

2. CUSTOMIZING YOUR SWMOR OR SWMOR2 SPREADSHEET

In this chapter, we go through the steps you need to complete in order to customize the SWMOR and SWMOR2 spreadsheets for your specific plant. For help with a specific part of the report, scan for the name of the main section and then look for specific items within that section.

ATTENTION SWMOR2 USERS

The SWMOR2 is customized in exactly the same way as the SWMOR. Although we wrote Chapter 9 to help you fill out the SWMOR2 report, we did not repeat any of the information presented in Chapter 2. Therefore, you will need to read this chapter even if you are using the SWMOR2 spreadsheet.

2.1 CREATE YOUR SWMOR OR SWMOR2 MASTER FILE

The first time you use the SWMOR or SWMOR2 spreadsheet, you will enter the data that will customize it for your plant. After customizing the spreadsheet once, and saving the customized file, you may skip this step.

FILE MANAGEMENT

If you don't have a system for saving electronic files, you should decide how you are going to save your data before you get too far. We recommend that you create a series of special folders (or subdirectories) so that you will know where all your MOR records are stored. Several plants have found the file structure shown in Figure 2.1 to be very useful.

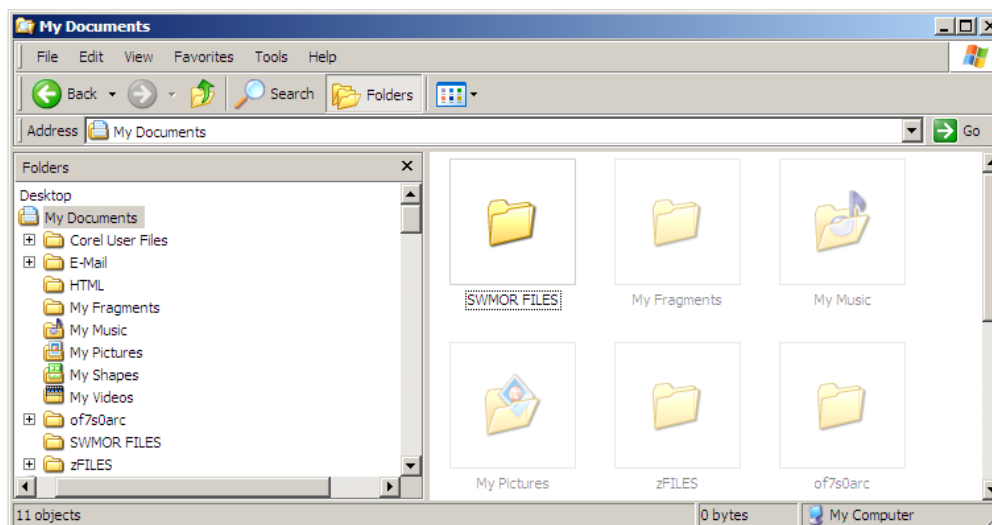


Figure 2.1. Sample file structure.

Backing Up Your Data

Each copy of the SWMOR spreadsheet takes up about 2.5 megabytes. Although you will be able to store many months of data on your hard drive, you should always save a backup copy in case your hard drive crashes. You must maintain a copy of each monthly report for at least three years. We recommend that you back up each monthly report on a CD-ROM, or at least keep a printed copy of each report in your files.

Enable Macros? Yes!

When you open the SWMOR file in Excel 2003, a dialog box will pop up to let you know that the workbook you are opening contains macros. In order for the spreadsheet to run properly, you must click the **Enable Macros** button every time you open the spreadsheet. Figure 2.2 shows the screen that appears, with the **Enable Macros** button in the bottom center.

