STUDENT GUIDE

DIRECTED ASSISTANCE MODULE NO. 3 – ALTERNATIVE TECHNOLOGIES (DAM3-ALT)

Latest Revision Date: March 15, 2014 (v1)

COURSE OBJECTIVES:

This Directed Assistance Module (DAM) is designed to provide supplemental information for the operators at plants that either:

- use unconventional or alternative technologies to treat surface water or groundwater under the direct influence of surface water, or

- are subject to the additional treatment requirements of the Long-Term (Stage 2) Enhance Surface Water Treatment Rule (LT2ESWTR) because the plant uses a source that has been assigned to Bin 2, 3, or 4.

The goal of DAM3-Alt is to assist the staff at these plants in their efforts to:

- Create a customized SWMOR-Alt spreadsheet (TCEQ Form 0102D) based on their plant's specific treatment regimen and sequence;

- Save and protect the integrity of their customized SWMOR-Alt;

- Create monthly files;

- Meet minimum monitoring requirements for alternative technologies;

- Enter daily data in the additional worksheets used in the SWMOR-Alt spreadsheet;

- Print and submit the completed SWMOR-Alt;

- Determine if their treatment plant is in compliance with relevant TCEQ/EPA surface water treatment rules; and

> **Important:**
>
> DAM3-Alt is designed for use a plants where the operators already have the basic information they need to establish an effective electronic file management system and to complete the core worksheets used in each of the Surface Water Monthly Operating Report (SWMOR) spreadsheets. If the plant staff lacks this essential knowledge, the operators should request DAM3 training before beginning DAM3-Alt.

Recognize treatment outcomes which require customer and TCEQ notification.

PROVISIONAL AGENDA[1]:

8:00	Introductions and overview (15 minutes)
8:15	DAM Training Pre-Test (10 minutes)
8:25	Facilities Tour and Assessment (80 minutes)
9:45	File Transfer and Management (15 minutes)
10:00	Creating the Master SWMOR-Alt File (30 minutes)'
10:30	Break (15 minutes)
10:45	Using the buttons on the SWMOR Tab (30 minutes)
11:15	Creating the Monthly SWMOR-Alt Form (15 minutes)
11:30	Lunch (60 minutes)
12:30	Daily Data Entry, Technology 1 (60 minutes)
1:30	Daily Data Entry, Technology 2 (60 minutes)
2:30	Daily Data Entry, Technology 3 (30 minutes)
3:00	Break (15 minutes)
3:15	Completing the Summary Page (60 minutes)
4:15	Questions and Answers (15 minutes)
4:30	DAM Training Post-Test (10 minutes)
4:40	Questionnaire (15 minutes)
4:55	Conclude the training and compile the data (15 minutes)
5:00	Adjourn

(1) The DAM3-Alt training is designed to be completed in a single day. However, agenda schedule may need to be adjusted based on site-specific needs.
For example, it the plant only uses one or two alternative technologies, more time can be spent on the plant tour, reviewing data collection and reporting procedures, or discussing other topics covered in the course. If additional time is not needed, it might be possible to complete the training in about seven hours.

INTRODUCTION

The Texas Commission on Environmental Quality (TCEQ) has created a number of different reporting forms and spreadsheets to help operators comply with the reporting requirements for surface water treatment plants (SWTPs). The SWMOR-Alt, TCEQ Form 0102-D, is one of those spreadsheets. The plants that must use the SWMOR-Alt spreadsheet include:

- Plants that must meet the additional monitoring and reporting requirements of the US Environmental Protection Agency's Long-Term, Stage 2 Enhanced Surface Water Treatment Rule (LT2ESWTR, or LT2 for short) because they use one or more raw water sources that the TCEQ has assigned to Bin 2, Bin 3, or Bin 4.

- Plants that claim pathogen removal credit for one or more of the following alternative technologies:
    - Source water protection programs
    - Bank filter wells
    - Presedimentation basins with continuous coagulant addition
    - A two-stage lime softening treatment process
    - Enhance filter performance by conventional, granular-media filters
    - Treatment processes that use two stages of conventional filtration, i.e., two conventional filters operated in series
    - Membrane filters
    - Cartridge filters
    - Ultraviolet light (UV) reactors for disinfection
    - Ozone or chlorine dioxide for Cryptosporidium inactivation credit
    - Other innovative technologies approved by the TCEQ.

- To help operators complete the SWMOR-Alt spreadsheet, the TCEQ has created several guidance documents and supplemental instructions for individual SWMOR-Alt worksheets. These documents include:
    - RG-211, Monthly Testing and Reporting at Surface Water Treatment Plant
    - Instructions for Customizing the SWMOR-Alt
    - Instructions for how to complete the SWMOR-Alt's Prefilters worksheet
    - Instructions for how to complete the SWMOR-Alt's Membrane Filter worksheets
    - Instructions for how to complete the SWMOR-Alt's Bag and Cartridge Filter worksheet
    - Instructions for how to complete the SWMOR-Alt's Enhanced Filter Performance worksheet
    - Instructions for how to complete the SWMOR-Alt's Two-Stage Filters worksheet
    - Instructions for how to complete the SWMOR-Alt's UV worksheets
    - Instructions for how to complete the SWMOR-Alt's Ozone/Chlorine Dioxide worksheet

All of the documents, and all of the SWMOR spreadsheets, can be downloaded from the TCEQ's website. The address of the webpage is:

http://www.tceq.texas.gov/drinkingwater/swmor/swmor/swmor-forms-and-instructions

The TCEQ has also created the following shortcut to this webpage:

www.tceq.texas.gov/goto/swtp/forms

The TCEQ also developed two Directed Assistance Modules (DAMs) which instructors can use to provide site-specific technical assistance to the plant's staff. The first of these, DAM3, was designed to help operators learn how to fill out the worksheets used in all of the SWMOR spreadsheets. The second, DAM3-Alt, we developed to help operators complete the worksheets that are only in the SWMOR-Alt report.

IMPORTANT

If operators don't know how to Pages 1 through 8 of the SWMOR-Alt or have had problems completing those worksheets, they should complete DAM3 training before taking DAM3-Alt training.

FILE MANAGEMENT

Each month, the TCEQ receives a few monthly reports that were produced using spreadsheets that have been accidentally damaged, or corrupted, by data entry errors. Consequently, the TCEQ recommends that the operators take special precautions to protect copies of:

- the original, or blank, spreadsheet they downloaded from the internet or obtained from the TCEQ;

- the customized, or Master, spreadsheet they create for each of their plants; and

- each of the completed monthly reports that are submitted to the TCEQ.

