



USFWS Cultural Resources Data Set and GIS Mapping Instruction Guide

Victoria Barr, R5/NWRS/VSC/ 10/27/2004, version 1.

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Introduction

This database will provide a consistent method for entering cultural resource site information into a format that will allow FWS cultural resource data to be easily obtained and analyzed both regionally and nationally. Additionally, information from this data base can be spatially analyzed in ArcGIS. The information in this instruction guide is meant to create inter-regional consistency. As per the memo from the Director, regions are not required but encouraged to complete this database using the standards set forth in this guide

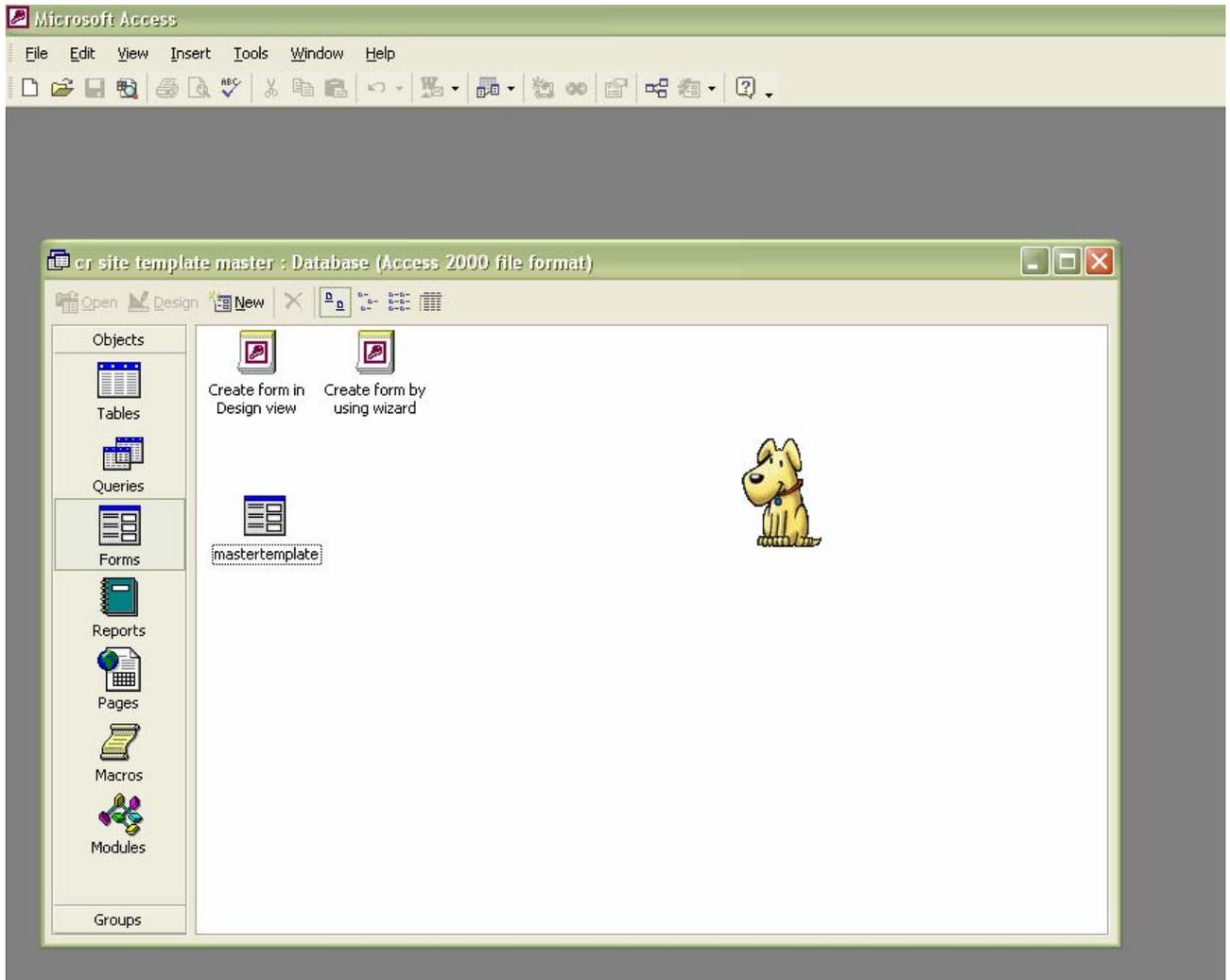
In each Region, the cultural resource specialists will be responsible for compiling and maintaining their database. We recommend that only one master database be created to avoid duplicating records. Additionally, we recommend that when sending cultural resource site information to field stations the station database should be in a read-only, password protected format, so that field stations cannot add or edit site data. The database should be stored on a secure drive, have scheduled back ups, not accessible from the internet, and password protected. We recommended coordinating with your regional IRM division to find the most appropriate environment for the database to address security and accessibility concerns.

To Begin:

Insert CD and open file named cr site template master.mbd with Microsoft Access.

In the left hand column of the text box, highlight the word forms.

On the right side of the text box, you will see something labeled 'mastertemplate'



Double click on 'mastertemplate' to open the data entry form.

USFWS Cultural Resource Site Data Set

Site ID

Region site #/field #

Field Station

org code

Tract #

Town

County

State

Area

Perimeter

Acres

Site Type:

Site description

Temporal

NR designation

Integrity

Condition

Threats

Material classes observed

Collections made during survey

List associated site numbers

list overlaying site #'s

Northing

Easting

Datum

UTM ZONE

GPS

Special consideration

Special designation

Associated databases?

Other database number

Contract #

Reference

Narrative

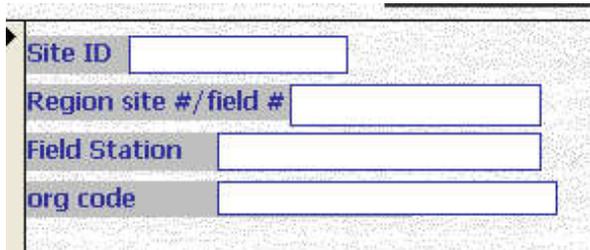
You can now begin to input data into the database:

To enter data into a field, click in the white box next to the field you would into which you would like to enter data.

You can also use the tab key on your keyboard to navigate the form

Section 1: Basic site info.

The fields highlighted in grey, provide the basic site information of field station and site numbers.



Site ID	<input type="text"/>
Region site #/field #	<input type="text"/>
Field Station	<input type="text"/>
org code	<input type="text"/>

Site ID:

The first field is the Site ID: Here you enter the state site identification number. Some states use the Smithsonian trinomial system, while others use their own system. If the site does not have one, then leave this field blank.

Region site #/field

To create a consistent method of assigning site numbers, each site will be labeled as follows: Region number, field station literal code and consecutive unique number.

For example, the first recorded site at Mason Neck National Wildlife Refuge would receive:
R5MSN-001.

Another example:

For Quilcene National Fish Hatchery the number would be R1AOF-001 for the first recorded site.

This way, we will be able identify the region, field station and consecutive site number in the beginning of the form/table and it easily creates a searchable field.

A list of literal codes will be under a separate file on the CD in Microsoft Excel or you can try clicking on this hyperlink: [listofliterals.xls](#)

Field Station

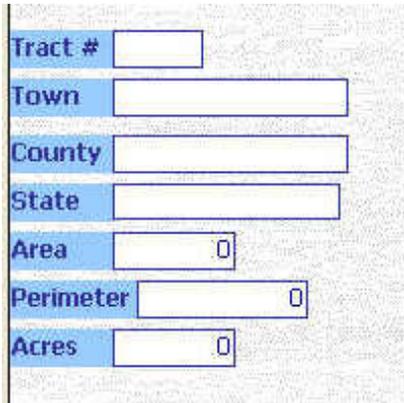
Enter the field station name (if it is a refuge within a complex, enter the specific refuges name)

Org Code

Enter the organization code for the field station for example 50138.

Section 2: Land data

The next section deals with land data such as tract # etc.



