

BOARD:  
Paul C. Aughtry, III  
Chairman  
Edwin H. Cooper, III  
Vice Chairman  
Steven G. Kisner  
Secretary



C. Earl Hunter, Commissioner

*Promoting and protecting the health of the public and the environment*

BOARD:  
Henry C. Scott  
M. David Mitchell, MD  
Glenn A. McCall  
Coleman F. Buckhouse, MD

## Bureau of Water

June 5, 2009

Ms. Janine Morris  
Drinking Water Section  
Water Management Division  
Ground Water and Drinking Water Branch  
US Environmental Protection Agency, Region IV  
Atlanta Federal Center  
61 Forsyth Street  
Atlanta, GA 30303-3104

Dear Janine,

Enclosed is a revised primacy revision application package for the Ground Water Rule. I have included several documents for your review. The list of documents is as follows:

1. The comment document you forwarded to me via electronic mail on April 9, 2009. The document includes an additional column with DHEC comments.
2. The revised primacy revision crosswalk
3. Appendix A – revised records retention schedule
4. Appendix B – sanitary survey inspection form with instructions. Please note that this form is printed in landscape for your ease of understanding and review. The actual document used by our inspectors will be in portrait format and will be printed from our EFIS database.
5. Appendix C – revised significant deficiencies document.
6. State of SC Ground Water Sanitary Survey Manual. This is the SOP our field staff uses when performing sanitary surveys. In your comments, you indicated that the review of our application requires the final document. Because of the time-consuming revision process, please accept this manual with the understanding that it is undergoing revisions. The expected completion date of all revisions is September 1, 2009. I am including several of the revised pages so you can see that we are including the significant deficiencies in the process. Along with Appendix C, this manual gives a comprehensive look at our sanitary survey program.

If I have left something out critical to your review, or if you have any questions or comments concerning the enclosed submittal, please contact me at (803) 898-3546, or via electronic mail at [welchra@dhec.sc.gov](mailto:welchra@dhec.sc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Richard Welch, Jr.", written in a cursive style.

Richard Welch, Jr., PE, Manager  
Drinking Water & Recreational Waters Compliance Section  
Drinking Water Protection Division  
SC Department of Health & Environmental Control

EPA Review Comments  
GWR Primacy Revision Package  
State of South Carolina  
April 6, 2009

Federal Citation (40 CFR)	State Citation (R61-58.)	EPA Comments	DHEC Comments
141.21(d)(3)	5.G(4)(c), pg.143	Regulatory citation in the state submitted crosswalk contains a typo. The "(C)" at the end of the citation should be lower case "(c)".	The crosswalk has been updated to reflect this change.
141.153(h)(6)(i)	12.C(11)(f)(i), pg. 349	In splitting the lengthy first sentence of the corresponding federal requirement (40 CFR 141.153(h)(6)(i)) into two sentences, DHEC has created some contradictory language within its own regulatory provision. The first sentence of the state provision, considered by itself, indicates that water systems must include notice of <u>any</u> significant deficiency in the next (CCR) report. The corresponding federal language only requires that the notice be issued for a significant deficiency "that is <u>un</u> corrected at the time of the next report." The second sentence of the state provision does parallel the federal requirement in that it indicates that the (CCR) report must contain information on <u>un</u> corrected significant deficiencies. The contradiction between the first and second sentences of the state language could potentially cause confusion for water systems.	While the Department feels like our citation is no less stringent than the federal regulations and will not cause confusion, this citation will be reviewed and potentially changed during the next regulation revision.
141.153(h)(6)(i)(A)	12.C(11)(f)(i)-(11)(f)(ii), pg. 349	Regulatory citations in the state submitted crosswalk contain typos. Each should include an "(" (open left parenthesis) immediately before the "f)".	The crosswalk has been updated to reflect these changes.
141.153(h)(6)(i)(C)	12.C(11)(f)(i)(C), pg. 349	The state provision does not mention two components of the corrective action plan and schedule that the corresponding federal requirement (40 CFR 141.153(h)(6)(i)(C)) indicates must (if appropriate) be included in the CCR: (1) interim measures, and (2) progress to date.	In an attempt to make a difficult run-on sentence easier to read and understand, the opening sentence was modified for our state regulations. The state provision does mention interim measures, but does not mention progress to date.
141.153(h)(6)(ii)	12.C(11)(f)(ii), pg. 349	Regulatory citation in the state submitted crosswalk contains a typo. The "(i)" between the "(f)" and "(ii)" in "R.61-58.12.C(11)(f)(i)(ii)" should be deleted.	The crosswalk has been updated to reflect this change.

141.401(b)	16.D(2), pg. 397	State regulatory text contains a typo that Region 4 did not identify during its review of the draft state Ground Water Rule in late 2007. In the first sentence, change the word “by” to “but”.	State regulatory language will be updated during the next regulatory revision.
141.403(b)(3)(i)(A)	16F(2)(c)(i)(A), pg. 403	State regulatory text contains a typo that Region 4 did not identify during its review of the draft state Ground Water Rule in late 2007. In the first sentence, the word “systems” should instead be “system” (no plural).	State regulatory language will be updated during the next regulatory revision.
142.14(d)(17) & 142.14(d)(17)(i) – (x)	Proposed Revision to Records Schedule, Appendix A	The “Retention” statement at the end of Appendix A of the primacy application (“Proposed Revision to Records Schedule”) indicates that each of the records identified in the appendix “will be kept 5 years, microfilm (or scan), destroy.” The statement is unclear, and it also unclear how the retention statement relates to the parenthetical statement “(Schedule to be determined)” immediately following the appendix title. Microfilm or scanned records are acceptable to EPA; however, 40 CFR 142.14(d) requires that each of the records on the list in this regulatory provision (Ground Water Rule items included as 40 CFR 142.14(d)(17)(i)-(d)(17)(x)) shall be retained for not less than 12 years. Additionally, revisions to the records retention schedule document need to reflect that it is (or is part of) a final document rather than a proposed approach.	The records retention document presented as Appendix A has been modified to reflect these changes.
142.15(c)(7)(i) – (iii)		<p>EPA’s Primacy Revision Crosswalk reference to 40 CFR 142.15 as “Records by States” is in error, and should instead read “Reports by States.” In light of this error, the corresponding state commitment for each of the three itemized reporting requirements (40 CFR 142.15(c)(7)(i)-(c)(7)(iii)) needs to be revised to reflect that the information identified in the federal requirement (i.e., most recent sanitary survey completion date, corrective action completion date, and list of systems providing 4-log treatment of viruses) will be <u>reported</u> to EPA <u>each quarter</u> through uploads to SDWIS/FED.</p> <p>As a note, DHEC’s response to 40 CFR 142.15(c)(7)(iii) also indicates that compliance monitoring information is kept by DHEC for three years. Compliance records identified on the list contained in 40 CFR 142.14(d)(17)(i)-</p>	<p>The primacy revision crosswalk has been revised to include these modifications.</p> <p>Compliance information sent to the Department will be kept in accordance with EPA’s records retention (12 years).</p>