One of the more important steps the operators can take to accomplish this goal is to create special directories and subdirectories on their computer. For example:

1) Create a **SWMOR Files** folder, or directory, in the My Documents folder of your computer. This directory will hold all of the blank SWMOR files, guidance documents, instructions, customized SWMOR-Alt files, and completed monthly reports for the plant. In this directory, the operators should create four or more folders, or subdirectories, as follows.

2) The **Blank Files** subdirectory. All of the blank SWMOR spreadsheets, guidance documents, and instruction documents that the plant downloads from the internet or obtains directly from the TCEQ will go in this directory. This subdirectory will serve as an on-line backup for these files. If the operators need to modify one of the files, such as when they create the plant's customized SWMOR-Alt, they should first copy the file they want to change, and then place the copy in a different subdirectory so they can edit it there. This precaution will help prevent accidental damage to the original file.

3) The **Customized Files** or **Master Files** subdirectory.
The operators should place a copy of the blank SWMOR-Alt file in this subdirectory. Once they have finished creating the customized SWMOR-Alt file(s) for the plant, the modified file(s) should be renamed to show that they have been customized and are no longer blank. This subdirectory will serve as an on-line backup for each of the plant's customized files. When the operators need to create the monthly report files, they should first copy the file they want to change, and then place the copy in a different subdirectory so they can enter the daily data there. This precaution will help prevent accidental damage to the customized SWMOR-Alt file(s).

4) The **Monthly Reports** subdirectory.
Each month, the operators should place a fresh copy of the customized SWMOR-Alt file in this subdirectory. Once the operators begin entering daily and monthly data in the customized file, the spreadsheet will automatically rename the file based on the month and year that the data was collected, the water system's PWS ID Number, and the name that the operators have assigned the plant. The operators may also want to add other subdirectories in this Monthly Reports folder. For example,

   o If the system needs to submit more than one SWMOR-Alt for this facility, i.e., if the site contains more than one plant, the plant staff may want to have a separate subfolder for each plant.

  o After a few years, the operators may want to create separate subfolders for each year's worth of SWMOR reports. If this is the case, they can create the 2013, 2014, 2015, and so on subfolders.

5) The **DAM** subdirectory (optional).
    If the operators want to keep copies of the materials they receive when a Directed Assistance Module, or DAM, is conducted at their plant. If so, they can place these electronic copies in a special subfolder so that the copies can be found quickly. If the plant has hosted more than one DAM training event, it might also be worth creating a separate folder in this subdirectory for each of the DAMs.

6) The **TCEQ Approvals** or **TCEQ Documents** subdirectory (optional).
    It might also be useful for the plant to keep electronic copies of all the critical letters that the facility sends to or gets from the TCEQ. For example, it would be a handy place to store electronic copies of the CT Study Approval Letter, any plan approval letters, and any exceptions that the plant has received from TCEQ. It's also a handy place to store an electronic copy of the plant's current Monitoring Plan if the plant has not already stored it in an SOPs subdirectory.

CREATING A CUSTOMIZED SWMOR-ALT FOR THE PLANT

BACKGROUND

The SWMOR-Alt spreadsheet contains 21 different worksheets so that it can cover the reporting requirements for all the treatment technologies or processes that the TCEQ has granted pathogen removal credit to. However, unless the plant uses every single one of these technologies, the operators will not need to use several of these worksheets. Consequently, the SWMOR-Alt has been written so that it will automatically create a site-specific reporting form that is based on the technologies actually used at a specific plant.   Once the spreadsheet has been customized, it will only show the worksheets that the operators will need to fill out to complete their plant's monthly report. Basically, the SWMOR-Alt automatically hides a worksheet if the operators tell the spreadsheet that the plant does not use that corresponding technology or technologies. Consequently, the operators should make sure the SWMOR-Alt is properly customized before entering daily data.

To properly customize the SWMOR-Alt spreadsheet, the operators will need to know which treatment processes they use for pathogen removal credit, to know how many of each type of treatment unit they have, and to completely understand how all water moves through the plant, i.e., which treatment units operate in parallel and which units operate in series. For example, think about a relatively simple plant that has a rapid mix, a clarifier, and four conventional filters. In this case, the water flows from the rapid mix to the clarifier and then to the filters; these three treatment processes said to operate in series because the water flows from one process to the other. On the other hand, the filters are said to operate in parallel because the clarified water passes through only one of the four filters.

To properly customize the SWMOR-Alt spreadsheet, the operators will also need to have a copy of the plant's TCEQ-approved CT Study. They will also need to have copies of any exception or plan approval letter(s) from the TCEQ that set site-specific monitoring requirements or performance criteria for one or more of the alternative technologies used at the plant. Examples include letters approving:

- the Direct Integrity Test (DIT) parameters for membrane units,

- the water quality and flow rate requirements/limits for ultraviolet light (UV) reactors, and

- the treatment credits allowed for using pre-filtration technologies, second-stage filters, or other alternative technologies.

One of the best ways to ensure that all the plant operators understand the treatment processes is to conduct a plant tour to collect data on the plant design and layout and the monitoring and reporting equipment and procedures used to collect reportable data. To help the plan staff collect and evaluate the information needed to complete their SWMOR-Alt, the TCEQ developed several checklists that the operators can use during the tour. These useful tools include:

- The **Treatment Technologies Table** shown in Attachment 1

- The **Bank Filters Checklist** shown in Attachment 2

- The **Presedimentation Basin Checklist** shown in Attachment 3

- The **Two-Stage Lime Softening Checklist** shown in Attachment 4

- The **Membrane Checklist** shown in Attachment 5

- The **Cartridge and Bag Filter Checklist** shown in Attachment 6

- The **Enhanced Filter Performance Checklist** shown in Attachment 7
- The **Two-Stage Conventional Filters Checklist** shown in Attachment 8
- The **UV Reactor Checklist** shown in Attachment 9

Although the SWMOR-Alt is an extremely sophisticated spreadsheet, it still has some notable limitations. For example:

- The SWMOR-Alt has no place to record performance data for each of the membrane units if the plant has two or more membrane units or operating in series. The same limitation applies to UV reactors used in series.
- A single SWMOR-Alt can only be used if all of the water passes through each of the major disinfection zones at the plant.

If the plant has two or more membrane units or UV reactors operating in series or if some of the water being treated does not pass through each of the major disinfection zones, the operators may have to complete and/or submit more than one monthly report in order to meet all of the monitoring and reporting requirements for their plant. For example, if the approved CT Study says the plant has three different parallel trains in disinfection zone D3 (i.e., zones D3A , D3B, and D3C), the operators will need to submit a second report if all of the treated water has not passed through one of these parallel disinfection zones.

