APPENDIX A:
PCE UPLOAD METHODOLOGY

GPS DEVICE SET-UP AND PCE UPLOAD

- **STEP 1**. Verify that Active Sync and internet access is available on the computer to be used to upload data.
- **STEP 2**. Set GPS handheld in connection cradle (the hardware in which the GPS is placed on for charging and connecting to a computer); connect to power source via power cord and to computer via USB cable. Both cables should be in the GPS manufacturer's box.
- **STEP 3**. Power on the GPS which should activate the Active Sync window on the computer (this may take a few minutes). **We do not want the handheld to sync with the computer/laptop** therefore when the Active Sync window appears with sync options, click the cancel button.
- **STEP 4**. Navigate to My Computer\Mobile Device\BDCP Field Data. Copy the file BDCP_field_[ResourceType]_data_mm_dd_yy.axf to your desktop (mm_dd_yy will denote the revision date of the ArcPad database file (.axf) and will change as the database is updated; it will not reflect the date of the current field survey). **There will be a text document with the same name as the database file (database file has the .axf extension). In your Explorer screen, make sure you're viewing the files with details (select under "Views" dropdown). It should say "AXF" under the "Type" column for the ArcPad database file that you do want. Under the "Type" column it will say "text document" for the file you <u>do not</u> want.** If available, also copy the related .ssf file. It will have the same name except that it will have an .ssf file extension instead of the .axf file extension. Copy these files to your desktop. Move one folder level up to find the file called "GPSCorrect.ssf". This file can also be found by accessing "My Computer" and viewing the contents of "Mobile Device"; It is possible that you may have both a GPSCorrect.ssf as well as the BDCP_Field_[Survey_Type]_mm_dd_yy.ssf. Both files (if both exist) should be copied to your desktop.
- **STEP 5**. If you do not have an .ssf file, skip ahead to Step 6. Once you have the .axf and .ssf files on your desktop, you will need to combine them into a zip folder. To accomplish this:
  - Select the files that were copied to your desktop.
  - Right click on one of them and choose "send to" and then select from the list that appears "Compressed (zipped) Folder". This will create a zip folder on your desktop with the files in it.
- **STEP 6**. Upload GPS data to Project Collaboration Environment (PCE) website tool.
  - Navigate to http://www.bdcpeireis.com on your computer.
  - Log-in to PCE using your assigned user name and password. (For login questions, contact Scott Pierson [SPierson@natomatech.com].)
- **STEP 7**. Within PCE, navigate to Collaboration\SURVEYS\EIR EIS Team\Survey Data\ Resource Name (the Resource Name will be the type of survey performed by your team, e.g.; mammals, birds, etc.)
- **STEP 8**. <u>For the first day of a survey period:</u>
  - Click on Upload New File (link appears on the top right-hand side of the screen)
  - Fill out the "Upload File" screen as follows:
    - **Title** – mmddyy_resource_GPSID#_data
    - **File Owner** – Should be you by default, may be Environmental Survey Technical Lead (ESTL) if preferred by the ESTL.

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- **Notes** – First line of notes should ALWAYS read: Day X of X –Surveyor 1 Name; other notes may be added as necessary (e.g.; parcel hazards, additional access instructions, incidental findings data).
- **File Keywords** – Resource Name, GPSID#

- Select "Browse" and navigate to the desktop; select the BDCP_field_[Survey_Type]_data_mm_dd_yy.zip file (or the BDCP_field_[Survey Type]_data_mm_dd_yy.axf file if you did not have a corresponding .ssf file and therefore didn't create a zip file) and click "OK". When you have returned to the Upload File page, click "Upload" and wait for the File Information page to load. Click "OK" to complete task.

Note: This may take up to 45-60 minutes, dependant on file size and internet speed. In the office, an 18 MB file took 3-5 minutes to upload, while a 250 MB file took 45 minutes.

Note: It is preferred that a new upload at the end of each day of your survey period be performed. Generally, this would be followed by removing the database containing what was collected that day from the GPS and replacing it with the most recent empty database available (refer to Step 10). Steps 9a and 9b are for those who wish to be able to see the data they've been collecting on previous days within the same survey period.

- **STEP 9a**. For additional days of the **same** survey period (an upload should occur every field day):
  - Navigate to resource folder (as shown in Step 7) and click on the file for this same survey period that you previously uploaded (files in the folder are listed on the right hand side of the screen).
  - Once the File Information page loads, click on "Check out file for editing" (first option below line).
  - After checking out a file for editing, the link will change to read: "Check in Edited Version". Click this link, complete the information fields and upload updated field data file to the same location. Repeat for each additional day of the survey period.
- **STEP 9b**. <u>If you are going out the next day</u> and want to retain today's collected data on the handheld, you can turn off your GPS and unplug it from the computer. Leave it plugged to the power source to recharge. Skip Steps 10 and 11.
- **STEP 10**. If you are finished with surveys for this resource and period, or do not need the previous day's collected data retained on your GPS AND have already uploaded today's survey data via Steps 7 and 8, complete the following steps to upload a clean data file to the GPS:

Note: Files cannot be directly uploaded or downloaded from PCE to the mobile device. Files must first be saved on the local computer.

  - Navigate in PCE to Collaboration\SURVEYS\Survey Data\[Survey Type] (the survey type will be the type of survey performed by your team, e.g.; mammals, birds, etc.)
  - On the right side of the screen, click on the file titled "Empty [ResourceType] Database".
  - On the file information page click on 'Download Current Available Version' (option is available above the line). A dialogue box will ask if you want to Open, Save, or Cancel. Select Save, navigate to your desktop and click "Save".
  - Navigate on your desktop back to the mobile device folder and then to the "BDCP Field Data" folder. Replace the BDCP_field_[Survey Type]_data_mm_dd_yy.axf file that is in the "BDCP Field Data" folder (and that you should have already uploaded to PCE), with the "Empty Database" file that you just downloaded and saved to your desktop.
  - Delete the .ssf file related to the .axf file that you just replaced.
- **STEP 11**. Unplug the GPS from the computer. If you are going to retain and use the GPS the following day, power it down, unplug from computer, and leave plugged into a power source to

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recharge. If you are finished using the GPS for this period, check the GPS and all related equipment back in to the DWR Equipment Manager.

SD CARD BACKUP PROCEDURES

Note: If for some reason at the end of a day you can't get access to a computer for uploading to PCE, you may backup the database on a SD card. The SD card used for backup cannot stay with the Trimble GPS unit but must be kept in a separate location (e.g.; in the vehicle is a good place).

- **STEP 1**. Insert SD card into GPS. At the bottom of the GPS there are two grey screws. Unscrew and remove the cover; a slot for inserting SD cards will be found. Insert card and replace cover.
- **STEP 2**. Turn on the GPS, navigate to the Start menu (top left corner of screen). From the Start menu choose "File Explorer".
- **STEP 3**. Under "File Explorer" the GPS will indicate within which folder you are currently located. To the right of the folder name there is a drop down arrow:
  - Using the attached stylus, tap the drop down arrow; a list of the folders higher in the folder hierarchy are shown, as well as the SD Card (shown at the bottom of the list). There will be a dot next to the folder in which you are currently located.
  - Tap "My Device" on the list and then tap "My Documents" in the list of folders and files that are displayed.
  - When you're in "My Documents" tap the "BDCP_Field_D..." folder (should be the folder at the top of the list).
- **STEP 4**. Tap and hold on the AXF file. It is the file with the following icon shown at the left of the file name: If you tap and let up on the stylus too quickly, Arcpad will open. When you tap and hold down on the file name, a menu will appear with the option "copy" listed.
  - Choose "copy"
  - Tap the down arrow next to BDCP_Survey_Data at the top under "File Explorer"
  - In the list that appears, choose "SD Card"
  - Somewhere on the screen where it is blank, tap and hold on the screen. A menu will appear including an option for "New Folder".
  - Choose "New Folder" and name the folder mmddyy. Once you've completed this, tap the new folder you've created to enter it.
  - Hold down the stylus once again in an empty spot in the new folder screen and from the menu that appears choose "Paste".
- **STEP 5**. Remove the SD card from the GPS unit and place it in a safe place (separate from you) while you are out surveying (e.g.; in the vehicle).

Note: This is for backup purposes only. The data backed up on the SD card should not be uploaded to PCE unless something happens to the data being stored on the Trimble GPS unit (e.g.; run over by a truck, dropped in a slough, etc.). It is recommended that when you've successfully uploaded the day's database from the GPS to PCE that you delete all of the old backup data on the SD card.

CAMERA SET-UP AND PCE UPLOAD

- **STEP 1**. Connect to computer via USB cable. The cable should be in the manufacturer's camera box. Power on the camera; the computer may recognize new hardware or ask how to open the storage device, click cancel.

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- **STEP 2**. Create a folder on your desk top named mmddyy_resource_GPSID_photos
- **STEP 3**. Navigate to "My Computer" and select the camera; it should be listed under "Scanners and Cameras". Copy the files from the camera file to the folder that was just created on your desktop.
- **STEP 4**. Zip the folder using either Winzip (if you have it) or by right clicking and selecting Send to\Compressed (zipped) folder. This will create a zipped version of photos on the desktop.
- **STEP 5**. Upload photos to Project Collaboration Environment (PCE) website tool.
  - Navigate to http://www.bdcpeireis.com.
  - Log in to PCE using your user name and password. (For login questions, contact spierson@natomatech.com).
- **STEP 6**. Within PCE, navigate to Collaboration\SURVEYS\Survey Data\ [Survey Type] (the Survey Type will be the type of survey performed by your team (e.g.; Mammals, Birds)
- **STEP 7**. For **each day** of the survey period:
  - Click on "Upload New File". The link is on the top right hand side of the screen.
  - Complete the "Upload File" screen as follows:
    - **Title** – mmddyy_resource_GPSID#_data
    - **File Owner** – Should be you by default, may be Environmental Survey Technical Lead (ESTL) if preferred by the ESTL.
    - **Notes** – First line of notes should ALWAYS read: Day X of X –Surveyor 1 Name; other notes may be added as necessary (e.g.; parcel hazards, additional access instructions, incidental findings data).
    - **File Keywords** – Resource Name, GPSID#
  - Click on Browse and navigate to the desktop, select the zipped folder and click "OK". When you return to the "Upload File" page, click "Upload" and wait for the File Information page to load. Click "OK" to complete task.

Note: This may take up to 45-60 minutes, dependant on file size and internet speed. In the office, an 18 MB file took 3-5 minutes to upload, while a 250 MB file took 45 minutes.

- **STEP 8**. Delete the photos from the camera. If you are going to use the camera the following day, power it down, unplug from computer, but leave it plugged into a power source to recharge. If you are finished with the camera for this period, return the camera and all related equipment to the DWR equipment manager.

Note: If you require your previous days' photos in the field on successive days you do not need to delete them from the camera each day, but should keep track of the new day's photo numbers so as not to upload duplicates. The reason for not uploading the photos for the entire survey period each day, as with the GPS data upload, is to minimize file size and time to upload.

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APPENDIX B:
QUALITY CONTROL FORMS

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Weekly Level 2 Environmental Survey Data Quality Control (QC) Form (Ver. 04/14/2010)

Name of Reviewer:

Review Date:

Review Period (survey dates included):

Survey Resource: | Data Collected by:

QC	Item	Who:	Outstanding Issues
☐	All data and photos collected during the review period specified above have been uploaded to PCE. This includes GPS data and scanned versions of the hard copy datasheets. ☐ yes ☐ no If no, provide outstanding issues in space provided.	***EFS**	
☐	The GIS repository contains all GPS data and photos collected by the individual specified above in "Data Collected by" during the review period. ☐ yes ☐ no If no, provide outstanding issues in space provided.	**EFS**	
☐	The GIS repository contains data from all of the hard copy datasheets produced by the individual specified above in "Data Collected by" during the review period. ☐ yes ☐ no If no, provide outstanding issues in space provided.	**EFS**	
☐	Data fields blank? ☐ yes ☐ no If yes, describe in the outstanding issues section where the omission is and what the value should be. If a field(s) is to remain blank, explain reason.	**EFS**	
☐	Data fields incorrect? ☐ yes ☐ no If yes, explain issue and suggested resolution in the outstanding issues section.	**EFS**	
☐	If applicable, are all questionable species sightings resolved? ☐ yes ☐ no If no, explain in the outstanding issues section.	***ESTL**	
☐	Are surveyors following proper PCE upload procedures? ☐ yes ☐ no If no, explain in the outstanding issues section.	***DS**	

*** EFS – Environmental Field Surveyor ESTL – Environmental Survey Technical Lead DS – Data Steward**

Signatures:

Survey Technical Lead (ESTL)		Date	
Data Steward		Date	

Instructions:

1. Level 2 QC is to be performed on a weekly basis.
2. Because there will be lag time between the resource team's uploading of data to PCE and the data getting into the Oracle SDE geodatabase, the Level 2 QC should be initiated one week following the review period.
3. Once the EFS and ESTL have completed the assigned sections of the form, including signature and date, a scanned copy should be uploaded to PCE at the following location: Surveys – EIR/EIS Team – Field Process and QA/QC – Completed QC Form. The QC level, resource name, and date range should be included in the file name of the QC form.
4. The (DS) will download the scanned form(s), address any problems listed by the EFS or ESTL, complete the DS section, and sign and date the updated form. The completed form will then be reposted to the PCE at the same file location.

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Weekly Level 3 Environmental Survey Data Quality Control (QC) Form (Ver. 04/14/2010)

Name of Reviewer:			
Review Date:		Survey Resource:	
Review Period (survey dates included):			

QC	Item	Outstanding Issues
☐	All GPS data and scanned data sheets uploaded to PCE for data collected during the review period specified above have been loaded into the GIS data repository. ☐ yes ☐ no If no, provide outstanding issues in space provided.	
☐	A comparison of digitized data in database with original hard copy datasheets has been performed.	
☐	A visual scan of field attributes for obvious or consistent errors/omissions in the data repository has been completed. If necessary, a discussion with the resource lead regarding any remaining errors or omissions has also occurred.	
☐	A verification of edits made to repository has been completed. (e.g.; updated photo links)	

Signatures:

Data Steward		Date	

Instructions:

1. Level 3 QC is to be performed on a weekly basis.
2. Form will be completed by Data Steward (DS).
3. Form will be uploaded to PCE at the following location: Surveys – EIR/EIS Team – Field Process and QA/QC – Completed QC Form. The QC level, resource name, and date range should be included in the file name of the QC form.

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Monthly Level 4 Environmental Survey Data Quality Control (QC) Form (ver. 04/14/2010)			
Name of Reviewer:			
Review Date:		Survey Resource:	
Review Period (survey dates included):			
QC	Item	Outstanding Issues	
☐	(To be completed by ESTL) A visual scan of the final GIS data repository for global biological, spatial or other errors has been completed. Outstanding issues should be noted in space provided.		
Signatures:			
Environmental Survey Technical Lead (ESTL)		Date	
Data Steward (DS)		Date	

Instructions:

1. Level 4 QC is to be performed on a monthly basis.
2. Once the form is completed by the ESTL, including signature and date, a scanned copy should be uploaded to the following location: Surveys – EIR/EIS Team – Field Process and QA/QC – Completed QC Form. The resource name and date range should be included in the file name of the QC form.
3. The DS will review the uploaded QC form, makes changes specified under the "Outstanding Issues" section, and sign and date. The completed form will then be reposted to the PCE at the same file location.

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APPENDIX C: GIS DATA SCHEMA/DATA MODEL

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Field Surveys Geodatabase Schema Diagrams: Domains 1 of 3

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Shared

Coded value domain
GPSID
Description
Field type *Long integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
215598	215598
215599	215599
215600	215600
216001	216001
216002	216002
216003	216003
216004	216004
216005	216005
216006	216006
216007	216007
216008	216008
216010	216010
216011	216011
216012	216012
216009	216009
216285	216285
216286	216286
216287	216287
216288	216288
216289	216289
216290	216290
216291	216291
216292	216292
216293	216293
216294	216294
216295	216295
216296	216296
216297	216297
216298	219298
216299	216299

Range domain
Percent
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Minimum value	Maximum value
0	100

Coded value domain
SurveyType
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Bats
2	Herpetofauna
3	Birds
4	Botany
5	Invertebrates
6	Site Recon
7	Woodrats and Rabits

Coded value domain
Yes_No_Int
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
0	No
-1	Yes

Coded value domain
Temp_Units
Description
Field type *String*
Split policy *Default value*
Merge policy *Default value*

Code	Description
F	F
C	C

Avian

Coded value domain
BirdActivity
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Nesting
2	Perched

Coded value domain
AvianSpecies
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Bank Swallow-BANS
2	Black-crowned Night Heron-BCHE
3	Burrowing Owl-BUOW
4	California Black Rail-BLRA
5	Cooper's Hawk-COHA
6	Double-crested Cormorant-DCCO
7	Grasshopper Sparrow-GRSP
8	Great Blue Heron-GBHE
9	Great Egret-GREG
10	Least Bittern-LEBI
11	Loggerhead Shrike-LOSH
12	Northern Harrier-NOHA
13	Osprey-OSPR
14	Redhead-REDH
15	Sandhill Crane-SACR
16	Short-eared Owl-SEOW
17	Snowy Egret-SNEG
18	Song Sparrow-SOSP
19	Swainson's Hawk-SWHA
20	Tricolored Blackbird-TRBL
21	White-faced Ibis-WFIB
22	White-tailed Kite-WTKI
23	Yellow-headed Blackbird-YHBL
24	Yellow-billed Cuckoo-YBCU
25	Yellow-breasted Chat-YBCH

Coded value domain
AvianHabitat
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Riparian tree(s)
2	Non-riparian tree(s)
3	Riparian shrub-scrub
4	Non-riparian shrub-scrub
5	Marsh
6	Grassland
7	Cultivated ag-land
8	Fallow ag-land
9	Other-list in comments

Coded value domain
AvianWind
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	None/Light
2	Moderate
3	High/Affects Survey

Coded value domain
Bot_Determination
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Keyed from Jepson Manual
2	Compared with specimen
3	Compared with photo
4	ID'd by another person
5	Personal knowledge of species
6	Other

Botany

Coded value domain
Botany_Species
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Amsinckia lunaris
2	Astragalus tener var. ferrisiae
3	Astagalus tener var. tener
4	Atriplex cordulata
5	Atriplex coronata var. coronata
6	Atriplex depressa
7	Atriplex joaquiniana
8	Atriplex persistens
9	Blepharizonia plumosa
10	Calandrinia breweri
11	Calochortus pulchellus
12	Carex comosa
13	Carex vulpinoidea
14	Centromadia (=Hemizonia) parryi ssp. parryi
15	Centromadia (=Hemizonia) parryi ssp. rudis
16	Centromadia (=Hemizonia) parryi ssp. rudis
17	Cirsium crassicaule
18	Convolvulus simulans
19	Cordylanthus mollis ssp. hispidus
20	Cordylantus mollis ssp. mollis
21	Cordylanthus palmatus
22	Cryptantha hooveri
23	Delphinium rcurvatum
24	Downingia pusilla
25	Eleocharis parvula
26	Erodium macrophyllum
27	Eryngium racemosum
28	Erysimum capitatum ssp. angustatum
29	Eschscholzia rhombipetala
30	Fritillaria agrestis
31	Fritillaria liliacea
32	Gratiola heterosepala
33	Hesperevax caulescens
34	Hesperolinon breweri
35	Hibiscus lasiocarpus
36	Iris longipetala
37	Isocoma arguta
38	Lasthenia conjugens
39	Lasthenia ferrisiae
40	Lathyrus jepsonii var. jepsonii
41	Legenere limosa
42	Lepidium latipes var. heckardii
43	Lilaeopsis masonii
44	Limosella subulata
45	Madia radiata
46	Myosurus minimus ssp. apus
47	Navarretia cotulifolia
48	Navareetia leucocephala ssp. bakeri
49	Neostapfia colusana
50	Oenothera deltoides ssp. howellii
51	Perideridia gairdneri ssp. gairdneri
52	Plagiobothrys glaber
53	Plagiobothrys hystriculus
54	Potamogeton zosteriformis
55	Psilocarphus brevissimus var. multiflorus
56	Ranunculus lobbii
57	Sagittaria sanfordi
58	Scutellaria galericulata
59	Scutellaria lateriflora
60	Symphyotrichum lentum (Aster lentus)
61	Trichocoronis wrightii
62	Trifolium depauperatum var. hydrophilum
63	Tropidocarpum capparideum
64	Tuctoria mucronata
65	Unknown Rare Plant

Coded value domain
Bot_Hab_Quality
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Excellent
2	Good
3	Fair
4	Poor

Coded value domain
ElderberryHabitat
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Riparian
2	Ruderal
3	Riprap
4	Ditch

Coded value domain
ElderberrySize
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	A: 0-5 stems
2	B: 6-20 stems
3	C: > 20 stems
4	D: large clump

Coded value domain
Botany_Habitat_Type
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
2	Agriculture
3	Developed
4	Grassland
5	Grassland-Disturbed Vernal Pools
6	Inland Dune Scrub
7	Managed Wetland
8	Nontidal Freshwater Permanent Emergent Wetland
1	Alkali Natural Seasonal Wetland Complex
9	Nontidal Perennial Aquatic
10	Other Natural Seasonal Wetlands
11	Riparian Forest
12	Riparian Invasives
13	Riparian Scrub
14	Ruderal Grassland
15	Tidal Brackish Emergent Wetland
16	Tidal Freshwater Emergent Wetland
17	Tidal Perennial Aquatic
18	Upland Scrub
19	Vernal Pool Complex

Field Surveys Geodatabase Schema Diagrams: Domains 2 of 3

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Mammals: Bats

Coded value domain
WindDirection
Description
Field type *Long integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	N
2	NE
3	E
4	SE
5	S
6	SW
7	W
8	NW

Coded value domain
SiteSuitability
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	No Potential Habitat
2	Foraging Habitat Present
3	Roosting Habitat Present
4	Roosting and Foraging Habitat Present

Coded value domain
RoostStructure
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Tree
2	Bridge
3	Building
4	Other

Coded value domain
EstimatedDBH
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	<10 cm
2	10-20 cm
3	>20 cm

Coded value domain
AR125ID
Description
Field type *Long integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
214245	214245
214247	214247
214236	214236
214238	214238

Coded value domain
Bat_Precip
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	None
2	Light Rain
3	Rain
4	Snow
5	Sleet
6	Hail
7	Fog
8	Smokey
9	Humid
10	Windy
11	Other

Coded value domain
CanopyDensity
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	High
2	Medium
3	Low

Coded value domain
Deciduous
Description
Field type *String*
Split policy *Default value*
Merge policy *Default value*

Code	Description
Deciduous	Deciduous
Non-Deciduous	Non-Deciduous

Coded value domain
RoostSize
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	1
2	<50
3	50-100
4	>100

Coded value domain
EstimatedHeight
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	<5 Feet
2	5-15 Feet
3	> 15 Feet

Coded value domain
FR125ID
Description
Field type *Long integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
214239	214239
214246	214246
214248	214248
214237	214237

Coded value domain
GuanoAmount
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Sparse (<50 Pieces)
2	Moderate (5-100 Pieces)
3	Not Fresh (> 100 Pieces)

Coded value domain
Bat_Activity
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	None
2	Low (<10 Passes)
3	Medium (11-20 Passes)
4	High (>20 Passes)

Coded value domain
Bat_Acoustic_Results
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
0	absent
-1	present
-2	potential
-3	data not collected/lost
-4	data not processed

Herpetofauna

Coded value domain
Herp_Weather
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	sunny/clear
2	cloud cover < 50%
3	cloud cover > 50%
4	light rain
5	heavy rain
6	haze/smoke
7	fog/overcast

Coded value domain
Herp_Activity
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
0	unknown
1	swimming
2	Land moving toward water
3	Land moving from water
4	Not moving
5	Courting/mating
6	Other (specify)

Coded value domain
Frog_Stream_Habitat_Non_Pool
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	run
2	riffle
3	glide
4	other

Range domain
FrogSurveyNum
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Minimum value	Maximum value
1	8

Coded value domain
Sex
Description
Field type *String*
Split policy *Default value*
Merge policy *Default value*

Code	Description
M	Male
F	Female

Coded value domain
SnakeCaptureType
Description
Field type *Long integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Passive
2	Active

Coded value domain
Herp_Habitat_Cap_sit
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	irrigation canal
2	slough or natural channel
3	freshwater marsh
4	edge of rice field
5	within rice field
6	upland/fallow field
7	other

Coded value domain
Herp_Habitat_Mod
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
0	unknown
1	aquatic vegetation present
2	aquatic vegetation absent
3	upland vegetation < 50%
4	upland vegetation > 50%
5	riprap/rocks
6	bare ground
7	other (specify)

Coded value domain
FrogSurveyType
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Day
2	Night

Coded value domain
FrogSurveyType2
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Breeding
2	Non-Breeding

Coded value domain
WaterType
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Vernal Pool
2	Seasonal Wetland
3	Artificial Impoundment
4	Other

Field Surveys Geodatabase Schema Diagrams: Domains 3 of 3

DRAFT

Herpetofauna

Coded value domain
Herp_Cover_Classes
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	0-5%
2	5-25%
3	25-50%
4	50-75%
5	75-100%
6	0%

Coded value domain
Herp_Distance_to_water
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	<1 m
2	1-3 m
3	3-10 m
4	10-20 m
5	>20 m
6	At margin
7	Impediment to H2O

Coded value domain
Herp_Habitat_Individual_Snake
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Bare ground
2	Rock/rip rap
3	Terrestrial veg
4	rice
5	litter
6	water
7	Submergent veg
8	Emergent veg
9	Other (specify)

Coded value domain
Herp_Veg_Height
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	<15 cm
2	15-50 cm
3	50-100 cm
4	> 100 cm

Coded value domain
Herp_Per_Snake_in_Sun
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
0	unknown
1	<10%
2	10-25%
3	25-50%
4	50-75%
5	75-100%
6	0%

Coded value domain
Herp_Snake_Position
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
0	unknown
1	coiled
2	Partly coiled
3	Stretched out
4	moving

Coded value domain
Herp_Species
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Thamnophis gigas
2	Thamnophis sirtalis
3	Thamnophis elegans
4	Thamnophis spp.
5	Pituophis catenifer
6	Lampropeltis getulus
7	Coluber constrictor
8	other

Coded value domain
Herp_Capture_Method
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Aquatic trap
2	Hand or snare from water
3	Hand or snare from dry land
4	telemetry
5	Sighting (no capture)
6	Other (specify)

Coded value domain
Herp_Substrate
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Bare ground
2	Veg/debris on ground/standing
3	Veg on/ over water
4	underground
5	Extending from burrow
6	On water surface
7	Below water surface
8	Rock/ rip rap
9	Other (specify)

Coded value domain
Herp_Veg
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	tules
2	cattails
3	grass
4	brush
5	rice
6	Weedy dicots
7	blackberry
8	primrose
9	Other (specify)

Coded value domain
Herp_Wind
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	0-5 mph
2	5-15 mph
3	> 15 mph

Coded value domain
amphibian_life_stages
Description
Field type *String*
Split policy *Default value*
Merge policy *Default value*

Code	Description
egg	egg
larvae	larvae
metamorph	metamorph
juvenile	juvenile
adult	adult

Coded value domain
amphibian_size_class
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Small
2	Medium
3	Large

Coded value domain
herp_amphibian_osberved_or_heard
Description
Field type *String*
Split policy *Default value*
Merge policy *Default value*

Code	Description
observed	observed
heard	heard

Coded value domain
herp_amphibian_species
Description
Field type *String*
Split policy *Default value*
Merge policy *Default value*

Code	Description
AMCA	AMCA
ANBO	ANBO
LICA	LICA
RADR	RADR
SPHA	SPHA
PSSI	PSSI

Coded value domain
herp_recon_species
Description
Field type *String*
Split policy *Default value*
Merge policy *Default value*

Code	Description
GGS	GGS
CTS	CTS
CRF	CRF

Site Reconnaissance

Coded value domain
Site_Recon_Storage_Location
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Below Ground
2	Above Ground

Coded value domain
Site_Recon_Waste_Water
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Discharge into drain
2	Discharge into ditch
3	Discharge into stream

Coded value domain
Site_Recon_Wells
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	Dry
2	Irrigation
3	Injection
4	Abandoned
5	Other

Invertebrates

Coded value domain
Magnitude
Description
Field type *Short integer*
Split policy *Default value*
Merge policy *Default value*

Code	Description
1	10s
2	100s
3	1000s
4	10000s
5	100000s
6	1000000s
7	10000000s
8	100000000s
9	1000000000s

Field Surveys Geodatabase Schema Diagrams: Avian Repository 1 of 2

DRAFT

Simple feature class
avian_point_offset

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SPECIES	Short integer	Yes		AvianSpecies	5		
NUMBER_	Long integer	Yes			10		
ACTIVITY	Short integer	Yes		BirdActivity	5		
HABITAT	Short integer	Yes		AvianHabitat	5		
SURVEYOR1	String	Yes					50
SURVEYOR2	String	Yes					50
DATETIME_	Date	Yes			0	0	36
GPS_ID	Long integer	Yes		GPSID	10		
PARCELAPN	String	Yes					50
WEATHER	Short integer	Yes		Herp_Weather	5		
TEMPERATURE	String	Yes					25
COMMENTS	String	Yes					250
PHOTOS	String	Yes					250
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
STARTTIME	String	Yes					10
STOPTIME	String	Yes					10
WIND	Short integer	Yes		AvianWind	5		
ACCURACY_METERS	Double	Yes			38	8	
X	Double	Yes			38	8	
Y	Double	Yes			38	8	
FOREIGNKEY	Long integer	Yes			10		
FROM_DATASHEETS	Short integer	Yes		Yes_No_Int	5		
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36

Relationship class
avian_point_offset_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *AVIAN_PHOTOS_TABLE*
Backward label *avian_point_offset*

Origin feature class	Destination table
Name *avian_point_offset*	Name *AVIAN_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *AVIAN_OFFSET*	

No relationship rules defined.

Simple feature class
avian_song_sparrow_offset

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SURVEYOR1	String	Yes					50
SURVEYOR2	String	Yes					50
DATETIME_	Date	Yes			0	0	36
GPS_ID	Long integer	Yes		GPSID	10		
PARCELAPN	String	Yes					50
WEATHER	Short integer	Yes		Herp_Weather	5		
TEMPERATURE	String	Yes					25
COMMENTS	String	Yes					250
PHOTOS	String	Yes					250
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
STARTTIME	String	Yes					10
STOPTIME	String	Yes					10
WIND	Short integer	Yes		AvianWind	5		
ACCURACY_METERS	Double	Yes			38	8	
X	Double	Yes			38	8	
Y	Double	Yes			38	8	
SPECIES	Short integer	Yes		AvianSpecies	5		
NUMBER_	Long integer	Yes			10		
FOREIGNKEY	Long integer	Yes			10		
ACTIVITY	Short integer	Yes		BirdActivity	5		
HABITAT	Short integer	Yes		AvianHabitat	5		
GLOBALID	GUID	No			0	0	38
FROM_DATASHEETS	Short integer	Yes		Yes_No_Int	5		
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36

Relationship class
avian_song_sparrow_offset_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *AVIAN_PHOTOS_TABLE*
Backward label *avian_song_sparrow_offset*

Origin feature class	Destination table
Name *avian_song_sparrow_offset*	Name *AVIAN_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *AVIAN_SONG_SPARROW_OFFSET*	

No relationship rules defined.

