Script for WHFS Focal Point – HydroBase

Slide 1
This is the HydroBase course for WHFS Focal Points.
Last update - April 2016.

Slide 2
Review the lesson.
Text for the audio is in the Notes tab at the left and there are downloads available at the end of the course.
Pass the final quiz on the NWS Learning Center.
Contact the Instructor for any technical problems.

Slide 3
This course is for WHFS Focal Points or those helping with WHFS Focal Point duties.
It is intended for only a few people in the office to have access to do work in HydroBase since it affects all of the WHFS applications.
The objectives focus on the most common uses of HydroBase, but the course covers less common actions as well.

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This is the sixth course in the WHFS Focal Point series.
The remaining courses will be added this Spring.

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In case you have not looked at the WFO_Support web page closely for a while, there is an updated HydroBase Operations Guide document. Under the WHFS Applications group, select HydroBase Operations. It was updated in 2015 and should be your Go-To for HydroBase information.
It is referred to as the Guide in the rest of this training course.
The Guidelines and Standards document has lots of gauge-specific information that can help you fill in some of the detailed information options in the various HydroBase GUIs. There are also standards for many key WHFS database tables.

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Again, the Hydro Database Manager application is commonly called HydroBase.
Use this GUI to update information in the hydro DB without having to login to the database and use psql commands to update tables.

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Other methods for accessing data in the hydro DB include Snoopy, psql queries run in Snoopy or a terminal window, and PgAdmin3.
Work with your ITO to install Snoopy if it is not on your AWIPS-2.
There are a number of stored queries available under the Query menu in Snoopy and you can add your own as well.

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Queries run delivered with Snoopy are safe. They do not change data.
If you create a new query that uses UPDATE, DELETE, or INSERT INTO commands, you WILL CHANGE DATA in the database.
Ask an ITO or someone with SQL or PSQL experience if you need assistance.

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Again, ask your ITO for assistance, if needed, using psql.
You may see suggestions posted on the whfsinfo listserver as well.
Ask for suggestions via whfsinfo to get a quick answer.

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Launch HydroBase from the Hydro perspective.
Note that the password you use is ONLY for the HydroBase GUI.
It is NOT the AWIPS-2 database password.
As with all passwords, please keep it close to the vest and only share with one or two staff members who need HydroBase access to assist you in managing the WHFS applications.

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1. In the Hydro perspective, select Hydro Database Manager to open the HydroBase application.
2. You should keep access to HydroBase password-protected.
3. The GUI opens with stations displayed alphabetically by ID by default.
4. The rest of the course will cover the menu options at the top.
5. There are 3 things you can do from the main GUI at the bottom of the screen.
    - Open a GUI to change the Station List Filter options
    - Change the Sort option
    - Enter a station ID to highlight that station in the main window
6. You should check the Station Filter List GUI now and again to make sure you know if all stations are being displayed or some are filtered out.

This GUI allows filtering by WFO or by the toggle of the Post Observed Values flag (covered later) that sends data to the EDEX shefdecode service for posting to the hydro database. A station may be toggled off if it is bad. It will not display in HydroBase if the Show SHEF No Post button is not selected in this GUI.

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1. You can change the HydroBase password from the Setup menu. If you forgot it, or someone else changed it, you can run a query to retrieve it. Keep it known only to those helping maintain WHFS software.
2. In HydroBase, select Setup > Administration. Use this GUI to change the password, which is stored in text. I show *** here to avoid publishing a password. If you don't have a password, this is blank. You SHOULD assign a password for HydroBase.
3. Run this query to see the password in either Snoopy or in a terminal window in psql: **select hb_password from admin;**
   Then use the GUI to change it.

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These interactions show each of the menus in the HydroBase GUI.
We will cover these options in some detail in the rest of the course. There is no audio for the rest of this interaction. Click through to view the menus.

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There is a Job Sheet on Add Location at the end of the course.
There is a feature to copy a similar existing station to a new ID, then you can edit it to put the correct info in for the New or Test station. The most-used option under Location is Modify Location. The other options are self-explanatory and explained in the Guide.

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1. The Modify Location GUI opens on the Geophysical page by default.
2. If you toggle the station Inactive, it won't be used by RiverPro. Document this with a date and reason for Inactive in a station current status log.
3. Toggle ON the Revise checkbox to add today's date as a station revision date.
4. Change select station attributes. Elevation refers to gauge elevation. This is usually height above ground of a precipitation gauge. It may be checkbar reading for a wire weight or height of the top of a staff gauge for a river station with no precip gauge. The Hydro DB requires that Lat, Lon, County, and State are filled in.
5. Update any direction details, network type, or RFC or WFO responsible for the station here.
6. In the Remarks section, add driving directions to the gauge. Make note of the vertical reference datum used to document the elevation (NGVD 29 or NAVD 88), the source (station description, topographic map, digital elevation source, etc.).
7. Characteristics are view-only. Click Apply then OK to save changes.
8. Use Copy to New Location to create a new or test station. See the Job Sheet at the end of the course for details.

