DATE: February 7, 2002, **Revised April 26, 2012**

TO: Office of Drinking Water Staff

FROM: Steven D. Pellei, PE, Acting Director SDP
Office of Drinking Water

SUBJECT: SURVEILLANCE & REGULATIONS - Sanitary Surveys

REFERENCE: WM 844, WM 860, WM 908, WM 910, *R&R Users Guide*, *SDWIS Users Manual*

Project Leader: Susan E. Douglas SED

Revision Highlights:
SDWIS update instructions (Section 6) have been modified to refer to the *SDWIS Users Manual*.
The minimum sanitary survey frequency for surface water and GUDI treatment facilities, operator compliance and monitoring & reporting elements has been reduced from 6 months to 12 months (Section 3, Table 1).
Reference to Tier 2 & 3 Public Notice templates on ODW server have been added (Section 11).
Inspection templates for the Fluoridation treatment process have been revised to agree with latest Center for Disease Control safety recommendations (ATTACHMENTS B & C).

SUMMARY STATEMENT

This guidance in this memo provides procedures and forms to implement Sanitary Surveys. The Sanitary Survey is a core function of the Public Water System Supervision program implemented by the VDH-Office of Drinking Water. The Sanitary Survey of all waterworks is required by federal and state rules and regulations originating from the Safe Drinking Water Act.

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ATTACHMENTS
(REPORT FORMS AND LETTERS)
These attachments are posted separately on the ODW server at
:\03-Memos\301-Active Working Memos\301.02-Forms Letters Manuals

ATTACHMENT A: GROUNDWATER SYSTEM OWNER'S REPORT

ATTACHMENT B: GROUNDWATER SYSTEM INSPECTION REPORT

ATTACHMENT C: SURFACE WATER & GUDI SYSTEM INSPECTION REPORT

ATTACHMENT D: CONSECUTIVE SYSTEM INSPECTION REPORT

ATTACHMENT E: TRANSIENT NON-COMMUNITY (TNC) SYSTEM INSPECTION REPORT

ATTACHMENT F: LIST OF POTENTIAL SIGNIFICANT DEFICIENCIES

ATTACHMENT G: TRANSMITTAL LETTER FOR SANITARY SURVEY REPORT WITH SIGNIFICANT DEFICIENCY & CAP

ATTACHMENT H: TRANSMITTAL LETTER WITH NOV

ATTACHMENT I: MONITORING HISTORY - R&R REPORT INSTRUCTIONS

1. PURPOSE

Sanitary surveys performed by ODW staff are a vital part of our mission to ensure all people in Virginia have access to an adequate supply of affordable, safe drinking water that meets federal and state drinking water standards. A sanitary survey of every waterworks is required by the EPA, as the information gathered may be used to identify compliance with State and Federal regulations and to identify significant deficiencies requiring corrective action.

2. SCOPE

Safe drinking water depends on many factors. An adequate sanitary survey is categorized into **EIGHT ESSENTIAL ELEMENTS.** These elements are described below.

1. Source(s)

   Surface Water: Includes intake structure and all valves and piping to WTP, and *associated pumping facilities*[1]

   Ground Water: Includes well, well casing, grout, valves, and piping to treatment plant (if treated) or to raw water tap (if not treated), *including the well pump*[1].

   Spring: Includes spring box, controls, valves, *and associated pumping facilities*[1].

2. Treatment

   Treatment is any chemical or physical processing of raw, applied to finished water that alters or enhances water quality in any way. This includes

   - Chemical addition systems (chemical metering pumps, pumps for chemical feeders, day tanks, or chemical mixing tanks, and pumps for chemical transfer, etc.) to treat raw water or finished water anywhere in the system
   - Aeration or agitation within the pipes or any vessel, pond, reservoir or basin
   - Sedimentation, Adsorption or Exchange processes
   - Filtration (including backwash and all appurtenances)

3. Distribution System

   Includes all piping and appurtenances following the treatment plant (or entry point tap) to convey finished water to consumers. Includes air release valves, fire hydrants, yard hydrants, blow off valves, sampling stations, meters, isolation valves, backflow prevention devices (RPZ, etc.).

4. Finished Water Storage

   All finished water storage vessels following treatment include: clearwell, hydropneumatic tanks, atmospheric storage tanks, bladder tanks, etc.

[1] Italicized items are included under this category for field inspection efficiency. This differs from the EPA Guidance Manuals, which combine ALL pumps into one category.

5. Pumps, Pump Facilities and Controls

   Includes intermediate pumps, finished water pumps at the treatment plant and booster pumps in the distribution system.

6. Monitoring and Reporting (M&R) and Data Verification

   Includes source and finished water quality data (bacteriological, physical, chemical, and radiological). Much of this element will be performed in preparation for the site visit, such as review of:

   a. Sampling Schedules
   b. Compliance sample results
   c. Violations and Public Notice Completion
   d. Monthly or quarterly Operation Reports
   e. Past Sanitary Surveys and Photos
   f. Submission of all required monitoring plans and reports
   g. Permits and Engineering Description Sheets

   This task also includes all field sampling and data collection conducted by ODW during the sanitary survey for verification of performance (not compliance with the SDWA).

7. Management & Operations

   Management and operations effect the overall water quality and reliability of the entire system. Some items that are included in this element are verification of:

   a. Corrective actions made in response to deficiencies cited, and all other recommendations from previous surveys.
   b. An effective cross-connection control program at the plant(s) and in the distribution system.
   c. Complaint history and response.
   d. Water loss and water audits performed. This includes an evaluation of the total amount of water produced/purchased vs. the total amount of water billed by the waterworks for revenue. AWWA recommends that routine water audits be conducted over a time period of at least 12 months. ODW has determined that >30% Leakage (Real Losses) to be a potential Significant Deficiency. More information on water loss terms and water audits can be found on the ODW server at:

      :\06-Technical Resources\665-Water Accountability & Leakage

   e. Asset Management Programs. This process includes the assessment of the current state of facilities and equipment owned and operated by the waterworks, and planning and scheduling maintenance, repair, and replacement at the lowest appropriate costs. Although state and federal regulations currently do not require asset management programs, they are encouraged. EPA information available on their website:
      - Asset Management Best Practice Guide
      - Check Up Program for Small Systems (CUPSS) – Asset management software

- Asset Management: A Handbook for Small Systems – STEP Guide Series
- Taking Stock of Your Water System: A Simple Asset Inventory for Very Small Drinking Water Systems
- Building an Asset Management Team
- Asset Management for Local Officials

Separate Capital Improvement Programs (CIP) may also be developed by waterworks or public utilities.

f. Operational supplies

g. Onsite laboratory

h. Emergency Management Plan. Every community waterworks, including consecutive systems, must have a current Emergency Management Plan for Extended Power Outages, as required by the *Waterworks Regulations*. It must be kept current and be readily accessible. The waterworks must certify in writing to the appropriate ODW Field Office that they have completed the plan. Specific information required in the plan is described in the *Regulations.*

8. Operator Compliance

The qualifications of system personnel must match Water System classification including the number of personnel and coverage of personnel when out sick or on vacation, according to the *Waterworks Regulations* and DPOR requirements.

During the survey ODW staff should courteously and thoroughly question the operators to determine their knowledge of the facility and its processes, the operator's ability to reliably operate the waterworks, and the attention paid to process control and maintenance. Performance of field tests is encouraged and results of those tests should be noted in the report.

3. FREQUENCY OF SURVEYS

All of the eight elements are necessary for a thorough survey, but not all elements may be necessary or evaluated at each survey. This is particularly true when surveys are conducted at very frequent intervals. Many of the elements, however, need to be evaluated at every survey. Completed element evaluations will be documented on written sanitary survey reports and in the State Drinking Water Information System (SDWIS) database.

The Interim Enhanced Surface Water Treatment Rule and the Ground Water Rule require States to complete sanitary surveys for all surface water systems, groundwater systems, and groundwater under the direct influence of surface water (GUDI) systems.

ODW has established sanitary survey schedules based on water source, treatment provided, and waterworks classification. No element shall be surveyed less than every 3 years. ODW's *minimum* sanitary survey frequency schedule is included in Table 1.

TABLE 1
MINIMUM SANITARY SURVEY FREQUENCY ESTABLISHED BY ODW, Months
(Report Template Section Shown in Parentheses)

ELEMENT: / **WW TYPE**	1 Source	2 Treatment	3 Distribution	4 Storage	5 Pumps	6 M&R	7 Mgmt	8 Operator
GW, no Treatment	24 (Part II)	N/A	36 (Part I)	36 (Part II)	36 (Part II)	24 (Part I)	24 (Part I)	24 (Part I)
GW, 4-log Virus Treatment req'd	12 (Part II)	12 (Part II)				12 (Part I)	12 (Part I)	12 (Part I)
GW, other Treatment	18 (Part II)	18 (Part II)				18 (Part I)	18 (Part I)	18 (Part I)
SW & GUDI	12 (Part II-B)	12 (Part II-A)	36 (Part II-B)	36 (Part II-B)	36 (Part II-B)	12 (Part I, II-C)	36 (Parts II-C, II-D)	12 (Part I)
Consecutive	N/A	36 (Part II)	36 (Part I)	36 (Part II)	36 (Part II)	36 (Part I)	36 (Part I)	36 (Part I)

To insure that all eight Elements have been surveyed for each waterworks during any three year interval, a database query and reporting tool will be provided.

4. SANITARY SURVEY PROCESS

The procedures needed to perform a Sanitary Survey are depicted in section 4.3 Sanitary Survey Process Flow Diagram. These major activities are included: scheduling, file and database review, field inspection, survey report completion, supervisor review including verification of Significant Deficiencies and Violations, and database updates.

4.1. Imminent Health Threats

During the course of a site visit, if the inspector believes that the waterworks is under an imminent health threat (e.g. one or more barriers have been compromised, and chemical or microbial contamination is believed to be occurring), then the inspector must contact his/her supervisor to discuss the situation and decide on an appropriate course of action. Findings that may indicate an imminent health threat include:

- Well flooding/ surface water intrusion
- Contamination of source or finished water from a chemical spill or cross-connection
- Unapproved use of a groundwater source without acceptable water quality data
- Zero or negative system pressure
- Major water main break/interruption
- Inadequate disinfection / log inactivation not achieved / minimum chlorine residual not maintained
- Elevated filtered water turbidities

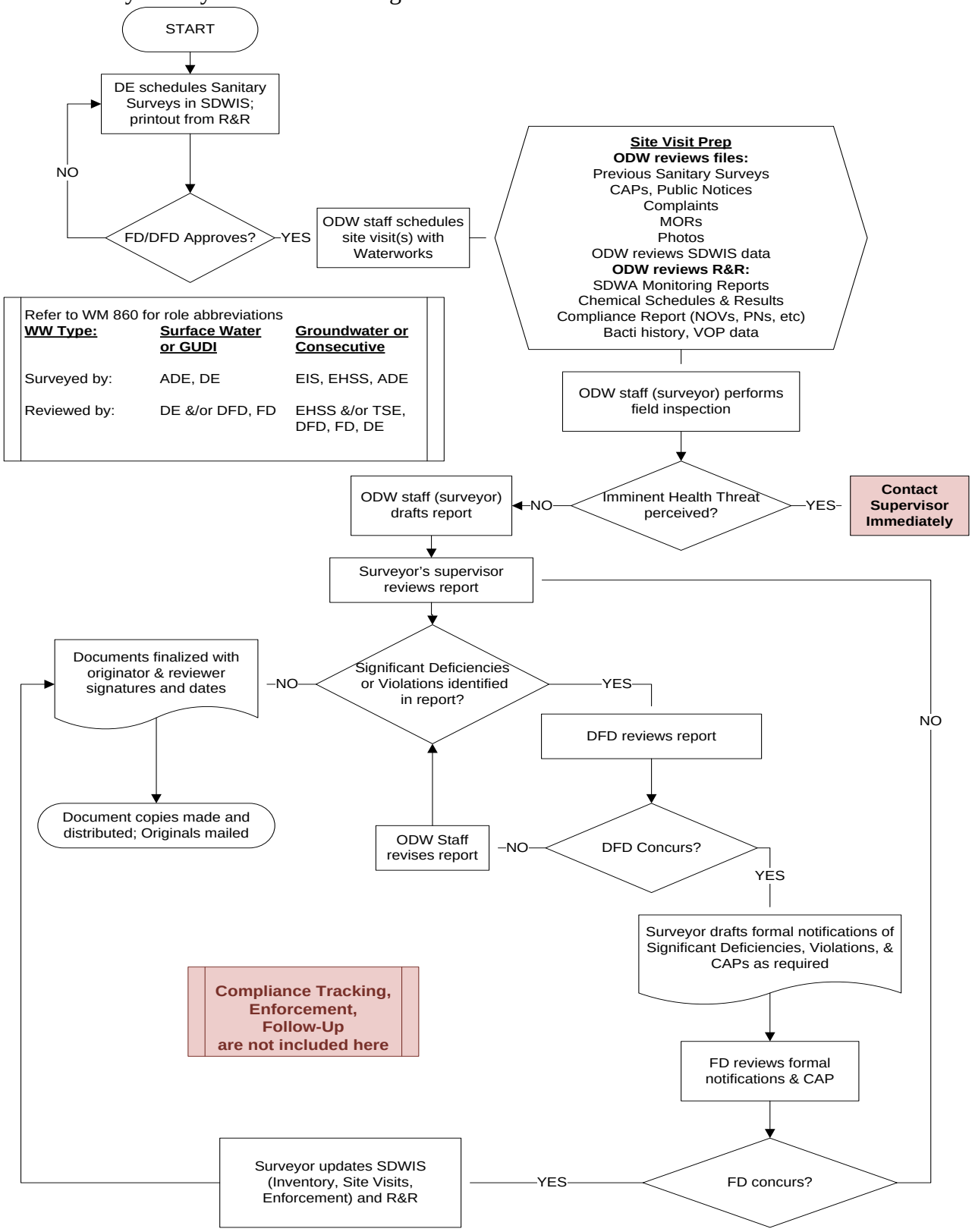
- Unprotected openings in finished water tanks with evidence of contamination (intrusion by birds, insects, etc.)

If the Field Director and Local Health Director support the issuance of a Special Notice, the inspector should assist the waterworks with preparation of the notice. The inspector should provide technical assistance on site to correct the problem, whenever possible. Depending on the severity of the situation, the inspector may need to end the inspection and schedule a follow-up site visit.

4.2. Safety Concerns

The inspector shall not enter confined spaces or climb elevated structures such as tanks. The inspector must use other methods and devices, such as binoculars, mirrors and lighting, to make field observations.

4.3 Sanitary Survey Process Flow Diagram



5. SANITARY SURVEY REPORTS

The attached sanitary survey report forms are for use in conducting and reporting the results of sanitary surveys.

The forms have been designed to

- provide uniformity of surveys,
- ensure completeness of the surveys,
- facilitate recordkeeping and SDWIS updates,
- allow follow-up surveys by other staff if necessary,
- provide owners/operators with a separate and concise notification of deficiencies,
- motivate owners/operators to take corrective action for recommendations,
- develop a Corrective Action Plan, if a significant deficiency exists, and
- provide a record for future surveys, for emergency situations, or when technical assistance is needed.

Part I of the report template is mandatory and shall not be modified. The subsequent sections are generated from field visits and may need to be customized for the particular waterworks surveyed.

If the template does not provide sufficient space, then place numbers in boxes where comments are required, and write the comments at the bottom of the page or on another sheet, to be included with the report.

The report can be brief or as detailed as necessary, with extra sheets added for narrative, to convey to the owner the deficiencies that exist. If the written report differs from the on-site discussion during the survey, the owner/operator must be phoned to notify of the change(s) and the reason(s).

5.1. Groundwater Systems Owner's Report or Transmittal Letter

The owner's report has been tailored to stand on its own without the full Sanitary Survey report. It includes minimal background information: date and type of survey, a listing of those in attendance, the next scheduled samples, and next scheduled inspection, and the most significant comments/findings. A template is provided in Attachment A.

Alternatively, the full sanitary survey report may be sent to the owner with a transmittal letter. If a Significant Deficiency is found during the Sanitary Survey, then the full report (Parts I and II) must be sent with a Significant Deficiency notification letter and Corrective Action Plan, as shown in Attachment G. If a violation is found during the Sanitary Survey, then the full report (Parts I and II) must be sent with the violation notice, as shown in Attachment H.

5.2. Groundwater Systems Part I - System Background

This section of the sanitary survey report reflects Essential Element numbers 6, 7, and 8. A template is provided in Attachment B and includes the following:

- General Information
- Compliance History
- Monitoring History

Completion of this section is mandatory**.** "Compliance History" is self-explanatory and should be completed before conducting the field inspection. Compliance dates may be obtained by running the R&R "System Data Dates" report. "Monitoring History" should be generated from R&R "Chemical Schedule" reports. See Attachment I for instructions to generate the Monitoring History report from R&R and paste into the sanitary survey report.

5.3. Groundwater Systems Part II – System Survey Information (Field Notes)

This portion of the report is intended to be used during the onsite review of the water source, facilities, equipment, operation, and maintenance of the waterworks. A template is also provided in Attachment B, and includes forms for wells and spring sources, and typical groundwater treatment processes.

In cases where other treatment processes are present, the staff will need to develop their own process-specific checklist(s) for inclusion in the survey report. The list(s) should follow the general format of that for fluoridation, including a review of the past 12 months' operation reports to determine effectiveness of treatment, questions pertaining to potential health threats (usually cross-connection control), physical facilities required by the *Waterworks Regulations*, and operational considerations. The staff should consult with the Deputy Field Director to assure that the pertinent items are included in the lists, and shared with other field offices as well as the Central Office for inclusion in future revisions to the template(s).

Staff are encouraged to take digital photographs of the facilities, and prepare piping diagrams or schematics. This information can be valuable to the staff in finalizing the survey report. It may also be an important future reference and may be incorporated into the Engineering Description Sheet of the Waterworks Operation Permit. Photos and schematics should be copied into the correspondence file after each inspection.

Performing field tests such as chlorine residual, pH, alkalinity, hardness, iron, manganese, etc. should be considered during surveys of most groundwater systems. Field tests may also be warranted during a complaint investigation, when requested by the owner/operator, or for the purpose of evaluating a treatment process. If the owner's report is prepared, then include the results of all field tests; otherwise document the results with the inspection form of the related waterworks facilities.

Problem solving must be approached systematically. Only after a thorough evaluation of all system components is completed, should recommended actions be reported to the owner/operator. Staff with limited experience or simply unable to confidently interpret the survey findings should defer to more experienced ODW staff for resolution.

5.4. Sanitary Survey Format for Surface Water and GUDI Source Waterworks

The sanitary survey report forms in Attachment C are for use in conducting and reporting the results of sanitary surveys performed at waterworks served by conventional surface water plants and membrane systems, excluding Reverse Osmosis.

This report form is designed to cover both performance of the physical facilities and the operational and managerial institutions which govern the facilities. The purpose of the form is to provide a means to look at the necessary unit processes at the treatment plant and at associated facilities elsewhere, and to look at the programs which need to be in place to ensure proper operation, maintenance, planning and funding of those facilities on an on-going basis.

5.5. Surface Water Systems Part I - System Background & Findings

This part includes the following topics, which are researched and completed *before* the field inspection:

- Capacity information
- Operation reports status
- Complaints summary
- Monitoring History
- Compliance History
- Enforcement Actions
- VOP performance

Following the sanitary survey the findings (especially deficiencies) are summarized in this section. It is recommended that the VOP performance summary from R&R be printed and shared with the Designated Operator (DO) during the routine site visit.

