Distribution of Water Resources Software on the USGS World Wide Web

INTRODUCTION

This document outlines the policy for distribution of publically available USGS Water Resources Software on the Internet. The Water Resources Application Software web page (http://water.usgs.gov/software/) provides links to five subject-category web pages and an alphabetical listing of all of the available software. These web pages and associated reference pages are collectively identified in this document as the Water software web pages. All USGS Water Resources software distributed to the public from USGS web pages must be accessible from the main Water Resources Application Software web page. The discussion below provides details on: approval for distribution, design of web pages, archive of software, and summary of roles and responsibilities.

PART I. -- APPROVAL FOR DISTRIBUTION

Approval of Software

Each release of the software will be distinguished by a unique version identifier. No specific style is required for the identifier, but it should be consistent for all distributions of the software. One common style is a numbering system that uses 2 or 3 parts, each separated by a decimal, to identify versions; the first part is used to distinguish major releases and the second and third parts are used to distinguish superficial and (or) minor releases. Another common style is to use some format of the release year and, optionally, the month, and day.

Initial version of software

Distribution of USGS software should be consistent with USGS policy for the review and release of technical materials. Only software documented in a report that has received Bureau approval will be listed on the Water software web pages. It is the responsibility of the software developer to notify the USGS Technical Offices and the Water Resources Web Team that the main software page needs to be updated to reflect the new release of software. The Lotus email group “GS-W Software Registry” is used for this notification.

Software updates

Much of the software that the USGS produces evolves over time. In many situations, software updates are not significant enough to warrant a new approved report; however, it is important to track all released versions of software and review them appropriately. For purposes of defining the approval process, software updates are separated into three categories: superficial changes,

minor changes, and major changes. Superficial changes do not require review; minor changes require review by at least one person familiar with the software, other than the software developer(s); and major changes requires the usual colleague review of a new product.

Superficial Change

A superficial change is defined as a revision that does not change the algorithms used by the software. Software revisions that fall into this category are:

- change to the input/output procedures
- change to the user interface
- trivial bug fixes

New versions that contain only superficial changes do not require review or approval prior to release. The developer must notify the Technical Offices (Office of Ground Water, Office of Surface Water, and Office of Water Quality) via email (GS-W Software Registry) when any superficial changes to software are released. The version history must be updated to describe the changes. All example and test data files distributed with the software should be updated to reflect any changes in format or results.

Minor Change

A minor change is defined to be a change that has some computational impact on the program, but the change does not significantly extend or modify the program as documented in approved reports. Changes that fall into this category include:

- significant bug fixes
- minor changes in algorithms
- minor extensions to existing capabilities

New versions that contain minor changes must be (a) documented in a change document or a revised user manual, and (b) reviewed by at least one person familiar with the software, other than the software developer(s). The developer must notify the Technical Offices (Office of Ground Water, Office of Surface Water, and Office of Water Quality) via email (GS-W Software Registry) when minor changes are made. The version history must be updated to describe the changes. All example and test data files distributed with the software should be updated to reflect any changes in format or results.

The review requirement should not be onerous or time-consuming. Rather, this requirement is meant to help the software developer(s) catch any problems. An additional important responsibility of the reviewer of “minor changes” is to check on the magnitude of the changes, if the reviewer believes that the change is a major change, then the reviewer shall notify the author.

Major Change

A major change is defined to be a change that has a significant computational impact or adds significant new functionality. Changes that fall into this category include:

- creation of distinct, new modules with new algorithms
- major change to the numerical solution technique
- major extensions to existing capabilities

New versions that contain major changes should be accompanied by a new report for which Bureau approval has been obtained. The developer must notify the Technical Offices (Office of Ground Water, Office of Surface Water, and Office of Water Quality) via email (GS-W Software Registry) when major changes are made. The version history must be updated to describe the changes. All example and test data files distributed with the software should be updated to reflect any changes in format or results.

Approval of Software Web Pages

Approval authority for web pages in the Water Resources Discipline has been delegated to the Water Science Center Director or equivalent level Office Chief, and is based on where the pages are hosted. However, software developers are encouraged to contact the appropriate Technical Office for guidance.