DIALOG BOXES

Once the plant staff has compiled the documents and information needed to customize the SWMOR-Alt for their plant, the operators should follow the instructions in the *How to Create, Customize, and Save Your SWMOR-Alt* document available from the TCEQ. To customize the SWMOR-Alt, the operators will need to complete the following four dialog boxes.

- Customize SWMOR
- Plant Parameters
- Disinfection Process Parameters
- Alternative Technologies and LT2 ESWT

Many of the plants that are required to use the SWMOR-Alt form will also need to complete one or more of the following dialog boxes.

- Treatment Technologies
- PBT DIT Parameters
- QBT DIT Parameters
- MBT DIT Parameters
- UV Validation Method
- UV Validation Method – Intensity Setpoint Approach
- UV Validation Method – Calculate Dose Approach

The instructions for completing each of these dialog boxes are in Sections 1.2 through 1.8 of the *How to Create, Customize, and Save Your SWMOR-Alt* document. Because those instructions are so thorough, the information is not repeated in this Student Guide. Operators should refer to the applicable section of that document for guidance.

PLANT IDENTIFICATION

Once the plant staff has finished entering data in the dialog boxes, the SWMOR-Alt will run a series of macro subroutines which create a site-specific SWMOR-Alt for the plant. Once the subroutines have run, the SWMOR-Alt spreadsheet will open to the P.2-Turbidity Data worksheet where the operators enter raw, settled, and finished water data. The instructions for entering the plant information are in Section 1.09 of the ***How to Create, Customize, and Save Your SWMOR-Alt*** document. Because those instructions are so complete, the information is not repeated in this Student Guide.

LT2 – SUMMARY WORKSHEET

The last step in creating a customized SWMOR-Alt spreadsheet involves describing each of the plant's treatment trains on the LT2-Summary worksheet. As noted on previous page, one of the best ways to ensure that all the plant staff has the information they need to complete the **LT2-Summary** worksheet is to conduct a plant tour and to use the **Treatment Technologies Table** shown in Attachment 1 for recording data on the plant design and layout.

Section 1.10 of the ***How to Create, Customize, and Save Your SWMOR-Alt*** document provides detailed information on how to fill out the table on the **LT2-Summary** worksheet.

IMPORTED DATA WORKSHEET

The Imported Data worksheet allows operators to link their customized SWMOR-Alt to the plant's SCADA system. There are a variety of methods that can be used to create these links. Consequently, this DAM does not provide any guidance on how to automate data entry on the SWMOR. However, the process generally involves creating a data import table or data import links on the Imported Data worksheet and then writing cross-reference formulas to copy that data into the appropriate cell in the corresponding SWMOR-Alt worksheets. If the water system's staff or consultants are going to create these links and formulas, they need to be created in the customized SWMOR-Alt so that they do not have to be recreated every month that the operators fill out a monthly report.

SAVE THE CUSTOMIZED SWMOR-ALT FILE

Once the operators have finished customizing SWMOR-Alt spreadsheet for their plant, they should save a copy on their computer and use this "Master" file to create the monthly reports they will complete each month. Sections 1.11 and 1.12 of the ***How to Create, Customize, and Save Your SWMOR-Alt*** document provides detailed information on how to complete these tasks.

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USING THE BUTTONS ON THE SWMOR-ALT TOOLBAR

BACKGROUND

The SWMOR-Alt spreadsheet contains several macros and formulas, which are small computer programs that execute specific commands. Some of these macros create the dialog boxes that operators use to create the customized spreadsheet for their plant. Others hide the sheets do not need to be included with the report and select the area on each worksheet that will print when it is time to submit the report.

Once of the things the macros do is create a custom toolbar at the top of the SWMOR-Alt worksheet. This toolbar provides the operators with a special SWMOR tab that has buttons to help use the SWMOR-Alt, look for cells that contain errors, and print their report. The macros also hide the standard Excel® tabs and even lock some of the commands on those other tabs that can mess up the spreadsheet.

The TCEQ's guidance document, *RG-211, Monthly Testing and Reporting at Surface Water Treatment Plants*, provides some basic information about the macros and formulas used in the SWMOR. However, RG-211 does not provide much detail about what the various buttons on the SWMOR tab do.

SWMOR TAB ON THE SWMOR-ALT TOOLBAR

- [Undo] and [Redo] buttons: The buttons will undo or redo the last few changes that were made during data entry. For example, if operators enter data in the wrong spot, they can either select the cells and delete the data, or they can hit the undo button and the SWMOR will automatically undo the last entry and will continue to undo entries, one at a time, as the operators keep hitting the undo button. If they accidently undo too many entries, they can hit the redo button and the spreadsheet will restore the data, one entry at a time, beginning with the last thing that was undone.

- [Copy] button: The copy button allows the operators to the data in the cell or cells that they select.

- [PasteValues] button: The operators can the select the cell where they want the values to be copied, and the [PasteValues] button will then paste the copied values into that area.

- [SaveAs Excel2007] button: This button is used to save the data that has been entered. Using it ensures that the file is saved in a macro-enabled version of Excel 2007. It should be noted that the Excel2007 programming language can be read by Excel 2007, Excel 2010, and Excel 2013 but not by earlier versions of Excel. If the file is saved in a different format, the SWMOR-Alt may lose some of its functions and may not be able to be read by earlier versions of Excel. Also, if the monthly file hasn't already been named, the button will allow the SWMOR-Alt to suggest a file name based on the information you entered when you first created the monthly file. If the file has already been named, the spreadsheet will allow you to save the file under the same name or to rename it. It is important to use this button because it preserves the cell formatting and macros used by SWMOR-Alt.

- [Print Active Sheet] button: This button prints the worksheet that is current displayed on the computer screen. The button also runs a macro that looks for data entry errors before it prints the page.

- [Print All Sheets] button: This button allows the operator to print all of the worksheets that need to be submitted with the SWMOR-Alt. This button also runs a macro that looks for data entry errors before it prints the report. However, in this case, the macro checks every worksheet to make sure that the entire report is properly completed and will not begin the print job if there are data entry errors on any of the worksheets. While the ability to simultaneously print all the worksheets is handy, the operators should know it takes a while to print a complete report. They may want to run the print job during lunch or at the end of the day.

- [Printer Setup] button: This is used to select the printer that the operator's want to use to print the plant's SWMOR-Alt monthly report. After the printer has been selected and saved, the operator can use the button to select the printer settings that will be used.

- [Circle Errors] button: The button is very useful because it allows the operators to circle any cells with data entry errors and any cells that should contain data but don't.

- [Erase Circled Errors] button: This button removes the circles that are drawn using the circle errors button. The operator can also use this button to erase circles that are drawn if the operators try to print a worksheet that contains errors.