5.6. Surface Water Systems Part II - A

This part includes field observations on the following topics:

- Unit Process Evaluations (Treatment)
- Finished Water Facilities (Clearwell)

5.7. Surface Water Systems Part II - B

This part includes field observations on the following topics:

- Raw Water Intake / Surface Source Evaluation
- Spring Source Evaluation (if declared GUDI)
- Source Water Assessment and Protection

5.8. Surface Water Systems Part II - C

This part includes field observations on the following topics:

- Distribution System Evaluation
- Cross Connection Control Program

- Distribution Storage
- Distribution Pump Station(s)

5.9. Surface Water Systems Part II - D

This part includes the following topics:
- System Management & Operations
- Financial

5.10 Sanitary Survey Report for Consecutive & TNC Systems

Consecutive system sanitary surveys may include up to seven of the eight Essential Elements:

1. Distribution System
2. Finished Water Storage
3. Pumps, Pump Facilities and Controls

these are found in Part II

4. Monitoring & Reporting and Data Verification
5. Water System Management and Operations
6. Operator Compliance

These are found in Part I

7. Treatment - this would be added to Part II

A template for a consecutive waterworks sanitary survey report is provided in Appendix D. One for TNC waterworks is provided in Appendix E.

6. SDWIS UPDATE

Upon completion of the sanitary survey report, the SDWIS - "Site Visits" module must be updated. Refer to the *SDWIS Users Manual* for specific data entry instructions.

7. DISTRIBUTION OF SANITARY SURVEY REPORTS

The entire report form for surface water and GUDI systems will be forwarded to the waterworks owner and to operations supervisor. For groundwater systems, the owner and/or operations supervisor may receive a full copy of the inspection report <u>or</u> a copy of the Owner's Report. **The ODW Central Office shall receive complete sanitary survey reports.**

A special copy of the Owner's Report (or letter to owner or opening/summary section) **<u>plus</u>** only the appropriate evaluation sheets (unit process review sheets) for fluoridation systems shall be sent to the Division of Dental Health for **<u>all</u>** waterworks which practice fluoride adjustment, whether groundwater or surface water. The copy shall be sent to:
cc: VDH – Division of Dental Health, Fluoridation Coordinator

For all federally-owned waterworks, a copy of the opening/summary section of the report or the owner's letter is to be mailed by the field office to:

Federal Facilities Program (3EC00)
Office of Enforcement, Compliance and Environmental Justice
US Environmental Protection Agency, Region 3

1650 Arch Street
Philadelphia, PA 19103
Phone: (215) 814-2148
Fax: (215) 814-2905

All sanitary survey reports shall be written, reviewed, and sent out of the Field Office within 30 calendar days of the survey.

8. SIGNIFICANT DEFICIENCIES

Significant Deficiency means any defect in a waterworks' design, operation, maintenance, or administration, as well as any failure or malfunction of any system component that may cause, or have the potential to cause, an unacceptable risk to health or that could affect the reliable delivery of safe drinking water.

All Significant Deficiencies identified by ODW staff during sanitary surveys must be corrected. A list of potential Significant Deficiencies is provided in Attachment F. (This list is also provided in SDWIS to facilitate data entry of Significant Deficiencies.) The list represents several possible Significant Deficiencies for waterworks but cannot account for all of the possible Significant Deficiencies for all waterworks. ODW staff may also determine event-specific Significant Deficiencies as appropriate.

If a staff member performing a sanitary survey observes one of these deficiencies, concurrence must be obtained from the Deputy Field Director prior to finalizing the report and formally notifying the waterworks owner. The observed deficiency shall be subject to the following questions in order to confirm that it is a Significant Deficiency:

- Does the deficiency cause the potential for acute and chronic contaminants to be introduced into the drinking water?
- If left uncorrected will the deficiency cause the potential for the introduction of contaminants into the drinking water at some time in the future, that has the potential for acute or chronic health effects?
- Does the deficiency affect treatment in a manner that increase the potential risk to public health?
- Does the deficiency cause the introduction of contaminants into the drinking water, that has the potential for acute or chronic health effects?

Within 30 days ODW must notify the waterworks owner in writing of a confirmed significant deficiency, as well as sending a full copy of the sanitary survey report. Use the sample Significant Deficiency notification letter and Corrective Action Plan in Attachment G. If a Significant Deficiency exists, then Corrective Action is required.

9. CORRECTIVE ACTION PLANS

Draft Corrective Action Plans (CAP) will usually be generated by ODW staff and included with the formal notification of a significant deficiency. The transmittal letter must inform the waterworks owner to review, sign and return the proposed CAP within 45 days. The waterworks owner may revise the proposed CAP (with ODW review and approval) or develop an owner generated CAP (see below). The CAP will include a list of specific activities, along with a schedule, to correct any significant deficiencies. CAPs are enforceable schedules of compliance and must include the following:

1. A statement of the deficiency
2. The action(s) necessary to correct the deficiency
3. Detailed schedule with begin dates and deadlines for each step to correct the deficiency
4. A statement that the waterworks will notify the appropriate field office, in writing, within 30 days of completing individual scheduled actions.

Corrective Action Plans may include the following:

1. Proposed interim measures to prevent a recurrence
2. Source of funding, if necessary
3. Any follow-up actions

If the waterworks owner desires to develop the CAP, field office staff must advise the waterworks owner that:

- A 30 day period to consult with ODW regarding the Corrective Action(s) is allowed and
- A subsequent 15 day period to submit to ODW a written CAP is also allowed.

CAPs will be given the highest priority for review as they address a potential threat to public health. CAP submittals will be acted on within 30 days of receipt. CAP action items and associated completion dates must be logged in SDWIS for compliance tracking.

10. CORRECTIVE ACTION PLAN FOLLOW-UP

Within 120 days of receiving written notification of a Significant Deficiency, the waterworks owner must complete all Corrective Actions or be in compliance with the schedule of activities in an approved CAP. Waterworks owners should complete CAP corrective action(s) within 120 days. Failure to complete Corrective Actions or meet individual approved schedule deadlines is a Treatment Technique violation. However, if reasonable events preclude the meeting of a deadline, the CAP may be revised, and no violation would be incurred.

The waterworks owner must notify ODW within 30 days of completing any required Corrective Actions. Logging of all deadlines for actionable items must be done in SDWIS for tracking purposes.

Onsite inspections will be conducted by Field Office staff after notification from a waterworks that a CAP has been completed. The inspection must be conducted within 30 days of notification from the waterworks. A written report of the inspection will document and inform the waterworks of ODW's concurrence or non-concurrence with the waterworks that the completed corrective action(s) meet(s) the intent of the CAP.

11. SIGNIFICANT DEFICIENCIES AND VIOLATION NOTICES

Virginia Administrative Code (VAC) violations that have also been identified as Potential Significant Deficiencies are listed in Table 2.

TABLE 2
SIGNIFICANT DEFICIENCIES AND VAC VIOLATIONS

VAC Violation (WM 908)	Significant Deficiency
B1 – Failure to Follow Approved BSSR or TSWMP	MR04 – Sampling not in accordance with BSSR
B2 – Lacks Properly Licensed Operator	OC01 – Number and Class of Operators do not meet WW Regulations
C6 – Less Than 20 psi at Service Connection	DS01 – Distribution pressure falls below 20 psi
C3 – Reliability problem; examples in WM 908 Attachment 2:	
• Failure to reliably maintain treatment or chemical addition – chlorination	TR05 – Failure to maintain continuous disinfection TR06 – Minimum chlorine residual not maintained to meet CT TR07 – Entry point chlorine residual < 0.2 mg/L
• Failure to reliably maintain treatment or chemical addition – corrosion control	TR11 – Inadequate continuous treatment
• Failure to maintain infrastructure – well seal	SO04 – Sanitary seal or pitless adapter well cap missing or defective
• Failure to maintain infrastructure – storage tanks	FW01 – Tank not watertight FW02 – Roof/Access hatches not watertight FW03 – Tank structurally unsound FW04 – Vent improperly screened FW05 – Overflow improperly screened or protected from contamination FW06 – Drain improperly screened or protected from contamination
• Failure to maintain infrastructure – distribution system	DS03 – Distribution leakage rate > 30%

When a VAC Violation is identified in the sanitary survey, it should be issued, per WM 908. When the Deputy Field Director confirms that the item is also a Significant Deficiency, then the Significant Deficiency data must be entered into SDWIS, and "associated" to the violation.

If the waterworks is non-compliant with the Corrective Action Plan because it fails to meet a schedule deadline or resolve a corrective action to the satisfaction of ODW, a Treatment Technique violation has occurred. Refer to the SDWIS Users Manual for further instructions.

Treatment technique violations require a Tier 2 Public Notice. Public Notice templates (Tiers 1, 2 and 3) are provided on the ODW server at \\Odwsrv1\odwshare\13-Public Notice & NOV Templates

END OF MEMO

{VDH-ODW Letterhead}

(Groundwater)(Consecutive) System Sanitary Survey Report

DATE

To: *Owner Name*
Waterworks Name
Address
City, State, Zip Code

SUBJECT:
Waterworks:
PWSID:

Survey Date:

Present at Survey:

Next Survey Scheduled For:

Future Sampling Requirements: See attached *(or insert table here)*

As a result of the sanitary survey noted above, the Department offers the following comments. Should you have questions or desire to discuss our findings, or desire a copy of the inspector's field evaluation notes, please contact us at (*phone number)*.

1. *Comment*
2. *Comment*
3. *Comment*

Please visit our web site at www.vdh.virginia.gov/drinkingwater. There you will find helpful information on water sampling and testing, operator licensing and training, consumer education, project funding and **many other topics, as well as, links to other key websites and Virginia's *Waterworks Regulations*.**

Survey By:

Name
Title

Attachment *(with owner & operator letters only)*

cc: *Name of Operator* (copy of attachment)
VDH-ODW-Central Office
County Health Department, Attention: *<<Name of Health Director>>*
County Administrator

VIRGINIA DEPARTMENT OF HEALTH
OFFICE OF DRINKING WATER
GROUNDWATER SYSTEM SANITARY SURVEY REPORT

SUBJECT:
WATERWORKS:
PWSID:

PART I - SYSTEM BACKGROUND

GENERAL INFORMATION

Owner Name:	Waterworks Class:
Type of Waterworks:	
Contact Name:	
Contact Address:	
Contact Phone Number:	

D.O. License Class:	D.O. Has Required License:
D.O. Legal Name:	License No./Exp. Date:

Inspection By:	Inspection Date:
Time Spent:	Last Inspection Date:
Date to Reviewer:	Reviewed by/Date:
Date to Reviewer:	Reviewed by/Date:
Inspection Type:	
Present at Inspection:	
Facilities Inspected:	

Operation Permit Effective Date:	Engineering Description Sheet Date:
Permit Up-to-Date:	Description Sheet Up-to-Date:
No. Connections:	Population Served:
Avg. Daily Production:	Operation Permit Capacity:
Exceeds 80% Operation Permit Capacity? (max. 3 consecutive months): If yes, explain:	
Treatment Provided:	
SDWIS Inventory Information Current:	

Comments:

COMPLIANCE HISTORY

Shaded Boxes	Indicate a potential Significant Deficiency

TOTAL COLIFORM & GROUNDWATER RULE		**DATE**
• BSSR Approved:		
• TSWMP Approved:		
• Are plans current & appropriate for service population?		
• Sampled in accordance with approved plans?		
• Disinfection required? (adequate contact time)		
Source # / Name (if multiple sources, list)		
• 4-Log virus inactivation required?		
Source # / Name (if multiple sources, list)		
• 4-Log virus inactivation provided?		
Source # / Name (if multiple sources, list)		
• On-line chlorine analyzers required for chlorine residual?		
ROUTINE RAW WATER BACTERIOLOGICAL MONITORING (*checked over past 12 months*)		
• Required?		
o If "Yes", Frequency:		
• # of *E. coli* positive Samples		
• # Samples with Total Coliform >100 CFU/ml		
GUDI DETERMINATION	**RESULT**	**DATE**
• *Source # / Name*		
SOURCE WATER ASSESSMENT PERFORMED		
• *Source # / Name*		
SOURCE WATER PROTECTION		
• Written source water protection plan?		
DDBP RULE - STAGE 1 (Community & NTNC, Disinfectant Used)		**DATE**
• Stage 1 Monitoring Plan approved?		
• Monitoring Plan current?		
• Monitoring frequency required:		
DDBP RULE - STAGE 2 (Community & NTNC, Disinfectant Used)		**DATE**
• Stage 2 Sampling Plan approved and current?		
• Compliance Extension Requested?		
o If "Yes", granted?		
o If "Yes", effective exemption dates:		
Comments:		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

PHASE II/V RULE		
• Waivers current for all entry points		
CONSUMER CONFIDENCE REPORTS (Community only)		
• Final report issued by deadline		
• Certification Statement Received?		
LEAD & COPPER RULE (Community & NTNC)		**DATE**
• Materials Survey/Sampling Plan Approved:		
• Action Level Exceedance (90%)		
• Optimized Corrosion Control Treatment (OCCT) required?		
• Public Education requirements met if required		
• All consumer notice requirements met?		
CROSS-CONNECTION CONTROL PROGRAM		**DATE**
• Approved:		
• Inspected Records This Visit		
o Program Active		
o Satisfactory		
(MONTHLY) OPERATION REPORTS		
• All submitted for past 12 months?		
• Operational treatment parameters monitored?		
• All required data reported?		
EMERGENCY MGMT. PLAN for Extended Power Outage (Community only)		**DATE**
• Verification received?		
• Current?		
ASSET MANAGEMENT (recommendation)		
• Written Plan Developed?		
• Routine Maintenance Performed?		
ENFORCEMENT		**DATE**
• Administrative/Consent Order in Effect:		
• Violations / Enforcement Actions Since Last Survey:		
• Owner issued Public Notice as required?		
• Active Corrective Action Plan?		
o If "Yes", is waterworks on schedule?		
• SDWIS Violation & Enforcement Action, Public Notification data current?		
COMPLAINTS SINCE LAST INSPECTION:		
• If yes, summarize:		
Comments:		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

MONITORING HISTORY

Insert R&R report - Next Chemical Sample Due. See WM 851, Attachment G for instructions.

If field notes are sent with the owner's report, the Next Chemical Sample Due report does not need to be included in both this section and the owner's report.

PART II - SYSTEM SURVEY INFORMATION (Field Notes)

Shaded Boxes Indicate a potential Significant Deficiency

COMBINED SECTIONS

A. SOURCE - WELL
B. WELL HOUSE
C. STORAGE - PNEUMATIC TANK(S)
D. CHEMICAL FEED SYSTEMS – SAFETY/GENERAL
E. DISINFECTION
F. NEW ACTIVITIES OR POLLUTION SOURCES
G. STORAGE - ATMOSPHERIC TANK(S)
H. BOOSTER PUMP STATION(S)

INDIVIDUAL SECTIONS

I. SOURCE - SPRING / SPRING ENCLOSURE / PUMP FACILITIES
J. DISTRIBUTION SYSTEM
K. METER & VALVE VAULT(S)
L. CONTINUOUS CHLORINE ANALYSIS
M. ULTRAVIOLET LIGHT UNITS
N. CORROSION CONTROL or SEQUESTRATION
O. IRON & MANAGNESE CONTROL ($KMnO_4$ - GREENSAND FILTERS)
P. FLUORIDATION
Q. ION EXCHANGE
R. REVERSE OSMOSIS

It is not necessary to include this page in a completed Sanitary Survey Report

A. SOURCE (WELL # / NAME)

Sanitary Casing Seal /Cap	
Elbowed Casing Vent/Screened	
12” Casing Extension	
Concrete Pad (6’ Square)	
Well Lot Condition (50 ft Radius)	
Protected from Flood Waters/ Runoff	
Discharge Check Valve	
Discharge Shut-Off Valve	
Valved Blow-Off	
Raw Water Sample Tap	
Water Level Gauge or Transducer	
Operable Water Meter/Reading	
Permitted Capacity (gpd)	
Pumping Rate Observed (gpm)	
Pumping Average hrs/day	
Permitted Source Capacity Exceeded?	
Discharge Head Observed (psi)	
All Weather Access	

B. WELL HOUSE

Adequate Protection	
Proper Storage Only (Non-toxic & Non-explosive)	
Cross-Connections Exist?	
Lighting	
Heating	
Electrical Wiring (Safety)	
Floor Drain	
All-Weather Access	
Wellhead Accessible	
Locked	
Clean/Uncluttered	
Emergency Power Available	

C. STORAGE - PNUEMATIC TANK(S)

(NAME/ LOCATION)
(Tank Volume)

Type: Pre-Pressurized or Hydro-Pneumatic	
Drain Protected from Contamination	
Pressure Gauge/Reading	
Pressure Operating Range	
Sight Glass/ Level Indicator	
Sample Tap Available	
Pressurizing System	
Vacuum Relief Valve	
Pressure Relief Valve	
Air Relief Valve	
Exterior Condition	
Normal Pump Cycling	
Tank Watertight, Structurally Sound	
Flushed/Cleaned Date	
Dept. of Labor & Industry Exp. Date (>120 gal.)	

D. CHEM. FEED SYSTEMS

SAFETY / GENERAL

Do any chemical storage and handling facilities offer potential for explosions?	
Is adequate safety equipment provided for chemical handling (i.e. rubber gloves, breathing apparatus, goggle, aprons, etc.)?	
Are Material Data Safety Sheets (MSDS) available?	
Are hazardous chemical containers labeled?	
Is adequate chemical storage area provided?	
Are there approved backflow prevention devices installed to isolate process water from finished water?	
Does the waterworks have adequate employee safety training?	

E. DISINFECTION

Disinfectant	
ANSI Certified/NSF Approved / “GRAS”	
Feeder Condition	
Spare Feeder/Repair Parts	
Room Ventilation	
Contact Tank in service	
Contact Tank Condition	
Injection Line Condition (Scale Build-Up, etc.)	
Solution Tank Condition	
Solution Tank Covered	
Feeder Activation/Operation	
Weight (gas) or Volume/ Depth (OCl) Scale	
Number Full Cylinders (Gas Only)	
Booster Pump(s)	
Residual Test Equipment	
Free Residual, mg/l	
Field test ≈ MOR residuals	

F. NEW ACTIVITIES OR POLLUTION SOURCES

within 1000 ft radius of well that present a significant/acute health risk.

