SUPPLEMENTARY WHAFIS DOCUMENTATION

WHAFIS 4.0

Maintenance of FEMA's WHAFIS Program

April 2024

Background

FEMA's WHAFIS 4.0 program has been recompiled to ensure its continued operation within modern Windows operating systems. All changes are limited to the compiling steps taken to generate an executable file. The source code has not been edited or revised in any way. The purpose of this revision is to maintain the current functionality as described within the WHAFIS 3.0 manual (September 1988) and WHAFIS 4.0 supplement (August 2007).

What's New

The updated WHAFIS program executable has been compiled using the Intel OneAPI compiler, build 2023.1.0.46351. The build required the following prerequisite installations:

- Compatible version of Visual Studio or the Build Tools for Visual Studio
- Visual Studio Community 2022 – 17.6.4.
- .NET desktop development and Desktop development with C++ workloads

Note, these are not required software for installation of the executable, see the Installation and Setup section below for more details on the install process.

Version Testing

Testing was performed on the recompiled WHAFIS to ensure consistency with the previous WHAFIS 4.0 executable. Minor discrepancies were observed in the results reported in WHAFIS PART 1 through PART 6. These discrepancies are believed to be due to differences in significant digit storage and rounding between the previously used and new compilers. Importantly, these were found to be within an acceptable error tolerance and do not appreciably change the estimation of overland coastal hazards. Examples of these differences are summarized below:

WHAFIS Part	Differences Observed
1 Input	Slopes (column 9) reported as 0.0000 in previous build are reported as -0.0000 in new build. The change in sign was not found to affect results beyond the sign convention reported in PART 1.
4 Location of Surge Changes	Additional lines indicating a change in surge were reported in PART 4 of the new build when compared to the previous build. These additional lines describe small (approximately 0.05 feet or less, vertically) changes in the reported stillwater elevation. Conversely, lines were omitted from PART 4 of the new build when compared to the previous build. Similarly, the impact is minor, resulting in small (approximately 0.05 feet or less, vertically) changes in the reported stillwater elevation.
5 Location of V Zones	The stationing of the reported V zones were observed to have small differences (approximately 0.05 feet or less, horizontally) between the previous build and new build.

WHAFIS Part	Differences Observed
6 Numbered A Zones and V Zones	The stationing of the reported zones was observed to have minor differences (approximately 0.05 feet or less, horizontally) between the previous build and new build. The new build was also observed to insert additional lines representing redundant zones. For example, a line describing an A Zone with elevation 14 may be inserted between two other A Zones also with elevation 14.

Command Line Usage

The standalone WHAFIS 4.0 executable can be run from a command line with input and output file names provided as command line parameters, as in the following example:

WHAFIS4.exe *inputFileName outputFileName*

Installation and Setup

The current version of the software can be saved directly to any machine with a Windows operating system. The executable can be run directly from the folder it has been saved to by opening and supplying the input and output filenames. Alternatively, the executable can be called from another computing program capable of calling and interfacing with executables.

How to Update WHAFIS for CHAMP

The Coastal Hazard Analysis and Mapping Program (CHAMP) program will install the 2007 version of the WHAFIS executable. Therefore, new users installing CHAMP or users with CHAMP already installed on their computing system should replace the previous version of the executable with this recompiled version. To make the change, replace the WHAFIS4.exe file in the CHAMP program folder with the updated version as described by the steps below. The MG.DAT file does not need to be changed or replaced. The CHAMP program will utilize this WHAFIS build once the updated executable has been saved to the CHAMP program folder.

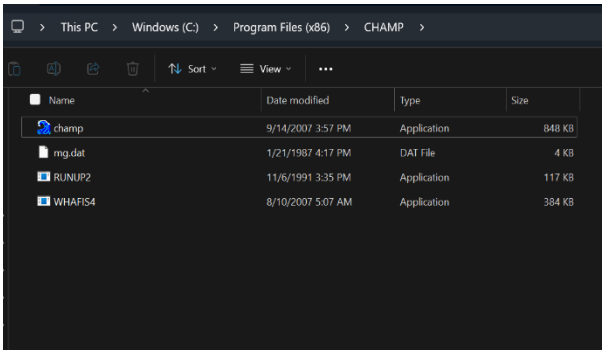
1. Download the CHAMP Application from FEMA's Coastal Engineering Tools page.
2. Run the CHAMP setup.exe file to install the program
3. Download the updated WHAFIS application:

    - WHAFIS Application

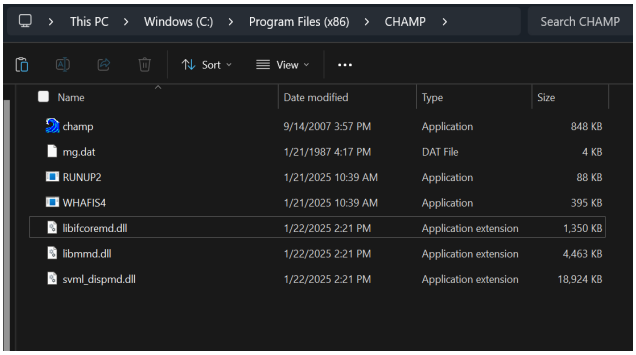
    Clicking the link above will download a zip file to your computer. The WHAFIS zip file will contain a file named "WHAFIS4.exe".

4. On your computer, navigate to the Program Files (x86) folder. Inside the Program Files (x86) folder, you will find a folder named CHAMP, which is automatically placed there when you first install CHAMP.

5. Move the newly downloaded WHAFIS4.exe files to the CHAMP folder to replace the older versions of these files. This can be done by selecting the new files and either dragging and dropping them into the CHAMP folder or by copying and pasting them.
    - Ensure the WHAFIS file is named exactly WHAFIS4.exe
    - This step requires administrative privileges, and may require Government Furnished Equipment (GFE) users to call the help desk for assistance and non-GFE users to contact similar organization IT resources.



The above figure shows the CHAMP folder **before** copying and pasting in the new RUNUP2.exe, WHAFIS4.exe, and DLL files.



The above figure shows the CHAMP folder **after** copying and pasting the new RUNUP2.exe, WHAFIS4.exe, and DLL files. The “date modified” column as seen above will contain updated dates, indicating the RUNUP2.exe and WHAFIS4.exe files have been replaced successfully.

6. After moving the files to the CHAMP folder, it will prompt you to replace the existing files. Click “Replace the file in destination” when prompted.