Table
AVIAN_PHOTOS_TABLE

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
AVIAN_OFFSET	GUID	Yes			0	0	38
AVIAN_SONG_SPARROW_OFFSET	GUID	Yes			0	0	38
GLOBALID	GUID	No			0	0	38
PHOTO_SHOWS_BUILDINGS	Short integer	Yes		Yes_No_Int	5		
PHOTOS	Raster	Yes			0	0	4

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Field Surveys Geodatabase Schema Diagrams: Avian Repository 2 of 2

Simple feature class
avian_point_ver2

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
SPECIES	Short integer	Yes		AvianSpecies	5		
NUMBER_	Long integer	Yes			10		
ACTIVITY	Short integer	Yes		BirdActivity	5		
HABITAT	Short integer	Yes		AvianHabitat	5		
PARCELAPN	String	Yes					50
WEATHER	Short integer	Yes		Herp_Weather	5		
TEMPERATURE	String	Yes					25
COMMENTS	String	Yes					250
PHOTOS	String	Yes					250
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
STARTTIME	String	Yes					10
STOPTIME	String	Yes					10
WIND	Short integer	Yes		AvianWind	5		
SURVEYOR1	String	Yes					50
SURVEYOR2	String	Yes					50
DATETIME_	Date	Yes			0	0	36
GPS_ID	Long integer	Yes		GPSID	10		
ACCESS_ID	Long integer	Yes			10		
AV_TABLE_OBJECTID	Long integer	Yes			10		
OLD_OBJECTID	Long integer	Yes			10		
X	Double	Yes			38	8	
Y	Double	Yes			38	8	
EDIT_DESC	String	Yes					250
EDIT_SRC	String	Yes					25
FROM_DATASHEETS	Short integer	Yes		Yes_No_Int	5		
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
ACCURACY_METERS	Double	Yes			38	8	
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
SHAPE	Geometry	Yes					
NUMBER_TEXT	String	Yes					10
DISTANCE_TEXT	String	Yes					10
DIRECTION_TEXT	String	Yes					10
QUADRANT	Short integer	Yes			5		

Simple feature class
avian_surveyed_parcels

Geometry *Polygon*
Contains M values *No*
Contains Z values *No*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
PARCELAPN	String	Yes					254
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
SHAPE.AREA	Double	No			0	0	
SHAPE.LEN	Double	No			0	0	

Field Surveys Geodatabase Schema Diagrams: Bat Repository 1 of 5

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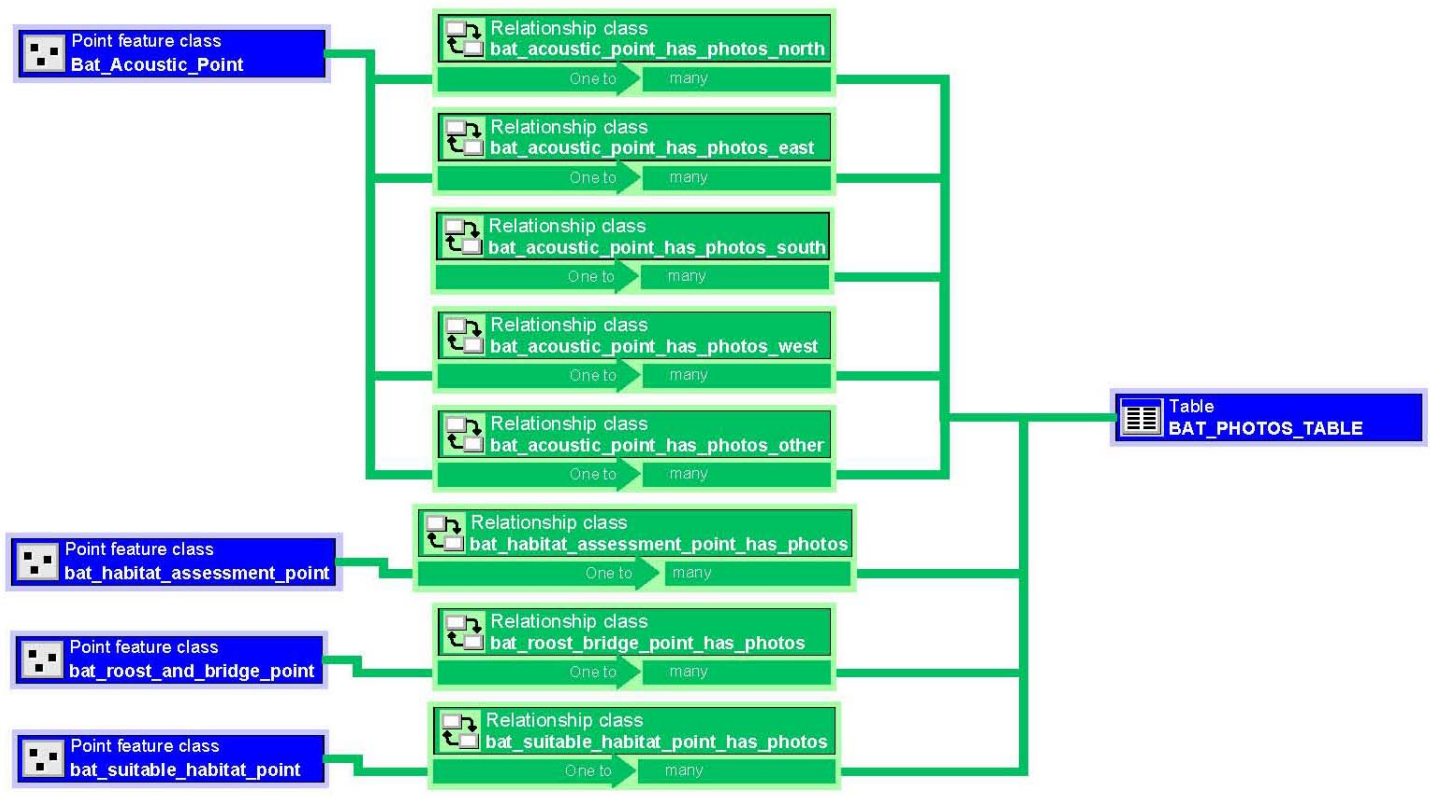


Simple feature class
bat_suitable_habitat_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
GPS_ID	Long integer	Yes		GPSID	10		
SURVEYOR1	String	Yes					50
SURVEYOR2	String	Yes					50
MAP_ID	String	Yes					50
PARCEL_ID	String	Yes					50
CAMERA_ID	String	Yes					50
UTM_NORTHING	Double	Yes			38	8	
UTM_EASTING	Double	Yes			38	8	
PHOTOS	String	Yes					250
DATE_	Date	Yes			0	0	36
TIME_	String	Yes					50
ROOSTTREESTAND	Short integer	Yes		Yes_No_Int	5		
ROOSTTREESTANDEUC	Short integer	Yes		Yes_No_Int	5		
ROOSTTREESTANDOAK	Short integer	Yes		Yes_No_Int	5		
ROOSTTREESTANDWILLOW	Short integer	Yes		Yes_No_Int	5		
ROOSTTREESTANDCOTTON	Short integer	Yes		Yes_No_Int	5		
ROOSTTREESTANDORCHARD	Short integer	Yes		Yes_No_Int	5		
ROOSTTREESTANDOTHER	Short integer	Yes		Yes_No_Int	5		
ROOSTTREESTANDNOTES	Short integer	Yes		Yes_No_Int	5		
ROOSTBRIDGE	Short integer	Yes		Yes_No_Int	5		
ROOSTBUILDING	Short integer	Yes		Yes_No_Int	5		
ROOSTSINGLETREE	Short integer	Yes		Yes_No_Int	5		
ROOSTSINGLETREESNAG	Short integer	Yes		Yes_No_Int	5		
ROOSTSINGLETREELIVE	Short integer	Yes		Yes_No_Int	5		
ROOSTSINGLETREELARGE	Short integer	Yes		Yes_No_Int	5		
ROOSTOTHER	Short integer	Yes		Yes_No_Int	5		
ROOSTNOTES	String	Yes					250
FORAGEWATER	Short integer	Yes		Yes_No_Int	5		
FORAGEWATSHALLOW	Short integer	Yes		Yes_No_Int	5		
FORAGEWATSMFLCH	Short integer	Yes		Yes_No_Int	5		
FORAGEWATSMFLCHWRIVEG	Short integer	Yes		Yes_No_Int	5		
FORAGEWATLRGFLCH	Short integer	Yes		Yes_No_Int	5		
FORAGEWATLRGFLCHWRIVEG	Short integer	Yes		Yes_No_Int	5		
FORAGEWATSTAGNANT	Short integer	Yes		Yes_No_Int	5		
FORAGEOTHER	Short integer	Yes		Yes_No_Int	5		
FORAGEAG	Short integer	Yes		Yes_No_Int	5		
FORAGEORCHARD	Short integer	Yes		Yes_No_Int	5		
FORAGEOAK	Short integer	Yes		Yes_No_Int	5		
FORAGEOTHER_1	Short integer	Yes		Yes_No_Int	5		
FORAGENOTES	String	Yes					250
ELEVATION	Double	Yes			38	8	
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
ACCURACY_METERS	Double	Yes			38	8	
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
PHOTOS_PATH	String	Yes					50
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36

at_suitable_habitat_point_has_photos

Field Surveys Geodatabase Schema Diagrams: Bat Repository 2 of 5

DRAFT

Simple feature class
bat_habitat_assessment_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
SUITABILITY	Short integer	Yes		SiteSuitability	5		
GPS_ID	Long integer	Yes		GPSID	10		
SURVEYOR1	String	Yes					50
SURVEYOR2	String	Yes					50
DATE_	Date	Yes			0	0	36
MAP_ID	String	Yes					50
PARCEL_ID	String	Yes					50
UTM_NORTHING	Double	Yes			38	8	
UTM_EASTING	Double	Yes			38	8	
PHOTOS	String	Yes					250
CAMER_ID	String	Yes					50
ANNUALGRASSLAND	Short integer	Yes		Yes_No_Int	5		
VINEYARD	Short integer	Yes		Yes_No_Int	5		
COASTALSCRUB	Short integer	Yes		Yes_No_Int	5		
OAKWOODLAND	Short integer	Yes		Yes_No_Int	5		
URBANBARREN	Short integer	Yes		Yes_No_Int	5		
AGCROP	Short integer	Yes		Yes_No_Int	5		
GRAINCROP	Short integer	Yes		Yes_No_Int	5		
ROWCROP	Short integer	Yes		Yes_No_Int	5		
INUNDATEDCROP	Short integer	Yes		Yes_No_Int	5		
CORNCROP	Short integer	Yes		Yes_No_Int	5		
ORCHARD	Short integer	Yes		Yes_No_Int	5		
ORCHARDTYPE	String	Yes					50
ESTIMATEDDBH	Short integer	Yes			5		
ESTIMATEDHEIGHT	Short integer	Yes			5		
ORCHCANOPYDENSITY	Short integer	Yes			5		
ECUALYPTUS	Short integer	Yes		Yes_No_Int	5		
EUCCANOPYDENSITY	Short integer	Yes			5		
INTACTSTAND	Short integer	Yes		Yes_No_Int	5		
SOLITARY	Short integer	Yes		Yes_No_Int	5		
RIPARIANWETLAND	Short integer	Yes		Yes_No_Int	5		
SHALLOWWETLAND	Short integer	Yes		Yes_No_Int	5		
SMALLFLOWINGCHANNEL	Short integer	Yes		Yes_No_Int	5		
SMALLFLOWCHNRIPVEG	Short integer	Yes		Yes_No_Int	5		
LARGEFLOWINGCHANNEL	Short integer	Yes		Yes_No_Int	5		
LARGEFLOWCHNRIPVEG	Short integer	Yes		Yes_No_Int	5		
STAGNANTWATER	Short integer	Yes		Yes_No_Int	5		
OTHER	String	Yes					50
NOTES	String	Yes					250
NUMBRIDGES	Long integer	Yes			10		
BUILDINGS	Short integer	Yes			5		
NUMBLDGOCC	Long integer	Yes			10		
NUMBLDGABAND	Long integer	Yes			10		
TREE	Short integer	Yes		Yes_No_Int	5		
TREEINTACTSTAND	Short integer	Yes		Yes_No_Int	5		
TREESOLITARY	Short integer	Yes		Yes_No_Int	5		
LARGETREES	Short integer	Yes		Yes_No_Int	5		
TALLTREES	Short integer	Yes		Yes_No_Int	5		
ROOSTORCHARD	Short integer	Yes		Yes_No_Int	5		
ROOSTRIPWET	Short integer	Yes		Yes_No_Int	5		
ROOSTECUALYPTUS	Short integer	Yes		Yes_No_Int	5		
ROOSTOAK	Short integer	Yes		Yes_No_Int	5		
ROOSTTREETYPEOTHER	Short integer	Yes		Yes_No_Int	5		
ROOSTOTHER	String	Yes					50
ROOSTTYPE	String	Yes					50
ROOSTNOTES	String	Yes					250
WATER	Short integer	Yes		Yes_No_Int	5		
WATER_SHALLOW	Short integer	Yes		Yes_No_Int	5		
WATER_SMFLOWCHN	Short integer	Yes		Yes_No_Int	5		
WATER_SMFLCHNRIPVEG	Short integer	Yes		Yes_No_Int	5		
WATER_LGFLOWCHN	Short integer	Yes		Yes_No_Int	5		
WATER_LGFLCHNRIPVEG	Short integer	Yes		Yes_No_Int	5		
WATER_STAGNANT	Short integer	Yes		Yes_No_Int	5		
WATER_OTHER	String	Yes					50
FORAGE_AGRICULTURE	Short integer	Yes		Yes_No_Int	5		
FORAGE_ORCHARD	Short integer	Yes		Yes_No_Int	5		
FORAGE_OTHER	Short integer	Yes		Yes_No_Int	5		
FORAGINGHABITAT	String	Yes					50
FORAGE_NOTES	String	Yes					250
OTHERSPECIESOBSERVED	String	Yes					250
TIME_	String	Yes					50
ELEVATION	Double	Yes			38	8	
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
ACCURACY_METERS	Double	Yes			38	8	
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
PHOTOS_PATH	String	Yes					50
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36

To: bat_habitat_assessment_point_has_photos

Field Surveys Geodatabase Schema Diagrams: Bat Repository 3 of 5

DRAFT

Simple feature class
bat_roost_and_bridge_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
GPS_ID	Long integer	Yes		GPSID	10		
DATE_	Date	Yes			0	0	36
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
MAP_ID	String	Yes					50
PARCEL_ID	String	Yes					50
UTM_NORTHING	Double	Yes			38	8	
UTM_EASTING	Double	Yes			38	8	
BRIDGE_ID	String	Yes					50
BATSPRESENT	Short integer	Yes		Yes_No_Int	5		
POROOSTMATERNITY	Short integer	Yes		Yes_No_Int	5		
POROOSTDAY	Short integer	Yes		Yes_No_Int	5		
POROOSTNIGHT	Short integer	Yes		Yes_No_Int	5		
POROOSTSOLITARY	Short integer	Yes		Yes_No_Int	5		
POROOSTUNKNOWN	Short integer	Yes		Yes_No_Int	5		
LABL	Short integer	Yes		Yes_No_Int	5		
ANPA	Short integer	Yes		Yes_No_Int	5		
COTO	Short integer	Yes		Yes_No_Int	5		
EUPE	Short integer	Yes		Yes_No_Int	5		
LANO	Short integer	Yes		Yes_No_Int	5		
LACI	Short integer	Yes		Yes_No_Int	5		
EPFU	Short integer	Yes		Yes_No_Int	5		
MYCA	Short integer	Yes		Yes_No_Int	5		
MYCI	Short integer	Yes		Yes_No_Int	5		
MYEV	Short integer	Yes		Yes_No_Int	5		
MYLU	Short integer	Yes		Yes_No_Int	5		
MYTH	Short integer	Yes		Yes_No_Int	5		
MYVO	Short integer	Yes		Yes_No_Int	5		
MYYU	Short integer	Yes		Yes_No_Int	5		
PAHE	Short integer	Yes		Yes_No_Int	5		
TABR	Short integer	Yes		Yes_No_Int	5		
UNKNOWN_	Short integer	Yes		Yes_No_Int	5		
OTHER	String	Yes					50
ROOSTSIZE	Short integer	Yes		RoostSize	5		
ROOSTSTRUCTURE	Short integer	Yes		RoostStructure	5		
ROOSTTEMP	Long integer	Yes			10		
TIME_	String	Yes					50
PHOTOS	String	Yes					250
GUANOPRESENT	Short integer	Yes		Yes_No_Int	5		
GUAVERYFRESH	Short integer	Yes		Yes_No_Int	5		
NOTFRESH	Short integer	Yes		Yes_No_Int	5		
GUANOAMOUNT	Short integer	Yes		GuanoAmount	5		
STAININGPRESENT	Short integer	Yes		Yes_No_Int	5		
POROOSTNOPOTENTIAL	Short integer	Yes		Yes_No_Int	5		
TEMPUNITS	String	Yes		Temp_Units			1
HUMIDITYINROOST	Long integer	Yes			10		
SUITABLEFORAGING	Short integer	Yes		Yes_No_Int	5		
ELEVATION	Double	Yes			38	8	
ROOSTSTRUCTURENOTES	String	Yes					250
NEARFORWATER	Short integer	Yes		Yes_No_Int	5		
NEARFORSHALLOW	Short integer	Yes		Yes_No_Int	5		
NFSMFLCH	Short integer	Yes		Yes_No_Int	5		
NFSMFLCHW_RIPVEG	Short integer	Yes		Yes_No_Int	5		
NFLRGFLCH	Short integer	Yes		Yes_No_Int	5		
NFLRGFLOCHW_RIPVEG	Short integer	Yes		Yes_No_Int	5		
NFSTAGNANT	Short integer	Yes		Yes_No_Int	5		
NFORACHARD	Short integer	Yes		Yes_No_Int	5		
NFOAKWOOD	Short integer	Yes		Yes_No_Int	5		
NFAG	Short integer	Yes		Yes_No_Int	5		
NFOTHER	Short integer	Yes		Yes_No_Int	5		
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
ACCURACY_METERS	Double	Yes			38	8	
EDITING_NOTES	String	Yes					250
OBJECT_ID_TXT	String	Yes					25
CALTRANS_Y	Double	Yes			38	8	
CALTRANS_X	Double	Yes			38	8	
PHOTONUMS	String	Yes					50
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
CAM_ID	String	Yes					25
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36

To: bat_roost_bridge_point_has_photos

Field Surveys Geodatabase Schema Diagrams: Bat Repository 4 of 5

DRAFT

Simple feature class
bat_acoustic_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
LABL	Short integer	Yes		Bat_Acoustic_Results	5		
ANPA	Short integer	Yes		Bat_Acoustic_Results	5		
MYYU	Short integer	Yes		Bat_Acoustic_Results	5		
MYCA	Short integer	Yes		Bat_Acoustic_Results	5		
PAHE	Short integer	Yes		Bat_Acoustic_Results	5		
MYCI	Short integer	Yes		Bat_Acoustic_Results	5		
MYLU	Short integer	Yes		Bat_Acoustic_Results	5		
EPFU	Short integer	Yes		Bat_Acoustic_Results	5		
LANO	Short integer	Yes		Bat_Acoustic_Results	5		
LACI	Short integer	Yes		Bat_Acoustic_Results	5		
TABR	Short integer	Yes		Bat_Acoustic_Results	5		
DATE_	Date	Yes			0	0	36
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
PARCELID	String	Yes					50
SURVEY_PERIOD	String	Yes					25
MAPID	String	Yes					50
STATIONID	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	10		
GPSNORTHING	Double	Yes			38	8	
GPSEASTING	Double	Yes			38	8	
FR125ID	Long integer	Yes			10		
AR125ID	Long integer	Yes			10		
CAMERAID	Long integer	Yes			10		
PHOTOS	String	Yes					250
PHOTOID_N	String	Yes					50
PHOTOID_S	String	Yes					50
PHOTOID_E	String	Yes					50
PHOTOID_W	String	Yes					50
OTHERPHOTO_IDS	String	Yes					50
BEGIN_AV_WIND	String	Yes					50
BEGIN_MAX_WIND	String	Yes					50
BEGIN_WIND_DIR	Long integer	Yes		WindDirection	10		
BEGIN_TEMP	String	Yes					20
END_AV_WIND	String	Yes					50
END_MAX_WIND	String	Yes					50
END_WIND_DIR	Long integer	Yes		WindDirection	10		
END_TEMP	String	Yes					20
WEATHER	Short integer	Yes		Bat_Precip	5		
FULL_MOON	Short integer	Yes		Yes_No_Int	5		
WEATHER_NOTES	String	Yes					250
COMMENTS	String	Yes					50
BATACTIVITY	Short integer	Yes			5		
ACTIVITY_15MIN	Short integer	Yes		Yes_No_Int	5		
TEMP_15MIN	String	Yes					20
WIND_15MIN	String	Yes					20
SMALL_15MIN	Short integer	Yes		Yes_No_Int	5		
MEDIUM_15MIN	Short integer	Yes		Yes_No_Int	5		
LARGE_15MIN	Short integer	Yes		Yes_No_Int	5		
UNK_SIZE_15MIN	Short integer	Yes		Yes_No_Int	5		
AUDITORY_15MIN	Short integer	Yes		Yes_No_Int	5		
ACTIVITY_30MIN	Short integer	Yes		Yes_No_Int	5		
TEMP_30MIN	String	Yes					20
WIND_30MIN	String	Yes					50
SMALL_30MIN	Short integer	Yes		Yes_No_Int	5		
MEDIUM_30MIN	Short integer	Yes		Yes_No_Int	5		
LARGE_30MIN	Short integer	Yes		Yes_No_Int	5		
UNK_SIZE_30MIN	Short integer	Yes		Yes_No_Int	5		
AUDITORY_30MIN	Short integer	Yes		Yes_No_Int	5		
ACTIVITY_60MIN	Short integer	Yes		Yes_No_Int	5		
TEMP_60MIN	String	Yes					20
WIND_60MIN	String	Yes					50
SMALL_60MIN	Short integer	Yes		Yes_No_Int	5		
MEDIUM_60MIN	Short integer	Yes		Yes_No_Int	5		
LARGE_60MIN	Short integer	Yes		Yes_No_Int	5		
UNK_SIZE_60MIN	Short integer	Yes		Yes_No_Int	5		
AUDITORY_60MIN	Short integer	Yes		Yes_No_Int	5		
ACTIVITY_SUNSET	Short integer	Yes		Yes_No_Int	5		
TEMP_SUNSET	String	Yes					20
WIND_SUNSET	String	Yes					50
SMALL_SUNSET	Short integer	Yes		Yes_No_Int	5		
MEDIUM_SUNSET	Short integer	Yes		Yes_No_Int	5		
LARGE_SUNSET	Short integer	Yes		Yes_No_Int	5		
AUDITORY_SUNSET	Short integer	Yes		Yes_No_Int	5		
ACTIVITY_75MIN	Short integer	Yes		Yes_No_Int	5		
TEMP_75MIN	String	Yes					20
WIND_75MIN	String	Yes					50
SMALL_75MIN	Short integer	Yes		Yes_No_Int	5		
MEDIUM_75MIN	Short integer	Yes		Yes_No_Int	5		
LARGE_75MIN	Short integer	Yes		Yes_No_Int	5		
UNK_SIZE_75MIN	Short integer	Yes		Yes_No_Int	5		
AUDITORY_75MIN	Short integer	Yes		Yes_No_Int	5		
ACTIVITY_90MIN	Short integer	Yes		Yes_No_Int	5		
TEMP_90MIN	String	Yes					20
WIND_90MIN	String	Yes					50
SMALL_90MIN	Short integer	Yes		Yes_No_Int	5		
MEDIUM_90MIN	Short integer	Yes		Yes_No_Int	5		
LARGE_90MIN	Short integer	Yes		Yes_No_Int	5		
UNK_SIZE_90MIN	Short integer	Yes		Yes_No_Int	5		
AUDITORY_90MIN	Short integer	Yes		Yes_No_Int	5		
ACT_SIZE_NOTES	String	Yes					250
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
PER_RIP_FO	Short integer	Yes			5		
PER_WOODLA	Short integer	Yes			5		
PER_GRASS	Short integer	Yes			5		
PER_AG	Short integer	Yes			5		

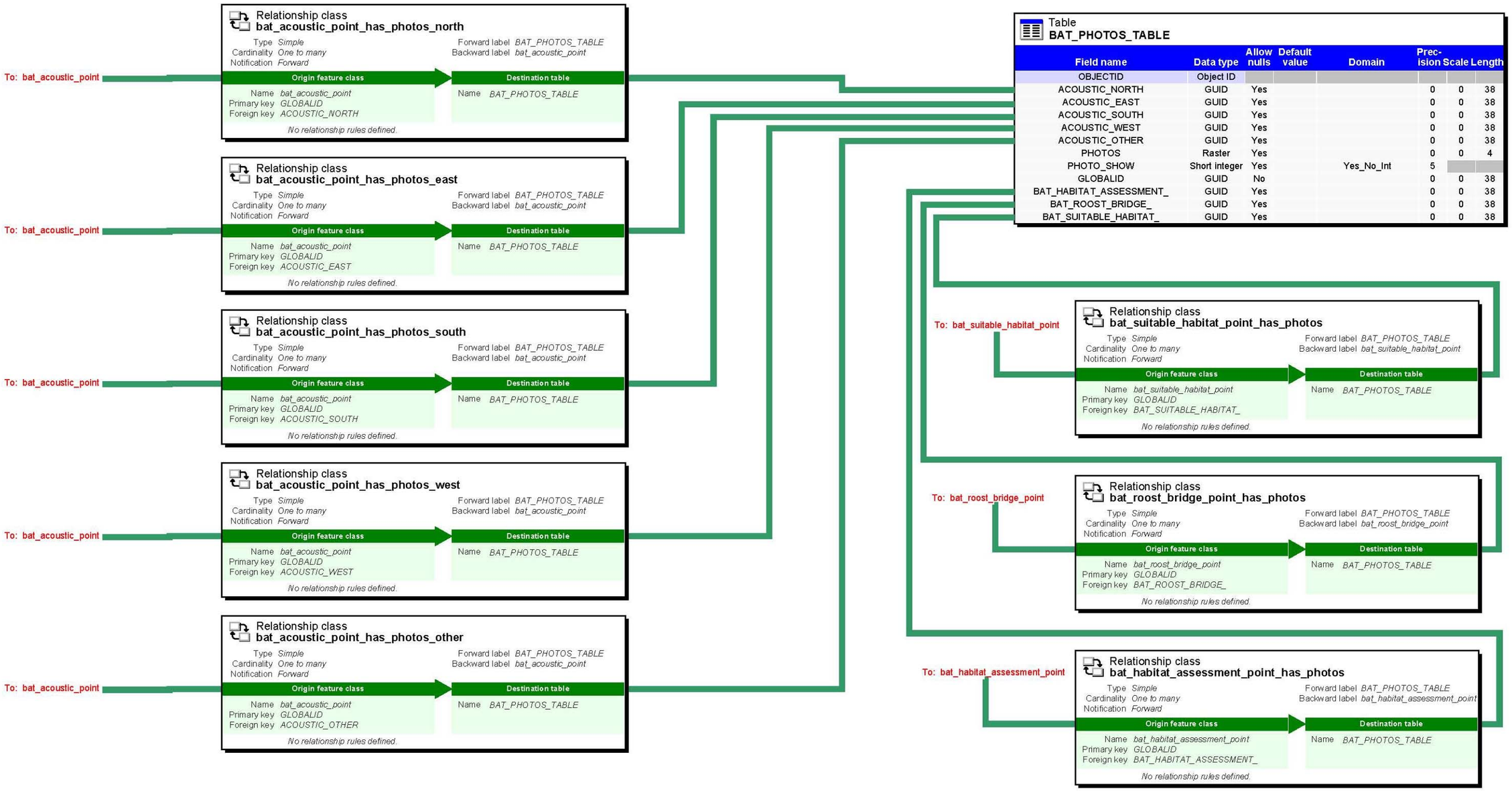
CONTINUATION OF BAT_ACOUSTIC_POINT

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
PER_ORCH	Short integer	Yes			5		
PER_VINE	Short integer	Yes			5		
PER_MARSH	Short integer	Yes			5		
PER_OTHER	Short integer	Yes			5		
OTHER	String	Yes					75
HAB_NOTES	String	Yes					250
F_O_HAB_TY	String	Yes					75
F_O_DBH	Short integer	Yes		EstimatedDBH	5		
F_O_CAN_H	Short integer	Yes		EstimatedHeight	5		
F_O_CAN_CO	Short integer	Yes			5		
AG_GRAIN	Short integer	Yes		Yes_No_Int	5		
AG_ROW_CRO	Short integer	Yes		Yes_No_Int	5		
AG_INNUDAT	Short integer	Yes		Yes_No_Int	5		
AG_CORN	Short integer	Yes		Yes_No_Int	5		
AG_CROP_TY	String	Yes					50
ROOST_BLDG	Short integer	Yes		Yes_No_Int	5		
ROOST_BRDG	Short integer	Yes		Yes_No_Int	5		
RO_SING_TR	Short integer	Yes		Yes_No_Int	5		
ROOST_STAN	Short integer	Yes		Yes_No_Int	5		
ROO_LRG_TR	Short integer	Yes		Yes_No_Int	5		
ROOST_SNAG	Short integer	Yes		Yes_No_Int	5		
ROOST_OTHE	Short integer	Yes		Yes_No_Int	5		
SH_OP_WET	Short integer	Yes		Yes_No_Int	5		
SLOU_CH	Short integer	Yes		Yes_No_Int	5		
STAGNANT	Short integer	Yes		Yes_No_Int	5		
FOR_OTHER	Short integer	Yes		Yes_No_Int	5		
RIP_FOR	Short integer	Yes		Yes_No_Int	5		
MAR_WET	Short integer	Yes		Yes_No_Int	5		
SLOU_CHAN	Short integer	Yes		Yes_No_Int	5		
FRO_WOOD	Short integer	Yes		Yes_No_Int	5		
FRO_AN_GRA	Short integer	Yes		Yes_No_Int	5		
FRO_AG	Short integer	Yes		Yes_No_Int	5		
FRO_ORCH	Short integer	Yes		Yes_No_Int	5		
FRO_VINE	Short integer	Yes		Yes_No_Int	5		
FRO_OTHER	Short integer	Yes		Yes_No_Int	5		
BE_RI_FOR	Short integer	Yes		Yes_No_Int	5		
BE_MAR_WET	Short integer	Yes		Yes_No_Int	5		
BE_SL_CH	Short integer	Yes		Yes_No_Int	5		
BE_WOOD	Short integer	Yes		Yes_No_Int	5		
BE_AN_GRAS	Short integer	Yes		Yes_No_Int	5		
BE_AG	Short integer	Yes		Yes_No_Int	5		
BE_ORCH	Short integer	Yes		Yes_No_Int	5		
BE_VINE	Short integer	Yes		Yes_No_Int	5		
BE_OTHER	Short integer	Yes		Yes_No_Int	5		
ROO_BLDG	Short integer	Yes		Yes_No_Int	5		
ROO_BRDG	Short integer	Yes		Yes_No_Int	5		
ROO_SOLI	Short integer	Yes		Yes_No_Int	5		
ROO_INTCT_	Short integer	Yes		Yes_No_Int	5		
LRG_TREES	Short integer	Yes		Yes_No_Int	5		
SNAGS	Short integer	Yes		Yes_No_Int	5		
OTHER_2	Short integer	Yes		Yes_No_Int	5		
FOR_SHALL_	Short integer	Yes		Yes_No_Int	5		
FOR_SLOU	Short integer	Yes		Yes_No_Int	5		
FOR_STAG	Short integer	Yes		Yes_No_Int	5		
FOR_OTH_30_100	Short integer	Yes		Yes_No_Int	5		
ELEVATION	Double	Yes			38	8	
ACCURACY_METERS	Double	Yes			38	8	
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
PHOTO_PATH	String	Yes					100
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36

To: bat_acoustic_point_has_photos_north
bat_acoustic_point_has_photos_east
bat_acoustic_point_has_photos_south
bat_acoustic_point_has_photos_west
bat_acoustic_point_has_photos_other

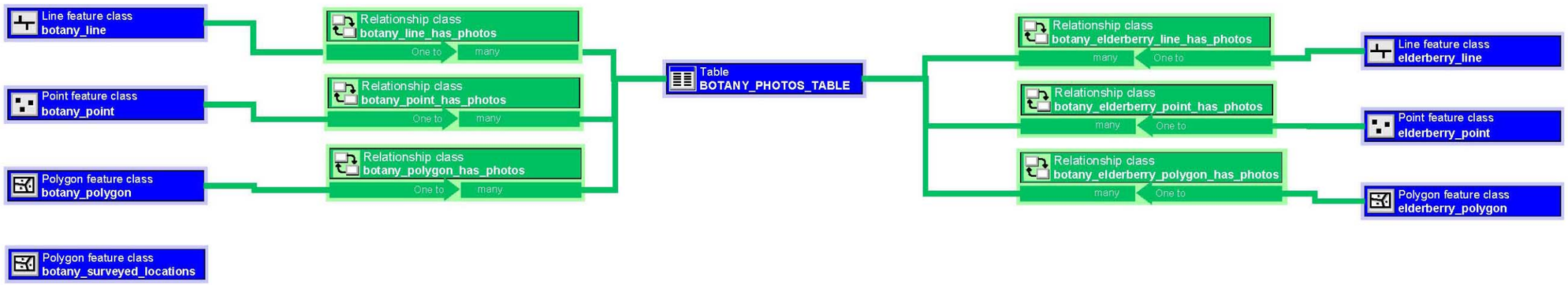
Field Surveys Geodatabase Schema Diagrams: Bat Repository 5 of 5

DRAFT



Field Surveys Geodatabase Schema Diagrams: Botany Repository 1 of 3

DRAFT



Simple feature class
botany_line

Geometry *Polyline*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
DATE_	Date	Yes			0	0	36
TIME_	String	Yes					50
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
SCIENTIFICNAME	Short integer	Yes		Botany_Species	5		
SURROUNDINGLANDUSE	String	Yes					250
VISIBLEDISTURBANCES	String	Yes					50
THREATS	String	Yes					50
DETERMINATION	Short integer	Yes		Bot_Determination	5		
PHOTOPLANT	Short integer	Yes		Yes_No_Int	5		
PHOTOHABITAT	Short integer	Yes		Yes_No_Int	5		
PHOTODIAGNOSTIC	Short integer	Yes		Yes_No_Int	5		
COMMENTS	String	Yes					250
ELEVATION	Double	Yes			38	8	
NUMINDIVIDUALS	Long integer	Yes			10		
PERCPHENVEGETATIVE	Short integer	Yes		Percent	5		
PERCPHENFLOWERING	Short integer	Yes		Percent	5		
PERCPHENFRUITING	Short integer	Yes		Percent	5		
EXISTINGCNDDB_OCC	Short integer	Yes		Yes_No_Int	5		
HABITATDESCRIPTION	String	Yes					250
SITEOCCQUALITY	Short integer	Yes		Bot_Hab_Quality	5		
PHOTOS	String	Yes					250
GPS_ID	Long integer	Yes		GPSID	10		
QC_DONE	Short integer	Yes		Yes_No_Int	5		
ACCURACY_METERS	Double	Yes			38	8	
EDIT_DESC	String	Yes					250
EDIT_METH	String	Yes					250
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
NUM_INDIVIDUALS_TEXT	String	Yes					10
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
HABITAT_TYPE	Short integer	Yes		Botany_Habitat_Type	5		
SHAPE.LEN	Double	No			0	0	

To: botany_line_has_photos

Simple feature class
botany_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
DATE_	Date	Yes			0	0	36
TIME_	String	Yes					50
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
SCIENTIFICNAME	Short integer	Yes		Botany_Species	5		
SURROUNDINGLANDUSE	String	Yes					250
VISIBLEDISTURBANCES	String	Yes					50
THREATS	String	Yes					50
DETERMINATION	Short integer	Yes		Bot_Determination	5		
PHOTOPLANT	Short integer	Yes		Yes_No_Int	5		
PHOTOHABITAT	Short integer	Yes		Yes_No_Int	5		
PHOTODIAGNOSTIC	Short integer	Yes		Yes_No_Int	5		
COMMENTS	String	Yes					250
ELEVATION	Double	Yes			38	8	
NUMINDIVIDUALS	Long integer	Yes			10		
PERCPHENVEGETATIVE	Short integer	Yes		Percent	5		
PERCPHENFLOWERING	Short integer	Yes		Percent	5		
PERCPHENFRUITING	Short integer	Yes		Percent	5		
EXISTINGCNDDB_OCC	Short integer	Yes		Yes_No_Int	5		
HABITATDESCRIPTION	String	Yes					250
SITEOCCQUALITY	Short integer	Yes		Bot_Hab_Quality	5		
PHOTOS	String	Yes					250
GPS_ID	Long integer	Yes		GPSID	10		
QC_DONE	Short integer	Yes		Yes_No_Int	5		
ACCURACY_METERS	Double	Yes			38	8	
EDIT_METH	String	Yes					15
EDIT_DESC	String	Yes					75
EDIT_SRC	String	Yes					25
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
NUM_INDIVIDUALS_TEXT	String	Yes					10
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
HABITAT_TYPE	Short integer	Yes		Botany_Habitat_Type	5		

To: botany_point_has_photos

Field Surveys Geodatabase Schema Diagrams: Botany Repository 2 of 3

DRAFT

Simple feature class
botany_polygon

Geometry *Polygon*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
DATE_	Date	Yes			0	0	36
TIME_	String	Yes					50
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
SCIENTIFICNAME	Short integer	Yes		Botany_Species	5		
SURROUNDINGLANDUSE	String	Yes					250
VISIBLEDISTURBANCES	String	Yes					50
THREATS	String	Yes					50
DETERMINATION	Short integer	Yes		Bot_Determination	5		
PHOTOPLANT	Short integer	Yes		Yes_No_Int	5		
PHOTOHABITAT	Short integer	Yes		Yes_No_Int	5		
PHOTODIAGNOSTIC	Short integer	Yes		Yes_No_Int	5		
COMMENTS	String	Yes					250
ELEVATION	Double	Yes			38	8	
NUMINDIVIDUALS	Long integer	Yes			10		
PERCPHENVEGETATIVE	Short integer	Yes		Percent	5		
PERCPHENFLOWERING	Short integer	Yes		Percent	5		
PERCPHENFRUITING	Short integer	Yes		Percent	5		
EXISTINGCNDDB_OCC	Short integer	Yes		Yes_No_Int	5		
HABITATDESCRIPTION	String	Yes					250
SITEOCCQUALITY	Short integer	Yes		Bot_Hab_Quality	5		
PHOTOS	String	Yes					250
GPS_ID	Long integer	Yes		GPSID	10		
QC_DONE	Short integer	Yes		Yes_No_Int	5		
ACCURACY_METERS	Double	Yes			38	8	
EDIT_METH	String	Yes					250
EDIT_DESC	String	Yes					250
EDIT_SRC	String	Yes					250
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
NUM_INDIVIDUALS_TEXT	String	Yes					10
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
HABITAT_TYPE	Short integer	Yes		Botany_Habitat_Type	5		
SHAPE.AREA	Double	No			0	0	
SHAPE.LEN	Double	No			0	0	

To: botany_polygon_has_photos

Simple feature class
botany_elderberry_line

Geometry *Polyline*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
FEATURETYPE	String	Yes	Point				50
SIZECATEGORY	Short integer	Yes		ElderberrySize	5		
HABITAT	Short integer	Yes		ElderberryHabitat	5		
ELEVATION	Double	Yes			38	8	
GPS_ID	Long integer	Yes		GPSID	10		
DATE_TIME_	Date	Yes			0	0	36
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
NOTES	String	Yes					250
ACCURACY_METERS	Double	Yes			38	8	
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
PHOTOS	String	Yes					50
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
SHAPE.LEN	Double	No			0	0	

To: botany_elderberry_line_has_photos

Simple feature class
botany_surveyed_locations

Geometry *Polygon*
Contains M values *No*
Contains Z values *No*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID_1	Object ID						
OBJECTID	Long integer	Yes			9		
COUNTY	String	Yes					50
APN_FORMAT	String	Yes					50
DESCRIPTIO	String	Yes					50
BLOCK2	String	Yes					10
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
SHAPE.AREA	Double	No			0	0	
SHAPE.LEN	Double	No			0	0	

Simple feature class
botany_elderberry_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
FEATURETYPE	String	Yes	Point				50
SIZECATEGORY	Short integer	Yes		ElderberrySize	5		
HABITAT	Short integer	Yes		ElderberryHabitat	5		
ELEVATION	Double	Yes			38	8	
GPS_ID	Long integer	Yes		GPSID	10		
DATE_TIME_	Date	Yes			0	0	36
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
NOTES	String	Yes					250
ACCURACY_METERS	Double	Yes			38	8	
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
PHOTOS	String	Yes					50
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36

To: botany_elderberry_point_has_photos

Field Surveys Geodatabase Schema Diagrams: Botany Repository 3 of 3

DRAFT

To: botany_elderberry_line

Relationship class
botany_elderberry_line_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *BAT_PHOTOS_TABLE*
Backward label *botany_elderberry_line*

Origin feature class	Destination table
Name *botany_elderberry_line*	Name *BOTANY_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *ELDERBERRY_LINE_*	

No relationship rules defined.