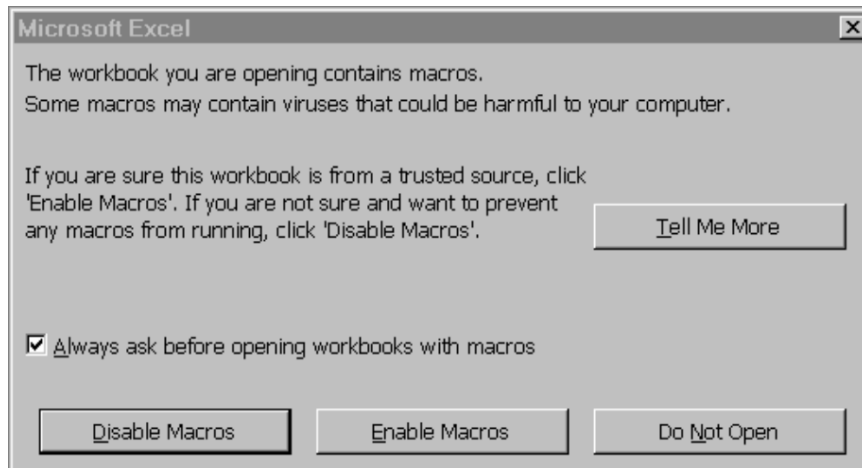


Figure 2.2. Opening screen dialog box to enable macros in Excel 2003.

When you open the SWMOR file in Excel 2007, a dialog box will pop up to provide options on how to open the file, as shown in Figure 2.3.

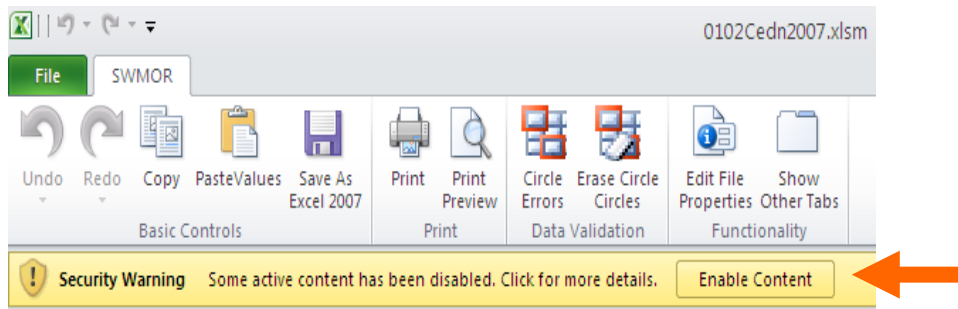


Figure 2.3. Opening screen dialog box to enable options in Excel 2007.

WARNING ABOUT MACROS

Macros are programs that will automatically execute when you open a file. Unless you are absolutely sure that you have obtained the file from a reliable source, you should be very wary about enabling a spreadsheet macro because hackers can hide viruses in the macro. If you have any doubts, scan the spreadsheet with an up-to-date antivirus program.

2.2 FILL OUT THE PLANT PARAMETERS DIALOG BOX

The next dialog box, **Plant Parameters**, will prompt you for the information needed to begin customizing the SWMOR or SWMOR2 for your plant. In order for the spreadsheet to run properly, you must complete the box. As you enter data in the dialog box, you may use the **<Tab>** key to move to the next cell, or data-entry spot, and the **<Shift> + <Tab>** keys to return to the previous cell.

Most of the information that you need to enter in the **Plant Parameters** dialog box (like the number of filters at the plant) relates to the layout of your plant. The other information (like number of disinfection zones) comes from your CT study approval letter, any letters that approve the design of your plant or—if you have an approved exception to one or more of our design requirements—the exception-approval letter.

Number of Sedimentation Basins

Enter the total number of sedimentation basins and clarifiers at your plant.

Number of Filters

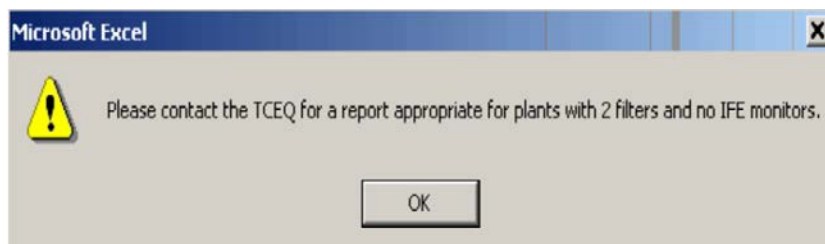
Enter the total number of filters at your plant. If you report that you have two filters, the SWMOR will ask you to confirm that you have a turbidimeter on the effluent of each filter (see Figure 2.4). If you do have IFE turbidimeters on both filters, click on the **[Yes]** button and continue entering data. If you do not have IFE turbidimeters on both filters, click on the **[No]** button.



Figure 2.4. Two-filter confirmation for SWMOR in both Excel 2003 and 2007.

