



Help Instruction File:

Payout Schedule Module Overview



Provided by the Office of Surface Mining Reclamation and Enforcement (OSMRE), the Pennsylvania Department of Protection (PADEP), the U.S. Geological Survey's (USGS) and the West Virginia Department of Environmental Protection (WVDEP).

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Table of Contents

1.0 OBJECTIVE	2
2.0 OVERVIEW AND APPLICATION	2
2.1 Functions	2
2.2 Configuration & Application	2
3.0 PAYOUT SCHEDULE MODULE OVERVIEW	3
3.1 Layout and Workflow	3
3.2 Module Inputs	3
3.2.1 Option to Pull Costs From AMDTreat	3
3.2.2 Item Name	3
3.2.3 Life Cycle	3
3.2.4 Replacement Percentage	4
3.2.5 Custom Cost	4
3.3 Module Outputs	4
3.3.1 Total Cost	4
3.3.2 Financial Variables	5
3.3.3 Payout Schedule	5

1.0 Objective

In the AMDTreat program, the Payout Schedule Tool module is considered a project component of a mine drainage treatment system. Both passive and active treatment systems require an on-going funding mechanism to operate, and for routine maintenance and repairs to be completed. Whether the funding mechanism is a bond or a trust, the health of that funding mechanism should be routinely checked so that treatment can continue to occur without a budget shortfall.

The objectives of the overview are to (1) Provide an understanding for the application of the Payout Schedule Tool module for capturing the associated costs for a mine drainage treatment system and (2) Provide an overview of the Payout Schedule module to guide users in developing an estimate of fund drawdown over time, until the system has reached its design life. The information is presented in two sections, **Overview and Application** and **Sampling Module Overview**.

2.0 Overview and Application

A basic understanding of treatment system design, operation, maintenance and repair activities is required to develop an accurate cost estimate using the AMDTreat software. These topics are discussed below before discussing the Payment Schedule module interface and functionality to provide the necessary context. The Overview and Application section is organized into two parts: (1) Functions and (2) Configuration & Application.

2.1 Functions

As mentioned in Section 1.0, the Payout Schedule Tool module is intended to capture all project costs for design, construction, operation, maintenance, and operation of a treatment system, model costs for recapitalization of certain system components when they need to be replaced, and produce a schedule of payouts and fund balances throughout the life of the system. This payout schedule can be used to determine if the fund balance is adequate to ensure future treatment of the mine drainage discharge being treated.

Users have the option to include treatment modules that they have already modeled in AMDTreat, or to create their own custom items. If data is pulled from AMDTreat, the user can leave the input fields as they are in the default setting. If the user chooses to build a custom model, the input fields must be filled out with data to populate the required input fields.

Once all costs are modeled, the user can preview the payout schedule for a screen view of the results. Users can also...”Print Payout Schedule.”

2.2 Configuration & Application

To ensure the on-going adequacy of a trust fund or bond, it is necessary to have a tool that tracks the expenditures and revenue (if applicable) of a trust or bond. This tool allows those who are administering the bond or trust to determine if the fund balance will have a shortfall. Steps can be taken at that time to ensure that the fund is adjusted so that the treatment system can operate properly until design life has been reached.

3.0 Payout Schedule Module Overview

This section focuses on describing the specifics of the AMDTreat Sampling module.

3.1 Layout and Workflow

The inputs for this module can be pulled from other AMDTreat modules, or the user can create a list of their own custom items. In general, inputs are on the left-hand side of the module and calculated outputs are on the right side, as well as the “Payout Schedule Preview” and “Print Payout Schedule” buttons. The workflow for users is to begin at the top left-hand side and continue down on the left-hand side entering all the appropriate input parameters.

Module output is provided below the “Pull data from AMD Treat?” default selection, as well as on the “Payout Schedule Preview” and “Print Payout Schedule” buttons. Note, the user must have Passive, Active, and/or Ancillary modules under “Treatment Layout” in the main AMD Treat screen for these items to display. Module outputs on the main screen include Recapitalization cost, term of analysis, Inflation Rate, Rate of Return and individual net present values for all individual items. Module outputs on the Payout Schedule include a summary of all input parameters, and a table that lists the year (below on page 2), balance of the fund before payout of that year’s expenses (Balance before Payout), balance after payout (Balance after Payout), and amount of expenses for each year (Payout Schedule).