To: botany_elderberry_point

Relationship class
botany_elderberry_point_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *BOTANY_PHOTOS_TABLE*
Backward label *botany_elderberry_point*

Origin feature class	Destination table
Name *botany_elderberry_point*	Name *BOTANY_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *ELDERBERRY_POINT_*	

No relationship rules defined.

Relationship class
botany_elderberry_polygon_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *BOTANY_PHOTOS_TABLE*
Backward label *botany_elderberry_polygon*

Origin feature class	Destination table
Name *botany_elderberry_polygon*	Name *BOTANY_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *ELDERBERRY_POLYGON_*	

No relationship rules defined.

Relationship class
botany_line_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *BOTANY_PHOTOS_TABLE*
Backward label *botany_line*

Origin feature class	Destination table
Name *botany_line*	Name *BOTANY_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *BOTANY_LINE_*	

No relationship rules defined.

Relationship class
botany_point_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *BOTANY_PHOTOS_TABLE*
Backward label *botany_point*

Origin feature class	Destination table
Name *botany_point*	Name *BOTANY_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *BOTANY_POINT_*	

No relationship rules defined.

To: botany_line

To: botany_point

To: botany_polygon

Relationship class
botany_polygon_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *BOTANY_PHOTOS_TABLE*
Backward label *botany_polygon*

Origin feature class	Destination table
Name *botany_polygon*	Name *BOTANY_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *BOTANY_POLYGON_*	

No relationship rules defined.

Simple feature class
botany_elderberry_polygon

Geometry *Polygon*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
FEATURETYPE	String	Yes	Point				50
SIZECATEGORY	Short integer	Yes		ElderberrySize	5		
HABITAT	Short integer	Yes		ElderberryHabitat	5		
ELEVATION	Double	Yes			38	8	
GPS_ID	Long integer	Yes		GPSID	10		
DATE_TIME_	Date	Yes			0	0	36
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
NOTES	String	Yes					250
ACCURACY_METERS	Double	Yes			38	8	
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
PHOTOS	String	Yes					50
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
SHAPE.AREA	Double	No			0	0	
SHAPE.LEN	Double	No			0	0	

Table
BOTANY_PHOTOS_TABLE

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
PHOTOS	Raster	Yes			0	0	4
GLOBALID	GUID	No			0	0	38
ELDERBERRY_LINE_	GUID	Yes			0	0	38
ELDERBERRY_POINT_	GUID	Yes			0	0	38
ELDERBERRY_POLYGON_	GUID	Yes			0	0	38
BOTANY_LINE_	GUID	Yes			0	0	38
BOTANY_POINT_	GUID	Yes			0	0	38
BOTANY_POLYGON_	GUID	Yes			0	0	38
PHOTO_SHOWS_BUILDINGS	Short integer	Yes		Yes_No_Int	5		

Field Surveys Geodatabase Schema Diagrams: Cultural

DRAFT

Line feature class
cultural_line

Point feature class
cultural_point

Polygon feature class
cultural_polygon

Simple feature class
cultural_line

Geometry *Polyline*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SHAPE	Geometry	Yes					
Date_Time	Date	Yes			0	0	8
Observer1	String	Yes					50
Observer2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	0		
Description	String	Yes					250
ResourceAttributes	String	Yes					250
Resource_Building	Short integer	Yes		Yes_No_Int	0		
Resource_Structure	Short integer	Yes		Yes_No_Int	0		
Resource_Object	Short integer	Yes		Yes_No_Int	0		
Resource_Site	Short integer	Yes		Yes_No_Int	0		
Resource_District	Short integer	Yes		Yes_No_Int	0		
Resource_Element_District	Short integer	Yes		Yes_No_Int	0		
Resource_Other	Short integer	Yes		Yes_No_Int	0		
Describe_Other	String	Yes					250
Photos	String	Yes					250
Description_Photos	String	Yes					250
Historic	Short integer	Yes		Yes_No_Int	0		
Prehistoric	Short integer	Yes		Yes_No_Int	0		
Owner	String	Yes					50
OwnerAddress	String	Yes					75
Observer_Affiliate	String	Yes					50
Survey_Type	String	Yes					250
Field_Form_QC	Short integer	Yes		Yes_No_Int	0		
Accuracy_Meters	Double	Yes			0	0	
SHAPE_Length	Double	Yes			0	0	

Simple feature class
cultural_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SHAPE	Geometry	Yes					
Date_Time	Date	Yes			0	0	8
Observer1	String	Yes					50
Observer2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	0		
Description	String	Yes					250
ResourceAttributes	String	Yes					250
Resource_Building	Short integer	Yes		Yes_No_Int	0		
Resource_Structure	Short integer	Yes		Yes_No_Int	0		
Resource_Object	Short integer	Yes		Yes_No_Int	0		
Resource_Site	Short integer	Yes		Yes_No_Int	0		
Resource_District	Short integer	Yes		Yes_No_Int	0		
Resource_Element_District	Short integer	Yes		Yes_No_Int	0		
Resource_Other	Short integer	Yes		Yes_No_Int	0		
Describe_Other	String	Yes					250
Photos	String	Yes					250
Description_Photos	String	Yes					250
Historic	Short integer	Yes		Yes_No_Int	0		
Prehistoric	Short integer	Yes		Yes_No_Int	0		
Owner	String	Yes					50
OwnerAddress	String	Yes					75
Observer_Affiliate	String	Yes					50
Survey_Type	String	Yes					250
Field_Form_QC	Short integer	Yes		Yes_No_Int	0		
Accuracy_Meters	Double	Yes			0	0	

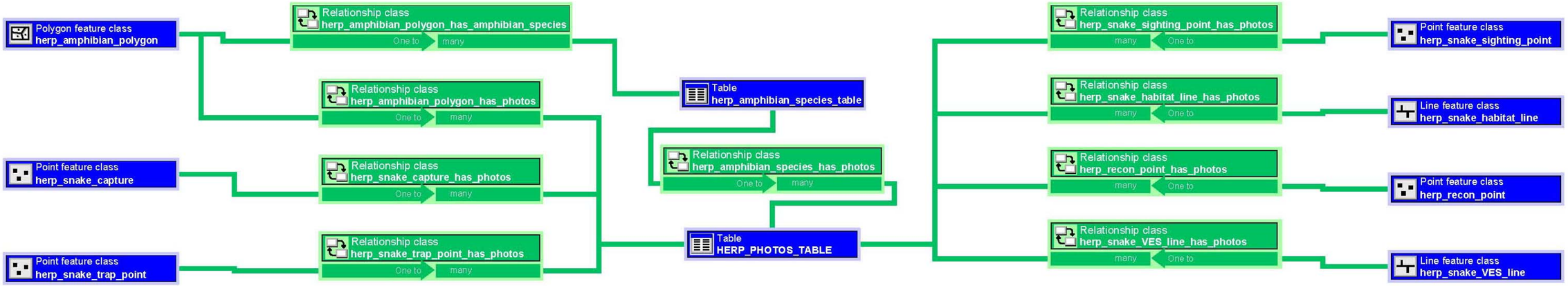
Simple feature class
cultural_polygon

Geometry *Polygon*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SHAPE	Geometry	Yes					
Date_Time	Date	Yes			0	0	8
Observer1	String	Yes					50
Observer2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	0		
Description	String	Yes					250
ResourceAttributes	String	Yes					250
Resource_Building	Short integer	Yes		Yes_No_Int	0		
Resource_Structure	Short integer	Yes		Yes_No_Int	0		
Resource_Object	Short integer	Yes		Yes_No_Int	0		
Resource_Site	Short integer	Yes		Yes_No_Int	0		
Resource_District	Short integer	Yes		Yes_No_Int	0		
Resource_Element_District	Short integer	Yes		Yes_No_Int	0		
Resource_Other	Short integer	Yes		Yes_No_Int	0		
Describe_Other	String	Yes					250
Photos	String	Yes					250
Description_Photos	String	Yes					250
Historic	Short integer	Yes		Yes_No_Int	0		
Prehistoric	Short integer	Yes		Yes_No_Int	0		
Owner	String	Yes					50
OwnerAddress	String	Yes					75
Observer_Affiliate	String	Yes					50
Survey_Type	String	Yes					250
Field_Form_QC	Short integer	Yes		Yes_No_Int	0		
Accuracy_Meters	Double	Yes			0	0	
SHAPE_Length	Double	Yes			0	0	
SHAPE_Area	Double	Yes			0	0	

Field Surveys Geodatabase Schema Diagrams: Herpetofauna 1 of 4

DRAFT



Simple feature class
herp_recon_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

To: herp_recon_point_has_photos

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
SURVEYOR1	String	Yes					50
SURVEYOR2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	10		
DATE_TIME_	Date	Yes			0	0	36
SPECIES	String	Yes		herp_recon_species			50
PHOTOS	String	Yes					50
NOTES	String	Yes					250
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
YEAR	Long integer	Yes			10		

Simple feature class
herp_snake_sighting_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

To: herp_snake_sighting_point_has_photos

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
SURVEYOR1	String	Yes					50
SHAPE	Geometry	Yes					
SURVEYOR2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	10		
DATE_TIME_	Date	Yes			0	0	36
SPECIES	Short integer	Yes		Herp_Species	5		
AIR_TEMPERATURE	Double	Yes			38	8	
WATER_TEMPERATURE	Double	Yes			38	8	
GROUND_TEMPERATURE	Double	Yes			38	8	
WIND_SPEED	Double	Yes			38	8	
PHOTOS	String	Yes					50
NOTES	String	Yes					250
GLOBALID	GUID	No			0	0	38
FIELD_FORM_QC	Short integer	Yes		Yes_No_Int	5		
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
YEAR	Long integer	Yes			10		

Field Surveys Geodatabase Schema Diagrams: Herpetofauna 2 of 4

DRAFT

To: herp_amphibian_polygon_has_amphibian_species

Simple feature class
herp_amphibian_polygon

Geometry *Polygon*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
WATER_FEATURE_ID	String	Yes					50
SURVEYOR1	String	Yes					50
SURVEYOR2	String	Yes					50
DATE_TIME_	Date	Yes			0	0	36
GPS_ID	Long integer	Yes		GPSID	10		
CURRENT_HISTORIC_RANGE	Short integer	Yes		Yes_No_Int	5		
MILE_OF_KNOWN_SITES	Short integer	Yes		Yes_No_Int	5		
PARCEL_APN	String	Yes					50
WATER_BODY_TYPE	Short integer	Yes		WaterType	5		
OTHER_TYPE	String	Yes					250
WATER_BODY_DIMENSIONS	String	Yes					50
WATER_BODY_MAX_DEPTH	Double	Yes			38	8	
WATER_BODY_TEMP	Double	Yes			38	8	
WATER_BODY_TURBIDITY	String	Yes					50
WATER_BODY_SALINITY	Double	Yes			38	8	
WATER_BODY_EPHEMERAL	Short integer	Yes		Yes_No_Int	5		
WATER_BODY_PERENNIAL	Short integer	Yes		Yes_No_Int	5		
WATER_BODY_EPHEMERAL_DATE	String	Yes					25
SUBMERGENT_EMERGENT_VEG	String	Yes					250
DOMINANT_INVERTS_VERTS	String	Yes					250
PREDATORS_THREATS	String	Yes					250
STREAM_FULL_WIDTH	Double	Yes			38	8	
STREAM_MAX_DEPTH	Double	Yes			38	8	
STREAM_GRADIENT	Double	Yes			38	8	
POOLS_WITHIN_STREAM	Short integer	Yes		Yes_No_Int	5		
POOL_IN_STREAM_SIZE	String	Yes					50
POOL_IN_STREAM_MAX_DEPTH	Double	Yes			38	8	
STREAM_NON_POOL_HABITAT	Short integer	Yes		Frog_Stream_Habitat_Non_Pool	5		
OTHER_STREAM_NON_POOL_HABITAT	String	Yes					250
STREAM_DOMINANT_VEGETATION	String	Yes					75
STREAM_SUBSTRATE	String	Yes					50
STREAM_BANK_DESCRIPTION	String	Yes					250
STREAM_PERENNIAL	Short integer	Yes		Yes_No_Int	5		
STREAM_EPHEMERAL	Short integer	Yes		Yes_No_Int	5		
STREAM_EPHEMERAL_DATE	String	Yes					50
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
COMMENTS	String	Yes					250
PHOTOS	String	Yes					75
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
YEAR	Long integer	Yes			10		
SHAPE.AREA	Double	No			0	0	
SHAPE.LEN	Double	No			0	0	

To: herp_amphibian_polygon_has_photos

Simple feature class
herp_snake_capture

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
GPS_ID	Long integer	Yes		GPSID	10		
DATETIME_	Date	Yes			0	0	36
UTMNORTHING	Double	Yes			38	8	
UTMEASTING	Double	Yes			38	8	
OBSERVER1	String	Yes					20
OBSERVER2	String	Yes					20
PIT_NUM	String	Yes					50
SITE	String	Yes					20
TRAP_NUM	Long integer	Yes			10		
DNA_COLLECTED	Short integer	Yes		Yes_No_Int	5		
SEX	String	Yes		Sex			5
SUPRALABIALS_L	Long integer	Yes			10		
SUPRALABIALS_R	Long integer	Yes			10		
SUPRALABIALS_TOTAL	Long integer	Yes			10		
INFRALABIALS_L	Long integer	Yes			10		
INFRALABIALS_R	Long integer	Yes			10		
INFRALABIALS_TOTAL	Long integer	Yes			10		
PREOCULARS_L	Long integer	Yes			10		
PREOCULARS_R	Long integer	Yes			10		
PREOCULARS_TOTAL	Long integer	Yes			10		
POSTOCULARS_L	Long integer	Yes			10		
POSTOCULARS_R	Long integer	Yes			10		
POSTOCULARS_TOTAL	Long integer	Yes			10		
DORSAL_SCALE_ROWS	Short integer	Yes			5		
SUBCAUDAL_COUNT	Short integer	Yes			5		
INR	Double	Yes			38	8	
NR	Double	Yes			38	8	
W_OF_S6	String	Yes					25
W_OF_S7	String	Yes					25
CAPTURE_TYPE	Long integer	Yes		SnakeCaptureType	10		
RECAPTURE	Short integer	Yes		Yes_No_Int	5		
RECAPTURE_NUM	Short integer	Yes			5		
NOTES	String	Yes					250
PHOTOS	String	Yes					100
QA_QC	Short integer	Yes		Yes_No_Int	5		
MASS_G	Double	Yes			38	8	
VTL_MM	Double	Yes			38	8	
SVL_MM	Double	Yes			38	8	
ACCURACY_METERS	Double	Yes			38	8	
SPECIES	Short integer	Yes		Herp_Species	5		
VENTRALSCUTECODE	String	Yes					50
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36

To: herp_snake_capture_has_photos

Field Surveys Geodatabase Schema Diagrams: Herpetofauna 3 of 4

DRAFT

To: herp_snake_trap_point_has_photos

Simple feature class
herp_snake_trap_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
GPS_ID	Long integer	Yes		GPSID	10		
OBSERVER1	String	Yes					25
OBSERVER2	String	Yes					25
UTM_NORTHING	Double	Yes			38	8	
UTM_EASTING	Double	Yes			38	8	
DATETIME_	Date	Yes			0	0	36
SITE	String	Yes					50
TRAP_NUM	Long integer	Yes			10		
STARTDATE	String	Yes					25
ENDDATE	String	Yes					25
HABITAT	Short integer	Yes		Herp_Habitat_Cap_sit	5		
HABITAT_MOD	Short integer	Yes		Herp_Habitat_Mod	5		
DOMINANT_AQU_VEG	String	Yes					50
DOM_AQU_VEG_PER_COV	Short integer	Yes			5		
DOMINANT_TER_VEG	String	Yes					50
DOM_TER_VEG_PER_COV	Short integer	Yes			5		
ADJACENT_LAND_USE	String	Yes					250
NOTES	String	Yes					250
PHOTOS	String	Yes					100
QA_QC	Short integer	Yes		Yes_No_Int	5		
ACCURACY_METERS	Double	Yes			38	8	
LINE_NUM	Short integer	Yes			5		
EDIT_DESC	String	Yes					75
EDIT_SRC	String	Yes					25
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
TRAP_NUM_TEXT	String	Yes					20

To: herp_snake_habitat_line_has_photos

Simple feature class
herp_snake_habitat_line

Geometry *Polyline*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SITE_NAME	String	Yes					75
LINE_ID	Short integer	Yes			5		
PARCEL_NUM	String	Yes					50
HABITAT_TYPE	String	Yes					30
SURVEYOR1	String	Yes					50
SURVEYOR2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	10		
SURVEY_DATES	String	Yes					25
EVALUATION_DATE_	Date	Yes			0	0	36
PHOTOS	String	Yes					250
ONE_A	Short integer	Yes			5		
ONE_B	Short integer	Yes			5		
ONE_C	Short integer	Yes			5		
TWO_A	Short integer	Yes			5		
TWO_B	Short integer	Yes			5		
THREE_A	Short integer	Yes			5		
THREE_B	Short integer	Yes			5		
FOUR	Short integer	Yes			5		
FIVE	Short integer	Yes			5		
SIX_SCORE	Short integer	Yes			5		
SIX_TEXT_	String	Yes					100
SEVEN_A_SCORE	Short integer	Yes			5		
SEVEN_A_TEXT_	String	Yes					100
SEVEN_B_SCORE	Short integer	Yes			5		
SEVEN_B_TEXT_	String	Yes					100
EIGHT_A	Short integer	Yes			5		
EIGHT_B	Short integer	Yes			5		
NINE	Short integer	Yes			5		
TEN	Short integer	Yes			5		
ELEVEN	Short integer	Yes			5		
TWELVE	Short integer	Yes			5		
THIRTEEN_A	Short integer	Yes			5		
THIRTEEN_B	Short integer	Yes			5		
THIRTEEN_C	Short integer	Yes			5		
THIRTEEN_D	Short integer	Yes			5		
FOURTEEN	Short integer	Yes			5		
FIFTEEN	Short integer	Yes			5		
TOTAL_SCORE	Short integer	Yes			5		
HABITAT_VALUE	String	Yes					10
NOTES	String	Yes					250
EDITOR_NAME	String	Yes					25
FIELD_FORM_QC	Short integer	Yes		Yes_No_Int	5		
SHAPE	Geometry	Yes					
EDIT_DATE	Date	Yes			0	0	36
TEMP	Long integer	Yes			10		
GLOBALID	GUID	No			0	0	38
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
YEAR	Long integer	Yes			10		
SHAPE.LEN	Double	No			0	0	

To: herp_snake_VES_line_has_photos

Simple feature class
herp_snake_VES_line

Geometry *Polyline*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
GPS_ID	Long integer	Yes		GPSID	10		
DATETIME_	Date	Yes			0	0	36
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
SITE	String	Yes					75
SURVEYORAFFIL	String	Yes					100
STARTTIME	String	Yes					50
ENDTIME	String	Yes					50
TOTALTIME	String	Yes					50
STARTAIRTEMP_F	Short integer	Yes			5		
ENDAIRTEMP_F	Short integer	Yes			5		
WATERTEMP_F	Short integer	Yes			5		
STARTGROUNDTEMP_F	Short integer	Yes			5		
ENDGROUNDTEMP_F	Short integer	Yes			5		
PERCCLOUDCOVER	Short integer	Yes			5		
WINDSPEED	Short integer	Yes			5		
WINDDIRECTION	Long integer	Yes		WindDirection	10		
NUMCAPTUREDGGS	Short integer	Yes			5		
NUMOTHERCAPTUREDGS	Short integer	Yes			5		
PHOTOSTAKEN	Short integer	Yes		Yes_No_Int	5		
DISTANCESURVEYED	String	Yes					25
OTHEROBSERVATIONS	String	Yes					250
PHOTOS	String	Yes					250
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
NOTES	String	Yes					250
ACCURACY_METERS	Double	Yes			38	8	
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
SHAPE.LEN	Double	No			0	0	

Field Surveys Geodatabase Schema Diagrams: Herpetofauna 4 of 4

DRAFT

To: herp_amphibian_polygon

Relationship class
herp_amphibian_polygon_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *HERP_PHOTOS_TABLE*
Backward label *herp_amphibian_polygon*

Origin feature class	Destination table
Name *herp_amphibian_polygon*	Name *HERP_PHOTOS_TABLE*
Primary key *WATER_FEATURE_ID*	
Foreign key *AMPHIBIAN_POLYGON*	

No relationship rules defined.

To: herp_snake_habitat_line

Relationship class
herp_snake_habitat_line_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *HERP_PHOTOS_TABLE*
Backward label *herp_snake_habitat_line*

Origin feature class	Destination table
Name *herp_snake_habitat_line*	Name *HERP_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *SNAKE_HABITAT_LINE*	

No relationship rules defined.

To: herp_snake_capture

Relationship class
herp_snake_capture_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *HERP_PHOTOS_TABLE*
Backward label *herp_snake_capture*

Origin feature class	Destination table
Name *herp_snake_capture*	Name *HERP_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *SNAKE_CAPTURE_*	

No relationship rules defined.

To: herp_snake_trap_point

Relationship class
herp_snake_trap_point_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *HERP_PHOTOS_TABLE*
Backward label *herp_snake_trap_point*

Origin feature class	Destination table
Name *herp_snake_trap_point*	Name *HERP_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *SNAKE_TRAP_*	

No relationship rules defined.

Table
herp_amphibian_species_table

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SURVEYOR1	String	Yes					50
SURVEYOR2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	10		
SURVEYTYPE1	Short integer	Yes		FrogSurveyType	5		
SURVEYTYPE2	Short integer	Yes		FrogSurveyType2	5		
NUM_SURVEY_VISITS	Short integer	Yes			5		
PHOTOS	String	Yes					150
SPECIES	String	Yes		herp_amphibian_specie s			50
NUM_INDIVIDUALS	Long integer	Yes			10		
OBSERVED_OR_HEARD	String	Yes		herp_amphibian_osberv ed_or_heard			50
LIFE_STAGE	String	Yes		amphibian_life_stages			50
SIZE_CLASS	Short integer	Yes		amphibian_size_class	5		
ID_CERTAINTY	String	Yes					50
BEGIN_TIME	String	Yes					20
END_TIME	String	Yes					20
CLOUD_COVER	String	Yes					25
PRECIPITATION	String	Yes					25
AIR_TEMPERATURE	Double	Yes			38	8	
WIND_SPEED	Double	Yes			38	8	
VISIBILITY	String	Yes					50
MOON_PHASE	String	Yes					50
HUMIDITY	Double	Yes			38	8	
WEATHER_DESCRIPTION	String	Yes					250
LIGHT_BRAND_NAME_MODEL	String	Yes					100
BINOCULAR_USED	Short integer	Yes		Yes_No_Int	5		
BINOCULAR_BRAND_NAME_MODEL	String	Yes					150
BINOCULAR_POWER	String	Yes					30
WATER_DIMENSIONS	String	Yes					50
WATER_MAX_DEPTH	Double	Yes			38	8	
WATER_TEMPERATURE	Double	Yes			38	8	
WATER_TURBIDITY	String	Yes					50
WATER_SALINITY	Double	Yes			38	8	
DATE_TIME_	Date	Yes			0	0	36
WATER_FEATURE_ID	String	Yes					50
GLOBALID	GUID	No			0	0	38
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
YEAR	Long integer	Yes			10		

Table
HERP_PHOTOS_TABLE

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
PHOTO	Raster	Yes			0	0	4
GLOBALID	GUID	No			0	0	38
AMPHIBIAN_POLYGON	String	Yes					50
SNAKE_HABITAT_LINE_	GUID	Yes			0	0	38
SNAKE_CAPTURE_	GUID	Yes			0	0	38
SNAKE_TRAP_	GUID	Yes			0	0	38
SNAKE_VES_LINE_	GUID	Yes			0	0	38
RECON_POINT_	GUID	Yes			0	0	38
SNAKE_SIGHTING_POINT_	GUID	Yes			0	0	38
AMPHIBIAN_SPECIES_TABLE_	GUID	Yes			0	0	38
PHOTO_SHOWS_BUILDINGS	Short integer	Yes		Yes_No_Int	5		

To: herp_amphibian_polygon

Relationship class
herp_amphibian_polygon_has_amphibian_species

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *herp_amphibian_species_table*
Backward label *herp_amphibian_polygon*

Destination table	Origin feature class
Name *herp_amphibian_species_table*	Name *herp_amphibian_polygon*
	Primary key *WATER_FEATURE_ID*
	Foreign key *WATER_FEATURE_ID*

No relationship rules defined.

To: herp_snake_VES_line

Relationship class
herp_snake_VES_line_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *HERP_PHOTOS_TABLE*
Backward label *herp_snake_VES_line*

Destination table	Origin feature class
Name *HERP_PHOTOS_TABLE*	Name *herp_snake_VES_line*
	Primary key *GLOBALID*
	Foreign key *SNAKE_VES_LINE_*

No relationship rules defined.

Relationship class
herp_amphibian_species_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *HERP_PHOTOS_TABLE*
Backward label *herp_amphibian_species_table*

Origin feature class	Destination table
Name *herp_amphibian_species_table*	Name *HERP_PHOTOS_TABLE*
Primary key *GLOBALID*	
Foreign key *AMPHIBIAN_SPECIES_TABLE_*	

No relationship rules defined.

To: herp_recon_point

Relationship class
herp_recon_point_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *HERP_PHOTOS_TABLE*
Backward label *herp_recon_point*

Destination table	Origin feature class
Name *HERP_PHOTOS_TABLE*	Name *herp_recon_point*
	Primary key *GLOBALID*
	Foreign key *RECON_POINT_*

No relationship rules defined.

To: herp_snake_sighting_point

Relationship class
herp_snake_sighting_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *HERP_PHOTOS_TABLE*
Backward label *herp_snake_sighting_point*

Destination table	Origin feature class
Name *HERP_PHOTOS_TABLE*	Name *herp_snake_sighting_point*
	Primary key *GLOBALID*
	Foreign key *SNAKE_SIGHTING_POINT_*

No relationship rules defined.

Field Surveys Geodatabase Schema Diagrams: Incidental Observations

DRAFT

Simple feature class
incidental_observation_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
HAB_STOCKPONDS	Short integer	Yes		Yes_No_Int	5		
HAB_VERNALPOOLS	Short integer	Yes		Yes_No_Int	5		
HAB_SANDYDUNES	Short integer	Yes		Yes_No_Int	5		
HAB_MARSH	Short integer	Yes		Yes_No_Int	5		
HAB_RIPARIANWOODLAND	Short integer	Yes		Yes_No_Int	5		
HAB_GRASSLAND	Short integer	Yes		Yes_No_Int	5		
HAB_OTHER	String	Yes					20
BIRD_CRANESGEESE	Short integer	Yes		Yes_No_Int	5		
BIRD_IBISNEST	Short integer	Yes		Yes_No_Int	5		
BIRD_ROOKERYHERONRY	Short integer	Yes		Yes_No_Int	5		
BIRD_BURROWINGOWL	Short integer	Yes		Yes_No_Int	5		
BIRD_OWLNEST	Short integer	Yes		Yes_No_Int	5		
BIRD_BLACKBIRDNEST	Short integer	Yes		Yes_No_Int	5		
BIRD_SONGBIRDNEST	Short integer	Yes		Yes_No_Int	5		
BIRD_RAPTORNEST	Short integer	Yes		Yes_No_Int	5		
BIRD_COMMENTS	String	Yes					250
MAM_BATSTRUCTURES	Short integer	Yes		Yes_No_Int	5		
MAM_SMALLRABBITS	Short integer	Yes		Yes_No_Int	5		
MAM_GROUNDSQUIRREL	Short integer	Yes		Yes_No_Int	5		
MAM_COMMENTS	String	Yes					250
INV_ELDERBERRY	Short integer	Yes		Yes_No_Int	5		
INV_VPSHRIMP	Short integer	Yes		Yes_No_Int	5		
INV_COMMENTS	String	Yes					250
REP_BURROWSVPGRASSLAND	Short integer	Yes		Yes_No_Int	5		
REP_SLOWSTREAMDITCH	Short integer	Yes		Yes_No_Int	5		
REP_COMMENTS	String	Yes					250
PLANT_COMMENTS	String	Yes					250
CULT_PREHISTORIC	Short integer	Yes		Yes_No_Int	5		
CULT_HISTORIC	Short integer	Yes		Yes_No_Int	5		
CULT_BUILDINGS	Short integer	Yes		Yes_No_Int	5		
CULT_COMMENTS	String	Yes					250
SITE_WELLS	Short integer	Yes		Yes_No_Int	5		
SITE_FUELTANKS	Short integer	Yes		Yes_No_Int	5		
SITE_PITSSUMPS	Short integer	Yes		Yes_No_Int	5		
SITE_DRUMS	Short integer	Yes		Yes_No_Int	5		
SITE_CHEMICALSTORAGE	Short integer	Yes		Yes_No_Int	5		
SITE_CHEMICALSPILL	Short integer	Yes		Yes_No_Int	5		
SITE_LEAKINGCONTAINERS	Short integer	Yes		Yes_No_Int	5		
SITE_TRANSFORMERS	Short integer	Yes		Yes_No_Int	5		
SITE_SEPTICTANK	Short integer	Yes		Yes_No_Int	5		
SITE_LANDFILL	Short integer	Yes		Yes_No_Int	5		
SITE_INDUSTRIAL	Short integer	Yes		Yes_No_Int	5		
SITE_COMMENTS	String	Yes					250
REC_COMMENTS	String	Yes					250
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
DATE_	Date	Yes			0	0	36
TIME_	String	Yes					50
ELEVATION	Double	Yes			38	8	
PHOTOS	String	Yes					250
GPS_ID	Long integer	Yes		GPSID	10		
FIELDFORMQC	Short integer	Yes		Yes_No_Int	5		
INV_FISH_N_VP	Short integer	Yes		Yes_No_Int	5		
INV_VP_ENDEMICPLANTS	Short integer	Yes		Yes_No_Int	5		
REP_TADPOLES	Short integer	Yes		Yes_No_Int	5		
ACCURACY_METERS	Double	Yes			38	8	
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
RAPTOR_NEST_GROUND	Short integer	Yes		Yes_No_Int	5		
BIRDS_CRANE_GEESE	Short integer	Yes		Yes_No_Int	5		
PARCEL_APN	String	Yes					30

Relationship class
incidental_observations_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*

Forward label *INCIDENTAL_PHOTOS_TABLE*
Backward label *incidental_observation_point*

Origin feature class
Name *incidental_observation_point*
Primary key *GLOBALID*
Foreign key *FOREIGNKEY*

Destination table
Name *INCIDENTAL_PHOTOS_TABLE*

No relationship rules defined.

Table
INCIDENTAL_PHOTOS_TABLE

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
FOREIGNKEY	GUID	Yes			0	0	38
PHOTO_CONTAINS_BUILDING	Short integer	Yes		Yes_No_Int	5		
PHOTO	Raster	Yes			0	0	4

Field Surveys Geodatabase Schema Diagrams: Vernal Pool Invertebrates 1 of 2

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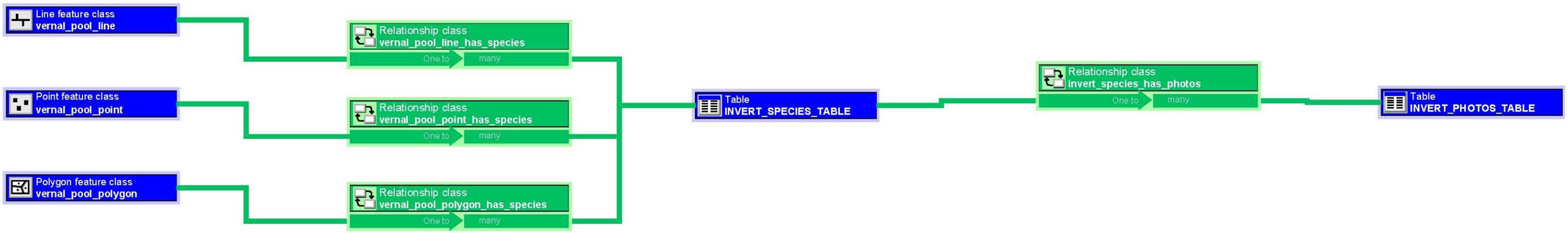

Simple feature class
vernal_pool_line

Geometry *Polyline*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
POOL_ID	String	Yes					20
SURVEYOR1	String	Yes					25
SURVEYOR2	String	Yes					25
GPS_ID	Long integer	Yes			10		
PARCEL_APN	String	Yes					50
DATE_TIME_	Date	Yes			0	0	36
SITE	String	Yes					50
MAX_DEPTH_IN	Double	Yes			38	8	
SURFACE_AREA_M	String	Yes					20
WATER_TEMP_C	Double	Yes			38	8	
NOTES	String	Yes					250
VP	String	Yes					50
ACCURACY_METERS	Double	Yes			38	8	
FIELD_FORM_QC	Short integer	Yes		Yes_No_Int	5		
QC_BY	String	Yes					15
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
YEAR	Long integer	Yes			10		
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
SHAPE.LEN	Double	No			0	0	

Relationship class
vernal_pool_line_has_species

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *INVERT_SPECIES_TABLE*
Backward label *vernal_pool_line*

Origin feature class
Name *vernal_pool_line*
Primary key *POOL_ID*
Foreign key *VP_LINE*

Destination table
Name *INVERT_SPECIES_TABLE*

No relationship rules defined.

To: INVERT_SPECIES_TABLE

Simple feature class
vernal_pool_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
POOL_ID	String	Yes					20
SURVEYOR1	String	Yes					25
SURVEYOR2	String	Yes					25
GPS_ID	Long integer	Yes			10		
PARCEL_APN	String	Yes					50
DATE_TIME_	Date	Yes			0	0	36
SITE	String	Yes					50
MAX_DEPTH_IN	Double	Yes			38	8	
SURFACE_AREA_M	String	Yes					20
WATER_TEMP_C	Double	Yes			38	8	
NOTES	String	Yes					250
VP	String	Yes					50
ACCURACY_METERS	Double	Yes			38	8	
FIELD_FORM_QC	Short integer	Yes		Yes_No_Int	5		
QC_BY	String	Yes					15
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
YEAR	Long integer	Yes			10		
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38

Relationship class
vernal_pool_point_has_species

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *INVERT_SPECIES_TABLE*
Backward label *vernal_pool_point*

Origin feature class
Name *vernal_pool_point*
Primary key *POOL_ID*
Foreign key *VP_POINT*

Destination table
Name *INVERT_SPECIES_TABLE*

No relationship rules defined.

To: INVERT_SPECIES_TABLE

Simple feature class
vernal_pool_polygon

Geometry *Polygon*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
POOL_ID	String	Yes					20
SURVEYOR1	String	Yes					25
SURVEYOR2	String	Yes					25
GPS_ID	Long integer	Yes			10		
PARCEL_APN	String	Yes					50
DATE_TIME_	Date	Yes			0	0	36
SITE	String	Yes					50
MAX_DEPTH_IN	Double	Yes			38	8	
SURFACE_AREA_M	String	Yes					20
WATER_TEMP_C	Double	Yes			38	8	
NOTES	String	Yes					250
VP	String	Yes					50
ACCURACY_METERS	Double	Yes			38	8	
FIELD_FORM_QC	Short integer	Yes		Yes_No_Int	5		
QC_BY	String	Yes					15
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
YEAR	Long integer	Yes			10		
SHAPE	Geometry	Yes					
GLOBALID	GUID	No			0	0	38
SHAPE.AREA	Double	No			0	0	
SHAPE.LEN	Double	No			0	0	

Relationship class
vernal_pool_polygon_has_species

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *INVERT_SPECIES_TABLE*
Backward label *vernal_pool_polygon*

Origin feature class
Name *vernal_pool_polygon*
Primary key *POOL_ID*
Foreign key *VP_POLYGON*

Destination table
Name *INVERT_SPECIES_TABLE*

No relationship rules defined.