IMPORTANT

If the answer to the question in the confirmation dialog box as shown in Figure 2.3 is “No,” it means that you should use SWMOR2 instead of SWMOR. Once you click on the [No] button, the instruction message box shown below will pop up. You have to click on the [OK] button before the macro will finish running. This macro adds a watermark to each of the worksheets stating “You have indicated that your plant has two filters but no IFE monitors. Therefore you must use the SWMOR2 spreadsheet. Contact the TCEQ for a copy of that report.” Although the spreadsheet is still functional, the watermark will be printed out on every page when you print the report and the report will not be accepted by the TCEQ. You should immediately close the spreadsheet without saving any changes and use SWMOR2 instead.



Number of Disinfection Zones

Your CT-study-approval letter describes the disinfection zones and treatment trains that exist at your plant. The disinfection zones are numbered; for example, *D1*, *D2*, and so on. Enter the total number of disinfection zones that are defined in your plant’s CT-study-approval letter. If the letter no longer accurately describes your disinfection zones or if you want to change the disinfection zones, you need to submit a new CT study for our review.

Number of Trains

After you enter the number of disinfection zones at your plant, hit **<Enter>** and the **Number of Trains** cell will pop up beside each of the zones you have at the plant. If there is more than one train in a zone, your CT approval letter will identify each train with a letter; for example, if disinfection zone *D1* contains three trains, the trains will be identified as *D1A*, *D1B*, and *D1C*. For each disinfection zone, enter the number of treatment trains defined in your plant’s CT-study-approval letter. (See Appendixes A and B for more information on CT studies.) The treatment trains, if defined, are denoted by suffixes A, B, and so forth.

Settled Water Turbidity Is Required

We typically require plants that were granted an exception to our requirements for detention-time design and surface-overflow rate to periodically monitor levels of settled-water turbidity. We occasionally impose this requirement for other reasons as well. For example, we sometimes require plants to conduct this monitoring as part of a mandatory corrective-action plan (CAP). If your plant does not have one of these exceptions or a mandatory CAP, we still recommend that you monitor settled-water turbidity levels, but seldom require it.

To place a check in the box, place the cursor on top of the box and then click the left mouse button. If we have required your plant to monitor settled-water turbidity, you must place a check in the **Settled Water Turbidity Is Required** box. If we have not required you to run these tests, you should leave the box empty even if you routinely monitor settled water turbidity levels.

Figure 2.5 shows an example of the **Plant Parameters** dialog box as it would be completed for the plant that received the approved CT study in Appendix A. The entries indicate that the plant has two sedimentation basins and six filters. The figure also shows that this plant has three disinfection zones, none containing more than one treatment train. Finally, the figure indicates that the plant has been required to monitor settled-water turbidity levels for some reason.

The screenshot shows a dialog box titled "Plant Parameters" with a close button (X) in the top right corner. The dialog is divided into two main sections: "Plant" and "Monitoring".

Plant Section:

- Number of Sedimentation Basins: 2
- Number of Filters: 6
- Number of Disinfection Zones: 3
- Disinfection Zones (D1-D10):
 - D1: Number of Trains: 1
 - D2: Number of Trains: 1
 - D3: Number of Trains: 1
 - D4: Number of Trains: (empty)
 - D5: Number of Trains: (empty)
 - D6: Number of Trains: (empty)
 - D7: Number of Trains: (empty)
 - D8: Number of Trains: (empty)
 - D9: Number of Trains: (empty)
 - D10: Number of Trains: (empty)

Monitoring Section:

- Settled Water Turbidity Is Required

At the bottom of the dialog are "OK" and "Cancel" buttons.

Figure 2.5. Plant Parameters dialog box with sample data.

Once you have entered the last piece of data in the **Plant Parameters** dialog box, click on the **[OK]** button. At this point, you will be able to enter the rest of the information from your CT study approval letter into the **Disinfection Process Parameters** dialog box.

IMPORTANT

If you click on the **[OK]** button, the SWMOR spreadsheet will execute the macro that updates appropriate cells on **P.2-Turbidity Data**, **P.3-Filter Data**, and **P.4&5-Disinfection Data** worksheets. Since this update process can take quite some time, you should press the **[CANCEL]** button if the **Plant Parameters** dialog box already properly describes your plant.

BE PATIENT

If you do need to change the information about your plant, it may take up to 3 minutes for this **[OK]** button's macro to finish running (or longer if depending on your plant's design and computer). In general, do not click buttons or type while you are waiting for the program to perform a calculation or run a macro.

