Instructions for use of MONKES and Entering Water Levels into GWSI

Prior to Field Trip

1. Insure that the most recent Monkes software (ver. 5.1.0.7) is installed on your PDA. If it is not you can go to the MONKES website and download and install the latest version of the software (https://collaboration.usgs.gov/wg/FCIS/MONKES/default.aspx). Alternatively, the latest version (MONKES_5.0.0.1) cabinet installation file is available at the following location: \\gs.doi.net\VirginiaWestVirginia-W\WV\all users have access\HISS\FIELD COMPUTING\MONKES
   Copy the file to the Program Files directory on your PDA and double click the cabinet file to install the software. You can delete the older version of the cabinet file to save space on your PDA.
   You can also download a copy of the **MONKES Manual in PDF** format from https://collaboration.usgs.gov/wg/FCIS/MONKES/SiteAssets/user_manual_4.9.pdf
2. Check to make sure that site visit generator software is installed on your PC. If it is not installed you can copy the program installation utility (***Site_Visit_Generator_setup***) from http://wwwrustla.er.usgs.gov/FCIS/MONKES/SVGenerator/ and have Mark Board install the program. Under the "Tools" menu in the site visit Generator Application, be sure to set the path of where you want your output files to be written. Selecting output to current directory is the easiest option.
   3. Install the 16 well field trip on your PDA by copying the "**WV_wells**" or "WV_Wells_month-##-20## XML file from \\gs.doi.net\VirginiaWestVirginia-W\WV\all users have access\HISS\FIELD COMPUTING\MONKES\Field Trip Builder\fieldtrip_data and placing the file in the **Program Files\MONKES** directory on your PDA.
4. Check the date of the "**WV_wells,xml**" file in the directory \\gs.doi.net\VirginiaWestVirginia-W\WV\all users have access\HISS\FIELD COMPUTING\MONKES\Field Trip Builder\fieldtrip_data to see if it is current. Jeremy, James, Fred, or I will periodically run the script and update the file. If your "**WV_Wells.xml**" file is out of date, copy the updated file to the "**Program Files\ MONKES**" directory on your PDA.

   (Optional Step) The field trip file "**WV_Wells.xml**" needs to be periodically updated (to update recently added water levels or changes to MPs) by running the script **ftbuilder** (in unix on the unix server) which can be copied from the MONKES website or from the \\gs.doi.net\VirginiaWestVirginia-W\WV\all users have access\HISS\FIELD COMPUTING\MONKES\Field Trip Builder dierectory. To update the "**WV_Wells.xml**" file copy the "**ftbuilder**" script and the directory "**fieldtrips**" from the

\\gs.doi.net\VirginiaWestVirginia-W\WV\all users have access\HISS\FIELD COMPUTING\MONKES\Field Trip Builder\fieldtrip_data directory to your unix directory.. Change the permissions on the "**ftbuilder**" program file to make the program executable by typing "chmod 777 ftbuilder". Run the **ftbuilder** script and answer **"No" to the "Include MPs with end dates?"** block. This will return only the current active MP. Click on the "**Build Trips**" button. The program will run and access data in GWSI and will create a file titled "**WV_Wells.xml**" in a directory titled "**fieldtrip_data**". Copy to the updated "**WV_Wells.xml**" file to the **Program Files\MONKES** directory on the **PDA**. Click OK and Exit to exit the "ftbuilder" program.

5. In File Explorer on the PDA navigate to the **SD-MMC Card** and create a directory titled **MONKES** and in that directory create a subdirectory titled **MONKES BACKUP.** Now that you have created the backup directories on the PDA you need to tell MONKES where to store the backup files by starting MONKES and clicking on "**Path Settings**". Change the path for item 4 in the "**Path Settings**" menu to **SD-MMC Card\MONKES\MONKES BACKUP** which will write the data files created by MONKES both to the internal memory on the PDA and to the SD card. . This is helpful in the event the PDA fails or locks up, as the data files can still be retrieved from the SD card. Some PDAs may list the storage card as **"Storage Card"** rather than **"SD-MMC Card"**, so click on **"Check Paths"** in the MONKES program to verify the settings are correct. If you get an error for the backup path you may have to check your storage card name in File Explorer and set it accordingly
6. Be sure you have the right time datum (**EDT or EST**) for the MONKES program by checking the time datum in the "**Defaults"** menu in MONKES. Spreadsheet and text files with beginning and ending dates for Eastern daylight savings time (EDT) and Eastern standard time (EST) are located at the following location \\gs.doi.net\VirginiaWestVirginia-W\WV\all users have access\HISS\FIELD COMPUTING\MONKES\

