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System Cost Model User's Manual

David Shropshire

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System Cost Model User's Manual

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Published June 1995

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System Cost Model

User's Manual

Version 1.2

Prepared for:
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System Cost Model User's Manual
Version 1.2

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ABSTRACT

The System Cost Model (SCM) was developed by Lockheed Martin Idaho Technologies in Idaho Falls, Idaho and MK-Environmental Services in San Francisco, California to support the Baseline Environmental Management Report sensitivity analysis for the U.S. Department of Energy (DOE). The SCM serves the needs of the entire DOE complex for treatment, storage, and disposal (TSD) of mixed low-level, low-level, and transuranic waste. The model can be used to evaluate total complex costs based on various configuration options or to evaluate site-specific options. The site-specific cost estimates are based on generic assumptions such as waste loads and densities, treatment processing schemes, existing facilities capacities and functions, storage and disposal requirements, schedules, and cost factors. The SCM allows customization of the data for detailed site-specific estimates. There are approximately forty TSD module designs that have been further customized to account for design differences for nonalpha, alpha, remote-handled, and transuranic wastes. The SCM generates cost profiles based on the model default parameters or customized user-defined input and also generates costs for transporting waste from generators to TSD sites.

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1. Introducing System Cost Model

1. Introduction

System Cost Model (SCM) is a waste management analysis computer program that calculates the size and cost of both new and existing waste treatment, storage, and disposal (TSD) facilities. The program evaluates and determines the most efficient method of managing current and future quantities of waste.

1.1 Overview of System Cost Model

SCM is designed to be user-friendly. It has been developed by experienced engineering and scientific professionals. As an information gathering and reporting tool, SCM enables the user to evaluate and prepare for the future.

1.1.1 Waste Types and Subtypes

SCM is designed to handle the modeling of costs for different types of waste. SCM uses two different terms to classify types of waste: "waste type" and "waste subtype." These terms are used throughout the SCM program and this manual when referring to waste.

Waste type refers to major classifications of waste; e.g., low-level waste (LLW), mixed low-level waste (MLLW), transuranic waste (TRUW), etc.

Waste subtype refers to the sub-classification of the above waste types; e.g. alpha (A), nonalpha (NA), contact-handled (CH), etc.

Refer to *Appendix A1.1 Waste Type Abbreviations* for a complete list of the waste types and subtypes handled by SCM.

1.1.2 Creating a New Case or Loading an Existing Case

Working with SCM starts with either creating a new case or editing an existing one. When creating a new case, the user will start by using a series of

on-screen forms to supply basic information to SCM, such as what types of waste the case will initially contain. SCM uses this information to build a new case. SCM then leads the user through the steps of changing the information associated with a case. These steps are described in *Section 1.1.3 Editing a Case*.

When loading an existing case, simply select the name of the case from the list of available cases.

1.1.3 Editing a Case

There are four required and four optional categories of information that can be changed for a SCM case. The required categories include waste loads, TSD scenarios, site schedules, and facility profiles. The optional categories include inflation factors, cost factors, other site costs, and Work Breakdown Structure (WBS) scale factors. Data from the four *required* categories *must be provided* for the program to run calculations successfully, while the four optional categories all have defaults and it is at the user's discretion whether to make any changes.

All of the commands for editing a case are located in the **Edit** menu. The case is saved with the same name by using **Case, Save** (this option overwrites the original case), or saved with a different name by selecting **Case, Save As**.

1.1.4 Running Calculations

Once the information is entered, the model can be calculated using the **Run!** menu item. SCM determines the operational schedules and duration, existing module types, module capacities and types of waste handled by these modules, and costs and labor requirements for new and existing facilities.

There are three phases in the calculation process: error checking, capacity calculations, and cost computations. SCM displays progress information as the case runs the calculation process to completion. When the last calculation is complete, SCM displays a dialog box to that effect.

Generally, calculation time ranges from 2 to 10 minutes, depending on the type of hardware used and the amount of data associated with the case.

1.1.5 Generating and Evaluating Reports

After the user has input the data and run the calculations, the **Report** menu can be used to generate a variety of case summary reports, site detail reports, graphs, and timelines to aid in the evaluation of a particular case. A preview function allows the user to quickly choose the reports needed.

After the user has reviewed the reports generated by SCM, generally the same cycle will start again, by editing some of the parameters of the case, running calculations, and examining the output from reports.

1.2 About the Manual

This manual assumes that the user is familiar with Microsoft Windows. If the user is new to Windows or is not familiar with icons, list boxes, and dialog boxes, the Microsoft Windows booklets *Getting Started with Microsoft Windows* or *Microsoft Windows User's Guide* are helpful references.

Furthermore, it is recommended that the user browse through this entire SCM manual before using this application. If help is required while using SCM, access the SCM Help System by pressing **F1** or by selecting **Help** from the menu bar.

1.2.1 Section Overviews

The SCM manual is organized into six major sections, with four appendices. A brief overview of the information included in these sections is provided below.

Section 1. Introducing System Cost Model: Summarizes the application and its main functions. Describes the layout and content of the manual and lists some important technical support information.

Section 2. Installing System Cost Model: Guides the user through the setup procedure.

Section 3. Working with Cases: Describes SCM common features and all of the commands in the **Case** pull-down menu. Teaches the user how to open, create, delete, copy, save, and close cases.

Section 4. Editing Cases: Describes each of the commands in the **Edit** pull-down menu. Teaches the user how to edit waste loads, TSD scenarios, site schedules, facility profiles, inflation factors, cost factors, other site cost factors, site information, and case notes. The information in this section applies to both new and existing cases.

Section 5. Calculations and Reports: Describes how to run calculations using the **Run!** command and how to generate each of the reports and graphs in the **Report** pull-down menu.

Section 6. Using the Help System: Describes how to access and use the SCM Help System.

Appendix 1: Abbreviations and Codes: Lists the various waste type abbreviations, site codes, and module codes used throughout the manual and SCM program.

Appendix 2: Report & Graph Samples: Includes samples of each report and graph.

Appendix 3: Error Messages: Lists all SCM error messages, with an explanation of the cause and solution for each message.

Appendix 4: Calculation Assumptions: Details all assumptions that are part of the calculation process SCM uses to determine costs associated with a case.

In addition, the *Table of Contents*, the *Index*, and the *Glossary of Terms* are included in this manual as resources for locating specific pieces of information. The *Table of Contents*, located at the beginning of the manual, may be used when it is necessary to find a specific topic. The *Index*, located at the end of the manual, is a helpful resource when it is necessary to search for specific terms in alphabetical order. Finally, the *Glossary of Terms*, also located at the end of the manual, is a ready reference when looking for word definitions, abbreviations, and acronyms related to SCM.

1.2.2 Section Highlights

If SCM is not already installed on the computer, see *Section 2. Installing System Cost Model* for instructions. For an overview of SCM and its basics, refer to *Section 1. Introducing System Cost Model* and *Section 3. Working with Cases*.

To start creating a new case, review *Section 3.3 Creating a New Case*. Once a new case has been created, or when editing an existing one, review *Section 4. Editing Cases*. This section describes the procedure for making changes using the **Edit** menu and provides detailed information on data entry for the various dialog boxes.

To run calculations and generate reports for either a newly created or recently edited case, refer to *Section 5. Calculations and Reports*.

For ease of use, the information in this manual is also accessible through the Help System. A guide to using the Help System is presented in *Section 6. Using the Help System*.

Finally, use the *Table of Contents* to locate specific topics, the *Index* to alphabetically search for specific terms, and the *Glossary* to find the meanings of words, abbreviations, and acronyms related to SCM.

1.2.3 Manual Conventions

This manual follows a format which enables the user to quickly locate information. A summary of these conventions is listed below.

Convention 1 Some functions require the use of a command button. When describing a particular function that requires selecting a button, check box, or menu item,

the text of that action appears bolded within the text. Also, names of keys, such as the **Enter** key, are presented in this same typeface.

Convention II Throughout the manual, whenever a bolded word is followed by another bolded word and separated by a comma, the first word is a menu heading, and the second word is a command within that menu. For example:

Help, Contents refers to the Help section on the menu bar and Contents within the Help menu.

Convention III References made to sections of this manual that describe a function in greater detail are shown in italics. For example:

Refer to *Section 3.1 Starting System Cost Model* for a more detailed description.

Convention IV The on-line Help System follows the subject headings used in this manual.

Convention V The sections in the body of the manual are structured around the SCM menus and completely describe each main dialog box as accessed through its menu command.

1.3 Obtaining Technical Support

Help, About SCM To access technical support information while using SCM, simply select the **Help** menu and choose **About SCM**. Refer to *Section 6.3 Reviewing Information About System Cost Model* for details.

For questions that cannot be resolved by using the SCM manual and Help System, contact David Shropshire:

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(208) 526-6800

When contacting the above-listed number, the user should have both the computer and the *System Cost Model User's Manual* within reach. The user will be asked to provide the SCM version number, basic hardware specifications, and a description of the problem. The user should also be prepared to provide, print, and fax information pertaining to the system's configuration including "win.ini" and "system.ini" settings as required.

2. Installing System Cost Model

2. Introduction

This section details the installation process, which involves copying the contents of the SCM disks to a computer, so that the SCM program is ready to use. The process takes approximately ten minutes.

For those familiar with Windows and its applications, a summary of the installation process follows: insert Disk 1; select **File, Run** from the Microsoft Windows Program Manager; type **a:setup**; and press the **Enter** key. When prompted, insert the indicated disks. A Program Manager group and icon will be created for SCM.

2.1 Package Contents

- Four high-density 3½-inch disks
- One System Cost Model User's Manual

2.2 System Requirements

In order to efficiently use SCM to its fullest capacity, the computer system on which the program is installed should meet the following requirements:

- Computer using DOS 5.0 or later version and Microsoft Windows 3.1
- 486SX 33MHz microprocessor or greater
- 20 Megabytes free hard disk space
- 4 Megabytes RAM (8MB or more recommended)

2.3 Setup Procedure

SCM installation procedure is similar to that of other Windows programs. The entire installation should take approximately ten minutes.

Three SCM subdirectories will be created during the installation process. Two of these subdirectories, "data" and "default," store the files necessary to run the application while the third, "betacase.scm," stores files of a sample case.

For future reference, once saved, each case will be located in its own subdirectory. These case subdirectories can be recognized by their ".scm" extension. In the Windows Program Manager, SCM creates the System Cost Model program group which contains the single SCM icon.

Start Windows Turn on the computer and start Microsoft Windows.

If Windows is already running, close all other programs except the Windows Program Manager. This is important because SCM Setup needs access to certain key files that other applications may be using.

If the computer does not start Windows automatically, it can often be started by typing **win** and pressing the **Enter** key after the computer has started.

Insert Disk 1 Insert Installation Disk 1 into the appropriate floppy drive—either drive A or B (referred to as the A-drive throughout this manual).

Select File, Run Select the **File** menu on the Program Manager, then select the **Run** command.

Enter a:setup In the Run dialog box, type **a:setup** and then select the **OK** button.

Once the setup procedure is initialized, it begins installing files onto the hard drive. The dialog box will appear as shown below.

A dialog box displays each SCM file, as it is being copied, under the Source File heading while Setup copies the files from the floppy drive to the hard drive. Likewise, the drive, directory, and filenames are displayed under the Destination File heading as Setup installs the file on the hard drive.

As the installation process for disk 1 continues, the horizontal bar below the Destination File heading displays the percentage of the installation process that has been successfully completed.

Insert Disk 2 Setup prompts the user to remove Disk 1 from the floppy drive and insert Disk 2.

Select the **OK** button to continue installing files from Disk 2.

This process repeats itself for each of the four disks as Setup installs SCM onto the hard disk.

When the installation process is complete, Setup returns to the Program Manager. When reinstalling SCM, duplicate icons may appear in the SCM program group. Although they will not cause any harm, simply delete any old SCM icons. Each of the icons will have the same effect, even if they are labeled differently.

From the Program Manager, double click on the **SCM** icon to access the application. Refer to *Section 3.1 Starting System Cost Model* for more detailed information.

3. Working with Cases

3. Introduction

This section describes how to use some of the common SCM command features including the menu bar, status bar, and certain buttons. It explains the main window that appears when SCM is launched and each of the commands in the **Case** menu.

3.1 Starting System Cost Model

Double click on the SCM icon in the Program Manager to launch SCM.

A dialog box appears asking whether to create a new case, open an existing one, or exit to the SCM menu. The box also displays information regarding technical support for SCM users.

From this dialog box, the user can choose to open a case, start a new case, or cancel to the SCM menus.

- Open Case** Select **Open Case** to open an existing SCM case for editing; see *Section 3.4 Opening a Case* for more information.
- New Case** Select **New Case** to create a new SCM case; see *Section 3.3 Creating a New Case* for more information.

3.2 Using Common System Cost Model Features

Certain key elements in SCM appear throughout the application. The menu bar at the top of the SCM window is used to navigate and execute commands. The status bar at the bottom of the SCM window displays the name of the case and the type of waste currently being edited. Many traditional Windows and SCM buttons are also used to execute commands.

3.2.1 Using the Menu Bar

The menu bar at the top of the SCM window is the most commonly used navigating tool. To initiate a menu bar command, select a menu heading to view the list of commands in its pull-down menu. This is done by placing the mouse arrow on the menu bar heading and holding down the left button. Select a command from the menu by dragging the mouse arrow to the function of choice so that it is highlighted, then release the mouse button to access that function. The menu bar has the following selections:

Case Edit Run! Report Help

To access the pull-down menu without using the mouse, simply press the **Alt** key and the underlined command letter from the menu title at the same time. Next, press the underlined letter of the desired command.

Help, Contents For example, select **Help** on the menu bar by pressing the **Alt** and **H** keys, and then select the **Contents** command by pressing **C** to access the SCM Help Contents window.

3.2.2 Viewing the Status Bar

The status bar at the bottom of the SCM window displays the name of the case on the left and the type of waste currently being edited in the center.

3.2.3 Using Common Buttons

The following buttons commonly appear throughout the application. In fact, many of these command buttons are common Windows elements. Even for new users, most of the buttons are self-explanatory and this section will only need to be reviewed occasionally. For more information about these and other Windows features, refer to the *Microsoft Windows User's Guide*.

Done When finished using a dialog box, select the **Done** button to acknowledge the changes and move on.

Cancel When using a dialog box, select the **Cancel** button to return to the previous dialog box and not save changes.

Undo Edits To return all entries in the current dialog box to their previous settings, select the **Undo Edits** button. This must be selected before pressing the **Done** button.

Until data in the dialog box are changed, the **Undo Edits** button appears light gray and remains unavailable. Also, once the **Done** button has been selected and the data in a dialog box have been saved, the **Undo Edits** button will become unavailable.

In some dialog boxes, data will be saved for one set of information when another on-screen control is selected. For example, selecting a different waste-subtype on the waste load screen will first save information for the current waste subtype.

Drop-Down Lists To enter data into a list box, select the box itself or the **Drop-Down List** button, then select the appropriate item in the drop-down list that appears.

Use the **Vertical Scroll Bar** to display choices that are not in the current list, or type the first letter of the selection. The automatic list search feature highlights the first list item beginning with that letter.

Scroll Bars Horizontal and vertical **Scroll Bars** allow viewing of data not visible in the current list.

These scroll bars are only present when the data exceed the screen space available. Click on the scroll bar, drag the scroll box, or click the scroll arrows to view this data.

Option Buttons **Option Buttons** allow selection of one option over another.

Click on an unmarked option button to mark it and thereby select its associated option. Doing this will deselect all other options in the group.

Check Boxes **Check Boxes** allow selection of one or more options.

Click on an unmarked check box to mark it and thereby select its associated option. Click on a marked check box to deselect it.

Spinners Spinners allow the user to choose from a range of sequential numerical values without having to type a value individually.

For example, this is used in SCM for selecting a year from a range of years. Click on the up arrow to increase the value, and the down arrow to decrease the value, or click inside the box and type in a number.

3.3 Creating a New Case

New Case To create a new case when first starting SCM, select the **New Case** button.

Case, New Once in the system, the user can create a new case by selecting **Case, New** from the menu bar at the top of the SCM window.

When creating a new case, SCM asks a series of questions, using the answers supplied to set up the new case. These questions are divided into two sets. The first set establishes basic information associated with the case and is described in the section below. The second set allows the user to change the values associated with the case and is described in *Section 4. Editing Cases*.

3.3.1 Selecting Default Waste Loads

The first step of creating a new case is to select which default waste loads to retain from all available waste types. SCM comes with a set of default data that includes existing waste loads for all sites. All waste types supported by SCM will be presented in this dialog box.

To select a default waste load to retain, simply click on a waste type with the mouse. To select more than one waste load, hold down the **Control** key on the keyboard while clicking with the mouse on the desired waste types.

Select Waste Types After the desired waste types have been selected, choose the **Select Waste Types** button to proceed to the next step. At this point, SCM copies the necessary case files, validates several case attributes based on the waste type selection, and prepares the case for data entry.

Select the **Cancel** button to return to the initial SCM dialog box or to the menu bar.

3.3.2 Retaining Waste Loads

After selecting the waste types to retain from the default waste loads, SCM asks for which specific sites waste loads should be retained. It does this once for each waste type that was selected to retain in the step above.

Retain Waste Loads From this dialog box, hold down the **Control** key on the keyboard while selecting sites by clicking the mouse on the site name. The **Select All Sites** button may be used to automatically mark all the sites; similarly, the **Deselect All Sites** button clears the marks on all sites. When all pertinent sites have been selected, click the **Retain Waste Loads** button.

If only some sites have been selected, SCM will present a list of the sites that have not been selected for verification by the user.

Clear Waste Loads Click on the **Clear Waste Loads** button to clear the displayed list of sites in the Clear Waste Loads dialog box. Otherwise, click on the **Cancel** button to return to the Retain Waste Loads dialog box.

If all sites were selected, SCM presents a dialog box for verification by the user.

3.3.3 The New Case Dialog Boxes

After a new case has been set up by the user, SCM automatically presents a series of dialog boxes to allow the user to change or add information in the case. These dialog boxes are the same as those used to edit existing cases. The titles of the dialog boxes are listed below as Steps 1-5, along with the section of the manual in which each individual dialog box is described.

Step 1: Select Waste Type	4.1 Selecting the Current Waste Type
Step 2: Edit Waste Loads	4.2 Editing Waste Loads
Step 3: Edit TSD Scenario	4.3 Editing Treatment, Storage, and Disposal Scenarios
Step 4: Edit Site Schedules	4.4 Editing Site Schedules
Step 5: Edit Facility Profiles	4.5 Editing Facility Profiles

In this series, the user first chooses a waste type, and then works with the associated information for that waste type (Steps 2-5). After completing this sequence, SCM will present the same sequence again. This allows each waste type to be edited, one at a time. Note that the Facility Profile dialog box is presented for each waste type selected, even though the information presented applies to the entire case.

For information regarding how to use each individual dialog box, refer to *Section 4. Editing Cases*.

3.3.4 After Completing the New Case Dialog Boxes

Once the series of dialog boxes listed above has been completed for all the selected waste types, the user is returned to Step 1 (Select Waste Type). To leave the series, click on the **Cancel** button.

From this point, the user may now either run calculations (see *Section 5.1 Running Calculations*) or edit other case information (starting with *Section 4.6*

Editing Inflation Factors). For either selection, it is a good idea to save the case at this point. For guidance on saving a new case, see *Section 3.5 Saving a Case*.

To return to editing information for the case, refer to *Section 4. Editing Cases*.

3.4 Opening a Case

Open Case To open an existing case when first starting SCM, select the **Open Case** button. The Open Case dialog box appears, allowing the user to select the appropriate case to open.

Case, Open Once in the system, open a case by selecting **Case, Open** from the menu bar.

SCM presents the Open Case dialog box which lists all SCM cases in the “Cases” list and their associated notes in the “Case Notes” list. The case at the top of the Cases list automatically appears highlighted. If this is not the desired case, use the mouse or arrow keys to highlight the appropriate case.

Open Case Once the desired case is highlighted, choose the **Open Case** button, or double click the case name to automatically open it. To not open a case at this time, select **Cancel**.

SCM copies the necessary case files and validates several case attributes, preparing the files for use. After SCM opens the selected case, if the calculations are not up-to-date, a dialog box appears asking the user to run the calculations now.