Activity or Pollution Source	Approx. Distance from Well

Comments:

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

G. STORAGE - ATMOSPHERIC TANK(S)

(NAME/LOCATION)
(Tank Volume)

WATER QUALITY PROTECTION	
Structure Watertight	
Vent Shielded and Screened	
Drain Satisfactory, Protected	
Tank Overflow	
• Screened	
• Air Gap Provided at Outlet	
• Splash Pad/Erosion Protection	
Roof Hatch Watertight	
Sidewall Access Watertight	
Accesses Locked/Bolted	
Other Tank Openings Curbed and Sleeved	
Other Tank Openings Covered	
Maintenance/Repair Date	
Frequency/Date of Professional Tank Survey (Recommended ~5 yr)	
Frequency/Date of Routine Tank Survey (Recommended ~1yr)	
Tank(s) Appear Structurally Sound	
Properly Modified for Antennae?	
WATER QUALITY MAINTENANCE	
Sample Tap Available	
Frequency Samples Collected	
Floating Debris Observed	
Good Turnover Potential	
Flushed/Cleaned Date	
OPERATION	
Tank Level Controls Operable	
Automatic or Manual	
Tank Level Recorded	
Automatic Recorder Operable	
CORROSION CONTROL	
Routine Interior Inspections Scheduled	
Interior Corrosion Visible	
Exterior Corrosion Visible	
Cathodic Protection Operable	
SAFETY	
Interior/Exterior Ladder Condition	
Interior/Exterior Ladder Guard	
Adequate Railing Available	
Safety Belt Available	
LOT	
Upkeep	
Access Road Maintained	
Surface Water Diverted	
Fence Condition Good	
Access Locked	

H. BOOSTER PUMP STATION(S)

(NAME/LOCATION)

PUMP STATION LOT	
Upkeep Adequate	
Surface Water Diverted Away	
Access Road Maintained	
PUMP STATION BUILDING	
Light Operable	
Ventilation Operable	
Heating Operable	
Pump Gland Piped to Drain	
Concrete Floor	
Screened Floor Drain	
Locked	
Deterioration &/or Damage Evident	
Storage of Toxic Chemicals	
PUMP STATION OPERATIONS	
No. of Pumps in Operation	
All Pumps Operable	
Pump Controls:	
• Automatic	
• Manual	
Pump Alternation:	
• Automatic	
• Manual	
Flow Meter Operable	
Low Pressure Cut-off	
Alarm Operable	
Compound Gauges Operable	
Cross Connections are Present	
PUMP MAINTENANCE	
Pump Service Schedule	
Pump Service Recorded	
Discharge Gate Valve	
Suction Gate Valve	
Check Valve	
Emergency Power Available	

COMMENTS:

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

I. SOURCE - SPRING / SPRING ENCLOSURE / PUMP FACILITIES		
	SPRING # / NAME	**SPRING # / NAME**
Construction Sufficient to Prevent Contamination		
Protected From Flooding		
Spring Overflow Screened		
Spring Lot		
All-Weather Access		
No Cross Connections		
Clean/Uncluttered		
Improper Storage of Contaminants		
Spring Enclosure Condition/Acceptable		
Spring Enclosure Protected (Lot Fenced)		
Locked		
Electrical Wiring (safety)		
Lighting		
Heating		
Entry Point Tap Available		
Raw Water Sampling Tap		
Discharge Check Valve		
Discharge Shut-Off Valve		
Valve Discharge to Waste		
Operable Water Meter		
Spring Yield - gpm (if available)		
Emergency Power available		
Comments:		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

J. DISTRIBUTION SYSTEM EVALUATION	
Pipe Material(s):	
Individual Service Meters provided?	
o If yes, routine calibration & replacement program in effect?	
Flushing Provisions (hydrants, blow-offs, etc.) available?	
Routine Flushing Program in practice?	
o If yes, describe:	
Isolation valves exercised?	
o If yes, describe:	
Air/vacuum relief valves checked for operability?	
o If yes, describe:	
Pressure monitoring of distribution system?	
o If yes, describe:	
Adequate Pressure Maintained Throughout? (>20 psi @ peak flow)	
Problems/Complaints in past year: ☐taste & odor ☐pressure ☐turbidity/sediment ☐color ☐service interruptions ☐other Describe:	
Pipe Repair - proper disinfection/sampling procedures used?	
Re-chlorination practiced? (If yes, see separate Re-Chlorination table in this report.)	
FIRE PROTECTION PROVIDED?	
How often are Fire Flow Tests conducted (with fire dept.)?	
How often are hydrants checked for operability?	
Are fire hydrants "NFPA-coded" to indicate maximum available fire flow?	
o If yes, is operator familiar with fire hydrant "code"?	
Are operators familiar with tank levels necessary to provide target fire flow for target duration?	
Does waterworks have routine procedures for contacting local fire department(s) to verify available fire flow and duration?	
MANAGEMENT	
Plans/Sketches/Maps with valve & master meter locations?	
Records maintained (should be kept for 3 years minimum): ☐Repairs ☐Flushing ☐Hydrant Testing ☐Fire Flow Tests ☐Water Audits ☐Complaints	
How often are Water Audits conducted?	
Leakage rates > 30%? Explain:	
Comments: (*Include information on water accountability).*	

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K. METER AND VALVE VAULT(S)	***NAME/LOCATION***	***NAME/LOCATION***
Vault Drain Functioning		
Sample Tap		
Access (Ladder, etc.)		
Locked Access		
Bypass piping		
Pressure gauges (PRV and altitude valve)		
Air/vacuum valve protected from contamination		
Comments:		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

L. CONTINUOUS CHLORINE ANALYSIS	***NAME/LOCATION***
Grab Sampling	
• Are grab samples collected at least weekly for routine calibration checks for each on-line analyzer?	
• Is a sample tap for grab samples located as close as feasible to where samples enter the on-line analyzer?	
• What method is used to analyze grab samples?	
• Is the method acceptable?	
Calibration	
• Are results of calibration checks within the larger of +/- 0.1 mg/l or +/- 15%?	
• Are emergency calibration checks performed as soon as possible when an on-line chlorine analyzer indicates a large (<50%) unexpected change in chlorine residual concentration?	
• Are records of calibration recorded and maintained for 3 years?	
On-line Analyzers	
• Does each analyzer have the readout at its installation and continuous recording (hard copy chart or electronic data)?	
• Is data recorded at least every 15 minutes?	
• Is an alarm activated when chlorine concentration is outside normal operating range? • If yes, what are the alarm settings? Minimum: Maximum:	
Do all chemical reagents and standards for on-line analyzers and grab sample methods have an unexpired shelf life?	
Comments:	

M. ULTRAVIOLET LIGHT UNITS	***NAME/LOCATION***
Does the UV Unit appear to be functioning?	
Is the bulb changed according to the manufacturer's recommended schedule?	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

N. CORROSION CONTROL or SEQUESTRATION	***NAME/LOCATION***
Type Treatment (ortho/poly/blend – phosphate, pH/alkalinity adjustment, calcite contactor, silicate, etc.): & purpose	
Back Siphonage Protection Provided	
Safety Eyewear and Clothing Provided	
Chemical(s) Meet ANSI / NSF Standards	
Equipment Literature Available	
Equipment Condition	
Equipment Operation Adequate	
Spare Feeder/Metering Pump	
Proper Mixing Downstream of Chemical Addition	
Adequate Mixing Provided for Chemical Slurries	
Separate Feeder/Storage Room Provided	
Suitable Chemical Storage (30 days minimum)	
Suitable Sampling Taps (upstream, downstream)	
Calcite Addition Based Upon (calcite contactor)	
Disposal of Backwash Waste (downflow calcite contactor)	
Appropriate & Operable Testing Equipment	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

O. IRON & MANGANESE CONTROL ($KMnO_4$ – GREENSAND FILTER, OTHER-specify)	***NAME/LOCATION***
Cross-Connection Protection – $KMnO_4$ Mixing Tank	
Safety Eyewear and Clothing Provided	
Chemicals meet ANSI / NSF Standards	
Equipment Literature Available	
Equipment Condition	
Equipment Operation Adequate	
Continuous or Batch $KMnO_4$ Addition	
Spare Metering Pump Provided	
pH Adjustment	
$KMnO_4$ Addition Follows pH Adjustment	
Supplemental Oxidants (aeration, chlorine, other)	
If Aeration, How Provided	
Is Disinfection Provided	
Suitable Sampling Taps (prior to $KMnO_4$, influent, effluent)	
Suitable $KMnO_4$ Storage (30 days minimum)	
Is $KMnO_4$ stored away from organic materials (explosion hazard)?	
Backwash (gravity from system/storage, pumped, other)	
No. Backwash Pumps	
Air Wash Provided	
Disposal of Backwash Waste	
Appropriate & Operable Testing Equipment	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

P. FLUORIDATION[1]				
Month		**Split Sample Results**		
	Dose Range (mg/L)	**Waterworks**	**Other**	**Acceptable[2]?**
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

P. FLUORIDE ACID	*NAME/LOCATION*
Anti-siphon protection	
Long gloves, apron, boots & goggles/face shield	
Room ventilation	
Carboy vented to outdoors	
Carboy openings sealed	
Separate feeder/storage room	
Chemicals meet NSF standards	
Feeder condition	
Injection line condition	
Weighing scale/recorder	
Feeder activation/operation	
Back pressure sustaining valve	
Fluoride Ion Test Equipment	
Fluoride Ion Concentration	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

[1] Review monthly operation reports and fluoride split sample reports for the past 12 months. Provide copy of this sanitary survey report to VDH-Dental Health, Richmond.
[2] Within 10% (specific ion electrode) or $\pm$ 0.2 (SPADNS)

P. FLUORIDE SATURATOR	***NAME/LOCATION***
Anti-Siphon vacuum breaker on make-up water line (upflow saturator)	
Air gap on make-up water line (downflow saturator)	
Particulate respirator, gloves, goggles, coveralls	
Chemicals meets ANSI / NSF standards	
Operational water meter on make-up water line (between softener and saturator, if applicable)	
Water meter read and volume recorded daily	
Softener Provided	
Upflow Saturator Pick-up Float Assembly	
Frequency of softener regeneration/replacement	
Hardness of make-up water (mg/l as $CaCO_3$)	
Minimum of 12 inches of fluoride chemical in saturator	
Metering pump and controls operating properly	
Back pressure sustaining valve	
Saturator Cleaning Frequency	
Fluoride Ion Test Equipment	
Fluoride Ion Concentration	
Adequate Cross Connection Control	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

Q. ION EXCHANGE	***NAME/LOCATION***
Treatment Purpose (softening, Fe/Mn removal, other)	
Cross-Connection Protection – Water Inlet to Brine Tank	
Chemicals meet NSF Standards	
Equipment Literature Available	
Equipment Condition	
Equipment Operation Adequate	
Bypass for Blending	
Regeneration (automatic, manual)	
Backwash (gravity from system/storage, pumped, other)	
No. Backwash Pumps	
Suitable Sampling Taps (influent, effluent, blended)	
Corrosion Problem Due to Salt Storage/Usage	
Suitable Salt Storage (30 days minimum)	
Salt Storage/Brine Tank Separated from Vulnerable Equipment	
Disposal of Brine Waste	
Appropriate & Operable Testing Equipment	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

R. REVERSE OSMOSIS			***NAME/LOCATION***
	Satisfactory?		Comments
	Yes	No	
Treatment purpose			(Fluoride removal, Desalination, other)
Number & configuration			(Pre-filters, RO units)
Equipment condition			
Equipment operation			(Actual Feed Rate = gpm; Recovery = %; Design Feedrate = gpm; Recovery = %)
O&M manual available			
Bypass for blending			(Treated = % *or* gpm; Bypassed = % *or* gpm)
Flowmeters			Location Reading Condition
•			
•			
Pressure gauges			Location Reading Condition
•			
•			
Test equipment			(Equipment; Availability; Condition)
Performance Monitoring			Parameter Frequency Value
Element replacement			(Schedule or condition; Date last replaced)
Chemical Pretreatment			Refer to table below
Chemicals meet NSF 60			
Concentrate Disposal			(Location, Condition)
Field test results - Applied water - Recovered water - Blended water			Temp pH Na F Other

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

R. REVERSE OSMOSIS (Cont.)					
Pretreatment Chemical	Function	Conc.	Feedrate	Storage Location/Quantity	Remarks
	Acid for pH adjustment				
	Antiscalant				
	Sequestration of Fe & Mn				
Comments:					

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

VIRGINIA DEPARTMENT OF HEALTH
OFFICE OF DRINKING WATER
SUBPART H SYSTEM SANITARY SURVEY REPORT

SUBJECT:
WATERWORKS:

PWSID:

PART I - SYSTEM BACKGROUND & FINDINGS

GENERAL INFORMATION

Owner Name:	Waterworks Class:
Type of Waterworks:	
Contact Name:	
Contact Address:	
Contact Phone Number:	

DO License Class:	DO Has Required License:
DO Legal Name:	DO License No./ Exp. Date:

Inspection By:	Inspection Date:
Time Spent:	Last Inspection Date:
Date to Reviewer:	Reviewed by/Date:
Date to Reviewer:	Reviewed by/Date:
Inspection Type: :	
Present at Inspection:	
Facilities Inspected:	

Operation Permit Effective Date:	Engineering Description Sheet Date:
Permit Up-to-Date	Description Sheet Up-to-Date
No. Connections:	Population Served:
Avg. Daily Production:	Operation Permit Capacity:
Exceeds 80% Operation Permit Capacity? (max. 3 consecutive months) If yes, explain:	
Treatment Provided:	
SDWIS Inventory Information Current:	

Comments:

COMPLIANCE HISTORY

Shaded boxes **indicate a potential Significant Deficiency**

TOTAL COLIFORM RULE		**DATE**
• BSSR Approved:		
• Report current &/appropriate for service population?		
• Sampled in accordance with approved plan?		
DDBP RULE - STAGE 1 (Community & NTNC)		**DATE**
• Stage 1 Monitoring Plan approved?		
• Monitoring Plan current?	N/A – Stage 1 completed	
•		
DDBP RULE - STAGE 2 (Community & NTNC)		**DATE**
• Stage 2 Monitoring Plan approved?		
• Monitoring Plan current?		
• Monitoring frequency required?		
• Compliance Extension Requested?		
o If "Yes", granted?		
o If "Yes", effective exemption dates:		
ENHANCED SWT RULES		**DATE**
• Disinfection Profile submitted with Operation Reports or available for review?		
• LT2 - Cryptosporidium or *E. coli* sampling complete?		
• LT2 - Bin Determination Made?		
• LT2 - Bin #		
• Treatment upgrades required?		
• If yes, describe:		
PHASE II/V RULE		
• Waivers current for <u>all</u> entry points?		
CONSUMER CONFIDENCE REPORTS (Community only)		
• Final report issued by deadline?		
• Certification Statement Received?		
LEAD & COPPER RULE (Community & NTNC)		**DATE**
• Materials Survey/Sampling Plan Approved:		
• Action Level Exceedance (90%)?		
• Optimized Corrosion Control Treatment (OCCT) required?		
• All consumer notice requirements met?		
Comments:		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

ATTACHMENT C - Surface Water & GUDI SYSTEMS - PART I - SYSTEM BACKGROUND & FINDINGS

CROSS-CONNECTION CONTROL PROGRAM		**DATE**
• Approved:		
• Inspected Records This Visit[1]		
o Program Active [2]		
o Satisfactory[3]		
(MONTHLY) OPERATION REPORTS		
• All submitted for past 12 months		
• Operational treatment parameters monitored?		
• All required data reported?		
EMERGENCY MGMT. PLAN for Extended Power Outage (Community only)		**DATE**
• Verification received?		
• Current?		
SOURCE WATER ASSESSMENT PERFORMED		
• Source: *# / Name*		
• Source: *# / Name*		
ENFORCEMENT		
• Administrative/Consent Order in Effect:		
• Violations / Enforcement Actions Since Last Survey[4]		
• Owner issued Public Notice as required?		
• Active Corrective Action Plan?		
o If yes, is waterworks on schedule?		
• SDWIS Violation & Enforcement Action, Public Notification data current?		
COMPLAINTS SINCE LAST INSPECTION		
• If YES, summarize:		
Comments:		

\ Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

[1] See Part C for additional questions
[2] Based on Part C questions
[3] Based on Part C questions
[4] If yes, ODW staff shall review Violations from R&R database and include listing here.

MONITORING HISTORY

Insert R&R report - Next Chemical Sample Due. See WM 851, Attachment G for instructions.

SUMMARY

PROBLEMS IDENTIFIED AT LAST INSPECTION	CORRECTED?
Inspection Date / Comment # / Description	Yes or No / explain
Inspection Date / Comment # / Description	Yes or No / explain
Inspection Date / Comment # / Description	Yes or No / explain
Inspection Date / Comment # / Description	Yes or No / explain
Inspection Date / Comment # / Description	Yes or No / explain

NEW COMMENTS FROM THIS INSPECTION

(Significant deficiencies shall be noted in transmittal letter with CAP requirements).

Attachments: ☐Part II-A ☐Part II-B ☐Part II-C ☐Part II-D

cc/Att: *(designated operator)* ☐Part II-A ☐Part II-B ☐Part II-C ☐Part II-D

cc: _____Health Department
VDH – ODW Central
VDH – Dental Health

PART II-A

UNIT PROCESS EVALUATIONS

(Shading Identifies a Potential Significant Deficiency)

FACILITIES INSPECTED:

A. MICRO / NANO / ULTRA - CLASS MEMBRANE FILTRATION
B. RAPID MIX
C. FLOCCULATION/SLOW MIX
D. SEDIMENTATION
E. SUPERPULSATORS
F. SOLIDS CONTACT CLARIFIER
G. ABSORPTION CLARIFIER
H. FILTRATION
I. FINISHED WATER FACILITIES
J. CHEMICAL FEED FACILITIES - GENERAL
K. CHLORINE GAS
L. HYPOCHLORITE
M. FLUORIDE ACID
N. FLUORIDE SATURATOR
O. AMMONIA
P. CHLORINE DIOXIDE
Q. OZONE
R. OPERATIONAL/PERFORMANCE DATA
S. OPERATIONAL/LABORATORY/STAFF MONITORING PROCEDURES
T. WASTE HANDLING
U. EMERGENCY POWER
V. VIRGINIA OPTIMIZATION PROGRAM REVIEW

SUPPLEMENTAL AND USEFUL WORKSHEETS

(Use of these worksheets is optional)

Jar Test Results
Filter Drop Test Worksheet

A. MICRO / ULTRA / NANO - CLASS MEMBRANE FILTRATION

1. Raw Water Holding Tank and Pump Station
   Tank Overflow, Drain and Vent Properly Screened. ☐Yes ☐No
   No. of Raw Water Pumps Provided: _____ No. in Operation: _____
   Pump house/room condition? ☐ Satisfactory ☐ Unsatisfactory

2. Pre-Screen/Pre-Filter
   No. Provide: _____ No. In Operation: ____
   Mode of Operation: ☐ Series ☐Parallel
   Pore Size Rating: _____ μ
   Headloss across Pre-Screen/Pre-Filter in use: _____ psi
   Headloss which initiates automatic cleaning/flushing: _____ psi
   Cleaning Frequency: _____ Date Last Cleaned: _____
   Overall appearance/performance: ☐ Satisfactory ☐ Need Attention

3. Required Pretreatment Chemical added to Raw Water ☐Yes ☐No ☐NA

CHEMICAL APPLIED	APPLICATION POINT	FEED RATE

   Chemicals Meet ANSI / NSF Standard 60 or "GRAS": ☐Yes ☐No

4. Membrane Filters
   Class of Membrane: ☐ Micro ☐ Ultra ☐ Nano Manufacturer _____
   No. of Membrane Units Provided: _____ No. In Operation: _____
   No. of Membrane Modules/Unit: _____
   Design Capacity of each Unit:_____ System Design Capacity:_____
   Design flux rate:_____
   Exceeds permitted filter loading rate? ☐Yes ☐No

5. Mode of Operation: ☐Series ☐ Parallel

6. Membrane Unit Appurtenances (operable and in good operating condition)

All Valves/Controls	☐Yes	☐No	☐NA
Pressure Gauges	☐Yes	☐No	☐NA
Filter Rate-of-Flow Indicator	☐Yes	☐No	☐NA
Filter Rate-of-Flow Controls	☐Yes	☐No	☐NA
Backwash Rate-of-flow Indicator	☐Yes	☐No	☐NA
Feed Pump(s)	☐Yes	☐No	☐NA
Backwash Pump(s) Controls	☐Yes	☐No	☐NA
PLC/Solenoids	☐Yes	☐No	☐NA
Adequate Spare Parts Inventory	☐Yes	☐No	☐NA

7. Transmembrane pressure: Unit # _____ psi Unit # _____ psi
8. Unit Alarm Set Point: _____ psi for _____ seconds
   Shutdown Alarm Operational: ☐Yes ☐No
   Unit Shutdown Set Point: _____ psi for _____seconds

9. No. of In-Line Turbidimeters: _____ No. In Operation: ___
   Raw/Feed Water Unit #_____: _____ NTU
   Raw/Feed Water Unit #_____: _____ NTU
   Raw/Feed Water Plant Shutdown Set Point: _____NTU
   Shutdown Alarm Operational: ☐Yes ☐No
   Raw/Feed Water Turbidimeter Recording Unit(s) Operational: ☐Yes ☐No ☐NA
   Product Water Unit # _____:_____mNTU
   Product Water Unit # _____:_____ mNTU
   Product Water Unit # _____:_____ mNTU
   Product Water Plant Shutdown Set Point: _____ mNTU
   Shutdown Alarm Operational: ☐Yes ☐No
   Product Water Turbidimeter Recording Unit(s) Operational: ☐Yes ☐No ☐NA
   In-Line Turbidimeter Calibration Frequency: _____
   Date(s) of Last Calibration: _____