		<p>(d)(17)(x) must in fact be retained by DHEC for a minimum of 12 years (see EPA's comment on DHEC's approach to addressing 40 CFR 142.14(d)(17), above). Other records, such as microbiological analyses, must be kept by DHEC for a minimum of only one year (per 40 CFR 142.14(a)(1)) and by water systems for a minimum of five years (per 40 CFR 141.33(a) and R.61-58.6.D(2)(a)).</p>	
<p>142.16(o)(2), 142.16(o)(2)(ii), 142.16(o)(2)(iii) &amp; 142.16(o)(2)(v)</p>		<p>The Reporting, Recordkeeping, and Special Primacy Requirements Crosswalk portion of the primacy application indicates that DHEC's sanitary survey guidance manual is being revised and will be forwarded to EPA Region 4 when complete. Receipt of the revised guidance manual is necessary for EPA to evaluate the adequacy of the state's approach to addressing these special primacy requirements. The manual needs to describe the procedures that staff performing sanitary surveys will use to complete the sanitary survey form that is included as Appendix B of the primacy application. In its current stand-alone form, it is difficult to ascertain <u>how</u> the sanitary survey form is applied to evaluate the sanitary condition of a water system. EPA also needs to understand how to decipher the results of a completed sanitary survey form and how a completed form translates to a report that is delivered to a system upon completion of the survey. Other issues that remain to be addressed in the state's response to the sanitary survey special primacy requirements presented in 40 CFR 142.16(o)(2) include:</p> <ol style="list-style-type: none"> <li>1) qualifications of and training for staff performing sanitary surveys;</li> <li>2) capacity for conducting sanitary surveys at the frequency described in the application (at least once every 3 years for CWS and at least once every 5 years for NTNCWS) – to include a brief description of past and future schedules;</li> <li>3) plans for meeting the sanitary survey scope and frequency requirements given existing or planned</li> </ol>	<p>Our sanitary survey program has existed in this state for decades. While we feel like no modifications are necessary to our program to incorporate the ground water rule, we are in the process of modifying parts of the program to make it easier for EPA compliance reviews.</p> <p>In December 1997, Department drinking water staff compiled and printed a comprehensive sanitary survey guidance manual for ground water systems. The information presented in the manual was an accumulation of many years of experience and information on how to conduct a sanitary survey. The manual goes through each of the required elements for the state survey (51 items). Field staff are trained every two (2) years. Because the manual is over 10 years old, the Department is currently revising it. Along with the revision, the inspection forms are being modified to include significant deficiencies and facilitate EPA compliance reviews. The completion date for the manual revision is September 2009. A training program is also scheduled for all of the field staff in October 2009.</p> <p>The Department has never had a problem conducting sanitary surveys at the EPA's recommended frequency. As a matter of fact, the Department's goal, that is rarely missed, is to perform a sanitary survey on all community systems annually.</p>

		<p>resources, the number of affected public water systems, anticipated follow-up technical assistance and enforcement needs, and other program demands.</p> <p>In most cases, significant deficiencies identified in Appendix C of the primacy application are first presented in a definition context, or as criteria for an inspector to use to determine whether a defect is significant. Then, specific examples of the significant deficiency are clearly delineated. For two of the eight sanitary survey elements, however, the division between definition and examples is not distinct or examples of the deficiency are not presented. For these two elements – (1) Treatment Significant Deficiency and (2) Pumps, Pump Facilities, and Controls Significant Deficiency – the application needs to more clearly distinguish definitions or criteria for determining significance of the deficiency from examples of the deficiency.</p> <p>DHEC will need to expand on the language presented in the Reporting, Recordkeeping, and Special Primacy Requirements Crosswalk to address 40 CFR 142.16(o)(2)(v). As currently presented, the language offers DHEC’s commitment to providing notice of significant deficiencies to systems within 30 days after identification and indicates that DHEC will track the information through its enforcement section. The revised application needs to describe <u>how</u> systems will be informed of deficiencies so that it is evident to EPA that DHEC has a cohesive plan in place for carrying out this regulatory function. Will DHEC inform systems of significant deficiencies by presenting them with the completed and signed form that is included as Appendix B of the primacy application at the conclusion of a sanitary site visit? Will a sanitary survey report be generated after the site visit and mailed to the system along with a letter highlighting significant deficiencies? Or, will a letter separate from the sanitary survey form or report be mailed to systems to inform systems of significant</p>	<p>The significant deficiency document attached in Appendix C has been modified and expanded to clarify deficiencies for EPA’s benefit.</p> <p>Systems will be notified of significant deficiencies in writing. This will be done by certified mail, as is the current practice of our enforcement section. The written notice of significant deficiency will be a stand alone document. The owner or responsible party currently gets a completed copy of the sanitary survey along with a written description of any findings or recommendations. All inspectors make an effort to meet with the owner or responsible party during the survey to explain any findings and clear up confusion.</p>
--	--	---	---