Select **Yes** to run the calculations based on the information currently in the case files. Refer to *Section 5.1 Running Calculations* for a more detailed description.

Select **No** to proceed to the next step in loading a case.

Once calculations have completed, or if they were already up-to-date, or if **No** is selected from the above dialog box, the user will be presented with the final question of selecting a waste type with which to work. Because SCM handles cases that contain more than one kind of waste, the type of waste to work with initially must be selected. This choice will be displayed even if the loaded case only has one type of waste.

Select Waste Type Select the type of waste to work with by clicking on its name in the list, and then clicking on the **Select Waste Type** button.

Cancel To not select a waste type at this time, select **Cancel**. However, a waste type must be selected to perform any of the editing functions within SCM. To choose a waste type to edit after leaving this dialog box, select **Edit, Select Waste Type** from the menu.

3.5 Saving a Case

Case, Save To save modifications to an existing open case, select **Case, Save** from the menu bar.

The Save command appears light gray and is unavailable when saving a newly created case for the first time (see *Case, Save As* below), or if a case has just been opened, but modifications have not been made to it.

If an existing case has been opened and modified, selecting **Case, Save** updates the case with the new changes.

As with other applications, be sure to save often in case of unexpected problems.

Case, Save As To save a new case for the first time or to save a copy of an existing open case under a different name, select **Case, Save As** from the menu bar. When using “Save As,” a new name must be provided with which to save the case. If the same name is chosen, or the name of another case, an error message will be displayed.

OK For a case that was created that is being saved for the first time, the Save Case dialog box asks for a name for the case. Any notes about the case for future reference can also be entered here. When complete, select the **OK** button.

The image shows a 'Save Case' dialog box. At the top, the title bar says 'Save Case'. Below the title bar, there are two labels: 'Case Name:' and 'Case Note:'. The 'Case Name:' label is followed by a text field containing the text 'UNTITLED .SCM'. The 'Case Note:' label is followed by a large, empty text area. At the bottom of the dialog box, there are two buttons: 'OK' and 'Cancel'.

To save a copy of an existing case under a different name, first open the case using the **Case, Open** command. Once the case is open, select **Case, Save As**. Modify the name of the case and enter any notes that might be useful for future reference. When complete, select the **OK** button.

3.6 Closing System Cost Model

Case, Exit Leave SCM by selecting **Case, Exit** from the menu bar at the top of the SCM window. If the menu bar is not available because another dialog box is being displayed, simply cancel or close the dialog box, then choose **Exit** from the **Case** menu.

If changes have been made to an open case, SCM asks whether to save those changes before exiting. SCM returns to the Program Manager or any other application that might be running.

3.7 Deleting a Case

Case, Delete Once in the system, delete an existing case by selecting **Case, Delete** from the menu bar. The Delete Case dialog box appears and allows selection of the appropriate case to delete.

The Delete Case dialog box lists all SCM cases in the **Cases** list along with their associated notes in the **Case Notes** list. The case at the top of the Cases list automatically appears highlighted. If this is not the desired case to delete, use the mouse to click on the appropriate case. Note that the open case cannot be deleted. To delete the currently open case, a different case must first be opened.

Delete Case Once the case to delete has been highlighted, choose the **Delete Case** button, or double click on the case name.

To not delete a case at this time, select **Cancel** to return to the menu.

3.8 Copying Cases

Case, Copy To Once in the system, an existing case can be copied from the SCM directory on the hard disk to a floppy or another hard disk by selecting **Case, Copy To** from the menu bar. In other words, this function exports a copy of the case from its

source to another location. The Copy Case To dialog box appears and allows the selection of the appropriate case to copy.

The Copy Case To dialog box lists all SCM-related cases in alphabetical order in the **Cases** list along with the associated notes in the **Case Notes** list. The case at the top of the **Cases** list automatically appears highlighted. If this is not the desired case to copy, click on appropriate case to highlight it.

Destination Drive The **Destination Drive** box displays the letter of the drive to which the case will be copied.

Click the **Drop-Down List** button and select the appropriate drive. For example, to copy the case to the floppy drive, select A:.

Select Case Once the case to copy has been highlighted, and the appropriate destination drive has been selected, choose the **Select Case** button, or double click on the case name to automatically copy its files.

To not copy the case at this time, select the **Cancel** button to return to the menu.

Case, Copy From Once in the system, a case can be copied from the floppy drive or another hard disk by selecting **Case, Copy From** from the menu bar. Using this command imports a copy of the case from its source to the drive where SCM resides. The Copy Case From dialog box appears and allows the selection of the appropriate case to copy.

The Copy Case From dialog box lists all SCM-related cases in alphabetical order in the **Cases** list and their associated notes in the **Case Notes** list. The case at the top of the **Cases** list automatically appears highlighted. If this is not the desired case to copy, click on another choice to highlight the appropriate case.

Source Drive The **Source Drive** box displays the letter of the drive from which the case will be copied.

Click on the **Drop-Down List** button, then select the appropriate drive from the drop-down list. For example, to copy the case from the floppy drive, select A:.

Select Case Once the case to copy has been selected, and the appropriate source drive is highlighted, choose the **Select Case** button, or double click the case name.

To return to the menu and not copy a case at this time, select the **Cancel** button.

The Copy To and Copy From features are used to copy cases to and from two different disk drives. To copy a case onto the same drive in which it is currently saved, use **Copy, Save As**; see *Section 3.5 Saving a Case* for more information.

3.9 Merging Cases

Case, Merge Two or more cases can be merged by selecting **Merge** from the **Case** menu selection. This function allows the waste loads, TSD scenarios, and all other case information from multiple cases to be combined into a single, new case that can be used on its own.

The Merge Cases dialog box appears and allows the selection of the cases to combine. The dialog box is shown below.

When presented with this dialog box, first type the name of the new case name that the merged cases will be put into by typing in the box labeled "Merged Case Name."

Then, select the cases to be merged by clicking on them while holding down the **Control** key. To deselect a case, simply click on it a second time, again while holding down the **Control** key.

Only cases from the current version of SCM will be displayed in the list. To merge cases from previous versions, first open each case and save it as version 1.2.

Merge Cases When the cases to merge have been selected, click on the **Merge Cases** button.

The second step in merging cases is to choose from which case to take cost factors and facility profiles. Because this information cannot be merged, a single case must be selected from the dialog box below.

Select Case Click on the desired case from which to take cost factors and facility profiles to highlight the case and then click on the **Select Case** button.

The final step of merging cases is to select for each case that is being merged which sites and waste types to include, as shown in the dialog box below. Note that each waste type and site combination available in the case is displayed.

Select Sites Select the waste type/site combinations to bring into the merged case by clicking on them while holding down the **Control** key. To select all sites without having to select them individually, use the **Select All Sites** button. Similarly, use the **Deselect All Sites** button to select none of the sites. When done, click on the **Select Sites** button. The cases will be merged and saved into the specified case name. This process may take several minutes.

3.10 Combining Results

Case, Combine Results The results of calculations of two or more existing cases can be combined by selecting **Combine Results** from the **Case** menu selection. This function allows the results of two or more cases to be combined into one "summary" case, allowing for the generation of reports for the combined case. Combined cases cannot be edited; only reports may be generated from them.

The Combine Case Results dialog box appears and allows selection of the cases to be combined. The dialog box is shown below.

The Combine Case Results dialog box lists all SCM cases in alphabetical order in the **Cases** list along with the associated notes in the **Case Notes** list. Hold down the **Control** key while clicking on the cases to select multiple cases. The selected cases will appear highlighted.

Only cases from the current version of SCM will be shown. To combine results of cases from previous versions, each case must be opened, run, and saved.

Combined Case Name Input the filename in the Combined Case Name box to name the newly combined result case.

Combine Cases Once the cases to combine and the new case name have been selected, select the **Combine Cases** button. To return to the menu, and not combine the cases at this time, select the **Cancel** button.

4. Editing Cases

4. Introduction

The **Edit** menu allows altering of previously entered data. Data is edited to correct entry mistakes or alter specific components of a case so that cases can be compared for cost analyses.

SCM accepts data input from four required categories and four optional categories. The four required categories are waste loads, TSD scenario, site schedules, and facility profiles. The optional categories, which allow individual refinement of select model assumptions, are inflation factors, cost factors, other site costs, and WBS scale factors.

Data from the four required categories must be complete for the program to work. It is at the user's discretion whether to make any changes to the four optional categories. Remember, for an existing case the original data defaults may have been overwritten or erased by the previous user of that case.

When editing a case, use the selections on the **Edit** menu bar to select any of the four required categories and any of the four optional categories for editing. Data from the waste loads, TSD scenarios, site schedules, other site costs, and WBS scale factors are different for each waste type in the case. To edit a waste type other than the currently selected waste type, use the **Edit, Select Waste Type** menu command, as described in *Section 4.1 Selecting the Current Waste Type*.

It is recommended that edits to the required categories should be made in the order listed in the menu bar, because edits in certain categories may require adjustments from other categories below them on the menu list. For example, the input necessary for the TSD scenario is dependent on the waste loads, and certain changes to the waste loads may require additional input in the TSD scenario.

Once the information is entered, the model results can be calculated using the **Run!** command. SCM determines the operating schedules, capacities, and costs for both new and existing facilities.

To use the editing features, open a case (*Section 3.4 Opening a Case*) or start a new one (*Section 3.3 Creating a New Case*). When working with a new case, SCM automatically leads the user through all four of the required input categories.

4.1 Selecting the Current Waste Type

Edit, Select Waste Type SCM can store more than one type of waste (MLLW, TRUW, etc.) in a single case. When editing a case, SCM allows editing on only one type of waste at a time. Use the **Edit, Select Waste Type** menu command to select the type of waste for which to edit data.

Select Waste Type To choose a waste type to edit, click on the type of waste in the list of available waste types, and choose the **Select Waste Type** button. After selecting a waste type, its name is displayed in the status bar (see *Section 3.2.2 Viewing the Status Bar*).

To leave the Select Waste Type dialog box without selecting a waste type to edit, select the **Cancel** button.

4.2 Editing Waste Loads

Edit, Waste Loads The **Edit, Waste Loads, Edit** function allows editing of the quantity of waste present and generated at each site. For a given site and waste subtype, the legacy waste, rate of waste generation, and waste densities by waste category default to the values obtained using site-specific data. These values may be changed by the user.

For each site and waste subtype that has waste values, it is possible to enter the number of years of waste generation, beginning year of waste generation, and location and duration of pre-treatment storage. This information will be used to determine the quantity of waste and when the waste will need to be processed.

To edit waste loads of an existing case, select **Edit, Waste Loads, Edit** from the menu bar to bring up the Edit Waste Loads: Select Site dialog box.

Select the site associated with the waste loads that require editing. A list of all available sites appears in the dialog box as shown below.

SCM displays the sites in alphabetical order. Use the **Vertical Scroll Bar** to display sites that are not currently shown.

Edit Site Highlight the appropriate site by clicking on it. Select the **Edit Site** button to edit waste loads for the selected site, or double click on the site name.

After the waste loads for a site have been changed, the name of the changed site will appear with an asterisk ("*") preceding it in the Edit Waste Loads: Select Site dialog box. This is to emphasize that changes have been made to the information for that site. This standard is used on other dialog boxes throughout SCM.

Done Select **Done** to return to the menu from the Edit Waste Loads: Select Site dialog box.

Once the site is selected, SCM displays the Edit Waste Loads dialog box, shown below.

Use the **Spinner** to increase or decrease this number in one year increments, or click on the number and type the new value. The value in the Site Generation Years box is multiplied by the generation rate in cubic meters per year to

the current site, waste type, and waste subtype.

The **Site Generation Years** box displays the duration of waste generation for case. Default values are provided for each of these entries.

The length of time that sites will be generating waste and the beginning year of waste generation affects the waste totals and project scheduling. These values may be selected for each site, waste type, and waste subtype within a

4.2.2 Selecting the Site Generation Years and Beginning Year

On the Edit Waste Loads dialog box, the waste subtype selector, located in the upper-left corner, allows the user to select which subtype of waste is edited (alpha, nonalpha, etc.). The waste type being edited, displayed in the status line, dictates which waste subtype choices are available.

Select a waste subtype from the drop-down list presented. Selecting a waste subtype causes the rest of the information in the dialog box to be updated, because waste load information is dependent on a given site, waste type, and waste subtype.

When selecting a different waste subtype, information that has been entered for the current waste subtype is saved.

4.2.1 Selecting Waste Subtypes

Non-alpha

Site Generating Years: 30
Beginning Year: 2000
Pre-Treatment Storage Years: 0

Site:
☐ Treating
☐ Generating

Densities:

1100 Wastewaters
1200 Aqueous slurries
2110 Aqueous/halogen, organic liquids
2120 Aqueous/nonhalogen, organic liquids
2210 Halogenated pure organic liquids
2220 Nonhalogenated pure organic liquids
3110 Inorganic particulates
3120 Inorganic sludges
3140 Salt waste
3150 Solidified inorganic process residue
3160 Inorganic chemicals
3210 Organic particulates
3220 Organic sludges
3230 Organic chemicals
4100 Contaminated soils
4200 Contaminated soils/debris

Volume m ³	Gen Rate m ³ /Yr	Total
330.00	0.97	29.10
52.00	0.10	1560.00
172.63	3.00	5178.90

Undo Edits

Clear Loads

Done

Edit Waste Loads: Hanford

calculate the total waste for each waste category. The total waste is calculated when **Enter** is pressed or when the cursor is moved to another input box on the dialog box.

Beginning Year The **Beginning Year** box displays the first year of waste generation at the site, for the selected waste type and subtype. This is also the year for which legacy volumes are specified.

Use the up or down arrow to increase or decrease the year in one year increments, or click on the number and type the new value.

4.2.3 Entering Pre-Treatment Information

Pre-Treatment Information regarding the storage of waste prior to treatment is selected from the **Pre-Treatment** group box. These choices affect the storage time for waste before treatment begins. Enter the number of years the pre-treated waste is stored and whether the waste is to be stored at the generating site or the treatment site. This selection is made for each site and waste type/subtype in a given case.

Storage Years The **Storage Years** box displays the number of years the pre-treated waste is stored.

Use the up or down arrow to increase or decrease this value in one year increments, or click on the number and type the value.

The site option buttons (**Generating** or **Treatment**) determine whether pre-treated waste is stored at either the generating site or the treatment site.

Generating A marked **Generating** option button indicates that the pre-treated waste is stored at the generating site.

Treatment A marked **Treatment** option button indicates that the pre-treated waste is stored at the treatment site.

The user may toggle between these two choices. If the storage years is 0, then this option is displayed in light gray and is unavailable.

4.2.4 Entering Waste Stream Volume and Generation Rates

When a waste subtype is selected, the current values for all associated information are displayed. Data may be entered into any of the waste stream fields. Waste streams are categories of waste that are distinguishable by their origin, physical state or form, composition, radioactivity, or a combination of these characteristics. Because of screen size constraints, the waste categories are presented in two sets.

For each waste stream, enter the legacy volume in cubic meters (Volume m³) and the generation rate in cubic meters per year (Generation Rate m³/yr). The

legacy volume is the original, or existing, volume at the start of the beginning year of waste generation. For default values, this is the waste present as of the start of the current year. The generation rate is the estimated rate of waste generation at that site. The third column automatically totals the waste volume to treat, and is calculated by adding the legacy volume to the product of the generation rate and the site generation years. The calculation is shown below:

$$\text{Legacy Volume (m}^3\text{)} + [\text{Generation Rate (m}^3\text{/yr)} * \text{Site Generation Years (yr)}] = \text{Volume of Waste Requiring Treatment (m}^3\text{)}.$$

To change the waste values, click within a cell to position the cursor and enter the appropriate number (either a whole number or a decimal). The number is entered by moving to another cell or pressing the **Tab** key. SCM computes the treatment volume using the calculation shown above and the values entered.

Second Set The 32 waste streams are divided into two separate sets. When the Edit Waste Loads dialog box is first accessed, SCM displays the first set of waste streams. When viewing the first set of data, the **Second Set** button appears at the bottom of the dialog box. Use this button to display the second set of waste streams.

First Set When viewing the second set of waste streams, the **First Set** button switches the user to the screen which displays the first set of waste streams.

Whenever switching between editing the first and second sets, changes made will be saved and undo edits will no longer be available.

The waste stream categories in the first set are:

Wastewaters - waters that have been used and contain contaminants, such as those used in a manufacturing process.

Aqueous Slurries - watery mixtures of insoluble matter such as mud or lime.

Aqueous/Halogenated Organic Liquids - flowing, watery carbon compounds combined with either fluorine, chlorine, bromine, iodine, or astatine.

Aqueous/Nonhalogenated Organic Liquids - flowing, watery substances that contain carbon compounds in the form of plant or animal matter.

Halogenated Pure Organic Liquids - flowing, watery pure carbon compounds combined with either fluorine, chlorine, bromine, iodine, or astatine.

Nonhalogenated Organic Liquids - flowing, watery substances that contain carbon compounds in the form of plant or animal matter.

Inorganic Particulates - minute particles of mineral matter produced by drilling or boring, or obtained from settling operations.

Inorganic Sludges - precipitated solid mineral matter produced by water and waste treatment processes.

Salt Waste - waste that contains an abundance of salt.

Solidified Inorganic Process Residue - mineral matter firmly bound together as a result of time, pressure, or chemical reaction.

Inorganic Chemicals - mineral matter obtained by a chemical process.

Organic Particulates - minute particles of plant or animal matter obtained by drilling, boring, or settling operations.

Organic Sludges - precipitated solids of plant or animal matter produced by water and waste treatment processes.

Organic Chemicals - carbon compounds obtained by a chemical process.

Contaminated Soils - polluted soil extracted from the upper layer of the Earth's crust.

Contaminated Soils/Debris - polluted soil and debris extracted from the upper layer of the Earth's crust.

The waste stream categories in the second set are:

Metal Debris - an accumulation of metallic fragments.

Inorganic Nonmetal - contains neither carbon compounds nor metallic matter.

Asbestos Debris - debris containing asbestos, which is an inert fibrous mineral used as a noncombustible, nonconducting, or chemically-resistant material.

Organic Debris - contains carbon compounds in the form of plant or animal matter.

Heterogeneous Debris - contains a mixture of organic and inorganic matter.

Lab Packs with Metals - laboratory-controlled concentrated masses that include metals.

Elemental Mercury - a heavy, silver-white, poisonous metallic element.

Elemental Lead - a malleable metal often used to shield against radioactivity.

Beryllium - a gray, light, strong, brittle metallic element often used as a hardening agent in alloys.

Batteries - cells that furnish electric current.

Reactive Metals - metals that respond to a chemical or electrical stimulus by altering its chemical structure.

Explosives/Propellants - substances that expand rapidly when placed in certain environments.

Compressed Gases/Aerosols - substances similar to air in density that are reduced in size or volume using greater than atmospheric pressure.

Unknown Liquids - unidentified flowing liquids.

Unknown Solids - unidentified particles that are neither gaseous nor liquid.

Waste Suitable for Disposal - waste that requires no further treatment to meet requirements for disposal.

4.2.5 Entering Waste Stream Densities

Densities To view or enter the density of each waste stream, select the **Densities** button.

This dialog box displays the densities of the selected waste streams in kilograms per cubic meters (Density kg/m^3). Default values exist for all densities, but are displayed only for waste streams with nonzero waste loads.

	Density kg/m^3
1100 Wastewaters	961.0000
1200 Aqueous slurries	
2110 Aqueous/halogen. organic liquids	
2120 Aqueous/nonhalogen. organic liquids	942.0000
2210 Halogenated pure organic liquids	
2220 Nonhalogenated pure organic liquids	
3110 Inorganic particulates	
3120 Inorganic sludges	
3140 Salt waste	
3150 Solidified inorganic process residue	
3160 Inorganic chemicals	1198.0000
3210 Organic particulates	
3220 Organic sludges	500.0000
3230 Organic chemicals	
4100 Contaminated soils	1100.0000
4200 Contaminated soils/debris	

Done

To alter default densities, enter the densities in the same manner as data are entered into the volume and generation rate on the Edit Waste Loads dialog box. Densities are required for any waste stream with a specified waste load.