A screenshot of a data entry form with the following fields:

- Tract #
- Town
- County
- State
- Area
- Perimeter
- Acres

Tract #

Enter the tract # (from Realty files) if known

Town

Enter name of town if applicable

State

Enter name of state in which the majority of the field station lies

Area

Enter the area of the site if known

Perimeter

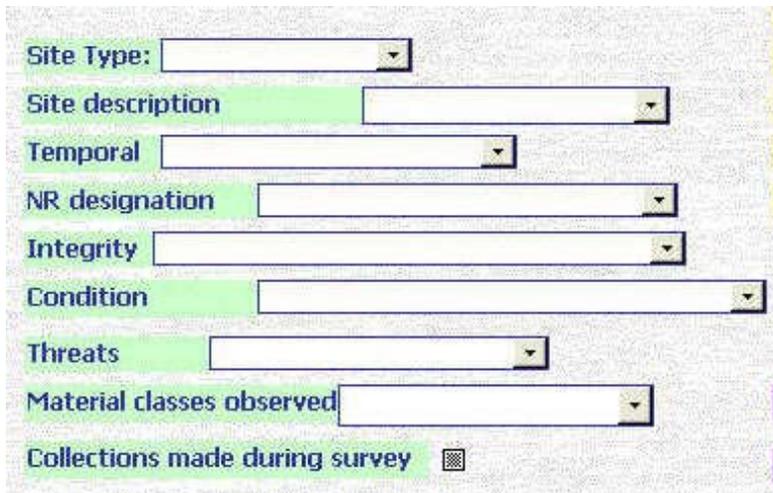
Enter the perimeter of the site if known

Acres

Enter the acreage of the site if known

Section 3: Site Information

In this section you will enter more specific information about the site. You will have a choice of either selecting an entry from a pop-down menu, or manually entering the information in each field. We advise that you keep these fields as simple as possible to make search queries of the data more efficient. ** If you have data that is not listed in the pop-down menu, I will later explain how to modify the menus in the pop-downs, to include what you want**.



The image shows a screenshot of a data entry form with the following fields:

- Site Type: [dropdown menu]
- Site description: [dropdown menu]
- Temporal: [dropdown menu]
- NR designation: [dropdown menu]
- Integrity: [dropdown menu]
- Condition: [dropdown menu]
- Threats: [dropdown menu]
- Material classes observed: [dropdown menu]
- Collections made during survey: [checkbox]

Site Type

This is a general description for the type of site. The basic options for this field are:

- Structure
- Maritime
- Prehistoric
- Historic
- Cemetery
- Military

Site description

This is a general description of the main activity of the site. The basic options are:

- Home

- Industry
- Commerce
- Historic hunting site
- School
- Lifesaving station
- Bridge
- Prehistoric burial
- Ossuary
- Camp
- Surface find
- Canal
- Concrete structure
- Farm
- Lighthouse
- Dam
- Prehistoric occupation site
- Fence
- Mine
- Railroad
- Reservoir
- Road
- Shell midden
- Rock art
- Rock pile/cairn
- Rock ring
- Sheet metal
- Trail
- Trestle/bridge
- Wall
- Wood structure
- Rock shelter
- Hearth
- Ship wreck
- Other

Temporal

This field is the basic temporal description of the site. The options include:

- Historic
- Prehistoric
- Proto-historic
- Contact period
- Unknown

NR Designation

Enter the National Register of historic places designation in this field. The options include:

- Not evaluated
- Likely
- Not likely
- Not eligible
- Eligible
- Potentially eligible
- Listed
- National Historic Landmark

Integrity

Select or type in the best integrity description for the site. The options include:

- Undisturbed
- Alterations consistent with secretary standards
- Unaltered (structure)
- Plowed
- Historic structural alterations (structure)
- Modern alterations (structure)
- Surface collected (professionals)
- Excavated (professionals)
- Avocationally collected
- Avocationally excavated
- Damaged by fire
- Damaged by vandals
- Looted
- Damaged by erosion
- Unknown

Condition

Select or enter a description that best describes the condition of the site when it was last observed. The basic options include:

- Erosion damage
- Flood damage
- Vegetated
- Unvegetated
- Modern plowing
- Artifacts exposed on surface
- No artifacts visible
- Visible holes in site
- Wind blow out
- Eroding slope
- Stable

- In disrepair
- Only walls standing
- Not being maintained
- Unpainted
- Broken windows
- Burned

Threats

Select or enter a description of threats to the site that were most recently observed. The basic options include:

- Tide/flood
- Erosion
- Plowing
- Looting
- Vandalism
- Construction
- Plowing
- Habitat management
- Fire management
- Other

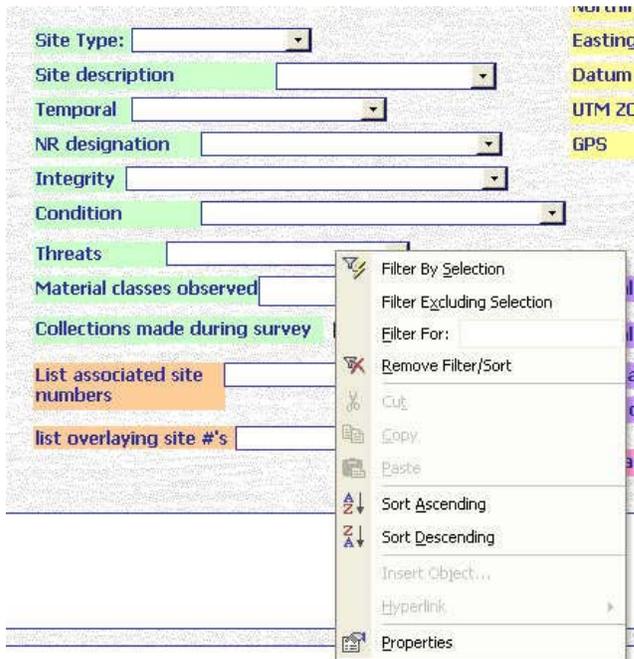
Material Classes Observed

Select or enter a description of the dominant type of material class observed. Basic options include:

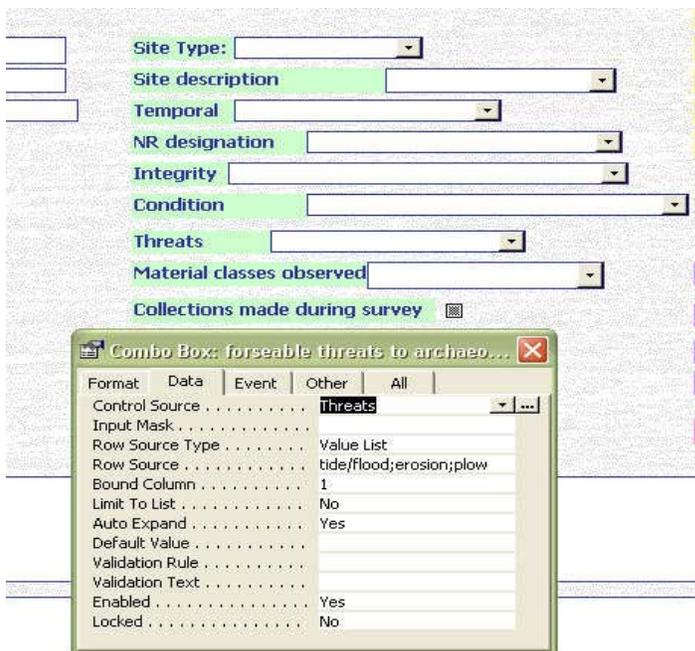
- Bedrock groundstone
- Animal bone
- Human bone
- Bullets
- Fire cracked rock
- Stone tools
- Bottles
- Mining tools
- Brick
- Prehistoric ceramic
- Historic ceramic
- Various historic artifacts

** Note: to add an item to any drop down menu, complete the following steps.

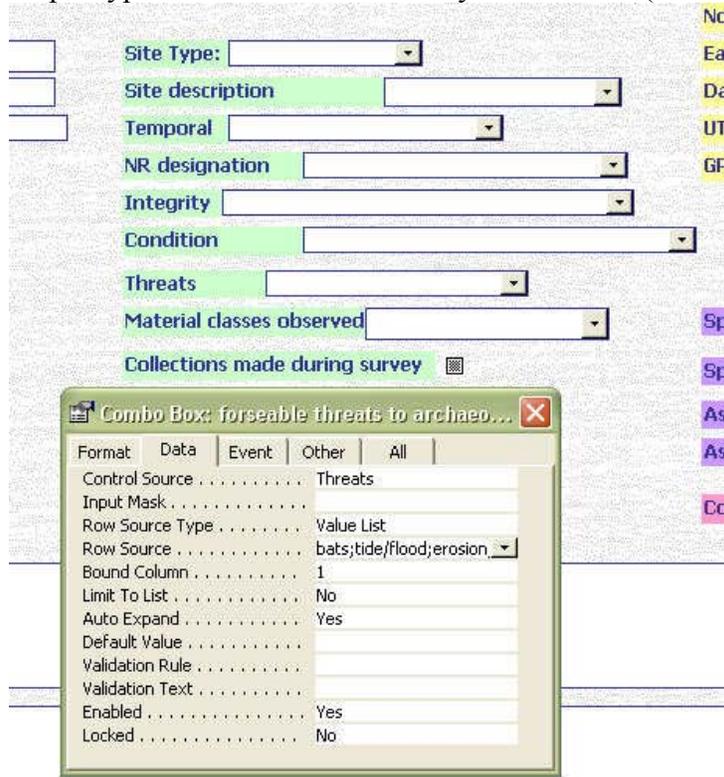
Step 1: right click in the box next to the field you want to modify and select properties from the bottom of text box (in this case, 'threats').