While on Site

7. After you arrive at the site start MONKES and select the "**Enter Water Levels**" tab.
8. Make sure you have the right time datum selected, either Eastern Daylight Time (EDT) or Eastern Standard Time (EST). If this tab is incorrect, your water level measurements will go into GWSI one hour off from the correct time.
9. Select your site from the field trip list by scrolling through the list and clicking on the well you are servicing.
10. Next click on the green "Enter-Water-Levels" tab. If you are using a steel tape you will have to click on the "**H/C**" tab and select **Y**. If you are using an electric tape you probably will not have to bother with this step, as the program defaults to the setting for electric tapes. Enter an **N** in the "**H/C**" if necessary and you are using an electric tape to make your water-level measurements.

11. Make your first tape down and enter the tape down into the "**Reading**" tab. Be sure to enter water levels to the hundredth (.01) of a foot, as MONKES recognizes 42, 42.0, and 42.00 as three different levels of accuracy; nearest foot, nearest tenth of a foot, and nearest hundredth of a foot. The data will go into GWSI as entered in the PDA, so enter it to the hundredth.
12. Select the correct MP by clicking on the "**MP**" entry block and selecting the correct MP, which should default to the latest MP available.
13. After you select the MP it will populate the "**W. Level**" tab so click on the "**Add Water Level**" tab to enter your water-level measurement into MONKES.
14. Make a second water-level measurement and repeat steps 9, 10, ll, and 12 above.
15. After you have entered in your two water-level measurements you should see them displayed in the window. Make a third water-level measurement if the first two measurements do not agree to within .02 feet by repeating steps 9, 10, 11, and 12 above. The program will prompt you for a third reading if the first two tape downs do not agree within .02 feet and/or if you try to exit the water-level entry screen without a third reading when a third reading is needed.
16. Now click on the "**Recorder**" tab and enter in the date and time readings by clicking on the "**Now**" tab. (If the recorder time is significantly different than the default time for the PDA you can also enter the recorder date and time in the "**Date**" and **Time**" tabs under the recorder field. Tracking the recorder date and time is optional and up to you.
17. Now click on the "**Read**" tab and enter you recorder readings. You should enter in the intial reading at the beginning of the visit and the final reading after servicing the well. B**e sure** to check "**Y or N"** in the "**Reset Recorder**" tab. This is the only way we know whether the recorder was reset.
18. Now click on the "**Return**" tab which takes you back to the Water-Level Entry screen. You can review your water-level measurements or check you reading against historical readings by clicking on the "**Hist**" or "**H-graph**" tabs.
19. Now click on the "**Return**" tab in the lower left corner of the window again, which will take you back to "**Site Selection**" window. You can choose another well now or hit the "**Return**" tab again which takes you back to the Main MONKES Menu.
20. You can now exit the MONKES program by clicking on the "**Exit**" tab or you can process the water levels by clicking on the "**Process Water Levels**" tab. You can process water levels after each site visit or at the end of a field trip. Center policy is to process the water levels only once at the end of each field trip.
21. If you decide to process the water levels, which creates the "**.gwsi**" and "**.OD XML**" files that you will need to archive and enter into water levels into GWSI, click on the "**Process Water Levels**" tab. The program will list the water-level measurements that will be processed. Now click on the "**Process**" tab to write the "**.gwsi**" and "**.OD XML**" files. The program will process the water levels and create 1) an XML file with the date, time, initials of person making visit, and a **.OD suffix**, and 2) a GWSI input file with the date, time, initials of person making visit, and a **.gwsi suffix** . The program will also list the files that were created and tell you what the names of the files are. Click on the "**OK**" button to

acknowledge the files that were created and the "**Exit**" tab to exit MONKES. If you setup your backup files correctly, the files will be written to both the **SD-MMC Card MONKES\MONKES Backup** and the **My Device\Program Files\MONKES\Data** directories. You can look at the files using the Windows Explorer program on the PDA