10. Direct integrity test (DIT) - observed conditions:
   Frequency of direct integrity test: _____
   Start pressure: _____ psi
   Stabilization period: _____ minutes ( ) NA
   Date of Last Test:_____ Initial pressure: _____ psi Final pressure: _____ psi
   Pressure decay rate: _____ psi/minute
   Alarm set point: _____ psi/minute
   Shutdown set point: _____ psi/minute
   DIT conducted after diagnostic testing, scheduled maintenance, or repair: ( ) Yes ( ) No

10. Membrane Flushing (Reverse Filtration/Backwashing) based on:
   ☐ Plant Startup
   ☐ Excess Pressure Differential (from Pressure Hold Test) [_____ psi drop over _____ minutes]
   ☐ Transmembrane Pressure (_____psi)☐ Product WaterTurbidity [_____ ntu]
   ☐ Time [_____ minutes] ☐ N/A
   Air Scrub performed during flushing? ☐Yes ☐No ☐NA

11. Air Supply System ☐NA
   No. of Air Compressors Provided: _____ No. in Operation: _____
   Air Regulating Valves Operational: ☐Yes ☐No
   Required Minimum Air Pressure Setting: _____ psi Plant Shutdown Setting: _____ psi
   Pressures meeting required minimums: ☐Yes ☐No
   Manual Air Gauges Operable: ☐Yes ☐No
   Compressor condensation drain lines open and screened: ☐Yes ☐No
   Auto Plant Shutdown for low air pressure operable: ☐Yes ☐No

12. Clean In Place (CIP) System
    Frequency: _____ Last Performed: _____
    CIP Frequency: _____ Last Performed: _____
    Clean In Place Tank Heater Operable: ☐Yes ☐No
    Clean In Place Tank Satisfactory: ☐Yes ☐No
    Chemical Feed Pumps Provided: ☐Yes ☐No
    Cleaning Products:_____
    Cleaning Chemicals meet NSF Standard 60 ☐Yes ☐No
    CIP Manual Control Valves Operable: ☐Yes ☐No
    Recirculation Pump Operable: ☐Yes ☐No
    Spare recirculation pump available: ☐Yes ☐No
    PH Meter Operable: ☐Yes ☐No
    Membrane Integrity Test performed after CIP ☐Yes ☐No

    Mini-Clean (Enhanced Flux Maintenance) Practiced? ☐Yes ☐No
    Frequency: _____

13. Frequency of Sonic Testing:_____ Date Last performed:_____

14. Normal Filter Module Replacement Frequency: _____
    Date Filter Modules Last Replaced: _____ No. Replaced: _____

15. Filter backwash wastewaters discharged to: ☐lagoons ☐holding tank/sand beds
    ☐other (describe):_____

16. Ultimate discharge of waste flows:_____

17. Evaluation of Giardia cyst inactivation for Membrane Plants
    Required log Giardia inactivation by disinfection: _____ [0.5 log or as designated by WOP]

    Post-filter CT operating data:

Parameter	Required (min/max)	Observed	Comments
Free residual chlorine, mg/L			
pH			
Temperature, C			
Clearwell water depth, ft			
Flow rate, gpm			

Do the "observed" CT data in the above tables indicate that 3-log Giardia inactivation is being achieved by filtration plus post-filter disinfection processes? ☐Yes ☐No

18. Do the CT data from the daily logs since the last inspection indicate continuous adequate Giardia inactivation by filtration plus post-filter disinfection processes? ☐Yes ☐No

19. In-line Chlorine Residual Monitor & Recorder Operable: ☐Yes ☐No

    Does the Recorder feature meet the requirements for 'continuous' recording? ☐Yes ☐No

    Does the chlorine residual monitor have an alarm? ☐Yes ☐No

    Is there a 'warning' alarm set point chlorine residual level? ☐Yes ☐No

    Does the alarm have a plant auto shutdown set point and shut down capability ? ☐Yes ☐No

B. RAPID MIX

1. Number of units: _____ Number in service:_____

2. Type of mixing provided: ☐conventional ☐static in-line ☐Other_____

3. Operable mixer available to meet mixing requirements ☐Yes ☐No ☐N/A

4. If conventional units:
   Variable speed control operational? ☐Yes ☐No ☐N/A
   Evidence of vortexing? ☐Yes ☐No
   Proper mixing obtained? ☐Yes ☐No

5. Chemicals being applied, point(s) of application:

Chemical Applied	Application Point	Feed Rate

6. Spare mixer provided? ☐Yes ☐No

7. General performance: ☐satisfactory ☐needs attention

8. Physical condition of unit: ☐satisfactory ☐needs attention

COMMENTS:

C. FLOCCULATION/SLOW MIX

1. Number of basins:_____ Number in service:_____

2. Mode of operation: ☐series ☐parallel ☐NA

3. All mixers operational? ☐Yes ☐No

4. Operable mixers available to meet mixing requirements: ☐Yes ☐No

5. Variable speed control operational? ☐Yes ☐No ☐NA

6. Tapered flocculation practiced? ☐Yes ☐No ☐NA

7. Isolation of basins/continued plant operation? ☐Yes ☐No ☐NA

8. Are proper baffles/compartments provided? ☐Yes ☐No

9. Evidence of vortexing/basin short-circuiting? ☐Yes ☐No

10. Overall floc formation: ☐good ☐fair ☐poor ☐undetectable

    Floc type/appearance: ☐pin floc ☐fluffy ☐sweepfloc ☐other_____

11. Are polymers used? ☐Yes ☐No

12. General performance: ☐satisfactory ☐needs attention

13. Physical condition of unit: ☐satisfactory ☐needs attention

COMMENTS:

D. SEDIMENTATION

1. No. of basins provided:_____ No. in operation: _____

2. Proper flow distribution between basins? ☐Yes ☐No

3. Signs of short circuiting/overloads? ☐Yes ☐No

4. Evidence of floc shear at stilling wall? ☐Yes ☐No

5. Floc carry-over observed? ☐Yes ☐No

6. Floc settleability: ☐satisfactory ☐needs attention

7. Sludge removal: ☐manual ☐mechanical

   If manual: _____times/year; last cleaned:_____next schedule cleaning_____

   If mechanical, is equipment operable: ☐Yes ☐No

   Excessive sludge accumulation: ☐Yes ☐No

   If "Yes", estimate sludge blanket depth:_____

8. Chemicals added, application point(s):

Chemical Applied	Application Point	Feed Rate

9. General performance: ☐satisfactory ☐needs attention

10. Physical condition of unit: ☐satisfactory ☐needs attention

E. SUPERPULSATORS *(replaces FLOCCULATION AND SEDIMENTATION)*

1. No. of units provided: No. in operation:

2. Proper flow distribution between basins? ☐Yes ☐No

3. Can each unit be sampled at multiple levels? ☐Yes ☐No

4. Chemicals being applied, point(s) of application:

Chemical Applied	Application Point	Feed Rate

5. Signs of short circuiting/overloading? ☐Yes ☐No

6. Are settleability tests run? Recorded?

7. Sludge blanket established? ☐Yes ☐No

8. Sludge blanket appearance: ☐Dispersed ☐ Normal ☐ Unusual Color (septic)

9. Sludge depth measurement tool available?

   Blanket depth: Unit No. 1 = Unit No. 2 =

10. Sludge removal:

    Basins last cleaned date:

    Controlled manually or by time clock? Explain.

    Mechanical removal equipment operable? ☐Yes ☐No

    Evidence of sludge carryover to filters? ☐Yes ☐No

11. "Vacuum" Pumps- Number Provided: Number Operable**:**

12. Overall appearance/performance: ☐satisfactory ☐needs attention

F. SOLIDS CONTACT CLARIFIER *(replaces FLOCCULATION AND SEDIMENTATION)*

1. No. of units provided:_____ No. in operation:_____

2. Floc carry-over observed? ☐Yes ☐No

3. Media cleaning / Sludge removal: ☐manual backflush/removal ☐automated backflush/removal

4. How often are units sludge wasted: _____

   Backflush/wasting based on: ☐head loss _____feet

   ☐time _____hours

   ☐turbidity _____NTU

5. Chemicals added, application point(s):

Chemical Applied	Application Point	Feed Rate

6. General performance: ☐satisfactory ☐needs attention
7. Physical condition of unit: ☐satisfactory ☐needs attention

COMMENTS:

G. ABSORPTION UNIT CLARIFIER *(replaces FLOCCULATION AND SEDIMENTATION)*

1. No. of units provided:_____ No. in operation:_____

2. Clarifier media type: ☐synthetic beads ☐floc blanket ☐other:_____

3. Media in good condition, stable? ☐Yes ☐No
   Date media last replaced (where applicable): _____

4. Media retention screen in good condition? ☐Yes ☐No ☐N/A

5. Floc carry-over observed? ☐Yes ☐No

6. How often are units sludge wasted: _____
   Backflush/wasting based on: ☐head loss _____feet
   ☐time _____hours
   ☐turbidity _____NTU

7. Is air scour provided and operable? ☐Yes ☐No ☐NA

8. Chemicals added, application point(s):

Chemical Applied	Application Point	Feed Rate

9. General performance: ☐satisfactory ☐needs attention

10. Physical condition of unit: ☐satisfactory ☐needs attention

COMMENTS:

H. FILTRATION

1. No. of filters provided:_____ No. in operation:_____

2. Filter media: ☐sand ☐sand/anthracite ☐sand/anthracite/garnet ☐other_____

   Date media last added or changed: _____

   Frequency media depth checked: _____

   Frequency operator checks filtration rate:_____ Date last checked_____

   Values observed for individual filters:

Filter No.	Effluent Turbidity (NTU)	Loading Rate (gpm/ft^2)

   Design: _____gpm at _____ gpm/ft^2

   Exceeds permitted rate? ☐Yes ☐No

   Was filtration rate checked? ☐Yes ☐No

   (see attached worksheet)

3. Filter appurtenances operable and in good condition? Last Calibrated

   All valves/controls: ☐Yes ☐No _____

   Filter rate-of-flow controls**:** ☐Yes ☐No _____

   Filter rate-of-flow indicator / recorder: ☐Yes ☐No _____

   Loss of head indicator / recorder: ☐Yes ☐No _____

   Surface wash: ☐Yes ☐No ☐NA

   If yes, backflow preventer provided? ☐Yes ☐No ☐NA

   Air scour: ☐Yes ☐No ☐NA

   Backwash pump(s)/controls**:** ☐Yes ☐No _____

   Backwash rate-of-flow indicator: ☐Yes ☐No _____

4. Filter backwash practices:

   Filter backwash based on plant established maximum values: ☐Yes ☐No

   Filter backwash based on: ☐head loss _____feet

   ☐time _____hours

   ☐turbidity _____NTU

   ☐particle counts_____particles/_____ml:size range_____

Average/maximum before backwash (over past 3 months):

filter run times: _____hours

head loss: _____feet

turbidity: _____NTU particles: _____/_____

Filter backwash observed? ☐Yes ☐No

Satisfactory? ☐Yes ☐No ☐NA

Frequency operator checks backwash rate:_____ Date last checked:_____

5. Filter-to-waste practiced: ☐Yes ☐No ☐NA

Is filter to waste at design filtration rate? ☐Yes ☐No

Average filter-to-waste (rewash) time:_____

Is turbidity monitored during filter-to-waste? ☐Yes ☐No ☐NA

Criteria established for filter-to-waste: duration _____

Are particles counted/monitored during procedure? ☐Yes ☐No

6. Is filter backwashed after any/all shutdowns? ☐Yes ☐No

If "No", does operator start filter with filter-to-waste after filter has been idle, before delivering flows to system? ☐Yes ☐No

7. General performance: ☐satisfactory ☐needs attention

8. Physical condition of units: ☐satisfactory ☐needs attention

COMMENTS:

I. FINISHED WATER FACILITIES

1. Clear well

Access protected from contamination	☐Yes	☐No
Overflow protected from contamination/flooding	☐Yes	☐No
Adequate drain	☐Yes	☐No
Screened vent(s)	☐Yes	☐No
Watertight roof/cover	☐Yes	☐No
Hatch(s) secure	☐Yes	☐No
Viewing port with light	☐Yes	☐No
Sediment present	☐Yes	☐No

Last cleaned: _____

Physical condition: ☐satisfactory ☐needs attention

2. Finished water pumps: ☐NA

Number of pumps provided: _____

Number of pumps operable: _____

Number of pumps in use: _____

Pressure gauges provided/operable _____ psig ☐Yes ☐No

Flow meter operable ☐Yes ☐No

Pumping rate: _____MGD

Physical conditions: ☐satisfactory ☐needs attention

3. Is clearwell water level monitored/controlled? ☐Yes ☐No ☐NA

4. Are level sensors operable? ☐Yes ☐No ☐NA

5. Chemicals added, point(s) of application:

Chemical Applied	Application Point	

6. Approved backflow device to isolate process water at treatment plant from distribution system? ☐Yes ☐No

COMMENTS:

J. CHEMICAL FEED FACILITIES – GENERAL

1. The following chemicals are fed at this facility: *May delete chemicals that are not applicable*. and add/replace chemicals with 'Trade Name' and/or 'Chemical Name' where applicable.

Chemical	No. of Feeder/Pumps. Available / In Service	Chemical	No. of Feeder/Pumps Available / In Service
☐ alum		☐ $KMnO_4$	
☐ ferric salt		☐ activated carbon	
☐ ferrous salt		☐ fluoride	
☐ polymer (coag. aid)		☐ phosphate	
☐ polymer (filter aid)		☐ chlorine	
☐ lime		☐ ammonia	
☐ caustic		☐ ozone	
☐ soda ash		☐ sodium chlorate (ClO2 generation)	
☐ other			

Chemicals certified to meet NSF Standard 60? ☐Yes ☐No

2. Any chemical feed changes that could affect Pb/Cu monitoring? ☐Yes ☐No

3. All feeders in good condition? ☐Yes ☐No

   Adequate ventilation provided? ☐Yes ☐No

4. Adequate backflow prevention on solution water? ☐Yes ☐No

   Date last inspected?

   Anti-siphon devices on feed lines? ☐Yes ☐No

5. Feeders calibrated on a regular basis? ☐Yes ☐No
   (Recommend quarterly)

   Frequency operators calibrate feeders: _____

   Date last calibrated: _____

   Frequency operators check calibrations: _____

   Date last checked: _____

6. Adequate chemical storage area provided (space, spill prevention)? ☐Yes ☐No

7. Is CORROSION CONTROL practiced at this facility? ☐Yes ☐No

   If Yes, indicate method(s): ☐pH/alkalinity adjustment

   ☐corrosion inhibitor

   ☐other: _____

8. Physical condition of chemical feed facilities: ☐satisfactory ☐needs attention

9. Do any of the chemical storage or handling facilities offer potential for explosions? ☐Yes ☐No

10. Other safety problems for the operators or public noted? ☐Yes ☐No
    Describe:

    Comments:

K. CHLORINE GAS

1. Adequate ventilation ☐Yes ☐No
2. Cylinders chained ☐Yes ☐No
3. Panic hardware ☐Yes ☐No
4. Cylinder repair kit ☐Yes ☐No
5. Chlorine scales operable ☐Yes ☐No
6. Automatic change-over provided/operable ☐Yes ☐No
7. Regulator vent properly installed/screened ☐Yes ☐No
8. Leak detection provided/operable (type:_____) ☐Yes ☐No
9. Outside entrance/exit ☐Yes ☐No
10. Room gas-tight, floor drains sealed ☐Yes ☐No
11. Breathing apparatus available ☐Yes ☐No

L. HYPOCHLORITE

1. Solution tank in good condition ☐Yes ☐No
2. Solution tank covered ☐Yes ☐No
3. Drain provided ☐Yes ☐No
4. Spill containment adequate ☐Yes ☐No
5. Stored away from organics and acids ☐Yes ☐No
6. Gloves, apron & eye protection ☐Yes ☐No
7. Eyewash/safety shower provided ☐Yes ☐No

M. FLUORIDE ACID

1. Weighing scale and recorder provided and in good condition ☐Yes ☐No
2. Long gloves, apron & goggles/face shield provided ☐Yes ☐No
3. Flowmeter/fluoride feed pacer/other control system provided, in good operating condition ☐Yes ☐No
4. Anti-siphon protection (Back pressure sustaining valve) ☐Yes ☐No
5. Feeder/metering pump operable and in good condition ☐Yes ☐No
6. Injection line in good condition ☐Yes ☐No
7. Separate feeder/storage room ☐Yes ☐No
8. Room ventilation adequate ☐Yes ☐No
9. Carboy/tank vented to outdoors ☐Yes ☐No
10. Carboy/tank openings sealed ☐Yes ☐No
11. Chemical meets NSF standards ☐Yes ☐No

N. FLUORIDE SATURATOR

1. Anti-Siphon vacuum breaker on make-up water line (upflow) ☐Yes ☐No ☐NA
2. Air gap on make-up water line (downflow) ☐Yes ☐No ☐NA
3. Back pressure sustaining valve ☐Yes ☐No
4. Particulate respirator, gloves, goggles, coveralls ☐Yes ☐No
5. Operational water meter on make-up water line (between softener and saturator, if applicable)_ ☐Yes ☐No
6. Water meter read and volume recorded daily ☐Yes ☐No
7. Frequency of softener regeneration/replacement: _____ ☐NA
8. Upflow saturator pick-up float assembly operational ☐Yes ☐No
9. Metering pump and controls operating properly ☐Yes ☐No
10. Fluoride Ion Test Equipment in good condition ☐Yes ☐No
12. Hardness of make-up water (mg/L as $CaCO_3$):
    - Water softener provided and in good operating condition ☐Yes ☐No ☐NA
    - Softener effluent hardness maintained <75 mg/l ☐Yes ☐No ☐NA
13. Minimum 12 inches of sodium fluoride in saturator? ☐Yes ☐No ☐NA
14. Saturator cleaning frequency:_____
15. Room ventilation adequate ☐Yes ☐No
16. Chemical meets NSF standards ☐Yes ☐No

O. AMMONIA

1. Adequate ventilation? ☐Yes ☐No
2. Panic hardware? (Gas supply only) ☐Yes ☐No ☐NA
3. Cylinder repair kit? (Gas supply only) ☐Yes ☐No ☐NA
4. Outside entrance/exit? (Gas supply only) ☐Yes ☐No ☐NA
5. Are there any brass, bronze or other copper alloy fittings used or present in the ammonia feed system? ☐Yes ☐No
6. Injection points stainless steel end-type diffusers with corporation stops? ☐Yes ☐No
7. Ammonia metering pumps provided: ☐Yes ☐No Working? ☐Yes ☐No
8. Chlorine to Ammonia feed ratio:_____ Adequate? ☐Yes ☐No
9. Discharge gauges provided on metering pump discharge piping? ☐Yes ☐No
   Working? ☐Yes ☐No
10. Discharge gauge pressures reading: _____psi
11. Feed facility ventilation adequate? ☐Yes ☐No
12. Ammonia leak detection monitor available? ☐Yes ☐No
    Working? ☐Yes ☐No
13. Ammonia storage tank condition: ☐satisfactory ☐needs attention
14. Ammonia storage tank sight level gauge provided? ☐Yes ☐No
    Working? ☐Yes ☐No
15. Ammonia storage tank pressure gauge provided? ☐Yes ☐No
    Working? ☐Yes ☐No
    Reading: ____psi
16. Recirculation connection to displace the ammonia vapors back into the delivery truck when filling the tank provided? ☐Yes ☐No
    Condition: ☐satisfactory ☐needs attention
17. Ammonia storage tank spill containment structure condition: ☐satisfactory ☐needs attention

P. CHLORINE DIOXIDE

1. Type of Generation Facility:
   - ☐ Conventional, Chlorine Gas + water + Sodium Chlorite
   - ☐ Solid Matrix Generator
   - ☐ Acid Boosted = HOCl+ Cl2+ NaCl
   - ☐ Other: _____
2. Chlorine gas flow control system: (refer to G. CHLORINE GAS)
3. Acid Feed Control System
4. Sodium Chlorite liquid feed control system
5. Chlorine Dioxide Generation Facility and Control System
6. Electronic Scales: Last Calibration Date: _____

   Clear of debris and water? ☐Yes ☐No
7. Reactor Cartridges: NaCl2 Maximum Weight: ____lbs

   Weight Observed Reactor 1: Reactor 2:
8. Operating within Spec ☐Yes ☐No
9. Storage satisfactory? ☐Yes ☐No
10. Adequate ventilation? ☐Yes ☐No ☐NA
11. Piping and components constructed of non–corrosive material? ☐Yes ☐No
12. Quick Disconnect couplings installed? ☐Yes ☐No
13. Humidifier Installed? _____ Operable? ☐Yes ☐No ☐NA
14. Leak detection: ☐Yes ☐No ☐NA Type: _____
15. Operating Temperature Specifications: Minimum Temp: _____F Maximum Temp: _____F

    Observed:_____F Operating within Spec? ☐Yes ☐No ☐NA
16. Alarm set points and interlocks:

    Low Air Flow Set Point: _____SCFM_ Operable ☐Yes ☐No ☐NA

    Low Differential Pressure: _____" HG Operable ☐Yes ☐No ☐NA

    Low vacuum: _____ " HG Operable ☐Yes ☐No ☐NA

    Low Temperature: ____F Operable ☐Yes ☐No ☐NA
17. Have standard operating procedures for the ClO2 generation been submitted to and approved by ODW? ☐Yes ☐No
18. Were the standard operating procedures readily available at the inspection? ☐Yes ☐No ☐NA
19. Has an operations and maintenance manual been submitted to VDH-ODW? ☐Yes ☐No ☐NA
20. Chlorine Dioxide Maximum Production Observed: _____

    Operating within Spec: ☐Yes ☐No ☐NA

21. Chlorine Dioxide Generation and Feed Rate

GENERATING AGENT	APPLICATION POINT	GENERATION FEED RATE
Chlorine		
Sodium Chlorite(NaCl2)		
CHEMICAL APPLIED	APPLICATION POINT	PRODUCTION RATE
Chlorine Dioxide		

22. Generator yield and balance data:

PRODUCTION YIELD CALCULATIONS

CE = measured generator effluent concentration of ClO2: _____ ppm

M = production rate of ClO2, lb/day: _____ lb/day

F = water flow rate through generator, gpm: _____gpm (Note: this is the raw water flow)

C = calculated concentration

(Note: Use this data to determine if the system is in balance for generation vs applied dose.)