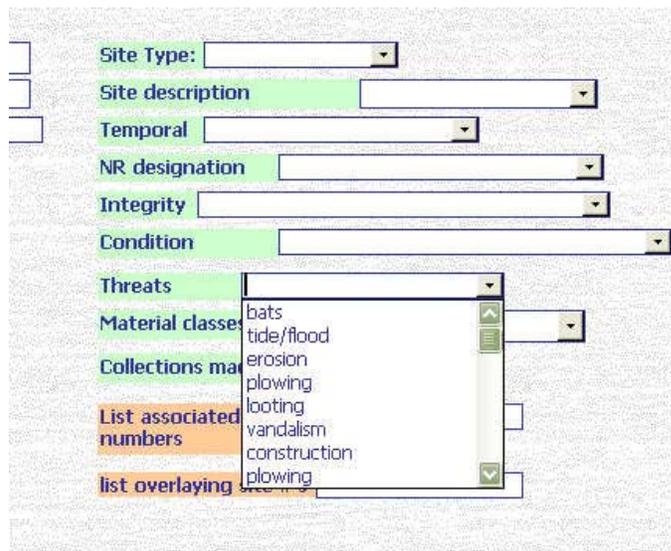
Step 2: Click once in the 'Row Source' section of the 'Data' tab in the properties box



Step3: type in new term followed by a semicolon (For this I used 'bats')



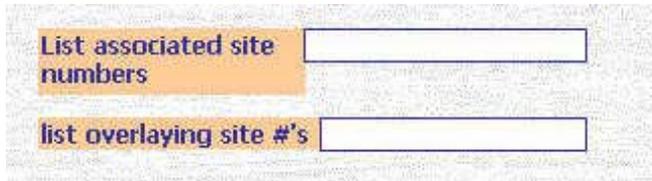
Now the new term will appear as choice in the drop-down menu.



It is fairly easy to make changes within Access and the help menu is handy. However, do not modify entire fields because we will lose inter-regional consistency.

Section 4: Associated site information

In this section list if the site is associated with another site or if it is a part of a multicomponent site.



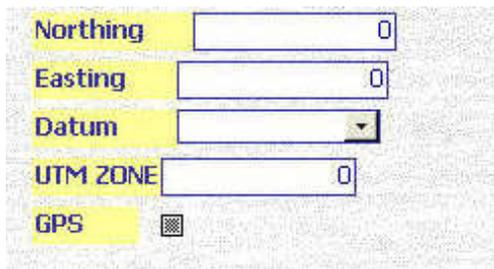
The image shows a screenshot of a form with two input fields. The first field is labeled "List associated site numbers" and the second is labeled "list overlaying site #'s". Both fields are empty and have a light blue border.

In the first section list the numbers of cultural resource sites associated with this site (near by sites or site of an associated event).

In the second section, list the numbers (the Region site#) of the other sites if this is a multicomponent site.

Section 5: Geographic information

In this section, you will enter the UTM coordinates, datum, UTM zone and whether or not the data was collected using a GPS unit.



The image shows a screenshot of a form with five input fields. The first four are labeled "Northing", "Easting", "Datum", and "UTM ZONE". The fifth is a checkbox labeled "GPS". The "Northing", "Easting", and "UTM ZONE" fields are empty. The "Datum" field is a dropdown menu. The "GPS" checkbox is checked.

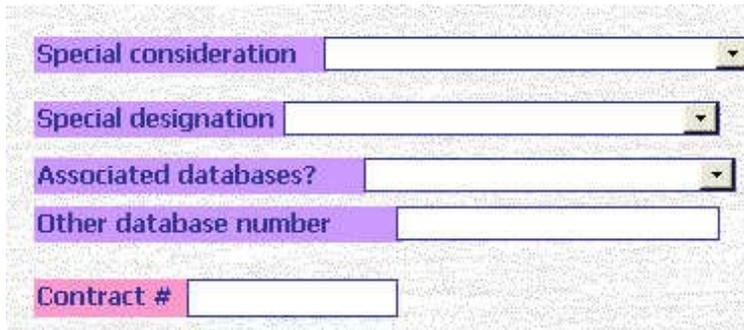
Zone, Northing and Easting sections are the UTM coordinates for the site. If you do not have them on hand, one easy way to get them is to open ArcGis, open the appropriate topo map, set the units to UTM and place the cursor over the part of the map where the site is located. In the bottom left part of the lower tool bar, the UTM coordinates will be displayed.

For the Datum, it is best that all the sites be in the same datum. When exporting the station information to ArcGis, the information needs to be sent by consistent data; otherwise ArcGis will not be able to project the spatial information, because of more than one datum. It is important to note that changing the datum will alter the Northing and Easting coordinates, so make sure you aware of the change if your are converting form one datum (NAD27 for example) to another (such as NAD83).

If you used a GPS unit to collect the data, click on the box (it will check it)

Section 6: Other information

In this section, you will enter information about the site which includes other associated database information, special consideration (such as near scenic by-way) or special designation (Preserve America site, National Battlefield site, etc.) Also, in this section, enter the contract number (is there is one).



Special consideration

Special designation

Associated databases?

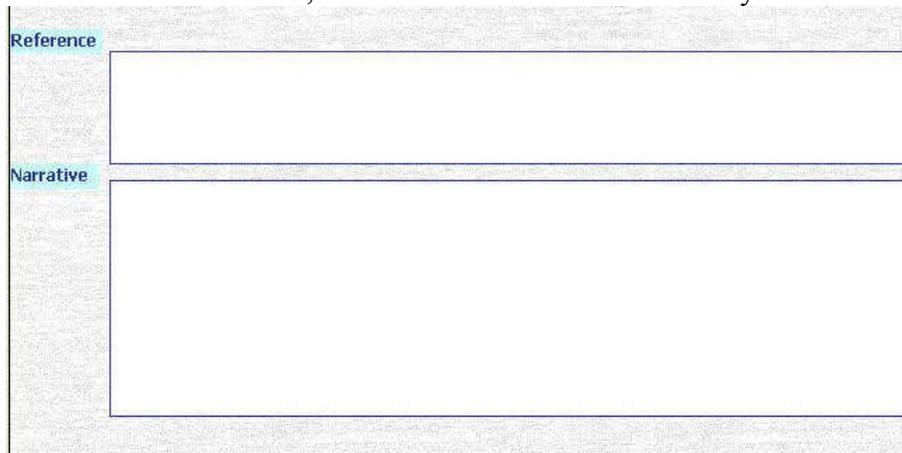
Other database number

Contract #

Section 7: References and Narrative

List works cited/references for the site in the Reference section, such as past reports or publications about the site.

In the Narrative section, describe in more detail the history and characteristics of the site.



Reference

Narrative

Now that you have completed the form, you can move to the next form by clicking on the arrow on the bottom left menu bar.

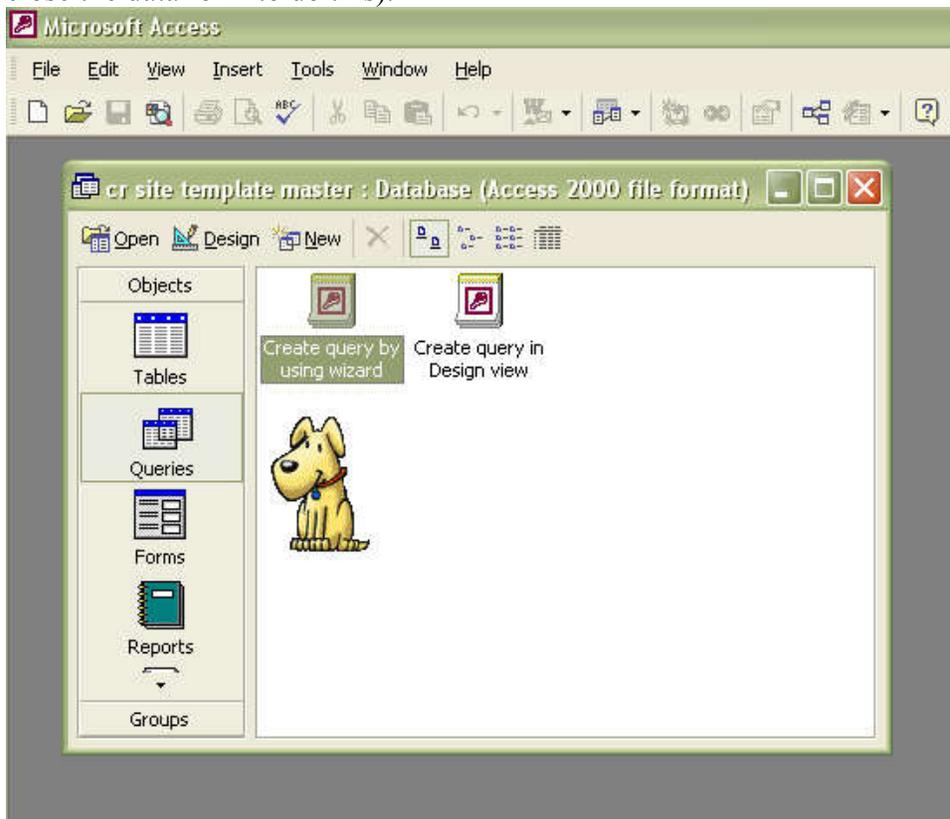
It is recommended that you familiarize yourself with Microsoft Access to understand how to navigate from one form to another, or from form view to table view etc.