Done When finished, select the **Done** button to return to the Edit Waste Loads dialog box.

4.2.6 Navigating the Edit Waste Loads Dialog Box

Once the legacy volume, generation rate, density, and pre-treatment storage information has been entered for the appropriate waste streams, continue entering waste load information for other sites, or move on to other sections of SCM.

Clear Loads To clear the waste loads and set them to zero, select the **Clear Loads** button.

A dialog box appears to confirm the clearing of waste loads for the currently selected site and waste subtype. Select **Yes** to confirm this choice; once this command is executed it *cannot* be undone. Select **No** to leave this dialog box without clearing the waste loads.

Undo Edits If incorrect information is entered into the Edit Waste Loads dialog box, all entries can be returned to their previous settings by selecting the **Undo Edits** button.

Until data in the dialog box are changed, the **Undo Edits** button remains light gray and unavailable. Changes made in this dialog box will be saved if the Next Site, Prior Site, or waste subtype selectors are chosen, and Undo Edits will become unavailable.

Next Site To enter waste load information for the next site (in alphabetic order), select the **Next Site** button and repeat the Edit Waste Loads procedure (in *Section 4.2 Editing Waste Loads*). Changes made to the current site will first be saved automatically.

Prior Site To enter waste load information for the prior site (in alphabetic order), select the **Prior Site** button and repeat the Edit Waste Loads procedure. Changes made to the current site will first be saved automatically.

Done To move from the Edit Waste Loads dialog box back to the Edit Waste Loads: Select Site dialog box, select the **Done** button.

Choose the Edit Waste Loads dialog box for any of the 51 sites. To edit the waste loads of another site, double click on the site name and follow the Edit Waste Loads procedure.

4.2.7 Clearing Waste Loads

Edit, Waste Loads, Select the **Edit, Waste Loads, Clear** function to clear some or all of the waste loads from the current case for the current waste type.

In this dialog box, use the mouse to click on the sites for which waste loads should be retained. To select more than one site, hold down the **Control** key while clicking on site names.

Select All Sites To select all sites automatically, click on **Select All Sites**. From here, use the mouse with the **Control** key depressed to deselect individual sites from the list.

Deselect All Sites To deselect all sites automatically, click on **Deselect All Sites**.

Cancel To not clear waste loads at this time, select **Cancel**.

Retain Waste Loads When the sites with waste loads that should be retained have been selected, select **Retain Waste Loads**. SCM presents a list as confirmation of the sites that will have their waste loads cleared.

Clear Waste Loads From this dialog box, select **Clear Waste Loads** to confirm the action and clear waste loads from the selected sites.

Cancel Select **Cancel** to return to the previous dialog box.

4.3 Editing Treatment, Storage, and Disposal Scenarios

Editing TSD scenarios is the second of the four required categories. TSD scenarios may be edited by either map or table. When making entries use the map, use the table as a check to see if all required TSD selections are complete.

Edit, TSD Scenario, by Map Select **Edit, TSD Scenario, by Map** to access the Edit TSD Scenario: Select Site dialog box. The map for the waste site will appear once the site is selected.

Edit, TSD Scenario, by Table Select **Edit, TSD Scenario, by Table** to access the Table dialog box.

When editing TSD scenarios, select the TSD sites for a particular site's waste loads and for a specific waste type and subtype. The type of waste, treatment method, and TSD locations may significantly impact lifecycle costs and planning of new facilities. SCM requires a TSD scenario to be completed for each site that has a waste load.

4.3.1 Editing TSD Scenarios by Map

Use the Edit TSD Scenario by Map dialog box to enter where the waste that comes from the selected waste generating site is to be treated, stored, and disposed.

Edit, TSD Scenario, by Map Select **Edit, TSD Scenario, by Map** to access the Edit TSD Scenario: Select Site dialog box. To access the map, select a site from the Edit TSD Scenario: Select Site dialog box. A list of those sites with waste loads defined appears in a dialog box as shown below. The map for the waste site will appear once a site is selected.

SCM displays the sites in alphabetical order. Use the **Vertical Scroll Bar** to display sites that are not currently shown.

After changing TSD data for a site and returning to the Edit TSD Scenario: Select Site dialog box, the name of the changed site will appear with an asterisk ("*") preceding it. This is to emphasize that changes have been made to the information for that site.

Edit Site Highlight the appropriate site by clicking on it. Then, select the **Edit Site** button to edit the highlighted site's TSD scenario using the TSD Locations dialog box.

Done Select **Done** from this dialog box to return to the menu.

Double click on the site name to access the TSD Locations dialog box. This will automatically activate the Map dialog box.

A map of the United States appears, marked with codes representing each of the 51 sites that generates waste. Refer to *Appendix 1: Abbreviations and Codes* for a list of site names and their associated codes.

Treatment Option The contents of the **Treatment Option** box vary based on the waste type and subtype selected. Click on the **Drop-Down List** button and choose the appropriate treatment option.

A default treatment option is always provided, and in most cases this value will not need to be altered.

Waste Subtype For each site, the waste subtypes with assigned waste loads appear on the map in a drop-down list. Enter TSD scenario information for each waste subtype, one at a time. If only one subtype has assigned waste load information, SCM displays that subtype in light gray and the drop-down box is unavailable. In this instance, enter TSD scenario information for the displayed waste subtype.

To aid in the selection of TSD sites, the location of the waste generating site is highlighted with a red background. This shows visually how far sites under consideration for TSD selection are from the generating site. The distances between the various sites can have an impact on the costs.

Treatment The **Treatment** box displays the waste treatment site code. The box is blank until a selection is made. To enter the site code, click within the box to position the cursor, then click on the desired site code button on the map. SCM enters the site code into the **Treatment** box. The site's code may also be typed into the entry box, rather than picking it from the map.

Truck/Rail The button next to the **Treatment** box selects whether the waste will be transported to the treatment site by **Truck** or by **Rail**.

When a site code is selected, this button defaults to **Rail** if transportation is required. Transportation may then be toggled between **Truck** and **Rail** by clicking on the button. If no transportation is required, **None** appears in light gray and is unavailable for selection. If **N/A** appears in the button, no transportation data is available for this route, and transportation costs will be zero. If only truck or rail is available (but not both), the button will display the transportation method in light gray text, indicating that the selection cannot be changed.

Storage The **Storage** box displays the storage site code where the waste will be stored after treatment. The box is blank until a selection is made.

To enter the site code, click within the box to position the cursor, then click on the desired site code button. SCM enters the site code into the **Storage** box. The site code can also be entered into the entry box, rather than picking it from the map.

Truck/Rail The button next to the **Storage** box selects whether the waste will be transported to the storage site by **Truck** or by **Rail**.

Storage Years The **Storage Years** box displays number of years the waste will be stored. Use the up or down arrow to increase or decrease this number in one year increments.

Disposal The **Disposal** box displays the waste disposal site code. The box is blank until a selection is made.

To enter the site code, click within the box to position the cursor, then click on the desired site code button. SCM enters the site code into the **Disposal** box. The site code can also be entered into the input box, rather than picking it from the map.

Truck/Rail The button next to the **Storage** box displays whether the waste will be transported to the disposal site by **Truck** or by **Rail**.

Once TSD scenario information for the selected site has been entered, TSD scenario information for additional sites may also be entered. TSD scenarios must be selected for each site with waste loads for SCM to calculate costs.

Done To move back to the Edit TSD Scenario: Select Site dialog box select the **Done** button from the TSD Map.

Undo Edits If incorrect information is entered into the TSD Locations dialog box, all entries for the currently selected waste subtype can be returned to their previous settings by selecting the **Undo Edits** button.

Until data in the dialog box are changed, the **Undo Edits** button remains light gray and unavailable. Changes made in this dialog box will be saved upon choosing the Next Site, Prior Site, or waste subtype selectors, and Undo Edits will become unavailable.

Next Site To enter TSD information for the next site (alphabetically), select the **Next Site** button and follow the Edit, TSD Scenario, by Map procedure. SCM automatically saves changes before moving to the next site.

Prior Site To enter TSD information for the previous site (alphabetically), select the **Prior Site** button and follow the Edit, TSD Scenario, by Map procedure. SCM automatically saves changes before moving to the prior site.

Table To access the TSD Scenario Table, select the **Table** button while in the Map dialog box.

4.3.2 Editing TSD Scenarios by Table

While TSD scenarios can be edited graphically using the map, the table can be used to enter data instead. The Table can also be used as a check for entries done in the Map.

Table To access the table from the map dialog box, select the **Table** button.

Edit, TSD Scenario, Select **Edit, TSD Scenario, by Table** to access the Table dialog box from the by Table edit menu.

TSD Scenario Table									
Waste		Treatment		Storage		Disposal			
Gen. Site	Waste Type	Treat. Opt.	Trans. mode	Treatment Site	Trans. mode	Storage Site	Store for (years)	Trans. mode	Disposal Site
AE	NA	BEM		AE			0	R	HA
AM	NA	BEM		AM			0	R	HA
AW	NA	BEM		AW			0		ID
BA	NA	BEM		BA			0	R	SR
FE	NA	BEM		FE			0	R	HA
HA	NA	BEM		HA	R	ID	3	T	HA
HA	RH	BEM		HA			0		HA
ID	NA	BEM		ID			0		ID
<div> <div>Top</div> <div>Prior Set</div> <div>Next Set</div> <div>Bottom</div> </div>									
<div> <div>Done</div> <div>Map...</div> </div>									

The TSD Table displays TSD scenarios for each waste generating site for the currently selected waste type. The columns display the site codes for the generating, treatment, storage, and disposal sites and the mode of transport to each location. The number of years of waste storage is also displayed.

The **Waste Gen. Site** column displays the site codes for sites that generate waste. Refer to *Appendix 1: Abbreviations and Codes* for a list of site names

and their associated codes. One row appears for each waste subtype with associated wastes at the generating site.

The **Waste Type** column displays a code representing each waste subtype.

The **Treat Opt** column displays the treatment option that will be used to treat the waste.

The **Treatment Trans. Mode** column displays a “T” for truck transportation or an “R” for rail transportation. If transportation is not necessary, or there is not any data available for that route, the column will be blank, and the associated transportation costs will be zero.

The **Treatment Site** column displays the waste treatment site code.

The **Storage Trans. Mode** column displays a “T” for truck transportation or an “R” for rail transportation. If transportation is not necessary, or there is not any data available for that route, the column will be blank, and the associated transportation costs will be zero.

The **Storage Site** column displays the post-treatment waste storage site code.

The **Store for (years)** column displays the number of years the waste will be stored.

The **Disposal Transportation Mode** column displays a “T” for truck transportation or an “R” for rail transportation. If transportation is not necessary, or there is not any data available for that route, the column will be blank, and the associated transportation costs will be zero.

The **Disposal Site** column displays the waste disposal site code.

The TSD Scenario Table is displayed alphabetically by waste generating site code. SCM can only display a limited number of sites on the TSD Scenarios dialog box at one time. Use the following navigation buttons to locate the waste generating site to edit.

Prior Set To view the TSD scenarios for the previous set of sites, select the **Prior Set** button.

Next Set To view the TSD scenarios for the next set of sites, select the **Next Set** button.

Top To view the site TSD scenarios at the beginning of the table, select the **Top** button.

Bottom To view the site TSD scenarios at the end of the table, select the **Bottom** button.

Once the site TSD scenario to edit has been selected, refer to *Section 4.3.2.2 Entering TSD Data* for more guidance.

Map To view or enter TSD data graphically, select the **Map** button at the bottom of the dialog box, and refer to *Section 4.3.1 Editing TSD Scenarios by Map* for more guidance.

Done When done editing TSD scenarios, select the **Done** button.

4.3.2.2 Entering TSD Data

To enter TSD data in the Table dialog box, click on the row of interest and the TSD Scenario dialog box appears.

TSD Scenario

Hanford

Non-alpha

Treatment Option: BEMR Calibrated

Treatment Site: HA Hanford

Transport by: None to Treatment Site

Storage Site: ID Idaho National En

Transport by: Rail to Storage Site

Store for: 3 years

Disposal Site: HA Hanford

Transport by: Truck to Disposal Site

Undo Edits Done

The selected waste generating site name and waste subtype appear at the top of the TSD Scenario dialog box.

The waste subtype label is displayed for information only. To enter TSD information for a different waste subtype, return to the TSD Table dialog box and choose the appropriate row.

Treatment Option The **Treatment Option** box displays the waste treatment method. The list displayed will vary depending on the current waste type.

Treatment Site The **Treatment Site** box displays the waste treatment site code.

Click on the **Drop-Down List** button and select the appropriate treatment site.

Transport by The **Transport by** box displays whether waste will be transported to the treatment site by truck or by rail.

Click on the **Drop-Down List** button and select Truck or Rail. If transportation is not necessary or there is not any data available for that route, the box appears light gray and unavailable. If this column is blank, associated transportation costs will be zero.

- Storage Site** The **Storage Site** box displays the post-treatment waste storage site code. Click on the **Drop-Down List** button and select the appropriate storage site.
- Transport by** The **Transport by** box indicates how waste will be transported to the storage site.
- Storage for** The **Storage for** box displays the number of years the waste will be stored. Use the up or down arrow to increase or decrease this number in one year increments.
- Disposal Site** The **Disposal Site** box displays the waste disposal site code. Click on the **Drop-Down List** button and select the appropriate treatment site.
- Transport by** The **Transport by** box displays how waste will be transported to the disposal site.
- Undo Edits** If incorrect information was entered into the TSD Scenario dialog box, all entries can be returned to their previous settings by selecting the **Undo Edits** button. Until data in the dialog box are changed, the **Undo Edits** button remains light gray and unavailable.
- Done** When TSD data entry for the selected waste generating site and waste subtype is complete, select the **Done** button to return to the TSD Table.

4.4 Editing Site Schedules

Editing site schedules is the third of the four required categories.

- Edit, Site Schedules** To edit site schedules of an existing case, select **Edit, Site Schedules** from the menu bar.

Once the quantity of waste and the TSD scenario have been entered, SCM allows the user to edit the scheduling of new treatment, storage, and disposal facilities at a site. This scheduling information will affect costs and the scheduling of funds for the project. SCM defaults to a construction schedule that starts in 1995. The number of construction years defaults to three.

A list of all sites specified in TSD scenarios appears on the left side of the Site Schedule dialog box. SCM displays the sites in alphabetical order. Use the vertical scroll bar to scan the available sites. To edit a particular site schedule, select the associated site.

If scheduling information for a site is changed, and then another site is selected, SCM will automatically save the modified information before displaying information for the newly selected site. SCM denotes sites that have been changed with an asterisk ("*") preceding the site code.

Site Schedule: Hanford

Select Treatment, Storage, or Disposal Site: Non-alpha

AM	Ames Laboratory
AE	Argonne National Laboratory East
AW	Argonne National Laboratory West
BA	Bettis Atomic Power Laboratory
FE	Fermi National Atomic Laboratory
HA	Hanford
ID	Idaho National Engineering Laboratory
IT	Inhalation Toxicology Research
KC	Kansas City Plant
KK	Knolls - Kesselring
KS	Knolls - Schenectady
KW	Knolls - Windsor
LB	Lawrence Berkeley Laboratory
LL	Lawrence Livermore National Laboratory
LA	Los Alamos National Laboratory
MD	Mound Plant
NR	Naval Reactor Facility

Treatment Site Schedule

Number of Sending Sites: 1 Sites...

Beginning Year of Construction:

Number of Years of Construction:

Number of Years of Operation:

Storage Site Schedule

Number of Sending Sites: 0 Sites...

Number of Years of Construction:

Disposal Site Schedule

Number of Sending Sites: 8 Sites...

Number of Years of Construction:

Undo Edits

Done

Waste Subtype Use the **Waste Subtype** selector to choose a subtype for changing site schedules. This selector will display all waste subtypes associated with the selected waste type for the selected site. When selecting a new waste subtype, SCM first saves the changes that have made to the current waste subtype.

To edit a particular schedule item, use the arrows to increase or decrease the numbers in the following boxes (detailed in *Section 4.4.1 Treatment Site Schedule*) in increments of one or click on the box and enter the number.

4.4.1 Treatment Site Schedule

Sites The **Sites** button accesses the Sending Sites display dialog box. From this dialog box, the user can view the site names and codes of those sites sending waste of the selected subtype to the highlighted site for treatment. The number of sending sites appears next to the **Sites** button.

Beginning Year of Construction The **Beginning Year of Construction** box displays the year in which construction of the proposed treatment site will begin. A beginning year must be chosen to allow beginning of construction at the site for treatment.

Number of Years of Construction The **Number of Years of Construction** box displays how many years of construction the treatment site will require. The default of three years is not based on any specific data.

Number of Years of Operation The **Number of Years of Operation** box displays how many years of operation are expected from the treatment site. This should be based on the number of years sites will be sending waste to this site for treatment.

4.4.2 Storage Site Schedule

- Sites** The **Sites** button accesses the Sending Sites display dialog box. From this dialog box, the user can view the site names and codes of those sites sending waste of the selected subtype to the highlighted site for storage. The number of sending sites appears next to the **Sites** button.
- Number of Years of Construction** The **Number of Years of Construction** box displays how many years of construction the storage site will require. The default of three years is not based on any specific data.

4.4.3 Disposal Site Schedule

- Sites** The **Sites** button accesses the Sending Sites display dialog box. From this dialog box, the user can view the site names and codes of those sites sending waste of the selected subtype to the highlighted site for disposal. The number of sending sites appears next to the **Sites** button.
- Number of Years of Construction** The **Number of Years of Construction** box displays how many years construction of the disposal site will require. The default of three years is not based on any specific data.
- Once TSD schedules have been edited for the selected site, another site may be chosen to edit.
- Undo Edits** If incorrect information is entered into the Site Schedule dialog box, the **Undo Edits** button can be selected to return all entries to their previous settings.
- Until data in the dialog box is changed, the **Undo Edits** button remains light gray and unavailable. Choosing a site from the site list, or selecting a waste subtype will save all changes and make Undo Edits unavailable.
- Done** When all site schedules have been edited, select the **Done** button to return to the SCM menu.

4.5 Editing Facility Profiles

Editing Facility Profiles is the last required SCM editing category.

- Edit, Facility Profiles** To edit facility profiles, select **Edit, Facility Profiles** from the menu bar.

Once the waste load, TSD scenario, and site scheduling information has been chosen, the information for existing facilities can be reviewed. SCM databases contain information about the known existing facilities at the time of the release of the SCM program. The default database also has information for modules available at facilities and the waste type dedication for the modules.

An existing case may have altered capacities and waste dedications, and other facilities or modules may have been added. The capacities and waste type dedication for modules in the default database can be changed, but an existing facility cannot be deleted from the default database. Other facilities or modules can be added, however.

Existing facilities and modules that are part of the default database are designated on-screen with a [D] label. Facilities or modules added by the user are designated with a [U] label.

When the user adds an existing facility, SCM requires the following information: when will it be operational and for how long, what module types will exist at the facility, what are the module capacities and what types of waste can be handled by these modules, and how much labor will be involved in operation?

Before editing facility profiles, select the associated site. A list of all available sites appears in the dialog box, as shown below.

SCM displays the sites in alphabetical order. Use the vertical scroll bar to locate the desired site.

Edit Site Highlight the appropriate site by clicking on it. Select the **Edit Site** button to edit the highlighted site's facility profiles using the Facility Profiles dialog box; or, double click on the site name to access the Facility Profiles dialog box.

Facility Profiles

Hanford

Facilities:	Operating Years
[D] 2401W/2402W Complex	1994-2019
[D] 242-A/Purex Effluent Treatment Facility	1995-2025
[D] 300 Area Waste Acid Treatment System	1994-2024
[D] 303-K Storage Facility	1994-2000
[D] 303-M Oxide Facility	1994-2024
[D] 304 Concretion Facility	1994-2019

Modules:	Capacity
[U] PADMN	549.7 m3/yr
[U] PBRRCR	549.7 kg/yr
[U] PSTOR	549.7 m3/yr
[D] STORE	0.0 m3/yr
[U] TSTOR	549.7 kg/yr

The selected site name appears at the top of the Facility Profiles dialog box.

4.5.1 Editing Facility Information

There may be numerous facilities at any given site. SCM defaults to the facility and module information available at the time of the release of SCM. A module must be associated with a specific facility. Therefore, information about the facility must be entered first, and then information about the modules associated with them may be entered.