2.3 FILL OUT THE DISINFECTION PROCESS PARAMETERS

The next dialog box, **Disinfection Process Parameters**, will prompt you for the information needed to continue customizing the SWMOR for your plant. You must complete this dialog box for the spreadsheet to run properly. As you enter data, you may use the **<Tab>** key to move to the next cell or data entry spot, and the **<Shift>** + **<Tab>** keys to move back to the previous cell.

Figure 2.6 shows a blank **Disinfection Process Parameters** dialog box. As the figure indicates, the dialog box is divided into two sections: **Residual Disinfectant** and **Approved CT Study Parameters**. You must complete both sections of the dialog box or the SWMOR spreadsheet will not work properly.

Residual Disinfectant	
Leaving the Plant:	In the Distribution System:
<input type="radio"/> Free Chlorine	<input type="radio"/> Free Chlorine
<input type="radio"/> Total Chlorine	<input type="radio"/> Total Chlorine

Approved CT Study Parameters					
Disinfection Zone	D1	D2	D3	D4	D5
Flow Rate (MGD)					
T10 (Minutes)					
Disinfectant					
Disinfection Zone	D6	D7	D8	D9	D10
Flow Rate (MGD)					
T10 (Minutes)					
Disinfectant					

Required Log Inactivation	
Giardia	
Viruses	

OK CANCEL

Figure 2.6. Disinfection Process Parameters dialog box.

Most of the information you need to complete the **Disinfection Process Parameters** dialog box will come directly from your CT study approval letter (see Appendix A for an example). The other information that you need to enter includes the disinfectant residual entering the distribution system and the disinfection residual in the distribution system.

Once you finish filling out the **Disinfection Process Parameters** dialog box, the SWMOR spreadsheet uses the information to complete parts of the **P.1-Summary** and the **P.4&5-Disinfection Data** worksheets.

Residual Disinfectant

You must fill out this area of the **Disinfection Process Parameters** dialog box based on your plant's normal operating practices. If your plant normally adds ammonia at some point in the treatment process, or if you purchase and redistribute chloraminated water, you must select **[Total Chlorine]** as your default disinfectant. You must select **[Free Chlorine]** as your default disinfectant if your plant does not add ammonia to the water before it leaves the plant.

Although the water leaving the plant usually contains the same disinfectant as the water in the distribution system, the SWMOR spreadsheet will not prevent you from selecting one type of disinfectant for the water leaving the plant and a different disinfectant for the water in the distribution system. However, this treatment approach is highly unusual and you will get the dialog box shown in Figure 2.6 if the two selections do not match. Click on the **[Yes]** button if you really are using two different types of disinfectants and the **[No]** button if the same type of disinfectant is present in both the water leaving the plant and in the distribution system.

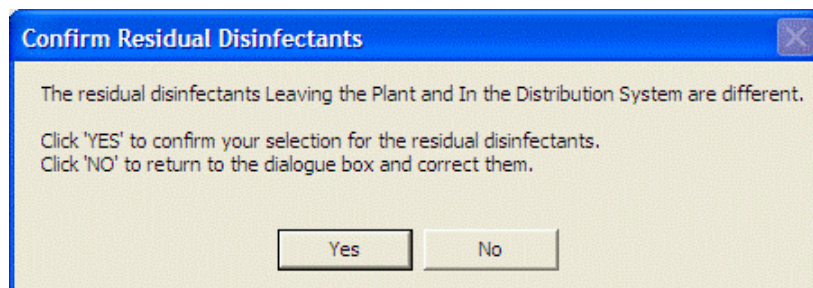


Figure 2.7. Confirm Residual Disinfectants dialog box.

Leaving the Plant

The SWMOR uses the disinfectant you select in this part of the **Disinfection Process Parameters** dialog box to set the default residual level you must maintain in the water leaving the plant.

IN the Distribution System

The SWMOR uses the information you select in this part of the **Disinfection Process Parameters** dialog box to set the default residual level you must maintain in the distribution system.

Approved CT Study Parameters

Your CT-study-approval letter will describe three approved parameters for each of the disinfection zones and treatment trains it identifies:

- the flow rate,
- T_{10} , and
- disinfectant type.