C = {m/(24h/d)/(2.2 kg/lb)]*(10^6 mg/kg)}/F*(3.785 L/gal)*(60 min/h) = _____ ppm

Does the measured, CE, ClO2 value compare to the calculated, C, value from above?

☐Yes ☐No ☐NA

If no, any changes made, interferences identified, etc:_____

23. ClO2 concentration entry point system: measured: _____ppm

Frequency of analysis: ☐Daily ☐Weekly ☐Monthly ☐Other

Analysis method:

☐Amperometric Method I, 4500-ClO2 C

☐Amperometric Method II, 4500-ClO2 D

☐DPD Method, 4500 – ClO2 E

24. Chlorite ion concentration: __ ppm ☐N/A, Not currently feeding

(Samples are required daily by the waterworks and monthly by a certified lab)

☐Daily At plant - DPD Method, 4500 – ClO2 E , Result:_____ ppm

☐Monthly - USEPA Method 300.0, Ion Chromatography

Last Test Performed: By: Result:

25. Do any of the chemical storage or handling facilities offer potential for explosions? ☐Yes ☐No

26. Is gas mask available: ☐Yes ☐No Location: _____

Last Checked:

27. Other safety problems for operators or public noted? ☐Yes ☐No

If yes, describe:

Q. OZONE

1. Ozone Components
   No. of _____gal LOX Tanks Provided: _____ In Service: _____
   No. of Vaporizers Provided:_____ In Service: _____
   No. of _____ ppd Generators Provided:_____ In Service: _____
   No. of Contact Chambers Provided: _____ In Service: _____

2. Diffusers Last Inspected: __/___/___

3. Ozone Monitoring
   Continuous Monitoring Provided: ☐Yes ☐No

   Probe Calibration: ____ (must be per Toolbox GM App C.)

   Probe Last Calibrated: __/___ /__

   Frequency of Calibration Checks: (must be at least weekly)

   Portable Monitors used? ☐Yes ☐No

   If so: Last Calibrated ___/___/____ Availability: On-site / Central location / Call in____

   Type of Portable Monitor/Kit: _____

   Uses an approved method? ☐Yes ☐No

4. Chemical Feed to Contact Chamber(s) and Disinfection Performance

Chemical Applied	Raw Feed	Feed Rate	Initial Residual *
Ozone	____ scfm at ____ %	____ mg/L	____ mg/l

*Location of first measurement: _____

Disinfectant Applied	CT	Giardia Inactivation	Virus Inactivation
Ozone	_____ mg/l-min	____ -log	____ -log

Current Ozone Control Method: Dose Control or CT Control
_____ (Effluent or Log-Integration) Method Calculation Verified: ___/___/___ (date)

5. Hydraulic Efficiency (Baffling) Factor: ___
6. Tracer Study Performed: ☐Yes ☐No ___/___/_____(date)
7. Is dosing adequate to meet CT requirements? ☐Yes ☐No
8. Have CT requirements been consistently met with Ozone since last inspection? ☐Yes ☐No
9. Monthly Operational Report ozone and CT credit data complete and satisfactory? ☐Yes ☐No
10. Have Giardia and virus CT requirements been met for the facility (all disinfectants)? ☐Yes ☐No
11. Ozone Destruct Units Operational (air borne): ☐Yes ☐No
12. Ozone Quench Operational (aqueous): ☐Yes ☐No
13. Ambient Ozone detectors operational ☐Yes ☐No
14. Describe the ozone residual monitoring points:
15. Describe the reliability of the power supply for the ozone generators:

16. Describe the alarms that would notify the operator in the event of a low ozone event. Describe the actions to be taken, either automatically or manually to address a low ozone event, which could result in inadequate CT:

COMMENTS

R. OPERATIONAL/PERFORMANCE DATA

Constant Monitoring Equipment	Operable	Inline Reading	Bench Reading	Corresponds To Desk Unit	Computer Reading	Corresponds To Computer
raw pH						
flash mix pH						
finished pH						
raw turbidity						
sed basin 1 turbidity						
sed basin 2 turbidity						
filter 1 turbidity						
filter 2 turbidity						
filter 3 turbidity						
finished turbidity						
finished chlorine						

1. At time of inspection *(Check last lab bench instrument values)*

Parameter	RAW Frequency/ Results	APPLIED[1] Frequency/ Results	FINISHED Frequency/ Results
Free Cl_2 (mg/L)			
Turbidity (NTU)			
pH			
Alkalinity (mg/L as $CaCO_3$)			
Hardness (mg/L as $CaCO_3$)			
Temperature °C			
Fluoride (mg/L)			
Iron (mg/L)			
Manganese (mg/L)			
Other (CO_2, PO_4, etc.)			

Plant flow at time of inspection: Raw Water _____MGD Finished Water _____MGD

[1] Replace with FILTRATE if membrane treatment

S. OPERATIONAL/LABORATORY STAFF MONITORING PROCEDURES

1. Hours plant is operated per day:

2. Designated Operator (DO) - Hours/Day present:

List all operators and their classification that work at this facility:

Name (as shown on license)	License Class	License Number	Expiration Date	Remarks

Is the staffing in accordance with the Waterworks Regulations? ☐Yes ☐No

3. How are operating decisions made and communicated?

Are there criteria and procedures established for plant shut down in case of unit process failure or upset or in event of significant overall quality degradation? ☐Yes ☐No

4. RECORDS RETENTION in accordance with *Regulations?* ☐Yes ☐No

5. Are daily log/data sheets readily available***?*** ☐Yes ☐No

   Were these daily log/data sheets reviewed? ☐Yes ☐No

   Are the daily log/data sheets adequate? ☐Yes ☐No

   Is the frequency of operational data collection adequate? ☐Yes ☐No

   Are there any obvious problems noted from the log entries? ☐Yes ☐No

6. How is the COAGULATION PROCESS controlled?

   ☐Pilot Filter

   ☐Jar Tests

   ☐Zeta Meter

   ☐Streaming Current Monitor

   Were coagulation control procedures observed / discussed? ☐Yes ☐No

   Were the procedures adequate? ☐Yes ☐No

7. Is equipment in good condition?

   pH meter ☐Yes ☐No

   Jar test machine ☐Yes ☐No

   Zeta meter ☐Yes ☐No ☐NA

   Pilot filters ☐Yes ☐No ☐NA

   Streaming current monitor ☐Yes ☐No ☐NA reading (if applicable): _____

   Particle counter/monitor ☐Yes ☐No ☐NA

8. What is the frequency of (combined) FILTER EFFLUENT TURBIDITY monitoring?

☐____ times per shift ☐ continuous

Is this frequency adequate (at least every 4 hours)? ☐Yes ☐No ☐NA

Are continuous monitoring units operational? ☐Yes ☐No ☐NA

Are the on-line (continuous) units calibrated at least quarterly?_____ ☐Yes ☐No ☐NA

Do continuous monitor readings correspond to desk-top unit readings? ☐Yes ☐No ☐NA

Does each filter effluent have an individual continuous turbidity monitor? ☐Yes ☐No

Does the filter effluent turbidity monitoring system have alarm set points? ☐Yes ☐No

Alarm set point(s): _____ Alarm type: _____

Is data recorded at least every 15 minutes? ☐Yes ☐No

Is data kept for 3 years? ☐Yes ☐No

Desk-top turbidimeter manufacturer: _____ Model No._____

Date last calibrated: _____

Calibration date posted: ☐Yes ☐No

Date bulb last changed: _____Spare bulb on hand? ☐Yes ☐No

Condition of cuvettes: _____

Primary standard used: ☐ Stablcal ☐Formazin ☐Amco AEPA-

Expiration Date of primary standard: _____

Secondary standard used: _____

Age of secondary standard: _____

Date secondary last compared to primary: _____

Turbidity-free water available? ☐Yes ☐No

9. Method of CHLORINE RESIDUAL monitoring:_____

Continuous residual monitor operational? (required for Population > 3,300) ☐Yes ☐No ☐NA

Does each analyzer have the readout at its installation and continuous recording (hard copy chart or electronic data)? ☐Yes ☐No

Is data recorded at least every 15 minutes? ☐Yes ☐No

Is an alarm activated when chlorine concentration is outside normal operating range? ☐Yes ☐No
Set limits: Min:_____ Max:_____

Are grab samples collected at least weekly for routine calibration checks for each on-line analyzer? ☐Yes ☐No

Is a sample tap for grab samples located as close as feasible to where samples enter the on-line analyzer? ☐Yes ☐No

What method is used to analyze grab samples? _____

If system serves ≤ 3,300, frequency of residual monitoring (Grab Sampling): _____

Expiration date of colorimeter gel standards: _____

Frequency of monitoring satisfactory? ☐Yes ☐No

Free chlorine residual measured and reported? ☐Yes ☐No

Calibration Checks performed? ☐Yes ☐No

If yes,

Are results of calibration checks within the larger of +/- 0.1 mg/l or +/- 15%? ☐Yes ☐No

Are emergency calibration checks performed as soon as possible when an on-line chlorine analyzer indicates a large (≥50%) unexpected change in chlorine residual concentration?

☐Yes ☐No ☐NA

Are records of calibration recorded and maintained for 3 years? ☐Yes ☐No

Do all chemical reagents and standards for on-line analyzers and grab sample methods have an unexpired shelf life? ☐Yes ☐No

Chlorine residual necessary to meet CT requirements: _____mg/l free chlorine

Location of measurement: _____

Staff aware of the required minimum residual? ☐Yes ☐No

Is this concentration being continuously met? ☐Yes ☐No

If No, is staff checking other parameters/taking appropriate steps to ensure CT requirements are being met on continuous basis? ☐Yes ☐No ☐NA

10. Are adequate LAB EQUIPMENT AND REAGENTS available to run necessary operational tests?

☐Yes ☐No

Are reagents dated? ☐Yes ☐No

Are test procedures appropriate? ☐Yes ☐No

Are desk-top units calibrated at appropriate intervals? ☐Yes ☐No

Does plant have LABORATORY CAPABILITY for:

algae counts and identification? ☐Yes ☐No

threshold odor determinations? ☐Yes ☐No

iron and manganese analyses? ☐Yes ☐No

Overall appearance of laboratory: ☐satisfactory ☐needs attention

11. FLUORIDE test utilized: _____

Equipment in good condition? ☐Yes ☐No ☐NA

Standards up-to-date? ☐Yes ☐No ☐NA

Is a continuous analyzer provided? ☐Yes ☐No ☐NA

Do continuous analyzer reading correspond to test kit readings? ☐Yes ☐No ☐NA

Frequency of continuous monitoring unit calibration: _____

12. Is CONTINUOUS pH monitoring equipment provided and in good condition? ☐Yes ☐No ☐NA

    Do continuous monitor readings correspond to desk-top readings? ☐Yes ☐No ☐NA

    Frequency of continuous monitoring unit calibration: _____

13. Adequate BACKFLOW PREVENTION devices at sinks, etc. ☐Yes ☐No

    Frequency of RPZ testing: _____ Date of last test: _____

T. WASTE HANDLING

1. Filter backwash, rewash, and settling basin wastewaters discharged to:

   ☐lagoons ☐holding tank/sand beds ☐other_____

2. Ultimate discharge of waste flows:_____

3. Provisions for water recycle to head of plant? ☐Yes ☐No

4. Is FILTER BACKWASH RECYCLE practiced? ☐Yes ☐No ☐NA

   Is recycle stream monitored for flow? ☐Yes ☐No* ☐NA

   Is recycle stream monitored for quality parameters? ☐Yes ☐No* ☐NA

   *Recycled filter backwash that is not measured is a Significant Deficiency

   Recycle Flowrate (total range): _____

   % of Raw Water Flow (should be < 10%): _____

   Is approved treatment provided for recycle flows**?** ☐Yes ☐No* ☐NA

   If Yes, Describe: _____*

   Recycled flow should be returned to the plant headworks. If additional approved treatment is not in service, it is a Significant Deficiency

   VDH approval date: _____

5. Are floor drains in chemical storage and feed areas separated from waste flow streams? ☐Yes ☐No ☐NA

COMMENTS:

U. EMERGENCY POWER

☐Portable generator connection(s). Identify generator supplier:
☐Permanent equipment installed
☐No Provisions

Use remaining table for permanent installations only:

Fuel: ☐Diesel gasoline ☐Propane gas ☐Natural gas

Generator Rating: KWH

- % of Total Power Demand met %
- Describe water production capability & critical elements supplied:

Power transfer switch: ☐Manual ☐Automatic

If auto switch provided, does operator know how to manually switch power source? ☐Yes ☐No ☐N/A

Fuel Supply - Level %

Fuel Supply - Approx. Duration hrs

Diesel Gasoline Fuel Tanks:

- Fuel tank a minimum of 50 feet from any well or 100 feet from intake ☐ Yes ☐ No
- Containment provided for fuel tank ☐ Yes ☐ No
- Leak detection provided ☐ Yes ☐ No
- Fuel tank double walled ☐ Yes ☐ No
- Refueling protected from spills ☐ Yes ☐ No
- Evidence of fuel leaks ☐ Yes ☐ No

How often is the Emergency Power exercised?
Duration?
How often is the transfer switch exercised?
Duration?

Maintenance records of engine and generators kept ☐Yes ☐ No

Maintenance records reviewed during inspection ☐Yes ☐No ☐N/A

- Adequate? ☐Yes ☐No ☐N/A

General Condition: ☐Good ☐Fair ☐Poor

Comments:

W. VIRGINIA OPTIMIZATION PROGRAM REVIEW [2]

Virginia Optimization Program Goal	**Filter-months met in past 12 months from MM/20XX to MM/20XX**	**Filter-months met in preceding 12 months from MM/20XX to MM/20XX**	**Improvement Shown?**
Clarified Water Turbidity (use clarifier-months rather than filter-months) ≤ 1.0 NTU when monthly average raw water turbidity ≤10.0 NTU ≤ 2.0 NTU when monthly average raw water turbidity > 10.0 NTU	A	B	C
Filtered Water Turbidity ≤ 0.3 NTU in 100% of filtered water readings	D	E	F
Filtered Water Turbidity ≤ 0.1 NTU in 95% of filtered water readings	G	H	I
Filtered Water Turbidity ≤ 0.1 NTU when filter returned to service after each backwash	J	K	L
Filtered Water Turbidity peak ≤ 0.3 NTU in backwash recovery period for each backwash	M	N	O
Length of backwash recovery period ≤ 15 minutes for each backwash	P	Q	R

COMMENTS:

[2] Discuss VOP performance summary with operator during sanitary survey. Complete table in accordance with following instructions prior to Sanitary Survey or use R&R Report.

Instructions

Box A:

- The 'time frame' is the 12 months preceding the month the inspection is conducted(example inspection in April 2011-preceding 12 months are April 2010 to March 2011).
- 'Filter – months' is the number of sedimentation basins the plant has in operation each month that meets the raw water turbidity criteria for that month totalized for the 12 month time frame. Examples:
  - WTP has two sedimentation basin and both in service every month and both meet the "≤ 1.0 NTU when monthly average raw water turbidity ≤10.0 NTU" criteria all 12 months; data entered is 24 of 24.
  - WTP has three sedimentation basins and all three in service every month; 2 months the criteria is "≤ 1.0 NTU when monthly average raw water turbidity ≤10.0 NTU" and 10 months the criteria is "≤ 2.0 NTU when monthly average raw water turbidity > 10.0 NTU". The total number of filter- months is 36 – 6 months of ≤ 1.0 NTU and 30 months of ≤ 2.0 NTU. However, none of the basins for the ≤ 1.0 NTU months met the criteria but all the basins met the criteria for all the ≤ 2.0 NTU months; data entered is 30 of 36.

Box B – Same as Box A regarding evaluation of data but the date range evaluated is the 13th to 24th month preceding the month the inspection is performed (example inspection in April 2011-preceding 13th to 24th months are April 2009 to March 2010).

Box C – Answer 'yes' or ' no' or 'N/A' as to whether or not the number of filter-months achieving performance goal in Box A is greater than Box B.

Box D:

- The 'time frame' is the 12 months preceding the month the inspection is conducted(example inspection in April 2011-preceding 12 months are April 2010 to March 2011).
- 'Filter – months' is the number of filters the plant has in operation each month that meets the individual Filtered Water Turbidity ≤ 0.3 NTU in 100% of turbidimeter determinations performance goal for that month totalized for the 12 month time frame. Examples:
  - WTP has two filters and both in service every month and both meet the Filtered Water Turbidity ≤ 0.3 NTU in 100% of turbidimeter determinations performance goal all 12 months; data entered is 24 of 24.
  - WTP has three filters and all three in service every month; 2 filters met the goal for 12 months and 1 filter met the goal for 11 months; data entered is 35 of 36.
  - WTP has three filters; 2 in service every month and 1 in service 10 months; the total filter months is 34; all filters met the goal each month; data entered is 34 of 34

Box E - Same as Box D regarding evaluation of data but the date range evaluated is the 13th to 24th month preceding the month the inspection is performed (example inspection in April 2011-preceding 13th to 24th months are April 2009 to March 2010).

Box F - Answer 'yes' or ' no' or 'N/A' as to whether or not the number of filter-months achieving performance goal in Box D is greater than Box E.

Box G - The 'time frame' is the 12 months preceding the month the inspection is conducted and the 'Filter – months' is the number of filters the plant has in operation each month that meets the individual Filtered Water Turbidity ≤ 0.1 NTU in 95% of turbidimeter determinations performance goal for that month totalized for the 12 month time frame.