After Field Trip

22. Upon returning to the office you will need to copy the "**.gwsi**" and "**.OD XML**" files from one of the directories described in step 20 to a temp directory called MONKES on your PC.
23. You will also need to copy the "**.gwsi**" file to your attach point in Unix to enter the water level into GWSI. In addition, the "**.gwsi**" file should be copied to the appropriate "**MONKES GWSI Files"** water year folder on \\gs.doi.net\VirginiaWestVirginia-W\WV\DATA_ARCHIVES\WATER_YEAR_DATA for archival.
24. Run the Site Visit Generator program to parse the original "**.OD XML**" file into separate XML files for each well visited by double clicking the "**MONKES Site Visit Generator**" click once application.
25. Click the Browse button to navigate to the location of the "**.OD XML**" file you want to process. Now click the "**Create Site Visits**" tab in the lower left corner of the Site Visit Generator program window. The program will process the "**.OD**" file and create separate XML files for each site visit.
26. Copy the XML files for each well to the appropriate "**Electronic_Inspections**" sub-directory (**identified by 15-digit site ID**) in the subdirectory \\gs.doi.net\VirginiaWestVirginia-W\WV\DATA_ARCHIVES\WATER_YEAR_DATA for the appropriate **Water Year**.
27. Make a **PDF** of the file by printing the file to the "**Cute PDF creator**" printer. Rename the file with the Station Number, Date, and Time and archive it in the same directory described in step 25 above. Be advised that the XML is considered the original record, not the PDF, so be sure to store both in the archives. Finally, print a hardcopy of the **XML electronic inspection PDF** and place it in the office folder for the well in the appropriate Water Year folder.
28. If you have a paper water-level note sheet make a PDF of it and copy it to the appropriate "Measurements" sub-directory (**identified by 15-digit site ID**) in the subdirectory \\gs.doi.net\VirginiaWestVirginia-W\WV\DATA_ARCHIVES\WATER_YEAR_DATA for the appropriate **Water Year**.
29. If you do not have the "**Cute PDF Creator**" mapped in your printer list go to "**Control Panel**" on your computer and click on the "**Run Advertised Programs**" tab and install both the Cute PDF programs listed there. See Mark Board if you need help with this process.

Entering Water-Level Measurements into GWSI

30. Make sure that you have copied your "**.gwsi**" file to be entered into GWSI to your local attach point on the Unix server for processing. You can delete it later after you enter the

water levels, as a copy of the "**.gwsi**" file should already be archived in the appropriate "**MONKES GWSI Files"** water year folder on \\gs.doi.net\VirginiaWestVirginia-W\WV\DATA_ARCHIVES\WATER_YEAR_DATA for backup purposes and potential re-entry as records are worked for the water year. These files will be deleted after the water-level records are checked and approved for publication.

The original record is the archived XML file which is permanently archived in the appropriate "**Electronic_Inspections**" sub-directory (**identified by 15-digit site ID**) on \\gs.doi.net\VirginiaWestVirginia-W\WV\DATA_ARCHIVES\WATER_YEAR_DATA for the appropriate **Water Year**.

31. Start GWSI in a unix window by typing **gwsi** at the command line
32. At the unix command prompt in GWSI select option 3 "**Edit GW Data**".
33. GWSI will prompt you for the "**.gwsi**" file you wish to enter so enter the appropriate "**.gwsi**" filename at the prompt.