- [Edit File Properties] button: The TCEQ uses the this button to update the file properties when it releases a new edition of SWMOR-Alt.

- [Show Other Tabs]: This button reveals the standard Excel tabs that the SWMOR-Alt routinely hides. Although these hidden tabs and buttons can be useful at times, they usually aren't needed.

CREATING THE MONTHLY SWMOR-ALT FILE

Section 2.5 of *RG-211, Monthly Testing and Reporting at Surface Water Treatment Plants*, provides most of the information that an operator will need to create the monthly file that will be completed and submitted to the TCEQ. However, the following two points deserve some extra emphasis.

- The TCEQ strongly recommends that the operators start with a fresh copy of the plant's customized "Master" file. Implementing this precautionary approach serves three important goals.

    o It helps prevent the continued use of a damaged file. If an operator accidentally damages the macros, equations, or mathematical formulas in one of the plant's monthly reports, this damage will be present each time the operators reuse the damaged file. By starting with a "fresh" file each month, the chance of propagating the error is greatly reduced.

    o Starting with a blank file each month helps avoid the possibility of accidentally using some of last month's data. Although the SWMOR-Alt will allow an operator to replace one value with another, there is a possibility that the operators will miss replacing one or more of the data points because the cell(s) will already contain last month's reading.

    o The SWMOR-Alt's macros will help prevent an operator from accidentally over-writing last month's file with the new one because it tries to remind the operators that they have changed the month. However, this is not a fool-proof program. If operators are not careful, they can accidentally save data under the wrong file name.

- The operators should place the plant's Monthly files in a different folder than its Master file.

There is one additional issue with the SWMOR-Alt that *RG-211* does not address. Specifically, after creating the plant's "Monthly" report file, the operators should select the **LT2-Summary** worksheet and review the treatment processes that are shown in each train to make sure there have been no changes since the Master file was created. The operator who prepares the final report should also do this right before printing the final report to make sure the Treatment Technologies table is correct. This precaution is important because the TCEQ doesn't currently require operators to include the **LT2-Summary** worksheet when they submit their monthly report and, therefore, that worksheet does not automatically print.

ENTERING DAILY DATA

Sections 3.1 through 3.5 of *RG-211, Monthly Testing and Reporting at Surface Water Treatment Plants*, provides guidance on how operators should complete the worksheets that are common to the regular SWMOR (the one for conventional plants in Bin 1) and the SWMOR-Alt spreadsheets. These worksheets include the:

- **P.1-Summary** worksheet
- **P.2-Turbidity** Data worksheet
- **P.3-Filter Data** worksheet
- **P.4&5-Disinfection Data** worksheet

- **P.6-TOCMOR** worksheet
- **P.7-TOC ACC** worksheet
- **P.8-TOC Step 2** worksheet

However, the SWMOR-Alt contains additional worksheets for plants that use alternative technologies. Instructions and guidance for completing these alternative technologies worksheets are provided in the following pages.

DAILY DATA ENTRY - MEMBRANES

BACKGROUND

The SWMOR-Alt categorizes membrane units based on the type of Direct Integrity Test (DIT) used to verify that the membranes are continuing to achieve the desired level of treatment. The three types of membrane technologies are:

- PBT Membranes, which use a pressure-based DIT test. In this test, the membranes are pressurized to prescribe minimum initial test pressure ($P_{initial}$) and then the pressure drop is measured over the duration of the test, i.e., the SCADA system needs to record both the Pinitial and the $\Delta P/T$ parameters each time a DIT is conducted.

- QBT Membranes, which use a flow-rate based DIT test. In this test, the membranes are pressurized to prescribe minimum initial test pressure ($P_{initial}$) and then the amount of air needed to maintain this pressure is measured over the duration of the test. Since the engineering symbol for flow rate is Q, and the test uses the flow rate of air, this type of test method is often referred to as a QBT test. In a QBT test, the SCADA system needs to record both the $P_{initial}$ and the air flow rate, Q, parameters each time a DIT is conducted.

- MBT Membranes, which use a DIT test that measures marker or particle-removal. In this test, a solution of particles is injected into the membrane feed line. The particle concentrations in the feed water and in the product water are then measured and the log removal calculated. Therefore, the plant must have a way to accurately measure the concentration of the particle they are using.

There are separate worksheets for each of the three different types of membrane technologies and there are different sets of instructions for entering daily data on each of these three worksheets. However, all of the information on daily data entry for membrane units is contained in the **How to Complete the Membrane Filters** worksheet of the SWMOR-Alt document (i.e., the "**How to**" document for membranes). Specifically,

- the instructions for completing the **Membrane-MBT** worksheet are in Section 1 of the document,

- the instructions for completing the **Membrane-PBT** worksheet are in Section 2 of the document, and

- the instructions for completing the **Membrane-QBT** worksheet are in Section 3 of the document.

There are also helpful "data entry" guidance built into the comment boxes that are in the header of each data entry column on the membrane worksheets. These comments summarize the more detailed information provided in the "**How to**" document for membranes and will probably help the plant staff properly complete their monthly report.

TEST PARAMETERS AND ADDITIONAL DATA

This section of the worksheet is located just below the plant identification information shown at the top of the page. It contains three sections, the section for the approved DIT Test Conditions, the section for

the results of the last DIT test run during the previous month, and the section where the operators can enter optional data. Sections 1.2, 2.2, and 3.2 of the "**How to**" for membranes document provide instructions on how the plant staff should complete this part of their report for each type of membrane unit.

The SWMOR-Alt spreadsheet will automatically fill out the section for the approved DIT conditions for each of the membrane units based on the data the operators entered when creating their customized SWMOR-Alt form. If the spreadsheet has not filled out the DIT conditions for one or more of the plant's membrane units, the operators will need to go back and re-customize the spreadsheet.

At the beginning of each month, the operators will need to enter the results of the last DIT conducted on each membrane unit during the previous month. This data is reported in the Previous Month section of this part of the report. The information is essential because the SWMOR-Alt uses it to determine when the first DIT has to be conducted during the current month.   Failure to enter this data will result in a reporting violation and will probably keep the operators from even printing this month's report.

The operators can also enter additional data in the Optional Data section of the table. The first two cells, on Filter Flux and transmembrane pressure (TMP), can be used to track irreversible fouling that has occurred in the membrane unit. The other header and date entry cells in this section are all unprotected and can be used to record any data that the plant staff or membrane vendor wants to track.