To: INVERT_SPECIES_TABLE

Field Surveys Geodatabase Schema Diagrams: Vernal Pool Invertebrates 2 of 2

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To: vernal_pool_polygon_has_species

To: vernal_pool_line_has_species

To: vernal_pool_point_has_species

Table
INVERT_SPECIES_TABLE

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SURVEYOR1	String	Yes					50
SURVEYOR2	String	Yes					25
DATE_TIME	Date	Yes			0	0	36
WEATHER	String	Yes					75
START_TIME	String	Yes					50
END_TIME	String	Yes					50
PHOTOS	String	Yes					150
MAX_DEPTH_IN	Double	Yes			38	8	
SUFACE_AREA_M	String	Yes					20
WATER_TEMP_C	Double	Yes			38	8	
BRLY	Short integer	Yes		Magnitude	5		
BRLI	Short integer	Yes		Magnitude	5		
BRSP	Short integer	Yes		Magnitude	5		
LEPA	Short integer	Yes		Magnitude	5		
LIOC	Short integer	Yes		Magnitude	5		
BRCO	Short integer	Yes		Magnitude	5		
BRLO	Short integer	Yes		Magnitude	5		
BRMA	Short integer	Yes		Magnitude	5		
BRME	Short integer	Yes		Magnitude	5		
CYCA	Short integer	Yes		Magnitude	5		
AMPHIPODA	Short integer	Yes	0	Yes_No_Int	5		
ANISOPTERA	Short integer	Yes	0	Yes_No_Int	5		
BELOSTOMATIDAE	Short integer	Yes	0	Yes_No_Int	5		
CERATOPOGONIDAE	Short integer	Yes	0	Yes_No_Int	5		
CHIRONOMIDAE	Short integer	Yes	0	Yes_No_Int	5		
CLADOCERA	Short integer	Yes	0	Yes_No_Int	5		
COPEPODS	Short integer	Yes	0	Yes_No_Int	5		
CORIXIDAE	Short integer	Yes	0	Yes_No_Int	5		
CULICIDAE	Short integer	Yes	0	Yes_No_Int	5		
DYTISCIDAE	Short integer	Yes	0	Yes_No_Int	5		
EPHYDRIDAE	Short integer	Yes	0	Yes_No_Int	5		
GASTROPODAE	Short integer	Yes	0	Yes_No_Int	5		
HYDRACARINA	Short integer	Yes	0	Yes_No_Int	5		
HYDROPHILIDAE	Short integer	Yes	0	Yes_No_Int	5		
MICROTURBELLARIA	Short integer	Yes	0	Yes_No_Int	5		
NOTONECTIDAE	Short integer	Yes	0	Yes_No_Int	5		
OSTRACODS	Short integer	Yes	0	Yes_No_Int	5		
SYRPHIDAE	Short integer	Yes	0	Yes_No_Int	5		
ZYGOPTERA	Short integer	Yes	0	Yes_No_Int	5		
AMPHIBIANS	Short integer	Yes	0	Yes_No_Int	5		
AMPHIBIAN_SPECIES	String	Yes					100
OTHER	String	Yes					100
NOTES	String	Yes					250
VP_POINT	String	Yes					25
VP_LINE	String	Yes					25
VP_POLYGON	String	Yes					25
QC_BY	String	Yes					15
EDITOR_NAME	String	Yes					25
EDIT_DATE	Date	Yes			0	0	36
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
YEAR	Long integer	Yes			10		
GLOBALID_1	GUID	No			0	0	38

Relationship class
invert_species_has_photos

Type *Simple*
Cardinality *One to many*
Notification *Forward*

Forward label *INVERT_PHOTOS_TABLE*
Backward label *INVERT_SPECIES_TABLE*

Origin feature class
Name *INVERT_SPECIES_TABLE*
Primary key *GLOBALID_1*
Foreign key *FOREIGNKEY_*

Destination table
Name *INVERT_PHOTOS_TABLE*

No relationship rules defined.

Table
INVERT_PHOTOS_TABLE

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
PHOTO	Raster	Yes			0	0	4
GLOBALID	GUID	No			0	0	38
FOREIGNKEY_	GUID	Yes			0	0	38
PHOTO_SHOWS_BUILDINGS	Short integer	Yes		Yes_No_Int	5		

Field Surveys Geodatabase Schema Diagrams: Riparian Mammals

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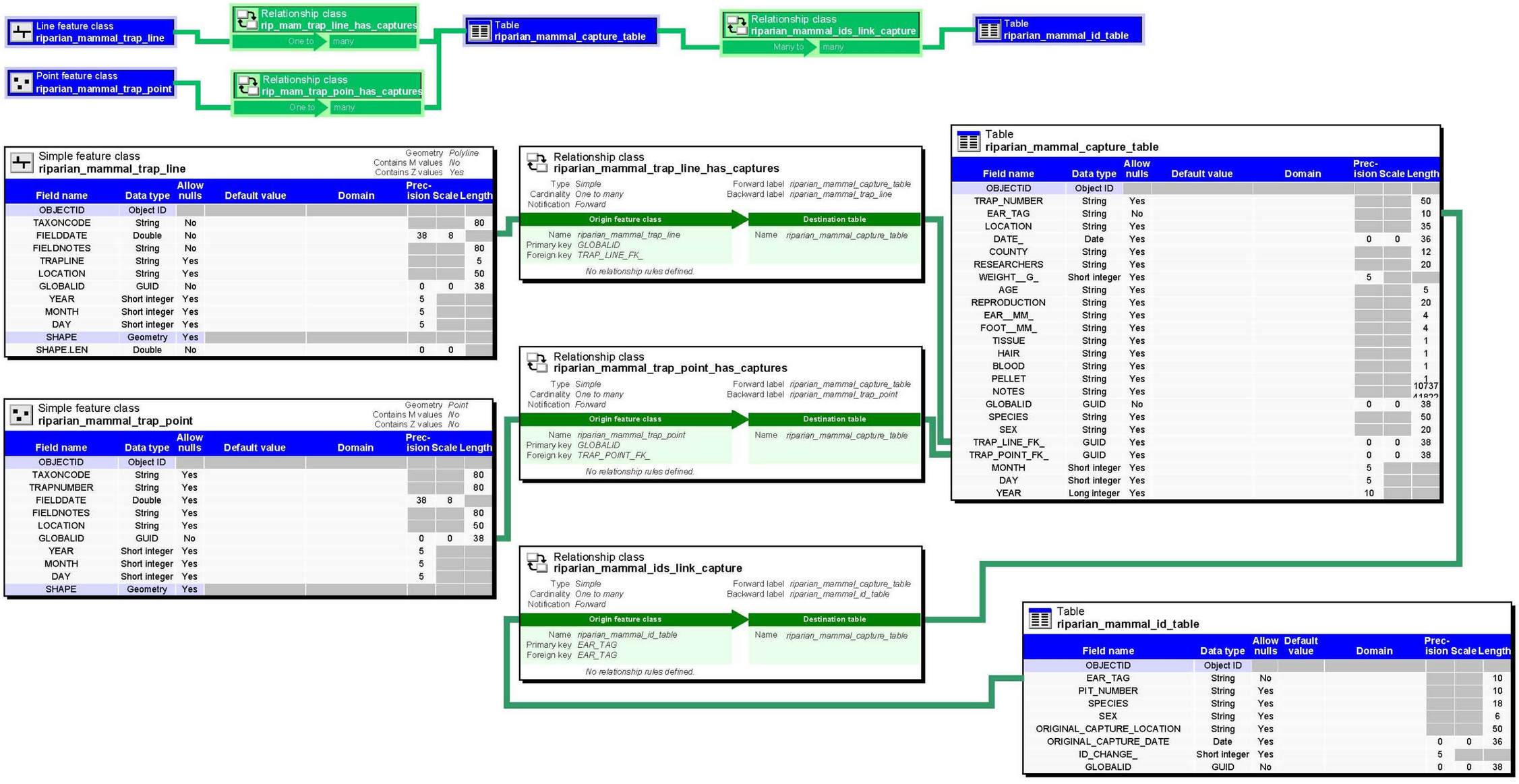

Simple feature class: riparian_mammal_trap_line

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
TAXONCODE	String	No					80
FIELDDATE	Double	No			38	8	
FIELDNOTES	String	No					80
TRAPLINE	String	Yes					5
LOCATION	String	Yes					50
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					
SHAPE.LEN	Double	No			0	0	

Simple feature class: riparian_mammal_trap_point

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
TAXONCODE	String	Yes					80
TRAPNUMBER	String	Yes					80
FIELDDATE	Double	Yes			38	8	
FIELDNOTES	String	Yes					80
LOCATION	String	Yes					50
GLOBALID	GUID	No			0	0	38
YEAR	Short integer	Yes			5		
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
SHAPE	Geometry	Yes					

Table: riparian_mammal_capture_table

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
TRAP_NUMBER	String	Yes					50
EAR_TAG	String	No					10
LOCATION	String	Yes					35
DATE_	Date	Yes			0	0	36
COUNTY	String	Yes					12
RESEARCHERS	String	Yes					20
WEIGHT__G_	Short integer	Yes			5		
AGE	String	Yes					5
REPRODUCTION	String	Yes					20
EAR__MM_	String	Yes					4
FOOT__MM_	String	Yes					4
TISSUE	String	Yes					1
HAIR	String	Yes					1
BLOOD	String	Yes					1
PELLET	String	Yes					1
NOTES	String	Yes					10737
GLOBALID	GUID	No			0	0	38
SPECIES	String	Yes					50
SEX	String	Yes					20
TRAP_LINE_FK_	GUID	Yes			0	0	38
TRAP_POINT_FK_	GUID	Yes			0	0	38
MONTH	Short integer	Yes			5		
DAY	Short integer	Yes			5		
YEAR	Long integer	Yes			10		

Table: riparian_mammal_id_table

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
EAR_TAG	String	No					10
PIT_NUMBER	String	Yes					10
SPECIES	String	Yes					18
SEX	String	Yes					6
ORIGINAL_CAPTURE_LOCATION	String	Yes					50
ORIGINAL_CAPTURE_DATE	Date	Yes			0	0	36
ID_CHANGE_	Short integer	Yes			5		
GLOBALID	GUID	No			0	0	38

Field Surveys Geodatabase Schema Diagrams: Site Reconnaissance 1 of 4

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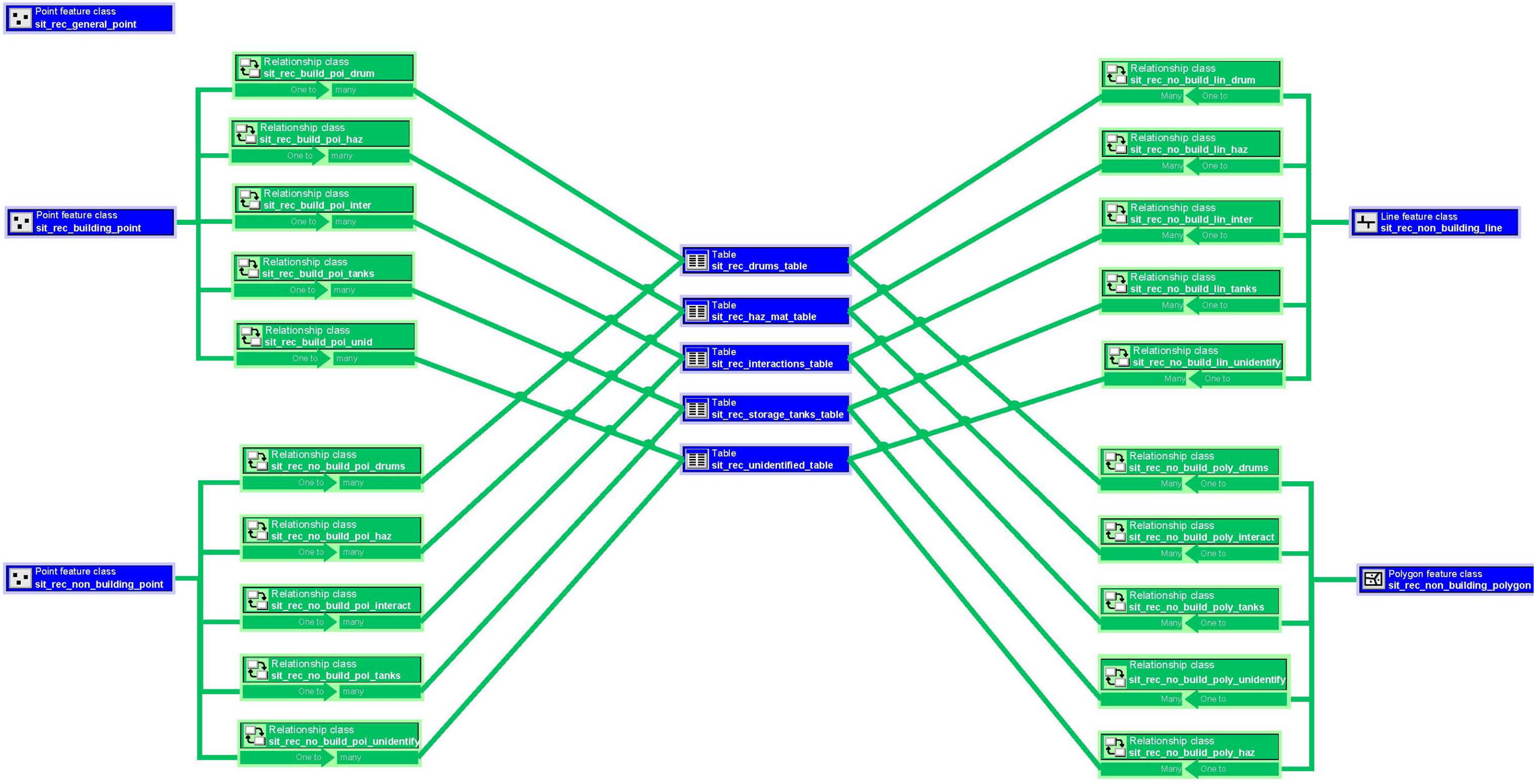

Field Surveys Geodatabase Schema Diagrams: Site Reconnaissance 2 of 4

DRAFT

Simple feature class
site_recon_general_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Prec-ision	Scale	Length
OBJECTID	Object ID						
SHAPE	Geometry	Yes					
DateTime_	Date	Yes			0	0	8
Observer1	String	Yes					50
Observer2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	0		
CurrentUses	String	Yes					250
TreatHazMat	Short integer	Yes		Yes_No_Int	0		
StoreHazMat	Short integer	Yes		Yes_No_Int	0		
DisposeHazMat	Short integer	Yes		Yes_No_Int	0		
GenerateHazMat	Short integer	Yes		Yes_No_Int	0		
PastUses	String	Yes					250
AdjoiningPropertyUses	String	Yes					250
SurroundingAreaUses	String	Yes					250
SurroundingAreaResidential	Short integer	Yes		Yes_No_Int	0		
SurroundingAreaCommercial	Short integer	Yes		Yes_No_Int	0		
SurroundingAreaIndustrial	Short integer	Yes		Yes_No_Int	0		
Topography	String	Yes					250
Structures	String	Yes					250
NumOfStructures	Short integer	Yes			0		
NumOfStories	Short integer	Yes			0		
StructuresAge	Short integer	Yes			0		
Roads	String	Yes					250
PublicThoroughfares	Short integer	Yes		Yes_No_Int	0		
AdjoiningPropRoads	Short integer	Yes		Yes_No_Int	0		
Streets	Short integer	Yes		Yes_No_Int	0		
ParkingFacilities	Short integer	Yes		Yes_No_Int	0		
PotableWaterSource	String	Yes					250
SewageDisposalSource	String	Yes					250
AgeOfSewageDisposalSource	Short integer	Yes			0		
FormQ_C	Short integer	Yes		Yes_No_Int	0		
Photos	String	Yes					250
Average_Accuracy_Meters	Double	Yes			0	0	

Field Surveys Geodatabase Schema Diagrams: Site Reconnaissance 3 of 4

Simple feature class
site_recon_building_point

Geometry *Point*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SHAPE	Geometry	Yes					
Date_Time	Date	Yes			0	0	8
Observer1	String	Yes					50
Observer2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	0		
CurrentUse	String	Yes					250
PastUse	String	Yes					250
OdorsDescribe	String	Yes					250
OdorsSource	String	Yes					50
PoolsOfLiquid	String	Yes					250
PCB	String	Yes					250
HeatingCooling	String	Yes					250
StainsCorrosion	String	Yes					250
DrainsSumps	String	Yes					250
Pictures	String	Yes					250
Average_Accuracy_Meters	Double	Yes			0	0	
Data_Form_Q_C	Short integer	Yes		Yes_No_Int	0		

Relationship class
sit_rec_build_poi_drum

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *site_recon_drums_table*
Backward label *site_recon_building_point*

Origin feature class: Name *sit_rec_building_point*, Primary key *OBJECTID*, Foreign key *ForeignKey*
Destination table: Name *sit_rec_drums_table*

No relationship rules defined.

To sit_rec_no_build_poi_drum
To sit_rec_no_build_lin_drum
To sit_rec_no_build_poly_drum

Table
sit_rec_drums_table

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
QUANTITY	Long integer	Yes			0		
CONTENT	String	Yes					50
LEAKING	Short integer	Yes		Yes_No_Int	0		
FOREIGNKEY	Long integer	Yes			0		
FK_NON_BUILDING_POINT	Long integer	Yes			0		
FK_NON_BUILDING_LINE	Long integer	Yes			0		
FK_NON_BUILDING_POLYGON	Long integer	Yes			0		

Relationship class
sit_rec_build_poi_haz

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *site_recon_haz_mat_table*
Backward label *site_recon_building_point*

Origin feature class: Name *sit_rec_building_point*, Primary key *OBJECTID*, Foreign key *ForeignKey*
Destination table: Name *sit_rec_haz_mat_table*

No relationship rules defined.

To sit_rec_no_build_poi_haz
To sit_rec_no_build_lin_haz
To sit_rec_no_build_poly_haz

Table
sit_rec_haz_mat_table

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
ID	String	Yes					50
QUANTITY	Long integer	Yes			0		
CONTAINERTYPE	String	Yes					50
STORAGECONDITION	String	Yes					50
FOREIGNKEY	Long integer	Yes			0		
FK_NON_BUILDING_POINT	Long integer	Yes			0		
FK_NON_BUILDING_LINE	Long integer	Yes			0		
FK_NON_BUILDING_POLYGON	Long integer	Yes			0		

Relationship class
sit_rec_build_poi_inter

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *site_recon_interactions_table*
Backward label *site_recon_building_point*

Origin feature class: Name *sit_rec_building_point*, Primary key *OBJECTID*, Foreign key *ForeignKey*
Destination table: Name *sit_rec_interactions_table*

No relationship rules defined.

To sit_rec_no_build_poi_inter
To sit_rec_no_build_lin_inter
To sit_rec_no_build_poly_inter

Table
sit_rec_interactions_table

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
CHEMICAL	String	Yes					50
QUANTITY	String	Yes					50
CONTAINERTYPE	String	Yes					50
STORAGECONDITIONS	String	Yes					50
EXTENTOFCONTAMINATION	String	Yes					50
FOREIGNKEY	Long integer	Yes			0		
FK_NON_BUILDING_POINT	Long integer	Yes			0		
FK_NON_BUILDING_LINE	Long integer	Yes			0		
FK_NON_BUILDING_POLYGON	Long integer	Yes			0		

Relationship class
sit_rec_build_poi_tanks

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *site_recon_storage_tanks_table*
Backward label *site_recon_building_point*

Origin feature class: Name *sit_rec_building_point*, Primary key *OBJECTID*, Foreign key *ForeignKey*
Destination table: Name *sit_rec_storage_tanks_table*

No relationship rules defined.

To sit_rec_no_build_poi_tanks
To sit_rec_no_build_lin_tanks
To sit_rec_no_build_poly_tanks

Table
sit_rec_storage_tanks_table

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
LOCATION	Short integer	Yes		Site_Recon_Storage_Location	0		
VENT_PIPES	Short integer	Yes		Yes_No_Int	0		
FILL_PIPES	Short integer	Yes		Yes_No_Int	0		
ACCESS_WAYS	Short integer	Yes		Yes_No_Int	0		
CONTENT	String	Yes					50
CAPACITY	String	Yes					50
AGE	String	Yes					25
FOREIGNKEY	Long integer	Yes			0		
FK_NON_BUILDING_POINT	Long integer	Yes			0		
FK_NON_BUILDING_LINE	Long integer	Yes			0		
FK_NON_BUILDING_POLYGON	Long integer	Yes			0		

Relationship class
sit_rec_build_poi_unid

Type *Simple*
Cardinality *One to many*
Notification *Forward*
Forward label *site_recon_unidentified_table*
Backward label *site_recon_building_point*

Origin feature class: Name *sit_rec_building_point*, Primary key *OBJECTID*, Foreign key *ForeignKey*
Destination table: Name *sit_rec_unidentified_table*

No relationship rules defined.

To sit_rec_no_build_poi_unidentify
To sit_rec_no_build_lin_unidentify
To sit_rec_no_build_poly_unidentify

Table
sit_rec_unidentified_table

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
QUANTITY	Long integer	Yes			0		
CONTAINERTYPE	String	Yes					50
STORAGECONDITION	String	Yes					50
FOREIGNKEY	Long integer	Yes			0		
FK_BUILDING_POINT	Long integer	Yes			0		
FK_NON_BUILDING_POINT	Long integer	Yes			0		
FK_NON_BUILDING_LINE	Long integer	Yes			0		
FK_NON_BUILDING_POLYGON	Long integer	Yes			0		

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Field Surveys Geodatabase Schema Diagrams: Site Reconnaissance 4 of 4

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The Relationship classes associated with the feature classes shown on this page are formated the same way as the relationship classes shown on the previous page. The tables associated with the feature classes shown on this page are shown on the previous page.

Simple feature class
site_recon_non_building_point

Geometry
Contains M values
Contains Z values Yes

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SHAPE	Geometry	Yes					
DateTime_	Date	Yes			0	0	8
Observer1	String	Yes					50
Observer2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	0		
WastePitPondLagoon	Short integer	Yes		Yes_No_Int	0		
StainedSoil	Short integer	Yes		Yes_No_Int	0		
StressedVegetation	Short integer	Yes		Yes_No_Int	0		
SolidWaster	Short integer	Yes		Yes_No_Int	0		
WasteWater	Short integer	Yes		Yes_No_Int	0		
WastWaterDrainage	Short integer	Yes		Site_Recon_Waste_Water	0		
Well	Short integer	Yes		Yes_No_Int	0		
WellType	Short integer	Yes		Site_Recon_Wells	0		
SepticSystem	Short integer	Yes		Yes_No_Int	0		
Form_Q_C	Short integer	Yes		Yes_No_Int	0		
Pictures	String	Yes					250
Average_Accuracy_Meters	Double	Yes			0	0	
Odors	Short integer	Yes		Yes_No_Int	0		
PoolsOfLiquid	Short integer	Yes		Yes_No_Int	0		
PCB	Short integer	Yes		Yes_No_Int	0		
Comments	String	Yes					250

To:
sit_rec_no_build_poi_drums,
sit_rec_no_build_poi_haz,
sit_rec_no_build_poi_inter,
sit_rec_no_build_poi_tanks,
sit_rec_no_build_poi_unidentify

Simple feature class
site_recon_non_building_line

Geometry *Polyline*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
SHAPE	Geometry	Yes					
DateTime_	Date	Yes			0	0	8
Observer1	String	Yes					50
Observer2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	0		
WastePitPondLagoon	Short integer	Yes		Yes_No_Int	0		
StainedSoil	Short integer	Yes		Yes_No_Int	0		
StressedVegetation	Short integer	Yes		Yes_No_Int	0		
SolidWaster	Short integer	Yes		Yes_No_Int	0		
WasteWater	Short integer	Yes		Yes_No_Int	0		
WastWaterDrainage	Short integer	Yes		Site_Recon_Waste_Water	0		
Well	Short integer	Yes		Yes_No_Int	0		
WellType	Short integer	Yes		Site_Recon_Wells	0		
SepticSystem	Short integer	Yes		Yes_No_Int	0		
Form_Q_C	Short integer	Yes		Yes_No_Int	0		
Pictures	String	Yes					250
Average_Accuracy_Meters	Double	Yes			0	0	
Odors	Short integer	Yes		Yes_No_Int	0		
PoolsOfLiquid	Short integer	Yes		Yes_No_Int	0		
PCB	Short integer	Yes		Yes_No_Int	0		
Comments	String	Yes					250
SHAPE_Length	Double	Yes			0	0	

To:
sit_rec_no_build_lin_drums,
sit_rec_no_build_lin_haz,
sit_rec_no_build_lin_inter,
sit_rec_no_build_lin_tanks,
sit_rec_no_build_lin_unidentify

Simple feature class
sit_rec_non_building_polygon

Geometry *Polygon*
Contains M values *No*
Contains Z values *Yes*

Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OBJECTID	Object ID						
DATETIME_	Date	Yes			0	0	8
OBSERVER1	String	Yes					50
OBSERVER2	String	Yes					50
GPS_ID	Long integer	Yes		GPSID	0		
WASTEPITPONDLAGOON	Short integer	Yes		Yes_No_Int	0		
STAINEDSOIL	Short integer	Yes		Yes_No_Int	0		
STRESSEDVEGETATION	Short integer	Yes		Yes_No_Int	0		
SOLIDWASTER	Short integer	Yes		Yes_No_Int	0		
WASTEWATER	Short integer	Yes		Yes_No_Int	0		
WASTWATERDRAINAGE	Short integer	Yes		Site_Recon_Waste_Water	0		
WELL	Short integer	Yes		Yes_No_Int	0		
WELLTYPE	Short integer	Yes		Site_Recon_Wells	0		
SEPTICSYSTEM	Short integer	Yes		Yes_No_Int	0		
FORM_Q_C	Short integer	Yes		Yes_No_Int	0		
PICTURES	String	Yes					250
AVERAGE_ACCURACY_METERS	Double	Yes			0	0	
ODORS	Short integer	Yes		Yes_No_Int	0		
POOLSOFLIQUID	Short integer	Yes		Yes_No_Int	0		
PCB	Short integer	Yes		Yes_No_Int	0		
COMMENTS	String	Yes					250
SHAPE	Geometry	Yes					
SHAPE_Length	Double	Yes			0	0	
SHAPE_Area	Double	Yes			0	0	

To:
sit_rec_no_build_poly_drums,
sit_rec_no_build_poly_haz,
sit_rec_no_build_poly_inter,
sit_rec_no_build_poly_tanks,
sit_rec_no_build_poly_unidentify

APPENDIX D:
ALTERNATE DATA MANAGEMENT FLOWCHART

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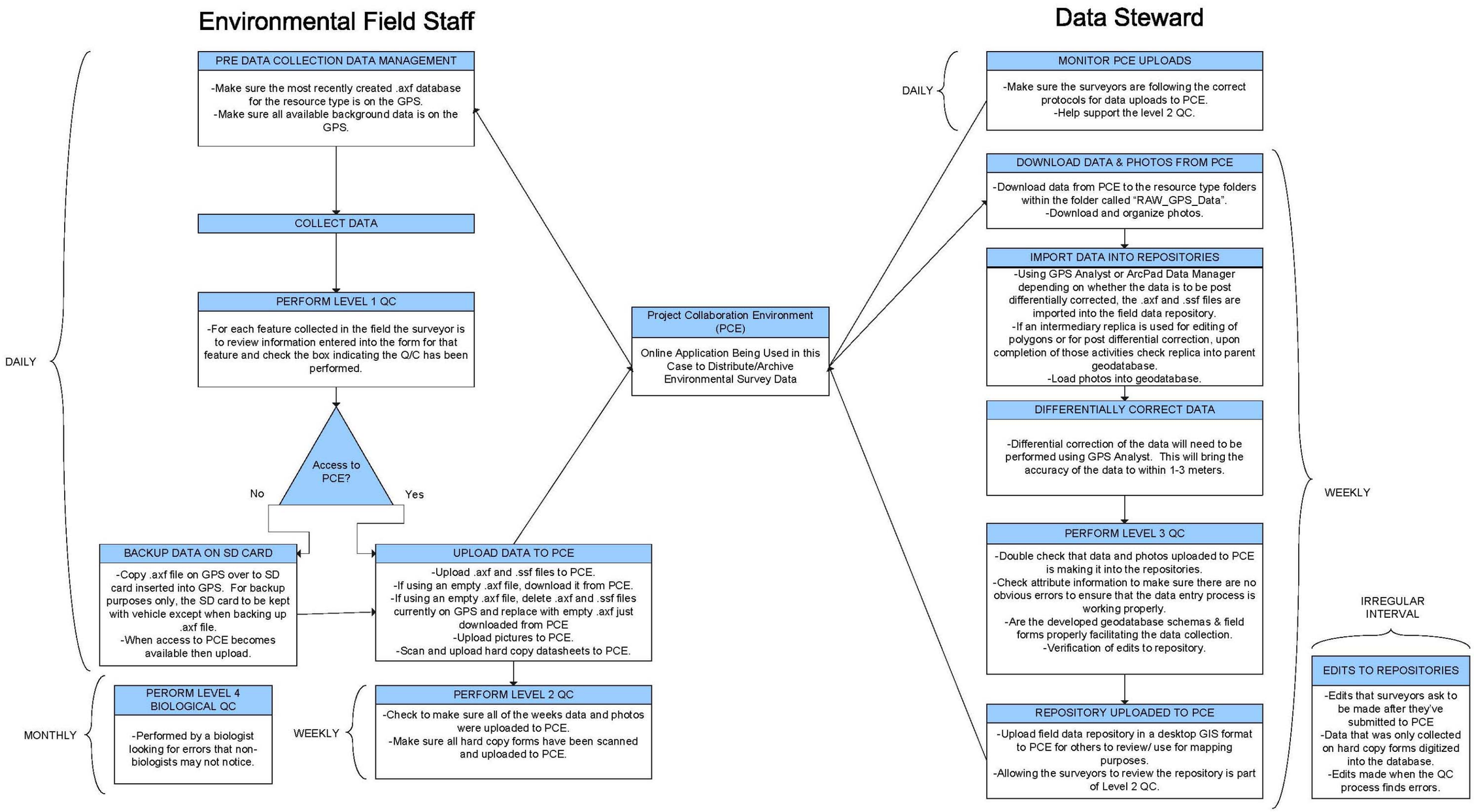
Environmental Surveys GIS Data Management

5/24/2010 DRAFT



APPENDIX E:
HARD COPY DATA ENTRY FORMS

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BDCP Review Area
Avian Data Sheet

Surveyors_____ Date_____

Parcel Number_____ Time_____

Weather_____ Temperature _____

Species	Habitat	Activity	Number	GPS	Distance	Direction

Comments:

Species

Double-crested Cormorant – DCCO
Least Bittern – LEBI
Great Blue Heron – GBHE
Great Egret – GREG
Snowy Egret – SNEG
Black-crowned Night Heron – BCHE
White-faced Ibis – WFIB
Redhead – REDH
Northern Harrier – NOHA
White-tailed Kite – WTKI
Cooper's Hawk – COHA
Swainson's Hawk – SWHA
Osprey - OSPR
California Black Rail - BLRA
Sandhill Crane – SACR
Yellow-billed Cuckoo - YBCU
Short-eared Owl - SEOW
Burrowing Owl – BUOW
Loggerhead Shrike - LOSH
Bank Swallow - BANS
Yellow-breasted Chat - YBCH
Grasshopper Sparrow – GRSP
Song Sparrow - SOSP
Tricolored Blackbird – TRBL
Yellow-headed Blackbird - YHBL

Habitat – Habitat which the species was observed using

Activity – Nesting (any nesting-related behavior), Perched (at potential/likely nest site or area)

Number – number observed doing that behavior

GPS – Reference location or actual location of bird

Distance – Distance to (nearest) bird from reference location

Direction - to bird or center of flock

Botany

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Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name:

Common Name:

Species Found? ☐ Yes ☐ No _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: _____
Address: _____
_____
E-mail Address: _____
Phone: _____

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: _____ Landowner / Mgr.: _____
Quad Name: _____ Elevation: _____
T____ R____ Sec ____, ____ ¼ of _____¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____
T____ R____ Sec ____, ____ ¼ of _____¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
DATUM: **NAD27** ☐ **NAD83** ☐ **WGS84** ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ ***OR*** Geographic (Latitude & Longitude) ☐
Coordinates:

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☐ Fair ☐ Poor
Immediate AND surrounding land use:
Visible disturbances:
Threats:
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☐ no ☐

DFG/BDB/1747 Rev. 6/16/09

1

[1] Citation: California Natural Diversity Database of the California Department of Fish and Game

_____ QC
(initial when complete)

Terrestrial Floristic Surveys Form

Please complete one survey form per botanist for each parcel

Parcel APN: _____ **Date:** _____
Your name: _____ **Start time:** _____
Team mate: _____ **End Time:** _____

Commonly Encountered Plants

☐	Arundo donax	☐	Hordeum murinum	☐	Raphanus sativus
☐	Avena fatua	☐	Lactuca serriola	☐	Rosa californica
☐	Brassica nigra	☐	Lepidium latifolium	☐	Rubus discolor
☐	Bromus diandrus	☐	Leymus triticoides	☐	Rumex crispus
☐	Bromus hordaceus	☐	Lolium multiflorum	☐	Salix exigua
☐	Carduus pycnocephalus	☐	Lolium perenne	☐	Salsola tragus
☐	Centaurea solsticialis	☐	Lotus corniculatus	☐	Scirpus acutus (=Schoenoplectus)
☐	Conium maculatum	☐	Lotus purshianus	☐	Scirpus californicus (=Schoenoplec
☐	Cynodon dactylon	☐	Melilotus sp.	☐	Silybum marianum
☐	Cyperus eragrostis	☐	Nicotiana glauca	☐	Typha latifolia
☐	Distichlis spicata	☐	Picris echioides	☐	Urtica dioica
☐	Foeniculum vulgare	☐	Polypogon monspeliensis	☐	Vicia sativa
☐	Hordeum marinum	☐	Populus fremontii	☐	Xanthium strumarium

Other Plants

Habitats Targeted?

DFG mapping confirmation (1/2 acre scale)

Comments:

Return Survey Needed? Yes No

Reason:

Special Status Plants Found:	GPS	Photo	Map
If none found, take <null point>			

Aquatic Floristic Surveys Form

Please complete one survey form per botanist for each parcel

Parcel APN: _____ **Date:** _____

Surveyor: _____ **Start time:** _____

Team mate: _____ **End time:** _____

Commonly Encountered Plants

- [ ] Alnus rhombifolia
- [ ] Arundo donax
- [ ] Aster subulatus
- [ ] Cephalanthus occidentalis
- [ ] Cynodon dactylon
- [ ] Cyperus eragrostis
- [ ] Egeria densa
- [ ] Eichornia crassipes
- [ ] Epilobium ciliatum
- [ ] Equisetum arvense
- [ ] Equisetum hyemale
- [ ] Euthamia occidentalis
- [ ] Iris pseudacorus
- [ ] Juglans hindsii
- [ ] Myriophyllum sp.
- [ ] Nicotiana glauca
- [ ] Paspalum sp.
- [ ] Hydrocotyle sp.
- [ ] Polygonum amphibium
- [ ] Populus fremontii
- [ ] Rosa californica
- [ ] Rubus discolor
- [ ] Salix exigua
- [ ] Salix gooddingii
- [ ] Salix laevigata
- [ ] Salix lasiolepis
- [ ] Salsola tragus
- [ ] Scirpus acutus (=Schoenoplectus)
- [ ] Scirpus californica (=Schoenoplectus)
- [ ] Typha angustifolia
- [ ] Typha latifolia
- [ ] Verbena bonariensis

Other Plants

Habitats Targeted?