    It is beneficial to have two Unix windows open when entering water levels into GWSI. In one window you can run the GWSI water-level entry program and in the other you can keep track of, edit, and drag and drop files into GWSI. Use the "cat", "more", or "nedit" unix commands along with the filename to view your **input** (**.gwsi**), **transaction** (**gw.lev.tran**), and **update error** (**upt.err.db01**) files. Some commonly used unix commands helpful for entry of data in GWSI are available on the internal West Virginia USGS groundwater home page at http://wv.usgs.gov/usgs/gw/index.html
34. You will next be prompted for a **batch entry code**, valid batch codes are **0-9 and A-Z**. So pick a code easy to remember and enter it at the command prompt.
35. If all goes well and there are no errors you should see the message "**NO ERRORS REPORTED**". If you get an error message look at the "**gw.lev.tran.db01"** file created with the batch code you entered in using the "**cat**", "**more**", or "**nedit**" unix commands along with the filename to determine what the error might have been. Usually it is related to the date or time field or time datum field.
36. Now hit a **carriage return** and the program should take you back to main GWSI menu. Enter option 4 (**Update GW Data**).
37. GWSI will prompt you **for the batch code** you assigned so enter it now.
38. GWSI will then tell you how many water-levels were entered and will create an error file (**upt.err.db01**) with a suffix for the batch code you selected. Check the error file by viewing the **upt.err.db01** error file in unix using the "cat", "more", or "nedit" unix commands along with the filename.
39. Enter a carriage return and you will be returned to the main GWSI menu; type **99** "**Exit to UNIX**" and a carriage return to exit GWSI.
40. See Mark Kozar or Melvin Mathes if you have questions entering water levels or if you have an error file that you can't make sense of.

Retrieving Entered Water-Level Measurements from GWSI

41. You can retrieve a table of your water-level measurements from GWSI by water-year to check to make sure your water-level measurements went into GWSI properly. To do this type **"GWSI"** and type **option "6" for Retrieval/Tables**.
42. Next hit a carriage return **<CR>** for the **TI** retrieval option, **<CR>** for the **root path name**, and **<1>** to select by **agency and site ID**.
43. Then type **N** to the "**Do you wish to load gross select keys from a file**" prompt". If you want to retrieve more than 1 site you can setup a file with a list of the station numbers and it will pull a table for multiple sites. Next, enter a **<CR>** to select individual sites with the **USGS** agency code and enter an "**S"** to specfiy sites one at a time. The program will now **prompt you for the fifteen digit site ID**, and you can enter more than 1 site if you wish.
44. Enter your **station number or numbers and type "N"** for the **"Any more agencies to select** prompt.
45. The next step is very important! Enter the number seven **"7"** and a **hyphen "-"** at the enter restrictions prompt. If you fail to do this you may not retrieve any data.
46. At this point you can type an **"R"** to retrieve your gross retrieval criteria or just hit a <CR> to continue the retrieval.
47. At the next prompt it will ask you what type of table format you want. At the **"Specify format"** prompt type **"4=Special"**.
48. Now you will prompted to name the output file, so "**enter an appropriate name for the table"** or accept the default table name **"gw.table"** and enter a **<CR>**.
49. You can **skip** the **"Enter the title you wish to appear at the top of each page**" prompt by entering a **<CR>**.
50. Next type a **"4"** at the **"Specify type water level table desired**" prompt. You will then be prompted for the water years of data which you wish to retrieve. At this point you can hit a <CR> which will pull data from the first year of data is available for the site(s) or "**enter a water-year"** for the retrieval. The next prompt asks for the ending water year you wish to retrieve. If you are just retrieving data for a single water year, just **"enter the same year"** you previously specified.
51. If you want max and min water levels for the water year you can type a **"Y"** to the "Do you wish to output a period of record summary. Most people just enter a **"N"** or a **<CR>** for the default response to this prompt.
52. Now just skip over the next nine prompts by entering the <CR> nine times.
53. You can review table at this point by typing an "R". Alternatively you can simply hit a **<CR>** at the **"Enter file disposition"** prompt with two additional carriage returns <CR> and a **"99"** to exit back to unix.
54. You can review the file by using one of the unix commands such as **"more" or "cat"** followed by a **space** and the **name of the table**.

Useful UNIX Command Link

55. Additional useful unix commands are available at the following location:

    http://wv.usgs.gov/usgs/gw/index.html

    Then click on the **"Unix Command Help"** link on the internal web site. To view the embedded internet and reference links in this document hover over the link with the mouse and hold down the <Ctrl> button while right clicking your mouse to activate the embedded links in this document.