		deficiencies? Regardless of the chosen approach, some detail of the approach needs to be included in the revised primacy application.	
40 CFR 142.16(o)(3)(iii)		In its language presented in the Reporting, Recordkeeping, and Special Primacy Requirements Crosswalk to address 40 CFR 142.16(o)(3)(iii), DHEC indicates that fecal indicator-positive source water samples will only be invalidated “where compelling evidence exists that indicates that the sample was contaminated during collection or transport.” It is important for DHEC to provide some further detail on or examples of evidence that may be considered sufficient for its decisions to invalidate. DHEC may have this type of information readily available through its experience in making invalidation decision under the Total Coliform Rule. Additionally, the language indicates that “Where available and appropriate, EPA guidance will be followed.” The revised primacy application needs to identify the specific guidance(s) that DHEC will use in carrying out this regulatory function.	<p>The primacy revision crosswalk has been revised to incorporate this item. Several reasons that the Department will invalidate a fecal indicator positive include samples that are past the holding time, laboratory equipment failures, or samples sent in by a non-certified lab. Evidence can be either written or verbal.</p> <p>The EPA guidance that may be followed, if appropriate, includes written guidance manuals on the total coliform rule, any ground water rule guidance (not still in draft form), distribution system guidance, as well as correspondence with the Region 4 office.</p>
142.16(o)(3)(iv)		The language presented in the Reporting, Recordkeeping, and Special Primacy Requirements Crosswalk to address 40 CFR 142.16(o)(3)(iv) indicates that DHEC “ <u>anticipates</u> only allowing monitoring after treatment where it is not possible or practical to collect sample before treatment and where the treatment is not expected to <u>significantly</u> impact water quality.” EPA needs to see this statement adjusted so that it is clear that when sampling is allowed after treatment, the treatment would be expected to have <u>no</u> impact on the <u>microbial</u> quality of the water.	The primacy revision crosswalk has been modified to incorporate this item.
40 CFR 142.16(o)(4)(i)		In addressing 40 CFR 142.16(o)(4)(i), the primacy application needs to explain in more detail DHEC’s process for determining that ground water systems achieve 4-log treatment of viruses at or before the first customer for systems that are not subject to source water monitoring requirements. It is appropriate for the explanation to include coverage of issues like appropriate treatment technologies, treatment design and specifications constituting sufficient inactivation and or removal (including consideration of baffling factors, hydropneumatic	The primacy revision crosswalk has been modified to incorporate this item. As far as the Department is aware, there are <u>no</u> systems in South Carolina that are exempt from the source water monitoring.

		tanks, and UV dose), minimum contact time required for compliance to be achieved at the minimum disinfectant residual, and submission of records of contact time calculations or records documenting maintenance of a minimum disinfectant residual. It is acceptable for the application to reference guidance documents; however, these references need to be to specific documents. The discussion and references to guidance, considered together, need to provide evidence that DHEC has a cohesive plan in place for carrying out this regulatory function.	
142.16(o)(4)(iii)		In its language presented in the Reporting, Recordkeeping, and Special Primacy Requirements Crosswalk to address 40 CFR 142.16(o)(4)(iii), DHEC indicates that it “will follow available scientific data to include ETV verifications where appropriate.” The revised primacy application needs to list the alternative technologies that systems may use alone or in combination with other technologies to achieve 4-log virus treatment, and it needs to present the rationale for allowing their use. DHEC may choose to allow itself flexibility to address technologies to emerge in the future by providing evidence that its permitting/approval process includes consideration of whether there is adequate evidence confirming the long-term ability of the process to achieve at least 4-log virus treatment.	The primacy revision crosswalk has been updated to incorporate this item. All proposed treatment is currently reviewed by engineers in both the facilities permitting section and compliance section. The Department’s rigorous review standards will continue to be followed.
142.16(o)(4)(iv)		In its response to 40 CFR 142.16(o)(4)(iv), DHEC proposes to base monitoring and compliance requirements for alternative treatment technologies “on the type of treatment being provided...under the full range of expected operating conditions.” The language in the primacy application needs to be expanded to explain the specific monitoring and reporting that systems will have to complete and report to DHEC for each of the allowable treatment technologies.	Current Department regulations require daily visits by a certified operator. Daily visits include process control checks, process verification, chemical levels & dosages, etc. These requirements will not change under the new rule. Ground water systems that propose to add treatment will be required to submit a monthly operating report to the Department similar to the report required by surface water plants. The report would include critical daily operating data, chemical amounts and dosages, well flow information, as well as bacteriological distribution system monitoring.
142.16(o)(4)(v)		In its response to 40 CFR 142.16(o)(4)(v), DHEC indicates that it “will follow manufacturers recommendations to establish membrane integrity testing requirements.” EPA needs some additional detail on a general monitoring framework that DHEC considers minimally acceptable for	While treating a contaminated source is not the Department’s first choice, any system proposing treatment will be reviewed to ensure that the membrane process will treat to 4-log virus removal. The Department would expect an engineering evaluation of the process. The evaluation

		<p>these manufacturers recommendations. For example, will challenge testing on a membrane product be expected as a condition for accepting recommendations of the manufacturer? Will indirect integrity monitoring be required for water system compliance? If so, will it trigger direct integrity testing if a control limit is exceeded? At what minimum frequency does DHEC expect manufacturers' recommendations to prescribe indirect integrity measurements to be recorded and or direct integrity testing to be conducted? In presenting information on minimally acceptable manufacturers recommendations, DHEC needs to discuss its expectations for what information water systems will report and the frequency at which reports must be submitted for compliance purposes.</p>	<p>would include challenge testing documentation from the manufacturer. The water system proposing complex treatment like membranes would also have to satisfy the Department that the water system operators and management are technically competent to run the membrane process including troubleshooting problems.</p>
142.16(o)(4)(vi)		<p>In its response to 40 CFR 142.16(o)(4)(vi), DHEC indicates that it "will only allow a system to discontinue treatment where it can be satisfactorily demonstrated that the source is not subject to fecal contamination..." The primacy application needs to provide additional detail of how these demonstrations can be made. Will source water monitoring results be considered in DHEC's decisions to allow discontinuation of treatment? On-site investigations? Documentation of well rehabilitation? If so, how?</p>	<p>The primacy revision crosswalk has been updated to reflect this information.</p>