DFG Mapping confirmation (1/2 acre scale)

Comments:

Return Survey Needed? Yes No

Reason:

Special Status Plants Found:	GPS	Photo	Map
If none found, take <null point>			

Cultural

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State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

Page of | *Resource Name or #:

P1. Other Ident fier:
*P2. Location: ☐ Not for Publication ☐ Unrestricted *a. County:
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5 Quad: Date: T ; R ; ¼ of ¼ of Sec ; M.D. B.M.
c. Address: City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel#, directions to resource, elevation, etc., as appropriate) Elevation:

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

*P3b. Resource Attributes: (List attributes and codes)
*P4. Resources Present: ☐Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)

*P6. Date Constructed/Age and Sources: ☐Historic ☐Prehistoric ☐Both

*P7. Owner and Address:

*P8. Recorded by: (Name, affiliation, and address)

*P9. Date Recorded:
*P10. Survey Type: (Describe)

*P11. Report Citation: (Cite survey report and other sources, or enter "none.")

*Attachments: ☐NONE ☐Location Map ☐Sketch Map ☐Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

DPR 523A (1/95)

*Required information

Herpetofauna

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GIANT GARTER SNAKE HABITAT EVALUATION AND SCORING FORM

Site Name:_____ **Trap Line ID #:**_____

Parcel #s:_____

General Habitat Type:_____

Surveyor/Affiliation:_____

Start/End Dates:_____ **Evaluation Date:**_____ **Photos:**_____

Scores: 0=absent/none, 1=present/low (<25%), 2=moderate (25-75%), 3=high (>75%)

Factor (* indicates either present or absent)	**State**	**Score**
1. Water available:		
a) Winter only (runoff) or sporadic availability (score = 1)	( )	( ) +
b) April through October only (score = 2)	( )	( ) +
c) All year (score = 3)	( )	( ) +
2. Water velocity (active season):		
a) Still or slow flow	( )*	( ) +
b) High flows	( )*	( ) --
3. Substrate:		
a) Silt	( )*	( ) +
b) Sand, gravel, rock	( )*	( ) --
4. Banks are sunny	( )	( ) +
5. Banks shaded by riparian overstory vegetation	( )	( ) –
6. Aquatic or emergent vegetation present	( )	( ) +
Dominant species†:_____		
7. Terrestrial vegetation present		
a) On banks	( )	( ) +
Dominant species†:_____		
b) In adjacent uplands	( )	( ) +
Dominant species†:_____		
8. Subterranean retreats present		
a) In banks	( )*	( ) +
b) In adjacent uplands	( )*	( ) +
9. Prey amphibians present	( )*	( ) +
10. Prey fish present	( )*	( ) +
11. Introduced gamefish present	( )*	( ) --
12. Site subject to severe seasonal or tidal flooding	( )*	( ) --
13. Adjacent land use:		
a) Rice	( )*	( ) +
b) Natural Uplands	( )*	( ) +
c) Row Crop	( )*	( ) --
d) Urban	( )*	( ) --
14. Disturbance due to human recreational or maintenance activities	( )*	( ) --
15. Connectivity to known populations of GGS (within 5 miles)	( )*	( ) +

† Up to three species and their respective cover classes (1 = 0-25%, 2 = 25-50%, 3 = 50-75%, 4 = 75-100%)

Total Score: [ ]

Additional Notes:

_____

_____

_____

_____

MORPHOMETRIC DATA

Capture Date_____ PIT Tag No._____

Capture Location E _____ N_____ Site _____ Trap # 1 _____

USGS 7.5' Quadrangle _____ Tnshp _____ Range _____

Mass (g) _____ DNA Collected Y/N

Sex _____

No. of Supralabials L _____ R _____ (Total) _____
No. of Infralabials L _____ R _____ (Total) _____
No. of Preoculars L _____ R _____ (Total) _____
No. of Postoculars L _____ R _____ (Total) _____

No. of Dorsal Scale Rows at Mid Body _____

Vent-Tail Length (VTL) mm _____

Snout-Vent Length (SVL) mm _____

Subcaudal Count (if tail intact) _____
(male ≥77, not ≥ 85)(female ≥ 71, not ≥ 76)

InR = _____ (Internasal-Rostral Contact) W of S6 at midht = _____ (Supralabial)

NR = _____ (Naso-Rostral Contact) W of S7 at midht = _____ (Supralabial)

(InR/NR ≤ 96% in T. gigas) (WS7>WS6 in T. gigas)

Notes: _____

Recaptures:

Date	Mass (g)	SVL (mm)	VTL (mm)	Release Date	Easting	Northing	Notes

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by_____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: _____
(mm/dd/yyyy)

Site Assessment Biologists: _____ _____
(Last name) (first name) (Last name) (first name)

_____ _____
(Last name) (first name) (Last name) (first name)

Site Location:_____
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____
_____
_____

Substrate: _____
_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

22 [2]

[2] Citation: U.S. Fish and Wildlife Service. 2005. Revised guidance on site assessment and field surveys for the California red-legged frog. 25 pp.

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: _____
Depth at bank full: _____
Stream gradient: _____

Are there pools (circle one)? YES NO
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____
_____
_____

Vegetation: emergent, overhanging, dominant species: _____
_____
_____

Substrate: _____
_____

Bank description: _____
_____
_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species location

23 [3]

[3] Citation: U.S. Fish and Wildlife Service. 2005. Revised guidance on site assessment and field surveys for the California red-legged frog. 25 pp.

Appendix E.
California Red-legged Frog Survey Data Sheet

Survey results reviewed by_____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Survey: _____ (mm/dd/yyyy)

Survey Biologist: _____ (Last name) (first name)

Survey Biologist: _____ (Last name) (first name)

Site Location:_____
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: _____
Brief description of proposed action:

Type of Survey (circle one): **DAY NIGHT** **BREEDING NON-BREEDING**

Survey number (circle one): **1 2 3 4 5 6 7 8**

Begin Time:_____ **End Time:**_____

Cloud cover:_____ **Precipitation:**_____

Air Temperature:_____ **Water Temperature:**_____

Wind Speed:_____ **Visibility Conditions:**_____

Moon phase:_____ **Humidity:**_____

Description of weather conditions: _____

Brand name and model of light used to conduct surveys: _____

Were binoculars used for the surveys (circle one)? **YES NO**
Brand, model, and power of binoculars: _____

25 [4]

[4] Citation: U.S. Fish and Wildlife Service. 2005. Revised guidance on site assessment and field surveys for the California red-legged frog. 25 pp.

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

Species	# of indiv.	Observed (O) Heard (H)	Life Stages	Size Class	Certainty of Identification

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: _____

_____
_____
_____
_____

Other notes, observations, comments, *etc.*

Necessary Attachments:

4. All field notes and other supporting documents
5. Site photographs
6. Maps with important habitat features and species locations

26 [5]

[5] Citation: U.S. Fish and Wildlife Service. 2005. Revised guidance on site assessment and field surveys for the California red-legged frog. 25 pp.

Incidental Observations

DRAFT

Parcel Survey Checklist

County_____ Parcel Number_____ Date_____ Time_____
Survey Participants_____

HABITATS
☐Stockponds ☐Vernal pools ☐Sandy dunes ☐Marsh
☐Riparian woodland ☐Grassland ☐Other

BIRDS (Mike Bradbury) ☐Cranes/Geese (winter) ☐Ibis nest ☐Rookery/Heronry ☐Burrowing owl/burrow ☐Owl Nest (tree) ☐Blackbird nest ☐Songbird nest ☐Raptor nest Sightings/Comments:
MAMMALS (Mike Bradbury) ☐Bats/bat structures ☐Small rabbits (not jack) ☐Ground squirrel activity (Stone Lakes) Sightings/Comments:
INVERTEBRATES ☐Elderberry ☐VP shrimp Sightings/Comments:
REPTILES and AMPHIBIANS (Laura Patterson) ☐Burrows in VP grassland ☐Slow streams/ditches Sightings/Comments:
PLANTS (Jean Witzman) Sightings/Comments:
CULTURAL RESOURCES (Janis Offerman) ☐Prehistoric archaeological sites ☐Historic archaeological sites/features ☐Buildings/structures Sightings/Comments:
SITE ASSESSMENT (Karen Enstrom) ☐Wells ☐Fuel Storage Tanks ☐Pits/Sumps ☐Drums ☐Chemical Storage ☐Evidence of Chemical Spill ☐Open or Leaking Containers ☐Transformers ☐Septic Tanks ☐Junkyard or Landfill ☐Industrial Use Sightings/Comments:
RECREATIONAL USE (Doug Rischbieter) Sightings/Comments:

Internal Draft- November 19, 2008

DRAFT

Invertebrate—Vernal Pools

DRAFT

Vernal Pool Branchiopod Wet-Season Surveys 2009/2010

Date:		Start time:		Surveyors:				Weather Conditions:		
		End time:								
GPS ID:		Camera ID:								
Pool ID										
Max. Depth (in.)										
Surface Area (m)										
Water Temp. (°C)										
Alkalinity:										
Total titrant used (ppm)										
Test result (ppm)										
pH										
EC (µS/cm)										
TDS (ppm)										
Dissolved Oxygen:										
%										
mg/L										
Turbidity (Low,Med,High)										
Large Branchiopods (est. # indiv)	*B. conservatio*									
	B. lindahli									
	B. longiantenna									
	B. lynchi									
	B. mackini									
	B. mesovallensis									
	Branchinecta sp.									
	Cyzicus californicus									
	Lepidurus packardi									
	Linderiella occident.									
Other Invertebrates (indicate presence)	Amphipoda									
	Anisoptera									
	Belostomatidae									
	Ceratopogonidae									
	Chironomid									
	Cladocera									
	Copepods									
	Corixidae									
	Culicidae									
	Dytiscidae									
	Ephydridae									
	Gastropoda									
	Hydracarina									
	Hydrophilidae									
	Microturbellaria									
	Notonectidae									
	Ostracods									
	Syriphidae									
Amphibians										
Photo #										
Notes										

Mammal—Bat

DRAFT

BDCP BAT DATSHEET - BAT BRIDGE AND STRUCTURE SURVEYS

DATE:	**OBSERVERS:**	**MAP ID:**
UTM:		**PHOTO IDs:**
PARCEL ID:	**CAM ID:**_____	**GPS ID:**_____

BRIDGE ID:	**SPECIES PRESENT**	**ROOST SIZE:** 1, <50, 50-100, >100
BATS PRESENT? Y N	LABL	**ROOST STRUCTURE**
GUANO PRESENT? Y N	ANPA	TREE
FRESH GUANO	COTO	BRIDGE
NOT FRESH GUANO	EUPE	BUILDING
SPARSE AMT (< 50 PIECES)	LANO	OTHER
MODERATE AMT (50-100 PIECES)	LACI	**TEMP IN STRUCTURE (F):**
LARGE AMT (>100 PIECES)	EPFU	**HUMIDITY IN STRUCTURE (F):**
STAINING PRESENT? Y N	MYCA	**SUITABLE FORAGING HABITAT?** Y N
POTENTIAL ROOST TYPE	MYCI	SHALLOW WETLAND
MATERNITY	MYEV	SMALL FLOWING CHANNEL
DAY	MYLU	SMALL FLOWING CHANNEL W/ RIP VEG
NIGHT	MYTH	LARGE FLOWING CHANNEL
SOLITARY	MYVO	LARGE FLOWING CHANNEL W/ RIP VEG
UNKNOWN	MYYU	STAGNANT WATER (I.E. POND)
NO POTENTIAL	PIHE	AGRICULTURE
NOTES:	TABR	ORCHARD
	UNK	OAK WOODLAND
	NOTES:	OTHER
		NOTES:

BDCP Bat Acoustic Monitoring – Habitat Information at Acoustic Set up Locations May 6, 2009

Date (Day/Month/Year):_____ Observers (three initials of each member):_____

Parcel ID:_____ Map ID:_____ GPS ID:_____ CameraID:_____
Photo ID: N_____; S_____; E_____; W_____ Other Photos_____

Habitat Information At Detector:

Predominant Habitat Type(s) within 30 meter radius of the detector: (circle all that apply)

Riparian Forest (Eucalyptus, Cottonwood, Willow, Sycamore) *Percent Cover w/in 30m radius:* _____
Woodland (e.g., oak) *Percent Cover of 30m radius:* _____ *Annual Grassland* *Percent Cover of 30m radius:* _____
Agricultural (crop) *Percent Cover of 30m radius:* _____ *Orchard* *Percent Cover of 30m radius:* _____
Vineyard *Percent Cover of 30m radius:* _____ *Marsh/Wetland/Pond* *Percent Cover of 30m radius:* _____
Other (description): _____ *Percent Cover of 30m radius:* _____

Predominant species composition of vegetation within each habitat type present within 30 meters of the detector: *(i.e., Riparian Forest = overstory(OS) cottonwood, willow; understory (US) willow and blackberry; ground cover (GC): limited, area choked with blackberry)*

_____
_____
_____
_____

Forest and Orchard habitat type details:
*Habitat Type:*_____
Estimated DBH: <10 cm 10-20cm >20cm Canopy Height: <5ft 5-10ft >10ft Canopy Cover: Low Medium High
Agricultural habitat type details:
Circle all that apply: Grain crop Row Crop Inundated crop Corn crop Crop Type (if known):_____

Suitable Features (within 30 meters of detector): (circle all that apply)
Roosting: *Building Bridge Solitary Tree Intact Stand Large Tree(s) Snag(s) Other:*_____
Foraging: *Shallow open water (wetland) Slough/Flowing Channel (large or small) Stagnant water (i.e. pond)*
*Other:*_____

Habitat Information Adjacent to Detector:

Habitat Types (between 30 and 100 m of detector): (circle all that apply)
180° in front of detector:
Riparian Forest Marsh/Wetland/Pond Slough/Flowing Channel Woodland Annual Grassland Agricultural (crop) Orchard
*Vineyard Other:*_____

1

BDCP Bat Acoustic Monitoring – Habitat Information at Acoustic Set up Locations May 6, 2009

180˚ behind the detector:

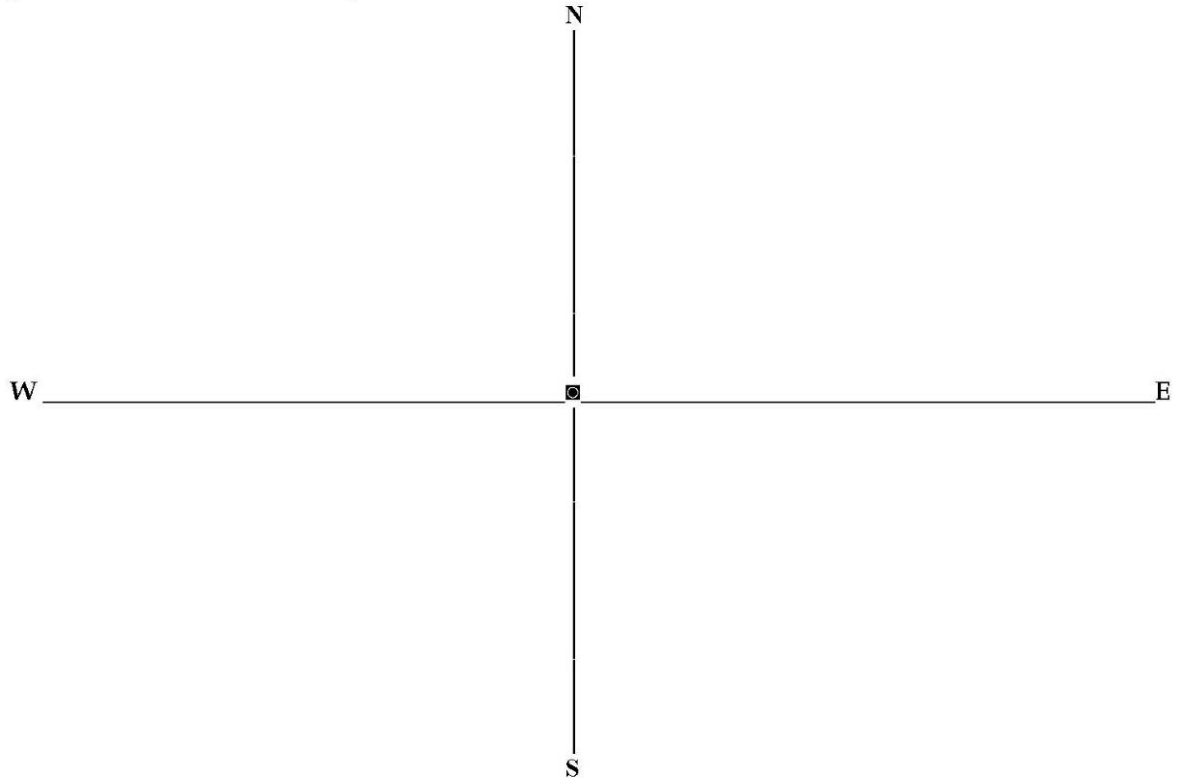
*Riparian Forest Marsh/Wetland/Pond Slough/Flowing Channel Woodland Annual Grassland Agricultural (crop) Orchard Vineyard Other:*_____

Suitable Features (between 30 and 100m of detector): (circle all that apply)

***Roosting*:** *Building Bridge Solitary Tree Intact Stand Large Tree(s) Snag(s) Other:*_____

***Foraging*:** *Shallow open water (wetland) Flowing Channel (large or small) Stagnant water (i.e. pond) Other:*_____

Please use the space below to sketch out the layout of the acoustic detector relative to notable features.



2

BDCP Bat Acoustic Monitoring – Habitat Information at Acoustic Set up Locations May 6, 2009

Equipment Pick up Notes:
Parcel ID:_____

AR125: (circle all that apply) in place operational fallen over vandalized
Notes: _____
_____
_____

FR125: (circle one) operational (green light on) non-operational (green light off)
Notes:_____
_____

Solar Panel: (circle all that apply) in place operational fallen over vandalized
Notes:_____
_____

Power supply box and contents (battery, Phocos):
Notes:_____
_____

HOBO: (circle one) present and collected absent

Additional Notes:

_____
_____
_____
_____
_____
_____

3

BDCP Bat Acoustic Monitoring – Habitat Information at Acoustic Set up Locations May 6, 2009

Equipment Set up Notes:

FR 125 ID: _____ Sunset today: _____ Sunrise tomorrow: _____
Program 1 time on: _____ time off: _____ Enabled: Y N Program 2 time on: _____ time off: _____ Enabled?: Y N
Hobo Placement: _____

Notes: _____

4

BDCP BAT DATASHEET 1 - HABITAT ASSESSMENTS

DATE: **OBSERVERS:** **MAP ID:** **PARCEL ID:**

UTM: **PHOTO IDs:**

CIRCLE ALL THAT APPLY

HABITAT TYPE	POTENTIAL ROOSTING FEATURES	POTENTIAL FORAGING FEATURES	SITE SUITABILITY RANK
ANNUAL GRASSLAND VINEYARD COASTAL SCRUB OAK WOODLAND URBAN/BARREN AG/CROP: GRAIN, ROW, INUNDATED, CORN ORCHARD: DECIDUOUS, NON-DECIDUOUS ESTIMATED DBH : < 10CM, 10-20 CM, > 20CM ESTIMATED HEIGHT: < 5FT, 5-15 FT, > 15 FT CANOPY: HIGH, MEDIUM, LOW ECUALYPTUS: INTACT STAND, SOLITARY CANOPY: HIGH, MEDIUM, LOW RIPARIAN/WETLAND SHALLOW WETLAND SMALL FLOWING CHANNEL SMALL FLOWING CHANNEL W/ RIP VEG LARGE FLOWING CHANNEL LARGE FLOWING CHANNEL W/ RIP VEG STAGNANT WATER (I.E. POND) OTHER VINEYARD	HUMAN OCCUPIED BUILDINGS No. ABANDONED BUILDINGS No. TREE: INTACT STAND, SOLITARY, LARGE TREE, SMALL TREE TREE TYPE: ORCHARD RIPARIAN/WETLAND EUCALYPTUS OAK OTHER	WATER SHALL0W WETLAND SMALL FLOWING CHANNEL SMALL FLOWING CHANNEL W/ RIP VEG LARGE FLOWING CHANNEL LARGE FLOWING CHANNEL W/ RIP VEG STAGNANT WATER (I.E. POND) OTHER AGRICULTURE ORCHARD OTHER NOTES	0 (NO POTENTIAL HABITAT) 1 (FORAGING HABITAT PRESENT) 2 (ROOSTING HABITAT PRESENT) 3 (ROOSTING & FORAGING PRESENT) FORAGING TYPE: ROOST TYPE: **OTHER SPECIES OBSERVED IN PARCEL:**
NOTES	NOTES	NOTES	

BDCP BAT DATASHEET 3 - SUITABLE HABITAT FEATURE

DATE: **OBSERVERS:**

UTM:

MAP ID: **PARCEL ID:**

PHOTO IDs:

SUITABLE FEATURE (CIRCLE ALL THAT APPLY)

ROOSTING	**FORAGING**
TREE STAND	WATER
EUCALYPTUS	SHALL0W WETLAND
OAK	SMALL FLOWING CHANNEL
COTTONWOOD	SMALL FLOWING CHANNEL W/ RIP VEG
ORCHARD	LARGE FLOWING CHANNEL
OTHER	LARGE FLOWING CHANNEL W/ RIP VEG
BUILDING	STAGNANT WATER (I.E. POND)
TREE	OTHER
SNAG	AGRICULTURE
LIVE/LARGE	ORCHARD
OTHER	OTHER
NOTES	NOTES

Mammal—Riparian

DRAFT

DHCCP TRAP CHECKLIST

Location _____

Date _____ Start/End Time _____

Researchers _____ TRAP A: Tomahawks TRAP B & C: Shermans

	A				
	A	B	C	Bait A	Notes
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

	B				
	A	B	C	Bait A	Notes
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

	C				
	A	B	C	Bait A	Notes
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

	D				
	A	B	C	Bait A	Notes
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

	E				
	A	B	C	Bait A	Notes
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

	F				
	A	B	C	Bait A	Notes
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Delta Habitat Conservation and Conveyance Plan Capture Summary

Date:_____ Researchers: _____

Location(s) w/UTM:_____ County: _____

Weather: _____ Start/End: _____ AM / PM Check Pg ____ of ____

Census Day: 1 2 3 4 5 ___ of ___ # of traps set:_____ Comments: _____

	Trap#	Ear Tag	Species	Sex	Wt.(g)	Age	Reproduction	Right Ear (mm)	Right Foot (mm)	# of Samples	Notes
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____
__	_____	_____	Sb Nf _____	M F	_____	A Y	_____	_____	_____	__E __H __P	_____

Key to Abbreviations:

* = Re-tag
** = New animal
R = Recapture
E = Escaped

Sb = *Sylvilagus bachmani* (brush rabbit)
Nf = *Neotoma fuscipes* (woodrat)

DIVI = *Didelphis virginiana* (Virginia opossum)
MEME = *Mephitis mephitis* (striped skunk)
MICA = *Microtus californicus* (California vole)
MUFR = *Mustela frenata* (long-tailed weasel)

MUMU = *Mus musculus* (house mouse)
MUVI = *Mustela vison* (American mink)
PEMA = *Peromyscus maniculatus* (N.A. deer mouse)
RARA = *Rattus rattus* (black rat)
SCGR = *Sciurus griseus* (western gray squirrel)
SPBE = *Spermophilus beechyi* (California ground squirrel)
SYAU = *Sylvilagus audubonii* (desert cottontail)

WILDLIFE FIELD SURVEY DATA SHEET

California State University, Stanislaus -- Endangered Species Recovery Program

Page ____ of ____

Visit Date	dd-mm-yy	Observers	
Location		County	
		APN #	
Weather	Temp ____ Cloud ____ Wind ____ Rain ____		
		Start/End time	hh:mm hh:mm

Comments :

Parcel	Class	Species	L	S	T	R	C	N	D	F	H	Notes

Class Type: B: Bird M: Mammal H: Herp

Observation Type: L: Live S: Scat T: Tracks R: Runway C: Clippings N: Nest D: Dead F: Fur H: Heard

Sb = Sylvilagus bachmani (brush rabbit)
Nf = Neotoma fuscipes (woodrat)
DIVI = Didelphis virginiana (Virginia opossum)
MEME = Mephitis mephitis (striped skunk)
MICA = Microtus californicus (California vole)
MUFR = Mustela frenata (long-tailed weasel)
PRLO = Procyon lotor (raccoon)
LECA = Lepus californius (black-tailed jackrabbit)
CALA = Canis latrans (coyote)
CACA = Castor canadensis (Beaver)
ONZI = Ondatra zibethicus (muskrat)
MUMU = Mus musculus (house mouse)
MUVI = Mustela vison (American mink)
PEMA = Peromyscus maniculatus (N.A. deer mouse)
RARA = Rattus rattus (black rat)
SCGR = Sciurus griseus (western gray squirrel)
SPBE = Spermophilus beechyi (California ground squirrel)
SYAU = Sylvilagus audubonii (desert cottontail)
THBO = Thomonys bottae (Botta's pocket gopher)
LUCA = Lutra canadensis (River otter)
VUVU = Vulpes vulpes (red fox)
URCI = Urocyon cinereoargenteus (gray fox)
VUMA = Vulpes macrotis (kit fox)

Assessment number ____ of ____ for this location
Page 1 of 2

ESRP - RBR HABITAT RAPID ASSESSMENT PROGRAM (RAP) DATA SHEET

Date: _____ **Researcher(s):**_____

UTM coordinates: **10 S** _____ **PDOP:** _____

Location: _____

Associated with APN(s):_____

1. Key Vegetation/Cover present (dominant types in 1st box, other plants present in 2nd box):

Shrubs	Herbaceous plants	Trees	Other Cover
☐ ☐ California blackberry	☐ ☐ Black mustard	☐ ☐ Valley oak	☐ ☐ Grass
☐ ☐ Himalayan blackberry	☐ ☐ Bull thistle	☐ ☐ Coast live oak	☐ ☐ Marsh/Wetland
☐ ☐ California wild rose	☐ ☐ Milk thistle	☐ ☐ Black willow	☐ ☐ Rock Piles
☐ ☐ California wild grape	☐ ☐ Curly dock	☐ ☐ Fremont's cottonwood	☐ ☐ Broken Concrete
☐ ☐ Coyote brush	☐ ☐ Fennel	☐ ☐ Narrowleaf cottonwood	
☐ ☐ Mugwort	☐ ☐ Pampas grass	☐ ☐ Box elder	
☐ ☐ Poison oak	☐ ☐ Poison hemlock	☐ ☐ Sycamore	
☐ ☐ Sandbar willow	☐ ☐ Stinging nettle	☐ ☐ Elderberry	
	☐ ☐ Pepperweed	☐ ☐ Black walnut	
☐ ☐ Other:	☐ ☐ Other:	☐ ☐ Other:	☐ ☐ Other:

2. Riparian Corridor Width

N/A	Poor	Marginal	Good	Excellent
No vegetation is present in the area above the bank.	0-5 meters	5-10 meters	10-15 meters	15+ meters
0	**1 2**	**3 4 5**	**6 7 8**	**9 10**

3. Linear Extent of Riparian Corridor

N/A	Poor	Marginal	Good	Excellent
No vegetation present above the bank	More bare area than vegetated area. Highly fragmented	Breaks in the vegetation frequent with bare areas every 15 meters	Riparian area fairly intact, with a few gaps in-between vegetated areas	Riparian area intact and continuous with no breaks in vegetation
0	**1 2**	**3 4 5**	**6 7 8**	**9 10**

[6]

[6] In the title, RBR is short for Riparian Brush Rabbit.

4. Riparian Vegetation Type/Height

N/A	Poor	Marginal	Good	Excellent
No vegetation is present above the bank.	Grasses/herbaceous plants (Grazed or mowed shorter than 5 centimeters)	Herbaceous plants and/or grasses (full height)	Shrubs present but not adjacent to open areas of herbaceous plants and/or grasses	Shrubs present with edges adjacent to open areas of herbaceous plants and/or grasses
0	**1 2**	**3 4 5**	**6 7 8**	**9 10**

5. Riparian Vegetation Density

N/A	Poor	Marginal	Good	Excellent
No vegetation is present above the bank.	Vegetation very sparse, covers less than 25% of the ground. Large bare spots are visible.	Vegetation somewhat sparse, several bare spots are visible. Covers 25-50% of ground.	Vegetation fairly thick, a few gaps or bare spots. Covers 50-80% of ground.	Vegetation very thick and well-developed. No gaps or bare spots. Coverage nearly 100%.
0	**1 2**	**3 4 5**	**6 7 8**	**9 10**

6. Bank Vegetation Type/Height

N/A	Poor	Marginal	Good	Excellent
No bank (steep incline), or bank lacks vegetation due to boulder, gravel, or bare dirt substrate	Grasses/herbaceous plants (Grazed or mowed shorter than 5 centimeters)	Herbaceous plants and/or grasses (full height)	Shrubs present but not adjacent to riparian vegetation	Shrubs present with edges adjacent to riparian vegetation
0	**1 2**	**3 4 5**	**6 7 8**	**9 10**

7. Bank Vegetation Density

N/A	Poor	Marginal	Good	Excellent
No bank (steep incline), or bank lacks vegetation due to boulder, gravel, or bare dirt substrate.	Vegetation very sparse, covers less than 25% of the ground. Large bare spots are visible.	Vegetation somewhat sparse, several bare spots are visible. Covers 25-50% of ground.	Vegetation fairly thick, a few gaps or bare spots. Covers 50-80% of ground.	Vegetation very thick and well-developed. No gaps or bare spots. Coverage nearly 100%.
0	**1 2**	**3 4 5**	**6 7 8**	**9 10**

8. Land Use Outside the Corridor

Urban (pavement, roads, parking lots, industrial)	Urban (residential lawn, golf course, sports field, or parks)	Agriculture (row-crop)	Agriculture (pasture, fallow)	Forest

Comments:_____

APPENDIX F: GIS STEP-BY-STEP PROCEDURES

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INTRODUCTION

The following instructions are intended as step-by-step tutorials for performing the GIS tasks necessary to successfully collect and process field data for BDCP EIR/EIS environmental surveys. These steps do not include the coordination efforts described in the workflows, as discussed in the main document, but are limited to technical GIS tasks only. The tutorials are organized in the same order as the steps outlined in the main document under "Environmental Field Surveys Workflows, Methods, and Protocols" and

"Multiuser Geodatabase Workflows, Methods, and Protocols". The software used for these processes is provided by ESRI®. For further help on using ESRI software, please refer to the following website: http://webhelp.esri.com/arcgisdesktop/9.3/index.cfm?TopicName=welcome

ENVIRONMENTAL FIELD SURVEYS DATA MANAGEMENT PROCESSES

Geodatabase Schema Creation/Adjustment

STEP 1: Open ArcCatalog.

STEP 2: Create a geodatabase. Browse to the folder intended for storage of the new geodatabase and right-click. Select "New" from the dropdown menu that appears and select "Personal Geodatabase". In order to use the GPS Analyst tool, which is needed for Post-Differential Correction, a personal geodatabase must be created. Refer to the section called "GPS Enable a Personal Geodatabase" for further instruction. If post differential correction is not required, "File Geodatabase" could be selected instead of "Personal Geodatabase". Creation of an SDE geodatabase requires a more complex process and will not be discussed in this document.

NOTE: Steps 3 and 4 are applicable to any geodatabase, including an SDE geodatabase.

STEP 3: *Add/Import/Remove Geodatabase Objects*. To create a new object, right-click on the geodatabase and select "New". From the new menu, select the type of geodatabase object that is to be created (e.g., feature class, table, and relationship class).

Alternatively, objects can be imported from other sources, like a shapefile or an object located in another geodatabase. In order to import an object, right-click the geodatabase and select "Import". From the import menu that appears, select "Feature Class" for a feature class import or "Table" for a table import.

To remove an object from the geodatabase, right-click on the object and select "Delete".

STEP 4: *Add/Remove Fields*. Click on the object to select it. The right window in ArcCatalog will present three tabs of information for the selected object. Select the "Preview" tab. At the bottom of the same window select "Table" from the dropdown "Preview" menu. At the bottom right of the table that appears, click on the "Options" button. Within the Options Menu, select "Add field".

To remove a field while viewing the table in "Preview", right-click on a Field Name along the top of the table and select "Delete Field".

NOTE: Access to field level drop down menus, requires geodatabase domains to have already been created. Read ESRI help regarding the creation of domains and assigning a domain to a field.

Creating a "Check Out" Geodatabase Replica from a Multiuser Geodatabase

Replica creation is the process of copying the multiuser geodatabase with the ability to edit that copy and then sync those edits back to the multiuser geodatabase. For this project, this applies to intermediary geodatabase replicas that AXF files are checked out from and back into, for disconnected editing (editing of the data offsite) and the transfer of edits from the geodatabase in the production environment to the geodatabase in the publish environment. There are multiple types of replicas, the kind used for intermediary geodatabases for checking out and in AXF files is called a check out replica. The replica used for the publish environment is a "One Way" replica.

STEP 1: Open ArcMap. Use the "Add Data" button to add layers from the multiuser geodatabase to ArcMap that are to be checked out to a replica geodatabase.

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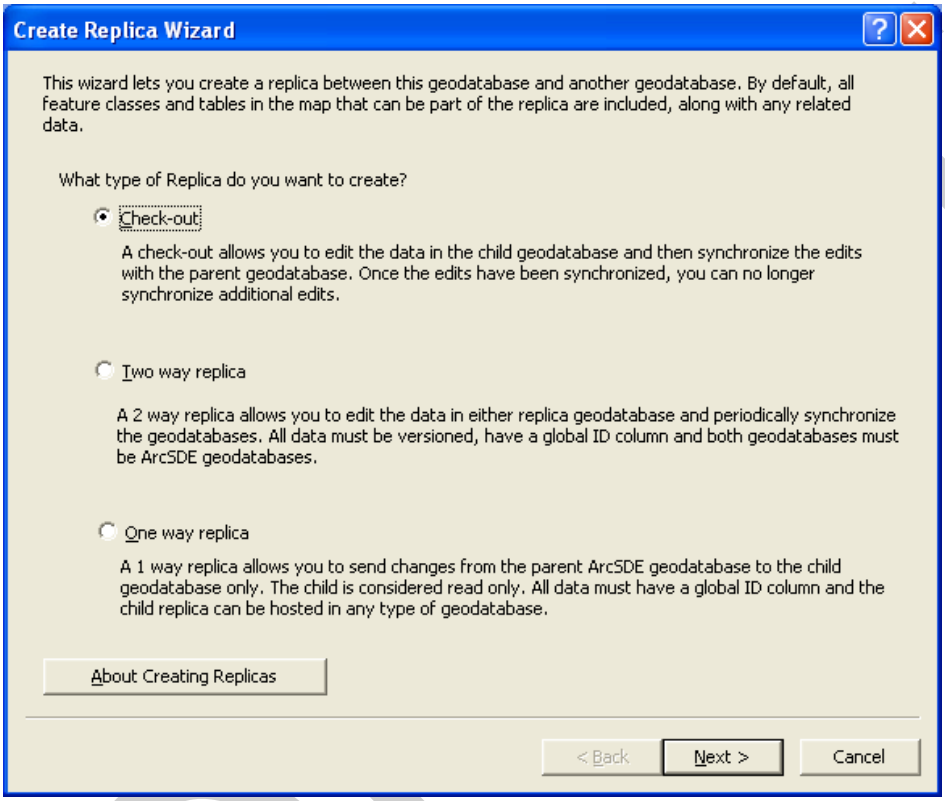
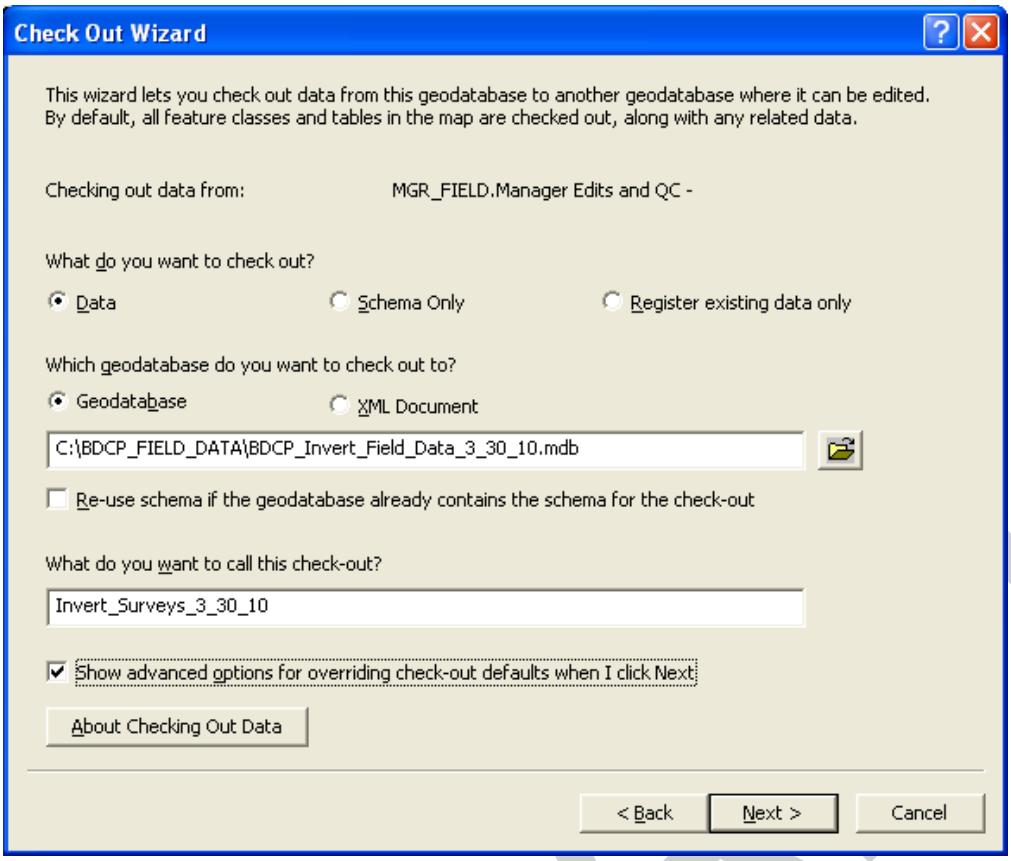
STEP 2: Select what gets checked out. If you only want to check out a subset of records within a layer, select those records that are to be included by selecting them in the attribute table, by using the select by attribute tool, by using the select by location tool, or by using the selection tool to click on a feature or features to select them in the map. Alternatively, a definition query can be used. Either the selection or the definition query will be recognized by the "Create Replica" tool, but both cannot be used for the same replication process.

