
- D. Key Personnel Background**
Name, position, summary of qualifications, resumes, training, certifications, and related experience and responsibilities of key personnel assigned to this work.

Include appropriate contact addresses, telephone, radio, pager, cell phone, fax, email, etc.
- E. Facilities Description**
Provide a detailed summary describing your repair shop and storage facilities, facility location, facility size, a list of activities that will take place at the facilities, etc.
- F. References**
Provide at least three (3) references including: Project Name/Description, Company/Agency Name, Key Contact Name, Address, Email, and Telephone Number). **Note:** References from public agencies preferred.
- G. Statement of Subcontractors**
Provide a list of Subcontractors, including Company Name and Address, you may use.
- H. Proposal Rate Sheet**
 1. Provide a comprehensive **Rate Sheet** with Unit Rates which shall include: labor, equipment, and any related costs to complete work in strict compliance with the specifications, terms, and conditions set forth in the Scope of Services (**Section 2**). Attach a Rate Sheet.
 2. Include both **Straight Time** and **Overtime** rates per hour.
 3. **Emergency Rates** and **Minimums** if applicable
 4. Include a **Materials Markup Percentage** (Actual Cost Plus).
- I. Financial and Insurance Resources:**

The CONTRACTOR shall submit information that would clearly document the financial ability to execute this contract and/or indicate that they have the ability to obtain such resources. Proper insurance for employees, sub consultants, and subcontractors shall be required of the selected CONTRACTOR, as will the ability to provide Professional Liability Insurance to the Town in the amount of two times the CONSULTANT'S fee or \$250,000 (whichever is greater).

J. Conflict of Interest:

The CONTRACTOR shall describe any and all current or potential conflicts of interest related to performance on this project. Relationships with property owners, developers, and other consultants, whether in recent past (past three years), present, or potentially in the future by interest in a pending project, which may serve to provide financial benefit to the CONTRACTOR, must be identified. If there is potential or present conflict of interest, the CONTRACTOR must identify methods they will employ to address said conflicts.

Section 4: Evaluation Process

Proposals will be evaluated based on the following criteria:

A. Qualifications and Experience 50%

1. Appropriateness and qualifications of the personnel, experience, training, and certifications.
2. Equipment and facilities for the specified services.
3. Ability to perform services described in the required manner and time frame.

B. Costs 30%

Based on the costs indicated in the submitted Proposal Rate Sheet described in Section 3-H.

C. References 20%

Comments from references regarding proposer's responsiveness to customer requirements, compliance with the contract terms, conditions, and work quality.

Section 5: Selection Process

The RFQ process will establish a ranking based on how each proposal meets the qualifications of the Scope of Services and the requirements of the RFQ. The proposal shall conform to the Proposal Requirements (**Section 3**). It is important that ALL listed items be included in the proposal. Proposals, which do not comply with all the requirements per or the proposal deadline, will not be

considered. The Town reserves the right to reject any or all proposals without qualifications, and to negotiate specific requirements and costs using the selected proposal as a basis.

Section 6: Responsibilities of the CONTRACTOR

- A. Prior to final selection, the CONTRACTOR may be asked to attend an interview, or to submit any additional information, which the Town may deem necessary to determine the CONTRACTOR'S qualifications.
- B. The successful CONTRACTOR will be considered to be the prime contractor for those services indicated in their proposal and will be required to assume total responsibility for the services offered in this proposal whether or not the firm is the firm delivering all of the services. The Town will consider the successful CONTRACTOR to be the sole point of contact with regard to all contractual matters, including performance or service unless otherwise stated.
- C. The CONTRACTOR shall provide the staff and resources as outlined in the RFQ and shall not assign to other staff or sub consultants without the written approval of the Town.
- D. The CONTRACTOR shall complete the scope of work and shall commit staff and resources to professionally and expeditiously complete such scope. The CONTRACTOR by virtue of their prior professional experience shall understand and endeavor to determine the possible obstacles that could interfere with the completion of the scope. The CONTRACTOR shall make such obstacles known to the Town and provide the Town with solutions to overcome such obstacles.
- E. No costs or expenses incurred by the CONTRACTOR in responding to this RFQ will be borne by the Town.
- F. Non-Discrimination in Employment and Affirmative Action. The CONTRACTOR shall not discriminate against any qualified employee or applicant for employment because of race, color, national origin, ancestry, age, sex, religion, or physical/mental handicap. The CONTRACTOR agrees to comply with all applicable Federal and State statutes, rules, and regulations prohibiting discrimination in employment.
- G. Upon evaluation of the RFQ responses received, the Town will seek to enter into a contract with the selected CONTRACTOR. In the event that the CONTRACTOR fails, neglects or refuses to execute the contract within fourteen (14) days after notification that they have been selected by the Town, the Town may at its option terminate and cancel its action and commence contractual discussions with another Contractor.
- H. Incorporated by reference into the contract will be all of the information presented in or with this RFQ and the CONTRACTOR'S response thereto.

Section 7: Negotiation & Informalities

The Town reserves the right to negotiate with the selected CONTRACTOR regarding variation to the original RFQ, Contract, and Cost, if deemed to be in the best interest of the Town to do so. The Town reserves the right to waive any item, which in the opinion of the Town is an informality. The Town has the right to accept or reject any or all proposals in whole or in part if it is deemed to be in the Town's interest to do so.

Section 8: RFP Questions & Revisions

Any questions or inquiries regarding this RFQ must be submitted in writing. In order to be considered, they must be received by the Purchasing Agent no later than seven (7) calendar days prior to the RFQ submission deadline. Any revisions to the RFQ will be provided in the form of an Addendum, posted on the Town's purchasing website at: <http://www.townofsaalemnh.org/purchasing/pages/current-bids-proposals-and-awards>.

Section 9: General Conditions

A. Irregular Proposals:

Proposal will be considered irregular and may be rejected for any of the following reasons; however the Town retains the right to waive informalities and irregularities at its sole discretion:

1. If the proposal does not include all information listed in this RFQ.
2. If there are unauthorized additions, conditional or alternate proposals, or irregularities of any kind which may tend to make the proposal incomplete, indefinite or ambiguous as to its meaning.
3. If the proposer adds any provisions reserving the right to accept or reject an award.

B. Delivery of Proposals, Withdrawal, Opening, and Disqualification:

All proposals shall be filed prior to the time and at the place specified in in this RFQ. Proposals received after the time for opening of the proposals may be returned to the proposer, unopened, at the Town's discretion. Faxed or emailed proposals are not acceptable, although an electronic copy can be submitted in addition to the printed one. The Town is not responsible for delayed mail that misses the deadline.

A proposer will be permitted to withdraw his proposal unopened after it has been deposited if such request is received in writing prior to the time specified for opening the proposals. Either of the following reasons may be considered as being sufficient for the disqualification of a proposer and the rejection of his proposal:

1. Evidence of collusion among proposers.

2. Failure to supply complete information as requested by the proposal specifications.

The right is reserved to reject any or all proposals, to waive technicalities or to advertise for new proposals, if in its sole judgment it is in the best interest of the Town of Salem.

- C. **Award:** If a contract is to be awarded, the award will be made to the proposer that displays the best mix of qualifications, experience, and availability as it pertains to the type of services in Section 2 above, as soon as practical after the review process.
- D. **Cancellation:** The Town reserves the right to cancel the award of any contract at any time before the execution of such contract by all parties without any liability to the Town.
- E. **Laws:** The CONTRACTOR shall comply with all State and Local laws, ordinances, regulations and requirements applicable to work hereunder.
- F. **Contractor and Subcontractor Insurance:** The CONTRACTOR shall deliver at the time of execution of a contract; certificates of all insurance required hereunder and shall be reviewed prior to approval by the Town of Salem. The certificates of insurance shall state that the companies issuing insurance will endeavor to mail to the Town of Salem ten (10) days-notice of cancellation, alteration or material change of any listed policies. The CONTRACTOR shall keep in force the insurance required herein for the period of the Contract. At the request of the Town of Salem, the CONTRACTOR shall promptly make available a copy of any and all listed insurance policies. The requested insurance must be written by a Company licensed to do business in New Hampshire at the time the policy is issued.