Section IV – 40 CFR 142 Parts 14, 15, & 16

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	EXPLANATION OF STATE POLICIES AND PROCEDURES
<b>PART 142 NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION</b>		
<b>SUBPART B PRIMARY ENFORCEMENT RESPONSIBILITY</b>		
<b>40 CFR 142.14 RECORDS KEPT BY STATES.</b>		
Records of the currently applicable or most recent State determination, including all supporting information and an explanation of the technical basis of each decision, made under the following provisions of 40 CFR part 141, subpart S and 40 CFR part 142.	40 CFR 142.14 (d)(17)	Decisions pertaining to Subpart S, Ground Water Rule, and Primacy requirements will be kept according to the Department's Record Retention Schedule. (See Appendix A.)
40 CFR 142.16(o)(2)(v). Records of written notices of significant deficiencies.	40 CFR 142.14 (d)(17)(i)	Records of written notices of significant deficiencies will be kept according to the Department's record retention schedule.
40 CFR 141.403(a)(5)(ii) of this chapter. Records of corrective action plans, schedule approvals, and State-specified interim measures.	40 CFR 142.14 (d)(17)(ii)	Records of corrective action plans, plan schedules, plan approvals, and any additional information will be kept according to the Department's record retention schedule.
40 CFR 142.16(o)(4). Records of confirmations under 40 CFR 141.403(a) of this chapter that a significant deficiency has been corrected or the fecal contamination in the ground water source has been addressed.	40 CFR 142.14 (d)(17)(iii)	Records of significant deficiency correction and records of addressing fecal contamination in the ground water source will be kept according to the Department's record retention schedule.
40 CFR 141.402(a)(5) of this chapter. Records of State determinations and records of ground water system's documentation for not conducting triggered source water monitoring.	40 CFR 142.14 (d)(17)(iv)	Records of Department determinations and conditions for not conducting triggered source monitoring will be kept according to the Department's record retention schedule.

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	EXPLANATION OF STATE POLICIES AND PROCEDURES
40 CFR 141.402(d) of this chapter. Records of invalidations of fecal indicator-positive ground water source samples.	40 CFR 142.14 (d)(17)(v)	Records of invalidations of fecal indicator positive ground water source samples will be kept according to the Department's record retention schedule.
40 CFR 141.402(a)(2)(ii) of this chapter. Records of State approvals of source water monitoring plans.	40 CFR 142.14 (d)(17)(vi)	Records of Department approvals of source water monitoring plans will be kept according to the Department's record retention schedule.
40 CFR 142.16(o)(4)(ii). Records of notices of the minimum residual disinfection concentration (when using chemical disinfection) needed to achieve at least 4-log virus inactivation before or at the first customer.	40 CFR 142.14 (d)(17)(vii)	Records of Department required minimum residual disinfection along with all other parameters needed to determine 4-log virus inactivation will be kept according to the Department's record retention schedule.
40 CFR 142.16(o)(4)(iv) and 142.16(o)(4)(v) Records of notices of the State-specified monitoring and compliance requirements (when using membrane filtration or alternative treatment) needed to achieve at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log inactivation and removal) before or at the first customer.	40 CFR 142.14 (d)(17)(viii)	Records of Department specified monitoring and compliance requirements for membrane filtration or other technologies needed to achieve 4-log virus inactivation or removal will be kept according to the Department's record retention schedule.
40 CFR 141.403(b)(1) and 141.403(b)(2) of this chapter. Records of written notices from the ground water system that it provides at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log virus inactivation and removal) before or at the first customer for a ground water source.	40 CFR 142.14 (d)(17)(ix)	Records of written notices of ground water systems providing 4-log virus inactivation or treatment will be kept according to the Department's record retention schedule.
40 CFR 142.16(o)(4)(vi). Records of written determinations that the ground water system may discontinue 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log inactivation and removal).	40 CFR 142.14 (d)(17)(x)	Records of written determinations that a ground water system may discontinue 4-log virus inactivation or treatment will be kept according to the Department's record retention schedule.

<b>40 CFR 142.15 REPORTS BY STATES.</b>		
<i>Ground water rule. Sanitary surveys.</i> The month and year in which the most recent sanitary survey was completed or, for a State that uses a phased review process, the date the last element of the applicable eight elements was evaluated under 40 CFR 142.16(o)(2) for each ground water system.	40 CFR 142.15 (c)(7)(i)	This information will continue to be provided to EPA through the Department's quarterly SDWIS updates. Written documentation can also be provided upon request.
<i>Corrective action requirements.</i> For any corrective action under 40 CFR 141.403(a) of this chapter, the date the ground water system completed corrective action.	40 CFR 142.15 (c)(7)(ii)	This information will be provided to EPA through the Department's quarterly SDWIS updates. Written documentation can also be provided upon request.
<i>Compliance monitoring.</i> All ground water systems providing at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log virus inactivation and removal) before or at the first customer for any ground water source(s).	40 CFR 142.15 (c)(7)(iii)	This information will be provided to EPA through the Department's quarterly SDWIS updates. In addition, compliance monitoring information submitted to the Department by systems providing 4-log treatment will be kept for 12 years in accordance with the record retention schedule submitted as Appendix A. Written documentation can also be provided upon request.

40 CFR 142.16 SPECIAL PRIMACY REQUIREMENTS.		
<i>Table 1 of 40 CFR 141.202(a) (Items (5), (6), and (9))</i> —To require public water systems to give a Tier 1 public notice (rather than a Tier 2 or Tier 3 notice) for violations or situations listed in Appendix A of Subpart Q of Part 141 of this chapter;	40 CFR 142.16 (a)(2)(iii)	The State Primary Drinking Water Regulations, R.61-58, are included with this primacy application. The public notice requirements are found in R.61-58 Appendix A.
<i>Requirements for States to adopt 40 CFR part 141, subpart S.</i> In addition to the general primacy requirements specified elsewhere in this part, including the requirement that State regulations are no less stringent than the Federal requirements, an application for approval of a State program revision that adopts 40 CFR part 141, subpart S, must contain the information specified in this paragraph (o).	40 CFR 142.16 (o)	The information included within this package constitutes the primacy application and includes all appropriate documentation.
<i>Legal authority.</i> The application for primacy must demonstrate the State has:	40 CFR 142.16 (o)(1)	Included with this primacy application is a letter from the Department's General Counsel outlining the Department's legal authority to implement and enforce the Ground Water Rule.
The authority contained in statute or regulation to ensure that ground water systems conduct source water monitoring under 40 CFR 141.402(a)(2), 40 CFR 141.402(a)(3) and 40 CFR 141.402(a)(4)(ii)(A) of this chapter.	40 CFR 142.16 (o)(1)(i)	The authority to ensure that ground water systems conduct source water monitoring can be found in the State Safe Drinking Water Act 44-55-30, 44-55-80, and the State Primary Drinking Water Regulation R.61-58.16.
The authority contained in statute or regulation to ensure that ground water systems take the appropriate corrective actions including interim measures, if necessary, needed to address significant deficiencies.	40 CFR 142.16 (o)(1)(ii)	The authority to ensure that ground water systems take appropriate corrective actions to address significant deficiencies can be found in the State Safe Drinking Water Act 44-55-30, 44-55-80, and the State Primary Drinking Water Regulation R.61-58.16.