DAILY PERFORMANCE DATA

The instructions for entering daily performance data are found in Sections 1.3, 2.3, and 3.3 of the "**How to**" document for membranes. A brief summary of these instructions can also be found in the comment boxes in the header row for each data entry column. There are some important things to note about entering daily data on the membrane worksheets. For example:

- The operators should enter data on a daily basis if possible. Daily operational data can trigger additional DITs and result in treatment or monitoring violations that can be eliminated if the operators promptly identify and address the underlying problems.

- The operators should enter the daily operational data (daily pumpage, average flux and TMP, maximum filtrate turbidity levels, etc) before entering the DIT data for that day. The spreadsheet uses the operational data to determine if and when a DIT must be conducted. Entering the DIT data first can create erroneous violations, though they will be corrected as soon as the operational data is entered.

- If the operators do not enter data on a daily basis, they will need to start with the earliest date they need to enter and then move forward rather than starting at a later date and moving backwards. This precaution will prevent the SWMOR-Alt from detecting erroneous violations, though they will be corrected as soon as the earlier data is entered.

DIRECT INTEGRITY TEST (DIT) DATA

The instructions for entering daily performance data are also found in Sections 1.3, 2.3, and 3.3 of the
"***How to***" document for membranes and a brief summary of these instructions can also be found in the
comment boxes in the header row for each data entry column. There are some important things to note
about entering DIT data on the membrane worksheets. For example, it is important that operators
remember the following.

- They must conduct and pass a DIT each day that the filtrate turbidity level exceeds 154 mNTU
  on two consecutive 5-minute readings.

- If the plant was assigned to Bin 2 or higher, they must conduct a DIT on each membrane unit at
  least once each day. Otherwise, they must conduct a DIT on each membrane unit at least once
  every 7 days.

- If the membrane unit fails a DIT, they must:
  - identify and correct the cause of the failure, and
  - leave the unit out of service until they repeat and pass a subsequent DIT .

  There are two ways to show that a membrane unit has passed a subsequent DIT before it
  treated more water.
  - The operators can indicate that they completed a corrective action.
  - The operators show the unit passed a DIT before it treated more water.

Example

A membrane unit fails a DIT on the December 1st and the operators leave it off-line until they can
investigate and correct the problem. Later that day, they repeat the DIT just to make sure it wasn't a
random error and the unit fails a second time so the operators begin a more extensive investigation. A
couple of days later, they have found and plugged several dozen broken fibers and they run a third DIT
the morning of the 5th before they begin their production run. How should the operators report the
successful corrective action on their SWMOR-Alt?

Option 1 (Unacceptable):   What the operators should not do when filling out their SWMOR-Alt.

	Operational Data						DIT Data			
	Daily Pump.	Norm. Filt.Flux	TMP	Norm. Spc.Flux	Daily Max.	CIP done?	$P_{initial}$	$\Delta P_{test}/\Delta t$	DIT pass?	C/A success?
Date	MG	gfd	psi	gfd/psi	mNTU	-	psi	psi/min	-	-
1	1.000	12.6	21.0	0.60	86		15.0	0.120	NO	NO
2	0.000	x	x	X	x					
3	0.000	x	x	X	x					
4	0.000	x	x	X	x					
5	1.000	12.3	21.0	0.59	34		18.2	0.160	YES	NA
6	1.000	12.5	22.0	0.57	51		18.0	0.240	YES	NA

Although it doesn't seem logical, the operators should not report the results of the DIT that was
conducted on December 5th on the line for December 5th data. Since the SWMOR-Alt does not have
any way to show that the DIT was conducted before any of the water filtered that day was produced,
entering data this way results in a treatment technique violation.

Option 2A (Acceptable):   The first of three acceptable ways to report the successful corrective action.

	Operational Data						DIT Data			
	Daily Pump.	Norm. Filt.Flux	TMP	Norm. Spc.Flux	Daily Max.	CIP done?	$P_{initial}$	$\Delta P_{test}/\Delta t$	DIT pass?	C/A success?
Date	MG	gfd	psi	gfd/psi	mNTU	-	psi	psi/min	-	-
1	1.000	12.6	21.0	0.60	86		15.0	0.120	NO	NO
2	0.000	X	X	X	X					
3	0.000	X	X	X	X					
4	0.000	X	X	X	X		18.2	0.160	YES	
5	1.000	12.3	21.0	0.59	34					
6	1.000	12.5	22.0	0.57	51		18.0	0.240	YES	NA

If the operators want to report the results of the successful "post-corrective action" DIT, they will need to report the results on the cells for December 4th DIT data. Again, the SWMOR-Alt does not have any way to show that the DIT was conducted before any of the water filtered on that day was produced. Therefore, entering data this way makes sure the SWMOR-Alt (and the TCEQ) knows that the successful corrective action was completed before the December 5th production run.

Options 2B and 2C (Acceptable):   Two other acceptable ways to report the successful corrective action.

If the operators just want to report that they have successfully completed the corrective action (without showing the results, they can either:

2B)   report the successful corrective action on the line for December 4th as shown below.

	Operational Data						DIT Data			
	Daily Pump.	Norm. Filt.Flux	TMP	Norm. Spc.Flux	Daily Max.	CIP done?	$P_{initial}$	$\Delta P_{test}/\Delta t$	DIT pass?	C/A success?
Date	MG	gfd	psi	gfd/psi	mNTU	-	psi	psi/min	-	-
1	1.000	12.6	21.0	0.60	86		15.0	0.120	NO	NO
2	0.000	X	X	X	X					
3	0.000	X	X	X	X					
4	0.000	X	X	X	X					YES
5	1.000	12.3	21.0	0.59	34					
6	1.000	12.5	22.0	0.57	51		18.0	0.240	YES	NA

or   2C)   report the successful corrective action on the same line where they reported the failure as shown below,

	Operational Data						DIT Data			
	Daily Pump.	Norm. Filt.Flux	TMP	Norm. Spc.Flux	Daily Max.	CIP done?	$P_{initial}$	$\Delta P_{test}/\Delta t$	DIT pass?	C/A success?
Date	MG	gfd	psi	gfd/psi	mNTU	-	psi	psi/min	-	-
1	1.000	12.6	21.0	0.60	86		15.0	0.120	NO	Yes
2	0.000	X	X	X	X					
3	0.000	X	X	X	X					
4	0.000	X	X	X	X					
5	1.000	12.3	21.0	0.59	34					
6	1.000	12.5	22.0	0.57	51		18.0	0.240	YES	NA

> **IMPORTANT**
> Operators must use this last option (2C) when the membrane unit is repaired and placed back in service the day after it failed the initial DIT.