The Town of Salem, NH shall be listed as an additional insured on a primary and non-contributory basis in General Liability, Auto Liability and Umbrella Liability policies required for the contract. The CONTRACTOR shall require each Subcontractor employed on the Project to maintain the coverage listed below unless the CONTRACTOR'S insurance covers activities of the Subcontractor on the Project.

No operations under this Contract shall commence until certificates of insurance attesting to the below listed requirements have been filed with and approved by the Town, required accounting information (W9, etc.) and the Contract approved by the Town.

- G. **Indemnification:** The Town and CONTRACTOR shall at all times indemnify and save harmless each other and their officers, and employees on account of any claims, damages, losses, litigation, expenses, counsel fees, and compensation arising out of any claims, damages, personal injuries and/or property losses sustained by any person

or entity, to the extent caused by the negligent acts, errors or omissions of the indemnifying party, its employees, or subcontractors in connection with work completed under the contract.

H. Insurance Coverage: The CONTRACTOR shall demonstrate that its staff is protected by Workers Compensation and Employers' Liability insurance in compliance with statutory limits and that the CONTRACTOR has coverage under professional liability, public liability and property damage insurance policies. Certificates for such policies will be provided to Client upon request. Minimum coverages shall be as follows:

1. Comprehensive General Liability (including Products Completed, Contractual Property, and Personal Injury coverage): \$1,000,000 per occurrence / \$2,000,000 aggregate
2. Automobile Liability (Property Damage): \$1,000,000 per occurrence
3. Professional Liability: \$1,000,000 per claim and in the aggregate

I. Accident Protections: It is a condition of this Contract, and shall be made a condition of each subcontract entered into pursuant to the Contract, that a Contractor and any Subcontractors shall not require any laborer or mechanic employed in the performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to health or safety, as determined by construction safety and health standards of the Occupational Safety and Health Administration, United States Department of Labor, which standards include, by reference, the established Federal Safety and Health regulations for Construction. These standards and regulations comprise Part 1910 and Part 1926 respectively of Title 29 of the Code of Federal Regulations and are set forth in the Federal Register. In the event any revisions in the Code of Federal Regulations are published, such revisions will be deemed to supersede the appropriate Part 1910 and Part 1926, and be effective as of the date set forth in the revised regulation.

J. Subcontracts: The CONTRACTOR shall be as fully responsible to the Town of Salem for the acts and omissions of Subcontractors and of persons employed by him, as he is responsible for the acts and omissions of persons directly employed by him.

K. Extras: Except as otherwise herein provided, no charge for any extra work or material will be allowed unless the Town has ordered the same, in writing.

L. Default and Termination of Contract: If the CONTRACTOR does not proceed in accordance with the Contract, then the Town of Salem will have full power and authority without violating the Contract to take the prosecution of the work out of the

hands of the CONTRACTOR. The Town of Salem may enter into an agreement for the completion of said Contract according to the terms and conditions thereof, or use such other methods as in his opinion will be required for the completion of said Contract in an acceptable manner.

All extra costs and charges incurred by the Town of Salem as a result of such delay, neglect or default, together with the cost of completing the work under the Contract will be deducted from any monies due or which may become due to said CONTRACTOR. If such expenses exceed the sum which would have been payable under the contract, then the CONTRACTOR shall be liable and shall pay to the Town of Salem the amount of such excess.

Reasons for termination include, but are not limited to:

1. CONTRACTOR fails to begin work under Contract within the time specified in the notice to proceed;
2. Fails to perform the work with sufficient workmen and equipment, or with sufficient materials to assume prompt completion of said work;
3. Performs the work unsuitably or neglects or refuses to remove materials or to perform a new such work as may be rejected as unacceptable and unsuitable;
4. Discontinues the prosecution of the work;
5. Fails to resume work, which has been discontinued, within a reasonable time after notice to do so;
6. Becomes insolvent or has declared bankruptcy, or commits any act of bankruptcy or insolvency;
7. Makes an assignment for the benefit of creditors;

The Town of Salem will give notice, in writing, to the CONTRACTOR for such delays, neglect, and default. CONTRACTOR shall respond within 14 days to such notice with corrective action, to the Town's satisfaction, or be subject to Contract termination.

APPENDIX A

| Wastewater Pumping Station Inspection | |
|---------------------------------------|--|
| Town of Salem, New Hampshire | |
| Station Name: Brookdale Road | |
| Date: | Inspected by: JMC/CSM, Ron Benjamin (Town) |
| photos/sketch: | |
| | |
| General | |
| Location | Brookdale Road |
| Type (circle one) | duplex flooded suction, can type |
| Installation date | 1998 |
| Design Capacity (gpm) | 120 |
| Collects flow from | Brookdale Road |
| Transfers flow to | North Policy Street |
| General condition | good |
| O&M, record drawings? | O&M and manufacturer design dwg |
| Site | |
| Owner | Town of Salem / Canoble Lake Realty Corp |
| Map/Lot number | Part of 80/3771 |
| Easement? | Yes |
| Lot size, acres | 30' x 60' Permanent Easement |
| Fence | Yes, wooden stockade, decent condition |
| Driveway | paved drive |
| Landscaping | no |
| Access to wetwell by truck? | yes, 10 ft. gate entrance |
| Neighborhood description | residential |
| Structural | |
| Structure description | underground, can style, wet well/dry pit |
| Dimensions | 8' dia x 9' high inside, floor about 19' below EG per design dwg |
| Accessiblility | ladder |
| Confined space Issues? | yes |
| Condition | overall good, light deterioration of paint on floor |
| | |
| | |

Wastewater Pumping Station Inspection**Town of Salem, New Hampshire****Station Name: Brookdale Road****Wetwell**

| | |
|---------------------------|--|
| Dimensions | 6 ft. dia. |
| Material | precast concrete, 3 sections; bituminous coating |
| Condition | good |
| Access and size | manhole; 3' x3' hatch |
| Steps | yes |
| Pump slide rails | N/A |
| Influent tee | no |
| Vent | yes, charcoal odor control, original media |
| Condition | good |
| Foam, odor, grease, grit? | grease observed on sides |
| Date/frequency cleaned | annually |
| Emergency storage? | no |

Pumps

| | |
|----------------------------------|---|
| Design flow, gpm | 120 gpm each |
| Design TDH, ft | 70 |
| Observed pump rate, gpm | P1: 97 GPM, P2: 88 GPM |
| Observed TDH ft or discharge psi | no gauge |
| Number of pumps | 2 |
| Pump model | Fairbanks Morse 5432C |
| Pump type | Dry pit submersible |
| Pump serial numbers | P1: 1193799, P2: 1193802 |
| Motor HP, voltage, # phases | Marathon Electric, 10 HP, 208-230/460V, 3 ph, Model CVD215TTDW7043 |
| Motor speed, rpm | 1750 |
| Date last overhauled | 10 YR Ago replaced by United Pump Compressor |
| Does capacity meet peak flow? | |
| 100% redundancy? | |
| | Pump seal system with domestic water supply with backflow preventer |

Controls

| | |
|-------------------------------|-------------------|
| Control panel description | |
| Condition/age | 1998 |
| Location (indoor/outdoor etc) | outdoor enclosure |
| Lead/lag controls? | yes |
| Auto alternation? | yes |
| Soft starters? | Yes |
| Variable frequency drives? | no |

Wastewater Pumping Station Inspection

Town of Salem, New Hampshire

Station Name: Brookdale Road**Instrumentation**

| | |
|----------------------------|---------------------|
| Level control type | pressure transducer |
| Level indicator | pressure transducer |
| Flowmeter type/size | no |
| Flow totalizer or recorder | pump runtime meter |
| Last calibration date | |
| Chart Recorder | no |
| SCADA RTU | no |
| Security system | no. lock on door |
| Runtime meter | yes |

Alarms

| | |
|-------------------------------|---------------------------------------|
| Alarm panel/display | |
| Alarm telemetry | cell phone based mission dialer |
| Local alarm light, horn? | no |
| Alarms tested? | anually, weekly generator excersize |
| Independent high level alarm? | yes, Independent float for high level |