Existing facilities are classified into two categories: default and user defined. Default facilities, denoted by a [D] before their name in the facility list, are facilities that exist at the time of release of SCM. User-defined facilities, denoted by a [U] before their name in the facility list, are facilities added by a user specifically to the current case.

4.5.1.1 Adding New Facilities

Add Facility To add a facility to the **Facilities** list, select the **Add Facility** button on the Facility Profiles dialog box.

Facility Name The **Facility Name** box displays the name of the facility. Enter the name of the facility in the box. Each facility at a site must have a unique name.

Year Available The **Year Available** box displays the year the facility will begin operation. Use the arrows to increase or decrease this number in one year increments.

Years Operating The **Years Operating** box displays how many years the facility will operate. Use the arrows to increase or decrease this number in one year increments.

Undo Edits If incorrect information was entered into the Add Facility dialog box, return all entries to their previous settings by selecting the **Undo Edits** button.

Until data in the dialog box is changed, the **Undo Edits** button remains light gray and unavailable.

Done When the facility information is completely entered, select the **Done** button from the Add Facility dialog box to return to the Facility Profiles dialog box.

The new facility name appears in the **Facilities** list on the Facility Profiles dialog box. Facilities added by the user will always be labeled with a [U] in the facilities list, indicating that the facility is user-defined.

Cancel Select the **Cancel** button to return to the Facility Profiles dialog box without adding the facility.

4.5.1.2 Editing Existing Facilities

Edit existing facilities using the Edit Facility dialog box. Existing facilities appear in the **Facilities** list at the top of the Facility Profiles dialog box.

Highlight the existing facility to edit using the Facility Profiles dialog box. Note the **Operating Years** of the existing facility appear to the right of the facility name.

Edit Facility Select the **Edit Facility** button to edit the highlighted facility using the Edit Facility dialog box.

The screenshot shows a dialog box titled "Edit Facility". Inside the dialog, there is a section for a facility named "Hanford". This section contains three input fields: "Facility Name" with the text "2401W/2402W Complex", "Year Available" with a spinner box showing "1994", and "Years Operating" with a spinner box showing "25". To the right of the "Years Operating" field is a button labeled "Undo Edits". At the bottom of the dialog box are two buttons: "Done" and "Cancel".

Facility Name The **Facility Name** box displays the name of the highlighted facility from the Facility Profiles dialog box. The entry can be changed only if the facility is user-defined; if it is a default facility, the name will appear in light gray text.

For a user-defined facility, a new name can be entered in the **Facility Name** box to replace the existing one.

Year Available The **Year Available** box displays the year in which the facility will begin operation. Use the arrows to increase or decrease this number in one year increments.

Years Operating The **Years Operating** box displays the number of years the facility will operate. Use the arrows to increase or decrease this number in one year increments.

Undo Edits If incorrect information was entered into the Edit Facility dialog box, return all entries to their previous settings by selecting the **Undo Edits** button.

Until data in the dialog box are changed, the **Undo Edits** button remains light gray and unavailable.

Done When editing has been finished for the facility, select the **Done** button to record changes and return to the Facility Profiles dialog box. The edited facility name appears in the **Facilities** list on the Facility Profiles dialog box.

Cancel Select the **Cancel** button to return to the Facility Profiles dialog box without accepting the changes.

4.5.1.3 Deleting Existing Facilities

Delete existing facilities using the Facility Profiles dialog box. Only user-defined facilities, designated with a [U] to the left of the name of the facility, can be deleted. Facilities appear in the **Facilities** list at the top of the Facility Profiles dialog box.

Highlight a user-defined facility for deletion.

Delete Facility Select the **Delete Facility** button to delete a user-defined facility and its associated information.

4.5.2 Editing Module Information

Just as each site can have more than one facility, each facility can have more than one module. For example, a site can have both an incinerator (INCIN) and a grouting module (GROUT).

A single facility, however, cannot have more than one module of the same type. For example, two incinerators cannot exist at the same facility at Hanford.

Enter information about specific modules using this section of the Facility Profiles dialog box.

4.5.2.1 Adding Modules

Each facility can have a number of modules that are currently available. The lower portion of the Facility Profiles dialog box lists the modules that are available at the selected facility. Just as with facilities, modules are designated as default ([D]) or user-defined ([U]).

Add Module To add a module to the **Modules** list, select the **Add Module** button on the Facility Profiles dialog box. The module information supplied will be added to the currently selected facility.

The Add Module dialog box appears. Because modules are components of facilities, a facility must exist before a module can be added. Refer to *Section 4.5.1.1 Adding New Facilities* for a more detailed description.

Module The **Module** box displays the module codes. Click on the **Drop-Down List** button and select the appropriate module code. Refer to *Appendix A1.3 Module Codes* to review a list of module codes.

Capacity The **Capacity** (kg/yr) box displays the amount of waste that the module can handle. Treatment module capacity is a rate measured in kilograms per year (kg/yr). Storage and disposal module capacity is a volume measured in cubic meters per year (m³/yr).

Highlight the box, or click within it to position the cursor, then enter the appropriate number.

In the **Module Capacity Waste Dedication** group, use the **Drop-Down List** button to select a waste type and subtype. Then enter the percentage of that module dedicated to handling the specified waste type and subtype.

Waste Type The **Waste Type** box displays all waste types supported by SCM. Select a waste type from the drop-down list.

Waste Subtype The **Waste Subtype** box displays the waste subtypes available for the waste type selected. Select a waste subtype from the drop-down list.

Percentage In the **Percentage** box, enter the percentage of the module that will be dedicated to handling the waste type and subtype selected above.

Use the up or down arrow to increase or decrease this number by five percent. Either click within another box or press the **Tab** key to display the selection. The box to the right displays the module's percentage capacity for each

combination of waste type and subtype. Enter as many combinations of waste types and subtypes as necessary. The sum of these percentages must total 100% for the **Done** button to become available.

Done When the entering of module information is finished, select the **Done** button from the Add Module dialog box to return to the Facility Profiles dialog box. The new module name appears in the **Modules** list on the Facility Profiles dialog box.

The **Done** button will not be available until waste dedications total 100%. It will also be unavailable if the module selected to add is already defined at the current facility.

Cancel Select the **Cancel** button to return to the Facility Profiles dialog box without accepting changes.

4.5.2.2 Editing Existing Modules

Edit existing modules by selecting the **Edit Module** button. Existing modules appear in the **Modules** list at the bottom of the Facility Profiles dialog box. The Edit Module dialog box appears as shown below.

Edit Module

2401W/2402W Complex

Module:

Capacity: m3/yr

Module Capacity Waste Dedication

LLW	LLW,NA,15%
A	MLLW,NA,80%
0%	TRUW,CH,5%

Waste Dedication percentages must total 100%

The Edit Module dialog box operates with the exact same controls as the Add Module dialog box, except that the **Module** selector is unavailable for default existing modules (modules marked with a [D] in the **Module** list). Refer to *Section 4.5.2.1 Adding Modules* above for more information.

4.5.2.3 Editing Module Work Breakdown Structures

WBS To edit the work breakdown structure of a selected module, highlight the desired module, then select the **WBS** button on the Facility Profiles dialog box. The WBS dialog box appears as shown below.

	Cost K\$/Year	FTEs/Year	Years of Expense
1.0 Pre-operations			0
2.0 Facility Construction Costs			0
3.0 Operations and Maintenance			30
4.0 Decontamination and Decommissioning			0

While SCM calculates the costs associated with module Operations and Maintenance (O&M, WBS 3.0) and Decontamination and Decommissioning (D&D, WBS 4.0) for existing facilities, any costs the user wants to include for Pre-operations and Facility Construction Costs may be entered here. The user may also override the calculated O&M and D&D costs by making entries in this dialog box.

If user-specified cost and full-time equivalent (FTE) values are not entered for WBS 3.0 (Operations & Maintenance) and WBS 4.0 (Decontamination & Decommissioning), SCM calculates these values using existing module information. However, if costs are entered for one module at a site, then costs for all modules of that type at the site (at different facilities) will be replaced.

The name of the selected facility and module appears in the top left of the dialog box. The Work Breakdown Structure list displays the specific tasks associated with the construction and operation of a module. Enter the appropriate information into the boxes to the right.

Cost K\$/Year The **Cost K\$/Year** box displays the yearly cost of the associated WBS in thousands of dollars (K\$/year).

Click within the box to position the cursor and type an entry.

FTEs/Year The **FTEs/Year** box displays the number of FTE employees required for the associated WBS per year. An FTE is an employee who works 8 hours per day, 40 hours per week, or 2,080 hours per year.

Click within the box to position the cursor and then make an entry.

Years of Expense The **Years of Expense** box displays the number of years each cost is incurred. Cost and FTE is multiplied by the Years of Expense to produce total costs.

Use the arrows to increase or decrease this number in one year increments.

For WBS 3.0, the years of expense is the same as the years that the facility will operate, which is specified in the facility information (see *Section 4.5.1.1 Adding New Facilities*, or *Section Facilities*).

Undo Edits If incorrect module information was entered, return all boxes to their previous settings by selecting the **Undo Edits** button. Until data in the dialog box is changed, the **Undo Edits** button remains light gray and unavailable.

Done When the entry of WBS breakdown information is finished, select the **Done** button to return to the Facility Profiles dialog box.

Cancel Select **Cancel** to return to the Module dialog box without saving WBS breakdown information.

4.5.2.4 Deleting Existing Modules

Delete user-defined modules using the Facility Profiles dialog box.

User-defined modules are designated with a [U] to the left of the module, while default modules are designated with a [D] to the left of the module. Existing modules appear in the **Modules** list at the bottom of the Facility Profiles dialog box.

Highlight the existing user-defined module to delete.

Delete Module Select the **Delete Module** button to delete the highlighted module and its associated information.

4.5.3 Navigating the Facility Profiles Dialog Box

Once the facility and module information has been edited for a selected site, either continue editing facility information for other sites, or return to the SCM window to work with other parts of the case.

Next Site To edit facility information for the next site (alphabetically), select the **Next Site** button and follow the same procedure as described in *Section 4.5.1 Editing Facility Information*.

Prior Site To edit facility information for the previous site (alphabetically), select the **Prior Site** button and follow the same procedure as described in *Section 4.5.1 Editing Facility Information*.

Done To record edits to facility information and return to the Edit Facility: Select Site dialog box select the **Done** button from the Edit Site Facility dialog box.

When the editing of facilities is completed, select the **Done** button from the Edit Facility: Select Site dialog box.

4.6 Editing Inflation Factors

Edit, Inflation Factors To edit inflation factors, select **Edit, Inflation Factors** from the menu bar. The Inflation Factors dialog box appears as shown below.

Inflation Factors

Current Inflation Factors:

1990 is 3.50%
1991 is 3.50%
1992 is 3.50%
1993 is 3.50%
1994 is 3.50%
1995 is 3.50%
1996 is 2.00%
1997 is 2.00%

Note: Default inflation factor is 0.0%

Starting year: 1996

Ending year: 2003

Inflation Factor: 2.00%

Save Undo Edits

Done

Starting/Ending Year A list of inflation factors for each year appears in the **Current Inflation Factors** list. To change any of the percentages, first select either a single year to change by clicking on it in the list, or select a range of years by setting the **Starting Year** and **Ending Year** boxes to the first and last year in the range, respectively.

Then, use the **Inflation Factor** box on the right side of the dialog box, clicking on the arrows to increase or decrease the inflation factor in .1% increments. After the inflation factor for any set of years has been changed, select the **Save** button to record the changes and prepare the dialog box for the next set of entries. If all changes for inflation factors are finished, select **Done** to move back to the menu bar.

Starting Year The **Starting Year** box displays the first year in the range.

Ending Year The **Ending Year** box displays the last year in the range. If this box displays the same year as the **Starting Year** box, then the percentage entered in the Inflation Factor box applies only to that year.

Inflation Factor The **Inflation Factor** box displays the inflation percentage to be applied to the range of years selected in the **Starting Year** and **Ending Year** boxes.

Save When the editing of a given set of inflation factors is finished, select the **Save** button to record changes. Selecting one of the items in the **Current Inflation Factors** box also records changes.

Undo Edits If incorrect inflation factor information was entered, return all entries to their previous settings by selecting the **Undo Edits** button. Until data in the dialog box is changed, the **Undo Edits** button remains light gray and unavailable.

Done Select the **Done** button to record all inflation factor edits and return to the menu bar.

4.7 Editing Cost Factors

Edit, Cost Factors To edit cost factors for specific sites, select **Edit, Cost Factors** from the menu bar. The Cost Factors dialog box appears.

Cost Factors: Hanford	
Select Site:	
AM	Ames Laboratory
AE	Argonne National Laboratory East
AW	Argonne National Laboratory West
BC	Battelle Columbus Laboratory
BA	Bettis Atomic Power Laboratory
BN	Brookhaven National Laboratory
CN	Charleston Naval Station
CI	Colonie Interim Storage Site
ET	Energy Technology Engineering
FE	Fermi National Atomic Laboratory
FM	Fernald Environmental Management
GA	General Atomics
GE	General Electric Vallecitos
GJ	Grand Junction Project Office
HA	Hanford
ID	Idaho National Engineering Laboratory

Construction Costs	
Design	25.0%
Inspection	8.0%
Project Mgmt	3.0%
Constr Indirect	13.0%
Constr Mgmt	8.0%
Mgmt Reserve	0.0%
Constr Cntgncy	13.0%

Pre-operation Costs	
Concept Design	9.0%
Safety Assurance	9.0%
Prep Operations	100.0%
PreOps Mgmt	10.0%
NEPA Permt K\$	6,000.0

Operating Costs	
Contingency	15.0%

FTE Costs (K\$/year)	
Engineering	\$109.0
Construction	\$87.0
Operating	\$97.0
Eng/Const	\$107.0

FTE costs are fully burdened

Undo Edits

Done

A list of all available sites appears in alphabetical order on the left side of the Cost Factors dialog box. Use the **Vertical Scroll Bar** to display sites that are not currently shown. Highlight the appropriate site and edit its cost factors using the boxes on the right side of the dialog box.

To enter information in a particular box, click on the box or use the **tab** key to highlight the box and enter the appropriate number.

Undo Edits If incorrect cost factor information was entered, return all boxes to their previous settings by selecting the **Undo Edits** button. Until data in the dialog box is changed, the **Undo Edits** button remains light gray and unavailable. Selecting a different site from the **Select Site** list will save changes and make the **Undo Edits** button unavailable.

Done Select the **Done** button to record cost factor edits and return to the menu bar. Selecting a different site from the **Select Site** list also will record changes.

4.7.1 Construction Costs

The Construction Costs group box displays the percentages used to calculate the costs of design, inspection, project management, construction indirect,

construction management, management reserve, and construction contingency, based on the base construction costs.

Construction Costs	
Design	25.0%
Inspection	8.0%
Project Mgmt	3.0%
Constr Indirect	13.0%
Constr Mgmt	8.0%
Mgmt Reserve	0.0%
Constr Cntgncy	13.0%

- Design** The **Design** box displays the percentage used to calculate project construction design based on the base construction cost. Base construction cost includes equipment installation, building construction, and associated indirect costs.
- Inspection** The **Inspection** box displays the percentage used to calculate project inspection cost based on the base construction cost.
- Project Management** The **Project Management** box displays the percentage used to calculate project management cost based on the base construction cost.
- Construction Indirect** The **Construction Indirect** box displays the percentage used to calculate construction indirect costs based on the cost of erected buildings plus installed equipment.
- Construction Management** The **Construction Management** box displays the percentage used to calculate construction management based on the base construction cost.
- Management Reserve** The **Management Reserve** box displays the percentage to calculate the amount reserved for additional construction management costs, based on the base construction costs.
- Construction Contingency** The **Construction Contingency** box displays the percentage applied to the base construction cost and all above costs to cover unforeseen activities or costs.

For example, if base construction costs are calculated to be \$100,000, then the costs above would be as follows:

Design	\$25,000
Inspection	\$8,000
Project Management	\$3,000
Construction Indirect	\$11,505 ($\$88,495 + 13\% = 100,000$)

Construction Management	\$8,000
Management Reserve	\$0
Construction Contingency	\$18,720 (13% of 100,000 + 25,000 + 8,000 + 3,000 + 8,000)

4.7.2 Pre-operation Costs

The **Pre-operation Costs** group box displays the percentages used to calculate the costs of concept design, safety assurance, preparatory operations, and pre-operations management along with the NEPA permit cost.

Pre-operation Costs	
Concept Design	<input type="text" value="9.0%"/>
Safety Assurance	<input type="text" value="9.0%"/>
Prep Operations	<input type="text" value="100.0%"/>
PreOps Mgmt	<input type="text" value="10.0%"/>
NEPA Permit K\$	<input type="text" value="6,000.0"/>

Concept Design The **Concept Design** box displays the percentage used to calculate pre-operations design, based on total construction cost (WBS 2.0).

Safety Assurance The **Safety Assurance** box displays the percentage of the total constructed facility used to calculate safety assurance costs.

Preparation for Operations The **Preparation for Operations** box displays the percentage of a single annual O&M budget used to calculate O&M training prior to commencement of operations.

Pre-operation Management The **Pre-operation Management** box displays the percentage of pre-operation costs used to calculate pre-operation management costs.

NEPA Permit The **NEPA Permit** box displays the costs, in thousands of dollars, associated with obtaining a NEPA permit.

4.7.3 Operating Costs

The **Operating Costs** group shows the contingency percentage applied to operating costs.

Operating Costs	
Contingency	<input type="text" value="15.0%"/>

Contingency The **Contingency** box displays the percentage applied to the total calculated operating costs as contingency.

4.7.4 Labor Costs

The **FTE Costs (K\$/year)** group box displays the annual salary in thousands of dollars for engineering, construction, operating, and engineering/construction positions.

FTE Costs (K\$/year)			
Engineering	\$109.0	Operating	\$97.0
Construction	\$87.0	Eng/Const	\$107.0

FTE costs are fully burdened

Engineering The **Engineering** box displays the annual salary, including benefits, of an engineer or administrator for both the design and operating phases.

Construction The **Construction** box displays the annual salary, including benefits, of a construction laborer.

Operating The **Operating** box displays the annual salary, including benefits, of a facilities operator.

Engineering and Construction The **Engineering and Construction** box displays the annual salary, including benefits, of a field engineer and/or construction manager.

4.8 Editing Other Site Costs

Edit, Additional Costs To edit other cost factors for specific sites, select **Edit, Other Site Costs** from the menu bar. The Other Site Costs dialog box appears as shown below.

Other Site Costs: Hanford

Select Site: Alpha

- AM Ames Laboratory
- AE Argonne National Laboratory East
- AW Argonne National Laboratory West
- BC Battelle Columbus Laboratory
- BA Bettis Atomic Power Laboratory
- BN Brookhaven National Laboratory
- CN Charleston Naval Station
- CI Colonie Interim Storage Site
- ET Energy Technology Engineering Center
- FE Fermi National Atomic Laboratory
- FM Fernald Environmental Management Project
- GA General Atomics
- GE General Electric Vallecitos
- GJ Grand Junction Project Office
- HA Hanford**
- ID Idaho National Engineering Laboratory
- IT Inhalation Toxicology Research

Commercial Contract Services (WBS 5.0)

Waste sent off-site: 0 m³

Cost: \$0.00 /m³

DOE Provided Off-Site Services (WBS 6.0)

Waste sent off-site: 0 m³

Cost: \$0.00 /m³

Years of Expense: 10

Special Site Costs (WBS 8.0)

Cost: \$100.00 K\$/year

Start Year: 1995

End Year: 1995

Undo Edits

Done

A list of all available sites appears in alphabetical order on the left side of the Other Site Costs dialog box. Use the **Vertical Scroll Bar** to display sites that are not currently shown. Highlight the appropriate site and edit its cost factors using the boxes on the right side of the dialog box.

Waste Subtype The Waste Subtype selector appears in the upper right corner of the dialog box, allowing for the selection of the waste subtype in which to change other site costs.

To enter information in a particular box, click on the box, or use the **tab** key to highlight the box and enter the appropriate number.