<p>The authority contained in statute or regulation to ensure that ground water systems take the appropriate corrective actions, including interim measures if necessary, to address any source water fecal contamination identified during source water monitoring under 40 CFR 141.402 of this chapter.</p>	<p>40 CFR 142.16 (o)(1)(iii)</p>	<p>The authority to ensure that ground water systems take appropriate corrective actions to address source water fecal contamination can be found in the State Safe Drinking Water Act 44-55-30, 44-55-80, and the State Primary Drinking Water Regulation R.61-58.16.</p>
<p>The authority contained in statute or regulation to ensure that ground water systems consult with the State regarding corrective action(s).</p>	<p>40 CFR 142.16 (o)(1)(iv)</p>	<p>The authority to ensure that ground water systems consult with the Department can be found in the State Safe Drinking Water Act 44-55-30, 44-55-80, and the State Primary Drinking Water Regulation R.61-58.16.</p>
<p><i>State practices or procedures for sanitary surveys.</i> In addition to the general requirements for sanitary surveys contained in 40 CFR 142.10(b)(2), a primacy application must describe how the State will implement a sanitary survey program that meets the requirements of paragraph (o)(2)(i) of this section. A "sanitary survey," as conducted by the State, includes but is not limited to, an onsite review of the water source(s) (identifying sources of contamination by using results of source water assessments or other relevant information where available), facilities, equipment, operation, maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the system, its sources and operations and the distribution of safe drinking water.</p>	<p>40 CFR 142.16 (o)(2)</p>	<p>The Department sanitary survey program currently evaluates all eight of the required elements. The evaluation form is attached to this primacy application as Appendix B. —</p> <p>The Department is in the process of revising our sanitary survey guidance manual to more closely reflect the eight elements and how to determine and document significant deficiencies. A copy of this guidance will be forwarded to EPA Region 4 when complete.</p>
<p>The State must conduct sanitary surveys that address the eight sanitary survey components listed in this section no less frequently than every three years for community water systems, except as provided in paragraph (o)(2)(iii) of this section, and every five years for non-community water systems. The State may conduct more frequent sanitary surveys for any system. The initial sanitary survey for each community water system must be conducted by December 31, 2012, unless the system meets the requirements of paragraph (o)(2)(iii) of this section. The initial sanitary survey for each community water system that meets the requirements of paragraph (o)(2)(iii) of this section and for each non-community water system must be conducted by December 31, 2014. The sanitary survey must include an evaluation of each of the following elements as applicable:</p>	<p>40 CFR 142.16 (o)(2)(i)</p>	<p>The Department conducts sanitary surveys that address the eight identified elements. For community water systems the frequency will be not less than every three years. For non-community water systems, the frequency will be not less than every five years. In addition, the Department implements a State wide <u>goal</u> of conducting surveys annually for all community water systems.</p>
<p>Source,</p>	<p>40 CFR 142.16 (o)(2)(i)(A)</p>	<p>The Department's sanitary survey program includes an evaluation of the source.</p>

Treatment,	40 CFR 142.16 (o)(2)(i)(B)	The Department's sanitary survey program includes an evaluation of the treatment.
Distribution system,	40 CFR 142.16 (o)(2)(i)(C)	The Department's sanitary survey program includes an evaluation of the distribution system.
Finished water storage,	40 CFR 142.16 (o)(2)(i)(D)	The Department's sanitary survey program includes an evaluation of the finished water storage.
Pumps, pump facilities, and controls,	40 CFR 142.16 (o)(2)(i)(E)	The Department's sanitary survey program includes an evaluation of the pumps, pump facilities, and controls.
Monitoring, reporting, and data verification,	40 CFR 142.16 (o)(2)(i)(F)	The Department's sanitary survey program includes an evaluation of the monitoring, reporting, and data verification records.
System management and operation, and	40 CFR 142.16 (o)(2)(i)(G)	The Department's sanitary survey program includes an evaluation of the system management and operation.
Operator compliance with State requirements.	40 CFR 142.16 (o)(2)(i)(H)	The Department's sanitary survey program includes an evaluation of the operator compliance with state requirements.
The State may use a phased review process to meet the requirements of (o)(2)(i) of this section if all the applicable elements of paragraphs (o)(2)(i)(A) through (o)(2)(i)(H) of this section are evaluated within the required interval.	40 CFR 142.16 (o)(2)(ii)	The Department is not planning on implementing a phased approach. All eight of the elements are evaluated and documented during the sanitary survey.
The State may conduct sanitary surveys once every five years for community water systems if the system either provides at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log inactivation and removal) before or at the first customer for all its ground water sources, or if it has an outstanding performance record, as determined by the State and documented in previous sanitary surveys and has no history of total coliform MCL or monitoring violations under 40 CFR 141.21 of this chapter since the last sanitary survey. In its primacy application, the State must describe how it will determine whether a community water system has an outstanding performance record.	40 CFR 142.16 (o)(2)(iii)	The Department does not plan on reducing the frequency of sanitary surveys to less than three years for community water systems.