Piping and valves

| | |
|--------------------------------------|---|
| Air release valves | no |
| Discharge check valves | yes, 4" |
| Isolation valves | yes, 4" GV's suction and discharge |
| Valve pit | no |
| Force main size, length, material | 4" steel discharge |
| Pump station bypass? | no |
| Force main drain? | no |
| Condition | minor cracking of paint on piping, valves |
| Electrical | see site review by Lee Carroll, P.E. |
| Service rating, voltage | 100 amp breaker |
| Main disconnect | yes |
| Surge protection? | |
| Intrinsically safe barriers? | no |
| Code Issues? (e.g. panel clearance?) | |

Backup power

| | |
|--------------------------------|--------------------------------|
| Generator make/model | Generac CD015, Model 98A059645 |
| Generator fuel | Diesel |
| Generator KW, voltage | 15kw, 120/208V |
| Transfer switch | ATS Asco series 300 |
| Condition/age | 12/4/1998 |
| Exercise schedule? | weekly |
| Capacity to run both pump? | yes |
| Portable generator connection? | no, permanent |
| Generator Serial Number | 2044585 |

Wastewater Pumping Station Inspection

Town of Salem, New Hampshire

Station Name: Butler Street (formerly Tyler St)

Date:

Inspected by: JMC/CSM, Ron Benjamin (Town)

photos/sketch:

General

Location

Butler Street

Type (circle one)

wet pit/dry pit; submersible; suction lift; ejector

Installation date

station moved from another location

Design Capacity (gpm)

Collects flow from

Butler/Wheeler Intersection

Transfers flow to

Butler Street

General condition

O&M, record drawings?

Site

Owner

Town of Salem

Map/Lot number

Easement?

Assumed

Lot size, acres

| | |
|-------|--|
| Fence | |
|-------|--|

Behind guardrail to NE Rehab at intersection of Butler St./Wheeler Ave.

Driveway

No

Landscaping

Grass, Trees around for buffer by NE Rehab

Access to wetwell by truck?

Yes

Neighborhood description

Residential and rehab facility

Structural

Structure description

Gormann Rupp package station

Dimensions

6' x 6'

Accessibility

N/A

Confined space issues?

No

| Condition |
|-----------|
|-----------|

Fair

| | |
|---|--|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Butler Street (formerly Tyler St) | |
| Wetwell | |
| Dimensions | 6' ID |
| Material | Precast concrete |
| Condition | Good condition, no aggregate exposed |
| Access and size | Manhole, 32" |
| Steps | No |
| Pump slide rails | No |
| Influent tee | No |
| Vent | No |
| Condition | Overall okay |
| Foam, odor, grease, grit? | Floatables, grease minor |
| Date/frequency cleaned | Annually |
| Emergency storage? | No |
| | |
| | Leaky gusher 5gpm at FM exit to structure - GW |
| Pumps | |
| Design flow, gpm | 400 gpm |
| Design TDH, ft | 71' |
| Observed pump rate, gpm | P1: 115 gpm, P2: 118 gpm |
| Observed TDH ft or discharge psi | no gauge |
| Number of pumps | 2 |
| Pump model | Gormann Rupp T4A3-B |
| Pump type | |
| Pump serial numbers | 814644, 814645 - not visible to field verify |
| Motor HP, voltage, # phases | 200V, 600Hz, 3 PH, 20 HP |
| Motor speed, rpm | 1750 RPM on tag |
| Date last overhauled | Annually |
| Does capacity meet peak flow? | Assumed |
| 100% redundancy? | Assumed |
| | 4" pump inlet/outlet |
| Controls | |
| Control panel description | Bulldog 100 pump controller, Gormann Rupp control panel 208V, 3PH, 60M, 160Amp |
| Condition/age | |
| Location (Indoor/outdoor etc) | Enclosure |
| Lead/lag controls? | Yes |
| Auto alternation? | Yes |
| Soft starters? | No |
| Variable frequency drives? | No |

| Wastewater Pumping Station Inspection | |
|---|--|
| Town of Salem, New Hampshire | |
| Station Name: Butler Street (formerly Tyler St) | |
| Instrumentation | |
| Level control type | Pressure transducer |
| Level Indicator | Pressure transducer |
| Flowmeter type/size | No |
| Flow totalizer or recorder | No |
| Last calibration date | No |
| Chart Recorder | No |
| SCADA RTU | No |
| Security system | No |
| Runtime meter | yes |
| Alarms | |
| Alarm panel/display | Bulldog 100 pump controller |
| Alarm telemetry | cell based Mission dialer |
| Local alarm light, horn? | no |
| Alarms tested? | no |
| Independent high level alarm? | yes |
| Piping and valves | |
| Air release valves | no, ball valves only |
| Discharge check valves | yes |
| Isolation valves | 3 way plug valve like Stiles Road |
| Valve pit | no, ball valves only |
| Force main size, length, material | 4" estimated per Town |
| Pump station bypass? | no |
| Force main drain? | no |
| Electrical | |
| | see site review by Lee Carroll, P.E. |
| Service rating, voltage | 3 PH, 208 V, 60 Hz |
| Main disconnect | |
| Surge protection? | |
| Intrinsically safe barriers? | no |
| Code issues? (e.g. panel clearance?) | |
| Backup power | |
| Generator make/model | Kohler Model 60REOZJB SN: 2122476 |
| Generator fuel | diesel |
| Generator KW, voltage | 60 Hz, 1800 RPM, 62 KW, 78 KVA |
| Transfer switch | auto |
| Condition/age | estimate circa 2006 |
| Exercise schedule? | weekly if possible |
| Capacity to run both pump? | yes |
| Portable generator connection? | no |
| | leaves, bees nest inside generator enclosure, rust on top of diesel tank |

Wastewater Pumping Station Inspection

Town of Salem, New Hampshire

Station Name: Butler Street (formerly Tyler St)

Mechanical

| | |
|-------------|-------------------------|
| Heating | portable space heater |
| Ventilation | blower inside enclosure |
| Plumbing | no |

Key Elevations

| | |
|--|----------|
| Invert in elevation, ft MSL | |
| Wetwell operating band, ft | 2.5' ??? |
| Force main discharge elevation, ft MSL | |
| Pump run time per cycle | |
| Pump station logs, maintenance records | |

Operating Concerns, Deficiencies, Improvements and Further Investigation

Pump design flow 400 gpm from record info does not appear to be accurate based on pump rates observed during draw down test.

Additional photos/sketches

| | |
|---------------------------------------|---|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Commercial Drive | |
| Date: | Inspected by: JMC/CSM, Ron Benjamin (Town) |
| photos/sketch: | |
| | |
| General | |
| Location | Commercial Drive |
| Type (circle one) | wet pit/dry pit; submersible; suction lift; ejector |
| Installation date | 1987 vintage |
| Design Capacity (gpm) | |
| Collects flow from | Commercial Drive area |
| Transfers flow to | Pelham Road |
| General condition | |
| O&M, record drawings? | |
| Site | |
| Owner | Town of Salem |
| Map/Lot number | |
| Easement? | yes, from 4 Commercial Drive |
| Lot size, acres | |
| Fence | no |
| Driveway | paved, poor condition, steep |
| Landscaping | no, only grass |
| Access to wetwell by truck? | yes |
| Neighborhood description | Industrial Park |
| Structural | |
| Structure description | dry pit, precast building on slab, wood panels inside |
| Dimensions | building: 10' x 12' x 7.2' H |
| Accessibility | 6' door on building, no WW access |
| Confined space issues? | |
| Condition | entry door in poor condition |
| | |
| | |

| | |
|---------------------------------------|---|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Commercial Drive | |
| Wetwell | |
| Dimensions | 6' diameter round, may be 7' (difficult to measure) |
| Material | precast concrete |
| Condition | fair, light hyd. Sulfide deterioration, no aggregates present |
| Access and size | manhole, hatch, 32" sewer cover |
| Steps | no |
| Pump slide rails | no |
| Influent tee | no |
| Vent | no |
| Condition | |
| Foam, odor, grease, grit? | clean, some floatables |
| Date/frequency cleaned | annually (typical for all stations) |
| Emergency storage? | no |
| | cracked mortar on frame concrete |
| Pumps | |
| Design flow, gpm | 250 gpm |
| Design TDH, ft | 51' |
| Observed pump rate, gpm | P1: 195 GPM, P2: 176 GPM |
| Observed TDH ft or discharge psi | |
| Number of pumps | 2 |
| Pump model | Gorman Rupp T6A3-B |
| Pump type | self priming |
| Pump serial numbers | P1 (1st from door): 835815, P2: not legible |
| Motor HP, voltage, # phases | Type T1KK SN 6400657 MI, 20 HP, 208V, 3 PH, 60 Hz, 230/460 V, 208 V |
| Motor speed, rpm | 1050 (1750 at full load) |
| Date last overhauled | annually |
| Does capacity meet peak flow? | |
| 100% redundancy? | |
| | P1 motor SN: 6400657 |
| Controls | |
| Control panel description | Bulldog 100 pump controller (same as Brookdale) |
| Condition/age | estimate 1998 |
| Location (indoor/outdoor etc) | Indoor |
| Lead/lag controls? | yes |
| Auto alternation? | yes |
| Soft starters? | no |
| Variable frequency drives? | no |