Undo Edits If incorrect cost factor information was entered, return all entries to their previous settings by selecting the **Undo Edits** button. Until data in the dialog box are changed, the **Undo Edits** button remains light gray and unavailable.

Selecting a different site from the Select Site list will save changes and make the **Undo Edits** button unavailable.

Done Select the **Done** button to record cost factor edits and return to the menu bar. Selecting a different site from the list on the left will also record changes.

4.8.1 Commercial Contract Services

The **Commercial Contract Services (WBS 5.0)** group box allows editing of the volume and unit cost for waste treatment for the waste sent to off-site commercial facilities.

Commercial Contract Services (WBS 5.0)	
Waste sent off-site:	<input type="text" value="0"/> m ³
Cost:	<input type="text" value="\$ 0"/> \$/m ³

Waste sent off-site The **Waste sent off-site** box displays the cubic meters of waste transported from the facility to a commercial facility.

Cost The **Cost** box displays the dollar amount per cubic meter that the commercial facilities charge.

4.8.2 DOE-Provided Off-Site Services

The **DOE-Provided Off-Site Services (WBS 6.0)** group box allows editing the volume and cost of waste sent off-site to other DOE facilities.

DOE Provided Off-Site Services (WBS 6.0)	
Waste sent off-site:	<input type="text" value="0"/> m ³
Cost:	<input type="text" value="\$ 0"/> \$/m ³
Years of Expense:	<input type="text" value="0"/>

Waste sent off-site The **Waste sent off-site** box displays the cubic meters of waste transported from the facility to another DOE facility.

Cost The **Cost** box displays the dollar amount per cubic meter that the treating site charges.

Years of Expense The **Years of Expense** box displays the number of years this volume of waste will be sent off-site at the given cost.

4.8.3 Special Site Costs

The **Special Site Costs (WBS 8.0)** group box allows editing of unforeseen costs (e.g., site infrastructure costs) during a specified range of years.

Special Site Costs (WBS 8.0)	
Cost:	<input type="text" value="\$ 0.0"/> K\$/year
Start Year:	<input type="text" value="1995"/>
End Year:	<input type="text" value="1995"/>

Cost The **Cost** box displays the special site costs in thousands of dollars per year.

Start Year The **Start Year** box displays the year in which the special site costs begin.

End Year The **End Year** box displays the year in which the special site costs end.

4.9 Editing WBS Scale Factors

Edit, WBS Scale Factors Select **Edit, WBS Scale Factors** from the menu bar to apply scale factors to specific module costs. The WBS Scale Factors dialog box displays the scale factors for WBS costs for a particular module at a specific site and allows the user to increase or decrease WBS costs by a scaling factor. The WBS Scale Factors dialog box appears below.

WBS Scale Factors: Hanford

Select Site:

- AM Ames Laboratory
- AE Argonne National Laboratory East
- AW Argonne National Laboratory West
- BC Battelle Columbus Laboratory
- BA Bettis Atomic Power Laboratory
- BN Brookhaven National Laboratory
- CN Charleston Naval Station
- CI Colonie Interim Storage Site
- ET Energy Technology Engineering Center
- FE Fermi National Atomic Laboratory
- FM Fernald Environmental Management Proj
- GA General Atomics
- GE General Electric Vallecitos
- GJ Grand Junction Project Office
- HA Hanford**
- ID Idaho National Engineering Laboratory
- IT Inhalation Toxicology Research

Alpha AGDSP

Scale Factors: ☒ Cost ☐ FTE

1.0 Pre-operations: 1.00

2.0 Facility Construction Costs: 1.00

3.0 Operations and Maintenance: 1.00

4.0 Decontamination & Decommissioning: 1.00

Notes

Undo Edits

Done

Select the specific site associated with the scale factors to edit. A list of available sites appears on the left side of the WBS Scale Factors dialog box in alphabetical order. Use the **Vertical Scroll Bar** to display sites that are not currently shown. Highlight the site to be edited. Then select the module and waste subtype options.

Waste Subtype The **Waste Subtype Option** box allows the selection of the waste subtype to be edited. Click on the **Drop-Down List** button and select the appropriate option.

Module The **Module Option** box allows the selection of the module being edited. Click on the **Drop-Down List** button and select the appropriate module option.

Cost/FTE The **Cost/FTE** option buttons allow changing of scale factors for either costs or FTEs. Select the appropriate button by clicking on it.

After these selections, input the appropriate scale factor for WBS 1.0 - 4.0. To change other scale factors, repeat the steps listed above.

Undo Edits If incorrect information was entered, return all boxes to their previous settings by selecting the **Undo Edits** button. Until data in the dialog box are changed, the **Undo Edits** button remains light gray and unavailable.

Selecting a different site, waste subtype, or module from the selectors provided will save changes and make the **Undo Edits** button unavailable.

Done Select the **Done** button to record scale factor edits and return to the menu bar. Selecting a different site from the list on the left will also record changes.

When **Done** is selected, the cost factors are applied to the calculation results, so that calculations do not need to be rerun. However, if a scale factor that was 0 is changed to a non-zero value, a warning message is displayed and calculations must be rerun to incorporate the new scale factors.

4.10 Editing Site Information

Edit, Site Information Select **Edit, Site Information** from the menu bar to edit all information associated with a specific site.

The Site Information dialog box combines the function of the TSD Scenarios and Site Schedule dialog boxes. This information is displayed on the left and right portions of the dialog box, respectively. The other information associated with a site can also be accessed: waste loads, facility profiles, cost factors, and other site costs by selecting buttons at the bottom of the dialog box.

The site to edit is selected from the **Drop-Down List** box in the upper left corner of the dialog box. Any changes made affect the site displayed in this box.

Click on the **Down-Arrow** button on the list box to view a list of all sites in alphabetic order. Use the **Vertical Scroll Bar** to display sites that are not displayed in the current list. Click on the site name to select it.

Waste Subtype The **Waste Subtype** drop-down list, located to the right of the site selection box, allows waste subtype selection from a list of all waste subtypes for which waste loads are entered. This selection controls both the TSD Scenario and Site Schedule portions of the Site Information dialog box.

Choose the waste subtype to display and enter data for it in the TSD Scenario and Site Schedule fields for the selected site.

4.10.1 Editing the TSD Scenario

Use the TSD Scenario section of this dialog box to edit TSD scenarios. Enter where waste loads from each site will be treated, stored, and disposed.

TSD scenarios can be edited using the Site Information dialog box or the Edit TSD Scenario dialog box. Refer to *Section 4.3 Editing Treatment, Storage, and Disposal Scenarios* for further guidance.

Treatment Option The **Treatment Option** box displays the treatment methods available for the selected waste type.

Treatment Site The **Treatment Site** box displays the waste treatment site code. Click on the **Drop-Down List** button, then select the appropriate treatment site.

Transport by The **Transport by** box displays whether waste will be transported to the treatment site by **Truck** or by **Rail**. Click on the **Drop-Down List** button and select **Truck** or **Rail**. Notice that if the Treatment site selected is the same as the waste generating site, the **Transport by** box displays **None** and appears light gray and unavailable. If no distance data are available for the selected site, the **Transport by** box displays **N/A**.

Storage Site The **Storage Site** box displays the waste storage site code. Click on the **Drop-Down List** button and select the appropriate storage site.

Transport by The **Transport by** box displays whether waste will be transported to the storage site by **Truck** or by **Rail**.

Storage for The **Storage for** box displays the number of years of post-treatment waste storage. Use the arrows to increase or decrease this number in increments of one.

Disposal Site The **Disposal Site** box displays the waste disposal site code and name. Click on the **Drop-Down List** button and select the appropriate disposal site.

Transport by The **Transport by** box displays whether waste will be transported to the disposal site by **Truck** or by **Rail**.

Undo Edits If incorrect site information was entered, return all entries to their previous settings by selecting the **Undo Edits** button. Until data in the dialog box is changed, the **Undo Edits** button remains light gray and unavailable.

Done Select the **Done** button to record site information edits and return to the menu bar. Selecting a different site from the site drop-down list in the upper left corner will also record changes.

4.10.2 Editing the Site Schedule

Site Schedule The Site Schedule section of this dialog box works like the Site Schedule dialog box accessed from the menu bar. Refer to *Section 4.4 Editing Site Schedules* for a detailed explanation.

4.10.3 Editing Waste Loads

Waste Loads Select the **Waste Loads** button to edit waste loads using the Edit Waste Loads dialog box. When finished editing, the Site Information dialog box is displayed. Refer to *Section 4.2 Editing Waste Loads* for more detailed description.

4.10.4 Editing Facility Profiles

Facilities Select the **Facilities** button to edit facility profiles of an existing case using the Facility Profiles dialog box. When finished editing, the Site Information dialog box will be displayed. Refer to *Section 4.5 Editing Facility Profiles* for more detailed description.

4.10.5 Editing Cost Factors

Cost Factors Select the **Cost Factors** button to edit the cost factors of an existing case using the Cost Factors dialog box. When the editing is complete, the Site Information dialog box will be displayed. Refer to *Section 4.7 Editing Cost Factors* for more detailed description.

4.10.6 Editing Other Site Costs

Other Site Costs Select the **Other Site Costs** button to edit other site costs using the Other Site Costs dialog box. When the editing is complete, the Site Information dialog box will be displayed. Refer to *Section 4.8 Editing Other Site Costs* for more detailed description.

4.11 Editing Case Notes

When the user saves a case for the first time (using **Case, Save As**), SCM allows for entry of notes regarding the case for future reference. These notes allow for identification and differentiation of each case.

Edit, Case Notes Select **Edit, Case Notes** from the menu bar to edit the notes associated with an open case. The Case Notes dialog box will appear as shown below.

Case Note To edit the existing notes, click within the text in the **Case Note** box and edit as desired.

OK Select the **OK** button to acknowledge changes and return to the menu bar.

Cancel Select **Cancel** to return to the menu bar without accepting changes.

5. Calculations and Reports

5. Introduction

When all the data have been entered or edited in a new or existing case, run the calculations and SCM will determine the results. Then, use the **Report** menu to generate a variety of case summary reports, site detail reports, graphs, and timelines.

5.1 Running Calculations

Running calculations for a case after each set of edits or on a new case entry must be done to produce the most current cost information. A case should be saved prior to running calculations, so that if SCM encounters unexpected problems while running, changes will not be lost.

The SCM calculations make assumptions that affect the output reports and graphs; see *Appendix 4: Calculation Assumptions*.

5.1.1 Starting Calculations

A case must be opened before running calculations. See *Section 3.4 Opening a Case* or *Section 3.3 Creating a New Case* for more information.

Run! Select the **Run!** command from the menu bar to run calculations for the current case. A dialog box will appear to confirm the running of calculations.

Yes Select **Yes** to run the calculations.

Selecting **Yes** causes SCM to immediately display progress information as the calculations run to completion.

The calculation process involves three main sections: error checking, capacity calculations, and cost calculations.

No To not run the calculations at this time, select **No**. SCM then returns to the menu bar.

When calculations are running, press **Alt-C** (hold down the **Alt** key while pressing **C**) to stop the calculation process. It may take several moments for the calculations to be interrupted. A dialog box is displayed to confirm this choice.

Depending at what point the calculations were interrupted, the results of previous calculations may be lost. A dialog box is displayed to explain changes to calculation results.

5.1.2 Calculations Performed

The SCM error-checking process checks for valid TSD scenarios.

The capacity calculations are composed of the following eleven steps:

1. pre-treatment storage, treatment, post-treatment storage, disposal sites and treatment options are linked;
2. pre-treatment storage schedules are calculated;
3. treatment schedules are calculated;
4. treatment modules are calculated;
5. storage and disposal schedules are calculated;
6. storage and disposal modules are calculated;
7. pre-treatment storage, treatment, storage, and disposal schedules are merged;
8. existing capacities are calculated;
9. existing capacity utilization is calculated
10. new and existing facility capacities are separated; and
11. average module capacities are calculated.

The cost calculations are composed of the following six steps:

1. cost regressions are calculated;
2. WBS 1.0 - 4.0 FTE costs are calculated;
3. WBS 5.0 - 8.0 costs are calculated;
4. existing facility costs are incorporated;
5. cost schedules are calculated; and
6. WBS cost scale factors are calculated.

When the last calculation is complete, SCM displays the following dialog box.

OK To acknowledge the message and return to the menu bar, select the **OK** button or press the **Enter** key. A variety of reports may now be generated using the **Report** menu as described in *Section 5.2 Generating and Printing Reports*. First, however, the case may be saved as described in *Section 3.5 Saving a Case*.

5.1.3 Time Required

Calculations take anywhere from 2 to 30 minutes. The time required to run the calculations depends on the type of hardware being used and the amount of data associated with the case. Refer to *Section 2.2 System Requirements* for a list of recommended hardware. Calculations should be run each time the case is edited, as the output will not change until the calculations are rerun.

5.2 Generating and Printing Reports

Use the **Report** menu to generate all SCM reports and graphs. These reports and graphs may be previewed, printed, or exported.

5.2.1 Selecting Reports or Graphs to Generate

Reports Select **Reports** from the menu bar to access a pull-down menu of reports and graphs. Select one of the following report or graph types: **Case Summary Reports**, **Site Detail Reports**, **Case Summary Graphs**, **Site Detail Graphs**, or **Case Comparison Graphs**. Each of these options is described in a later section, starting with *Section 5.2.5 Generating Case Summary Reports*.

Case Summary Reports

Reports to Print

☒ WBS 1.0 - 4.0
☐ WBS 5.0 - 8.0
☐ FTE
☐ Annual Costs
☒ Waste Loads - First Set
☒ Waste Loads - Second Set
☐ Waste Densities - First Set
☐ Waste Densities - Second Set

☐ Schedule
☒ TSD Scenario
☐ Background
☐ Facility Profiles
☐ PEIS Report - TSD
☐ PEIS Report - WBS

Select All Reports

Deselect All Reports

Options

Type:

All types

☒ For whole case
☐ By waste type

Preview

Print

Export

Done

Select All Reports Select the **Select All Reports** button to choose all available reports and graphs to be generated. The available reports and graphs are marked with a box as shown above.

Preview Select the **Preview** button to view a selected report or graph before printing it. SCM initializes the report engine and then prepares the report. Refer to *Section 5.2.3 Previewing Reports* below for a more detailed description.

The Printing dialog box displays the SCM print status as it reads, sorts, and prints the selected reports and graphs. SCM displays the current number of records read and sorted relative to the total number of records to be read and sorted for the print file. It displays the percentage of the process which is complete. To set up the printer, refer to *Section 5.2.10 Setting up the Printer*.

Export Select the **Export** button to export data from a report or graph to an ASCII file.

When the user chooses to export data from a report, the format for export can be selected.

Mark the **Data Only** option box to export the report data (only the numbers used in the report, in comma-delimited ASCII format).

Mark the **Report Image** option box to export a report image (an ASCII representation of the report).

Select the **Export** button to start exporting data from the selected reports.

When exporting data, the user will be prompted for a file name for each report selected.

Done Select **Done** to leave the report or graph selection dialog box.

5.2.2 Selecting Report Options

On each of the report and graph dialog boxes, the user is presented with a set of options to control the appearance and structure of the output.

Options	
Type: <input type="text" value="MLLW"/>	<input type="text" value="All types"/>
☒ For whole case	☐ By waste type

Type In the **Type** selection boxes, SCM allows the user to choose to report specific waste types. If these selections are left at their defaults, the generated report or graph will contain data from all waste types present in the case. If a specific waste type is selected, then the generated report will contain only data from the selected waste type.

If there is more than one waste type in the current case, then the **Type** selection boxes will present all available choices, as well as an **All types** choice. Select **All types** to report all waste types.

For whole case The second selector in this section allows the user to choose whether to report **For whole case**, or to report **By waste type**. With the **For whole case** choice, SCM prints the report or graph without subdividing the information by waste type.

By waste type With the **By waste type** choice, SCM prints each waste type present in the case on separate pages.

5.2.3 Previewing Reports

Preview Select the **Preview** button to view a report.

When the user previews a report (not a graph), SCM scans the database to locate and add the appropriate data to the report. The processing time varies with the amount of data to be included in the report. Select the **Cancel** button at the bottom of the window to abort the scanning process. The number of records scanned, the number of records selected, the total number of records, and the percentage of records scanned are displayed in the bottom right corner of the window.

The following navigational and command buttons are located at the bottom of the window:

The **Home** button transfers the user to the first page of a report

The **Previous** button transfers the user to the previous page

The **Next** button transfers the user to the following page

The **End** button transfers the user to the last page of a report.

If the first page of the report is displayed, the **Home** and **Previous** buttons appear light gray and unavailable. If the last page of the report is displayed, the **Next** and **End** buttons appear light gray and unavailable.

Cancel Select the **Cancel** button to cancel the report generation process. To restart the generation of the report, reselect **Preview** from the report dialog box. The **Cancel** button is only available when SCM initially scans the database to generate the report or graph; otherwise, it appears light gray and unavailable.

Use the **Zoom** button to alternate between viewing the entire report page and two enlarged (zoomed-in) views.

Use the **Export** button to export the data from the currently-displayed report to a file. When the **Export** button is selected, the following dialog box appears.

Format From this dialog box, choose the format to export by selecting the **Format** option. Selecting **OK** will display different options depending on which format is chosen. Then a dialog box will be displayed to select a file name in which to store the exported data. Select **Cancel** to not export the report data.

Select the **Print** button to send the report to the printer. A print dialog box appears. Specify the print range and the number of copies, and select the **OK** button to begin printing. To set up the printer, refer to *Section 5.2.10 Setting up the Printer*.

5.2.4 Preview Controls

The Preview Controls dialog box, located in the lower right corner of the Preview window, appears for both report and graph previewing.

The dialog box displays controls for previewing the next report or graph, printing the current report or graph, and canceling the print preview. If the

Preview Controls dialog box is in the way of the preview window, click and hold on the title bar and drag it to a new location.

Next If more than one report or graph was selected to be generated, select the **Next** button to view the next report or graph.

SCM initializes the report engine and prepares the next report or graph. When the preview window reappears, SCM scans the database and adds the appropriate data to the report or graph.

When viewing the final report or graph (or if only one report or graph is selected), select the **Next** button to return control to the report or graph selection dialog box. From here, the reports or graphs just previewed may be printed, or other reports or graphs can be selected to preview and print. Refer to *Section 5.2.1 Selecting Reports or Graphs to Generate* for guidance.

Print Select the **Print** button to send the currently displayed report or graph to the current default printer. To set up the printer, refer to *Section 5.2.10 Setting up the Printer*.

Cancel Select the **Cancel** button to discontinue the previewing process and return to the report or graph selection dialog box. Refer to *Section 5.2.1 Selecting Reports or Graphs to Generate* for guidance.

5.2.5 Generating Case Summary Reports

Report, Case Summary Reports Select **Report, Case Summary Reports** from the menu bar to generate case summary reports. Case summary reports show information for the case as a whole, without subdivision for individual sites, in a textual (row and column) format.

Case Summary Reports

Reports to Print

- ☒ WBS 1.0 - 4.0
- ☐ WBS 5.0 - 8.0
- ☐ FTE
- ☐ Annual Costs
- ☐ Waste Loads - First Set
- ☐ Waste Loads - Second Set
- ☐ Waste Densities - First Set
- ☐ Waste Densities - Second Set
- ☐ Schedule
- ☐ TSD Scenario
- ☐ Background
- ☐ Facility Profiles
- ☒ PEIS Report - TSD
- ☐ PEIS Report - WBS

Select All Reports **Deselect All Reports**

Options

Type: All types

☒ For whole case ☐ By waste type

Preview **Print** **Export** **Done**

The **Reports to Print** group box displays the case summary reports that can be generated. Refer to *Section A2.1 Case Summary Reports* for examples of each type of report.

See *Section 5.2.2 Selecting Report Options* for information about the **Options** group.

5.2.6 Generating Site Detail Reports

Report, Site Detail Reports To generate site detail reports, select **Report, Site Detail Reports** from the menu bar. Site detail reports show information in a textual format for specific sites that the user chooses.