The flow rate and T_{10} information you need to complete this section of the dialog box appears in a table that is usually near the end of the letter. The information about the disinfectant usually used in each of the zones generally appears near the front of the letter where we describe the plant's general treatment and disinfection processes. (See Appendix A for an example of a CT-study-approval letter.)

Flow Rate (MGD)

You must enter the flow rate for each disinfection zone and train defined by your plant's CT-study-approval letter in the appropriate cell in the dialog box. You must enter this value in million gallons per day (MGD).

T_{10} (minutes)

You must also enter the approved T_{10} time for each disinfection zone and train defined by your plant's CT-study-approval letter in the appropriate cell in the dialog box. You must enter this value in minutes.

Disinfectant

The **Disinfectant** boxes in this section of the **Disinfection Process Parameters** dialog box contain a drop-down list that contains all of the possible disinfectants that can be used in the disinfection zone or treatment train. Use the drop-down lists to select the type of disinfectant residual maintained in each of the disinfection zones and treatment trains identified in the CT-study-approval letter. The abbreviations for the possible disinfectants are shown in Table 2.1.

Table 2.1. Abbreviations for disinfectants.

Abbreviation	Disinfectant
FCL	free chlorine
CLO2	chlorine dioxide
O3	ozone
CLA	chloramines
NA	the disinfection zone is not used

IMPORTANT

The dialog box will not allow you to select **<NA>** for a given disinfection zone or treatment train unless:

- a disinfectant is routinely applied in any of the previous zones or trains,
- or
- a disinfectant is routinely applied in a previous zone or train but
 - some, but not all, of the parallel trains in a later zone are not routinely used and
 - a disinfectant is identified for each of the remaining trains that are routinely used.

Our CT-study-approval letter also establishes performance standards for the disinfection process at your plant. Given the treatment processes for physical removal at the plant, the disinfection process is required to achieve a minimum number of log inactivations of *Giardia lamblia* cysts and viruses.

Required Log Inactivation of *Giardia lamblia* Cysts

Enter the amount of *Giardia* inactivation that disinfection is required to achieve at your plant. Unless the TCEQ has established an alternative performance standard for the plant, your disinfection process must achieve a 0.5-log inactivation of *Giardia lamblia* cysts.

Required Log Inactivation of Viruses

Enter the amount of viral inactivation that the disinfection process is required to achieve at your plant. Unless the TCEQ has established an alternative performance standard for the plant, your disinfection process must achieve a 2.0-log inactivation of viruses.

Once you have entered the last piece of data in the **Disinfection Process Parameters** dialog box, click on the **[OK]** button. At this point, the macro will finish running and create the customized SWMOR or SWMOR2 for your plant.

IMPORTANT

If you click the **[OK]** button, the SWMOR spreadsheet will execute the macro that updates appropriate cells on **P.1-Summary** and **P.4&5 Disinfection Data** worksheets. Since this update process can take quite some time, you should press the **[CANCEL]** button if the **Disinfection Process Parameters** dialog box already properly describes your plant.

BE PATIENT

If you do need to change the information about your plant, it may take up to two minutes for this **[OK]** button's macro to finish running (or longer, depending on your plant's design and computer). In general, do not click buttons or type while you are waiting for the program to perform a calculation or run a macro.

When the macro that tells the spreadsheet about your plant data finishes running, the spreadsheet will be ready for you to type in your plant information and data.

Example 2-1: Entering Data in the Disinfection Process Parameters Dialog Box

How to complete the **Disinfection Process Parameters** dialog box for the plant with the CT-study-approval letter in Appendix A.

Disinfection Zone	1	2	3		
Flow Rate (MGD)	1.440	0.480	0.960		
T10 (Minutes)	46.7	11.7	222.1		
Disinfectant	FCL	FCL	CLA		
Disinfection Zone					
Flow Rate (MGD)					
T10 (Minutes)					
Disinfectant					

The approval letter's plant description (page A-1) indicates that liquid ammonium sulfate (LAS) is applied upstream of the clearwells. Therefore, the treatment plant is using chloramines as a residual disinfectant. Consequently, **Total Chlorine** is selected in the **Residual Disinfectant** section of the dialog box under **Leaving the Plant** and **In the Distribution System**.