STEP 3: Use the create replica tool. Make sure the "Distributed Geodatabase" toolbar is active. Select the "Create Replica" button on the toolbar. The following screen will appear:



STEP 4: Choose Check-out and click on next. The following screen will appear:



STEP 5: *Choose replica save location.* Under "Which geodatabase do you want to check out to?", use either the browse to button on the right to locate a geodatabase that has already been created, or type in a path and name for a new geodatabase that is to be created. If creating a new geodatabase, make sure to include either a .mdb or .gdb extension at the end of the name depending on the type to be created (.mdb = personal or Access geodatabase, .gdb = file geodatabase). The naming convention for replica geodatabases that will be used to create future AXF files is as follows: BDCP_<Resource_Type>_Field_Data_<mm_dd_yy>. Under "What do you want to call this check-out?" enter a name for this new replica version. Check the box next to where the form states "Show advanced options for overriding check-out defaults when I click Next". In most cases the other options on this screen can be left as defaulted. Click Next. The following screen will appear:

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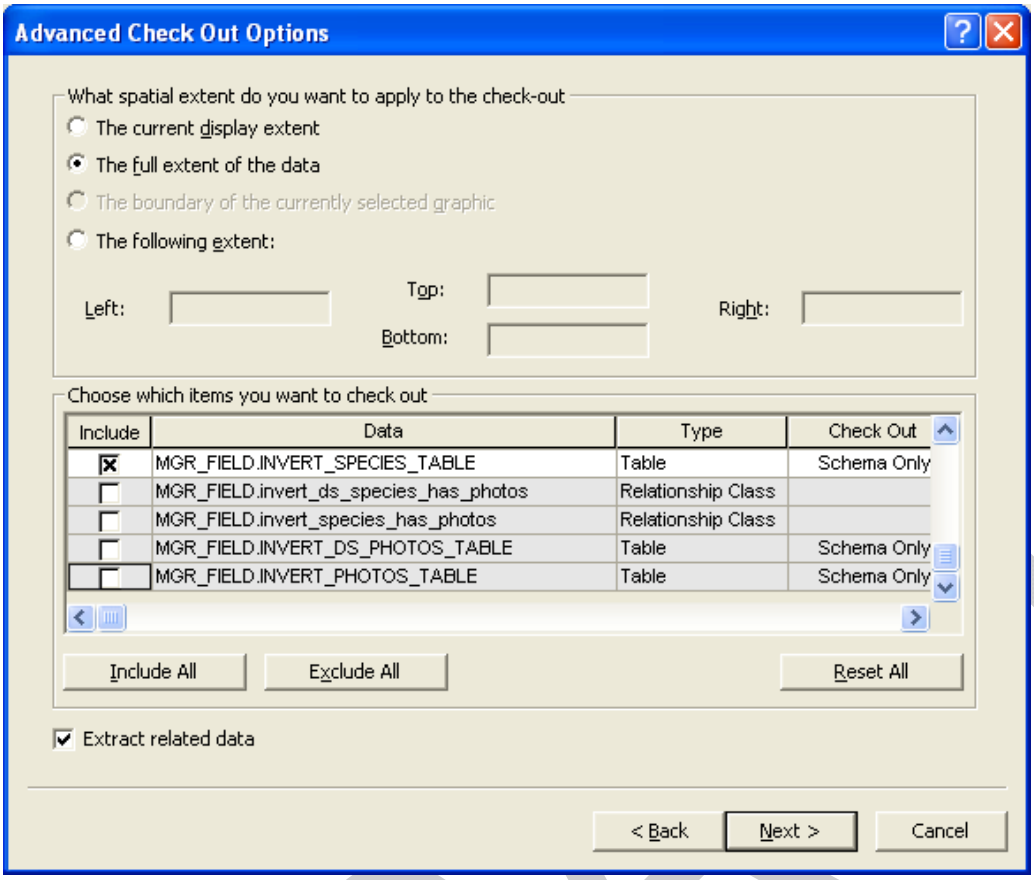
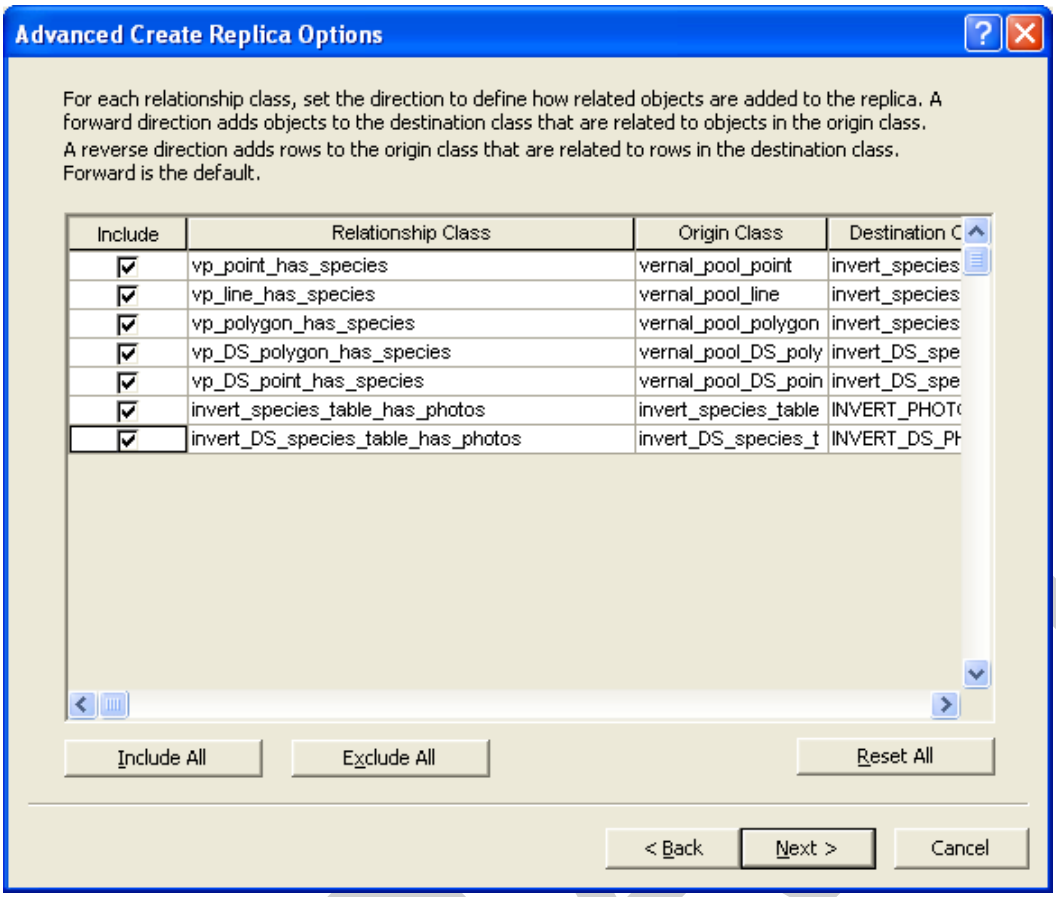


STEP 6: *Choose extent and geodatabase objects to be checked out.* In most cases, choose the option "The full extent of the data" under where it is stated "What spatial extent do you want to apply to the check-out". In the section that states "Choose which items you want to check out" each layer in the open map and its related tables will be listed and automatically checked for inclusion. If the features that have been added to the map are stored within a feature dataset in the geodatabase, and some other layers in the same feature dataset weren't added to the current map, those layers will also be listed and selected in this list. Please note that most layers and tables are related to a photo table and this photo table will be included in this list of data sources and selected by default unless they are unselected by the user here. Checking out a photo table will add to processing time and may also take up a large amount of disk space; therefore is not recommended unless the photos are intended to be included in the replica geodatabase. If the purpose of the replica is to create an AXF file, uncheck the box next to each photo table that is listed, as well as the relationship class that binds them to the other geodatabase objects. Select Next. The following screen will appear:



STEP 7: Leave everything as defaulted and select Next. The following screen will appear:

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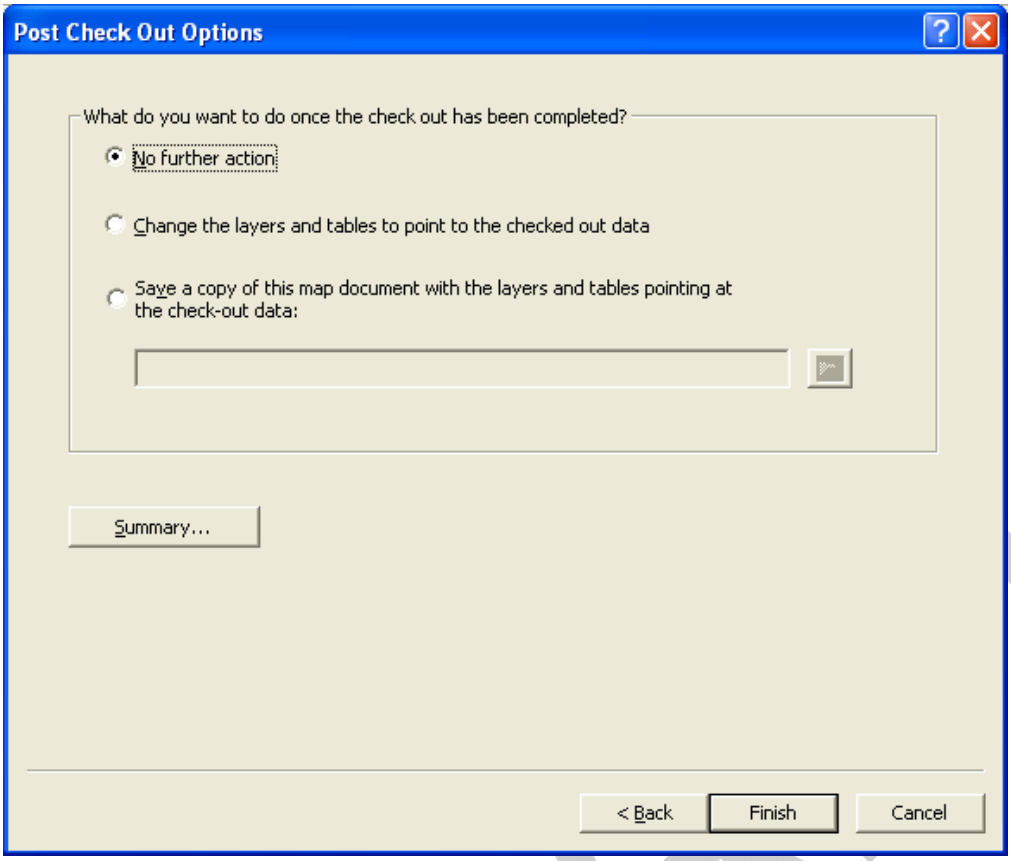


STEP 8: *Determine what to do with the current Map Document.* This screen provides options that can tell the layers in the existing map to point to the new replica geodatabase or will create a new map document that will point to the replica geodatabase upon completion of the check-out. In most cases, leave as the default and select Finish.

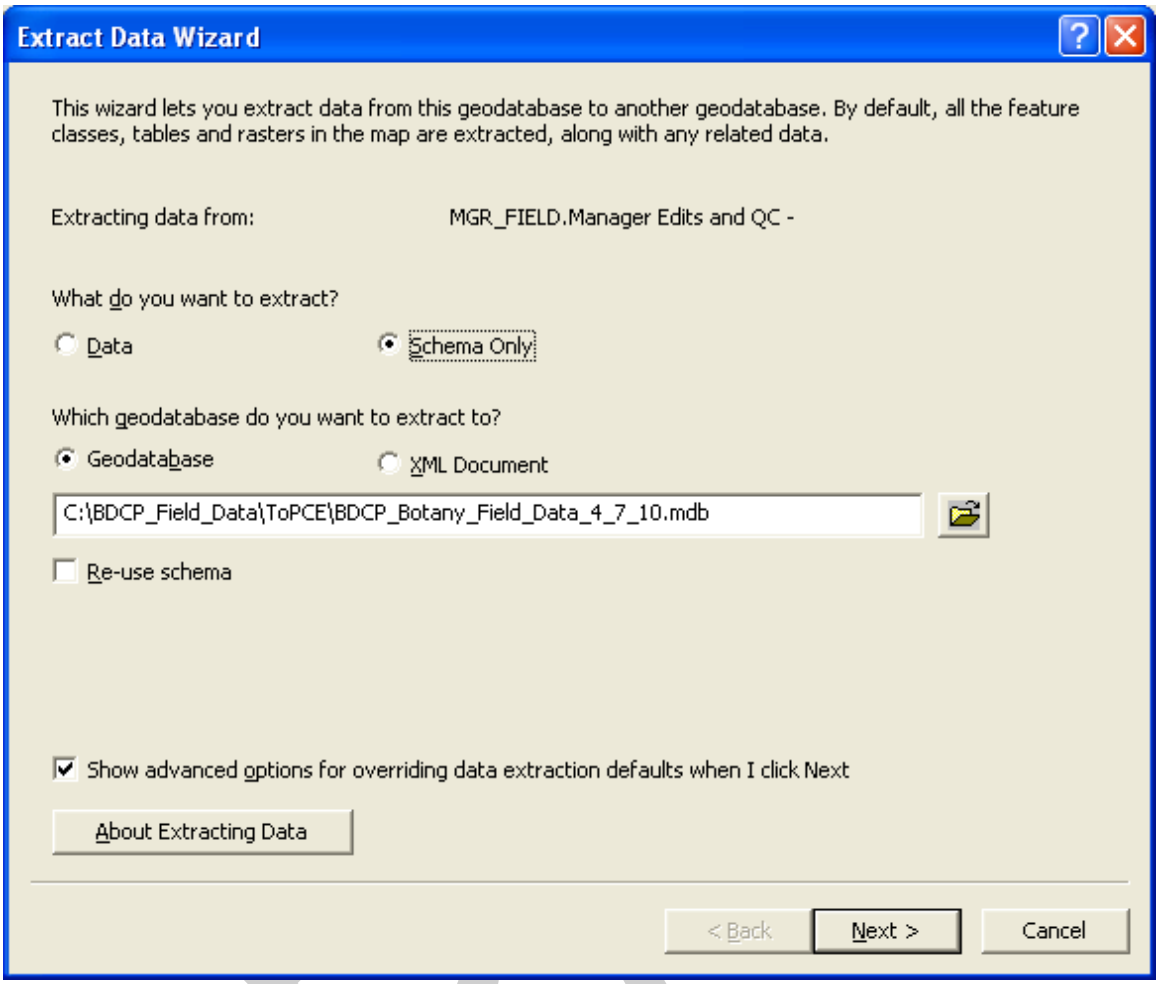
Exporting Data or Schema from a Multiuser Geodatabase to a Personal Geodatabase

NOTE: In order to use the tools associated with GPS Analyst a personal geodatabase must be used. GPS Analyst does not work with file or SDE geodatabases.

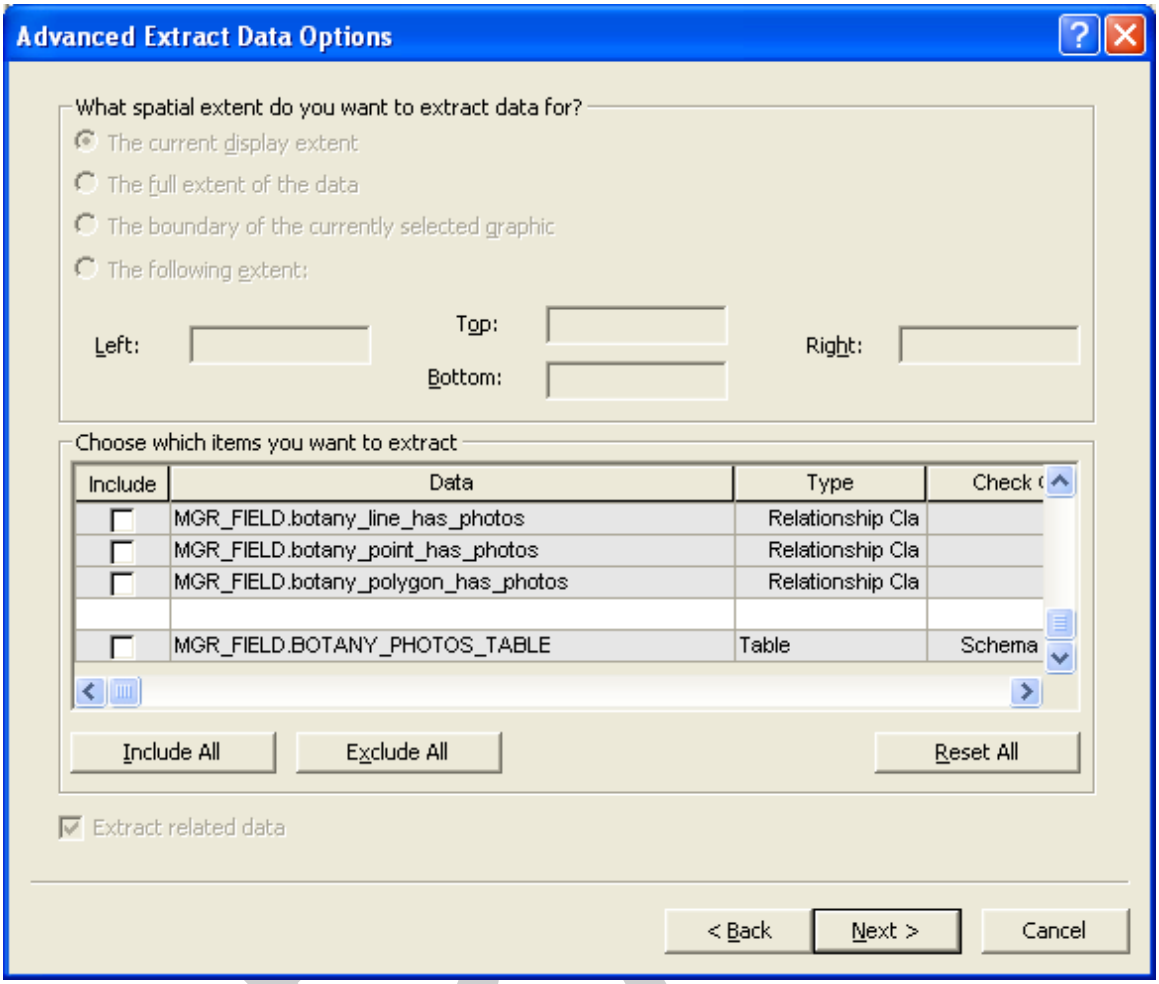
STEP 1: *Open ArcMap*. Add data from the multiuser geodatabase to be exported.

STEP 2: *Select what gets checked out.* If you only want to check out a subset of records within a layer, select those records that are to be included by selecting them in the attribute table, by using the select by attribute tool, by using the select by location tool, or by using the selection tool to click on a feature or features to select them in the map. Alternatively, a definition query can be used. Either will be recognized by the "Extract Data" tool but not both at the same time.

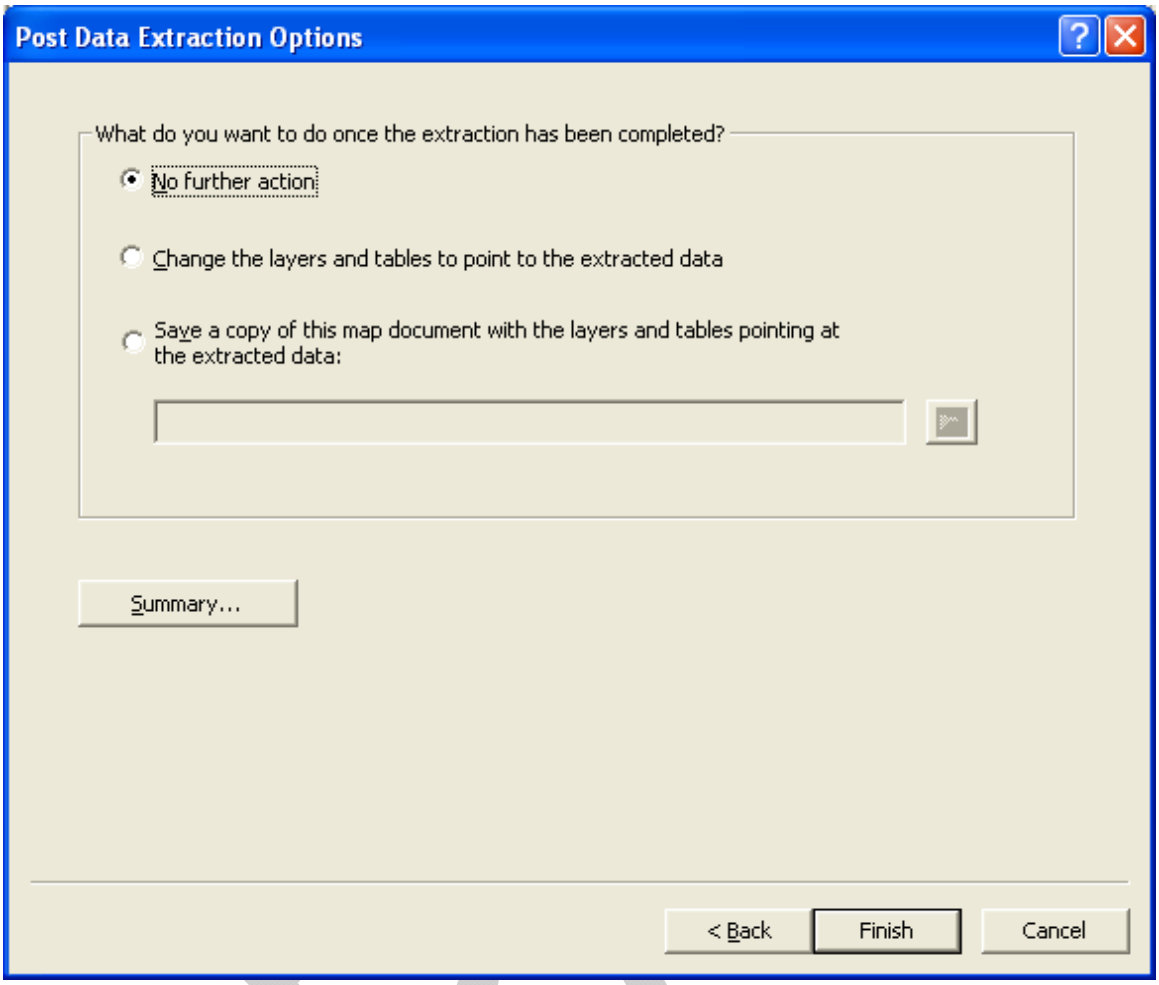
STEP 3: Use the create extract data tool. Make sure the "Distributed Geodatabase" toolbar is active. Press the "Extract Data" button on the toolbar. The following screen will appear:



STEP 4: *Specify geodatabase to hold data.* On the first page of the "Extract Data Wizard" specify where it says "What do you want to extract?" whether it is an empty schema that is to be created in the target geodatabase or if it is to hold data. Where it says "Which geodatabase do you want to extract to?" select Geodatabase and type the path and geodatabase name to hold the data. For the geodatabase name make sure to include the extension (either .mdb or .gdb). Alternatively, if the geodatabase already exists click the browse to button to the right and select existing database. Check the box next to "Show advanced…" and then press "Next".



STEP 5: *Select details of what's extracted.* If "Schema Only" was chosen on the first page most of the options on the next page will be grayed out. Most likely the photos will not be needed so uncheck all relationship classes and photo tables. The photo tables require a lot of storage space and considerably draws out the time it takes the computer to run the extraction process. When done with this screen press "Next".



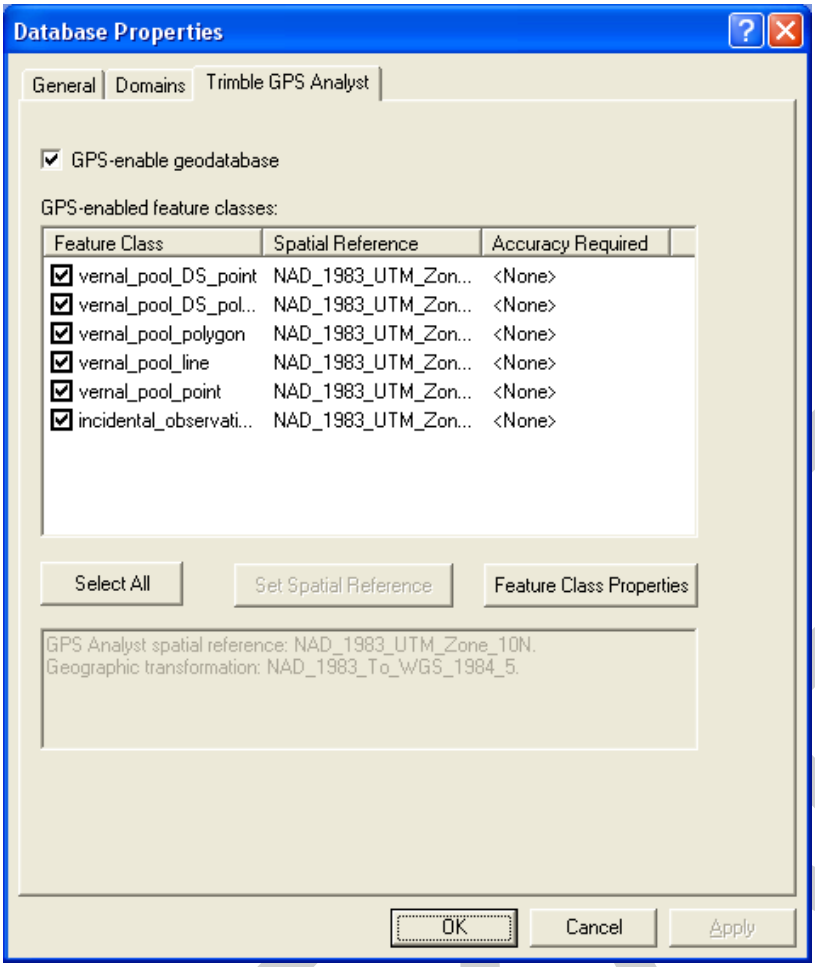
STEP 6: *Finish.* On the final page make a choice among the options given and press "Finish".

GPS Enabling a Personal Geodatabase

NOTE: This function relates specifically to using a geodatabase in conjunction with GPS Analyst. GPS Analyst provides post-differential correction and other tools. In order to use the tools associated with GPS Analyst, the temporary geodatabase being used to store the period's field data must be a personal geodatabase and GPS enabled.

STEP 1: Open ArcCatalog. Navigate to the personal geodatabase that is to be GPS enabled.

STEP 2: Right click on the geodatabase. Choose properties from the provided menu. The following screen will appear:



STEP 3: *Select Feature Classes.* In the Database Properties screen, select the Trimble GPS Analyst tab. Check the box next to "GPS-enable geodatabase", press the "Apply" button at the bottom and then check all boxes under "GPS-enabled feature classes" for those features that will be used during field data collection with a GPS. When the screen appears asking for the geographic transformation, choose "NAD_1983_To_WGS_1984_5".

STEP 4: *Set GPS accuracy field.* Click the "Feature Class Properties" button. The dialog box that will appear is shown below. Each feature class has a field named "Accuracy_Meters". Select that field from the drop down menu next to where it states: "Store average estimated accuracy in". Leave other items to their defaulted values. Select OK when finished. Press OK once more to complete the GPS enabling.

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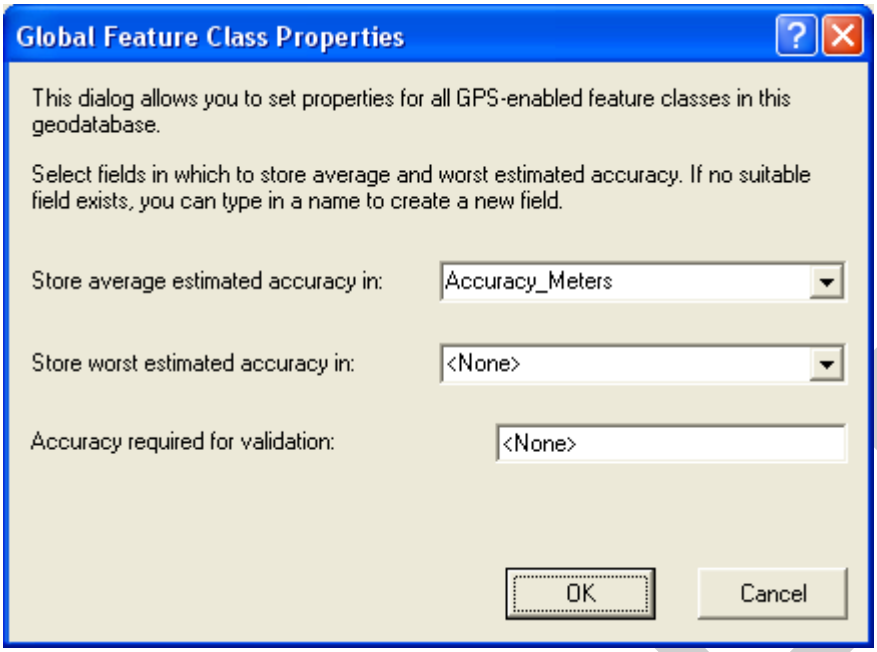

Creating an AXF File from a Geodatabase

NOTE: When creating an AXF there are a number of situations that can cause a problem. Those problems will cause recorded errors. To see the errors, open the XML file that is created at the same time the AXF is created and saved at the same location. Without viewing the file, the errors may go unnoticed until the AXF file is used in ArcPad. The following are known situations that will cause an error (items 1-3 only apply to situations with a relationship):

1. The primary key field has a value that has been used more than once. A primary key field must have unique values.
2. The foreign key field in the related table has a null value. In ArcPad the related table will be inaccessible.
3. The primary key field has a null value. This will cause random removal of records from the feature class which will cause some foreign key values in the related table to become null and will in turn cause the problem described in item 2 above.
4. Feature class has non-spatial records. This will show up as an error in the XML file and those records will not be included in the AXF file.

If the data in the AXF is to be post-differentially corrected, refer to Section 1 below; otherwise, use the instructions in Section 2.

Section 1

STEP 1: Use the "Add Data" button in ArcMap to *add data layers from a geodatabase that subsequently will be checked out to an AXF file.*

STEP 2: *Use the "Get Data for ArcPad" tool.* Confirm that both ArcPad and GPS Analyst have previously been installed on the computer. Make sure that both ArcPad Data Manager and GPS Analyst extensions have been turned on (Tools > Extensions), and that the GPS Analyst toolbar has been turned on (Tools > Customize). Also confirm that the AXF "check in" and "check out" buttons have been added to the Toolbar. Refer to GPS Analyst documentation if those buttons are not present on the Toolbar. The

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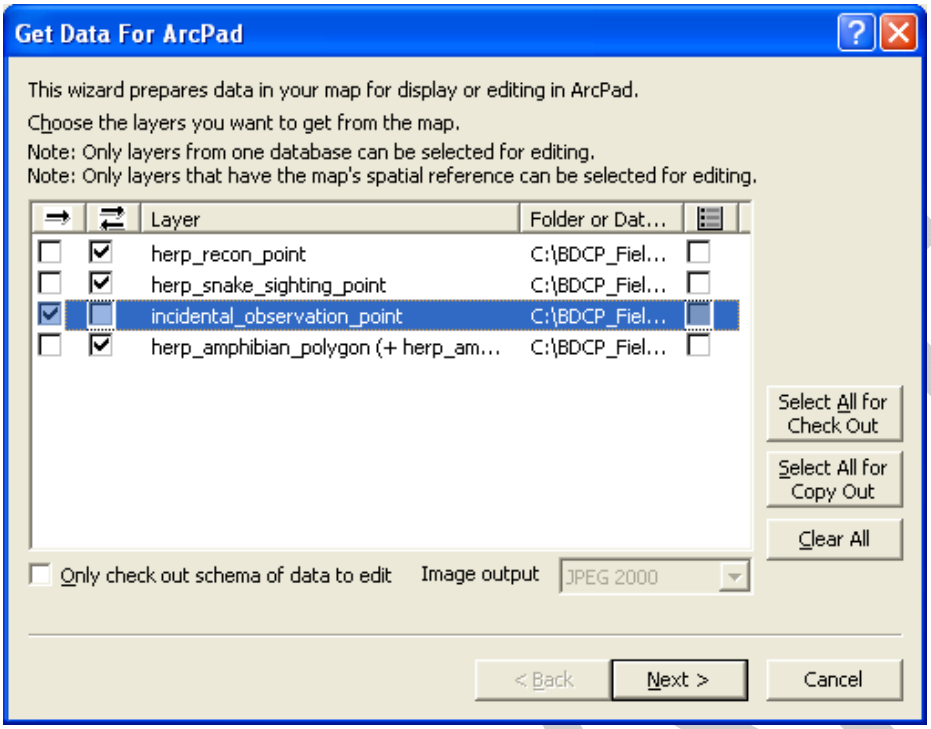
corresponding icons are as follows: “Get Data for ArcPad” and “Check in ArcPad AXF file and GPSCorrect SSF”. On the GPS Analyst toolbar, select the “Get Data for ArcPad” button. The following screen will appear:



STEP 3: *Check out layers for editing.* Selections in the first two columns determine whether the layers will be checked out for editing or not. The first column has a single right-facing arrow, while the second has two opposite facing arrows. Check the box in the first column for layers that are <u>not</u> to be edited (they will be output as shapefiles). Check the box in the second column for layers that <u>are</u> to be edited (they will be output as feature classes in the AXF file). Moving to the right side of the screen there are more checkboxes. This column allows you to assign data entry forms that were used with other AXF files or shapefiles to each of the listed layers. Choose whether or not to include the actual data or just the schema of the data by selecting the box at the bottom. When all selections have been made, click Next. The following screen will appear:

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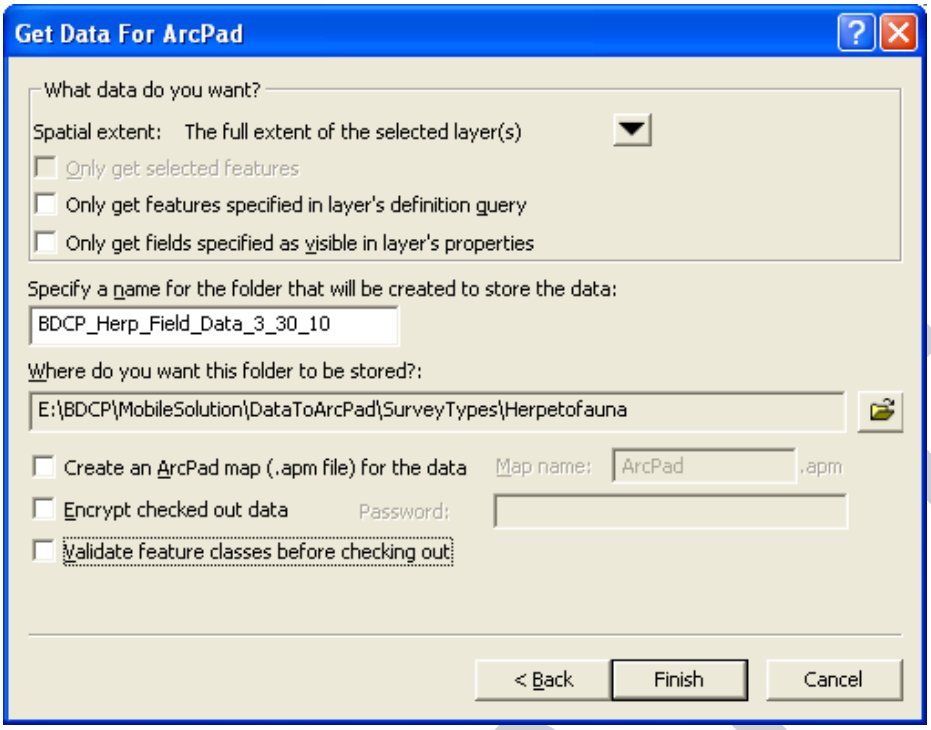

STEP 4: *Complete final page.* Under the section "What data do you want?", specify the subset of data to be used (if any). Assign a name to the output folder (format: BDCP_<resource type>_Field_Data_<mm_dd_yy>), browse to the location in which to save the folder, and select "Finish".