<p>The State must define and describe in its primacy application at least one specific significant deficiency in each of the eight sanitary survey elements in paragraphs (o)(2)(i)(A) through (o)(2)(i)(H) of this section. Significant deficiencies include, but are not limited to, defects in design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system that the State determines to be causing, or have potential for causing, the introduction of contamination into the water delivered to consumers.</p>	<p>40 CFR 142.16 (o)(2)(iv)</p>	<p>The Department has identified at least one significant deficiency for each of the eight required elements. This list is attached as Appendix C.</p>
<p>As a condition of primacy, the State must provide ground water systems with written notice describing any significant deficiencies no later than 30 days after the State identifies the significant deficiency. The notice may specify corrective actions and deadlines for completion of corrective actions. The State may provide the written notice at the time of the sanitary survey.</p>	<p>40 CFR 142.16 (o)(2)(v)</p>	<p>The Department will provide the required written notice of significant deficiencies within 30 days. This information will be tracked through the Department's enforcement section.</p>
<p><i>State practices or procedures for source water microbial monitoring.</i> The State's primacy application must include a description of the following:</p>	<p>40 CFR 142.16 (o)(3)</p>	<p>This primacy application includes the required information as described below.</p>
<p>The criteria the State will use under 40 CFR 141.402(a)(2)(i) and 141.402(d)(2) of this chapter for extending the 24-hour time limit for a system to collect a ground water source sample to comply with the source water monitoring requirements.</p>	<p>40 CFR 142.16 (o)(3)(i)</p>	<p>These extensions will be evaluated on a case-by-case basis with consideration given to the following: lab availability &amp; closures (weekends), mail service, extreme danger to the sample collector, or unavoidable delays.</p>
<p>The criteria the State will use under 40 CFR 141.402(a)(5)(i) and 141.402(a)(5)(ii) of this chapter to determine whether the cause of the total coliform-positive sample taken under 40 CFR 141.21(a) of this chapter is directly related to the distribution system.</p>	<p>40 CFR 142.16 (o)(3)(ii)</p>	<p>The Department will use several criteria, including, but not limited to: low disinfectant residual in an area being sampled (for systems that add disinfection), a recent line break and repair in proximity to the sample, a documented backflow event in the distribution system, or a documented leak in the distribution system.</p>

<p>The criteria the State will use for determining whether to invalidate a fecal indicator-positive ground water source sample under 40 CFR 141.402(d)(1)(ii) of this chapter.</p>	<p>40 CFR 142.16 (o)(3)(iii)</p>	<p>Each request will be evaluated on a case-by-case basis and will only be invalidated where compelling evidence exists that indicates that the sample was contaminated during collection or transport. Several reasons that the Department may invalidate a fecal indicator positive include samples that are past the holding time, laboratory equipment failures, or samples sent in by a non-certified lab. Evidence can be either written or verbal.</p>
<p>The criteria the State will use to allow source water microbial monitoring at a location after treatment under 40 CFR 141.402(e)(1) of this chapter.</p>	<p>40 CFR 142.16 (o)(3)(iv)</p>	<p>Each request will be evaluated on a case-by-case basis. The Department will only allow monitoring after treatment where it is not possible or practical to collect sample before treatment and where the treatment is not expected to have any impact on microbial water quality.</p>
<p><i>State practices or procedures for treatment technique requirements.</i> As a condition of primacy, the State must verify that significant deficiencies or source water fecal contamination have been addressed. The State must verify within 30 days after the ground water system has reported to the State that it has completed corrective action. The State must verify either through written confirmation from the ground water system or a site visit by the State. Written notice from the ground water system under 40 CFR 141.405(a)(2) of this chapter may serve as this verification. The State's primacy application must include the following:</p>	<p>40 CFR 142.16 (o)(4)</p>	<p>After the Department receives a written notice of correction from a water system, the Department will verify corrections within 30 days by visiting the site(s).</p>

<p>The process the State will use to determine that a ground water system achieves at least a 4-log treatment of viruses (using inactivation, removal, or a combination of inactivation and removal) before or at the first customer for a ground water source for systems that are not subject to the source water monitoring requirements of 40 CFR 141.402(a) of this chapter because the ground water system has informed the State that it provides at least 4-log treatment of viruses.</p>	<p>40 CFR 142.16 (o)(4)(i)</p>	<p>Systems that intend to provide 4-log virus inactivation or removal must submit to the Department a detailed plan on the treatment.</p> <p>If disinfection or UV inactivation is proposed, appropriate CT or IT calculations to determine the effectiveness of the treatment will be required. Where baffling and/or flow conditions are known, the appropriate theoretical detention times will be used. When unknown, tracer studies may be required.</p> <p>Other treatment technologies will be evaluated on a case by case basis and parameters for achieving 4-log treatment will be established based on the most current state of knowledge at the time the request is received. Systems will be required to submit monthly reports that demonstrate that parameters for 4-log treatment set by the Department are met on a daily basis.</p> <p>Specific guidance manuals that may be followed, when appropriate, include: Alternative disinfectants and oxidants guidance manual, UV disinfection guidance manual for the final long term 2 ESWTR, and the membrane filtration guidance manual. If newer guidance from EPA is published and is relative to ground water rule decisions, that may also be followed.</p>
---	--------------------------------	---

<p>The process the State will use to determine the minimum residual disinfectant concentration the system must provide prior to the first customer for systems using chemical disinfection.</p>	<p>40 CFR 142.16 (o)(4)(ii)</p>	<p>Minimum residual disinfectant concentrations will be evaluated and set on a case-by-case basis based on CT tables, any removal provided, and other appropriate factors. The Department will evaluate and set the minimum residual disinfectant level based on worst expected case water quality parameters (temperature &amp; pH) and assign the minimum level to ensure that 4-log treatment is provided under the full range of expected operating conditions.</p>
<p>✓ The State-approved alternative technologies that ground water systems may use alone or in combination with other approved technologies to achieve at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log inactivation and removal) before or at the first customer for a ground water source.</p>	<p>40 CFR 142.16 (o)(4)(iii)</p>	<p>The Department is not planning to approve treatment on a fecally contaminated source. If a water system were to propose a compelling argument for treating a contaminated source, the argument and supporting documentation must contain information related to the type of treatment proposed. Such information would include process type (membrane, disinfection, or other), water quality data critical to the process operation, pilot demonstration studies for processes the Department is not comfortable with, manufacturers literature and accompanying data documenting the ability of the process, and any other information relative to the treatment that the Department deems necessary.</p>