| | |
|---------------------------------------|--|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Commercial Drive | |
| Instrumentation | |
| Level control type | pressure transducer |
| Level Indicator | pressure transducer |
| Flowmeter type/size | no, run hours |
| Flow totalizer or recorder | run hours |
| Last calibration date | estimate annually |
| Chart Recorder | no |
| SCADA RTU | no |
| Security system | no |
| Runtime meter | yes |
| Alarms: | |
| Alarm panel/display | yes, alarms on panel, display defunct |
| Alarm telemetry | cell based Mission control dialer |
| Local alarm light, horn? | no, no |
| Alarms tested? | |
| Independent high level alarm? | yes, float |
| Alarms on panel | engine overcrank, overspeed, low oil, high temp. P1/P1 high temp high water alarm, silence alarm |
| Piping and valves | |
| Air release valves | 1 1/4" ball valves in lieu of air release |
| Discharge check valves | yes |
| Isolation valves | 6" tee valve in common header Dezurik 6" |
| Valve pit | no |
| Force main size, length, material | 6" out of station |
| Pump station bypass? | no. pump from WW |
| Force main drain? | no |
| Electrical | |
| | see site review by Lee Carroll, P.E. |
| Service rating, voltage | 150 amp, 3 PH, 60 Hz, 208 V |
| Main disconnect | 200 amp |
| Surge protection? | estimate yes |
| Intrinsically safe barriers? | estimate no |
| Code issues? (e.g. panel clearance?) | |
| | 4 - 20 amp breakers |
| Backup power | |
| Generator make/model | backup motor: Wisconsin Propane Powers P2 operated by bubbler |
| Generator fuel | propane |
| Generator KW, voltage | auxiliary motor |
| Transfer switch | backup bubbler |
| Condition/age | estimated 80's |
| Exercise schedule? | weekly |
| Capacity to run both pump? | no |
| Portable generator connection? | no |
| Auxiliary motor | Gormann Rupp Watchdog 20 Hp, 3 PH, 20 V, SN: 86249-AX |
| | Wisconsin Model VG4DG SN: 6127710 run hours 23.6 |
| | DC bubbler system turns on backup motor |

| | |
|--|--|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Copper Beech | |
| Date: | Inspected by: JMC/CSM, Ron Benjamin (Town) |
| photos/sketch: | |
| <p>Note: See report by Underwood Engineers dated February 2014</p> | |
| General | |
| Location | Copper Beech Road |
| Type (circle one) | wet pit/dry pit; submersible; suction lift; ejector |
| Installation date | |
| Design Capacity (gpm) | 120 gpm (currently at 250 gpm) |
| Collects flow from | Copper Beech Road |
| Transfers flow to | Pond Street |
| General condition | Poor, not up to code |
| O&M, record drawings? | Available |
| Site | |
| Owner | Town of Salem |
| Map/Lot number | |
| Easement? | assumed |
| Lot size, acres | |
| Fence | no |
| Driveway | paved, poor condition, rutting |
| Landscaping | no |
| Access to wetwell by truck? | yes |
| Neighborhood description | residential, large homes |
| Structural | |
| Structure description | building; wet well |
| Dimensions | 12' x 15.5' vinyl siding, asphalt shingles |
| Accessibility | |
| Confined space issues? | yes |
| Condition | building in poor condition, gable roof, asphalt shingles. Wood insect damage, trim rotted, drainage issues at face of building, 5' door for pump room, 3' door wet well. Building built on top of Smith & Loveless wet well, door to enter wet well infested with mice. Building built on top of existing pumps skid S&L |
| | sheet rock in wet well, wood panel in pump room |

| | |
|---------------------------------------|--|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Copper Beech | |
| Wetwell | |
| Dimensions | 5' diameter |
| Material | precast concrete, bitumin seal at joints |
| Condition | exposed sealant at joints, light spalling, good condition |
| Access and size | hatch 2' x 2.3' |
| Steps | yes, not usable |
| Pump slide rails | no |
| Influent tee | no |
| Vent | no |
| Condition | |
| Foam, odor, grease, grit? | not observed |
| Date/frequency cleaned | annually |
| Emergency storage? | |
| | low flow at this station |
| Pumps | |
| Design flow, gpm | 120 GPM |
| Design TDH, ft | 35 TDH |
| Observed pump rate, gpm | P1: 108 GPM, P2: 86 GPM |
| Observed TDH ft or discharge psi | |
| Number of pumps | 2 |
| Pump model | Smith & Loveless |
| Pump type | centrifugal, vacuum assist to prime pumps |
| Pump serial numbers | P2: 8908105, P1: 8908106 |
| Motor HP, voltage, # phases | 5 HP, 230/460 V, 3 PH |
| Motor speed, rpm | 1165 RPM |
| Date last overhauled | annually |
| Does capacity meet peak flow? | |
| 100% redundancy? | |
| Controls | |
| Control panel description | Bulldog 100 pump controller, SN: 16-4008, 240V, 3PH, 60 Hz |
| Condition/age | fair, servicable |
| Location (indoor/outdoor etc) | Indoor |
| Lead/lag controls? | yes |
| Auto alternation? | yes |
| Soft starters? | no |
| Variable frequency drives? | yes, Yaskawa V1000 VFDS, 2 years old |

| | |
|---------------------------------------|---|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Copper Beech | |
| Instrumentation | |
| Level control type | pressure transducer |
| Level Indicator | pressure transducer |
| Flowmeter type/size | no |
| Flow totalizer or recorder | no |
| Last calibration date | |
| Chart Recorder | no |
| SCADA RTU | no |
| Security system | no |
| Runtime meter | yes |
| Alarms | |
| Alarm panel/display | on Bulldog 100 |
| Alarm telemetry | cell based Mission dialer |
| Local alarm light, horn? | yes, alarm and horn, both defunct |
| Alarms tested? | no |
| Independent high level alarm? | yes |
| Piping and valves | |
| Air release valves | no |
| Discharge check valves | yes |
| Isolation valves | plug valves on discharge, check valves on discharge |
| Valve pit | no |
| Force main size, length, material | 4" |
| Pump station bypass? | no |
| Force main drain? | no |
| | pvc piping for pump Intake 4" |
| Electrical | see site review by Lee Carroll, P.E. |
| Service rating, voltage | |
| Main disconnect | |
| Surge protection? | |
| Intrinsically safe barriers? | no |
| Code Issues? (e.g. panel clearance?) | clearance issues |
| | XFMR for VFDS |
| Backup power | |
| Generator make/model | Onan |
| Generator fuel | natural gas |
| Generator KW, voltage | 20 Kw, 20 KVA, 60 Hz, 1800 RPM |
| Transfer switch | auto |
| Condition/age | |
| Exercise schedule? | weekly if possible |
| Capacity to run both pump? | yes |
| Portable generator connection? | no |
| | |
| | |

Wastewater Pumping Station Inspection

Town of Salem, New Hampshire

Station Name: Copper Beech

Mechanical

Heating

wall mounted heater, 1500 W portable

Ventilation

generator louvers, no other

Plumbing

no sump pump

Key Elevations

Invert in elevation, ft MSL

Wetwell operating band, ft

Force main discharge elevation, ft MSL

| | |
|-------------------------|------|
| Pump run time per cycle | 1.00 |
|-------------------------|------|

Pump station logs, maintenance records

Operating Concerns, Deficiencies, Improvements and Further Investigation

new VFDs and lights within last year or two

wet well area is Class 3, non-conforming

Additional photos/sketches

Wastewater Pumping Station Inspection**Town of Salem, New Hampshire****Station Name: Freedom Drive**