Section 2

STEP 1: Add data layers that are to be checked out to an AXF file from an existing geodatabase to an open ArcMap window.

STEP 2: Use the "Get Data For ArcPad" tool. Make sure that ArcPad has already been installed on the computer and that the ArcPad Data Manager extension (Tools > Extensions) and the ArcPad Data Manager toolbar have both been turned on (Tools > Customize). On the ArcPad Data Manager Toolbar select the "Get Data For ArcPad" button. The following screen will appear:

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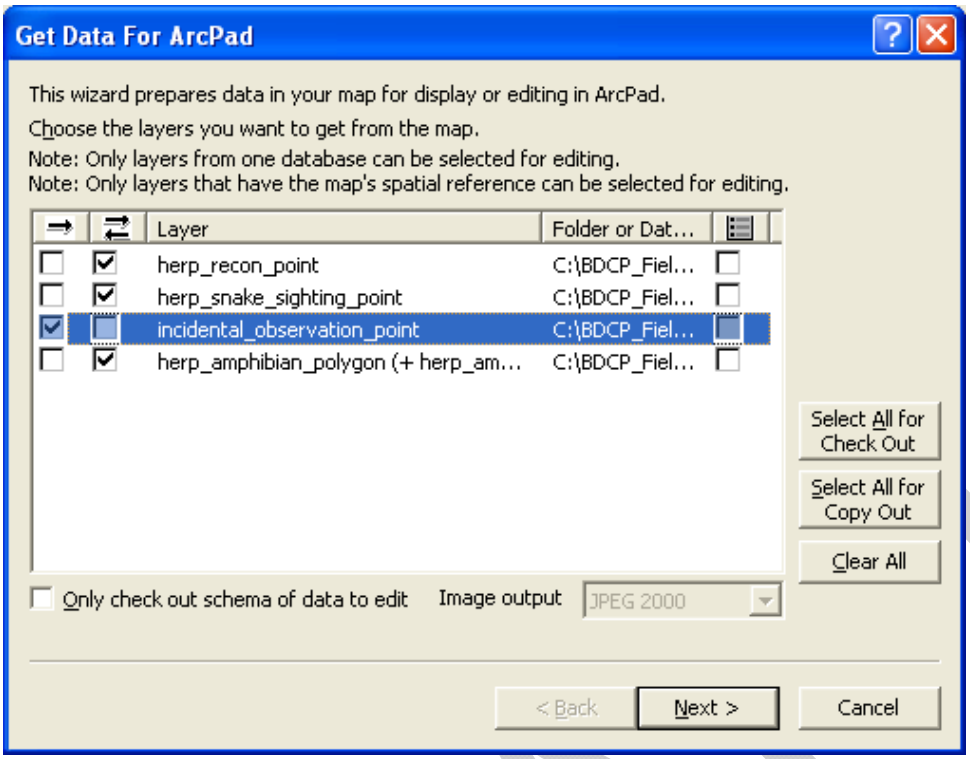

STEP 3: *Check out layers for editing.* Selections in the first two columns determine whether the layers will be checked out for editing or not. The first column has a single right-facing arrow, while the second has two opposite facing arrows. Check the box in the first column for layers that are <u>not</u> to be edited (they will be output as shapefiles). Check the box in the second column for layers that <u>are</u> to be edited (they will be output as feature classes in the AXF file). The right side of the screen includes more checkboxes that will allow you to assign data entry forms that were used with other AXF or shapefiles to each of the listed layers. Choose whether or not to include the actual data or just the schema of the data by selecting the box at the bottom. When all selections have been made, click Next. The following screen will appear:

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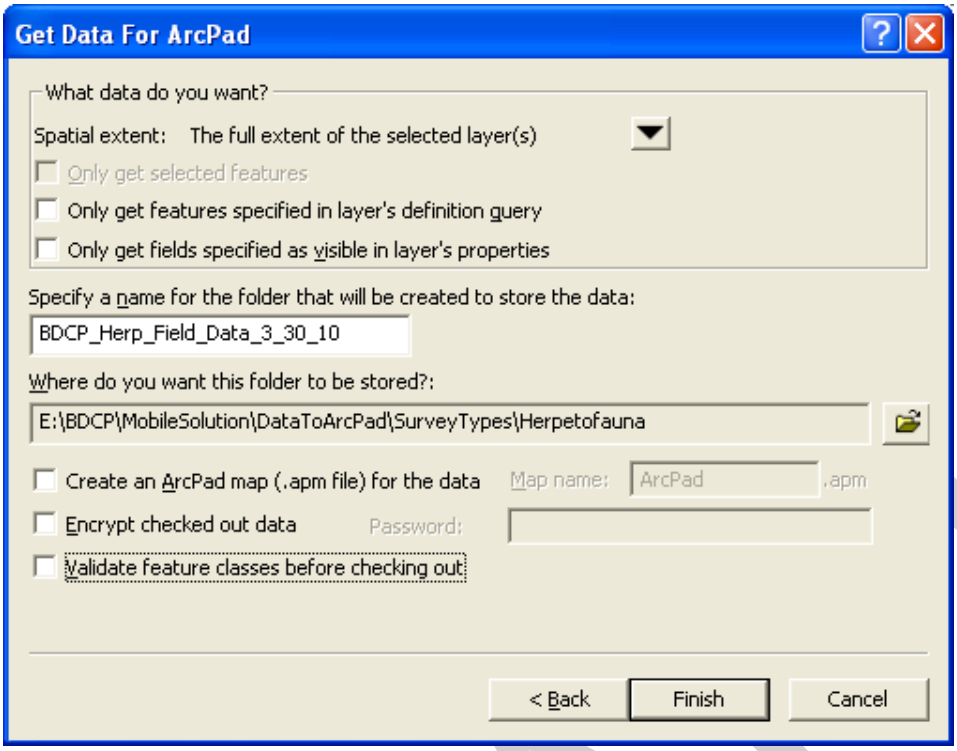

STEP 4: *Complete final page.* Under the section "What data do you want?" specify the subset of data to be used (if any). Assign a name to the output folder (format: BDCP_<resource type>_Field_Data_<mm_dd_yy>), browse to the location in which to save the folder, and select "Finish".

Creating Data Entry Forms

STEP 1: Start the ArcPad Application Builder program.

STEP 2: Open an AXF file or ArcPad layer file (.apl if using a shapefile) in ArcPad Application Builder.

STEP 3: Select the Layer from which to create the form. An AXF can have multiple layers contained within it. Refer to the image below to see where to find the layers:

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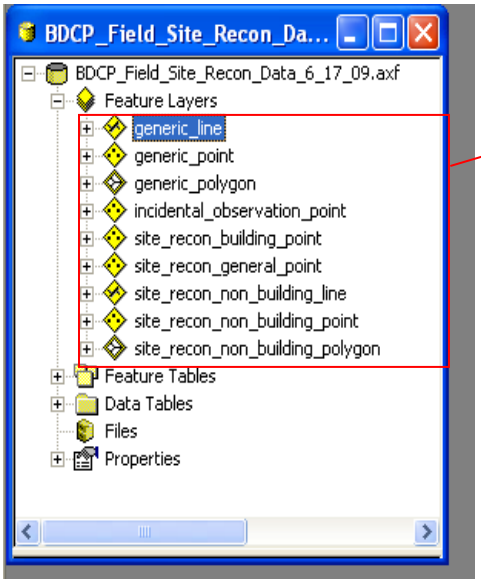
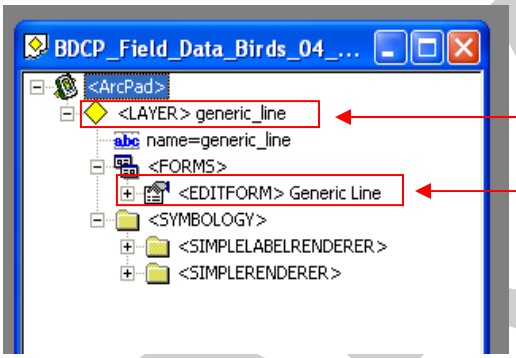


Select one and double-click

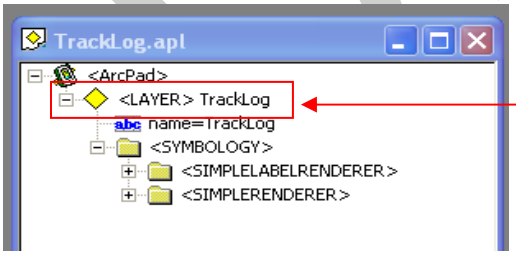
If a data form has already been created, the window will include:



Select "<LAYER> generic line"..

If the layer contains <EDITFORM> as shown here, it means that a data form has already beencreated. . To use this form, double-click "<EDITFORM>…" to open the form. ..Editor" and jump to STEP 5

If a data form has not already been created, the window will be similar to:



Select this layer and move to Step 4.

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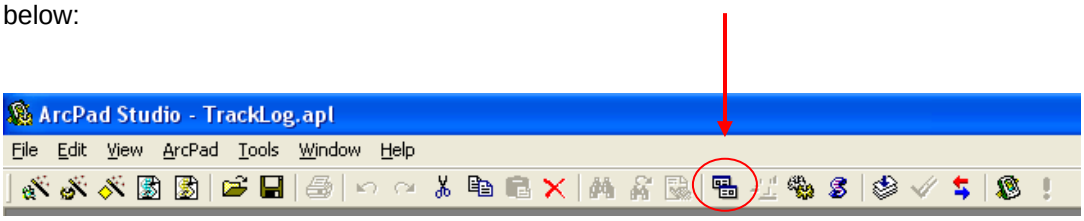
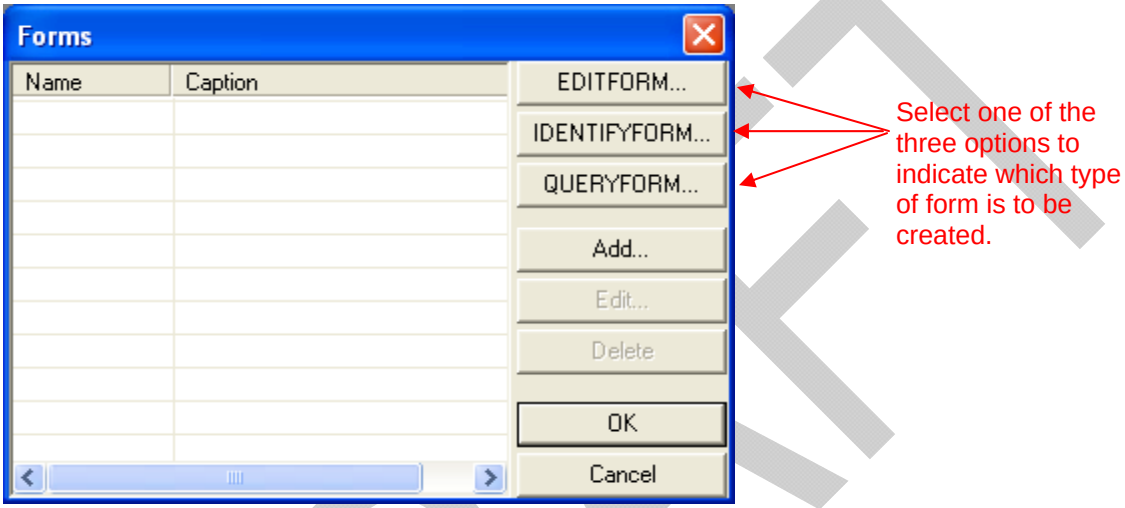
STEP 4: Select the "Create Form" button. The "Forms" button is located on the top toolbar as shown below:



The following screen will appear:



The "Edit Form" option creates a form that is used in ArcPad for data editing. A read only "Edit Form" will also display when the "Identify Tool" is used unless a different "Identify Form" is created. Alternatively though, an "Identify Form" cannot be used in ArcPad for data editing. The "Query Form" option is used to create a form specifically for querying the data. For this program, only the "Edit Form" option is being used. Select "EDITFORM".

STEP 5: Design the Form. When "EDITFORM" is selected, the following windows will appear:

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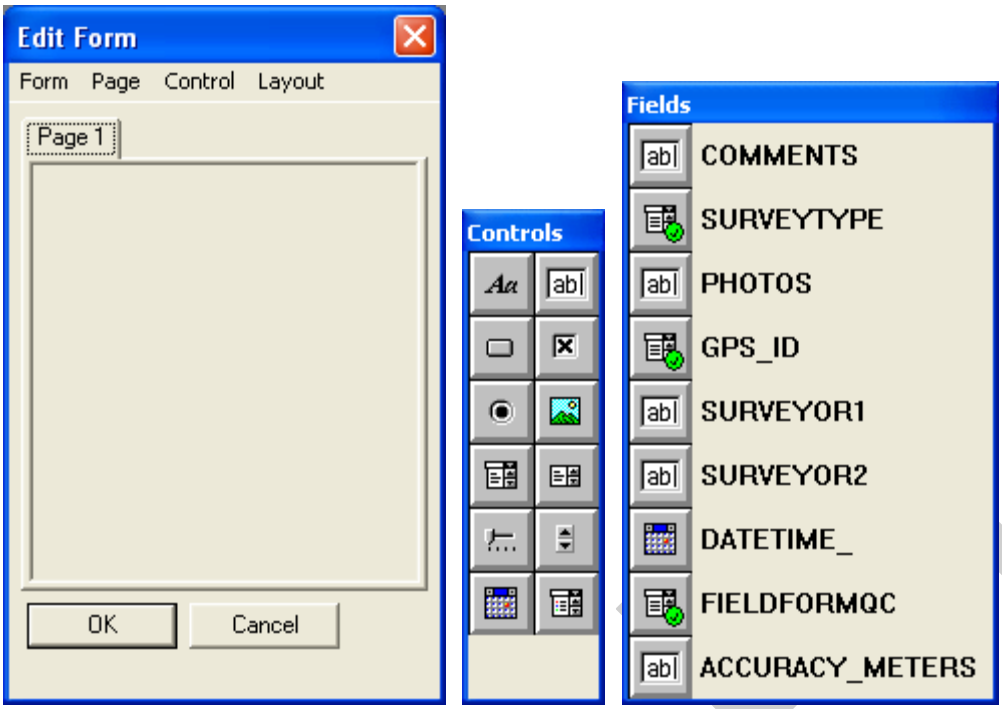

A form contains a series of controls. Text is considered a “Control”. The “Control” window contains the suite of controls that can be included in a form. To add a Control to the form, select and drag one of the “Control” icons from the “Controls” window to the “Edit Form” window (shown on left). The “Properties” window will appear when the control is placed in the “Edit Form” window. For updating already existing controls, the “Control Properties” window can be accessed by double-clicking an existing control on a form. The “Control Properties” window allows for the adjustment of the control’s position on the form, the field that the control is tied to, and other functions.

The “Fields” window (shown above to the right) contains all current fields included in the layer; the icon to the left of each field shows the *type* of control most likely to be used for that Field. Click on and drag a Field over to the Edit Form and the control previously added to the Edit Form will be linked to that field. This is the ideal way to create the controls.

There are some fields that will need to be created with a different control link than the default suggested. The “FIELDFORMQC” field in the”Field” window above is an example. The default field control shown for “FIELDFORMQC” is a combo box. In this case, although the combo box also provides a “yes/no” field, for this project, a checkbox field is preferred (checked = yes, unchecked = no).

To change the control link for a field: 1) Click and drag the checkbox control from the controls window over to the “Edit Form” screen; 2) A window (as shown below) will appear. Select the field “FIELDFORMQC” from the dropdown menu for the “Field” property.

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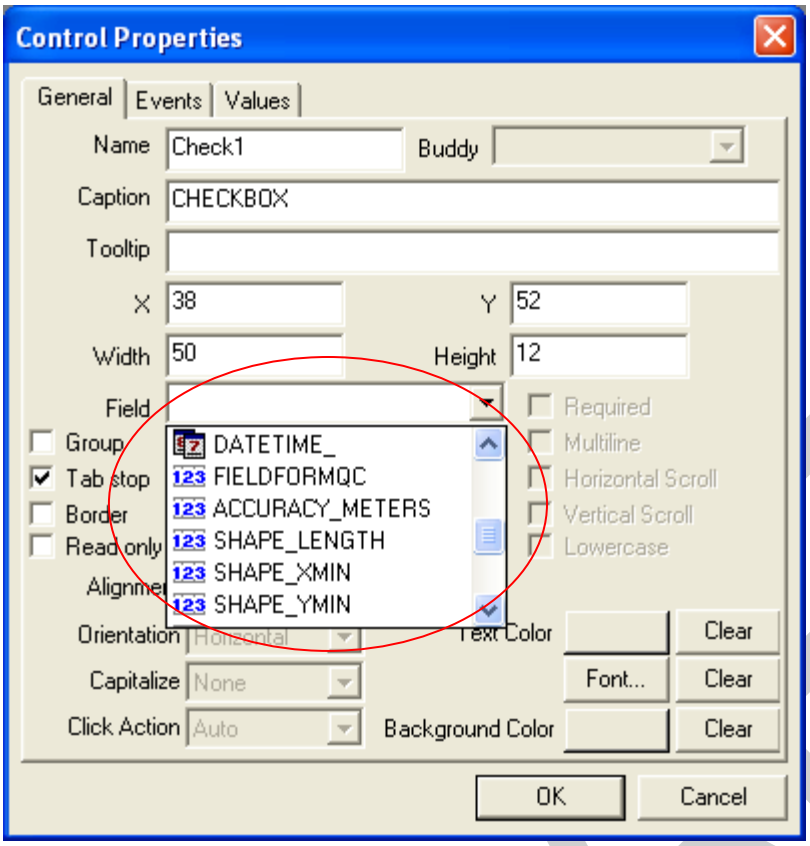

STEP 6: Click OK to complete this task. Within the ArcPad studio main window, save. If all controls have been created, close the program to end this session.

ArcPad Common Tasks Guide

Task 1: Starting ArcPad on the GPS

STEP 1: To power on the Trimble GPS, push the green button located at the bottom right of the handheld. The Windows Mobile desktop will open. This may take a few minutes as the Trimble GPS boots up. When the Windows Mobile desktop appears, using the attached stylus, touch START at the top left hand corner of the screen. A drop down menu will appear. Select "Programs" from the bottom of the menu. A new window will appear; find the icon shown below:

Touch the icon shown above and ArcPad will start.

Tip: When using the stylus, it is a common mistake to hold the stylus on the screen too long. Quickly touch the screen and let up on the stylus for best response.

STEP 2: After starting ArcPad (it will take a minute or two to start up) a window similar to the one shown below will appear:

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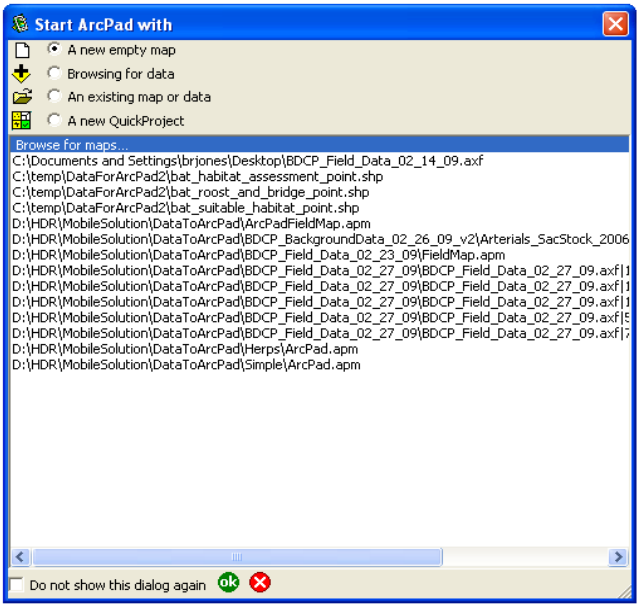
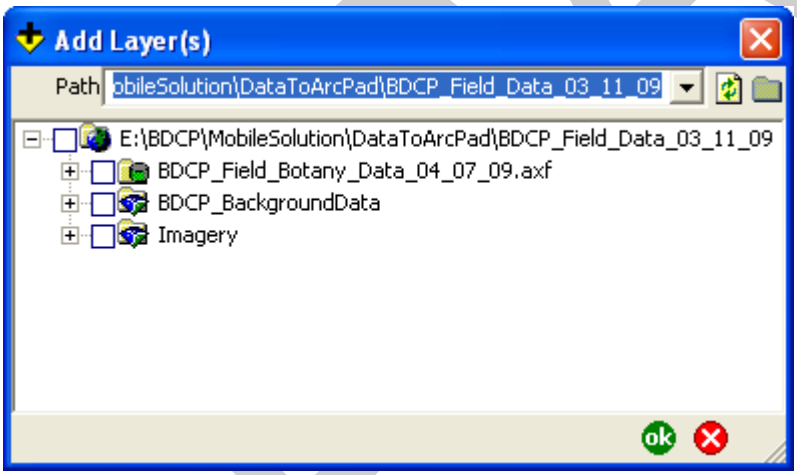
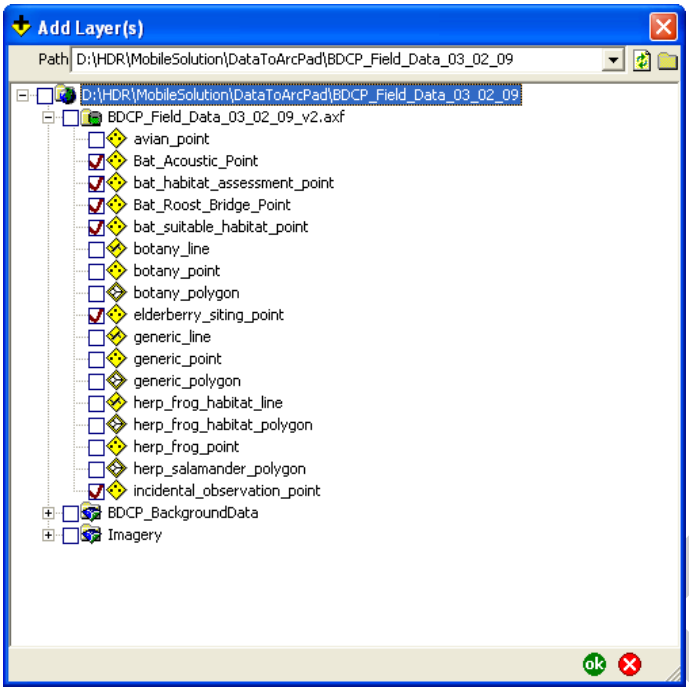


The window shows all files that have been accessed on this handheld using ArcPad. Select "Browsing for data" among the four options at the top (*this is to be performed for initial use only)*. Alternatively, if a map has already been saved with pre-selected layers and symbology, confirm the name of the .apm file shown in the window is the map to be accessed, and select "An existing map or data" from the four options. Touch the green OK icon at the bottom of the window to move to the next step.

STEP 3a: If the "Browsing for data" option was selected in Step 2, the screen below will appear:



The file shown above "BDCP_Field_Botany_Data_04_07_09.axf" is an ArcPad geodatabase. An AXF for each of the resource types has been created. Each resource's AXF file contains the form that has been developed for that specific resource. Check the box next to the AXF file itself and the plus sign next to "BDCP_BackgroundData" to see a list of layers that can be used as background information. Imagery is also available; also select the plus sign next to "Imagery" to navigate to the location of the imagery. It is suggested to only select layers that are required for the field effort. The Trimble GPS will run out of RAM memory and cease to work if too many layers get added. Be careful when imagery is added. If imagery is to be used, it is suggested to use only the AXF file and one background file in addition to the imagery. After selecting the layers (see screen below), touch the green OK icon at the bottom of the window.



STEP 3b: If the "An existing map or data" option was selected in Step 2, a window will appear listing all the .apm files available on the Trimble GPS. Select the preferred map and touch OK.

Task 2: Recording a New Point Feature

STEP 1: *Turn on GPS function.* To add a point feature to a GIS layer based on GPS coordinates (versus just tapping on the screen with the stylus in a location on the shown map), first activate the GPS. To do this, on the main ArcPad screen, touch the icon shown below:

The window below will appear:

Initially, "NOFIX" will appear in the window. This will change to "2D" once the device has locked on to enough satellites. At this point, the window should be showing the Latitude and Longitude of your current position, and will indicate whether or not the device is ready for data collection. Once GPS is activated, it will not be necessary to repeat this step for the remainder of the current ArcPad session. Select the red "X" box to close the "Position" window.

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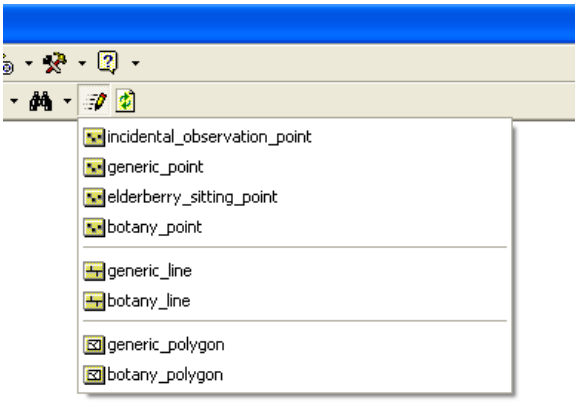
STEP 2: *Begin recording a new point.* First identify on ArcPad which point layer to edit. To do this, touch the "Edit Layer" icon shown below:

A list of the available layers will appear similar to the list shown below:



The layers are divided into geometry groups: all of the point layers are grouped together, all of the line layers are grouped together, and all of the polygon layers are grouped together. Choose the point layer to edit.

Once a layer is selected for editing, the Editing Toolbar will automatically appear below the two default toolbars as shown below:

STEP 3: Touch the "edit point" icon as shown below:

Once this icon is selected, touch a location on the map displayed on the screen to manually add the point, or add the point by GPS unit location as follows (the below icon will be available on the screen):

Touch the above icon; a point will be recorded based on the unit's current position. Once the icon is selected, it will take about 10 seconds for the Trimble to process the position information and bring up a data entry form. The form will look similar to the image below:

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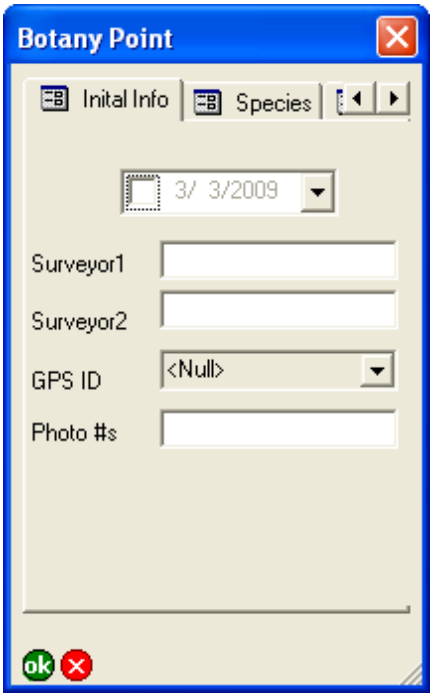

STEP 4: In the image shown above, the tabs are located at the top of the window, while on the GPS unit they will be positioned at the bottom. For information that requires typed entry you must use the "keyboard". The "keyboard" icon is located at the bottom right of the screen and can be difficult to see because it is white. In the event the activated "keyboard" hides a field that requires data entry: 1) touch the field with the stylus; 2) touch the "keyboard" icon. This will not prevent the keyboard from hiding the field but will ensure that you are typing in the correct field. To view the field during the typing process, touch the "keyboard" icon to temporarily hide the keyboard and review entered text, then touch the icon again to reactivate and resume typing.

STEP 5: Some layers are associated with tables that enable the user to record more than one species per point. If the layer is associated with a table, the"Related Table" tab will be shown on the field form. Please refer to the image below:

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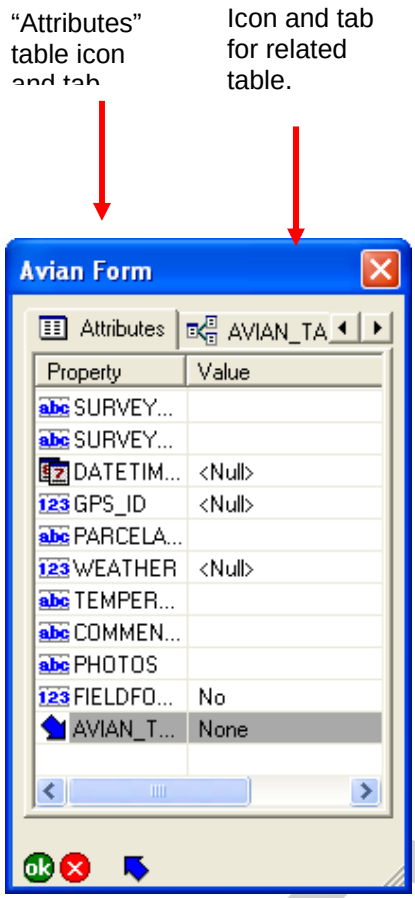

Scroll through the form tabs to find the "Attributes" table tab. Following the "Attributes" table tab, the related table tab will be found. When the related table tab is selected, it will resemble the image below:

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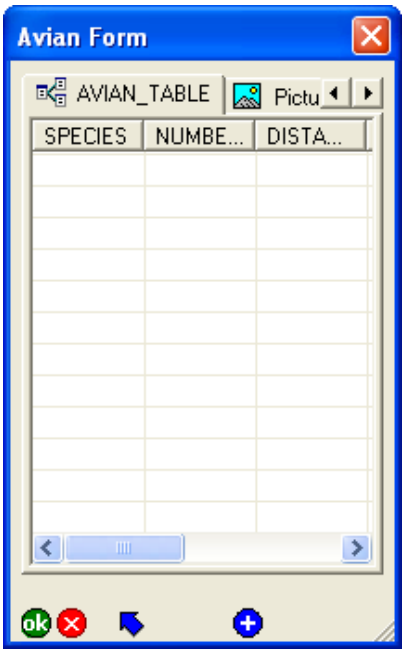
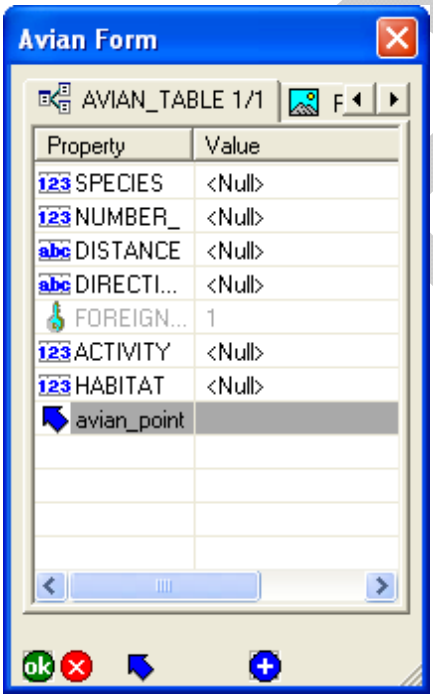


To add an “occurrence” to be associated with the new point, in this example it’s a “Species of Bird”; click on the blue plus sign located at the bottom of the window. The following image will appear:



The information that will be associated with each attribute as defined for this form will be visible. Click in the cell below “Value” next to an attribute to insert information for that attribute. Below is an example of

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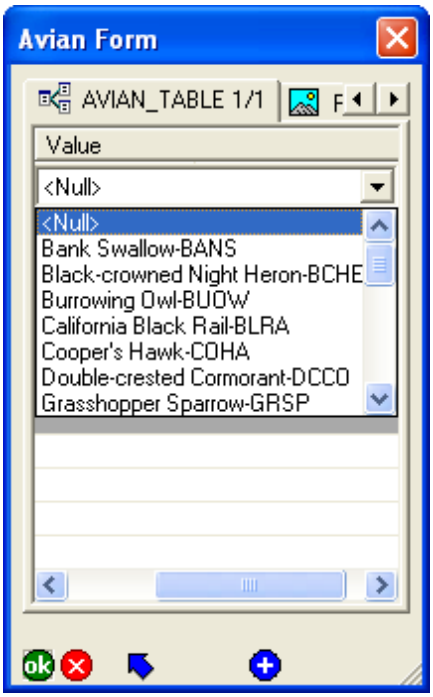
selecting the species property. The drop down menu appears after the user clicks on the cell in the "Value" column corresponding to the field "SPECIES".



To add another occurrence, which in this example would be another bird species and its associated information, click on the plus sign at the bottom. Continue performing this procedure until all the occurrences have been recorded. Click on the green OK icon at the bottom of the window when finished.

Task 3: Recording a New Line Feature

STEP 1: Steps associated with this task are similar to those of Task 2. Refer to Step 1 in Task 2 (above) for information regarding activating the GPS function. For this activity, Step 2 would change to selection of a line layer for editing (instead of a point layer); a "polyline" should be specified as the type of geometry to be collected. Please refer to the image below:

If a line layer is the only item selected for editing, then the "polyline" symbol is automatically chosen as the Geometry type. If both a point and line layer is selected for editing, the geometry type for editing will need to be specified. To do this, click on the down arrow key to the right of the "Geometry" icon and select "Polyline". An example of the dropdown menu is below:

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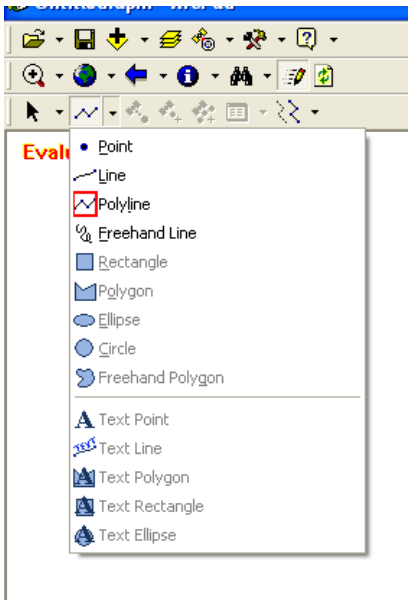
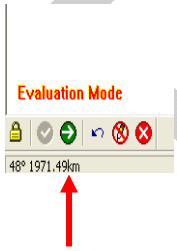


STEP 2: After the polyline geometry is selected, the polyline can be edited on the screen manually or can be collected by current GPS position. There are two options for collecting a line by GPS unit position. The first option allows the collection of one vertex (i.e.; segment point) at a time. To use this option, select the button located on the toolbar as shown below at each vertex along the line:

The second option allows the GPS to collect the vertices automatically. To use this option, click the streaming icon (shown below) to initiate:

With the streaming icon selected, walk the line. Upon completion, click on the green right arrow at the bottom of the screen:



Clicking on the green right arrow initiates the Data Collection form. Please refer to Task 2, Steps 4 and 5 for the remaining steps in the activity.