Box H - Same as Box G regarding evaluation of data but the date range evaluated is the 13th to 24th month preceeding the month the inspection is performed.

Box I - Answer 'yes' or 'no' or 'N/A' as to whether or not the number of filter-months achieving performance goal in Box G is greater than Box H

The remaining Boxes (J through R) follow the same pattern for filters as Boxes D through I but for different performance goals.

Virginia Optimization Program Goal	**Why is the VOP goal not met in each clarifier-month or filter-month? What are the operator's plans to improve WTP performance?**
Clarified Water Turbidity (use clarifier-months rather than filter-months) ≤ 1.0 NTU when monthly average raw water turbidity ≤ 10.0 NTU ≤ 2.0 NTU when monthly average raw water turbidity > 10.0 NTU	Typically meeting goals – did not meet during 1 month of previous 12 months (February 2009 – 92.54% of samples were ≤1.0 NTU with an average raw turbidity of 8 NTU). Severe storms pushed the raw water turbidity much higher than normal for four days resulting in not meeting the ≤1.0 NTU goal. The goal was achieved the 3rd and 4th day of the event. Recommend the operator on duty during the first two days of the event be better trained to handle the extreme turbidity spike.
Filtered Water Turbidity≤ 0.3 NTU in 100% of filtered water readings AND Filtered Water Turbidity≤ 0.1 NTU in 95% of filtered water readings	N/A – Meeting goals
Filtered Water Turbidity ≤ 0.1 NTU when filter returned to service after each backwash	The rewash filtering rate of flow is unknown. The diameter of the rewash and filter rate of flow control valve is the same as are the associated pipe diamenters. The rewash valve is a manually operated gate valve on stem extending up through the floor to the filter room. The operators fully open the rewash valve during rewash at all times – Recommend operator perform filter drop tests to determine the number of valve turns it takes to match the filter rewash rate to the filtration rate.
Filtered Water Turbidity peak ≤ 0.3 NTU in backwash recovery period for each backwash	N/A – Meeting goals
Length of backwash recovery period ≤ 15 minutes for each backwash	N/A – Meeting goals

Instructions

This area is a discussion of ***operator's*** diagnosis of shortcomings, and plans to improve facility performance. The inspecting engineer may find that the operator has no diagnosis or plan. In this case, the engineer should enter his assessment of why the goal was not met and state his recommendation for a change that may result in meeting the goal. The below table has examples of possible entries by the inspecting engineer; do not assume these examples are for the same WTP.

Jar Test Results
(Optional)

Plant: _____

Date: _____

Performed By: _____

Raw Water Characteristics:

pH _____
Temperature _____ ^{0}F
Turbidity _____ NTU (Turb.)
Alkalinity _____ (mg/L as $CaCO_3$) (Alk.)
Total Hardness _____ (mg/L as $CaCO_3$) (TH)

Jar No.	Coag. Dose (mg/L)	Alk. Adj. (mg/L)	Floc Forming	Floc Settling Charac.	Settled pH	Settled Alk.	Settled TH	Settled Turb.
1								
2								
3								
4								
5								
6								

Coagulant Used: _____ Alkalinity Adjustment: _____

_____ RPM for _____ minutes; _____ RPM for _____ minutes;
Settling Time: _____ minutes

Filter Drop Test Worksheet
(Optional)

Plant: _____

Date: _____

Inspected By: _____

No. of Filters: _____

Filter Box Area: _____

Gullet Area: _____

Effective Filter Surface Area: _____

Volume Filtered: _____

Filter No.	Time For 6" Drop	Calc. Filter Rate	Indicated Filter Rate	Head Loss Indicated	Head Loss Measured

PART II - B
RAW WATER SOURCE

(Shading Identifies a Potential Significant Deficiency)

A. RAW WATER INTAKE / SURFACE SOURCE EVALUATION

Source Name: _____

1. Intake located on: ☐stream/free flowing river ☐reservoir

2. Observed (visible) water quality: ☐clear ☐turbid ☐colored _____

   ☐other_____

3. Conditions (Activities or pollution sources) in the immediate intake area that represent a potential health risk:

   ☐Yes ☐No

   Describe:_____

4. Observed conditions of surrounding area:_____

   _____

5. Reservoir level/stream flow: ☐normal ☐high ☐low

6. For in-stream intake:

   check dam provided: ☐Yes ☐No

   condition of check dam: _____

   stream flow monitoring provided: ☐Yes ☐No

7. Condition of intake structure:_____

   screen provided: ☐manual ☐mechanical ☐none

   condition of screen: ☐good ☐average ☐poor

   number of intake levels provided:___ depths:_____

   drawoff depth/level being used: _____

   access provided to intake structure:_____

   method of cleaning screen:_____

   is it operable/used:_____

8. Raw water pumps

   number provided:_____ number operable:_____

   number in use: _____ pumping rate:_____

   pump station subject to flooding: ☐Yes ☐No

   protected against trespassing/vandalism: ☐Yes ☐No

access to pump station:_____

when were pumps/valves last maintained/checked:_____

9. Treatment provided at intake (describe): _____

_____

10. Physical condition of intake: ☐satisfactory ☐needs attention

11. Capacity Evaluation

Intake components restrict ability of the waterworks to meet present demand? ☐Yes ☐No

Present water demand exceeds source safe yield? ☐Yes ☐No

Safe Yield: Determination Date:

Present demand exceeds raw water pumping capacity? ☐Yes ☐No

Comments:

B. SPRING / SPRING ENCLOSURE / PUMP FACILITIES

1. SPRING

Construction Sufficient to Prevent Contamination? ☐Yes ☐No

Protected From Flooding? ☐Yes ☐No

Spring Overflow Screened? ☐Yes ☐No

Cross Connections present? ☐Yes ☐No

2. LOT

All-Weather Access? ☐Yes ☐No

Clean/Uncluttered? ☐Yes ☐No

Improper Storage of Contaminants? ☐Yes ☐No

Fenced? ☐Yes ☐No

Locked?

3. SPRING ENCLOSURE

Electrical Wiring ☐satisfactory ☐needs attention

Lighting ☐satisfactory ☐needs attention

Heating ☐satisfactory ☐needs attention

4. PUMPS & APPURTENANCES PRESENT & OPERABLE

Entry Point Tap ☐Yes ☐No

Raw Water Sampling Tap ☐Yes ☐No

Discharge Check Valve ☐Yes ☐No

Discharge Shut-Off Valve ☐Yes ☐No

Valve Discharge to Waste ☐Yes ☐No

Operable Water Meter ☐Yes ☐No

Observed Pumping Rate (gpm) Discharge Head (psi)

Pump(s) Controlled By

COMMENTS/FIELD TEST RESULTS:

C. SOURCE WATER ASSESSMENT/PROTECTION

1. List land use activities of concern found but not listed in Zone 1 for the original source water assessment.

LUA TYPE	RISK	NAME OF PROPERTY OWNER	OWNER ADDRESS	LATITUDE/LONGITUDE

2. Source Water Protection:

Does the waterworks have a written source water protection plan? ☐Yes ☐No

If "Yes":

Has the source water protection plan been submitted for review? ☐Yes ☐No

When was the last evaluation performed? _____

Has there been sufficient additional development in the watershed to warrant a revised source water protection plan? ☐Yes ☐No

Discuss:

If "No":

Has a schedule been established to develop a plan? ☐Yes ☐No

What is nature of watershed?

☐agricultural ☐industrial ☐forested ☐residential

How is the watershed controlled/protected?

☐ordinances ☐owned by waterworks ☐zoning ☐other_____

What is size of the watershed? _____

Percent of watershed protected/controlled:_____%

Any sources of pollution in proximity of intakes:_____

Discuss:

3. Does waterworks have a spill response plan? ☐Yes ☐No

Has it been tested? ☐Yes ☐No

4. Has there been a contamination event since last survey? ☐Yes ☐No

Date of evaluation:_____

If "Yes", discuss (source, materials and quantities involved, effects on plan and distribution system, etc.:

Comments:

PART II -C
DISTRIBUTION SYSTEM, CROSS-CONNECTION CONTROL, STORAGE, PUMPING, METER & VALVE VAULTS

(Shading Identifies a Potential Significant Deficiency)

A. DISTRIBUTION SYSTEM EVALUATION

1. Distribution System Survey

   a. Map of distribution system available ☐Yes ☐No
      Frequency of map updates: _____

   b. Materials used:
      ☐ductile iron ☐cast iron ☐asbestos cement ☐galvanized
      ☐PVC ☐HDPE ☐other _____

   Valve guide available ☐Yes ☐No

2. Water audit conducted ☐Yes ☐No
   Accountability determined? ☐Yes ☐No
   If Yes, _____% accountability

   Leakage rates >30% (poses unacceptable risk of back siphonage) ☐Yes ☐No
   Discuss problem(s), resolution:

   Systematic leak detection program ☐Yes ☐No
   Systematic leak repair program ☐Yes ☐No
   Meter repair program ☐Yes ☐No
   Records maintained ☐Yes ☐No

3. Distribution system routinely flushed ☐Yes ☐No
   Frequency: _____
   Records maintained ☐Yes ☐No

4. Fire hydrants operational status checked ☐Yes ☐No
   By whom: _____
   Frequency:_____
   Records maintained ☐Yes ☐No
   Flow tested ☐Yes ☐No
   Flow "coded" (NFPA, other) ☐Yes ☐No

5. Valve exercise program
   Valves checked for operability ☐Yes ☐No
   Frequency:_____
   Records maintained ☐Yes ☐No

6. Corrosion control program

Piping conditions examined ☐Yes ☐No

Water stability determined ☐Yes ☐No

Method:_____ Frequency:_____

Other corrosivity/corrosion control tests performed

Method:_____ Frequency:_____

7. Air/vacuum valves

Checked for operability ☐Yes ☐No Frequency:_____

Protected from contamination ☐Yes ☐No

8. Distribution system problems

Problems/complaints logged by owner in past year ☐Yes ☐No

☐taste & odor ☐discolored water/sediment in water

☐pressure problems (<20 psi) ☐service interruptions

☐other _____

9. Records kept for three years ☐Yes ☐No

10. Is rechlorination practiced? ☐Yes ☐No

11. Does waterworks have a General Permit for water line construction? ☐Yes ☐No

If "Yes" expiration date: _____

If "Yes" are annual reports/updated maps being submitted ? ☐Yes ☐No

COMMENTS:

B. CROSS CONNECTION CONTROL PROGRAM

1. Does utility/plant have an approved Cross-Connection Control Program? ☐Yes ☐No
   Date of approval: _____
   Person in responsible charge: _____

   a. Annual surveys made (all customers) in accordance with the approved program? ☐Yes ☐No

   b. Backflow prevention devices tested in accordance with the approved program? ☐Yes ☐No

   c. All booster/jockey/fire pumps in system equipped with low pressure cut-off switches on suction lines? ☐Yes ☐No

2. Are inspection/test records maintained? ☐Yes ☐No
   Location:_____
   Records maintained for 10 years? ☐Yes ☐No
   Were records reviewed? ☐Yes ☐No
   Are records satisfactory? ☐Yes ☐No

Comments:

C. METER / VALVE VAULTS(s)

METER/VALVE VAULT	**NAME/LOCATION**	**NAME/LOCATION**
Vault Drain Functioning		
Sample Tap		
Access (Ladder, etc.)		
Locked Access		
Bypass piping		
Pressure gauges (PRV and altitude valve)		
Air/vacuum valve protected from contamination		
Comments:		

D. DISTRIBUTION STORAGE (ATMOSPHERIC TANKS)[1]

Shading Identifies a Potential Significant Deficiency)

STORAGE TANK	NAME/LOCATION	NAME/LOCATION
WATER QUALITY PROTECTION		
Structure Watertight		
Vent Shielded and Screened		
Drain Satisfactory, Protected		
Tank Overflow		
• Screened		
• Air Gap Provided at Outlet		
• Splash Pad /Erosion Protection		
Roof Hatch Watertight		
Sidewall Access Watertight		
Accesses Locked/Bolted		
Other Tank Openings Curbed, Sleeved, Covered		
Maintenance/Repair Date		
Frequency/Date of Professional Tank Survey (recommend~5 yr)		
Frequency/Date of Routine Tank Survey (recommend ~1 yr)		
Tank(s) Appear Structurally Sound		
Properly modified for Antennae?		
WATER QUALITY MAINTENANCE		
Sample Tap Available		
Frequency Samples Collected		
Floating Debris Observed		
Good Turnover Potential		
Flushed/Cleaned Date		
OPERATION		
Tank Level Controls Operable		
Automatic, Manual or Both		
Tank Level Recorded		
Automatic Recorder Operable		
CORROSION CONTROL		
Routine Interior Inspections Scheduled		
Interior Corrosion Visible		
Exterior Corrosion Visible		
Cathodic Protection Operable		
SAFETY		
Interior/Exterior Ladder Condition		
Interior/Exterior Ladder Guard		
Adequate Railing Available		
Safety Belt Available		
LOT		
Upkeep		
Access Road Maintained		
Surface Water Diverted		
Fence Condition Good		
Access Locked		

[1] Confirm with owner when unable to verify by physical inspection.

E. DISTRIBUTION – PUMP STATION[2] (Shading Identifies a Potential Significant Deficiency)

PUMP STATION	NAME/LOCATION	NAME/LOCATION
PUMP STATION LOT		
Upkeep Adequate		
Surface Water Diverted Away		
Access Road Maintained		
PUMP STATION BUILDING		
Light Operable		
Ventilation Operable		
Heating Operable		
Pump Gland Piped to Drain		
Concrete Floor		
Screened Floor Drain		
Locked		
Deterioration &/or Damage Evident		
Storage of toxic chemicals		
PUMP STATION OPERATIONS		
No. of Pumps in Operation		
All Pumps Operable		
Pump Controls: Manual / Automatic		
Pump Alternation: Manual / Automatic		
Flow Meter Operable		
Low Pressure Cut-off		
Alarm Operable		
Compound Gauges Operable		
Discharge Gate Valve Present/Operable		
Suction Gate Valve Present/Operable		
Check Valve Present/Operable		
Cross Connections are present		
PUMP MAINTENANCE		
Pump Service Schedule		
Pump Service Recorded		
EMERGENCY POWER AVAILABLE		
HYDROPNEUMATIC TANK	NAME/LOCATION	NAME/LOCATION
Type: Pre-pressurized or Hydro-Pneumatic		
Pressure Gauge / Reading		
Pressurizing System		
Pressure Operating Range		
Sight Glass / Level Indicator		
Drain protected from contamination		
Pressure Relief Valve		
Vacuum Relief Valve		
Air Relief Valve		
Exterior Condition		
Dept. of Labor & Industry Exp. Date (>120 gal)		
Tank Watertight, Structurally Sound		
Flushed/Cleaned Date		

[2] Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

PART II - D
SYSTEM MANAGEMENT AND ADMINISTRATION

A. COMMUNICATION & TRAINING

1. Is the system's management familiar with the system's facilities and their needs? ☐Yes ☐No
2. Clear lines of communication established with managers, plant and system operators? ☐Yes ☐No
3. Operational policies clear and communicated/made available to operating staff? ☐Yes ☐No
4. Good communication between the Designated Operator and other operating staff (particularly shift supervision)? ☐Yes ☐No
5. Are personnel adequately trained? ☐Yes ☐No
6. Is there an active, on-going staff training program, either in-house or outside? ☐Yes ☐No

B. STAFFING

7. Are sufficient staff (plant, system, and laboratory) provided? ☐Yes ☐No
8. Will system be adequately staffed in case of illness or vacation? ☐Yes ☐No
9. Are there problems with personnel turnover? ☐Yes ☐No

C. OPERATON & MAINTENANCE

10. Are shift supervisors held responsible for all decisions made while on duty? ☐Yes ☐No
11. Does Designated Operator and shift supervisors have 24-hour access to management staff capable of authorizing emergency expenditures? ☐Yes ☐No
12. Are preventative maintenance tasks scheduled and performed? ☐Yes ☐No
13. Has an Operations & Maintenance Manual been prepared for the plant and system? ☐Yes ☐No
14. Is there an established safety program? ☐Yes ☐No
    Is the manual kept up-to-date? ☐Yes ☐No

D. PLANNING & BUDGETS

15. Does management have plans for addressing system growth or regulatory requirements for improvements? ☐Yes ☐No
16. Has an Asset Management Plan been developed? ☐Yes ☐No
17. Are sufficient funds allocated for system maintenance and upkeep? ☐Yes ☐No
18. Is a reserve fund established to cover necessary replacements or Capital Improvements? ☐Yes ☐No
19. Are new connections to the system notified of current or unresolved problems? ☐Yes ☐No
20. Has an emergency response plan been established for the entire waterworks? ☐Yes ☐No
    Has the plan been tested? ☐Yes ☐No
    Is the plan routinely updated? ☐Yes ☐No

Is an emergency power generator capable of powering 100% plant? ☐Yes ☐No

Are the pump stations equipped with emergency power? ☐Yes ☐No

COMMENTS:

VIRGINIA DEPARTMENT OF HEALTH
OFFICE OF DRINKING WATER
CONSECUTIVE SYSTEM SANITARY SURVEY REPORT

SUBJECT:
WATERWORKS:
PWSID:

PART I - SYSTEM BACKGROUND

GENERAL INFORMATION

Owner Name:	Waterworks Class:
Type of Waterworks:	
Contact Name:	
Contact Address:	
Contact Phone Number:	
Wholesaler:	

D.O. License Class:	D.O. Has Required License:
D.O. Legal Name:	License No./Exp. Date:

Inspection By:	Inspection Date:
Time Spent:	Last Inspection Date:
Date to Reviewer:	Reviewed by/Date:
Date to Reviewer:	Reviewed by/Date:
Inspection Type:	
Present at Inspection:	
Facilities Inspected:	

Operation Permit Effective Date:	Engineering Description Sheet Date:
Permit Up-to-Date:	Description Sheet Up-to-Date:
No. Connections:	Population Served:
Avg. Daily Production:	Operation Permit Capacity:
Exceeds 80% Operation Permit Capacity? (max. 3 consecutive months): If yes, explain:	
Treatment Provided:	
SDWIS Inventory Information Current:	

Comments:

COMPLIANCE HISTORY

Shaded Boxes	Indicate a potential Significant Deficiency

TOTAL COLIFORM & GROUNDWATER RULE		DATE
• BSSR Approved:		
• Are plans current & appropriate for service population?		
• Sampled in accordance with approved plans?		
• Disinfection required? (adequate contact time)		
• 4-Log virus inactivation required?		
• 4-Log virus inactivation provided?		
• On-line chlorine analyzers required for chlorine residual?		
• Procedure for wholesaler notification of TC + results (groundwater purchasers only)		
DDBP RULE - STAGE 1 (Community & NTNC, Disinfectant Used)		**DATE**
• Stage 1 Monitoring Plan approved?		
• Monitoring Plan current?		
• Monitoring frequency required:		
DDBP RULE - STAGE 2 (Community & NTNC, Disinfectant Used)		**DATE**
• Stage 2 Sampling Plan approved and current?		
• Compliance Extension Requested?		
o If "Yes", granted?		
o If "Yes", effective exemption dates:		
CONSUMER CONFIDENCE REPORTS (Community only)		
• Final report issued by deadline		
• Certification Statement Received?		
LEAD & COPPER RULE (Community & NTNC)		**DATE**
• Materials Survey/ Sampling Plan Approved:		
• Action Level Exceedance (90%)		
• Optimized Corrosion Control Treatment (OCCT) required?		
• Public Education requirements met if required		
• All consumer notice requirements met?		
Comments:		

CROSS-CONNECTION CONTROL PROGRAM		DATE
• Approved:		
• Inspected Records This Visit		
o Program Active		
o Satisfactory		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

(MONTHLY) OPERATION REPORTS		
• All submitted for past 12 months		
• Appropriate operational treatment parameter monitoring		
• All required information/analyses reported		
EMERGENCY MGMT. PLAN for Extended Power Outage (Community only)		**DATE**
• Verification received?		
• Current?		
ASSET MANAGEMENT (recommendation)		
• Written Plan Developed?		
• Routine Maintenance Performed?		
ENFORCEMENT		**DATE**
• Administrative Order in Effect:		
• Violations / Enforcement Actions Since Last Survey:		
• Owner issued Public Notice as required?		
• Active Corrective Action Plan?		
o If "Yes", is waterworks on schedule?		
• SDWIS Violation & Enforcement Action, Public Notification data current?		
COMPLAINTS SINCE LAST INSPECTION:		
• If yes, summarize:		
Comments:		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

MONITORING HISTORY

Insert R&R report - Next Chemical Sample Due. See WM 851, Attachment G for instructions.