Date: Inspected by: JMC/CSM, Ron Benjamin (Town)

photos/sketch:

General

| | |
|-----------------------|--|
| Location | Freedom Drive |
| Type (circle one) | ejector station |
| Installation date | This station (can) relocated from another location in Town |
| Design Capacity (gpm) | |
| Collects flow from | Freedom Drive neighborhood |
| Transfers flow to | Veteran's Memorial Parkway |
| General condition | servicable |
| O&M, record drawings? | no |

Site

| | |
|-----------------------------|--|
| Owner | Town of Salem |
| Map/Lot number | |
| Easement? | |
| Lot size, acres | |
| Fence | 6.5' chain link fence w/barbed wire, 8' gate |
| Driveway | yes, paved, fair condition |
| Landscaping | no |
| Access to wetwell by truck? | |
| Neighborhood description | residential elderly housing |

Structural

| | |
|------------------------|--|
| Structure description | 4" slab top building, 12'x15', exposed aggregate finish. Precast concrete walls, flat roof |
| Dimensions | 12 x 15 x 7 |
| Accessiblility | ladder; stairs |
| Confined space issues? | |
| Condition | building fair, entry door corroded, floor coating deteriorating |
| | this station moved from another location, 5' diameter steel can |

| | |
|---|----------------------------------|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Freedom Drive | |
| Wetwell - N/A | |
| Dimensions | |
| Material | |
| Condition | |
| Access and size | |
| Steps | |
| Pump slide rails | |
| Influent tee | |
| Vent | |
| Condition | |
| Foam, odor, grease, grit? | |
| Date/frequency cleaned | |
| Emergency storage? | |
| | |
| Ejector Compressors | |
| Design flow, gpm | 100 |
| Design TDH, ft | 15 |
| Observed pump rate, gpm | |
| Observed TDH ft or discharge psi | |
| Number of compressors | 2 by Quincy Compressor |
| Model | #2 230-56, #1 230-36 |
| Type | size 3.5 x 3 |
| Serial numbers | #2 303384, #1 589298L |
| Motor HP, voltage, # phases | #1: leeson - Info not legible |
| Motor speed, rpm | |
| Date last overhauled | annually |
| Does capacity meet peak flow? | |
| 100% redundancy? | |
| Motor model #21, C182C170BBA, 60 Hz, 1740 RPM, 2 Hp, 1 PH | |
| Controls | |
| Control panel description | Smith and Loveless control panel |
| Condition/age | |
| Location (indoor/outdoor etc) | Indoor |
| | pods alternate |
| Auto alternation? | yes |
| Soft starters? | n/a |
| Variable frequency drives? | n/a |
| ejector count: Pot 1: 2315, Pot 2: 158 | |

Wastewater Pumping Station Inspection**Town of Salem, New Hampshire****Station Name: Freedom Drive****Instrumentation**

| | |
|----------------------------|---|
| Level control type | n/a |
| Level Indicator | |
| Flowmeter type/size | |
| Flow totalizer or recorder | |
| Last calibration date | |
| Chart Recorder | |
| SCADA RTU | |
| Security system | |
| Runtime meter | compressor hours, ejector pot count (resetable) |

Alarms

| | |
|--------------------------|---|
| Alarm panel/display | |
| Alarm telemetry | cell based mission control |
| Local alarm light, horn? | |
| Alarms tested? | |
| Alarm | power fail only alarm, no compressor fail |

Piping and valves

| | |
|-----------------------------------|---|
| Air release valves | |
| Discharge check valves | |
| Isolation valves | |
| Valve plt | |
| Force main size, length, material | |
| Pump station bypass? | compressors and motors removed from can and installed in building |
| Force main drain? | 5' diameter steel can transferred from other location |

Electrical

| | |
|--------------------------------------|--------------------------------------|
| Service rating, voltage | see site review by Lee Carroll, P.E. |
| Main disconnect | 100 Amp, 240 V |
| Surge protection? | |
| Intrinsically safe barriers? | |
| Code Issues? (e.g. panel clearance?) | |

Backup power

| | |
|--------------------------------|----------------------------------|
| Generator make/model | Kohler w/GM vortec, Kohler 15RYG |
| Generator fuel | LPG |
| Generator KW, voltage | 15 kW, 15 KVA |
| Transfer switch | ATS, Kohler RDT-CFNA-0100-A |
| Condition/age | 2005 |
| Exercise schedule? | weekly |
| Capacity to run both pump? | yes |
| Portable generator connection? | |
| | SN: 2060327 manufactured 9/05 |

Wastewater Pumping Station Inspection

Town of Salem, New Hampshire

Station Name: Freedom Drive

Mechanical

Heating

electric wall mounted UH

Ventilation

louvers electronically activated, 2.5' x 2.5'

Plumbing

domestic water service

Key Elevations

Invert in elevation, ft MSL

Wetwell operating band, ft

Force main discharge elevation, ft MSL

| Pump run time per cycle |
|-------------------------|
| 10 |
| 20 |
| 30 |
| 40 |
| 50 |
| 60 |
| 70 |
| 80 |
| 90 |
| 100 |

Pump station logs, maintenance records

Operating Concerns; Deficiencies; Improvements and Further Investigation

Ejector pot count indicates alternation not always successful.

Additional photos/sketches

| | |
|---------------------------------------|---|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Haigh Avenue | |
| Date: | Inspected by: JMC/CSM, Ron Benjamin (Town) |
| photos/sketch: | |
| | |
| General | |
| Location | Haigh Ave |
| Type (circle one) | wet pit/dry pit |
| Installation date | 1972 vintage |
| Design Capacity (gpm) | |
| Collects flow from | Haigh Ave. |
| Transfers flow to | So. Broadway |
| General condition | aged |
| O&M, record drawings? | |
| Site | |
| Owner | Town of Salem |
| Map/Lot number | |
| Easement? | |
| Lot size, acres | |
| Fence | concrete flood wall CIP concrete - 4' high, 5' chain link fence w/barbed wire, 3.5' entryway gate |
| Driveway | paved drive, good condition |
| Landscaping | no, grass only |
| Access to wetwell by truck? | through 3.5' gate |
| Neighborhood description | residential, also serves mall? |
| Structural | |
| Structure description | building; dry pit, well well |
| Dimensions | 8', 3' manway |
| Accessibility | dry pit - elevator with stairs, 8' |
| Confined space issues? | yes |
| Condition | dry pit - fair, limited leakage/deterioration, floor beneath P-2 epoxy coating peeling, metal rusting |
| | building - ceiling leaking by vent, brick façade, asphalt shingle - good shape, wood gable ends and trim, louvers |
| | |

| | |
|---------------------------------------|--|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Haigh Avenue | |
| Wetwell | |
| Dimensions | 6' estimate |
| Material | precast concrete |
| Condition | good |
| Access and size | manhole |
| Steps | yes |
| Pump slide rails | no |
| Influent tee | yes |
| Vent | no, flood protection cover on MH |
| Condition | |
| Foam, odor, grease, grit? | high grease levels, pumped monthly |
| Date/frequency cleaned | monthly grease, washed annually by Roto Rooter |
| Emergency storage? | no |
| Pumps | |
| Design flow, gpm | 240 gpm at 38' TDH |
| Design TDH, ft | 38' |
| Observed pump rate, gpm | |
| Observed TDH ft or discharge psi | |
| Number of pumps | 2 |
| Pump model | Smith & Loveless 4B3 |
| Pump type | |
| Pump serial numbers | P1: 040623, P2: 040624 |
| Motor HP, voltage, # phases | 7.5 HP, 230 V, 3PH |
| Motor speed, rpm | 1200 |
| Date last overhauled | |
| Does capacity meet peak flow? | |
| 100% redundancy? | |
| Motor serial number | M2: 04-0391 B-1, M1: can't read, seal water system with non domestic |
| Controls | |
| Control panel description | Bulldog 100 |
| Condition/age | estimate 1998 |
| Location (indoor/outdoor etc) | indoor in building |
| Lead/lag controls? | yes |
| Auto alternation? | yes |
| Soft starters? | not observed |
| Variable frequency drives? | no |