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1. The other page for Modify Locations is the Additional Info page.
2. Enter the Horizontal Datum reference source for the Lat/Lon values on the Geophysical page and other key items.
3. This is the toggle for Post Observed Values to post data to the Hydro DB after decoding. If this is OFF, you may not see the station in HydroBase. Select the Station Filter List (bottom of HydroBase GUI) option and check Show SHEF No Post in the Filter list GUI to see the station. The data will not post to the Hydro DB PE tables. It will NOT appear in the Hydro perspective either! Document this in a current station status log!

4. Click the Setup + Apply button to open a GUI to update Cooperating Agency info according to the Guide on page 9 of 46.
5. Click Apply and OK to save changes.
6. Here is another Copy to New Location button.

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Select a river station in the HydroBase GUI, then you can make many updates using the River Gage menu options. The first option, River Gage, opens a GUI similar to Modify Location with two pages.

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1. The River Gage GUI opens on the Geophysical page.
2. Update key items near #2 including Flood Stage or Flow, Action Stage or Flow, and the Zero Datum value (in feet above MSL).
3. Click the Revise button if you update any info.
4. Click Forecast Point Group Assignment to update these for RiverPro.
5. Set the Primary Physical Element. This affects Point Data Control for Hydro perspective display and tells RiverPro which time series to use for Observed and Forecast data.
6. Use Latest Forecast tells RiverPro to only use the latest forecast data - Recommended.
7. Remarks is a useful place to put directions to the gauge.
8. Number 8 is new - Issuance Stage/Flow is the level where the responsible RFC is required to issue a forecast.

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1. Use the Page pulldown to get to the Additional Info page.
2. Enter station period of record.
3. List the source of the Lat/Lon horizontal datum information - gauge owner, your E-19 (if NWS), etc. This should be the datum you entered on Modify Location > Additional Info > Horizontal Datum (slide 16).
4. Vertical Datum is the reference datum (NGVD 29 or NAVD 88, etc.)
5. Update Rating information, including the agency, date, and rating number.
6. Use the pulldowns to select if tides or backwater affect the gauge.
7. Enter the gauge owner Station Number.
8. Enter a Bankfull stage that may or may not equal Flood Stage.
9. Enter the Check Bar value for a wire weight gauge.

10. For a Reservoir, you can enter a Pool. Suggestion - Use one of the pool values from the Reservoir GUI (Flood, Spillway, Conservation, Dead) and use the same Pool type for any reservoirs. Top of Flood Control pool is probably a good standard. Document Pool type in Remarks back on the Geophysical page for reference.

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The next two interactions cover the rest of the options in the River Gage menu for updating static data for a river station.

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1. Flood Category opens a GUI to modify categorical values. Note Minor category is Flood Stage or Flow.
2. Impact Statement allows changes to high water impacts and this data is used by RiverPro.
3. Low Water Statement impacts are transferred to the AHPS CMS and visible on public webpages.
4. Flood Damage information is used internally, including within E-19s, but is NOT used by RiverPro.
5. Rating Curve opens a GUI to update some rating curve information. See pages 22-23 of the Guide. Most offices get automatic rating curve updates using the RUHT program (Rating and Unit Hydrograph Transfer). Work with your RFC to ensure you are using the rating curve they use for their forecast if there are any questions. The GUI does offer a way to import a new rating curve placed in the correct directory.
6. Unit Hydrograph opens a GUI that allows importing a new unit hydrograph for Site Specific points. Most offices use the RUHT program, however. See page 23 of the Guide.
7. Crest History allows you to mark crests as Preliminary, Official, or Record (once formally declared, usually by USGS). See page 24 of the Guide.

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1. Low Water holds a record of low water events. These appear in E-19s and on public webpages.
2. Benchmark holds a catalog of benchmarks identified around the gauge to use when leveling to verify gauge location and elevation or flood crests for impacts, inundation, etc.
3. Datum holds the gauge elevation and date of the Zero Datum. Also update this in River Gage > Zero Datum. Document the Reference Datum used (e.g., NGVD 29 or NAVD 88) in River Gage (Additional Info) > Vertical Datum. For a Local Datum (used for a wire weight or staff gauge, etc.), the elevation is normally below streambed to avoid negative stages and is documented in feet above Mean Sea Level (MSL). For some gauges, the value where the gauge reads 0.0 may be 0.0 feet MSL. Check the gauge owner's (USGS, etc.) station description information to find the zero datum.
4. Description holds additional station information. Proximity is used by RiverPro. Reach is limited to 80 characters. Affected Area is used to hold the lat/lon pairs for a simple polygon (80 char max) for the national warning map.
5. Publications typically holds USGS Water Resource publication info for the state containing the station, etc.
6. References holds information used including USGS publications or station description, previous E-19s, etc.

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Opens the Reservoir GUI to update key reservoir information. Much of this is available from the web-based National Inventory of Dams (NID), but some info may be needed from EAPs (Emergency Action Plans), etc. See Section 6 of the Guide on Reservoir and also Setup menu, Reference Fields (Section 9.3 of the Guide) for additional information.