PART II. DESIGN OF WEB PAGES

The software will be distributed from developer-maintained and hosted web pages. The Water Resources Web Team will place a link to the developer's web page from one or more of the Water software web pages, as appropriate. Descriptions of these are as follows:

Main Web Page

The Water software web pages are maintained by the Water Webserver Team. The Water Resources Application Software web page (http://water.usgs.gov/software/) provides links to subject category web pages for General Use, Water Quality and Chemistry, Ground Water, Statistics & Graphics, and Surface Water. There is also a page with an alphabetical listing of all of the available software. Software may be listed on one or more subject-category pages as appropriate. The subject-category pages provide a link to the software web page maintained by the developer.

Content of Developer Maintained Software Web Pages

Web Page Requirements

Web pages should conform to the USGS requirements. These requirements include, but are not limited to:

- Standards and guidelines (http://water.usgs.gov/usgs/www.html).
- Section 508 accessibility (http://internal.usgs.gov/gio/irm/section508/).
- Visual identity (http://internal.usgs.gov/visual/)

It is the web site developer's responsibility to obtain approval for the page(s) and to ensure that all online materials comply with appropriate requirements. Web pages will not be released to the public if the approving authority determines the pages do not comply with current USGS requirements. As USGS requirements evolve, page developers may be required to modify the pages to maintain compliance.

In addition to the USGS requirements, at a minimum, all web pages that distribute USGS software should contain the following elements:

- A short description of the software.
- The source code.
- Information about installation or compilation of the code, including any special libraries or compilers that may be needed.
- A user manual or other documentation for the software. A downloadable version is recommended. If an online version is not available, then instructions for obtaining a printed copy should be given.
- A "version history" describing the changes made to the software over time, with some type of method used to distinguish the various versions (version number, date, or other method).
- A point of contact for questions concerning the software. This might normally be the name and email address or phone number of the software developer or distributor.
- A statement of the level of support that a user should expect.
- A list of computer operating systems on which the programs have been used, compiled, or tested successfully.
- A statement of USGS policy on use and distribution of USGS software, or a link to such a statement. At the very least, this statement could include a disclaimer of liability for the use of the software. (See http://water.usgs.gov/software/help/notice/.)
- Test data sets, as appropriate, for the software, including both input data and expected output. A test data set is useful both for quality-assurance purposes and for tutorial purposes.

Other Content

The following elements are ideas for optional components for a developer's software web pages:

- Compiled binaries of the software for various platforms and operating systems.
- A Frequently Asked Questions (FAQ) list, with answers.

- A list of known bugs and the versions of the software affected by such bugs, or the versions in which those bugs have been fixed.
- A TO-DO list: A list of features to add and bugs to fix. This can be a list of plans of the software developer, or it can include input requests from the user community.
- A mailing list for the purpose of notifying the user community of upgrades and other topical news.
- A list of publications relevant to the software, including links if electronic versions are available.

Location of Web Pages

The Water software web pages are hosted on the Water Discipline web site (http://water.usgs.gov/software/). The developer Web pages for specific software packages will reside on the properly configured and registered USGS Web server for the appropriate Office or Water Science Center of the developer.

PART III. ARCHIVE OF SOFTWARE

Software developers shall maintain their own archives of their software. In addition, the appropriate water Technical Office (Office of Ground Water, Office of Surface Water, or Office of Water Quality) will each maintain a separate archive of all versions of all software relevant to their specific discipline that are posted. These archives maintained by the Technical Offices are for the purpose of insuring a complete record of all publicly released versions of software. It is not intended to have frequent access. The archive of the appropriate Technical Office will be updated when the software developers notify the Technical Offices (thru email to GS-W Software Registry) that distributed software has changed.

PART IV. SUMMARY OF ROLES AND RESPONSIBILITIES

It is the responsibility of the software developer (or their designee) to create and maintain all Web pages associated with the distribution of their software. It is the responsibility of the software developer to seek and obtain approval of their web pages from the appropriate USGS authority. It is the responsibility of the software developer to notify the USGS Water Resources Web Team (thru email to GS-W Software Registry) that the main software page needs to be updated to reflect the new release of software. It is the responsibility of the developer to notify the Technical Offices when distributed software is changed.

The Technical Offices are responsible for overseeing the process and to archive the posted software when notified of a new release.

It is the responsibility of the Water Resources Web Team to maintain the main Water Discipline's web page and the topical (Ground Water, Surface Water, Water Quality and Chemistry, General Use, and Statistics & Graphics) category Web pages. The Web Team will establish the links from the category pages to the approved software web pages. The distribution pages will be maintained and updated on a timely basis, within a few days of when changes are received by the Web Team. The Water Resources Web Team is contacted via email thru "GS-W Software Registry."