SUMMARY SECTION

The Summary section of the Daily Performance table automatically shows the number of days when the membrane unit had a monitoring or treatment technique violation during the reporting period. If the spreadsheet reports that there are one or more violations, the operators can scroll down to row 174 to find which dates are involved so that they can investigate the cause of the error. There are also a couple of large unprotected blocks where the operators can enter any comments or information that they think might be useful in the future.

The SWMOR-Alt will automatically copy the treatment credits achieved by the plant's membrane technologies to the LT2-Summary worksheet, where they will be added to the plant's other treatment credits.

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DAILY DATA ENTRY – UV TECHNOLOGIES

BACKGROUND

UV reactors are usually classified based on the type of dose monitoring strategy used to determine whether or not the UV reactor has achieved the required level of disinfection. The SWMOR-Alt has been designed to accommodate reactors that use two of these dose-control approaches; those that use an Intensity Setpoint Approach and those that use a Calculated Dose Approach. These two approaches can be characterized as follows.

- Intensity Setpoint Approach (ISA) reactors – the control system operates the reactor based on one or more UV intensity "setpoints."
- Calculated Dose Approach (CDA) reactors – the control system uses several operational parameters to continuously calculate and adjust the "UV dose" that the reactor is applying.

Regardless of the control approach that is used, the reactors all use "duty sensors" to continuously monitor the intensity of the UV light within the reactor. To ensure that these duty sensors continue to produce accurate data, their accuracy must be checked against a "reference sensor."   In addition, some reactors utilize UV Transmittance (UVT) data to control the reactor and the accuracy of these UVT analyzers be validated periodically.

The SWMOR-Alt contains four worksheets for plants that use UV for disinfection credit. These worksheets include:

1) The UV-Sensor Data worksheet – Operators use this worksheet to record the monthly calibration results for the duty sensors in each of its UV reactors. The worksheet is divided into two major sections. The upper section, which is contained on rows 1 – 72, is used to record the sensor calibration data for ISA reactors; the lower section, which is contained on rows 73 – 144, is used to record the sensor calibration data for CDA reactors. Each section can accommodate up to 20 reactors and has enough room to enter sensor calibration data for up 10 sensors in each of those reactors.

2) The UV-ISA worksheet – The operators use this worksheet to record the daily performance data for up to 20 ISA reactors. The worksheet is divided into five sections and each of these sections can has space to enter daily data for up to 5 reactors.

3) The UV-CDA worksheet – The operators use this worksheet to record the daily performance data for up to 20 CDA reactors. The worksheet is divided into five sections and each of these sections can has space to enter daily data for up to 5 reactors.

4) The UV-UVT Analyzer worksheet – The operators use this worksheet to record the weekly calibration data for up to 20 UVT analyzers.

Based on the data entered when the operators created their plant's customized the SWMOR-Alt, the spreadsheet will automatically hide any worksheets and data sections which the operators will not need for data entry. The spreadsheet will also shade and lock any unused cells in the sections it does need to display. If the customized SWMOR-Alt does not display all the data entry cells that the operators will need to use, they will need to close the spreadsheet and then go back and check and correct any data entry errors that were made when customizing the spreadsheet.

All of the instructions for entering UV data on each of these four worksheets is contained in the **How to Complete the Ultraviolet Light Worksheets** of the SWMOR-Alt document (i.e., the "**How to**" document for UV). Specifically,

- the instructions for completing the **UV-Sensor Data** worksheet are in Section 2 of the document,

- the instructions for completing the **UV-ISA** worksheet are in Section 3 of the document,

- the instructions for completing the **UV-CDA** worksheet are in Section 4 of the document, and

- the instructions for completing the **UV-UVT** Analyzer worksheet are in Section 5 of the document.

There are also helpful "data entry" guidance built into the comment boxes that are in the header of each data entry column on the various UV worksheets. These comments summarize the more detailed information provided in the "**How to**" document for UV and will probably help the plant staff properly complete their monthly report.

COMPLETING THE SENSOR DATA WORKSHEET

Every UV reactor contains one or more sensors which continuously monitor the intensity of the UV light inside the reactor. To ensure these "duty" sensor readings are correct, the accuracy of the "duty" sensor must be checked once a month using a calibrated "reference" sensor.   If one or more of the reactor's duty sensors produce readings that are more than 20% higher than that of the reference sensor, the SWMOR-Alt automatically applies a Correction Factor when it determines whether the UV reactor is meeting its inactivation requirements. If the duty sensor readings are close enough, the correction factor will be set at 1.0.

Because section 2 of the "**How to**" document for UV provides detailed information on how to fill out the UV-Sensor Data worksheet, the information is not repeated in this student guide. However, there are a few important things that deserve some extra emphasis.

- At the beginning of each month, the operators will need to enter the previous month's Sensor Correction for each of their UV reactors.   The SWMOR-Alt will use these previous factors until the accuracy of the duty sensors are rechecked during the current month.

- The accuracy of the duty sensors in every reactor must be checked once each month. Although the operators do not have to check the sensors in every single reactor on a single day, all the duty sensors in any given reactor must be checked on a single day. This is important because the SWMOR-Alt begins using the reactor's new correction factor on the date that the duty sensor accuracy was checked.

- The operators need to enter the calibration data on the same day that the duty sensors are checked. This is important because the calibration data could produce a different sensor correction factor that the one previously used.

- If the correction factor has changed since the last calibration, the operators will need to remember that they must immediately enter the new correction factor in the computer algorithm/ program that controls the reactor. Failure to make this change could result in the failure to meet disinfection requirements because the factor impacts the amount of power required to achieve the required level of inactivation.

COMPLETING THE UV-ISA AND UV-CDA WORKSHEETS (AS APPLICABLE)

The **UV-ISA** worksheet will only be visible if the plant uses one or more UV reactors that rely on a control algorithm based on Intensity Setpoint Approach. Likewise, the **UV-CDA** worksheet will only be visible if the plant uses one or more UV reactors that rely on a control algorithm that uses the Calculated Dose Approach. Sections 3 and 4 of the "How to" document for UV provides detailed information on how to fill out the **UV-ISA** worksheet and **UV-CDA** worksheets, respectively. Since these sections are so complete, the information is not repeated here.   However, there are two important things that probably deserve a little extra explanation.

- The operators must be able to determine the total volume of water treated by each UV reactor each day as well as the amount "off-spec" water it produced. The information is used to determine what percentage of the water treated was not treated properly. If the plant has been assigned to Bin 2 or higher, this "off-spec" percentage could determine whether or not the plant met state and federal requirements for Crypto removal and inactivation.

- The operators must also be able to determine the duration of each event when one or more UV reactors are producing off-spec water. For plants assigned to Bin 1 (and those that have not yet been assigned to a bin), the duration of the event could have an impact on the plant's ability to meet it inactivation requirements for Giardia and virus.