After forms have been completed, you can sort the data by certain criteria, such as prehistoric, if you wish.

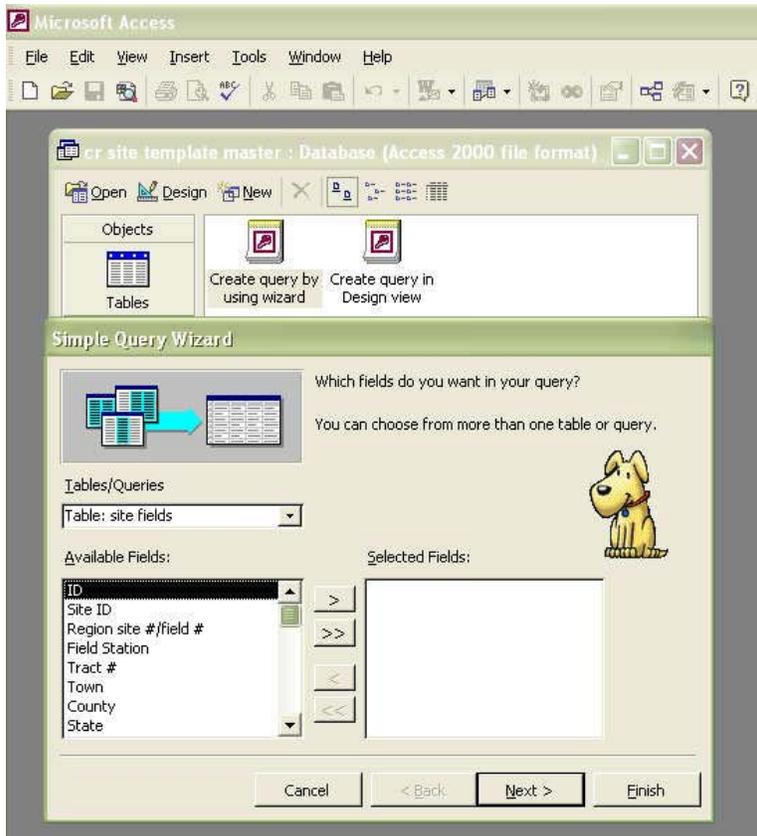
Section 8: Queries

In Microsoft Access, creating queries allows the user to search certain types of data (such as search for all sites within your database that are prehistoric and on the National Register). To export a file to ArcGIS, you also need to construct a query. Make sure that the files you prepare to export have the same datum; otherwise, ArcGIS will not be able to spatially display the data. If the field station geographic data contains more than one datum, separate by datum in the search query mode (I will show you how to specify which field to sort)

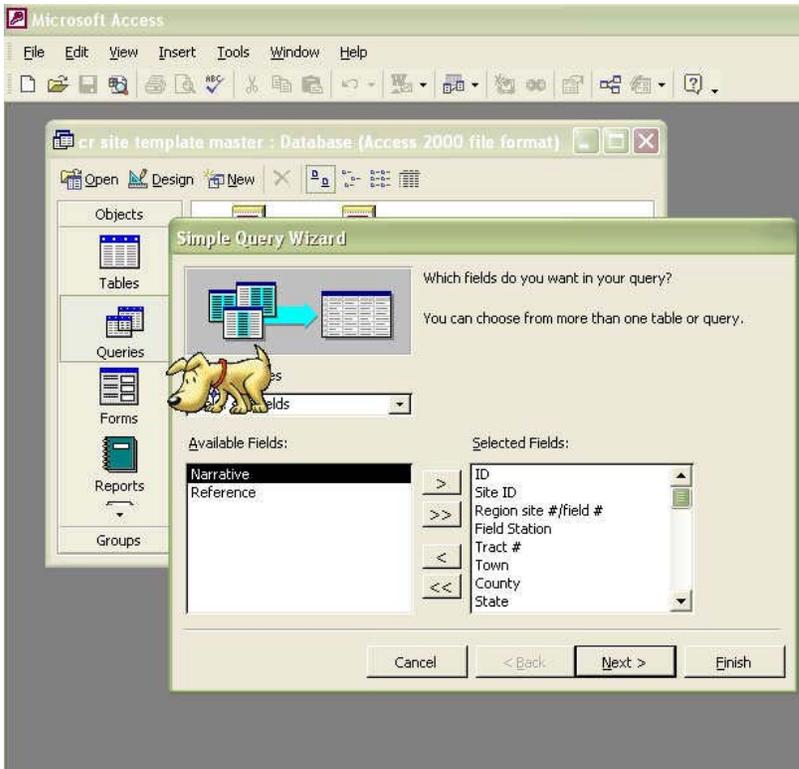
To start a query, click on the queries icon in the main Access menu (you will need to close the data form to do this).



Then double click on “Create query by using wizard icon.” The query wizard menu will then appear.

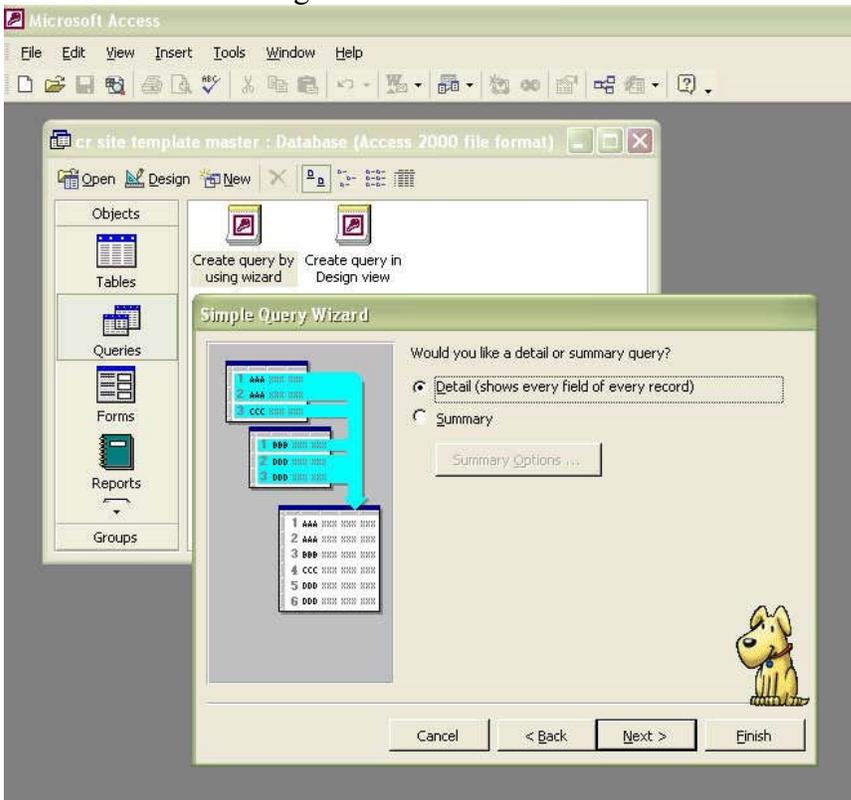


Next select which field you would like to appear in the query. If creating query to export to GIS, I recommend selecting all fields except the Narrative and Reference fields, as they will not have a value in ArcGIS.