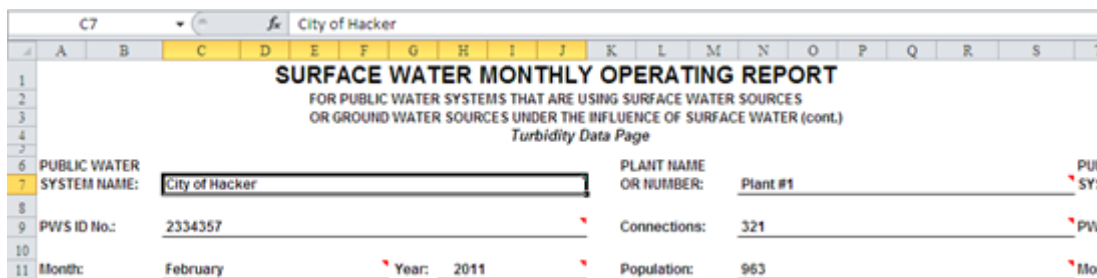
The CT-study-approval letter also identified three disinfection zones for the plant. The **Flow Rate** and **T10** values for each of the three zones that are summarized in Table 2 of the CT study approval letter (page A-3) have been copied into the appropriate cell of the dialog box.

The plant description also indicates that there is a standby LAS injection point located just downstream of the rapid mix but, as noted previously, the primary LAS injection point is located upstream of the clearwells. Therefore, the dialog box indicates that free chlorine (FCL) is the primary disinfectant used in zones D1 and D2 and chloramines (CLA) are the primary disinfectant used in zone D3.

Identify Your Plant (on Page 2)

After the **Disinfection Process Parameters** macro finishes running, you will need to enter additional information about the plant.

At the top of each page of the SWMOR and SWMOR2 spreadsheets, you will find cells for identifying your water system and your plant. However, we have locked all of these cells except for the ones on the **P.2-Turbidity Data** worksheet. The spreadsheet has been programmed so that when you fill out the water-system and plant information on page 2, the data will automatically be copied onto the other pages. In addition, when you open the spreadsheet, the program automatically takes you to the top of page 2 so that you can enter the name of your water system and other information. Figure 2.8 shows this part of the spreadsheet.



The screenshot shows a Microsoft Excel spreadsheet titled "City of Hacker". The main heading is "SURFACE WATER MONTHLY OPERATING REPORT" for public water systems using surface water sources. The current worksheet is "Turbidity Data Page". The form fields are as follows:

6	PUBLIC WATER		PLANT NAME		PUI
7	SYSTEM NAME:	City of Hacker	OR NUMBER:	Plant #1	SY:
8					
9	PWS ID No.:	2334357	Connections:	321	PW
10					
11	Month:	February	Year:	2011	Mor
			Population:	963	

Figure 2.8. Plant-description section of the SWMOR spreadsheet.

Public Water System Name

Enter the name of your public water system.

Plant Name or Number

If your water system has more than one treatment plant, enter the name of the plant that collected the data contained in this specific report. You do not have to complete this cell if your water system has only one treatment plant.

Special Case: Sometimes the treatment trains in a single plant are markedly different. In these cases, you may need to submit a separate SWMOR or SWMOR2 for each treatment train. If you think your plant should submit more than one report, call the public drinking water program at 512-239-4691 and ask for the Surface Water Treatment Rule Coordinator, or e-mail <SWTPMOR@tceq.texas.gov>, to be sure.

PWS ID No.

Enter your water system's seven-digit PWS ID number.

2.4 SAVE YOUR CUSTOMIZED SWMOR SPREADSHEET

After you have completed the two dialog boxes and entered the information on your system, we strongly recommend that you save the customized spreadsheet. That way, you will not have to re-enter all that data each time that you open the spreadsheet. In addition, you will be able to click on the [Cancel] button when the **Plant Parameters** and **Disinfection Process Parameters** dialog boxes open and avoid the delays that occur when running the customization macros. The only time that you will need to reenter any of the "customized" data is when something at the plant changes.

NOTE

If you are using the SWMOR, we recommend that you save the customized file using the following filename:

SWMOR_master_PWSIDNumber_PlantName

If you are using the SWMOR2, we recommend that you save the customized file using the following filename:

SWMOR2_master_PWSIDNumber_PlantName

In each case, PWSIDNumber is the PWS ID number of your system and PlantName is the name of your plant.

Running the SWMOR after You Have Customized It

If you saved the customized spreadsheet, you will still need to click on the **[Enable Macros]** button in the Excel dialog box each time you open the spreadsheet. However, unless you need to edit the data in the **Plant Parameters** or the **Disinfection Process Parameters** dialog box, you may click on the **[Cancel]** button when those boxes open and avoid the extra delay that occurs when running the customization macro.