  Let's look at an example of how the duration of "off-spec" events is calculated.

Example

A treatment plant has two UV reactors. The flow rate through the first reactor exceeds its maximum allowable flow rate beginning at 1:00 PM and the operators began reducing the flow rate through that reactor 20 minutes later. By 1:45 PM, the first reactor returned to acceptable operating conditions. Unfortunately, the staff overcompensated when they made the flow rate change, and the flow rate through the second reactor began to exceed its allowable flow rate at 1:30 PM. The operators made another adjustment and both reactors were restored to an acceptable operating condition at 2:30 PM. In this example, the reactor 1 produced off-spec water for 0.75 hours (from 1:00 until 1:45) and reactor 2 produced off-spec water for 1.0 hours. However, the off-spec event only lasted a total of 1.50 hours (from 1:00 until 2:30).

COMPLETING THE UV-UVT ANALYZER WORKSHEET

As noted previously, the control system for CDA reactors adjusts the applied UV dose based on several operational parameters. In many of the UV reactors, one of the readings used to adjust the UV dose is the UV transmittance of the water. The higher the UVT of the water, the easier it is for UV light to penetrate . . . and the easier it is to get the UV light all the way through the water, the lower the power input has to be to get the desired UV intensity. In a way, UVT is much like chlorine demand (except the relationship is reversed) . . . higher chlorine demand means you have to add more chlorine to get the desired residual while a lower UVT levels means you have to add more energy to get the desired UV sensor reading.

If the CDA reactor has an on-line UVT analyzer that continuously monitors the UVT of the water being treated, the operators must use a benchtop UVT instrument or a reference UVT sensor to check the accuracy of the on-line device on a weekly basis. The results of these weekly checks are recorded on the UV-UVT Analyzer worksheet. If the plant does not have any on-line UVT analyzers, the SWMOR-Alt automatically hides the worksheet because it is not needed.

Because section 5 of the "**How to**" document for UV provides detailed information on how to fill out the UV-UVT Analyzer worksheet, the information is not repeated in this student guide.

DAILY DATA ENTRY – CARTRIDGE AND BAG FILTERS

BACKGROUND

Sections 1.1 and 1.2 of the *How to Complete the Bag and Cartridge Filtration Worksheet of the SWMOR-Alt* document (i.e., the "*How to*" document for cartridges) contain a lot of background information on how the on the **Bag/Cartridge** worksheet works. However, there are some important concepts that are worth some additional discussion.

When the TCEQ refers to bag or cartridge filters, it is really referring to the assembly that contains the actual bag or cartridge filter units. In many cases, a single assembly will contain more than one bag or cartridge.

Not all of the plants that use bag or cartridge filter assemblies use them for pathogen removal credit. For example, some plants use bag or cartridge filtration simply as a pretreatment process for their membrane filters. When operators create the customized SWMOR-Alt for their plant, they should not include bag or cartridge filters unless the TCEQ has approved them for pathogen removal credit.

DAILY PERFORMANCE DATA

All of the information an operator needs to know to enter daily data on the Bag/Cartridge worksheet is contained in Section 1.3 of the "*How to*" document for cartridges. Because those instructions are so thorough, the information is not repeated in this Student Guide. Operators should refer to Section 1.3 of that document for detailed guidance on entering daily data.

There are also helpful "data entry" guidance that is provided in the comment boxes for each heading label at the top of the data entry columns. These comments summarize the more detailed information provided in the "*How to*" document for cartridges and will probably help the plant staff properly complete their monthly report.

SUMMARY AND COMPLIANCE ACTIONS

If the plant uses bag or cartridge filters as its primary filtration technology, the operators will need to complete the Summary and Compliance section of the **Bag/Cartridge** worksheet. The instructions for completing that section are in section 1.4 of the "*How to*" document for cartridges. Again, those instructions are pretty complete so the information is not repeated here.

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DAILY DATA ENTRY – ENHANCED IFE PERFORMANCE

BACKGROUND

The plant can receive an additional 1.0-log of Crypto removal credit if:

1) it monitors and records the IFE turbidity level at least once every 15 minutes,
2) 95% of the IFE readings from each filter are below 0.15 NTU, and
3) none of the filters have confirmed IFE readings above 0.3 NTU.

Although the plant does not have to increase its IFE monitoring frequency to get this additional credit, it must collect and report additional data. Specifically, the operators must have the ability to determine the:

1) total number of IFE readings that each filter produced when it was discharging water to the clearwell,
2) total number those IFE readings that were higher than 0.15 NTU in each filter, and
3) the number of times during the month that each filter produced two or more consecutive 15-minute readings that were 0.35 NTU or higher.

Since the process of manually collecting and analyzing more than 2000 data points for each filter will be extremely time consuming, systems that want to claim this credit will really need to use the plant's SCADA system to automate the process.

DAILY PERFORMANCE DATA

Section 1.1 of the *How to Complete the Enhanced IFE Worksheet of the SWMOR-Alt* document (i.e., the "*How to*" document for enhanced IFE performance) contains all of the information that operators will need to fill out the **Enhanced IFE** worksheet.   Because those instructions are so thorough, the information is not repeated in this Student Guide. Operators should refer to Section 1.1 of that document for detailed guidance on entering daily data.

There are also helpful "data entry" guidance that is provided in the comment boxes for each heading label at the top of the data entry columns. These comments summarize the more detailed information provided in the "*How to*" document for enhanced IFE credit and will probably help the plant staff properly complete their monthly report.

SUMMARY TABLE

As Section of 1.2 of the "*How to*" document for enhanced IFE credit indicates, all of the values shown in the Summary section of the **Enhanced IFE** worksheet are calculated

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DAILY DATA ENTRY – OZONE AND CHLORINE DIOXIDE CREDIT FOR CRYPTO INACTIVATION

BACKGROUND

The *How to Complete the Cryptosporidium Concentration-Time (CT) Worksheet on the SWMOR-Alt* document (i.e., the "*How to*" document for Crypto CT credit) contains all of the information that operators will need to fill out the **CryptoCT** worksheet.   However, there are a couple of important facts that are worth some additional discussion.