If field notes are sent with the owner's report, the Next Chemical Sample Due report does not need to be included in both this section and the owner's report.

PART II - SYSTEM SURVEY INFORMATION (Field Notes)

Shaded Boxes Indicate a potential Significant Deficiency

A. DISTRIBUTION SYSTEM EVALUATION
B. STORAGE – ATMOSPHERIC TANK(S)
C. BOOSTER PUMP STATION(S)
D. STORAGE – PNEUMATIC TANK(S)
E. METER & VALVE VAULT(S)
F. RE-CHLORINATION STATION(S)
G. CONTINUOUS CHLORINE ANALYSIS

It is not necessary to include this page in a completed Sanitary Survey Report

A. DISTRIBUTION SYSTEM EVALUATION	
Pipe Material(s):	
Individual Service Meters provided?	
o If yes, routine calibration & replacement program in effect?	
Flushing Provisions (hydrants, blow-offs, etc.) available?	
Routine Flushing Program in practice?	
o If yes, describe:	
Isolation valves exercised?	
o If yes, describe:	
Air/vacuum relief valves checked for operability?	
o If yes, describe:	
Pressure monitoring of distribution system?	
o If yes, describe:	
Adequate Pressure Maintained Throughout? (>20 psi @ peak flow)	
Problems/Complaints in past year: ☐taste & odor ☐pressure ☐turbidity/sediment ☐color ☐service interruptions ☐other Describe:	
Pipe Repair - proper disinfection/sampling procedures used?	
Re-chlorination practiced? (If yes, see separate Re-Chlorination table in this report.)	
FIRE PROTECTION PROVIDED?	
How often are Fire Flow Tests conducted (with fire dept.)?	
How often are hydrants checked for operability?	
Are fire hydrants coded to indicate maximum available fire flow?	
o If yes, is operator familiar with fire hydrant code index?	
Are operators familiar with tank levels necessary to provide target fire flow for target duration?	
Does waterworks have routine procedures for contacting local fire department(s) to verify available fire flow and duration?	
MANAGEMENT	
Plans/Sketches/Maps with valve & master meter locations?	
Records maintained (should be kept for 3 years minimum): ☐Repairs ☐Flushing ☐Hydrant Testing ☐Fire Flow Tests ☐Water Audits ☐Complaints	
How often are Water Audits conducted?	
Leakage rates > 30%? Explain:	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

B. STORAGE - ATMOSPHERIC TANK(S)	***NAME/LOCATION*** ***Tank Volume***	***NAME/LOCATION*** ***Tank Volume***
WATER QUALITY PROTECTION		
Structure Watertight		
Vent Shielded and Screened		
Drain Satisfactory, Protected		
Tank Overflow		
• Screened		
• Air Gap Provided at Outlet		
• Splash pad / Erosion Protection		
Roof Hatch Watertight		
Sidewall Access Watertight		
Accesses Locked/Bolted		
Other Tank Openings Curbed and Sleeved		
Other Tank Openings Covered		
Maintenance/Repair Date		
Frequency/Date of Professional Tank Survey (recommended ~5 yr). Explain.		
Frequency/Date of Routine Tank Survey (recommended ~1 yr). Explain.		
Tank(s) Appear Structurally Sound		
Properly modified for Antennae?		
WATER QUALITY MAINTENANCE		
Sample Tap Available		
Frequency Tank Samples Collected		
Floating Debris Observed		
Good Turnover Potential		
Flushed/Cleaned Date		
OPERATION		
Tank Level Controls Operable		
Automatic or Manual		
Tank Level Recorded		
Automatic Recorder Operable		
CORROSION CONTROL		
Routine Interior Inspections Scheduled		
Interior Corrosion Visible		
Exterior Corrosion Visible		
Cathodic Protection Operable		
SAFETY		
Interior/Exterior Ladder Condition		
Interior/Exterior Ladder Guard		
Adequate Railing Available		
Safety Belt Available		
LOT		
Upkeep		
Access Road Maintained		
Surface Water Diverted		
Fence Condition Good		
Access Locked		
Comments:		

C. BOOSTER PUMP STATION(S)	***NAME/LOCATION***	***NAME/LOCATION***
PUMP STATION LOT		
Upkeep Adequate		
Surface Water Diverted Away		
Access Road Maintained		
PUMP STATION BUILDING		
Light Operable		
Ventilation Operable		
Heating Operable		
Pump Gland Piped to Drain		
Concrete Floor		
Screened Floor Drain		
Locked		
Deterioration &/or Damage Evident		
Storage of toxic chemicals		
PUMP STATION OPERATIONS		
No. of Pumps In Operation		
All Pumps Operable		
Pump Controls:		
• Automatic		
• Manual		
Pump Alternation:		
• Automatic		
• Manual		
Flow Meter Operable		
Low Pressure Cut-off		
Alarm Operable		
Compound Gauges Operable		
Cross Connections are present		
PUMP MAINTENANCE		
Pump Service Schedule		
Pump Service Recorded		
Discharge Gate Valve		
Suction Gate Valve		
Check Valve		
Comments:		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

D. STORAGE - PNEUMATIC TANK(S)	***NAME/LOCATION***	***NAME/LOCATION***
Type: *Pre-Pressurized or Hydro-Pneumatic*		
Drain protected from contamination		
Pressure Gauge / Reading		
Pressure Operating Range		
Sight Glass / Level Indicator		
Sample Tap Available		
Pressurizing System		
Vacuum Relief Valve		
Pressure Relief Valve		
Air Relief Valve		
Exterior Condition		
Normal Pump Cycling (not "water logged")		
Tank Watertight, Structurally Sound		
Flushed/Cleaned Date		
Dept. of Labor & Industry Exp. Date (>120 gal.)		
Comments:		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

E. METER AND VALVE VAULT(S)	***NAME/LOCATION***	***NAME/LOCATION***
Vault Drain Functioning		
Sample Tap		
Access (Ladder, etc.)		
Locked Access		
Bypass piping		
Pressure gauges (PRV and altitude valve)		
Air/vacuum valve protected from contamination		
Comments:		

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F. RE-CHLORINATION STATIONS	***NAME/LOCATION***	***NAME/LOCATION***
Disinfectant		
ANSI Certified / NSF Approved / "GRAS"		
Feeder Condition		
Spare Feeder/Repair Parts		
Safety Features/ Precautions adequate to protect operator and public		
Room Ventilation		
Injection line condition (scale build up, etc.)		
Solution tank condition		
Solution tank covered		
Feeder Activation/Operation		
Weight (gas) or volume/depth (OCl) scale		
Number full cylinders (gas systems)		
Booster Pump(s)		
Residual test equipment		
Free residual, mg/l		
Inspection field test ≈ Monthly Operation Report residuals?		
Comments:		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

VIRGINIA DEPARTMENT OF HEALTH
OFFICE OF DRINKING WATER
GROUNDWATER SYSTEM SANITARY SURVEY REPORT
TRANSIENT NON-COMMUNITY

SUBJECT:
WATERWORKS:
PWSID:

PART I - SYSTEM BACKGROUND

GENERAL INFORMATION

Owner Name:	Waterworks Class:
Type of Waterworks: **TNC**	
Contact Name:	
Contact Address:	
Contact Phone Number:	

D.O. License Class:	D.O. Has Required License:
D.O. Legal Name:	License No./Exp. Date:

Inspection By:	Inspection Date:
Time Spent:	Last Inspection Date:
Date to Reviewer:	Reviewed by/Date:
Date to Reviewer:	Reviewed by/Date:
Inspection Type:	
Present at Inspection:	
Facilities Inspected:	

Operation Permit Effective Date:	Engineering Description Sheet Date:
Permit Up-to-Date:	Description Sheet Up-to-Date:
No. Connections:	Population Served:
Avg. Daily Production:	Operation Permit Capacity:
Exceeds 80% Operation Permit Capacity? (max. 3 consecutive months): If yes, explain:	
Treatment Provided:	
SDWIS Inventory Information Current:	

Comments:

COMPLIANCE HISTORY

Shaded Boxes	Indicate a potential Significant Deficiency

TOTAL COLIFORM & GROUNDWATER RULE		DATE
• BSSR Approved:		
• TSWMP Approved:		
• Are plans current & appropriate for service population?		
• Sampled in accordance with approved plans?		
• Disinfection required? (adequate contact time)		
• 4-Log virus inactivation required?		
• 4-Log virus inactivation provided?		
• On-line chlorine analyzers required for chlorine residual?		

ROUTINE RAW WATER BACTERIOLOGICAL MONITORING *(checked over past 12 months)*		
• Required?		
o If "Yes", Frequency:		
• # of *E. coli* positive Samples		
• # Samples with Total Coliform >100 CFU/ml		

GUDI DETERMINATION	RESULT	DATE
• *Source # / Name*		
• *Source # / Name*		

SOURCE WATER ASSESSMENT PERFORMED		DATE
• *Source # / Name*		
• *Source #/ Name*		

SOURCE WATER PROTECTION		DATE
• Written source water protection plan?		
Comments:		

CROSS-CONNECTION CONTROL PROGRAM		DATE
• Approved		
• Inspected Records This Visit		
• Program Active		
• Satisfactory		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

OPERATION REPORTS	
• All submitted for past 12 months	
• Appropriate operational treatment parameter monitoring	
• All required information/analyses reported	

ENFORCEMENT		
• Administrative Order in Effect:		
• Violations / Enforcement Actions Since Last Survey:		
• Owner issued Public Notice as required?		
• Active Corrective Action Plan?		
o If "Yes", is waterworks on schedule?		
• SDWIS Violation & Enforcement Action, Public Notification data current?		

COMPLAINTS SINCE LAST INSPECTION:
• If yes, summarize:
Comments:

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

MONITORING HISTORY

Insert R&R report - Next Chemical Sample Due. See WM 851, Attachment G for instructions.

If field notes are sent with the owner's report, the Next Chemical Sample Due report does not need to be included in both this section and the owner's report.

PART II - SYSTEM SURVEY INFORMATION (Field Notes)

Shaded Boxes Indicate a potential Significant Deficiency

COMBINED SECTIONS

A. SOURCE - WELL
B. WELL HOUSE
C. STORAGE PNEUMATIC TANK(S)
D. CHEMICAL FEED SYSTEMS – SAFETY/GENERAL
E. DISINFECTION
F. NEW ACTIVITIIES OR POLLUTION SOURCES
G. STORAGE - ATMOSPHERIC TANK(S)
H. BOOSTER PUMP STATION(S)

INDIVIDUAL SECTIONS

I. SOURCE - SPRING / SPRING ENCLOSURE / PUMP FACILITIES
J. DISTRIBUTION SYSTEM
K. CONTINUOUS CHLORINE ANALYSIS
L. ULTRAVIOLET LIGHT UNITS
M. CORROSION CONTROL TREATMENT
N. IRON & MANAGNESE CONTROL ($KMnO_4$ - GREENSAND FILTERS)
O. SOFTENING (CATION EXCHANGE USING NaCl)
P. REVERSE OSMOSIS

It is not necessary to include this page in a completed Sanitary Survey Report

A. SOURCE (WELL # / NAME)

Sanitary Casing Seal /Cap	
Elbowed Casing Vent/Screened	
12" Casing Extension	
Concrete Pad (6' Square)	
Well Lot Condition (50 ft Radius)	
Protected from Flood Waters/ Runoff	
Discharge Check Valve	
Discharge Shut-Off Valve	
Valved Blow-Off	
Raw Water Sample Tap	
Water Level Gauge or Transducer	
Operable Water Meter/Reading	
Permitted Capacity (gpd)	
Pumping Rate Observed (gpm)	
Pumping Average hrs/day	
Permitted Source Capacity Exceeded?	
Discharge Head Observed (psi)	
All Weather Access	

B. WELL HOUSE

Adequate Protection	
Proper Storage Only (Non-toxic & Non-explosive)	
Cross-Connections Exist?	
Lighting	
Heating	
Electrical Wiring (Safety)	
Floor Drain	
All-Weather Access	
Wellhead Accessible	
Locked	
Clean/Uncluttered	
Emergency Power Available	

C. STORAGE - PNUEMATIC TANK(S)

(NAME/ LOCATION)
(Tank Volume)

Type: Pre-Pressurized or Hydro-Pneumatic	
Drain Protected from Contamination	
Pressure Gauge/Reading	
Pressure Operating Range	
Sight Glass/ Level Indicator	
Sample Tap Available	
Pressurizing System	
Vacuum Relief Valve	
Pressure Relief Valve	
Air Relief Valve	
Exterior Condition	
Normal Pump Cycling	
Tank Watertight, Structurally Sound	
Flushed/Cleaned Date	
Dept. of Labor & Industry Exp. Date (>120 gal.)	

D. CHEM. FEED SYSTEMS

SAFETY / GENERAL

Do any chemical storage and handling facilities offer potential for explosions?	
Is adequate safety equipment provided for chemical handling (i.e. rubber gloves, breathing apparatus, goggle, aprons, etc.)?	
Are Material Data Safety Sheets (MSDS) available?	
Are hazardous chemical containers labeled?	
Is adequate chemical storage area provided?	
Are there approved backflow prevention devices installed to isolate process water from finished water?	
Does the waterworks have adequate employee safety training?	

E. DISINFECTION

Disinfectant	
ANSI Certified/NSF Approved / "GRAS"	
Feeder Condition	
Spare Feeder/Repair Parts	
Room Ventilation	
Contact Tank in service	
Contact Tank Condition	
Injection Line Condition (Scale Build-Up, etc.)	
Solution Tank Condition	
Solution Tank Covered	
Feeder Activation/Operation	
Weight (gas) or Volume/ Depth (OCl) Scale	
Number Full Cylinders (Gas Only)	
Booster Pump(s)	
Residual Test Equipment	
Free Residual, mg/l	
Field test ≈ MOR residuals	

F. NEW ACTIVITIES OR POLLUTION SOURCES

within 1000 ft radius of well that present a significant/acute health risk.

Activity or Pollution Source	Approx. Distance from Well

Comments:

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

G. STORAGE - ATMOSPHERIC TANK(S)

(NAME/LOCATION)
(Tank Volume)

WATER QUALITY PROTECTION	
Structure Watertight	
Vent Shielded and Screened	
Drain Satisfactory, Protected	
Tank Overflow	
• Screened	
• Air Gap Provided at Outlet	
• Splash Pad/Erosion Protection	
Roof Hatch Watertight	
Sidewall Access Watertight	
Accesses Locked/Bolted	
Other Tank Openings Curbed and Sleeved	
Other Tank Openings Covered	
Maintenance/Repair Date	
Frequency/Date of Professional Tank Survey (Recommended ~5 yr)	
Frequency/Date of Routine Tank Survey (Recommended ~1yr)	
Tank(s) Appear Structurally Sound	
Properly Modified for Antennae?	
WATER QUALITY MAINTENANCE	
Sample Tap Available	
Frequency Samples Collected	
Floating Debris Observed	
Good Turnover Potential	
Flushed/Cleaned Date	
OPERATION	
Tank Level Controls Operable	
Automatic or Manual	
Tank Level Recorded	
Automatic Recorder Operable	
CORROSION CONTROL	
Routine Interior Inspections Scheduled	
Interior Corrosion Visible	
Exterior Corrosion Visible	
Cathodic Protection Operable	
SAFETY	
Interior/Exterior Ladder Condition	
Interior/Exterior Ladder Guard	
Adequate Railing Available	
Safety Belt Available	
LOT	
Upkeep	
Access Road Maintained	
Surface Water Diverted	
Fence Condition Good	
Access Locked	

H. BOOSTER PUMP STATION(S)

(NAME/LOCATION)

PUMP STATION LOT	
Upkeep Adequate	
Surface Water Diverted Away	
Access Road Maintained	
PUMP STATION BUILDING	
Light Operable	
Ventilation Operable	
Heating Operable	
Pump Gland Piped to Drain	
Concrete Floor	
Screened Floor Drain	
Locked	
Deterioration &/or Damage Evident	
Storage of Toxic Chemicals	
PUMP STATION OPERATIONS	
No. of Pumps in Operation	
All Pumps Operable	
Pump Controls:	
• Automatic	
• Manual	
Pump Alternation:	
• Automatic	
• Manual	
Flow Meter Operable	
Low Pressure Cut-off	
Alarm Operable	
Compound Gauges Operable	
Cross Connections are Present	
PUMP MAINTENANCE	
Pump Service Schedule	
Pump Service Recorded	
Discharge Gate Valve	
Suction Gate Valve	
Check Valve	
Emergency Power Available	

COMMENTS:

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

I. SOURCE - SPRING / SPRING ENCLOSURE / PUMP FACILITIES		
	SPRING # / NAME	**SPRING # / NAME**
Construction Sufficient to Prevent Contamination		
Protected From Flooding		
Spring Overflow Screened		
Spring Lot		
All-Weather Access		
No Cross Connections		
Clean/Uncluttered		
Improper Storage of Contaminants		
Spring Enclosure Condition/Acceptable		
Spring Enclosure Protected (Lot Fenced)		
Locked		
Electrical Wiring (safety)		
Lighting		
Heating		
Entry Point Tap Available		
Raw Water Sampling Tap		
Discharge Check Valve		
Discharge Shut-Off Valve		
Valve Discharge to Waste		
Operable Water Meter		
Spring Yield - gpm (if available)		
Emergency Power available		
Comments:		

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

J. DISTRIBUTION SYSTEM EVALUATION	
Pipe Material(s):	
Flushing Provisions (hydrants, blow-offs, etc.) available?	
Adequate Pressure Maintained Throughout? (>20 psi @ peak flow)	
Problems/Complaints in past year: ☐taste & odor ☐pressure ☐turbidity/sediment ☐color ☐service interruptions ☐other Describe:	
Pipe Repair - proper disinfection/sampling procedures used?	
Leakage rates > 30%? Explain:	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

K. CONTINUOUS CHLORINE ANALYSIS	***NAME/LOCATION***
Grab Sampling	
• Are grab samples collected at least weekly for routine calibration checks for each on-line analyzer?	
• Is a sample tap for grab samples located as close as feasible to where samples enter the on-line analyzer?	
• What method is used to analyze grab samples?	
• Is the method acceptable?	
Calibration	
• Are results of calibration checks within the larger of +/- 0.1 mg/l or +/- 15%?	
• Are emergency calibration checks performed as soon as possible when an on-line chlorine analyzer indicates a large (<50%) unexpected change in chlorine residual concentration?	
• Are records of calibration recorded and maintained for 3 years?	
On-line Analyzers	
• Does each analyzer have the readout at its installation and continuous recording (hard copy chart or electronic data)?	
• Is data recorded at least every 15 minutes?	
• Is an alarm activated when chlorine concentration is outside normal operating range? • If yes, what are the alarm settings? Minimum: Maximum:	
Do all chemical reagents and standards for on-line analyzers and grab sample methods have an unexpired shelf life?	
Comments:	

L. ULTRAVIOLET LIGHT UNITS	***NAME/LOCATION***
Does the UV Unit appear to be functioning?	
Is the bulb changed according to the manufacturer's recommended schedule?	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