Site Detail Reports

Reports to Print

☒ WBS 1.0 - 4.0	☐ Annual Capacities
☐ WBS 5.0 - 8.0	☐ Annual WBS 1.0 - 8.0
☐ FTE	☐ Annual WBS 1.0 - 4.0 by Module
☒ Cost Factors	☐ Annual WBS 5.0 - 8.0 by Module
☐ Module Capacities	☐ Sending Sites

Select All Reports Deselect All Reports

Sites to Print

HA - Hanford

Hold down the Control key while clicking the mouse to select multiple sites

Select All Sites Deselect All Sites

Options

Type: MLLW All types ☒ For whole case ☐ By waste type

Preview Print Export Done

The **Reports to Print** group box displays the reports that can be generated. Refer to *Section A2.2 Site Detail Reports* for examples of each type of report.

The **Sites to Print** group box lists the sites for which the selected reports will be generated.

Click on a site name to select it. To select multiple sites, hold down the **Control** key while clicking on the site names. The selections will appear highlighted. Use the **Vertical Scroll Bar** to display sites that are not currently displayed in the box.

5.2.7 Generating Case Summary Graphs

Case Summary Graphs			
Graphs to Print			
☒ Life Cycle by TSD	☐ TSD Cost Timeline		
☐ Life Cycle by WBS	☐ WBS Cost Timeline		
<input type="button" value="Select All Graphs"/>	<input type="button" value="Deselect All Graphs"/>		
Options			
Type: <input type="button" value="All types"/>	☒ For whole case ☐ By waste type		
<input type="button" value="Preview"/>	<input type="button" value="Print"/>	<input type="button" value="Export"/>	<input type="button" value="Done"/>

See *Section 5.2.2 Selecting Report Options* for information about the **Options** group.

5.2.8 Generating Site Detail Graphs

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Site Detail Graphs

Graphs to Print

☒ TSD Cost Timeline ☐ WBS Cost Timeline

Select All Graphs Deselect All Graphs

Sites to Print

✓ HA - Hanford

Hold down the Control key while clicking the mouse to select multiple sites

Select All Sites Deselect All Sites

Options

Type: All types

☒ For whole case ☐ By waste type

Preview Print Export Done

The **Graphs to Print** group box displays the graphs that can be generated. Refer to *Section A2.4 Site Detail Graphs* for examples of each type of graph.

The **Sites to Print** group box displays the sites for which graphs will be generated.

Click on a site name to select it. To select multiple sites, hold down the **Control** key while clicking on the site names. The selections will appear highlighted. Use the **Vertical Scroll Bar** to display sites that are not currently displayed in the box.

See *Section 5.2.2 Selecting Report Options* for information about the **Options** group.

5.2.9 Generating Case Comparison Graphs

Report, Case Comparison Graphs To generate a variety of case comparison graphs, select **Report, Case Comparison Graphs** from the menu bar. Case comparison graphs display information from multiple cases (as selected by the user) in a bar or line graph.

Case Comparison Graphs

Graphs to Print

☒ TSD ☐ WBS 1.0 - 4.0

☐ Cumulative Cost Over Time ☐ WBS 5.0 - 8.0

Select All Graphs **Deselect All Graphs**

Cases to Print

AABEMRM

✓ AAHAN

AAMULTI

BEMRLLW

✓ BEMRMLLW

BEMRRUN

BEMRTRUW

BETACASE

Hold down the Control key while clicking the mouse to select multiple cases

Select All Cases **Deselect All Cases**

Options

Type: All types ☐ For whole case ☒ By waste type

Preview **Print** **Export** **Done**

The **Graphs to Print** group box displays the graphs that can be generated. Refer to *Appendix A2.5 Case Comparison Graphs* for examples of each type of graph.

The **Cases to Print** group box displays the cases that can be incorporated into the selected case comparison graphs.

Click on the first case name to select. To select other cases, hold down the **Control** key while clicking on the case names. The selections will appear highlighted. Use the **Vertical Scroll Bar** to display cases that are not currently displayed in the box.

See *Section 5.2.2 Selecting Report Options* for information about the **Options** group.

5.2.10 Setting up the Printer

Report, Printer Setup Select **Report, Printer Setup** to select a printer and the source, size, and orientation of the paper, along with other options specific to individual printers. Refer to the *Microsoft Windows User's Guide* for additional guidance.

6. Using the Help System

6. Introduction

The Help pull-down menu at the top of the window contains the Help resources and the information from this manual.

6.1 Accessing Help

Help, Contents Access the SCM Help Contents window by selecting **Help, Contents** from the menu bar.

Contents Select the **Contents** button at the top of the System Cost Model Help window to return to the Contents window when using Help.

The SCM Contents window is the Help System's table of contents. Review the green underlined items and select a topic by clicking on the desired item.

In many cases, several sub-topics will appear. Select the appropriate sub-topic. Related topics may appear underlined at the bottom of the window. Click on one of these related topics to read its description.

While in SCM, press the **F1** key to display help for the particular section of SCM that is currently active. For example, when using the TSD Scenario dialog box, pressing F1 will display help for that function.

6.1.1 Navigating Help

Help provides several navigational buttons to move efficiently through the help topics.

- Back** Select the **Back** button to return to the previous help topic.
- History** Select the **History** button to view the list of help topics accessed during the current help session. Double click on the desired topic in the Help History dialog box to access that topic.
- Alt + Tab** Press and hold down the **Alt** key then press the **Tab** key to move between the SCM Help System and the SCM application. When several applications are running, it may be necessary to press the **Tab** key several times while holding the **Alt** key down.

6.1.2 Using the Help Menu Bar

The Help menu bar allows for printing the current Help window, quitting Help, copying text from a Help window, marking a Help window, and receiving assistance using Help.

- File** The **File** menu provides choices for opening other help files, printing the topic file currently displayed, specifying the print setup, and quitting Help.
- Edit** The **Edit** menu allows for copying text from any Help topic to the Clipboard, and allows adding of comments to the Help topics.
- Bookmark** The **Bookmark** menu allows definition of place holders at frequently used Help topics. This menu lists previously defined bookmarks for easy retrieval.
- Help** The **Help** menu explains how to use the Help System. This menu controls whether Help windows are to overlap any other application's windows. This "Always On Top" option can be useful when following a step-by-step procedure on-screen, to help refer back to a particular Help topic. Refer to the *Microsoft Windows User's Guide* for a more detailed description.

6.1.3 Reviewing SCM Terms

Glossary Select the **Glossary** button to view a list of SCM terms and their definitions.

Each term is dot-underlined. Click on the word and a pop-up definition appears. Click on the window again to hide the definition.

6.2 Searching for Specific Help Topics

Search for a specific topic using a key word or title.

- Help, Search for Help on** Select **Help, Search for Help on** from the menu bar, to search for a specific help topic. The Search dialog box appears.

Search While in the SCM Help System, select the **Search** button at the top of the window to search for a specific help topic.

The list of topics is arranged alphabetically in the Search dialog box. Either enter a word or scroll through the list to select a topic.

By the user entering a word, the first letter entered calls up the first word in the list beginning with that letter. Each letter typed thereafter narrows the search by moving to the word that begins with that particular combination of letters. There may be several entries from which to choose. Use the scroll bar to view those entries that do not appear in the dialog box.

Show Topics Select the **Show Topics** button to view a short list of topics associated with the highlighted word.

Go To Select the topic and the **Go To** button to access the requested topic.

6.3 Reviewing Information About System Cost Model

Help, About SCM Select **Help, About SCM** from the menu bar, to review information about SCM. The About System Cost Model dialog box appears.

The About System Cost Model dialog box displays the version number, the name, address, and telephone number of SCM developers, and pertinent copyright and contract information.

Done Select the **Done** button to leave the About dialog box and return to the menu bar.

Appendix 1: Abbreviations and Codes

A1.1 Waste Type Abbreviations

System Cost Model (SCM) works with the following types of waste, each shown with its identifying abbreviation.

LLW	Low-level waste (LLW) contains less than 10 nCi/gm of radioactivity except when it has alpha emissions which are between 10 and 100 nCi/gm.
MLLW	Mixed low-level waste (MLLW) is a combination of hazardous waste and low-level waste.
TRUW	Transuranic waste (TRUW) is generated by irradiating uranium and results in the formation of elements heavier than uranium with the subsequent radioactive decay of these elements into lighter waste products.

The following waste subtypes are supported by SCM.

A	Alpha waste contains transuranic nuclide at concentrations ranging from 10 to 100 nCi/gm.
NA	Nonalpha waste contains transuranic nuclide at concentrations below 10 nCi/gm.
CH	Contact-handled waste has a contact radiation dose less than 200 mrem/hr.
RH	Remote-handled waste has a contact radiation dose at or greater than 200 mrem/hr.

A1.2 Treatment, Storage, and Disposal Site Codes

Each of the following sites are identified by a site number and a two-letter site code. These codes are listed in alphabetical order by site name.

AM	Ames Laboratory
AE	Argonne National Laboratory East
AW	Argonne National Laboratory West
BC	Battelle Columbus Laboratory
BA	Bettis Atomic Power Laboratory
BN	Brookhaven National Laboratory
CN	Charleston Naval Station
CI	Colonie Interim Storage Site
ET	Energy Technology Engineering Center
FE	Fermi National Atomic Laboratory
FM	Fernald Environmental Management Project
GA	General Atomics
GE	General Electric Vallecitos
GJ	Grand Junction Project Office
HA	Hanford
ID	Idaho National Engineering Laboratory
IT	Inhalation Toxicology Research
KC	Kansas City Plant
KK	Knolls - Kesselring
KS	Knolls - Schenectady
KW	Knolls - Windsor
EH	Laboratory for Energy-Related Health Research
LB	Lawrence Berkeley Laboratory
LL	Lawrence Livermore National Laboratory
LA	Los Alamos National Laboratory
MI	Mare Island Naval Station
MS	Middlesex Sampling Plant
MD	Mound Plant
NR	Naval Reactor Facility
NV	Nevada Test Site
NN	Norfolk Naval Station
OR	Oak Ridge Reservation
PG	Paducah Gaseous Diffusion Plant
PX	Pantex Plant
PH	Pearl Harbor Naval Station
PI	Pinellas Plant
PO	Portsmouth Gaseous Diffusion Plant
PN	Portsmouth Naval Station
PP	Princeton Plasma Physics Lab
PS	Puget Sound Naval Station
RM	RMI Titanium, Inc.

RF	Rocky Flats Plant
SL	Sandia National Laboratory - Albuquerque
SC	Sandia National Laboratory - Livermore
SR	Savannah River Site
SM	Site A/Plot M, Palos Forest Preservation
ST	Stanford Linear Accelerator Complex
UM	University of Missouri
WP	Waste Isolation Pilot Plant
WS	Weldon Spring Site
WV	West Valley Demonstration Project

A1.3 Module Codes

This section lists the five-letter module codes that identify treatment, storage, and disposal modules.

A1.3.1 Pre-Treatment Storage Module Codes

PADMN	Pre-Treatment Storage Administration
PRCSH	Pre-Treatment Receive, Certification, and Shipping
PSTOR	Pre-Treatment Storage

A1.3.2 Treatment Module Codes

AQWTR	Aqueous Waste Treatment
ASPAK	Assay, Sort, & Packaging
CMPCT	Shredding/Compaction
CSHIP	Certification/Shipping
DEACT	Deactivation/Reactive Metals Removal
DECON	Decontamination
DWASH	Debris Washing
EWASH	Soil Washing
GROUT	Grout Stabilization
INCIN	Incineration
MAINT	Maintenance
MMELT	Metal Melting
NEUTR	Neutralization (Liquid Waste)
NPACK	Nongasing Packaging
ORGRM	Organic Removal
ORGSB	Organic Stabilization
OSORT	Open, Dump, & Sort
PACKG	Packaging
PBRCR	Lead Recovery
PLYMR	Polymer Stabilization
RCINS	Receiving & Inspection

RECYC	Recycling
RETRV	Waste Retrieval
RMERC	Mercury Recovery
SPECL	Special Waste Processing
SUPER	Supercompaction
SWASH	Sludge Washing
TADMN	Treatment Administration
THDRB	Thermal Desorption
TSTOR	Treatment Storage
VITRF	Vitrification
WCHAR	Waste Characterization (Physical)
WETOX	Wet Air Oxidation

A1.3.3 Storage Module Codes

SADMN	Storage Administration
SRCSH	Storage Front/Back End
SRCSH	Storage Receiving and Shipping
STORE	Storage
STOSI	Silo Storage

A1.3.4 Disposal Module Codes

AGDSP	Above Ground Engineered Disposal
BHDSP	Borehole Disposal
DADMN	Disposal Administration
DRECV	Disposal Front End
IDDSP	Intermediate Depth Disposal
SIDSP	Silo Disposal
SLDSP	Shallow Land Disposal

Appendix 2: Report & Graph Samples

A2. Report & Graph Samples

Examples of System Cost Model (SCM) report and graph outputs can be found in the *System Cost Model User's Manual*.

A2.1 Case Summary Reports

This section presents samples of graphs which can be generated from SCM as described in *Section 5.2.5 Generating Case Summary Reports*.

The sample reports presented in this section are shown in the order in which they appear in the report dialog box. They are as follows:

- WBS 1.0 - 4.0
- WBS 5.0 - 8.0
- FTE
- Annual Costs
- Waste Loads - First Set
- Waste Loads - Second Set
- Waste Densities - First Set
- Waste Densities - Second Set
- Schedule
- TSD Scenario
- Background
- Facility Profiles
- PEIS Report - TSD
- PEIS Report - WBS

Detailed Work Breakdown Structure PLCC by Site

Non-alpha MLLW

All costs in thousands of dollars

Case: TESTCASE

WBS 1.0 - 4.0:

WORK BREAKDOWN STRUCTURE						
Code	Name of Site	1.0	2.0	3.0	4.0	Total PLCC
AE	Argonne National Laboratory East	2,770	17,000	52,311	8,659	80,752
AW	Argonne National Laboratory West	3,974	34,149	45,994	4,517	88,635
BN	Brookhaven National Laboratory	3,755	35,184	39,797	4,775	83,513
CN	Charleston Naval Station	0	0	0	0	0
EH	Laboratory for Energy-Related Health Research	0	0	0	0	0
ET	Energy Technology Engineering Center	0	0	0	2,537	2,537
GA	General Atomics	185	424	9,338	64	10,012
HA	Hanford	97,838	176,447	1,967,573	837,743	3,079,603
ID	Idaho National Engineering Laboratory	9,432	31,537	214,984	73,167	329,120
IT	Inhalation Toxicology Research	900	12,239	10,235	2,320	25,696
LA	Los Alamos National Laboratory	9,329	52,754	114,807	14,034,303	14,211,196
LB	Lawrence Berkeley Laboratory	2,283	21,024	17,148	9,881	50,338
LL	Lawrence Livermore National Laboratory	18,532	48,920	202,365	81,149	348,967
MD	Mound Plant	0	0	0	0	0
NV	Nevada Test Site	30,839	111,534	549,849	764,015	1,456,040
OR	Oak Ridge Reservation	59,450	1,012,514	1,214,277	690,034	2,976,277
PO	Portsmouth Gaseous Diffusion Plant	26,150	93,533	303,465	271,102	694,253
PX	Pantex Plant	4,628	42,802	54,812	7,165	109,307
RF	Rocky Flats Plant	0	70,807	0	0	70,807
SL	Sandia National Laboratory - Albuquerque	2,377	21,242	22,169	2,250	48,039
SR	Savannah River Site	54,092	196,217	552,099	222,087	1,024,497
WV	West Valley Demonstration Project	3,318	33,807	29,302	4,588	71,015
		329,861	2,010,242	5,400,131	17,020,377	24,760,613

Detailed Work Breakdown Structure PLCC by Site

Non-alpha MLLW

All costs in thousands of dollars (constant dollars)

Case: TESTCASE

WBS 5.0 - 8.0:

WORK BREAKDOWN STRUCTURE						
Code	Name of Site	5.0	6.0	7.0	8.0	Total PLCC
AE	Argonne National Laboratory East			21		21
AW	Argonne National Laboratory West			0		0
BN	Brookhaven National Laboratory			81		81
CN	Charleston Naval Station			1		1
EH	Laboratory for Energy-Related Health Research			2		2
ET	Energy Technology Engineering Center			3		3
GA	General Atomics			1		1
HA	Hanford	35,750		0	9,900	45,650
ID	Idaho National Engineering Laboratory			0		0
IT	Inhalation Toxicology Research			2		2
LA	Los Alamos National Laboratory			0		0
LB	Lawrence Berkeley Laboratory			3		3
LL	Lawrence Livermore National Laboratory			339		339
MD	Mound Plant			4		4
NV	Nevada Test Site			0		0
OR	Oak Ridge Reservation			0		0
PO	Portsmouth Gaseous Diffusion Plant			5,147		5,147
PX	Pantex Plant			43		43
RF	Rocky Flats Plant			0		0
SL	Sandia National Laboratory - Albuquerque			5		5
SR	Savannah River Site			0		0
WV	West Valley Demonstration Project			0		0
		35,750	0	6,659	9,900	51,309

Detailed Work Breakdown Structure FTEs by Site

Non-alpha MLLW

Case: TESTCASE

WORK BREAKDOWN STRUCTURE						
Code	Name of Site	1.0	2.0	3.0	4.0	Total FTEs
AE	Argonne National Laboratory East	17	67	324	12	420
AW	Argonne National Laboratory West	24	130	365	18	537
BN	Brookhaven National Laboratory	23	135	308	19	486
CN	Charleston Naval Station	0	0	0	0	0
EH	Laboratory for Energy-Related Health Research	0	0	0	0	0
ET	Energy Technology Engineering Center	0	0	0	0	0
GA	General Atomics	1	2	47	0	50
HA	Hanford	816	841	16,912	1,660	20,228
ID	Idaho National Engineering Laboratory	58	120	1,494	174	1,847
IT	Inhalation Toxicology Research	5	50	59	9	123
LA	Los Alamos National Laboratory	57	202	808	32	1,099
LB	Lawrence Berkeley Laboratory	14	78	174	9	275
LL	Lawrence Livermore National Laboratory	116	175	1,475	31	1,797
MD	Mound Plant	0	0	0	0	0
NV	Nevada Test Site	185	425	3,568	465	4,644
OR	Oak Ridge Reservation	357	4,402	7,956	882	13,596
PO	Portsmouth Gaseous Diffusion Plant	161	351	2,126	63	2,701
PX	Pantex Plant	28	166	414	24	632
RF	Rocky Flats Plant	0	0	0	0	0
SL	Sandia National Laboratory - Albuquerque	14	79	201	9	304
SR	Savannah River Site	374	715	4,096	332	5,517
WV	West Valley Demonstration Project	20	130	246	18	414
		2,270	8,069	40,574	3,757	54,669

Annual Costs:

Annual Costs by Site

MLLW

Case: TESTCASE

Argonne National Laboratory East

Year	Cost
1991	5,666
1992	7,052
1993	7,052
1994	2,496
1995	2,621
1996	2,721
1997	2,846
1998	2,971
1999	3,121
2000	3,245
2001	3,395
2002	3,545
2003	3,720
2004	3,870
2005	4,044
2006	4,244
2007	4,419
2008	4,619
2009	4,843
2010	5,043
2011	5,268
2012	5,517
2013	5,767
2014	1,402
2015	1,466
2016	1,530
2017	1,600
2018	1,676
2019	3,467
2020	3,617
2021	3,778
2022	3,951
2023	4,123
Total	124,710

Argonne National Laboratory West

Year	Cost
1991	11,383
1992	13,370
1993	13,370
1994	2,299
1995	2,414
1996	2,506
1997	2,621
1998	2,736
1999	2,874
2000	2,989
2001	3,127
2002	3,265

Date Calculated: 5/ 1/95
Date Printed: 5/ 1/95

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Program version 1.2
Data version 1.2

Total Waste Loads by Site - First Set

Non-alpha MLLW

Volume in cubic meters

Case: TESTCASE

	1100	1200	2110	2120	2210	2220	3110	3120	3140	3160	3180	3210	3220	4100	4200	Total
AE	135															135
AW	16						354			0		8,888				9,240
BN			68				8	3,417		376						3,859
CN							17									17
ET	2															2
GA	553															553
HA		2,549,850	41	183,982		4,985		206,291	46,402	142,051	142,511	61,775	187		2,151	3,340,230
ID	828	2,955	191	7,717		564	3,027	11,420	653		26	119	4			27,506
LA	1,830	926		771			4,387	581			2	68				8,369
LB										163						163
LL	120,700		23,350			2,802	1,401	4,682		7,199			95	1,961		162,171
MD					24											24
NV		370,240												59		370,299
OR	64,078	14,842	24,753	641,483		3,287	4,531	8,582	20,797	284,026	35	3,084	1,982	108	7,531	1,056,902
PO	9,384	1,189					2,254	9,190		3,674		11,300	138	99,952		137,092
PP			69							534						623
PX																2
SL									0	0				2		0
SR	118,815	110,921		51,584		403	29,212	240				4	17		4	311,203
WV	12	11	0				712			225						961