- Chlorine and chloramine are not able to achieve any Crypto inactivation at the residuals and contact times provided at potable water treatment plants. Consequently, SWMOR-Alt does not provide any Crypto inactivation credit for these two disinfectants.
- Chlorine dioxide (ClO_2) is capable of inactivating Crypto. However, high residuals and long contact times are required to achieve any measureable level of inactivation. Therefore, it is extremely unlikely that a plant will be able to use this disinfectant for Crypto control unless it provides some treatment technology (such as ferric coagulants or reverse osmosis) to reduce chlorite concentration to acceptable levels.   Nevertheless, the SWMOR-Alt does include the equations for calculating Crypto inactivation when chlorine dioxide is used as a disinfectant.
- Ozone (O_3) is also capable of inactivating Crypto. Unlike chlorine dioxide, Crypto inactivation can be achieved at reasonable ozone concentrations. Consequently, the SWMOR-Alt allows plants to claim Crypto inactivation credit for ozone. However, Section 11.3 of the USEPA's *Long Term 2 Enhanced Surface Water Treatment Rule Toolbox Guidance Manual* recommends that Crypto credit not be allowed for granted for the first ozone dissolution chamber. Based on this guidance, the SWMOR-Alt does not allow any Crypto inactivation credit for a disinfection zone where the disinfectant type used for Giardia and virus credit is "**O3-Cell 1**".

DAILY PERFORMANCE DATA

Section 1.1 of the "*How to*" document for Crypto CT credit contains all of the information that operators will need to fill out the **CryptoCT** worksheet.   Because those instructions are so thorough, the information is not repeated in this Student Guide. Operators should refer to Section 1.1 of that document for detailed guidance on entering daily data.

As Section 1.1 indicates, most of the daily performance data for the **CryptoCT** worksheet is automatically copied from the data that was entered on the **P.4&5-Disinfection Data** worksheet. However, if the plant ever fails to achieve its desired level of Crypto inactivation, the operators will need to record how many consecutive hours that the plant was not meeting its goal.

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NOTE; the following sections have not been written because there were no systems using these technologies at the time that the Student Guide was developed.

DAILY DATA ENTRY – BANK FILTERS

DAILY PERFORMANCE DATA

DAILY DATA ENTRY – PRESEDIMENTATION BASINS

DAILY PERFORMANCE DATA

DAILY DATA ENTRY – TWO-STAGE LIME SOFTENING

DAILY PERFORMANCE DATA

DAILY DATA ENTRY – TWO-STAGE CONVENTIONAL FILTERS

DAILY PERFORMANCE DATA

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COMPLETING THE SUMMARY PAGE

Sections 3.5 and 3.6 of *RG-211, Monthly Testing and Reporting at Surface Water Treatment Plants*, provides most of the information that an operator will need to complete the following sections of the **P.1-Summary** worksheet.

1) Treatment Plant Performance

2) Distribution System

3) Additional Reports & Worksheets, and

4) Public Notification

However, the following aspects of each of these four sections are worth additional discussion.

TREATMENT PLANT PERFORMANCE

The SWMOR-Alt automatically completes this section based on the daily data they enter on the other worksheets. However, it is very important that operators understand that the automated calculations will produce errors if there are data entry errors on the other sheets. Operators should run an error check (use the [Circle Errors] button) on each worksheet before they print the first page. If no errors are detected on the other worksheets but the P.1-Summary sheet continues to show errors, the SWMOR-Alt spreadsheet formulas have probably been damaged.

DISTRIBUTION SYSTEM

Plant staff will have to populate most of this section because it is the only area on the SWMOR-Alt where distribution sampling data is recorded. *RG-211* provides a pretty complete description of the data that needs to be entered. However, there are a couple of points worth emphasizing.

- If the operators took no distribution samples during the month (i.e., enter a <0> in the "Total number of readings this month" cell), they must enter <NA> in the next three cells. Unless there is at least one sample, next three questions are not applicable since the at least one data point is needed to determine the average reading, the number of samples with a low residual, or the number of samples with no residual.

- If the operators took distribution samples but failed to record any of the disinfectant residual results, they must enter <ND> in all four of the cells. Unless they have at least some data, they cannot answer any of the questions.

- If the operators took distribution samples but only recorded some of the disinfectant residual results, they must enter <MD> in "Average disinfectant residual value" cell and enter a numeric value in the other three cells. Unless the operators have at all of the readings, they cannot calculate the average of all the samples, although they can report the number of samples they collected, the number of those that had low residuals, and the number of them that had no detectable residual.

The **P.1-Summary** worksheet in SWMOR-Alt also has the following two useful features that are not described in RG-211.

1) Cell AA95 allows drinking water bottling companies that meet certain requirements to monitor ozone (instead of chlorine) at the point where water is delivered to the bottling operation. If the plant meets all the conditions specified in this cell and selects <Yes> from the dropdown list, the required monitoring parameter shown in cell L49 will change from "free chlorine" to "ozone" when the operators enter <0.2> in cell J49.

2) Cell Z96 allows a plant with a large wholesale population but a small retail population to base its distribution monitoring requirements on its retail population instead of the total population it serves.

ADDITIONAL REPORTS & WORKSHEETS

Section 3.5 of *RG-211* also provides guidance on how an operator should complete the Additional Reports & Worksheets section of the **P.1-Summary** worksheet. The instructions are so complete that additional guidance is not needed in this document.

PUBLIC NOTIFICATION

Information that operators need to know about public notices are found in two separate areas in RG-211. Specifically,

- Section 3.6 of *RG-211* describes the information that operators need to enter on the Summary Page Addendum section of the P.1-Summary worksheet. This section of the SWMOR-Alt is where operators report the dates that the system notified the TCEQ and the general public of any treatment technique and monitoring and reporting violations that occurred.

- Chapter 8 contains more detailed information about how and when the system must notify the TCEQ and the general public and includes the mandatory language and information these notices must contain.

One of the major differences between the **P.1-Summary** worksheet on the regular SWMOR (the one for conventional plants in Bin 1) and the SWMOR-Alt spreadsheets is the Summary Page Addendum for Violations and Public Notices. In the SWMOR-Alt spreadsheet, this addendum addresses two more items than are addressed in the regular SWMOR. Specifically, the SWMOR-Alt:

- adds an extra line (row 94) to address the treatment technique violation and public notice associated with the failure to meet the removal/inactivation requirements for *Cryptosporidium*, and

- includes additional page (rows 112 through 142) that covers violations and public notices associated with the failure to meet the monitoring and reporting requirements related to the use of alternative technologies.

Although these differences exist, the instructions provided in Section 3.6 should provide the guidance needed to complete the additional cells. However, *RG-211* doesn't describe one useful aspect of the addendum pages . . . if the SWMOR-Alt does detect a treatment technique or monitoring violation, it will identify the specific type of violation and list the days that the violation occurred.   Operators can use

this information to go back to the applicable worksheet(s) and look for data entry errors or omissions that triggered an erroneous violation.

Inside back cover:

Revision history

Latest Revision Date: March 15, 2014 (v1)--Created

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