M. CORROSION CONTROL or SEQUESTRATION	***NAME/LOCATION***
Type Treatment (ortho/poly/blend – phosphate, pH/alkalinity adjustment, calcite contactor, silicate, etc.): & purpose	
Back Siphonage Protection Provided	
Safety Eyewear and Clothing Provided	
Chemical(s) Meet ANSI / NSF Standards	
Equipment Literature Available	
Equipment Condition	
Equipment Operation Adequate	
Spare Feeder/Metering Pump	
Proper Mixing Downstream of Chemical Addition	
Adequate Mixing Provided for Chemical Slurries	
Separate Feeder/Storage Room Provided	
Suitable Chemical Storage (30 days minimum)	
Suitable Sampling Taps (upstream, downstream)	
Calcite Addition Based Upon (calcite contactor)	
Disposal of Backwash Waste (downflow calcite contactor)	
Appropriate & Operable Testing Equipment	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

N. IRON & MANGANESE CONTROL ($KMnO_4$ – GREENSAND FILTER, OTHER-specify)	***NAME/LOCATION***
Cross-Connection Protection – $KMnO_4$ Mixing Tank	
Safety Eyewear and Clothing Provided	
Chemicals meet ANSI / NSF Standards	
Equipment Literature Available	
Equipment Condition	
Equipment Operation Adequate	
Continuous or Batch $KMnO_4$ Addition	
Spare Metering Pump Provided	
pH Adjustment	
$KMnO_4$ Addition Follows pH Adjustment	
Supplemental Oxidants (aeration, chlorine, other)	
If Aeration, How Provided	
Is Disinfection Provided	
Suitable Sampling Taps (prior to $KMnO_4$, influent, effluent)	
Suitable $KMnO_4$ Storage (30 days minimum)	
Is $KMnO_4$ stored away from organic materials (explosion hazard)?	
Backwash (gravity from system/storage, pumped, other)	
No. Backwash Pumps	
Air Wash Provided	
Disposal of Backwash Waste	
Appropriate & Operable Testing Equipment	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

O. ION EXCHANGE	***NAME/LOCATION***
Treatment Purpose (softening, Fe/Mn removal, other)	
Cross-Connection Protection – Water Inlet to Brine Tank	
Chemicals meet NSF Standards	
Equipment Literature Available	
Equipment Condition	
Equipment Operation Adequate	
Bypass for Blending	
Regeneration (automatic, manual)	
Backwash (gravity from system/storage, pumped, other)	
No. Backwash Pumps	
Suitable Sampling Taps (influent, effluent, blended)	
Corrosion Problem Due to Salt Storage/Usage	
Suitable Salt Storage (30 days minimum)	
Salt Storage/Brine Tank Separated from Vulnerable Equipment	
Disposal of Brine Waste	
Appropriate & Operable Testing Equipment	
Comments:	

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

P. REVERSE OSMOSIS			***NAME/LOCATION***
	Satisfactory?		Comments
	Yes	No	
Treatment purpose			(Fluoride removal, Desalination, other)
Number & configuration			(Pre-filters, RO units)
Equipment condition			
Equipment operation			(Actual Feed Rate = gpm; Recovery = %; Design Feedrate = gpm; Recovery = %)
O&M manual available			
Bypass for blending			(Treated = % *or* gpm; Bypassed = % *or* gpm)
Flowmeters			Location Reading Condition
•			
•			
Pressure gauges			Location Reading Condition
•			
•			
Test equipment			(Equipment; Availability; Condition)
Performance Monitoring			Parameter Frequency Value
Element replacement			(Schedule or condition; Date last replaced)
Chemical Pretreatment			Refer to table below
Chemicals meet NSF 60			
Concentrate Disposal			(Location, Condition)
Field test results - Applied water - Recovered water - Blended water			Temp pH Na F Other

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

Q. REVERSE OSMOSIS (Cont.)					
Pretreatment Chemical	Function	Conc.	Feedrate	Storage Location/Quantity	Remarks
	Acid for pH adjustment				
	Antiscalant				
	Sequestration of Fe & Mn				
Comments:					

Y = Yes; N = No; NA = Not Applicable; N/I = Not Inspected; None = None; OK = Acceptable

ATTACHMENT F - LIST OF POTENTIAL SIGNIFICANT DEFICIENCIES

Shaded cells indicate Potential Significant Deficiencies for Surface Water Treatment only.

Sanitary Survey Element	SDWIS Category Code	Description (included in SDWIS; max. 95 characters)
Source	SO	SO01-Potential contamination source or activity within 50 ft of well
Source	SO	SO02-Potential contamination of well from surface water runoff
Source	SO	SO03-Well has not been approved by VDH-ODW
Source	SO	SO04-Sanitary seal or pitless adapter well cap missing or defective
Source	SO	SO05-Spring box construction deficient; susceptible to contamination
Source	SO	SO06-Existing demand exceeds source pumping rate
Source	SO	SO07-Existing demand exceeds source "safe yield"
Source	SO	SO08-Existing demand exceeds intake components' hydraulic capacity
Treatment	TR	TR01-Filter loading exceeds permitted rate[1]
Treatment	TR	TR02-Filter flow controls inoperable or improperly calibrated[1]
Treatment	TR	TR03-Filter backwash rate or duration inadequate[1]
Treatment	TR	TR04-Filter backwash pump controls inoperable or improperly calibrated[1]
Treatment	TR	TR05-Failure to maintain continuous disinfection
Treatment	TR	TR06-Minimum chlorine residual not maintained to meet CT
Treatment	TR	TR07-Entry point chlorine residual < 0.2 mg/L[2]
Treatment	TR	TR08-Chemicals not certified to ANSI/NSF 60 Standard or GRAS
Treatment	TR	TR09-Chemical storage or handling present risk of explosions
Treatment	TR	TR10- Unprotected or improperly protected cross-connections [3]
Treatment	TR	TR11-Inadequate continuous treatment for MCL or TT requirements
Treatment	TR	TR12-Coagulant/Coagulant Aid improperly applied
Treatment	TR	TR13-Mixer inoperable or inadequate
Treatment	TR	TR14-No floc formation
Treatment	TR	TR15-Excess sludge accumulation
Treatment	TR	TR16-Disinfection profile unavailable or not understood by **Operator**[4]
Distribution System	DS	DS01-Distribution pressure falls below 20 psi at the service connection
Distribution System	DS	DS02-Failure to have active Cross-Connection Control Program
Distribution	DS	DS03-Distribution leakage rate greater than 30%[5]

[1] All filter types
[2] SWTR requirement
[3] A cross-connection control device is missing or is inadequate
[4] 40 CFR 141.172 (b)(6) states: "The system must retain disinfection profile data in graphic form, as a spreadsheet, or in some other format acceptable to the State for review as part of the sanitary surveys conducted by the State."
40 CFR 141.16 (b)(3)(iv) states: "When conducting sanitary surveys for systems required to comply with the disinfection profiling requirements in § 141.172 of this chapter, the State must also review the disinfection profile as part of the sanitary survey."

ATTACHMENT F - LIST OF POTENTIAL SIGNIFICANT DEFICIENCIES

System		
Finished Water Storage[6]	FW	FW01-Tank not watertight
Finished Water Storage	FW	FW02-Roof / Access hatches not watertight
Finished Water Storage	FW	FW03-Tank structurally unsound
Finished Water Storage	FW	FW04-Vent improperly screened
Finished Water Storage	FW	FW05-Overflow improperly screened or protected from contamination
Finished Water Storage	FW	FW06-Drain improperly screened or protected from contamination
Finished Water Storage	FW	FW07-Potential contamination of finished water from surface water runoff
Pumps (facilities and controls)	PU	PU01-Critical pump equipment inoperable
Pumps (facilities and controls)	PU	PU02-Unprotected or improperly protected cross-connections
M&R & Data Verification	MR	MR01-Not using certified lab for compliance testing
M&R & Data Verification	MR	MR02-No BSSR approved by VDH-ODW
M&R & Data Verification	MR	MR03-No TSWMP approved by VDH-ODW
M&R & Data Verification	MR	MR04-Sampling not in accordance with BSSR
M&R & Data Verification	MR	MR05-Sampling not in accordance with TSWMP
Management & Operations	SM	SM01-ODW-required operation testing not performed / recorded
Management & Operations	SM	SM02-Lab log and data sheets not readily available[7]
Operator Compliance	OC	OC01-Number and Class of Operators do not meet WW Regulations

[5] Leakage means the loss of water from the distribution system, up to the point of service connections, through breaks or defects in piping.

[6] Includes clearwells

[7] Applicable to surface water and GUDI treatment facilities, and GW systems required to meet 4-log virus inactivation.

«Date»

NOTICE OF SIGNIFICANT DEFICIENCY (IES)

SUBJECT: <<*County*>>
WATERWORKS: <<*Waterworks Name*>>
PWSID:

«Owner Name»
«Address»
«Address»

Dear *«Owner Name»*:

On *{date}*, {*name of the inspector*} of this office conducted a sanitary survey of your waterworks. Enclosed is a copy of the report developed as a result of that survey.

The following Significant Deficienc(y)(ies) (was)(were) identified during this inspection:

{itemize deficiency-ies here}

(If ODW issues CAP):
Enclosed is a proposed Corrective Action Plan (CAP) for your review; please sign and return if acceptable. If you wish to make changes to the CAP please contact this Office immediately. The final, signed CAP must be submitted to this Office by {*date of letter plus 45 days*} for review and approval. You are required to notify this Office within 30 days of completion of each action item. The CAP must be fully implemented within 120 calendar days from the date of this letter. Once all of the actions listed in the CAP have been completed, this Office must conduct a follow-up inspection to verify elimination of the Significant Deficiency in accordance with the CAP.

(If waterworks owner generates CAP):
You are required to contact this Office by *{date of letter plus 30 days}* to establish how and on what schedule the Significant Deficiency will be addressed. A written Corrective Action Plan (CAP) must be submitted to this Office by *{15 days later}*, for review and approval. The CAP must outline the steps necessary to correct the Significant Deficiency, and be fully implemented within 120 calendar days from the date of this letter.

You are required to notify this Office within 30 days of completion of each action item. Once the actions listed in the CAP have been completed, this Office must conduct a follow-up inspection to verify elimination of the Significant Deficiency in accordance with the CAP.

Your failure to respond as requested by the above deadlines may force VDH to pursue enforcement action in order to protect public health.

Please visit our web site at www.vdh.virginia.gov/drinkingwater. There you will find helpful information on water sampling and testing, operator licensing and training, consumer education, project funding and many other topics, as well as, links to other key websites and Virginia's *Waterworks Regulations*. If you have questions, please do not hesitate to contact me.

Sincerely,

District Engineer

Enclosure(s)

cc: VDH-ODW-Central Office
County Health Department, Attention: <<*Name of Health Director*>>
County Administrator

CORRECTIVE ACTION PLAN
Waterworks Name
PWSID ##########

The following (interim and) corrective actions must be implemented by the (*Name of waterworks owner)* because the *(Name of waterworks)* waterworks has been found to have the following significant deficienc(y)(ies):

Itemize deficiencies here……

A. INTERIM ACTION REQUIREMENTS [if applicable]

Include interim action requirements as necessary

B. CORRECTIVE ACTION REQUIREMENTS

The following corrective actions and schedules will be followed by the (*Name of waterworks*). As each action item is completed, the status will be reported in writing to the VDH-ODW.

ACTION ITEMS	START DATE	COMPLETION DATE
Include corrective action item(s) necessary to correct the significant deficiency	Immediately	Target 120 days from CAP issuance

(I)(*Name of waterworks owner entity*) agree(s) to fully implement the above (interim and) corrective actions to bring (my)(*name of waterworks*) waterworks into compliance with the Commonwealth of Virginia *Waterworks Regulations*.

Waterworks Owner/Agent Date

NOTICE OF VIOLATION*

NOTE: If compliance schedules or corrective action plans are developed, they should be included with a separate violation notice attached to the transmittal letter without this heading.

SUBJECT: <<*County*>>
WATERWORKS: <<*Waterworks Name*>>
PWSID:

«Owner Name»
«Address»
«Address»

Dear *«Owner Name»*:

On *{date}*, {*name of the inspector*} of this office conducted a sanitary survey of your waterworks. Enclosed is a copy of the report developed as a result of that survey. Please note our list of comments and recommendations on page __ of the inspection report.

This Notice is to advise you that the subject waterworks appears to be in violation of the Commonwealth of Virginia *Waterworks Regulations* as follows:

{Itemize Violations found}

If you have questions on the report or would like to discuss my findings, please do not hesitate to contact me.

Sincerely,

District Engineer

Enclosure

cc: VDH-ODW-Central Office
County Health Department, Attention: <<*Name of Health Director*>>
County Administrator

SUBJECT: <<*County*>>
WATERWORKS: <<*Waterworks Name*>>
PWSID:

«Owner Name»
«Address»
«Address»

Dear *«Owner Name»*:

On *{date}*, *{name}* conducted a sanitary survey of your waterworks. Enclosed is a copy of the report developed as a result of that survey. Please note our list of comments and recommendations on page __ of the inspection report. Additional items may be found in the body of the report.

If you have questions on the report or would like to discuss my findings, please do not hesitate to contact me. This office would like to thank the staff at the *{waterworks name}* for their assistance and professionalism during the inspection.

Sincerely,

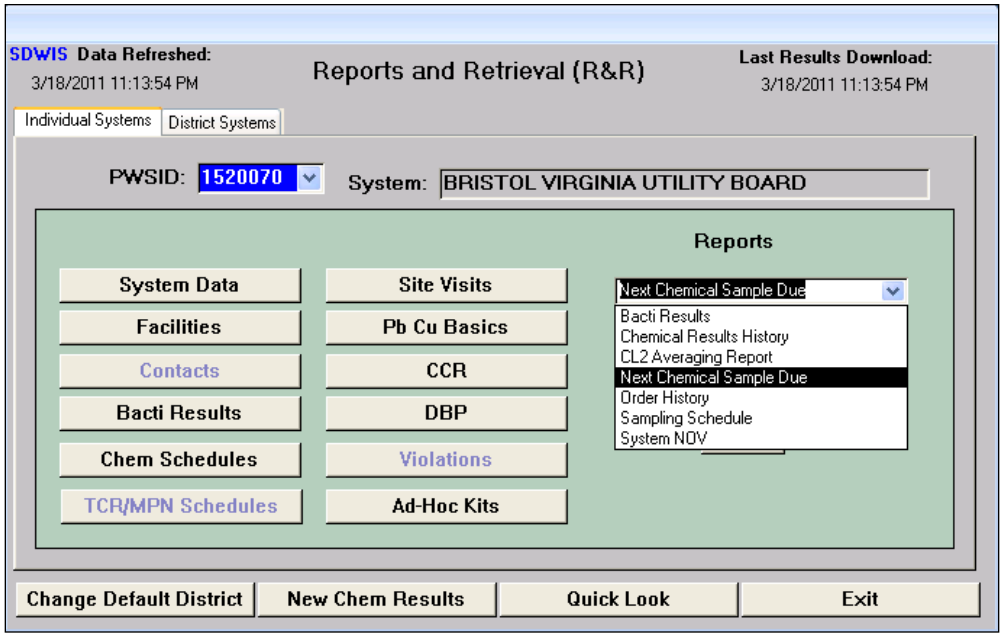
{Name & Title}

Enclosure

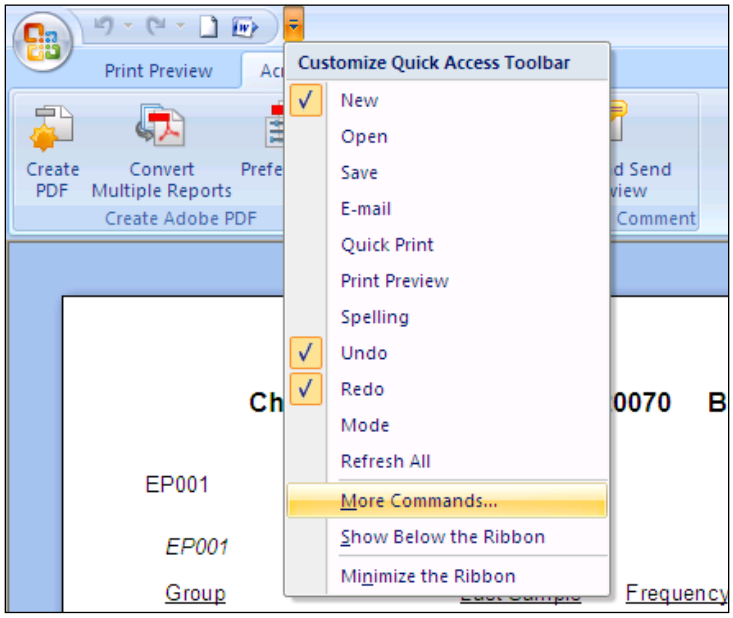
cc: VDH-ODW-Central Office
County Health Department, Attention: <<*Name of Health Director*>>
County Administrator

Sanitary Survey Monitoring History – R&R Report Instructions (Microsoft Access 2007)

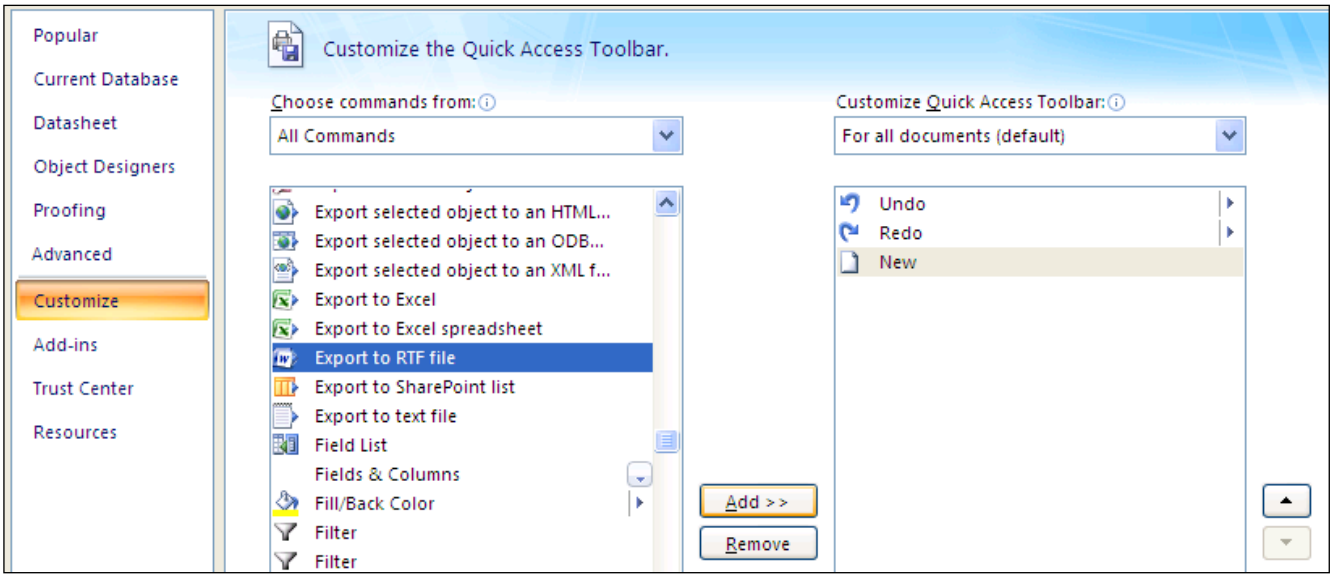
- Choose the appropriate PWSID under the *Individual Systems* tab.
- Choose Next Chemical Sample Due under the *Reports* bar, click Run.
- Chemical Schedule for corresponding PWSID will appear.



- Click the down arrow near the top left of the report (*Customize Quick Access Toolbar*) and select More Commands.



- In the *Choose commands from* dropdown tab, select All Commands.
- Click Export to RTF file, then Add, then OK.



- Click Browse to choose the file export location, name the file, check the box to open the file after the export is complete, and click OK.
- Copy and paste the report into your sanitary survey by highlighting the exported report, right click and choose Copy, then right click and choose Paste in your sanitary survey report.
- Modify font and font size as needed.