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The Data Ingest menu options are in Section 7 of the Guide.
Your most common use will be in QC/Alert/Alarm Limits.
Ingest Filter options are important in determining which data is available for use by the WHFS applications.
Work with your ITO if you need to alter purge parameters.

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1. Ingest Filter opens a GUI to control data preferences.
   (1) Toggle on the Location checkbox, then enter a station ID in the text box.
   (2) Scroll down in the data window to select the PE and related attributes to examine. In this example, HG 0 RG is instantaneous GOES River Stage reports. You could check the PE filter checkbox to only display HG, and the TypeSrc checkbox to select only RG if desired. Click on the line of interest and the values fill in the lower section of the GUI.
2. Near number 3 is TypeSource Rank. This is important for a station with multiple river, or precip, gauges at the same site.
   You should rank which source you consider 1st (primary). If it is unavailable, a 2nd source will be used.
3. Switches -
   (4) Make sure the Master Switch is checked ON to send data to EDEX shefdecode for storage. For Precip stations, ensure a preferred hourly gauge source has the MPE switch checked ON. Multisensor Precipitation Estimator is the source of precip for any Site Specific stations you have at your office.
4. Set Switches for All Listed Above -
   (5) This button should NOT be used in most cases. Any of the 3 checkboxes you toggle ON (or OFF) will be applied to all the gauges in your display window. If you have not applied filters to show only a single station, it will be applied to ALL similar stations in your database. There is no "UNDO" option. Don't click this button!
5. Update entries -
   (6) Use the pulldowns in area 6 carefully to change any of the specific settings for a selected Physical Element for one station. When you are ready to save changes to TypeSource, Master Switch, or some other setting, click Apply and OK to save the changes.

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Use Adjustment Factors to apply a constant change to the reported value for a station. Apply an adjustment due to a bias, a rating shift, convert MSL to a local datum, or convert degrees C to F. See Section 7.2 in the Guide.

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1. QC/Alert/Alarm Limits opens a GUI on the Default Limits page. The limits on this page, listed by Physical Element, apply to ALL stations in your hydro DB. QC includes Gross and Reasonable Range checks. Alert and Alarm Limits can be set for awareness as we approach critical conditions. Again, on this page, Limits affect ALL sites.
2. Make changes on the Default Limits page in the lower right, then apply. Remember to make value ranges broad enough to cover ALL stations in your hydro DB (including offices you backup) for each PE.
3. The Location Limits page applies limits to a single station for each PE.
   (1) Change to Location Limits using the Page pulldown.
   (2) Toggle ON the Location checkbox and add a station ID to display.
4. Location Limits 1 -
   (3) Highlight the line with the PE of concern.
   (4) In this example, note the way Dates must be handled to set seasonal limits as you cannot cross year-end.
5. Location Limits 2 -
   (5) Make any changes in the lower right area, press Apply and OK.

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The Data Purge Parameters option opens a GUI to modify the number of hours of products to store by table or number of products to store by version. If you are having storage issues, work with your ITO to determine if you need to change purge parameters.

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The Reports menu offers access to create Flood Reports, such as data for E-3 or E-5 reports. It also offers access to create Text Reports from data in the database for E-19, E-19A, and B-44A reports.

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There are several configuration options in the Setup menu. We already mentioned the Administration GUI where you change the password for HydroBase.

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1. Administration - Update your contact info and change HydroBase password here.
2. Reference Fields - Allows you to add Reservoir Owner or Type to make them available to the pulldowns in the Reservoir GUI.
3. State/Counties/Zones - Use to update State, County, or Zone info, WFO responsible, and Service Backup assignments.
4. RiverPro General Parameters - Use this to update a few key parameters affecting RiverPro and VTEC.
5. RiverPro Forecast Groups/Points allows updates to RiverPro Groups and Forecast Point assignments. See Section 9.5 of the Guide and Section 9.1.3 of the RiverPro Manual.

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1. Radar Location is used by the MPE software. The Active flag should be toggled ON for desired radars.
2. Areal Definitions are used by Site Specific for points you have configured. Use this GUI to manually edit a small change or use it to import a new **basins.dat** file. Note it deletes the old one. The basins.dat file is imported into the 2 tables when the update script is run from HydroBase. These are used by the MAP preprocessor to compute areal precip for a basin. For MAP to work correctly and provide SSHP with decent areal precip, the basins.dat file still need to be maintained.
3. NWR Transmitter Towers opens a GUI. I default relevance to the new BMH replacement for CRS as to whether you need to use this GUI for anything since BMH is delivered.
4. TimeSeries Group Configuration opens the SITE group_definition.cfg file in the Localization perspective in the Eclipse editor. This was covered in the Hydro Time Series Course.
5. HydroGen Configuration opens a GUI to update the hgstation table, controlling flow of data from the WFO to AHPS. Refer to the documentation on the WFO_Support site. A HydroGen course will briefly summarize this information later this spring.

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Some of these links may be useful for you to download and save.
There are more links to download on the next slide also.

Slide 34

Here are some additional links to download.
This is the end of the course.
The next slide will link to the Final Quiz.

Slide 35
(Final Quiz)
No Audio