Total Waste Loads by Site - Second Set

Volume in cubic meters

Case: TESTCASE

Non-alpha MLLW

	5300	5400	Total
AW	0	0	0

Date Calculated: 5/ 1/95
Date Printed: 5/ 1/95

Waste Densities by Site - First Set

Non-alpha MLLW

Density in kilograms per cubic meter

Case: TESTCASE

	1100	1200	2110	2120	2210	2220	3110	3120	3140	3150	3160	3210	3220	4100	4200
AE	961	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AW	961	0	0	0	0	0	650	0	0	1,198	0	320	0	0	0
BN	0	0	990	0	0	0	650	658	0	1,198	0	0	0	0	0
CN	0	0	0	0	0	0	650	0	0	0	0	0	0	0	0
ET	961	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GA	961	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HA	0	1,050	990	942	0	816	0	658	658	1,198	1,198	320	500	0	750
ID	961	1,050	990	942	0	816	650	658	658	0	1,198	320	500	0	0
LA	961	1,050	0	942	0	0	650	658	0	0	1,198	320	0	0	0
LB	0	0	0	0	0	0	0	0	0	1,198	0	0	0	0	0
LL	961	0	990	0	0	816	650	658	0	1,198	0	0	500	1,100	0
MD	0	0	0	0	1,360	0	0	0	0	0	0	0	0	0	0
NV	0	1,050	0	0	0	0	0	0	0	0	0	0	0	1,100	0
OR	961	1,050	990	942	0	816	650	658	658	1,198	1,198	320	500	1,100	750
PO	961	1,050	0	0	0	0	650	658	0	1,198	0	320	500	1,100	0
PP	0	0	990	0	0	0	0	0	0	1,198	0	0	0	0	0
PX	0	0	0	0	0	0	0	0	0	0	0	0	0	1,100	0
SL	0	0	0	0	0	0	0	0	658	1,198	0	0	0	0	0
SR	961	1,050	0	942	0	816	650	658	0	0	0	320	500	0	750
WV	961	1,050	990	0	0	0	650	0	0	1,198	0	0	0	0	0

Waste Densities - First Set:

Waste Densities by Site - Second Set

Density in kilograms per cubic meter

Case: TESTCASE

Non-alpha MLLW

	5300	5400
AW	320	400

Date Calculated: 5/ 1/95
Date Printed: 5/ 1/95

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Data version 1.2

Site Schedule

Non-alpha MLLW

Case: TESTCASE

Code	Name of Site	TREATMENT			STORAGE	DISPOSAL
		Start Const.	Years Const.	Years Oper.	Years Const.	Years Const.
AE	Argonne National Laboratory East	1995	3	10		
AW	Argonne National Laboratory West	1995	3	10		
BN	Brookhaven National Laboratory	1995	3	10		
CN	Charleston Naval Station	1995	3	10		
ET	Energy Technology Engineering Center	1995	3	10		
GA	General Atomics	1995	3	10		
HA	Hanford	1995	5	25		5
ID	Idaho National Engineering Laboratory	1995	5	30	3	5
IT	Inhalation Toxicology Research	1995	3	10		
LA	Los Alamos National Laboratory	2000	5	30	3	5
LB	Lawrence Berkeley Laboratory	1995	3	10		
LL	Lawrence Livermore National Laboratory	1995	3	10		
MD	Mound Plant	1995	3	10		
NV	Nevada Test Site	1995	3	10		3
OR	Oak Ridge Reservation	2000	5	10	3	5
PO	Portsmouth Gaseous Diffusion Plant	1995	3	10		
PP	Princeton Plasma Physics Lab	1994	3	10		
PX	Pantex Plant	1995	3	10		
SL	Sandia National Laboratory - Albuquerque	1995	3	10		
SR	Savannah River Site	1994	3	30	3	5
WV	West Valley Demonstration Project	1994	3	10		3

TSD Scenario

Non-alpha MLLW

Case: TESTCASE

TSD Scenario:

Code	Name of Site	TREATMENT		STORAGE		DISPOSAL		Treatment Option
		Site	Transport	Site	Transport Years	Site	Transport	
AE	Argonne National Laboratory East	AE	Rail			HA	N/A	BEMR Calibrated
AW	Argonne National Laboratory West	AW				ID	N/A	BEMR Calibrated
BN	Brookhaven National Laboratory	BN				HA	N/A	BEMR Calibrated
CN	Charleston Naval Station	CN				SR	N/A	BEMR Calibrated
EH	Laboratory for Energy-Related Health Research	HA				HA		BEMR Calibrated
ET	Energy Technology Engineering Center	ET				HA	N/A	BEMR Calibrated
GA	General Atomics	GA				NV	N/A	BEMR Calibrated
IT	Inhalation Toxicology Research	IT				NV	N/A	BEMR Calibrated
LB	Lawrence Berkeley Laboratory	LB				HA	N/A	BEMR Calibrated
LL	Lawrence Livermore National Laboratory	LL				HA	N/A	BEMR Calibrated
MD	Mound Plant	MD				NV	N/A	BEMR Calibrated
NV	Nevada Test Site	NV				NV		BEMR Calibrated
PO	Portsmouth Gaseous Diffusion Plant	PO				NV	N/A	BEMR Calibrated
PX	Pantex Plant	PX				NV	N/A	BEMR Calibrated
SL	Sandia National Laboratory - Albuquerque	SL				NV	N/A	BEMR Calibrated
HA	Hanford	HA				HA		BEMR Calibrated
ID	Idaho National Engineering Laboratory	ID		ID	1	ID		BEMR Calibrated
LA	Los Alamos National Laboratory	LA		LA	1	LA		BEMR Calibrated
OR	Oak Ridge Reservation	OR		OR	1	OR		BEMR Calibrated
SR	Savannah River Site	SR		SR	1	SR		BEMR Calibrated
PP	Princeton Plasma Physics Lab	PP				HA	N/A	BEMR Calibrated
WV	West Valley Demonstration Project	WV				WV		BEMR Calibrated

NOTE: N/A indicates that transportation data is not available

Date Calculated: 5/ 1/95
Date Printed: 5/ 1/95

Background:

Case Background

Case: TESTCASE

Data Version: 1.2
Program Version: 1.2

Last Save: 5/ 1/95 11:19:21
Last Run: 5/ 1/95 17:27:27

of Treatment Sites: 22
of Storage Sites: 5
of Disposal Sites: 7

Notes:

Date Calculated: 5/ 1/95
Date Printed: 5/ 1/95

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Program version 1.
Data version 1.

Facility Profiles:

Facility Profiles

Case: TESTCASE

Argonne National Laboratory East

	Module	Capacity
Alkali Metal Reaction Booths	DEACT	73,156
Building 306	AQWTR	47,000
Radioactive Liquid Evaporator/Concentrator, B306	NEUTR	2,750,000
TRUEX Bldg 205	PACKG	0

Brookhaven National Laboratory

	Module	Capacity
Compactor, Bldg 446	CMPCT	0
Radioactive Waste Concentration Facility, B881	GROUT	0
	NEUTR	0

Energy Technology Engineering Center

	Module	Capacity
Radioactive Materials Disposal Facility	AQWTR	345,000
	RMERC	800

Fernald Environmental Management Project

	Module	Capacity
Plant 8 VOC Treatment System	AQWTR	23,862,000
UNH Treatment Facility	NEUTR	765,000

Lawrence Berkeley Laboratory

	Module	Capacity
Building 75	AQWTR	69,000
	GROUT	760,000
Building 85	AQWTR	99,000
	GROUT	758,000
LLW Compactor, Bldg 75A	CMPCT	0
LLW Solidification, Bldg 75	GROUT	58,800
LLW Scintillation Vial Crusher, Bldg 75A	CMPCT	0

Lawrence Livermore National Laboratory

	Module	Capacity
Area 514 WWFU	NEUTR	6,822,000
Area 514-1 Waste Water Treatment Facility	AQWTR	147,000,000
Shredding Unit, Bldg 513	CMPCT	840,000
Size Reduction Unit, Bldg 612	CMPCT	64,400

Nevada Test Site

	Module	Capacity
LLW Disposal Unit, Area 3 RWMS	SLDSP	38,200
LLW Disposal Unit, Area 5	SLDSP	6,700
Area 6 Decontamination Pond	NEUTR	1,400,000
Mixed Waste Management Unit, PO3U	SLDSP	12,648

Paducah Gaseous Diffusion Plant

	Module	Capacity
C-400-C Evaporator	NEUTR	19,600
C-400-D Lime Precipitation Unit	NEUTR	136,000

Date Calculated: 5/ 1/95
Date Printed: 5/ 1/95

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Program version 1.2
Data version 1.2

Non-alpha MLLW**PEIS TSD Modules**

All costs in millions of dollars (constant dollars)

Case: TESTCASE

Module	SITE											Total
	LA	HA	OR	NV	SR	PO	OT	LL	ID	PX	AW	
Pre-treatment Cost	48	0	596	0	0	0	0	0	0	0	0	642
Treatment Cost	117	1,762	427	329	559	694	436	349	141	109	89	5,012
Storage Cost	29	0	389	0	188	0	6	0	71	0	0	683
Disposal Cost	14,019	1,317	1,565	1,127	297	0	0	0	117	0	0	18,442
	14,211	3,079	2,977	1,456	1,024	694	442	349	329	109	89	24,759

NOTE: The OT column shows the total of all other sites

Date Calculated: 5/ 1/95
Date Printed: 5/ 1/95

PEIS Work Breakdown Structure

Non-alpha MLLW

All costs in millions of dollars (constant dollars)

Case: TESTCASE

Work Breakdown Structure	SITE											Total
	LA	HA	OR	NV	SR	PO	OT	LL	ID	PX	AW	
1.0 Pre-operations	9	98	59	31	54	26	18	19	9	5	4	330
2.0 Construction	53	178	1,013	112	198	94	212	47	32	43	34	2,012
3.0 Operations & Maintenance	115	1,968	1,214	550	552	303	180	202	215	55	48	5,400
4.0 Decontamination & Commissioning	14,034	838	690	764	222	271	35	81	73	7	5	17,020
5.0 Commercial Contract Services	0	36	0	0	0	0	0	0	0	0	0	36
6.0 DOE-Provided Off-site Services	0	0	0	0	0	0	0	0	0	0	0	0
7.0 Transportation	0	0	0	0	0	5	0	0	0	0	0	5
8.0 Special Site Costs	0	10	0	0	0	0	0	0	0	0	0	10
	14,211	3,126	2,976	1,457	1,024	699	443	349	329	110	89	24,613

NOTE: The OT column shows the total of all other sites

Date Calculated: 5/ 1/95
Date Printed: 5/ 1/95

A2.2 Site Detail Reports

This section presents samples of graphs that can be generated from SCM as described in *Section 5.2.6 Generating Site Detail Reports*.

The sample reports presented in this section are shown in the order in which they appear in the report dialog box. They are as follows:

- WBS 1.0 - 4.0
- WBS 5.0 - 8.0
- FTE
- Cost Factors
- Module Capacities
- Annual Capacities
- Annual WBS 1.0 - 8.0
- Annual WBS 1.0 - 4.0 by Module
- Annual WBS 5.0 - 8.0 by Module
- Sending Sites

Hanford

Work Breakdown Structure PLCC by Module

Non-alpha MLLW

All costs in thousands of dollars (constant dollars)

Case: TESTCASE

WORK BREAKDOWN STRUCTURE					
Module Name	1.0	2.0	3.0	4.0	Total PLCC
Treatment					
AQWTR	11,531	29,742	161,454	260,139	462,868
CSHIP	5,086	10,705	97,102	1,026	113,920
GROUT	4,488	14,475	53,094	3,945	76,003
INCIN	11,715	16,652	48,443	4,099	80,911
MAINT	3,843	6,450	189,547	17,242	217,084
PACKG	8,476	11,075	130,100	1,371	151,024
PLYMR	884	9,759	16,401	1,558	28,603
RCINS	3,408	2,576	20,269	43,834	70,089
TADMN	13,808	6,850	465,793	57,534	543,986
TSTOR	1,103	5,306	3,254	8,333	17,997
	64,347	113,593	1,185,462	399,086	1,762,490
Disposal					
DADMN	5,878	6,012	186,851	2,220	200,962
DRECV	8,867	12,922	206,473	7,084	235,348
SLDSP	18,744	43,919	388,785	429,352	880,802
	33,490	62,853	782,111	438,657	1,317,113
Pre-Treat					
OTHER	0	0	0	0	0
	0	0	0	0	0
	97,838	176,447	1,987,573	837,743	3,079,603

Hanford

Work Breakdown Structure PLCC by Module

Non-alpha MLLW

All costs in thousands of dollars (constant dollars)

Case: TESTCASE

WORK BREAKDOWN STRUCTURE					
Module Name	5.0	6.0	7.0	8.0	Total PLCC
AQWTR	0	0	0	0	0
CSHIP	0	0	0	0	0
DADMN	0	0	0	0	0
DRECV	0	0	0	0	0
GROUT	0	0	0	0	0
INCIN	0	0	0	0	0
MAINT	0	0	0	0	0
OTHER	35,750	0	0	9,900	45,650
PACKG	0	0	0	0	0
PLYMR	0	0	0	0	0
RCINS	0	0	0	0	0
SLDSP	0	0	0	0	0
TADMN	0	0	0	0	0
TSTOR	0	0	0	0	0
	35,750	0	0	9,900	45,650

Hanford

Detailed Work Breakdown Structure FTEs by Module

Non-alpha MLLW

Case: TESTCASE

WORK BREAKDOWN STRUCTURE					
Module	1.0	2.0	3.0	4.0	Total FTEs
Treatment					
AQWTR	95	141	639	39	915
CSHIP	42	47	897	5	990
GROUT	37	69	501	18	625
INCIN	103	74	618	19	815
MAINT	32	29	1,789	4	1,855
PACKG	71	51	740	6	868
PLYMR	5	38	143	6	193
RCINS	30	11	191	2	234
TADMN	114	31	4,398	10	4,552
TSTOR	9	29	96	14	148
	539	521	10,011	123	11,194
Disposal					
DADMN	49	27	1,846	6	1,928
DRECV	73	62	1,931	33	2,099
SLDSP	155	230	3,124	1,498	5,007
	277	319	6,901	1,537	9,034
Pre-Treat					
OTHER	0	0	0	0	0
	0	0	0	0	0
	816	841	16,912	1,660	20,228

Cost Factors:

Hanford Cost Factors

Case: TESTCASE

Construction Costs

Design	25.0%
Inspection	8.0%
Project Management	3.0%
Construction Indirect	13.0%
Construction Management	8.0%
Management Reserve	0.0%
Construction Contingency	13.0%

Pre-operations Costs

Conceptual Design	9.0%
Safety Assurance	9.0%
Preparation for Operations	100.0%
Pre-operations Management	10.0%
NEPA Permitting (K\$)	\$6,000.0

Operations Costs

Contingency	15.0%
-------------	-------

FTE Costs (K\$/year)

Engineering	\$109.0
Construction	\$87.0
Operating	\$97.0
Engineering/Construction	\$107.0

Hanford Module Capacities

Non-alpha MLLW

Treatment capacities in kilograms per year; all other capacities in cubic meters per year

Case: TESTCASE

MODULE CAPACITIES										
Module Name	Existing Facilities					New Facilities				
	Avg Cap	Max Cap	Total Cap	Start Date	End Date	Avg Cap	Max Cap	Total Cap	Start Date	End Date
Treatment										
AQWTR	5,307,176	6,580,899	64,522,480	1994	2024	6,580,146	6,580,146	32,900,732	2025	2029
CSHIP						3,024,237	3,629,103	108,872,564	1994	2029
GROUT						990,381	1,188,463	35,653,721	1994	2029
INCIN						129,918	129,918	3,897,551	2000	2029
MAINT	6,311,816	7,574,209	89,354,489	1995	2024	1,051,889	7,573,456	37,868,037	1994	2029
PACKG						3,625,270	3,625,270	108,758,125	2000	2029
PLYMR						24,995	29,995	899,844	1994	2029
RCINS	654,925	654,925	16,373,147	2000	2024	654,925	654,925	3,274,629	2025	2029
TADMN	6,311,816	7,574,209	89,354,489	1995	2024	1,051,889	7,573,456	37,868,037	1994	2029
TSTOR	573,300	573,300	12,612,600	2000	2021	234,505	654,925	7,035,177	2000	2029
Disposal										
DADMN	1,000	1,000	10,000	2000	2009	1,414	2,064	50,917	1994	2029
DRECV						1,692	2,064	60,917	1994	2029
SLDSP	1,000	1,000	10,000	2000	2009	1,414	2,064	50,917	1994	2029

Annual Capacities:

Hanford Annual Module Capacities

Non-alpha MLLW

Case: TESTCASE

Treatment capacities in kilograms per year, All other capacities in cubic meters per year

Module Name Year	MODULE CAPACITIES	
	Existing	New
Treatment AQWTR		
1994	752	0
1995	752	0
1996	752	0
1997	752	0
1998	752	0
1999	752	0
2000	6,580,899	0
2001	6,580,899	0
2002	6,580,899	0
2003	6,580,899	0
2004	6,580,899	0
2005	6,580,899	0
2006	6,580,899	0
2007	6,580,899	0
2008	6,580,899	0
2009	6,580,899	0
2010	6,580,899	0
2011	6,580,899	0
2012	6,580,899	0
2013	6,580,899	0
2014	6,580,899	0
2015	6,580,899	0
2016	6,580,899	0
2017	6,580,899	0
2018	6,580,899	0
2019	6,580,146	0
2020	6,580,146	0
2021	6,580,146	0
2022	6,580,146	0
2023	6,580,146	0
2024	6,580,146	0
2025	0	6,580,146
2026	0	6,580,146
2027	0	6,580,146
2028	0	6,580,146
2029	0	6,580,146
CSHIP		
1994	0	109
1995	0	109
1996	0	109

Date Calculated: 5/ 1/95
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Program version 1.2
Data version 1.2

Hanford Annual WBS 1.0 - 8.0 Costs

Non-alpha MLLW

All costs in thousands of dollars (actual dollars)

Case: TESTCASE

	1.0	2.0	3.0	4.0	5.0	8.0	Total
1990	0	22,218	0	0	0	0	22,218
1991	0	22,218	0	0	0	0	22,218
1992	30,801	22,218	0	0	0	0	53,020
1993	30,801	22,218	0	0	0	0	53,020
1994	0	0	31,145	0	0	0	31,145
1995	0	13,724	32,702	0	0	1,732	48,159
1996	0	14,247	33,948	0	0	1,798	49,994
1997	0	14,900	35,506	0	0	1,881	52,287
1998	12,670	15,554	37,063	0	0	1,863	67,251
1999	13,309	16,338	38,932	0	0	2,062	70,642
2000	0	0	48,288	0	46,475	2,145	96,908
2001	0	0	50,517	0	0	0	50,517
2002	0	0	52,746	0	0	0	52,746
2003	0	0	55,348	0	0	0	55,348
2004	0	0	57,575	0	0	0	57,575
2005	0	0	60,176	0	0	0	60,176
2006	0	0	63,147	0	0	0	63,147
2007	0	0	65,747	0	0	0	65,747
2008	0	0	68,718	0	0	0	68,718
2009	0	0	72,062	0	0	0	72,062
2010	0	0	75,033	44,377	0	0	119,410
2011	0	0	78,376	46,354	0	0	124,730
2012	0	0	82,091	48,551	0	0	130,642
2013	0	0	85,805	50,748	0	0	136,553
2014	0	0	89,520	52,944	0	0	142,465
2015	0	0	93,606	0	0	0	93,606
2016	0	0	97,692	0	0	0	97,692
2017	0	0	102,149	0	0	0	102,149
2018	0	0	106,978	0	0	0	106,978
2019	0	0	111,807	0	0	0	111,807
2020	0	0	116,636	74,108	0	0	190,744
2021	0	0	121,836	77,412	0	0	199,249
2022	0	0	127,408	84,645	0	0	212,054
2023	26,742	0	132,980	88,347	0	0	248,070
2024	28,012	0	139,295	92,542	0	0	259,850
2025	0	0	167,937	199,027	0	0	366,964
2026	0	0	175,668	209,190	0	0	384,858
2027	0	0	183,399	212,754	0	0	396,154
2028	0	0	191,989	222,719	0	0	414,709
2029	0	0	200,579	232,685	0	0	433,264
2030	0	0	0	346,852	0	0	346,852
2031	0	0	0	362,489	0	0	362,489
2032	0	0	0	378,836	0	0	378,836
2033	0	0	0	395,894	0	0	395,894