| | |
|--|---|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Haigh Avenue | |
| Instrumentation | |
| Level control type | pressure transducer, high level float |
| Level indicator | pressure transducer |
| Flowmeter type/size | no |
| Flow totalizer or recorder | no, run hours |
| Last calibration date | annual |
| Chart Recorder | no |
| SCADA RTU | no |
| Security system | no |
| Runtime meter | Yes |
| Alarms | |
| Alarm panel/display | no |
| Alarm telemetry | cell based mission alarm |
| Local alarm light, horn? | no |
| Alarms tested? | no |
| Independent high level alarm? | yes, assumed |
| Piping and valves | |
| Air release valves | no |
| Discharge check valves | 4", yes on each SL |
| Isolation valves | yes, plug valves either side, both pumps |
| Valve pit | no |
| Force main size, length, material | estimate 6" |
| Pump station bypass? | no |
| Force main drain? | no |
| Electrical | |
| see electrical review by Leo Carroll, P.E. | |
| Service rating, voltage | |
| Main disconnect | |
| Surge protection? | |
| Intrinsically safe barriers? | |
| Code issues? (e.g. panel clearance?) | |
| Backup power | |
| Generator make/model | Onan 45EM, Ford Motor Model 300GF-6005-A-50-31 |
| Generator fuel | propane |
| Generator KW, voltage | 45 Kw, 56 KVA for 3 PH/ 30Kw, 37.5 KVA for 1 PH |
| Transfer switch | auto |
| Condition/age | 1998 vintage |
| Exercise schedule? | weekly assumed |
| Capacity to run both pump? | yes, assumed |
| Portable generator connection? | no |
| | |
| | |

Wastewater Pumping Station Inspection

Town of Salem, New Hampshire

Station Name: Haigh Avenue

Mechanical

| | |
|---------|--|
| Heating | portable electric space heater, 1500 watt 12.5 amp |
|---------|--|

| | |
|-------------|----|
| Ventilation | no |
|-------------|----|

| | |
|----------|-----------|
| Plumbing | sump pump |
|----------|-----------|

| | |
|--------------|------------------------|
| Dehumidifier | Dayton 3UF75, 2.2/3 Kw |
|--------------|------------------------|

Key Elevations:

Invert in elevation, ft MSL.

Wetwell operating band, ft

Force main discharge elevation, ft MSL

| |
|-------------------------|
| Pump run time per cycle |
|-------------------------|

Pump station logs, maintenance records

Operating Concerns, Deficiencies, Improvements and Further Investigation

Lots of grease

Additional photos/sketches

| Wastewater Pumping Station Inspection | |
|---------------------------------------|---|
| Town of Salem, New Hampshire | |
| Station Name: Keewaydin | |
| Date: | Inspected by: JMC/CSM, Ron Benjamin (Town) |
| photos/sketch: | |
| <div style="height: 150px;"></div> | |
| General | |
| Location | Keewaydin Drive |
| Type (circle one) | wet pit/dry pit; submersible; suction lift; ejector |
| Installation date | |
| Design Capacity (gpm) | |
| Collects flow from | Commercial and Stiles Road pump stations |
| Transfers flow to | Main Street |
| General condition | |
| O&M, record drawings? | |
| Site | |
| Owner | Town of Salem |
| Map/Lot number | |
| Easement? | |
| Lot size, acres | |
| Fence | 6' high chain link and barbed wire, 12' gate |
| Driveway | paved, good condition |
| Landscaping | no |
| Access to wetwell by truck? | yes |
| Neighborhood description | industrial park |
| Structural | |
| Structure description | wood siding, cedar clapboards |
| Dimensions | 16' x 14' x 10'+ high |
| Accessibility | 7' door |
| Confined space issues? | |
| Condition | trim needs replacing, rot, insect damage on fascia, asphalt shingle roof, good condition, gable vents, exterior alarm lights active by door |
| | two windows both 2.2' x 1.1' |

Wastewater Pumping Station Inspection**Town of Salem, New Hampshire****Station Name: Keewaydin****Wetwell**

| | |
|---------------------------|---|
| Dimensions | Est. 10' ID |
| Material | precast concrete |
| Condition | good; no signs of hyd sulfide corrosion |
| Access and size | hatch, 2.5' x 2.5' |
| Steps | no |
| Pump slide rails | no |
| Influent tee | no |
| Vent | no |
| Condition | |
| Foam, odor, grease, grit? | minor grease |
| Date/frequency cleaned | annually |
| Emergency storage? | no |
| | |
| | |

Pumps

| | |
|----------------------------------|---|
| Design flow, gpm | 650 gpm |
| Design TDH, ft | 82' |
| Observed pump rate, gpm | |
| Observed TDH ft or discharge psi | |
| Number of pumps | 2 |
| Pump model | Gorman Rupp T8A3-B |
| Pump type | self priming centrifugal |
| Pump serial numbers | P1: 937960 (2nd from door), P2: 987961 |
| Motor HP, voltage, # phases | 50 HP, 230/460 V, 3 PH, 126/63 Amp, Type TIKK, 4 poles, 60 Hz |
| Motor speed, rpm | 1765 |
| Date last overhauled | annually |
| Does capacity meet peak flow? | |
| 100% redundancy? | |
| Motor model # | M1: B0504VLF1UK, M2: B0504VLF10K |
| Controls | |
| Control panel description | Bulldog 100 pump controller, SN 90-827-LE |
| Condition/age | estimate 1990 |
| Location (indoor/outdoor etc) | Indoor 480 V, 3 PH, 60 Hz, 155 Amp |
| Lead/lag controls? | no |
| Auto alternation? | yes |
| Soft starters? | yes |
| Variable frequency drives? | no |
| Motor | M1 SN: 90602531, M2 SN: 90602534 |

Wastewater Pumping Station Inspection**Town of Salem, New Hampshire****Station Name: Keewaydin****Instrumentation**

| | |
|----------------------------|-------------------------------------|
| Level control type | float switches, pressure transducer |
| Level indicator | pressure transducer |
| Flowmeter type/size | no |
| Flow totalizer or recorder | no |
| Last calibration date | annually |
| Chart Recorder | no |
| SCADA RTU | no |
| Security system | no |
| Runtime meter | yes |

Alarms

| | |
|-------------------------------|---------------------------|
| Alarm panel/display | GR panel with lights |
| Alarm telemetry | cell based mission dialer |
| Local alarm light, horn? | yes light, no horn |
| Alarms tested? | |
| Independent high level alarm? | yes |

Piping and valves

| | |
|-----------------------------------|-----------------------------------|
| Air release valves | yes |
| Discharge check valves | yes, swing check valves with arms |
| Isolation valves | tee valve |
| Valve pit | no |
| Force main size, length, material | 8" pump suction and discharge |
| Pump station bypass? | no |
| Force main drain? | no |

flapper on inlet of GR pump

Electrical

see site review by Lee Carroll, P.E.

| | |
|--------------------------------------|------------------|
| Service rating, voltage | |
| Main disconnect | 200 Amp, 600 VAC |
| Surge protection? | |
| Intrinsically safe barriers? | |
| Code Issues? (e.g. panel clearance?) | |

Backup power

| | |
|--------------------------------|---|
| Generator make/model | outdoor generator Kohler 125ROZP71 SN: 366957 |
| Generator fuel | diesel, tank below |
| Generator KW, voltage | 3 PH, 125 Kw, 156 KVA |
| Transfer switch | Kohler ATS |
| Condition/age | estimate 1990 |
| Exercise schedule? | weekly |
| Capacity to run both pump? | yes |
| Portable generator connection? | no |

Wastewater Pumping Station Inspection

Town of Salem, New Hampshire

| |
|-------------------------|
| Station Name: Keewaydin |
|-------------------------|

| |
|------------|
| Mechanical |
|------------|

| | |
|---------|--|
| Heating | Qmark electric heater 480 V/3 PH, thermostat, 5 Kw |
|---------|--|

| | |
|-------------|--|
| Ventilation | |
|-------------|--|

| | |
|----------|----|
| Plumbing | no |
|----------|----|

| | |
|-------|-------------------------|
| Other | sump pump, dehumidifier |
|-------|-------------------------|

[illegible]

| | |
|----------------|--|
| Key Elevations | |
|----------------|--|

| | |
|-----------------------------|--|
| Invert In elevation, ft MSL | |
|-----------------------------|--|

| | |
|----------------------------|--|
| Wetwell operating band, ft | |
|----------------------------|--|