<p>The monitoring and compliance requirements the State will require for ground water systems treating to at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of inactivation and removal) before or at the first customer for State-approved alternative treatment technologies.</p>	<p>40 CFR 142.16 (o)(4)(iv)</p>	<p>Monitoring and compliance requirements will be established based on the type of treatment being provided. The Department will use available guidance and monitoring protocols to ensure minimum 4-log treatment is provided under the full range of expected operating conditions. Ground water systems that propose to add treatment will be required to submit a monthly operating report to the Department similar to the report required by surface water plants. The report would include critical daily operating data, chemical amounts and dosages, well flow information, as well as bacteriological distribution system monitoring.</p>
<p>The monitoring, compliance and membrane integrity testing requirements the State will require to demonstrate virus removal for ground water systems using membrane filtration technologies.</p>	<p>40 CFR 142.16 (o)(4)(v)</p>	<p>Any system proposing membrane treatment must submit a Preliminary Engineering Report to the Department for review. The report must contain manufacturers information on challenge testing done on the membrane, along with expected pre and post membrane water quality.</p> <p>For minimum compliance requirements, the Department will require a direct integrity test once per day on each membrane unit. The system operator must record the results of the test and report it to the Department as part of the monthly operating report.</p>

<p>The criteria, including public health-based considerations and incorporating on-site investigations and source water monitoring results the State will use to determine if a ground water system may discontinue 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of inactivation and removal) before or at the first customer.</p>	<p>40 CFR 142.16 (o)(4)(vi)</p>	<p>The Department will only allow a system to discontinue treatment where it can be satisfactorily demonstrated that the source is not subject to fecal contamination and no significant deficiencies are evident that would adversely affect source water quality.</p> <p>Demonstration to the Department may include, but not be limited to: source water monitoring results that are absent for fecal indicators for a specified time period (several months), satisfactory documentation of well rehabilitation, or onsite visits by Department staff.</p>
--	---------------------------------	--

## Appendix A

### RECORDS RETENTION SCHEDULE

#### Ground Water Rule R.61-58.16

DESCRIPTION: The Ground Water Rule (federal) requires the Department to keep certain records pertaining to the Rule. This federal regulation, adopted as part of the State Primary Drinking Water Regulations R.61-58.16 applies to systems that have a ground water source. Some of these records are sent from the Department to the water system, and some are submitted by Public Drinking Water Systems. The required information consists of sampling results and records of decisions that the Department makes with regards to the provisions in the Rule.

- Records of the currently applicable or most recent Department determination, including all supporting information and an explanation of the technical basis of each decision made under R.61-58.16.
- Records of written notices, from the Department, to the water system, of significant deficiencies found with that water system.
- Records of corrective action plans, schedule approvals, and Department-specified interim measures, if any.
- Records, from the Public Water System, of confirmations that a significant deficiency has been corrected, or the fecal contamination in the ground water source has been addressed.
- Records of the Department's determinations and records of ground water system's documentation for not conducting triggered source water monitoring.
- Records of the Department's invalidations of fecal indicator-positive ground water source samples.
- Records of the Department's approvals of source water monitoring plans.
- Records of notices, from the Department, to water systems identifying the minimum residual disinfection concentration needed to achieve at least 4-log virus inactivation.
- Records of notices, from the Department, to water systems, identifying Department-specified monitoring and compliance requirements for membrane filtration or alternative treatment used to achieve at least 4-log virus inactivation or removal.

- Records of notices, from the water system, that the system is providing at least 4-log virus inactivation or removal.
- Records of written determinations, from the Department, that a water system may discontinue 4-log virus inactivation or removal.

RETENTION: All records listed above will be kept 12 years. After the retention time has expired, the Department will either microfilm (or scan) or destroy.

## Appendix B

SC DHEC  
Bureau of Water

### Public Water System Sanitary Survey Report Ground Water Systems

Site Name:   
System number:

Last Survey:

Survey Date:

Type of Inspection or Visit

Operator/Owner present?

Overall Rating

**Source**

- 1 \* Protection from Contamination
- 2 Quantity
- 3 Security
- 4 Wellhead Piping

**Pumps, Pump Facilities, & Controls**

- 24 \* Reliable Capacity
- 25 Operation & Control
- 26 Pumps
- 27 Flow Measuring Device

**Water Treatment**

- 5 \* Chemical Feed
- 6 Chemical Storage & Handling
- 7 Chemical Injection Points
- 8 Filtration
- 9 Equipment Maintenance

**Monitoring, Reporting, & Data Verification**

- 28 \* Monitoring & Recordkeeping
- 29 Testing Equipment
- 30 Sample Siting Plan

**Distribution**

- 10 \* Water Quality
- 11 Adequate Pressure
- 12 Disinfectant Residual
- 13 Cross Connection Control
- 14 Fire Flow
- 15 Valve & Hydrant Maintenance
- 16 Flushing program
- 17 Leak Detection & Repair
- 18 System Map

**System Management & Operation**

- 31 \* Corrections from Previous Survey
- 32 Emergency Plan
- 33 Plant Security
- 34 Facility Maintenance
- 35 Supplies/Spare Parts Inventory
- 36 Waste Disposal
- 37 Procedures Manual
- 38 Stand-by Power
- 39 Is system presently under order?  
If yes, is system complying?

**Storage**

- 19 \* Protection from Contamination
- 20 Capacity
- 21 Security
- 22 Appurtenances
- 23 Maintenance

**Operator Certification**

- 40 \* Certified Operator
  - 41 Staffing
  - 42 Treatment System Group (I - VI)
  - 43 Treatment Operator Grade
- A  
B  
C  
D  
T

- 44 Dist. Group (I-V)
  - 45 Distribution Operator Grade
- A  
B  
C  
D  
T  
G

**Other Requirements**

- 46 Drought Response Plan
- 47 Source Water Protection Plan
- 48 Are all services metered?  
Percent metered:

**49 Field Tests (location or address)**

Chlorine	<input type="text"/>
pH	<input type="text"/>
Pressure	<input type="text"/>
Flow	<input type="text"/>
Other (specify)	<input type="text"/>
Other (result)	<input type="text"/>

**50 Samples Taken**

Bacteriological	<input type="text"/>
Inorganic	<input type="text"/>
Organic	<input type="text"/>
Radiological	<input type="text"/>
Other	<input type="text"/>

- 51 Follow up scheduled?  
Date scheduled:

\* Items with an asterisk are significant deficiency items.