Annual WBS 1.0 - 8.0:

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Annual WBS 1.0 - 4.0 Costs by Module

Non-alpha MLLW

All costs in thousands of dollars (actual dollars)

Case: TESTCASE

Treatment AQWTR

	1.0	2.0	3.0	4.0	Total
1995	0	6,245	0	0	6,245
1996	0	6,483	0	0	6,483
1997	0	6,781	0	0	6,781
1998	0	7,078	0	0	7,078
1999	0	7,435	0	0	7,435
2020	0	0	0	74,108	74,108
2021	0	0	0	77,412	77,412
2022	0	0	0	80,952	80,952
2023	20,841	0	0	84,492	105,134
2024	21,621	0	0	88,505	110,126
2025	0	0	20,056	104,820	124,877
2026	0	0	20,980	109,436	130,416
2027	0	0	21,903	114,252	136,156
2028	0	0	22,929	119,604	142,533
2029	0	0	23,955	124,955	148,911
2030	0	0	0	8,146	8,146
2031	0	0	0	8,513	8,513
2032	0	0	0	8,897	8,897
2033	0	0	0	9,298	9,298
2034	0	0	0	9,715	9,715
	42,283	34,025	109,825	1,022,914	1,209,029

CSHIP

	1.0	2.0	3.0	4.0	Total
1990	0	2,141	0	0	2,141
1991	0	2,141	0	0	2,141
1992	2,543	2,141	0	0	4,684
1993	2,543	2,141	0	0	4,684
1994	0	0	2,697	0	2,697
1995	0	0	2,832	0	2,832
1996	0	0	2,940	0	2,940
1997	0	0	3,074	0	3,074
1998	0	0	3,209	0	3,209
1999	0	0	3,371	0	3,371
2000	0	0	3,506	0	3,506
2001	0	0	3,668	0	3,668
2002	0	0	3,830	0	3,830
2003	0	0	4,018	0	4,018
2004	0	0	4,180	0	4,180
2005	0	0	4,369	0	4,369

Date Calculated: 5/ 1/95
Date Printed: 5/ 1/95

Hanford **Annual WBS 5.0 - 8.0 Costs by Module**

Non-alpha MLLW

All costs in thousands of dollars (actual dollars)

Case: TESTCASE

	5.0	8.0	Total
1995	0	1,732	1,732
1996	0	1,798	1,798
1997	0	1,881	1,881
1998	0	1,963	1,963
1999	0	2,062	2,062
2000	46,475	2,145	48,620
	46,475	11,583	58,058

Sending Sites:

Hanford Sending Sites

Case: TESTCASE

Treatment

EH MLLW Non-alpha
HA MLLW Non-alpha
Total Sending Sites: 2

Disposal

AE MLLW Non-alpha
BN MLLW Non-alpha
EH MLLW Non-alpha
ET MLLW Non-alpha
HA MLLW Non-alpha
LB MLLW Non-alpha
LL MLLW Non-alpha
PP MLLW Non-alpha
Total Sending Sites: 8

A2.3 Case Summary Graphs

This section presents samples of graphs which can be generated from SCM as described in *Section 5.2.7 Generating Case Summary Graphs*.

The sample graphs presented in this section are shown in the order in which they appear in the graph dialog box. They are as follows:

- Life Cycle by TSD
- Life Cycle by WBS
- TSD Cost Timeline
- WBS Cost Timeline

Life Cycle by TSD:

Total Life Cycle Cost by WBS

Case: TESTCASE

TSD Cost Timeline:

PTSD Cost Timeline

WBS Cost Timeline

Case: TESTCASE

A2.4 Site Detail Graphs

This section presents samples of graphs which can be generated from SCM as described in *Section 5.2.8 Generating Site Detail Graphs*.

The samples graphs presented in this section are shown in the order in which they appear in the graph dialog box. They are as follows:

TSD Cost Timeline
WBS Cost Timeline

TSD Cost Timeline:

WBS Cost Timeline:

A2.5 Case Comparison Graphs

This section presents samples of graphs which can be generated from SCM as described in *Section 5.2.9 Generating Case Comparison Graphs*.

The sample graphs presented in this section are shown in the order in which they appear in the graph dialog box. They are as follows:

TSD
Cumulative Cost Over Time
WBS 1.0 - 4.0
WBS 5.0 - 8.0

TSD:

Case Comparison by PTSD

Cumulative Cost Over Time:

Case Comparison of Cumulative Cost Over Time

WBS 1.0 - 4.0:

Case Comparison by WBS 1.0 - 4.0

MLLW

WBS 5.0 - 8.0:

Case Comparison by WBS 5.0 - 8.0

MLLW

Appendix 3: Error Messages

A3. Error Messages

The following list details each System Cost Manual (SCM) error message and how to solve the associated problem. They are presented in alphabetical order.

[case] already exists

A name for a case has been specified that is already being used on your system; select another name.

[datapath] contains no database tables to copy!

The directory that SCM uses to create new cases is empty. Reinstall SCM or contact technical support.

[path] already exists

A case has been chosen to copy from or to another drive, and the case (or a case with the same name) already exists in that directory. Either remove the case from the destination directory, or rename the case to copy.

[path] contains no database tables to copy!

One of the cases selected to combine is missing some or all of its information. Try loading the case, running calculations, and saving the case, or reconstructing the case data.

Case cannot be named 'UNTITLED.SCM'

A case cannot be named "UNTITLED," but some parts of SCM use this name as a placeholder. Replace the name "UNTITLED" with another name.

Case created with a newer version of SCM; case cannot be opened

A case has been specified to load that was created with a later version of SCM. Make sure your system has the most recent version of SCM, or contact technical support for assistance.

Case database version newer than current database version; case cannot be opened.

A case has been specified to load that was created with a later version of the SCM database. Make sure your system has the most recent version of SCM, or contact technical support for assistance.

COSTMOD.DBF record not found for [module]; contact SCM Administrator

One of the SCM databases appears to be incomplete. Contact technical support for assistance.

COSTFACT.DBF record not found for site [sitename]; contact SCM Administrator

One of the SCM databases appears to be incomplete. Contact technical support for assistance.

Duplicate records found in [filename]

When loading a case, SCM checks for the integrity of the databases included in the case, including whether the databases contain duplicate information. Contact technical support for assistance with this error.

Facility name entered not unique

The facility name you specified already exists when adding a new facility. Use a different facility name for the new facility.

Incomplete site selection

When defining a TSD scenario, a site must be selected for both treatment and disposal; selecting a site for storage is optional. Make sure sites are selected.

Invalid case name

A case name has been entered that is not legal. Make sure the name contains no spaces or punctuation symbols.

Invalid facility name

The name of the new facility cannot be blank. Enter a name to identify the facility.

Module selected already exists for this facility

There can only be one instance of any module at a given facility; a module has been attempted to be added to a facility that already has that module. Either increase the capacity of the existing module, or define a new facility and add the new module to that facility.

Need at least two [version #] cases to combine

To combine the results of cases, at least two cases of the current version of SCM must be present on your system. To convert a case to the current version, open the case, run the calculations, and save the case.

No cases found in directory [path]

A case operation has been selected, such as to copy a case, but no cases exist on your system. At least one existing case must be present to be able to perform these operations.

No sites exist

The database that contains the sites that SCM supports appears to be empty. Contact technical support for assistance.

No waste loads defined - nothing to do!

The clear waste loads function cannot be used when there are no waste loads defined for the current case.

SCM cannot delete the current case

SCM has detected a problem with your hard disk or with another portion of your system's hardware that prevents the deletion of the selected case. Check your system to ensure that it is operating properly.

SCM is unable to delete the [path] directory

SCM has detected a problem with your hard disk or with another portion of your system's hardware that prevents the deletion of the selected case. Check your system to ensure that it is operating properly.

Spaces are not allowed in case names

The case name entered is not legal. Make sure the name contains no spaces.

There is no distance data between sites

SCM comes with a database containing distances between sites that is used to calculate transportation costs. The chosen sites are not in the distance database. Contact technical support for assistance with this error.

TSD scenarios have not been defined for all waste loads

The calculation error checking process has detected there are not TSD scenarios defined for all waste loads. Use the **Edit, TSD Scenario** menu selection to define TSD scenarios for all waste loads in the case.

Two or more cases must be selected to create a combined case

The case combine function will combine the results from two or more cases into a new case. Select at least two case names from the list.

Unable to convert case - case program version not known

SCM has a conversion feature to take cases from older versions and convert them to work with the current SCM release. The specified case is from a version that is unknown or not supported. Contact technical support for more information.

Unable to create case [path]

SCM was unable to create a new case as a result of a disk error. Check your system to ensure that it has enough free disk space and that the rest of your system is operating properly.

Unable to create directory [path]

SCM has detected a problem with your hard disk or with another portion of your system's hardware that prevents the creation of a directory needed for operation. Check your system to ensure that it is operating properly and that there is enough available disk space.

Waste subtype [subtype name] not found

A waste subtype was selected that was not found in the SCM databases. Please contact technical support.

Waste type [type name] not found

A waste subtype was selected that was not found in the SCM databases. Please contact technical support.

Appendix 4: Calculation Assumptions

A4. Introduction

System Cost Model (SCM) uses the following set of assumptions when performing the calculations for capacities and schedules:

- Costs in SCM are based on the capacities for each module that are computed. After the capacity in each year has been determined, the average capacity for the lifetime of the module is computed. The method used to determine the average, however, is different for new and existing facilities. Consider the following example module usage:

1996	1000 kg
1997	3000 kg
2000	2000 kg
2001	5000 kg
2002	3000 kg

For a new facility, the average would be computed as

$$\frac{1000 + 3000 + 2000 + 5000 + 3000}{7} = 2000 \text{ kg / yr}$$

where 7 is the total number of years the facility will be in existence, even though it will not be in operation in 1998 or 1999. Operation and Maintenance (O&M) costs for this facility would be calculated based on 2000 kg/yr input and would be spread evenly over the entire lifetime (1996 - 2002).

For an existing facility, the average would be computed as

$$\frac{1000 + 3000 + 2000 + 5000 + 3000}{5} = 2800 \text{ kg / yr}$$

In this case, only the number of years that the module is actually in use is used to compute the average. O&M costs for this facility would be based on 2800 kg/yr of input and would apply only to the years that the facility is used (1996, 1997, 2000, 2001, and 2002).

- Aqueous waste streams are always treated at the generating site, regardless of the TSD scenario chosen for that site. The storage and disposal options specified in the TSD dialog box are used for all waste, including aqueous waste.
- Waste process flow factors used to determine the treatment requirements for the 32 treatability categories of waste load inputs are documented in the following reports: *Waste Management Facilities Cost Information Reports for MLLW*, *Waste Management Facilities Cost Information Reports for LLW*, and *Waste Management Facilities Cost Information Reports for TRUW*.
- Disposal facilities receive waste at the same rate as treatment facilities process the waste. The first year of storage or disposal for waste is the same as the first year of treatment. Storage continues for a number of years specified. For example, if waste is generated only in 1996 and storage for that waste is specified as 2 years, then storage data is recorded for 1996, 1997, and 1998.
- For legacy volumes, treatment is spread equally over the entire lifetime of the specified treatment facility. For example, if 1000 kg of legacy waste exists at a site, and the specified treatment site is set to operate for 10 years, then the treatment facility receives 100 kg per year of legacy waste for treatment.
- Existing facilities are always used before new facilities are built.
- The beginning year of construction provided by the user is overridden if the required treatment start year and the number of years of construction (provided by the user) dictate an earlier construction date.
- Waste handling capacities are divided among existing facilities with similar treatment capabilities at a site. For example, if three existing facilities at Hanford each had 100 kg incineration capacity and only 100 kg of waste needs to be incinerated, all three facilities are operated at one-third capacity.
- Treatment must begin in the first year of generation unless pre-treatment storage is used.
- Pre-operations occur in the two years before construction. The construction and operating periods are specified by the user.
- The decontamination and decommissioning period occurs within the five years following treatment or at the conclusion of the facility life-cycle.

SCM uses the following set of assumptions when performing the calculations for costs:

- Calculation of O&M costs for a facility are always based upon the average annual capacity. The calculation of capital costs (WBS 1.0, 2.0, and 4.0),

depends on the type of facility. For treatment modules, capital costs are based on the *average* annual rate. For storage (and pre-treatment storage) modules (PSTOR, STORE, and STOSI), capital costs are based on the *maximum* volume in storage in any given year of the module's lifetime; i.e., the largest inventory of waste during the module's lifetime. For disposal modules (AGDSP, SLDSP, IDDSP, and SIDSP), capital costs are based on the *total* amount of waste that is placed in the facility over its lifetime.

- Costs are calculated based on cost versus capacity data which appears in the *Waste Management Facilities Cost Information* reports for MLLW, LLW, and TRUW.
- The cost estimates produced by SCM rely on established assumptions related to waste processes, technology selection criteria, and scheduling limitations.
- FTEs are calculated by using a scale factor, or series of factors, applied against each of the WBS components.
- WBS 5.0 costs are applied to the first year of treatment at a site. WBS 6.0 costs are applied over the number of years specified by the user, starting with the first year of treatment at a site. WBS 7.0 costs are applied to the years in which the transportation occurs. WBS 8.0 costs are spread over the years specified by the user.
- WIPP costs, which are determined by using the AGDSP module, are based on unit rates (i.e., \$ per m³).
- Only WBS 3.0 and 4.0 costs are calculated for existing facilities. WBS 1.0 and 2.0 costs must be a user-input in order for these costs to be included in the results of calculations.
- WBS 4.0 costs for existing facilities are calculated based on the dedicated capacity of the facility, not on the amount of capacity that was used at the facility.
- If the user enters costs for WBS 4.0 for a module at an existing facility, then user-provided costs are used for all other instances of that module at the specified site.
- WBS 3.0 and 4.0 costs for an existing facility that are user-input are scaled based on waste dedication information.
- The cost for NEPA permitting, which is a user-input on a site-specific basis in the Cost Factors dialog box, is applied to the appropriate administration module (TADMN, SADMN, or DADMN, in order of preference).

- Cost data for facilities that are larger than can be supported by backup information are calculated by multiplying the largest facility cost by the ratio of the facility capacity to the largest capacity to the 0.7 power.
- Cost data for facilities that are smaller than can be supported by backup information (but larger than a minimum facility) are calculated by multiplying the smallest facility cost by the ratio of the facility capacity to the smallest capacity to the 0.7 power.
- If the combination of the treatment option and waste load result in process volumes for a particular module less than 0.1 pound per hour or 0.1 cubic foot per year, no cost is calculated for that treatment, storage, or disposal technology.
- For TRUW, retrieval cost and waste characterization costs are automatically applied to legacy waste as they undergo treatment.

Glossary

Alpha Waste

Alpha (A) waste emits alpha radiation from the range of 10 to 100 nCi/gm.

Aqueous

Aqueous waste consists primarily of water.

Base Case

Base case treatment is a standard waste treatment scheme, using thermal desorption and grout as the primary stabilization route.

Contact-Handled

Contact-handled waste has a contact radiation dose less than 200 mrem/hr. This waste may be handled by workers in the proper personal protective equipment.

Facility

A facility is a building or set of buildings on a site. There can be multiple facilities per site. Furthermore, any facility can have one or more modules that either treat waste, store waste, or dispose of waste.

FTE

Full-time equivalent (FTE) represents an employee working 8 hours per day, 40 hours per week, or 2,000 hours per year.

Grout

Grout is a thin mixture of water and portland cement, and occasionally other components, e.g., sand, clay, or hardeners.

Hazardous Waste

Hazardous waste is a toxic, flammable, corrosive, or reactive waste that is dangerous to humans and the environment, but not radioactive.

Inorganic

Inorganic materials are composed of mineral matter containing no organic carbon.

Land Disposal Requirements

Land disposal requirements (LDR) involve the waste being treated to Resource Conservation and Recovery Act (RCRA) disposal standards.

Legacy Volume

Legacy volume is the preexisting volume of waste present at a site at the start of a model run.

Low-level Waste

Low-level waste (LLW) contains less than 10 nCi/gm of total radioactivity other than alpha emissions that may be between 10 and 100 nCi/gm.

Mixed Low-level Waste

Mixed low-level waste (MLLW) is a combination of hazardous waste and low-level waste.

Module

Modules are subsets of facilities. Any facility can have one or more modules. There are three types of modules: treatment, storage, or disposal. Furthermore, there may be different treatment modules for different waste streams. For example, when a load of waste arrives to be treated, 50% may be transferred to the battery treatment module, 30% to the organic deposits treatment module, and 20% to the reactive metals treatment module. A five-letter module code is used to identify treatment, storage, and disposal modules.

Nonflame

Nonflame treatment of waste uses processes that are alternates to incineration.

Organic

Organic materials are composed of plant or animal matter—organic compounds.

Particulate

Particulate is made up of minute solid particles.

Polymer

Polymer is a material built up from a series of smaller units that may be chemically simple (such as ethylene) or relatively complex (such as methyl methacrylate).

Reduced Gas

Reduced gas treatment produces a final waste form that will generate less gas during disposal.

Remote-Handled

Remote-handled waste has a contact radiation dose at or greater than 200 mrem/hr. This waste must be handled by methods that isolate the workers from the waste.

Site

A site is an area of land occupied by, or to be occupied by, one or more structures or by some other use. Each site is identified by a site number and a two- to five-letter site code.

Sludge

Sludge is soft organic or inorganic solid material produced by drilling or boring, or obtained from settling operations.

Solidification

Solidification is a particular stabilization process in which waste and a liquid, such as grout or polymer, are mixed together and allowed to harden.

Stabilization

Stabilization is the process whereby waste is physically bound in a solid matrix of another material and placed in a container. Vitrification and solidification processes are both referred to as stabilization.

TSD

Treatment, Storage, and Disposal.

Transuranic Element

All elements beyond uranium on the periodic table. All transuranic elements are manmade.

Transuranic Waste

Waste contaminated with uranium-233 or transuranic elements having half-lives greater than 20 years in concentrations of more than 1 ten-millionth of activity per gram of waste.

Transuranic waste (TRUW) is generated by irradiating uranium and resulting in the formation of elements heavier than uranium with the subsequent radioactive decay of these elements into lighter waste products.

Vitrification

Vitrification is a specific stabilization process in which waste and a molten frit additive are mixed and allowed to cool to form a glassy or rocklike material. The additive contains abundant silica (SiO_2) and often consists chiefly of sand or basalt.

Waste Stream

A waste stream is a category of waste that is distinguishable by its origin, physical state or form, composition, radioactivity, or some combination of these characteristics.

Waste Type

Waste type refers to a major waste classification, e.g., low-level waste (LLW), mixed low-level waste (MLLW), transuranic waste (TRUW), etc.

Waste Subtype

Waste subtype refers to the subclassification of a waste type; e.g., alpha (A), nonalpha (NA), contact-handled (CH), etc.

WIPP

Waste Isolation Pilot Plant (WIPP) located in Carlsbad, New Mexico.

WIPP WAC

WIPP waste acceptance criteria (WAC) indicates that the waste will be treated to meet WIPP waste acceptance criteria.

Work Breakdown Structure

Work breakdown structures (WBSs) are subsets of projects. There are four WBSs, or tasks, associated with a project: preoperations activities cost, production facility construction cost, operations and maintenance costs, and decontamination and decommissioning costs.

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