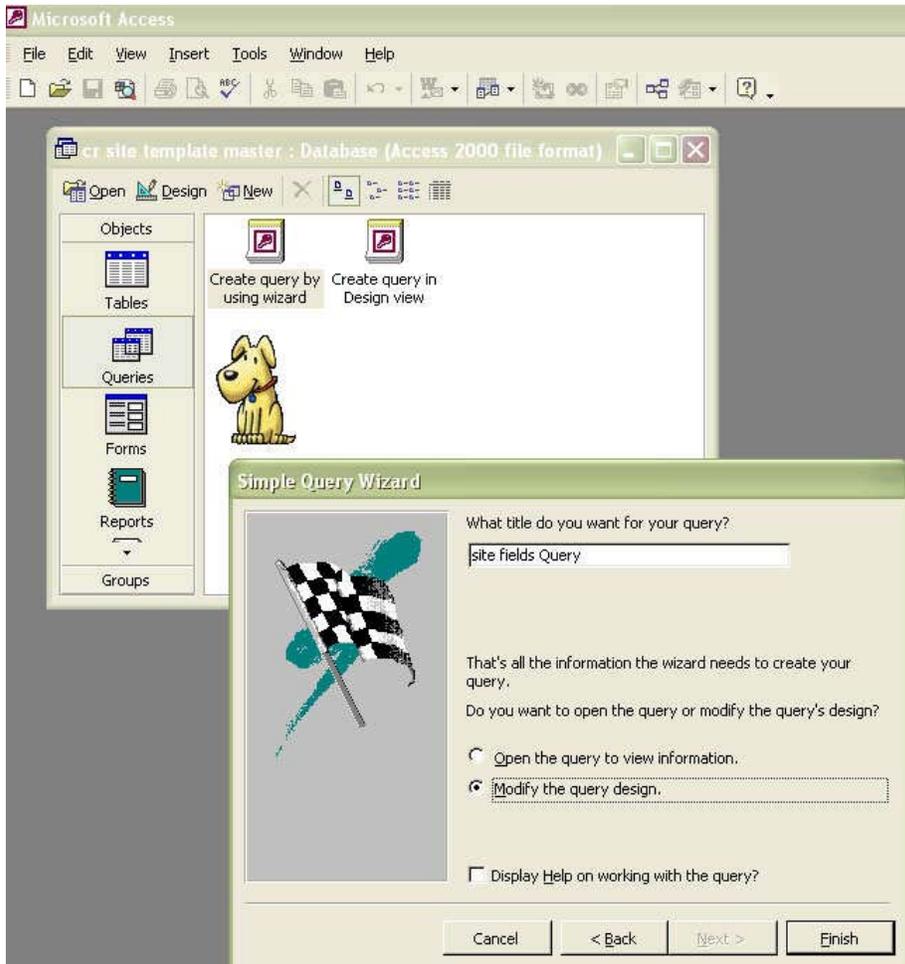
After you have selected the desired fields, click on next button.

Click the next button again.

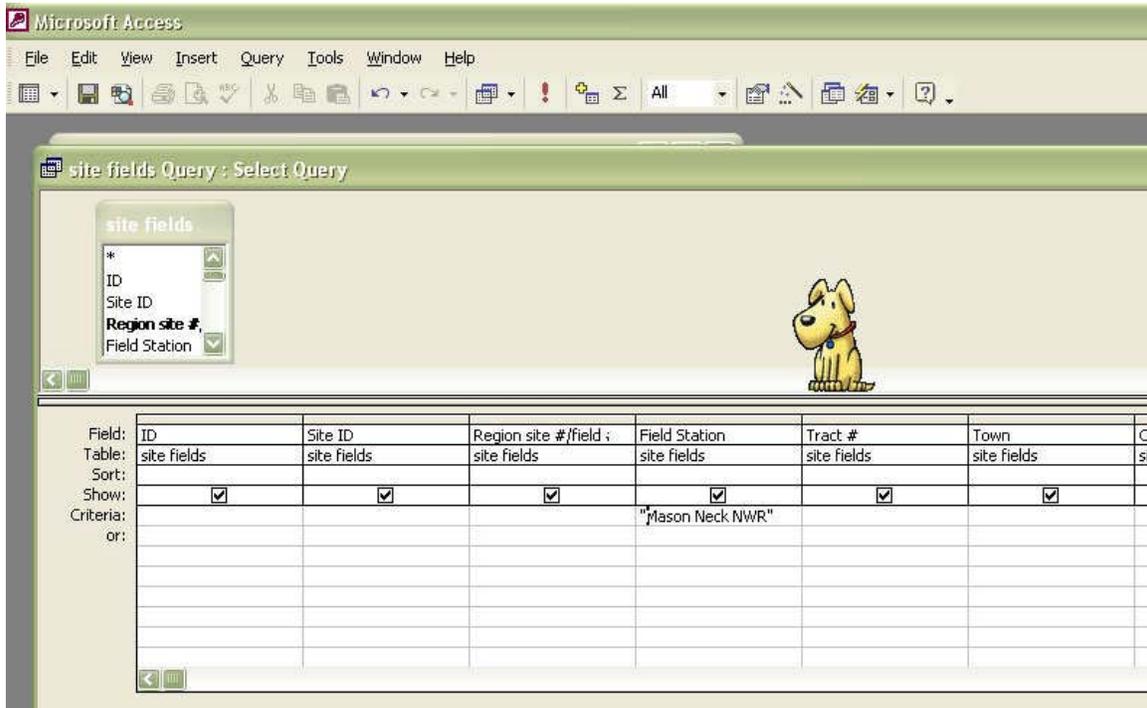


In the next screen, click the ‘modify the query design button’ and then the finish button.

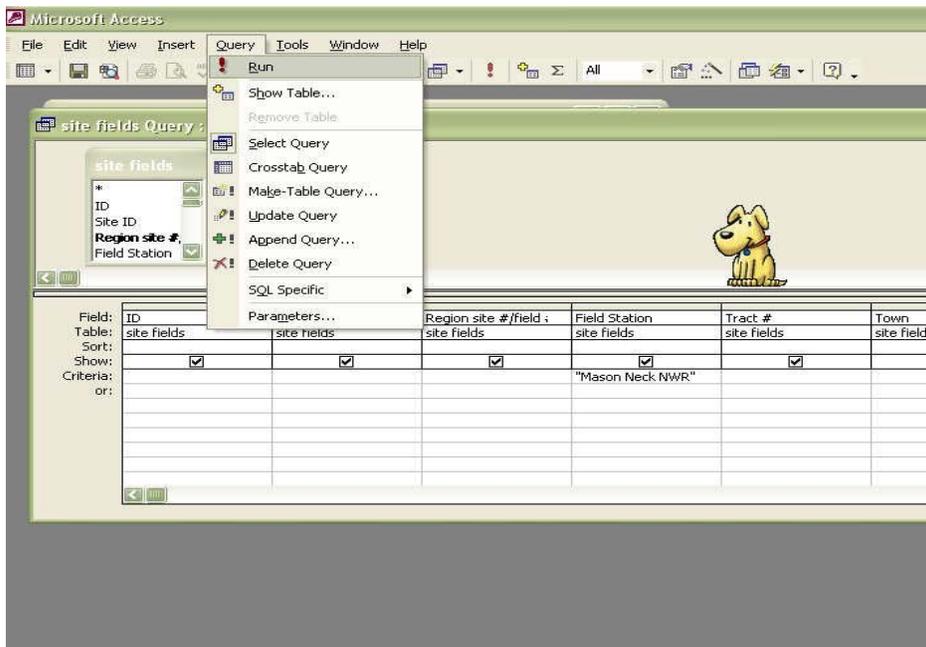
This will take you into the design view of the query from which you can ask to run a query by requesting certain criterion.



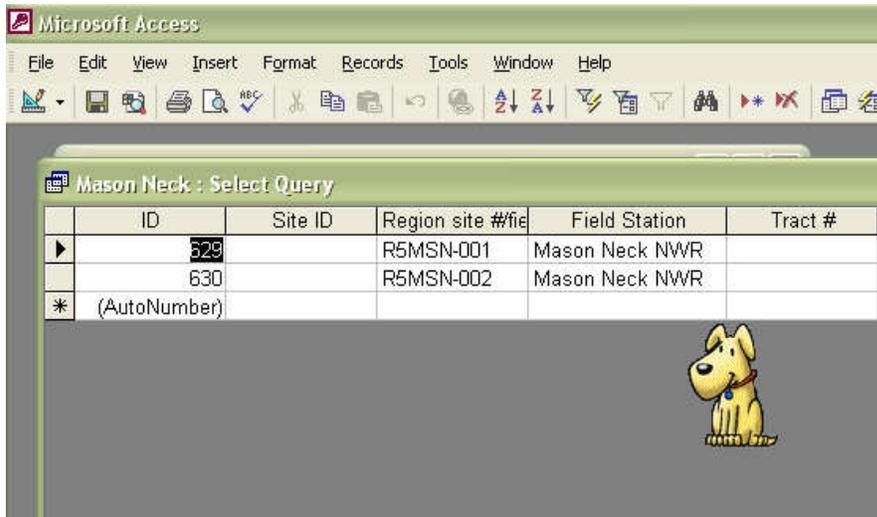
When in the design view, tab over to the Field Station field and type in field station row “Mason Neck NWR”. For this query, we want Access to select all records that contain Mason Neck NWR. There are many types of queries you can run, for example in the NR designation field you could select ‘likely’ and Access would pull all the ‘likely sites’ from the dataset to make a query.



Now in the Query menu on the top menu bar, select “Run!”