## Appendix C

### Significant Deficiencies

During sanitary surveys, inspectors often discover a wide range of deficiencies. Some are minor and have little potential for public health risk. Other more serious deficiencies have the potential to make the water unsafe and pose an increased risk to public health. This section of the guidance manual provides guidelines for inspectors to use when determining whether or not a deficiency is significant. Significant deficiencies can be identified during sanitary surveys, or any other time that the Department determines public health may be at risk.

The first step is to define what characteristics constitute significant deficiencies. In South Carolina, the term significant deficiency means a deficiency that is causing or may have the potential to cause risks to public health or safety and requires immediate correction.

The second step is for inspectors to evaluate the system for defects and determine the significance of each defect (i.e. whether or not a defect meets the criteria for a significant deficiency). A few general questions that may help inspectors in making these determinations are the following:

- Is there the potential for contaminants to be introduced to the drinking water due to the deficiency?
- If left uncorrected will the deficiency cause the potential for the introduction of contaminants at some point in the future?
- Does the deficiency affect treatment in an unacceptable manner?
- Does the deficiency pose risks to the safety of the public or operators?

The table below has been developed to give inspectors examples of the most common significant deficiencies. Each of the eight areas of the sanitary survey has one significant deficiency identified. Other areas not listed may also be significant if there is a concern about public health.

- Source: Protection from contamination.  
This item would be considered a significant deficiency when the condition of the well pad, piping, or other equipment has caused or has the potential to cause contamination of the source. Some examples include a severely cracked well pad, missing vent screen, or an improper seal.
- Treatment: Chemical feed.

This item would be considered a significant deficiency when there is inadequate application of treatment chemicals or feeding chemicals that are not certified through the National Sanitation Foundation (NSF). Some common examples include, but are not limited to: chemicals not being fed in the correct order limiting their effectiveness, severely leaking or spraying chemical feed points, or using a chemical that has not been approved by the Department.

▪ Distribution: Water quality.

This item would be considered a significant deficiency when there are health-related water quality problems in the distribution system. Some examples include violations for bacteriologicals (Total Coliform Rule), disinfection byproducts, or other persistent chemical MCL violations.

▪ Storage: Protection from contamination.

This item would be considered a significant deficiency when the condition of the storage tank(s) causes or has the potential to cause contamination of the system. Some examples include improper or missing vent screens on vents and overflow piping, inadequate hatch seals, or inadequate internal cleaning or maintenance of storage tanks.

▪ Pumps, Pump Facilities, & Controls: Reliable capacity.

This item would be considered a significant deficiency when there is inadequate pump capacity to adequately maintain system flows and pressures. Some examples include, but are not limited to: pumping wells more than 16 hours during a 24 hour period, wells permanently out of service with no plans for adding capacity, or unresolved problems with well pumping such that system reliability is affected.

▪ Monitoring, Reporting, & Data Verification: Monitoring & Recordkeeping.

This item would be considered a significant deficiency when a water system is not adequately monitored or is not meeting the recordkeeping requirements. Some examples can include: not monitoring according to the Department-approved monitoring plan or site sampling plan, or not keeping adequate process control records. Data falsification is another serious issue that can be found as a significant deficiency.

▪ System Management & Operation: Corrections from a previous survey.

This item would be considered a significant deficiency when a water system does not correct items identified on a previous survey that can be associated with potential health risks. Some examples can include inoperable equipment, cracked well pad, potential for contamination from storage, using improper disinfection after repairs, or other corrections, major or minor, that if not corrected could introduce contamination into the system.

▪ Operator Compliance with State Requirements: Certified Operator.

This item would be considered a significant deficiency when the system is not in compliance with the state operator certification requirements. Examples of this include operators failing to make daily facility visits where required, improper grade operators operating a system, or a person operating without a license.

This table is not intended to be all-inclusive. Each inspector should keep in mind the definition of significant deficiencies and apply that definition when encountering other deficiencies or situations that are not listed but could also pose a public health risk.

Once an inspector determines that a significant deficiency exists, several steps must be followed.

1. The individual significant deficiency item as well as the overall survey rating should be rated unsatisfactory.
2. The water system must be notified in writing either within 30 days of the sanitary survey, or within 30 days from the time when the significant deficiency was identified.
3. The water system must be referred to enforcement. Significant deficiencies require corrective action within a defined time frame and the drinking water enforcement section is responsible for tracking.

South Carolina Department of Health and Environmental Control  
Bureau of Water  
Surface Water Supply Monthly Report  
Individual Filter Performance

1. PURPOSE:

This form, properly completed, is to be used by Department Personnel during a sanitary survey inspection of a public groundwater system.

2. ITEM BY ITEM INSTRUCTIONS:

Site Name: Name of the public water system site or plant.

System Number: Enter the seven-digit identification number assigned to the public water system by DHEC.

Type of Inspection or visit: Enter R for routine or F for follow up.

Last Survey: Enter the date of the last sanitary survey for the system

Owner or Operator present: Enter Y for Yes, or N for No

Survey Date: Enter the date that the survey was conducted.

Overall Rating: Enter the overall water system rating for the current survey, either S for Satisfactory, I for Needs Improvement, or U for Unsatisfactory.

Items 1 – 38, and Items 40 and 41 should be filled out using the following ratings: S for Satisfactory, U for Unsatisfactory, I for Needs Improvement, and N for Not Applicable. Department personnel should fill in the corresponding box for these items with one of the above symbols (S, U, I, or N).

Item 39 should be filled in with a Y for yes or N for no.

Item 42 fill in the treatment system group (I-VI).

Items 43 & 45 fill in the number of certified operators for each grade type listed.

Item 44 fill in the distribution system group (I-V).

Items 46 – 48 should be filled in with a Y for yes, or N for no.

Item 49 fill in the location or address where field samples were collected. In the corresponding boxes fill in the field test result(s).

Item 50 should be filled in with the results of the laboratory tests when results are returned.

Item 51 should be filled in with a Y for yes or N for no. If filled in with a Y, then a follow up inspection date should be entered in the space provided.

The DHEC representative signs on the first signature line.

The water system representative signs on the second signature line

3. OFFICE MECHANICS AND FILING: This form should be filed in the Drinking Water File Room according to the facility permit number.