PM Generator's User's Manual. BSS wrote the documentation to accompany the Performance Measures (PM) software developed by SDI for the District's Water Supply Department. This post-processing software is an innovative modeling approach that integrates ArcGIS software, C programs, Java applets, and Graphic User Interfaces (GUIs) with MODFLOW or SEAWAT data to more easily visualize modeling parameter results for a single well, an ASR region, or a basin. The PM Generator software uses MODFLOW and SEAWAT output from the Lower West Coast Floridan model to produce water level and water quality PM graphics and animations and ASR budget and production graphs. BSS designed the User's Manual in coordination with the SDI software development team. BSS wrote the description for each module and provided independent testing of the software throughout the development cycle.

PM Generator User's Manual

1. INTRODUCTION

Hydrologic models are used to understand and simulate the potential effects water management projects may have on natural and managed systems. The outputs from these models are called stages (heads or water levels) and flows (volume) for each cell within the model's grid for each time-step (daily). For each cell or group of cells within the model boundary, the stage and flow may be summed or averaged for a specified duration (daily, weekly, monthly, seasonally, annually or by multiple years). The stage and flow data can be displayed in the form of tables, histograms, line graphs, bar graphs or color-coded maps. These different types of displays are generally referred to as Performance Measures (PM). Performance Measures are quantitative indicators of how well (or poorly) an alternative model meets a specific objective. Good performance measures have features that:

- are quantifiable,
- have a specific target,
- indicate when that target has been reached, and
- measure the degree of improvement toward the target when it has not been reached.

Achieving hydrologic targets does not necessarily guarantee ecological restoration of natural areas nor necessarily guarantee future water supplies. Hydrologic PMs do provide the best available indication of future conditions, and this information can be used as a basis for decision making in terms of directing ecological recovery and future water allocation in the Lower West Coast (LWC) and other regions.

The Performance Measures Data Processing System, PM Generator, is a new post-processing utility program based on the District's AutoPMG post-processing utility code (SFWMD 2005). AutoPMG was developed to post-process output from groundwater flow models using MODFLOW 96. The PM Generator uses the output results from the Lower West Coast (LWC) Floridan Model being developed for the District (Restrepo 2005) using the USGS SEAWAT-2000 program to produce several types of Performance Measure graphics and animations. The SEAWAT program simulates three-dimensional, variable-density, transient groundwater flow in porous media. The source code for SEAWAT was developed by combining the USGS codes for MODFLOW and MT3DMS into a single program that solves the coupled flow and solute-transport equations (Guo and Langevin 2002).

Figure 6-14. Water Level Animation screen shot for March 11, 1965.