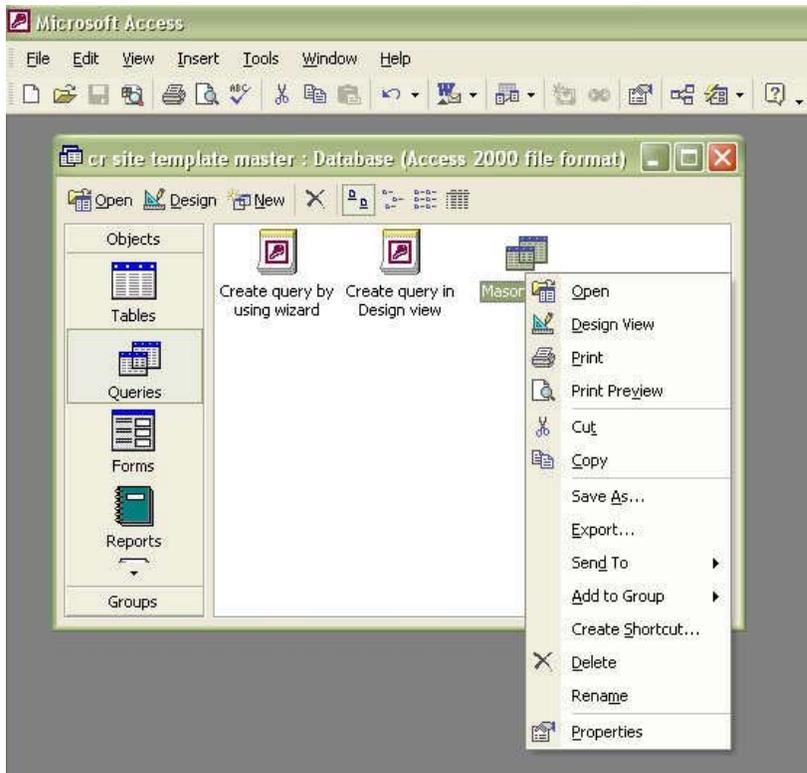
After you run the query, Access will bring up the table with the selected sites/criteria. For this example, Mason Neck NWR was the search criteria, and all Mason Neck NWR records were selected for the table (In this case we have two records for the example.)



Now you have a query for a field station that you can export to ArcGIS. Remember, if your field station has more than one datum for you UTM coordinates; separate the records as separate data. For example, you would still type “Mason Neck NWR” in the field station column, and also the datum in the datum column, for example “NAD83” or “NAD27” depending on what that group has for a datum.

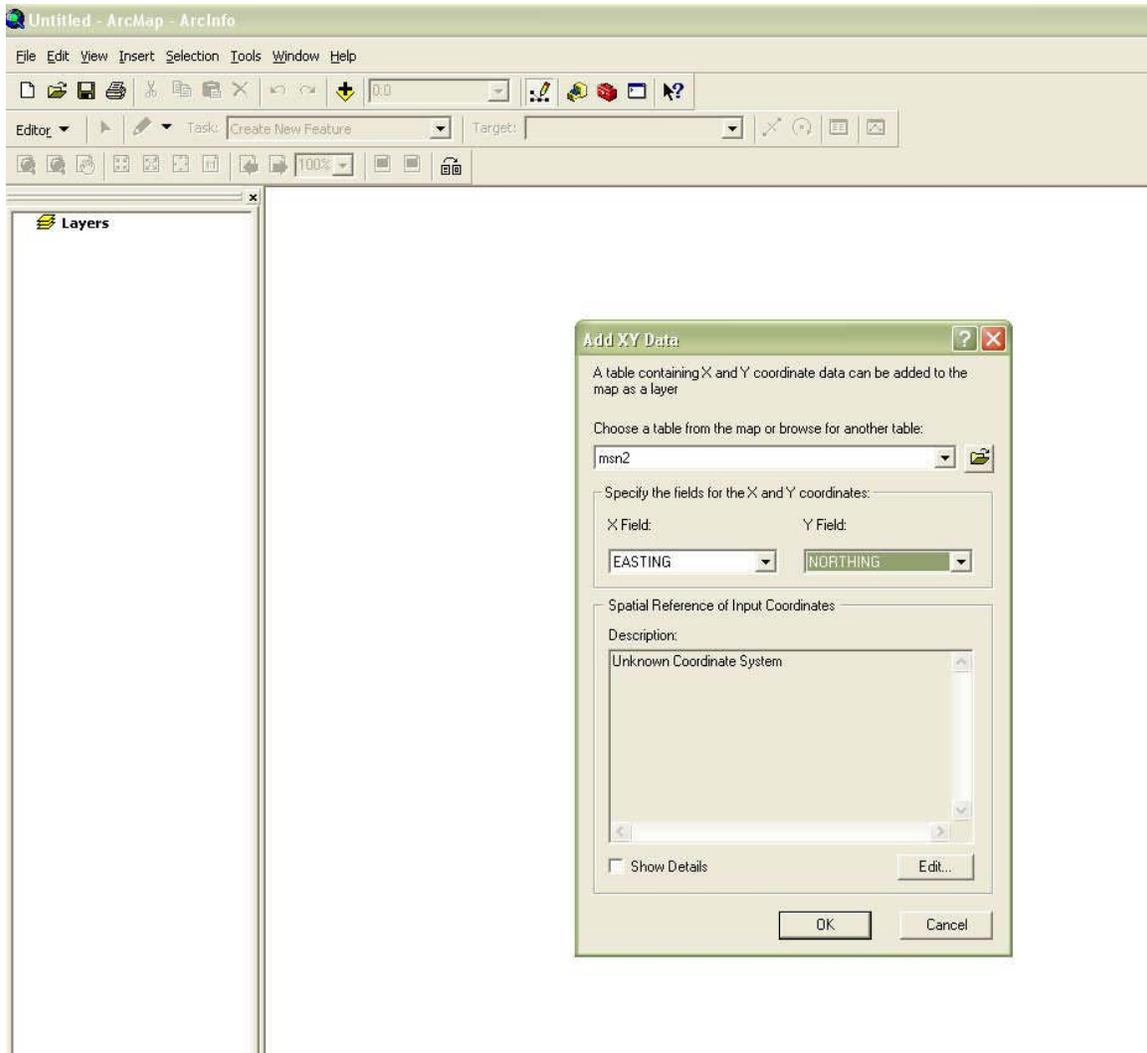
Section 9: Exporting to ArcGIS

To export your data to ArcGIS, right click on the query you have made (for this exercise, I will export the Mason Neck query). Then from the menu that appears after you right click, select export and save the file as a .dbf.

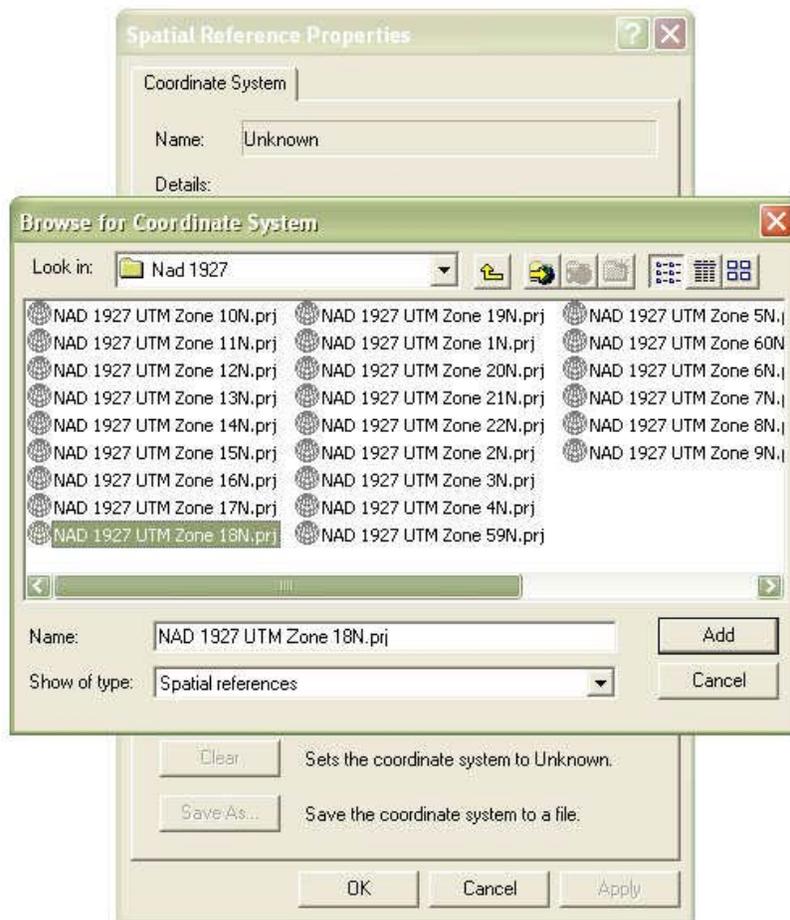


Next, open ArcGIS (I recommend using at least Arc 8.3, version 9 is now available)