2.5 CREATING MONTHLY FILES

You should have already customized your SWMOR (or SWMOR2), as described in the previous sections. Then, every month, you will need to create a separate electronic file for that particular month. It is best to start each month with a new file created from your original **customized** file, rather than updating a previous month's file that already has data in it.

IMPORTANT

You are required to keep your SWMORs for at least three years. So, if you plan on keeping electronic copies of the SWMOR, be careful not to overwrite the file from a previous month. For this reason, it is best to start each month with a new file created from your original customized file, rather than updating a previous month's file that already has data in it.

We have added some automated features that reduce the chance that you will accidentally overwrite data from a previous month. However, this feature is not completely fail-safe and it is still possible for you to lose data if you are not careful.

Enable Macros? Yes!

When the **Enable Macros** dialog box pops up in Excel 2003, click **[Enable Macros]**. You need to enable the macros so that the spreadsheet can accurately perform its many calculations. In Excel 2007, the option to enable macros appears in a yellow ribbon above below the toolbar.

Plant Parameters and Disinfection Process Parameters? Cancel!

When the **Plant Parameters** and **Disinfection Process Parameters** dialog boxes

pop up, click [Cancel]. The process you went through in Sections 2.2 and 2.3 created a customized spreadsheet that describes your plant. As long as you don't make changes to your plant (such as structural changes), you may skip this step when entering monthly data, thus saving time.

IMPORTANT

As noted above, we strongly recommend that you begin each month's report with a blank copy of your customized SWMOR. However, if you insist on using a completed report from a previous month as your starting point, you must click on the [OK] button rather than the [CANCEL] button, so that the SWMOR will reset the disinfectant types to your default values.

Enter the Monthly Data about the Plant (on Page 2)

After you have customized your SWMOR file to describe your plant, you need to enter the plant data at the top of the **P2-Turbidity Data** worksheet as shown in Figure 2.9. The two spreadsheets copy whatever you type in these cells onto the other pages.

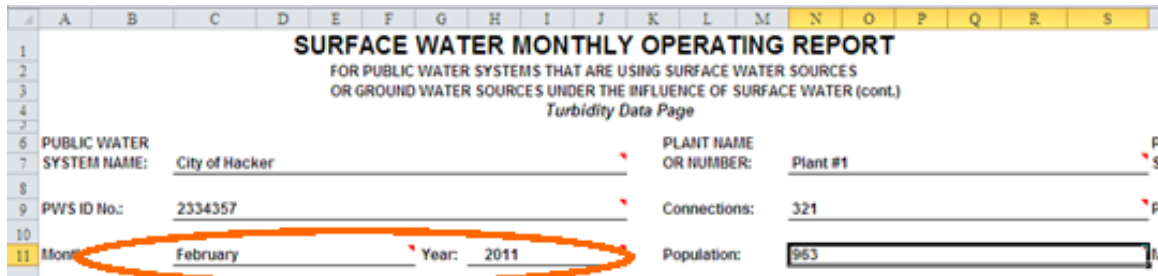


Figure 2.9. Monthly data section of spreadsheet.

Month/Year

Use the drop-down lists to select the month and the year in which your plant collected the data.

NOTE

We have added a new feature that allows you to change the years in the drop-down list.

The value of the first year in the list can be changed by changing the value shown in cell AQ2 located on the right-hand side of the **P.2-Turbidity Data** worksheet.

Connections (Community Systems)

This cell appears only on page 2 of the SWMOR. Enter the number of connections your water system serves.

You must complete this cell if your water system is a water-supply corporation, municipal water supplier, or other community water system. RV parks, industrial facilities, and other non-community water systems do not have to complete this cell.

Population (Water Wholesalers and Non-community Systems)

This cell also appears only on page 2 of the SWMOR. Enter the maximum number of customers your water system serves during this reporting month.

You must complete this cell if your water system sells treated water to other public water systems or is a non-community water system. Community water systems that do not sell water to other public water systems do not have to complete this cell.

NOTE

The turbidity and disinfection requirements for surface water treatment plants are based on the total population served by the plant. Consequently, a system must report the approximate population that it serves through both the wholesale and retail connections that it supplies.