Force main discharge elevation, ft MSL

| | |
|-------------------------|--|
| Pump run time per cycle | |
|-------------------------|--|

Pump station logs, maintenance records

| | |
|--|--|
| | |
|--|--|

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[illegible]

| Wastewater Pumping Station Inspection | |
|---------------------------------------|--|
| Town of Salem, New Hampshire | |
| Station Name: South Policy Street | |
| Date: | Inspected by: JMC/CSM, Ron Benjamin (Town) |
| photos/sketch: | |
| | |
| General: | |
| Location | South Policy Street |
| Type (circle one) | flooded suction |
| Installation date | built 1991 |
| Design Capacity (gpm) | |
| Collects flow from | mall only |
| Transfers flow to | So. Policy gravity |
| General condition | good |
| O&M, record drawings? | |
| Site: | |
| Owner | Town of Salem |
| Map/Lot number | |
| Easement? | |
| Lot size, acres | |
| Fence | 6' high chain link with barbed wire |
| Driveway | paved drive, good condition, not enough room to open gate with vehicle outside |
| Landscaping | arbovitae buffer outside fence, some small (2) plants, (2) trees |
| Access to wetwell by truck? | yes, through 15' gate |
| Neighborhood description | at rear of mall parking lot |
| Structural: | |
| Structure description | building, 3 stories, wet well |
| Dimensions | 12' x 18' building |
| Accessibility | wet well hatch 3.3' x 2.8' |
| Confined space issues? | |
| Condition | building good condition, split face CMU veneer, flat roof, precast panels |
| | leaking bitumastic sealant at precast section joints in lowest level of pump room likely from installation, coating on floor showing signs of wear, exterior scuppers for roof |

| | |
|---------------------------------------|--|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: South Policy Street | |
| Wetwell | |
| Dimensions | estimate 8' x 10' ID |
| Material | precast square shape, 1 wet well divided |
| Condition | decent, no exposed aggregate observed |
| Access and size | hatch, ladder |
| Steps | yes |
| Pump slide rails | no |
| Influent | pipe enters to channel, can split between wet wells |
| Vent | yes, fan with controls |
| Condition | |
| Foam, odor, grease, grit? | odor, grease, muffin monster has worn teeth and needs replacement |
| Date/frequency cleaned | monthly grease by mall, annual by Town |
| Emergency storage? | |
| | mechanical equipment inside showing corrosion, bubbler lines not used, WW cleaned once per month by mall, lights, electrical, water pipe in WW, run one side at a time, switch annually, ISO valve in middle |
| Pumps | |
| Design flow, gpm | 400 gpm |
| Design TDH, ft | 37.5 TDH |
| Observed pump rate, gpm | |
| Observed TDH ft or discharge psi | |
| Number of pumps | 2 |
| Pump model | Yeoman dated May 2007 on tag |
| Pump type | P1: Model 4310LC-3C, P2: Model 4310LC-3C |
| Pump serial numbers | P1: 9811253, P2: 9811253 |
| Motor HP, voltage, # phases | 10 HP, 230/460 V, 3 PH, 60 Hz |
| Motor speed, rpm | 1145 |
| Date last overhauled | annually |
| Does capacity meet peak flow? | |
| 100% redundancy? | |
| | domestic seal water system, pressure gauges in/out |
| Controls | |
| Control panel description | annunciator panel upper level, Bulldog 100 pump controller |
| Condition/age | 1991 |
| Location (Indoor/outdoor etc) | Indoor |
| Lead/lag controls? | yes |
| Auto alternation? | yes |
| Soft starters? | no |
| Variable frequency drives? | no |

| | |
|---------------------------------------|---|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: South Policy Street | |
| Instrumentation | |
| Level control type | pressure transducer, air bubbler disconnected |
| Level indicator | pressure transducer |
| Flowmeter type/size | 4" flow meter doesn't work, Foxboro flowtube 8000 series, magnetic |
| Flow totalizer or recorder | chart recorder |
| Last calibration date | |
| Chart Recorder | yes, but likely defunct, not used |
| SCADA RTU | no |
| Security system | no |
| Runtime meter | Yes, P1 9721.5 hours, P2: 9773.6 hours, these hours were not reset when pumps replaced 2007 |
| Alarms | |
| Alarm panel/display | annunciator panel upper level |
| Alarm telemetry | cell based mission dialer, annunciator panel |
| Local alarm light, horn? | no |
| Alarms tested? | no |
| Independent high level alarm? | yes, high float |
| | low/high WW P1/P2 fail, compressor fail, flood sta alarm, seal water fail, gen fail, grinder fail, power fail |
| Piping and valves | |
| Air release valves | yes mid level at FM exit |
| Discharge check valves | yes 6", 4" pump inlet/outlet |
| Isolation valves | yes, all valves and piping 6" |
| Valve pit | no, reduces down to 4" FM at exit of building |
| Force main size, length, material | 4" |
| Pump station bypass? | Isolation of valves, 7 plug valves, 2 check valves, all 6" |
| Force main drain? | no |
| Electrical | |
| | see site review by Lee Carroll, P.E. |
| Service rating, voltage | 225 Amp main breaker, 208Y/120, 240/120 V |
| Main disconnect | 400 Amp, 3 PH, 240 VAC |
| Surge protection? | |
| Intrinsically safe barriers? | |
| Code Issues? (e.g. panel clearance?) | |
| | explosion proof lighting |
| Backup power | |
| Generator make/model | Generac 90A04066-S |
| Generator fuel | diesel |
| Generator KW, voltage | 50 Kw, 120/208 V. 62.5 KVA, 60 Hz, 173.4 Amps |
| Transfer switch | auto, general ATS |
| Condition/age | good condition, fairly new? |
| Exercise schedule? | weekly if possible |
| Capacity to run both pump? | yes, will run everything in station |
| Portable generator connection? | |
| Generator SN | 994439 |

Wastewater Pumping Station Inspection

Town of Salem, New Hampshire

Station Name: South Policy Street

Mechanical

Heating

electric UH TPI Corp, 2000/1500 W (2) upstairs and lowest

Ventilation

HVAC system

Plumbing

domestic water service

Other

dehumidifier

louvers for generator

Key Elevations

Invert in elevation, ft MSL.

Wetwell operating band, ft

Force main discharge elevation, ft MSL

| Pump run time per cycle |
|-------------------------|
|-------------------------|

Pump station logs, maintenance records

Operating Concerns; Deficiencies; Improvements and Further Investigation

exhaust fan recently added as safety upgrade but it is very loud when operating, this was a recent addition safety

muffin monster and lots of debris in wet well from the mall

wants new muffin monster quotes for \$30K, muffin monster is cemented in channel in wet well, hard to replace

Difficult access to site. Swap entrance gate to mail parking lot side

Additional photos/sketches

Wastewater Pumping Station Inspection

Town of Salem New Hampshire

Station Name: Stiles Road

Date:

Inspected by: JMC/CSM, Ron Benjamin (Town)

photos/sketch:

General

Location

Stiles Road

Type (circle one)

wet pit/dry pit; submersible; suction lift; ejector

Installation date

1987 vintage

Design Capacity (gpm)

Collects flow from

Stiles Road area

Transfers flow to

Pelham Road

General condition

O&M, record drawings?

Site

Owner

Town of Salem

Map/Lot number

Easement?