Once Arcmap is open, click on tools, then add XY data. In the first window, browse to the in which you saved your .dbf file. The in the X field select easting and in the Y field select northing

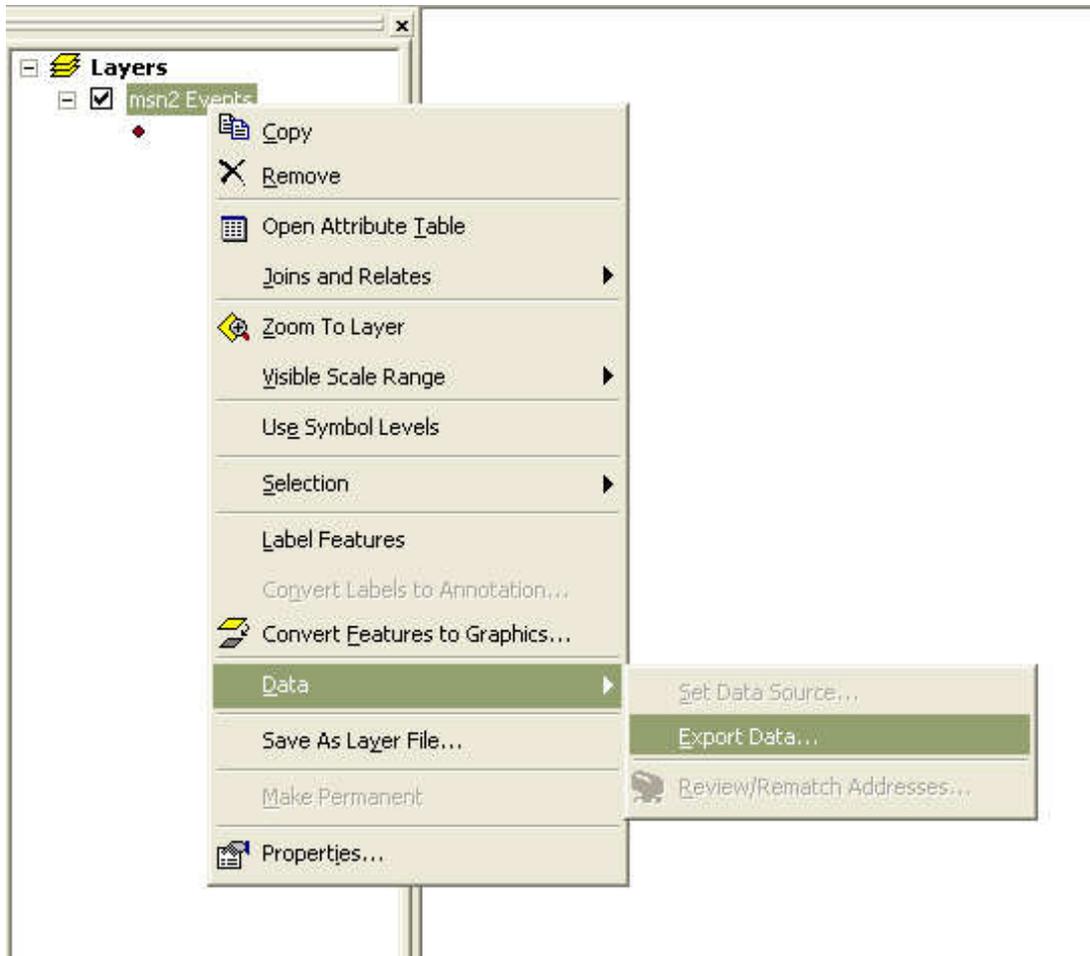


In the spatial reference of input coordinates section, select edit, and then navigate to the coordinate system that your data were collected in. Click the select box, then projected coordinate systems and then select the appropriate one. For this exercise, I am selecting UTM NAD 1927, zone 18 north.

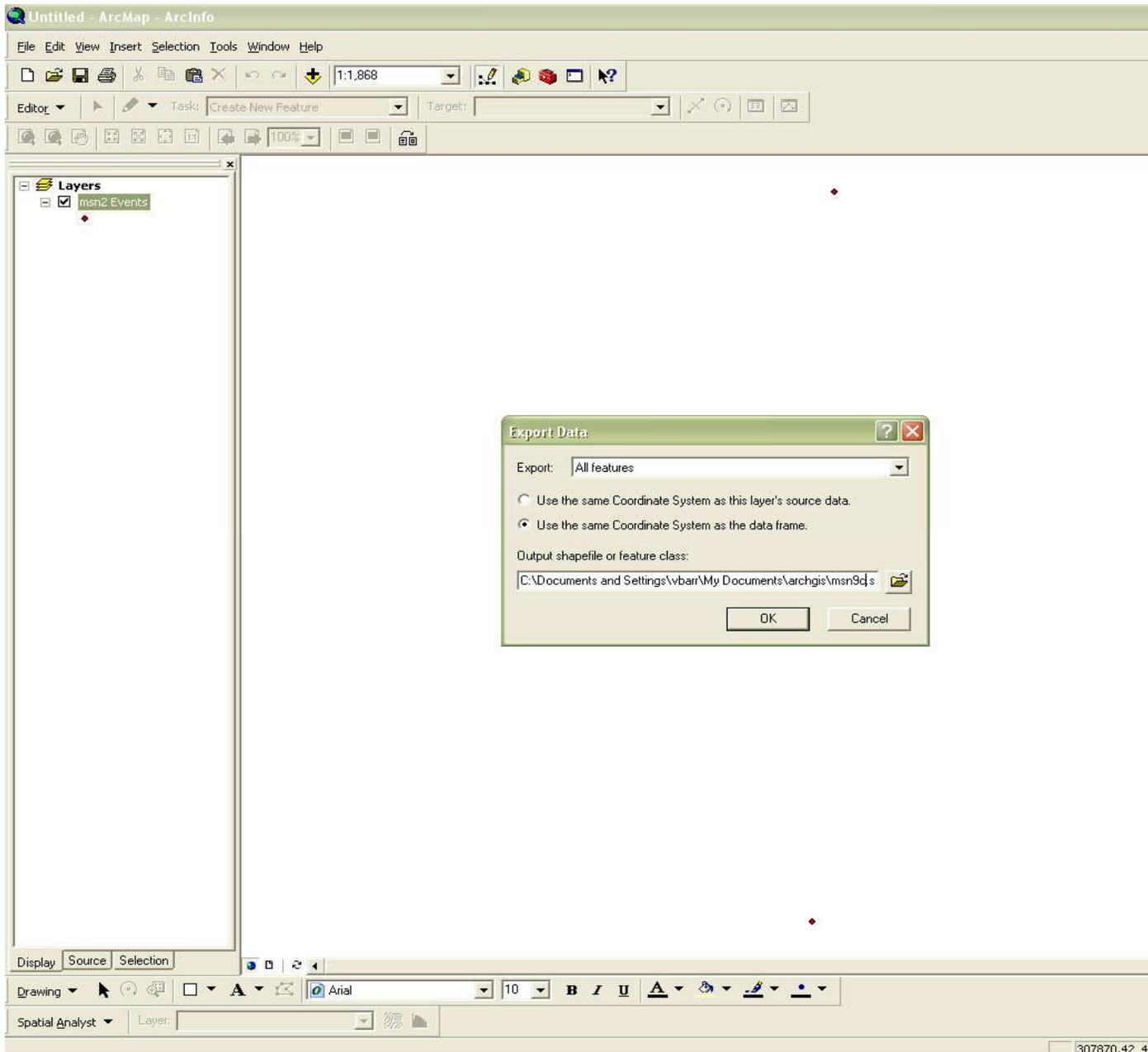


Then click add, and ok and the data points will appear on a blank screen.

Next right click on the new events feature and select data and then export data.