A general overview of the module input and output sections is presented below, however, users are directed to the numerous tool tips located within the module that provide additional detailed information, such as definitions of terminology. In most cases, the tool tips are accessed by clicking on the information icon () in each of the subheadings in the module.

3.2 Module Inputs

3.2.1 Option to Pull Costs from AMDTreat: The user can select or de-select the option to pull data from all modules that they have already created in AMDTreat. Individual line items from all modules are brought into the table when this option is selected. All annual costs from individual modules are summed up into one annual cost. If the user does not select this option, no data is pulled in, however a line for annual costs is created by default to assist users in preparing the payout schedule.

3.2.2 Item Name: Name of the item is carried over from AMDTreat, or specified by user if the option to pull data from AMDTreat is not selected.

3.2.3 Life Cycle: The time frame between equipment or material replacement is termed as its Life Cycle. Some equipment manufacturers provide recommended life cycles for their equipment to provide consumers with an estimate of how long the equipment is expected to be operational. Some life cycles, such as those used for treatment media (limestone), are based on best professional judgement. Some operators prefer to periodically purchase and replace equipment before failure to preserve the continuity of operations, while others wait until failure to replace an item.

3.2.4 Replacement Percentage: The Replacement Percentage is an adjustment factor to the default cost to accommodate situations where the entire piece of equipment or all of the material does not require recapitalization. For example, a passive treatment component may be designed to contain enough limestone to neutralize the acidity load for 20 years, however, the accumulation of metal hydroxide precipitates within the void space of the limestone layer may require that 25% of the limestone be replaced every 7 years to prevent hydraulic failure such as plugging or short-circuiting. For this scenario, the initial cost of the limestone making up the limestone layer is discounted by 75% and assigned a life cycle of 7 years to determine the amount of money required to cover the cost of replacing 25% of the limestone layer every 7 years over the Term of Analysis.

3.2.5 Custom Cost: If the user does not pull data from AMDTreat, custom costs for each item in the recapitalization table must be entered. These should be capital costs for individual treatment system components, and the user should also provide replacement percentages and life cycles for these custom items if they chose to model a custom system in lieu of using data provided by AMDTreat modules.

3.3 Module Outputs

This section goes over the module outputs (costs) for the items associated with estimating costs associated with a mine drainage treatment facility.

3.3.1 Total Cost: Costs in the table represent the net present value cost of each individual line item in the table, and is a function of the financial variables and other input variables in the table.

3.3.2 Financial Variables: The Term of Analysis, Inflation Rate, and Rate of Return are three variables used in the NPV calculations. The default values for these terms are shown under the Net Present Value section of each module. Users must access the Net Present Value menu at the top of the main user interface to change the default values as they would apply to all modules used for an entire treatment system. While NPV is determined for each AMDTreat module activated by the user, the goal is to determine a total NPV for an entire mine drainage treatment system project (a collection of cost estimates for individual modules creates a treatment system project in AMDTreat). Therefore, a single value for Term of Analysis, Rate of Return, and Inflation Rate is applied to all modules and cannot vary between modules.

3.3.3 Payout Schedule: Module outputs on the Payout Schedule include a summary of all input parameters, and a table that lists the year, balance of the fund before payout of that year's expenses, balance after payout, and amount of expenses for each year (Payout Schedule).

3.3.3.1 Rationale for Recapitalization Recommendations: Recapitalization recommendations are based on professional experience of the AMDTreat Team and may not apply to all situations. Users are encouraged to customize the recapitalization assumptions to their treatment scenario. AMDTreat Team members are located in Pennsylvania and West Virginia and have collective experience in design, funding, and/or operation/maintenance for over 100 passive treatment systems. Users may have different experiences and opinions than those listed.