Lot size, acres

Fence

5' chain link, poor condition, bent, weak, 12' gate

Driveway

yes, paved, fair condition

Landscaping

no

Access to wetwell by truck?

yes, through gates

Neighborhood description

professional offices, industrial

Structural

Structure description

fiberglass enclosure, wet well

Dimensions

6' x 6' Gorman Rupp fiberglass enclosure

Accessibility

above ground, 2 doors either side

Confined space issues?

no

Condition

acceptable

| | |
|---------------------------------------|--|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Stiles Road | |
| Wetwell | |
| Dimensions | 8' |
| Material | precast concrete |
| Condition | fair, mineral deposits at joints, no obvious signs of hyd. Sulfide corrosion |
| Access and size | manhole |
| Steps | no |
| Pump slide rails | no |
| Influent tee | no |
| Vent | passive (candy cane) |
| Condition | |
| Foam, odor, grease, grit? | no grease, no acid |
| Date/frequency cleaned | cleaned annually |
| Emergency storage? | no |
| | |
| Pumps | |
| Design flow, gpm | 260 gpm |
| Design TDH, ft | 50' |
| Observed pump rate, gpm | P1: 92 gpm, P2: 76 gpm |
| Observed TDH ft or discharge psi | |
| Number of pumps | 2 |
| Pump model | Gormann Rupp T4A3-B |
| Pump type | name plate info not visible |
| Pump serial numbers | 861542, 861543 (from O&M) |
| Motor HP, voltage, # phases | 20 HP, 200 V, 3 PH |
| Motor speed, rpm | 1350 (1750 at full load) |
| Date last overhauled | original, 1987 |
| Does capacity meet peak flow? | |
| 100% redundancy? | |
| | P1 hours: 8302.4, P2 hours: 7605.5 |
| Controls | |
| Control panel description | GR control panel |
| Condition/age | estimate 1987 |
| Location (Indoor/outdoor etc) | in fiberglass enclosure |
| Lead/lag controls? | yes |
| Auto alternation? | yes |
| Soft starters? | no |
| Variable frequency drives? | no |
| | 208 V, 3 PH, 60 Hz |
| Station SN | 87-2581-AM |

| | |
|---|---|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Stiles Road | |
| Instrumentation | |
| Level control type | pressure transducer |
| Level Indicator | pressure transducer |
| Flowmeter type/size | no |
| Flow totalizer or recorder | run hour meter |
| Last calibration date | annual |
| Chart Recorder | no |
| SCADA RTU | no |
| Security system | no |
| Runtime meter | yes |
| Alarms | |
| Alarm panel/display | GR lights |
| Alarm telemetry | cell based mission dialer |
| Local alarm light, horn? | alarm light but not active |
| Alarms tested? | |
| Independent high level alarm? | yes |
| Piping and valves | |
| Air release valves | yes, factory GR spring activated 3 way plug |
| Discharge check valves | yes, wafer check valves plus flapper on pump |
| Isolation valves | 3 way plug on common header |
| Valve pit | no |
| Force main size, length, material | 6" suction reduced to 4" pump intake, 4" discharge on pumps to tee valve expanded to 6" discharge |
| Pump station bypass? | no |
| Force main drain? | no |
| Electrical | |
| see site review by Lee Carroll, P.E. | |
| Service rating, voltage | 3 PH, 60 HZ, 208 A |
| Main disconnect | 200 Amp |
| Surge protection? | |
| Intrinsically safe barriers? | no |
| Code issues? (e.g. panel clearance?) | |
| Backup power | |
| Generator make/model | International Diesel Electric Co model 60 H339LPG |
| Generator fuel | diesel |
| Generator KW, voltage | 60 KW, 75 KVA, 3 PH, 60 Hz, 120/208 V |
| Transfer switch | auto |
| Condition/age | estimate 1987 |
| Exercise schedule? | weekly |
| Capacity to run both pump? | yes |
| Portable generator connection? | no |
| Breaker | 225 Amp |
| Serial number | 87221 |
| run hours 387.1, enclosure in poor condition, generator leaking oil | |

Wastewater Pumping Station Inspection

Town of Salem, New Hampshire

Station Name: Stiles Road

Mechanical

Heating

space heater

Ventilation

yes, fan for fiberglass enclosure

Plumbing

Key Elevations

Invert in elevation, ft MSL

Wetwell operating band, ft

Force main discharge elevation, ft MSL

| | |
|-------------------------|------|
| Pump run time per cycle | 1.00 |
|-------------------------|------|

Pump station logs, maintenance records

Operating Concerns, Deficiencies, Improvements and Further Investigation

Additional photos/sketches

| Wastewater Pumping Station Inspection | |
|--|---|
| Town of Salem, New Hampshire | |
| Station Name: Twinbrook Ave (formerly Carol St.) | |
| Date: | Inspected by: JMC/CSM, Ron Benjamin (Town) |
| photos/sketch: | |
| | |
| General | |
| Location | Twinbrook Ave |
| Type (circle one) | wet pit/dry pit; submersible; suction lift; ejector |
| Installation date | 1972 vintage |
| Design Capacity (gpm) | |
| Collects flow from | residential neighborhood, high l/i |
| Transfers flow to | |
| General condition | |
| O&M, record drawings? | |
| Site | |
| Owner | Town of Salem |
| Map/Lot number | |
| Easement? | |
| Lot size, acres | |
| Fence | 13.5' gate, 5' gate, 7' chain link with barbed wire |
| Driveway | paved, minor cracking, good condition |
| Landscaping | no, grass only |
| Access to wetwell by truck? | yes, through 13.5' gate |
| Neighborhood description | residential |
| Structural | |
| Structure description | 14' x 16' building, brick veneer, gable roof, wooden trim, asphalt shingles |
| Dimensions | 8' dia. dry pit |
| Accessibility | ladder in dry pit |
| Confined space issues? | yes |
| Condition | |
| | wet well dry pit 8' can |

| | |
|--|---|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Twinbrook Ave (formerly Carol St.) | |
| Wetwell | |
| Dimensions | 6' ID |
| Material | precast concrete |
| Condition | good, no aggregates |
| Access and size | manhole |
| Steps | 1 step |
| Pump slide rails | no |
| Influent tee | no |
| Vent | no |
| Condition | |
| Foam, odor, grease, grit? | grease debris present in wet well |
| Date/frequency cleaned | annually |
| Emergency storage? | no |
| | |
| Pumps | |
| Design flow, gpm | 250 |
| Design TDH, ft | 42 |
| Observed pump rate, gpm | P1: 257 gpm, P2: 288 gpm |
| Observed TDH ft or discharge psi | |
| Number of pumps | 2 |
| Pump model | Smith & Loveless 4B2 |
| Pump type | Dry pit vertical close coupled |
| Pump serial numbers | P1: 750158216, motor sn: 741884A-15 |
| Motor HP, voltage, # phases | 5 HP, 230 V, 3 PH |
| Motor speed, rpm | 1200 RPM |
| Date last overhauled | annual |
| Does capacity meet peak flow? | |
| 100% redundancy? | assumed |
| | P2 motor model #2: FL8264-XX2574 (same as M1) |
| | recycle system for seal water |
| Controls | |
| Control panel description | Smith & Loveless CP, bubbler defunct |
| Condition/age | fair, servicable, old |
| Location (indoor/outdoor etc) | dry pit |
| Lead/lag controls? | yes |
| Auto alternation? | yes |
| Soft starters? | no |
| Variable frequency drives? | no |
| | |

| | |
|--|---|
| Wastewater Pumping Station Inspection | |
| Town of Salem, New Hampshire | |
| Station Name: Twinbrook Ave (formerly Carol St.) | |
| Instrumentation | |
| Level control type | pressure transducer |
| Level Indicator | pressure transducer |
| Flowmeter type/size | no |
| Flow totalizer or recorder | no, run hours |
| Last calibration date | annual |
| Chart Recorder | no |
| SCADA RTU | no |
| Security system | no |
| Runtime meter | yes |
| Alarms | |
| Alarm panel/display | cell based mission dialer |
| Alarm telemetry | dialer |
| Local alarm light, horn? | no |
| Alarms tested? | no |
| Independent high level alarm? | yes |
| Piping and valves | |
| Air release valves | no |
| Discharge check valves | yes |
| Isolation valves | yes, 4" |
| Valve pit | no |
| Force main size, length, material | 6" |
| Pump station bypass? | no |
| Force main drain? | no |
| | lifting crane hoist in dry pit |
| Electrical | see electrical review by Lee Carroll, P.E. |
| Service rating, voltage | |
| Main disconnect | |
| Surge protection? | |
| Intrinsically safe barriers? | |
| Code Issues? (e.g. panel clearance?) | |
| Backup Power | |
| Generator make/model | Onan (Ford) engine, similar to Halgh Ave., model 30.0 EK-15R/1786C |
| Generator fuel | propane |
| Generator KW, voltage | 3 PH, 30 KW, 37.5 KVA, 254/440 & 277/480 V/1 PH, 20 KW, 25 KVA, 139/240 V & 120/240 & 240/416 |
| Transfer switch | auto |
| Condition/age | |
| Exercise schedule? | weekly |
| Capacity to run both pump? | yes |
| Portable generator connection? | no |
| | |
| | |