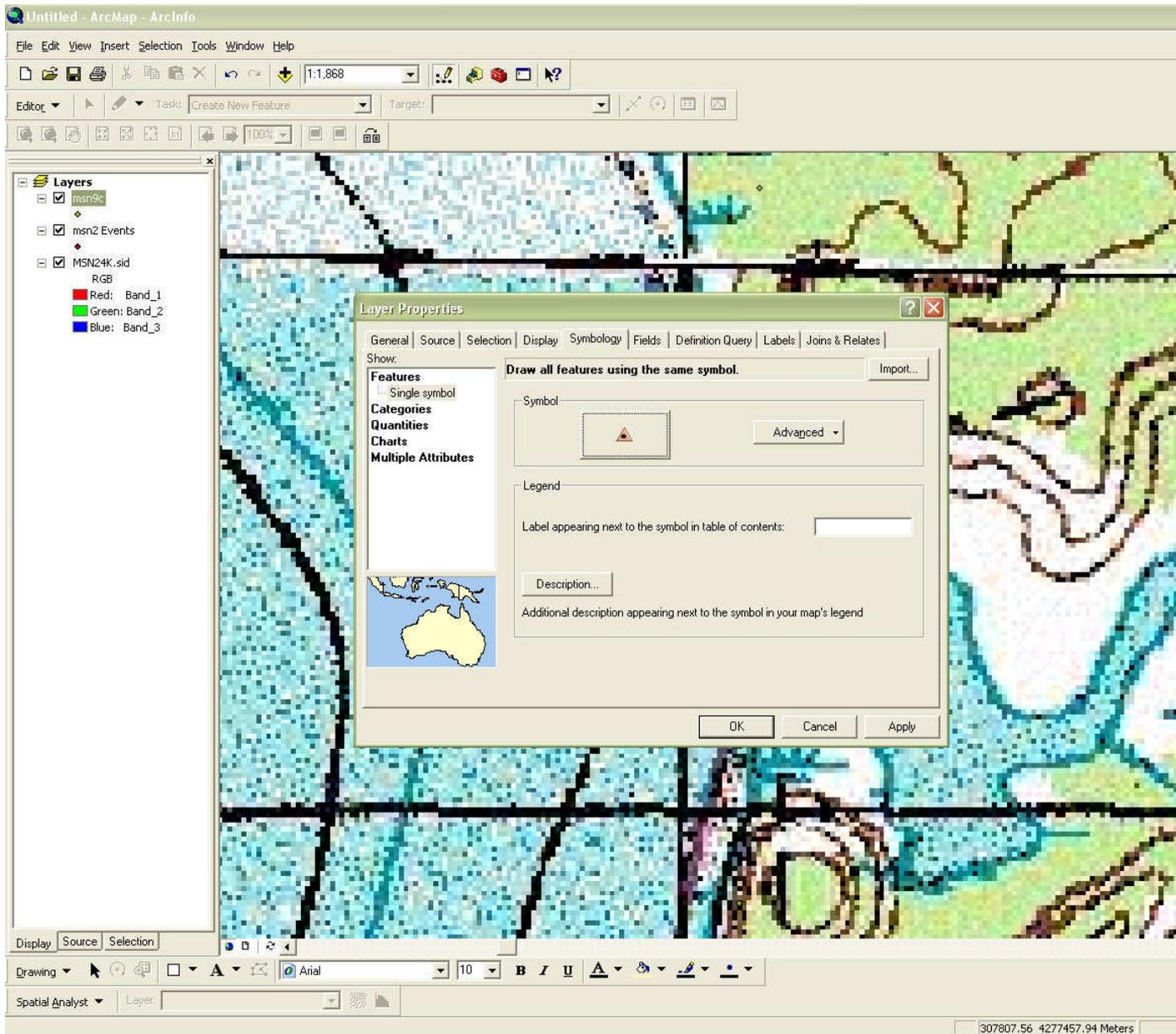


Then rename your event (in this case it will be msn9c) to make your event into a shapefile (.shp). You will also want to select the button “use the same coordinate system as the data frame”.

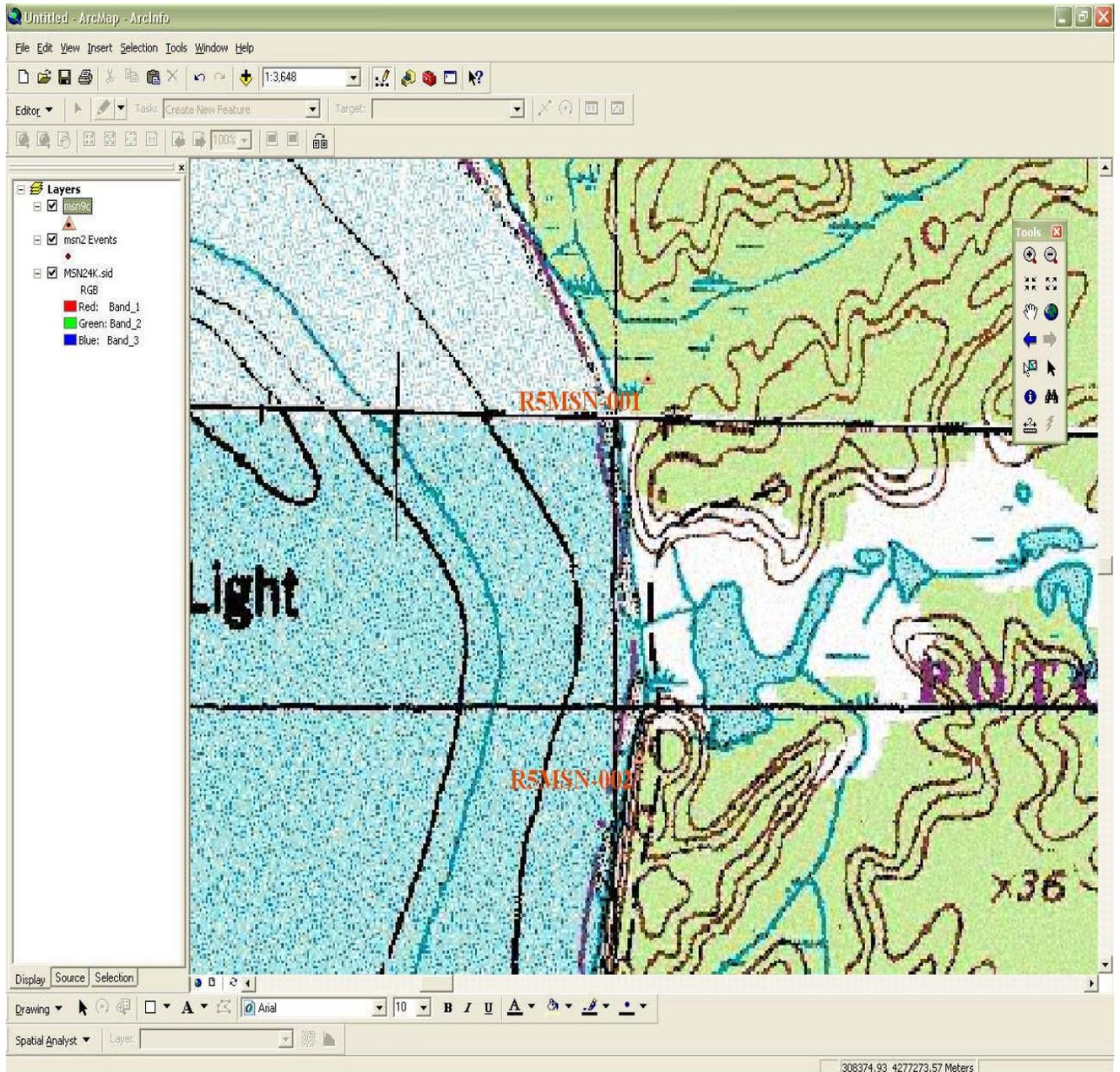


When prompted to add the data as a new layer, select yes.

Now you can add your background map. If it is a topo map, it will be a .drg file, if it is a digital orthophoto quad, it will be a .doq file. You will need to coordinate with your regional cartographic specialists to get access to the map files if you do not have direct access already. For this exercise, I am using a drg for Mason Neck NWR. To see the points you have displayed, you may want to change the symbol, which you can do by double-clicking on the symbol in the left-hand column (remember, you are now working with a shapefile, not the event). You may also need to set the coordinate system for the data frame (in this case I set it to UTM NAD 83 18 north).



Next you can label the sites by right clicking on the shapefile, select properties and then the label tab. In this tab, you select the size, font style, color and label position. You can now also start to conduct search queries about the data. For example, you can ask to show only prehistoric or historic sites, or both. I recommend taking an Intro to GIS class to learn the dynamic functions of ArcGIS.



Now you can also ‘play around’ in the data frame to see what the features are. If you click on the “I” symbol, this will allow you to view the attribute table for a specific site (kind of cool, huh?) You can also zoom in/out, pan around, measure distances..... the possibilities are almost endless...

To make final adjustments, click the layout view. From here, you can add the north arrow, scale and a legend. After you have labeled the map, you can export it as a PDF or many other formats.



Section 10: Concluding Remarks

This manual has instructed you in the basic development and application of the Cultural Resource Database. It has also demonstrated how to conduct basic operations in ArcGIS. I strongly recommend taking the introduction to GIS course to become more familiar with the program. We will be updating the instruction guide as more information becomes available. Things will be modified as more people use GPS technology as well (the Trimble GeoXT is mighty handy and has a lot of potential for field applications).

It is also important to complete metadata (which can be easily done in Arc Catalog) after you complete a project for a station. Remember to communicate with your ITM division and cartography section to coordinate access to base maps and to create a secure environment to store your data.

Feel free to contact Victoria Barr at Victoria_Barr@fws.gov or 413/253-8531, Patrick Donnelley or Eugene Marino, should you have any questions.