Task 4: Recording a New Polygon Feature

STEP 1: Steps associated with this task are similar to those of Task 2. Refer to Step 1 in Task 2 (above) for information regarding activating the GPS function. For this activity, Step 2 would change to selection of a polygon layer for editing (instead of a point layer); the steps associated with this task are similar to

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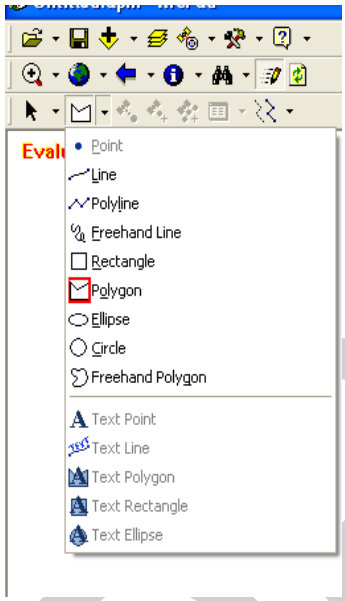
Task 2. Refer to Step 1 in Task 2 for information regarding activating the GPS. After completing Steps 1 and 2 in Task 2, assuming a polygon layer to edit was selected in Step 1, a polygon must be specified as the type of Geometry to be collected. Please refer to the image below:

If a polygon layer is the only item selected for editing, then the "polygon" symbol is automatically chosen as the Geometry type. If both a point layer and a polygon layer are selected for editing, it will be necessary to specify which geometry type is to be edited. To accomplish this, click on the drop down arrow to the right of the "Geometry" icon (see figure above) and select "Polygon" from the dropdown menu that appears:



STEP 2: Once the polygon geometry is selected, edits can be performed manually on the screen or collection by GPS position can be performed. There are two options for collecting a polygon by GPS position. The first option allows the collection of one vertex at a time. To use this option click on the button located on the toolbar (shown below) at each vertex along the line:

The second option allows the GPS to collect the vertices automatically. To use this option, click the streaming icon (shown below) to initiate:

With the streaming icon selected, walk the perimeter of the polygon. Upon completion, click on the green right arrow at the bottom of the screen:

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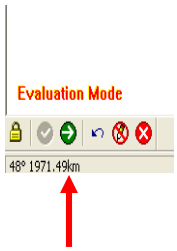


Clicking on the green right arrow initiates the Data Collection form. Please refer to Task 2, Steps 4 and 5 for the remaining steps in the activity.

Data Management by the EFS

For information regarding the steps to be taken for an EFS to obtain an AXF file to use for field data entry, as well as steps for end-of-day file and photograph uploads, please refer to Appendix A.

Checking in AXF Files

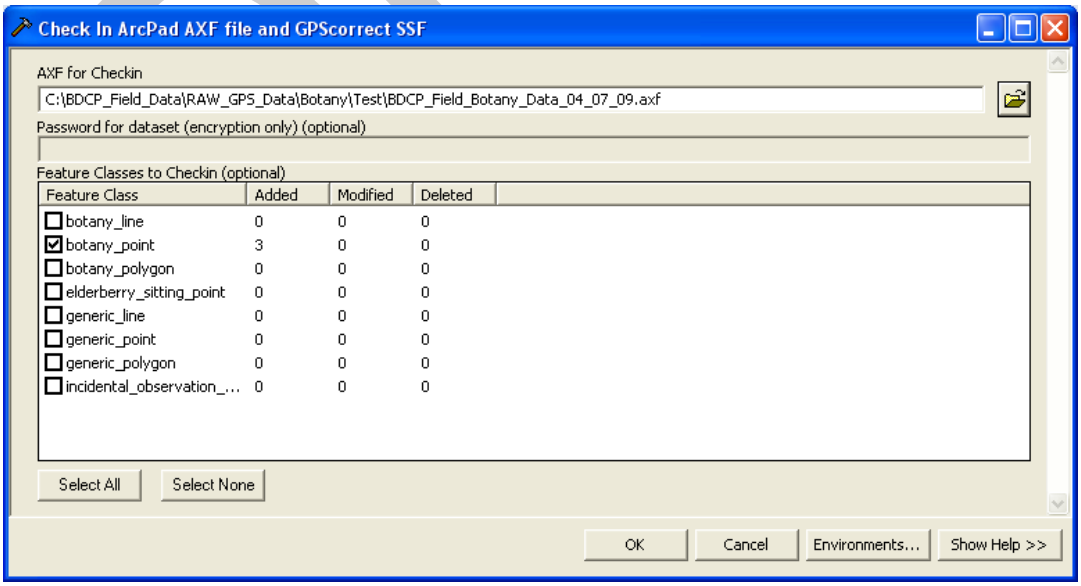
If the data in the AXF is to be post-differentially corrected (increases feature accuracy by 1-2 meters) begin with Section 1 below, otherwise skip to Section 2.

Section 1

STEP 1: Open ArcMap.

STEP 2: Use the "Check in ArcPad AXF file and GPSCorrect SSF" tool. Confirm that both ArcPad and GPS Analyst software has been installed on the computer. In addition, confirm that ArcPad Data Manager and GPS Analyst extensions have been initiated (Tools > Extensions), and that the GPS Analyst toolbar has been turned on (Tools > Customize). Finally, confirm that the AXF "check in" and "check out" buttons have been added to the toolbar. Refer to GPS Analyst documentation for instructions as necessary. The icons include: "Get Data for ArcPad" and "Check in ArcPad AXF file and GPSCorrect SSF".

On the GPS Analyst toolbar click on the "Check in ArcPad AXF file and GPSCorrect SSF" button. The following screen will appear:



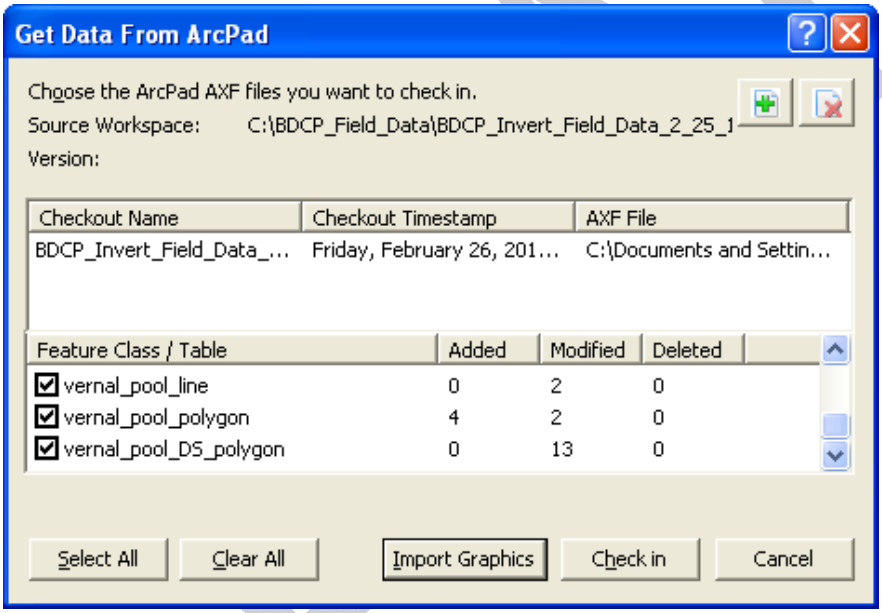
STEP 3: *Add AXF.* Click the folder button at the right of the tool to browse to the location of the AXF and SSF files (both files need to be located together in the same folder). Select the appropriate AXF file for editing. Once the AXF has been added to the tool, the column "Feature Class" will reflect all feature classes contained in the selected AXF. Select all feature classes that have a number greater than zero in any of the columns to the right of each name. When completed, select OK. This will initiate the tool run. Occasionally, when the tool has completed its run or experiences an error during processing, the above screen will reappear with some of the feature classes showing all columns changed to zero. Uncheck those feature classes that have been changed and select OK.

NOTE: It is suggested to record the numbers associated with each feature class and table under the "Added", "Modified", and "Deleted" columns. Sometimes all changes do not make it over to the geodatabase. A comparison between the recorded numbers and what quantities are contained in the feature classes and tables after the check in is complete is recommended.

Section 2

STEP 1: Open ArcMap.

STEP 2: Use the "Get Data for ArcPad" tool. Confirm that ArcPad has been installed on the computer and the ArcPad Data Manager extension has been turned on (Tools > Extensions). Also make sure the ArcPad Data Manager toolbar has been turned on (Tools > Customize). On the ArcPad Data Manager toolbar, select the "Get Data from ArcPad" button. The following screen will appear:



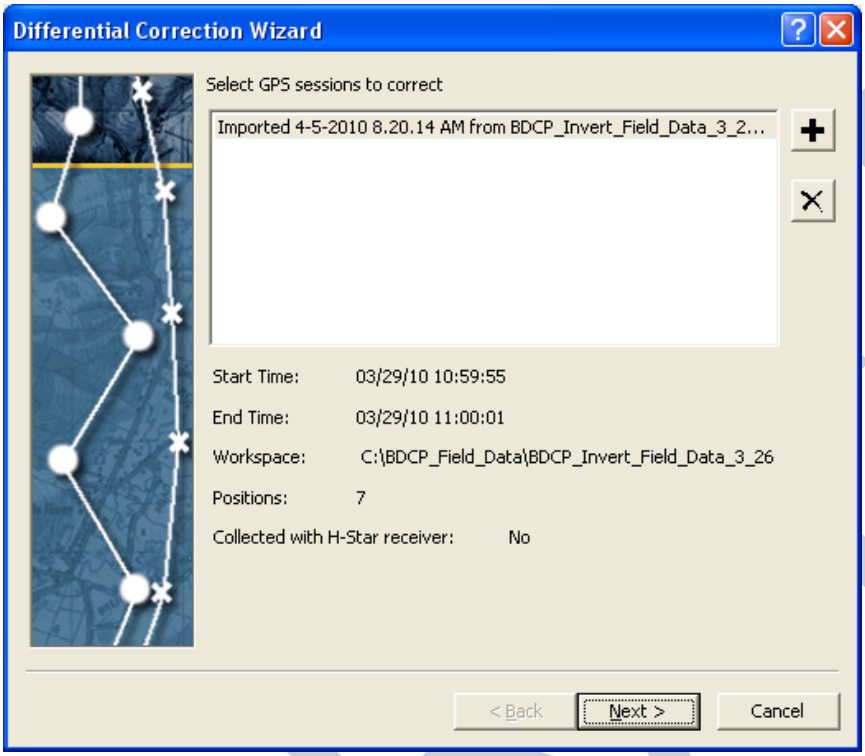
STEP 3: *Add AXF.* Click the green plus sign at the top right corner of the window and a "browse to AXF file" dialog screen will appear. After completing the "add AXF" function, the feature classes contained in the AXF will be displayed under the "Feature Class/Table" column. The remaining columns indicate how many records were added, deleted, or modified in each feature class. Select "Check in". The following screen will appear describing the results of the check in:

NOTE: It is suggested to record the numbers associated with each feature class and table under the "Added", "Modified", and "Deleted" columns. Sometimes all changes do not make it over to the geodatabase. A comparison between the recorded numbers and what quantities are contained in the feature classes and tables after the check in is complete is recommended.

Post Differential Correction

STEP 1: Open ArcCatalog. Browse to the GPS Enabled geodatabase to be edited.

STEP 2: Select undifferentially corrected SSF files. Within the geodatabase, open the folder called "GPS Sessions". All of the SSFs that have been imported into the geodatabase will be listed. For any files that have previously been differentially corrected, a listing with a bullseye symbol will be displayed; the listing will note the name of the SSF file that has been corrected and when the correction was performed.



STEP 3: *Run post differential correction.* Right click on an SSF file that has not been post differentially corrected. Select the "Differential Correction" button. The "Differential Correction Wizard" will open. The first field will include the name of the SSF file that was selected for differential correction. The bottom half of the screen will provide information about the SSF file. Click "Next" three times to page through screens that should be left to defaulted values.

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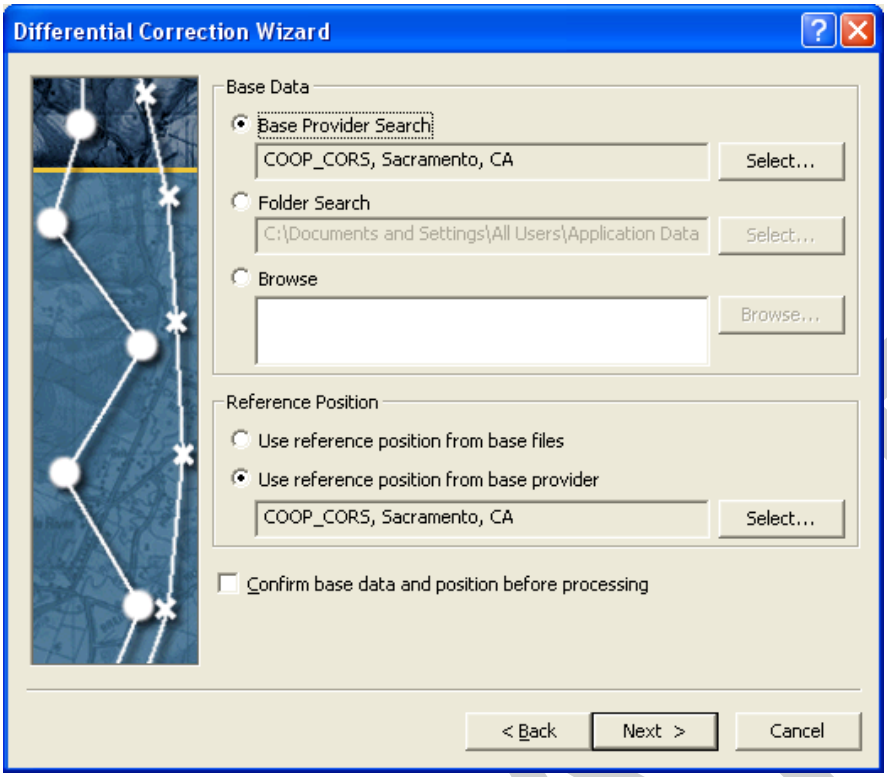
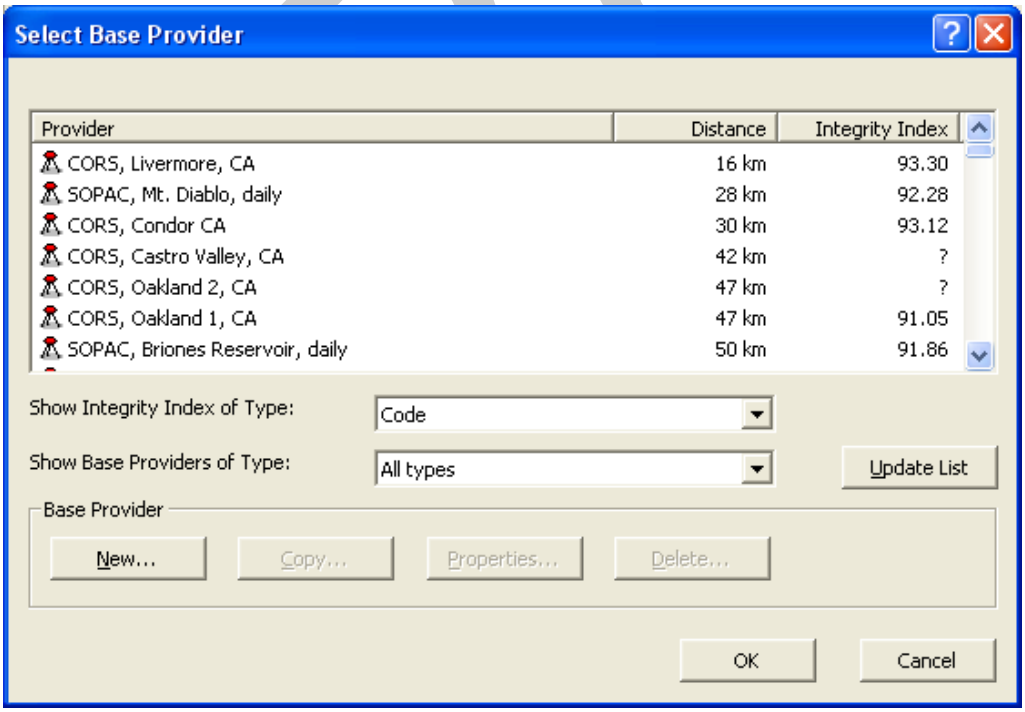


STEP 4: *Select base provider.* At the top of the 4th screen (shown above) confirm that the radio button next to "Base Provider Search" is selected and then click the "Select" button to the right of the field. The following screen will appear:



The base provider stations will be shown sorted from closest to furthest from the location at which the SSF file was recorded. For best results, select the closest location with the highest "Integrity Index". Select the "Update List" button to refresh the list from the internet in case new base stations have become operational since the last update. For the next three screens, select "OK", "Next", and finally, "Start".

STEP 5: *Review Report.* As the different steps in the process are being performed, a report will be displayed on the screen. Occasionally, the wizard will be unable to find, download, or open base data from the base provider station that was selected. If this happens, select the "Back" button at the bottom until the "Base Provider Search" screen is shown. Select a different base station and try again. Click the "Next" button twice and restart the correction by selecting "Start" on the final screen. Review the final report to assure the quality and effectiveness of the process. The best results will be indicated by the following items within the report. The section of the report labeled "Coverage Details" should show 100% coverage. In the section where it says "Differential Correction Summary" it should say 100% of the selected positions were code corrected… and within that same section it should have 100% of the positions falling between 0-15cm and 2-5m for estimated accuracies.

"Check Out" Replica Geodatabase Synchronization

Replica synchronization is the process of transferring edits from one geodatabase to another. One of the geodatabases needs to be the parent geodatabase and the other the child replica geodatabase of this parent. For this project, this applies to intermediary geodatabase replicas from which AXF files are checked out and back into, for disconnected editing (i.e.; editing of the data offsite). In addition, it will be used for transfer of edits from the geodatabase in the production environment to the geodatabase in the publish environment. There are multiple types of replicas; for intermediary geodatabases used to check out and in the AXF files, they are referred to as a "check out" replica. The replica used for the publish environment is a "one way" replica.

STEP 1: *Open ArcCatalog*. Browse to the geodatabase replica that was created from the original SDE multiuser geodatabase.

STEP 2: *Use the synchronize changes tool.* Right click on the geodatabase name and hover the mouse pointer over "Distributed Geodatabase" from the menu that opens. A secondary menu will appear; click "Synchronize Changes" from the menu list. The following screen will appear:

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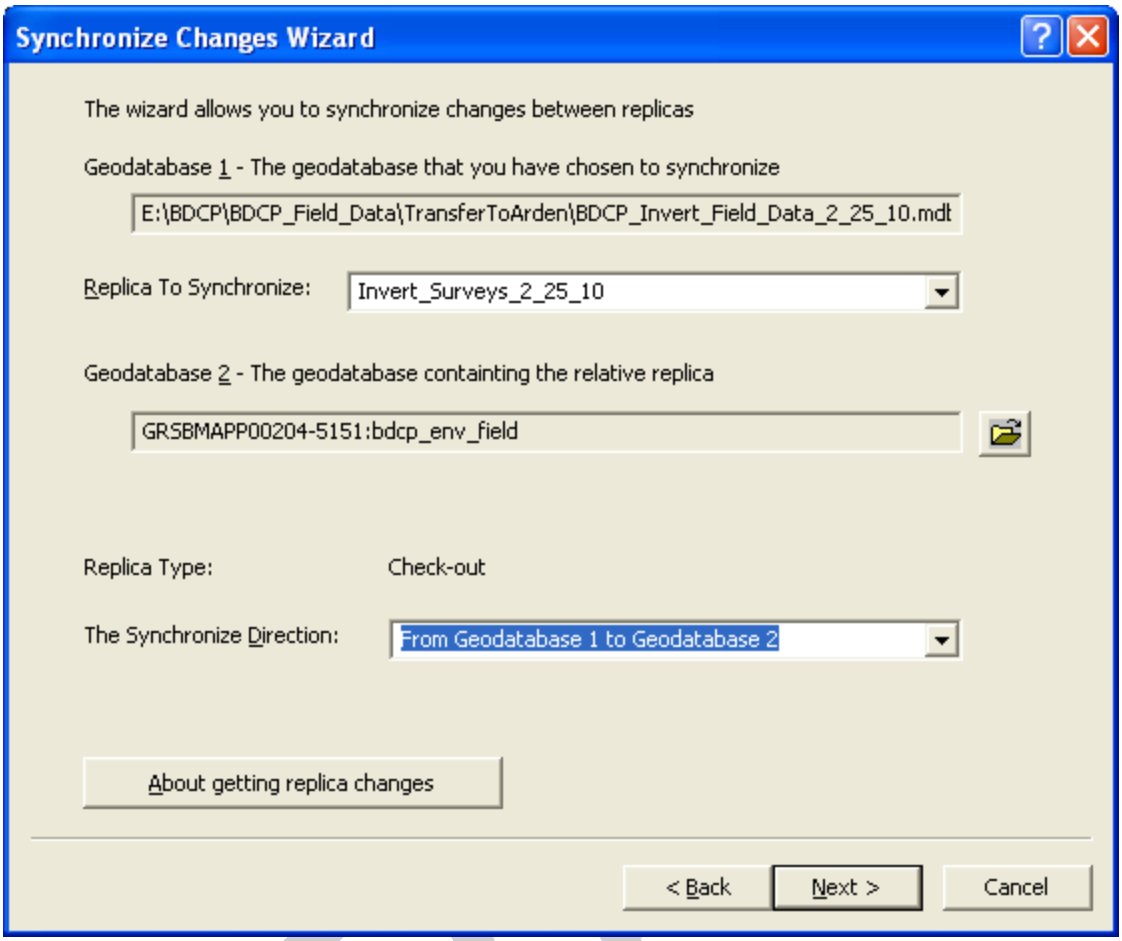

STEP 3: *Press next.* Since the synchronize was initiated from a locally saved replica and not from the multiuser geodatabase parent which likely has multiple replicas created from it, all options have been defaulted correctly; select the "Next" button to move to the next step.

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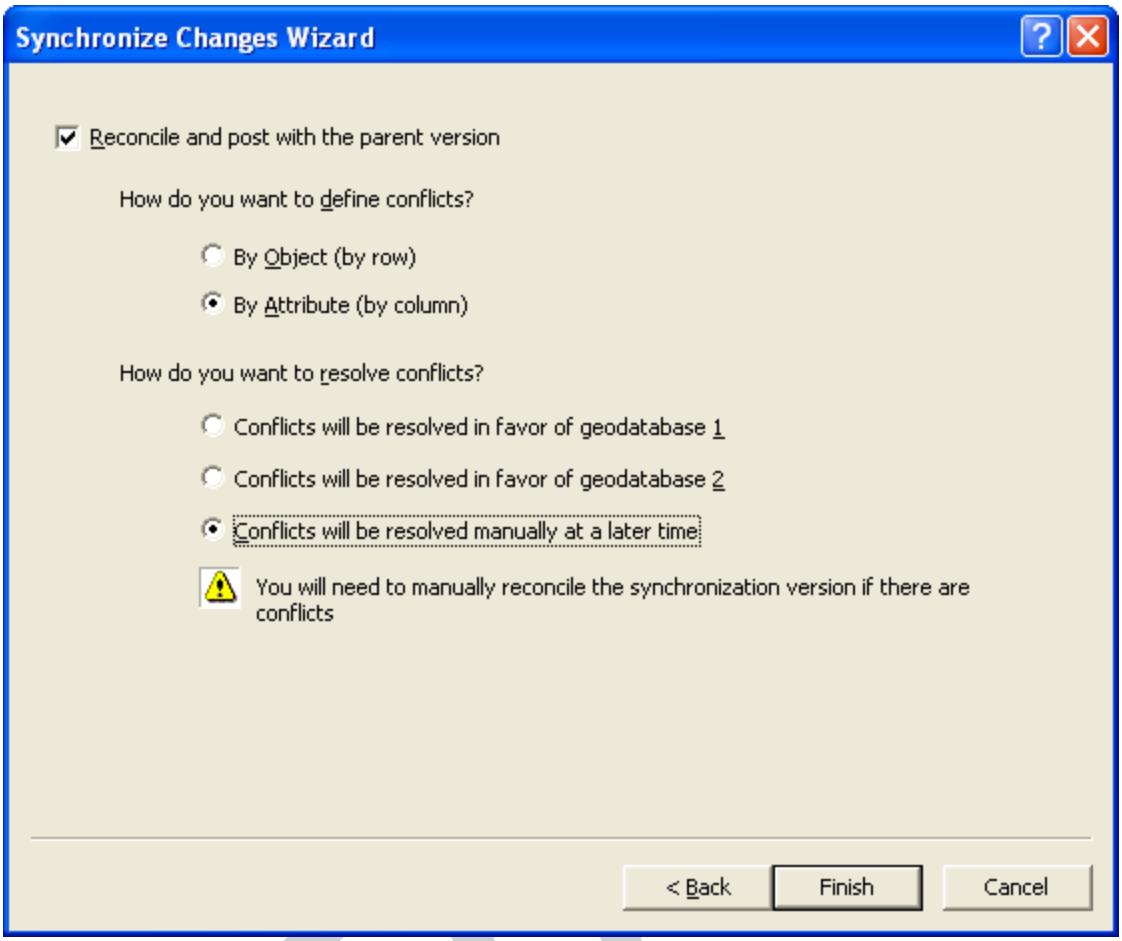


STEP 4: *Reconcile and post with the parent version.* The parent version of the replica is the version that the replica was created from. By checking the box to "Reconcile and post with the parent version" this step can also be completed and the replica version will not have to be managed separately. Choose "By Attribute" and "Conflicts will be resolved manually at a later time" (to increase control of the data edits). If there are conflicts found, the reconcile and post process will be aborted and conflicts can be viewed and resolved. The reconcile and post process will need to be repeated once the conflicts are resolved. If conflicts were found and the reconcile and post process was aborted, it does not mean that the synchronization was unsuccessful. It means that the edits were transferred from the replica geodatabase to the multiuser geodatabase, but they remain a child version under the parent version instead of the edits being incorporated into the parent version itself. If this happens, review and resolve the conflicts and then post and reconcile with the parent the child version that now contains the replica information and has had its conflicts reviewed and resolved. Select "Finish" to end the process.

Photo Management Processes

STEP 1: Download pictures from PCE.

STEP 2: Organize photos. Open the GPSID folder that matches the ID of the handheld unit that was being used when the zipped set of photos were taken. The GPSID folders are located within each of the survey type folders. Within this open folder, create individual "day" folders for all days included in the photo period. Unzip the photographs and separate them into their related "day" folders. Please refer to the introduction to the Data Management and Maintenance section for more information on the overall field survey data folder structure.

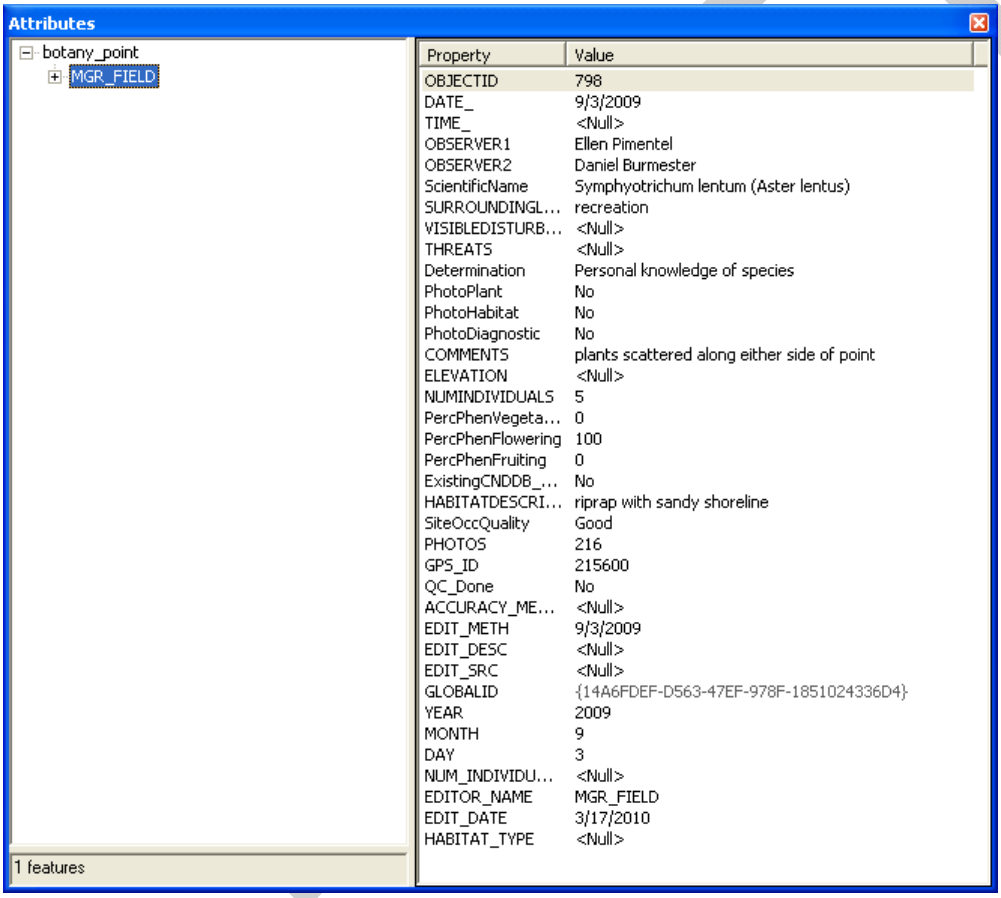
STEP 3: Start ArcMap. Add the feature class or table that has the photo numbers stored. For this example the feature class is titled "botany_point".

NOTE: This tutorial is split into two sections. For most situations refer to section 1. Alternatively, in situations where the photo number is being stored in a species table, which is then related to a photos table, refer to section 2.

Section 1

STEP 4: *Start Edit session and select a feature.* After selecting a feature class, click the attributes button on the editor toolbar (as shown below).

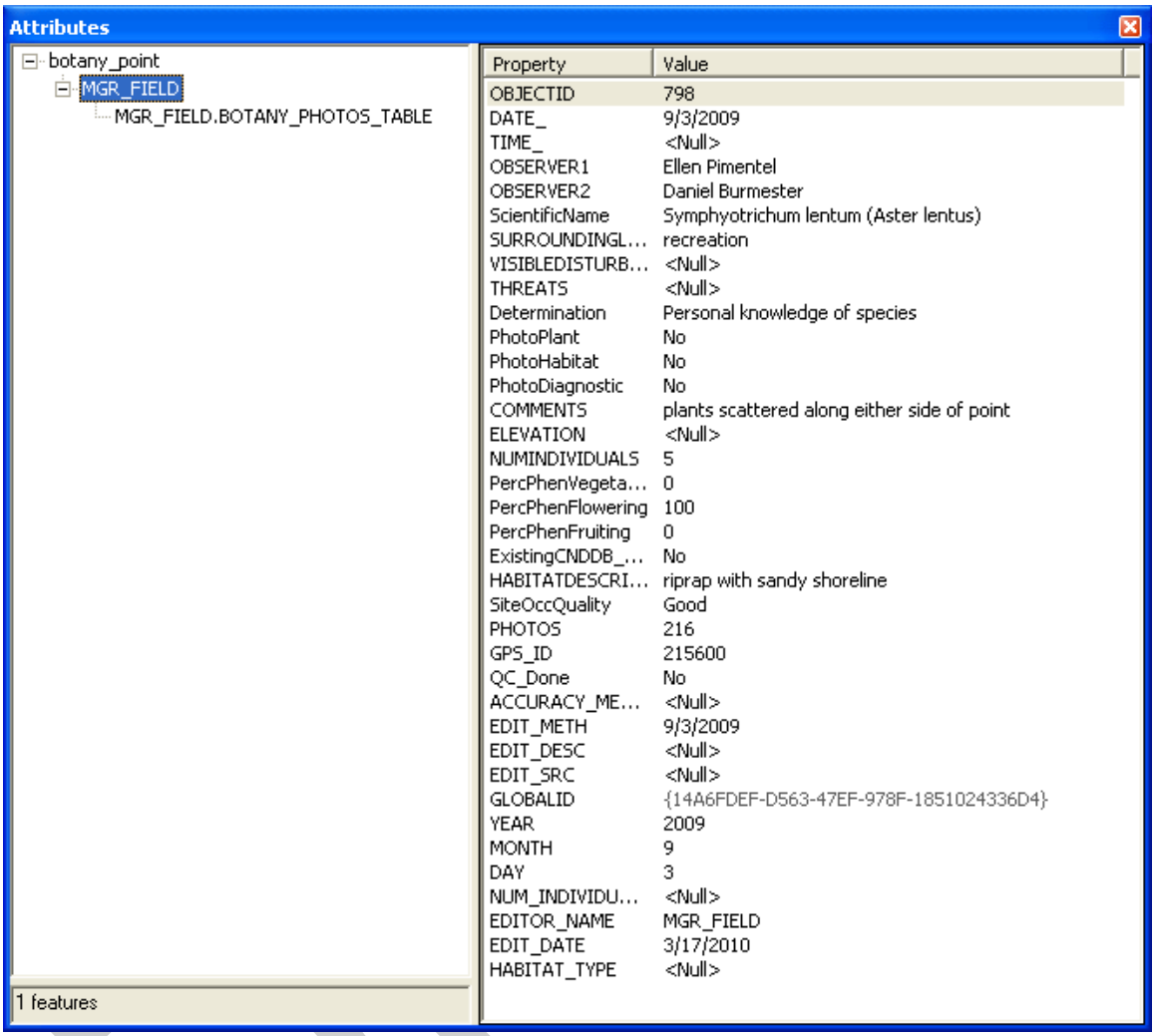
The following window will appear:



Property	Value
OBJECTID	798
DATE_	9/3/2009
TIME_	<Null>
OBSERVER1	Ellen Pimentel
OBSERVER2	Daniel Burmester
ScientificName	Symphyotrichum lentum (Aster lentus)
SURROUNDINGL...	recreation
VISIBLEDISTURB...	<Null>
THREATS	<Null>
Determination	Personal knowledge of species
PhotoPlant	No
PhotoHabitat	No
PhotoDiagnostic	No
COMMENTS	plants scattered along either side of point
ELEVATION	<Null>
NUMINDIVIDUALS	5
PercPhenVegeta...	0
PercPhenFlowering	100
PercPhenFruiting	0
ExistingCNDDB_...	No
HABITATDESCRI...	riprap with sandy shoreline
SiteOccQuality	Good
PHOTOS	216
GPS_ID	215600
QC_Done	No
ACCURACY_ME...	<Null>
EDIT_METH	9/3/2009
EDIT_DESC	<Null>
EDIT_SRC	<Null>
GLOBALID	{14A6FDEF-D563-47EF-978F-1851024336D4}
YEAR	2009
MONTH	9
DAY	3
NUM_INDIVIDU...	<Null>
EDITOR_NAME	MGR_FIELD
EDIT_DATE	3/17/2010
HABITAT_TYPE	<Null>

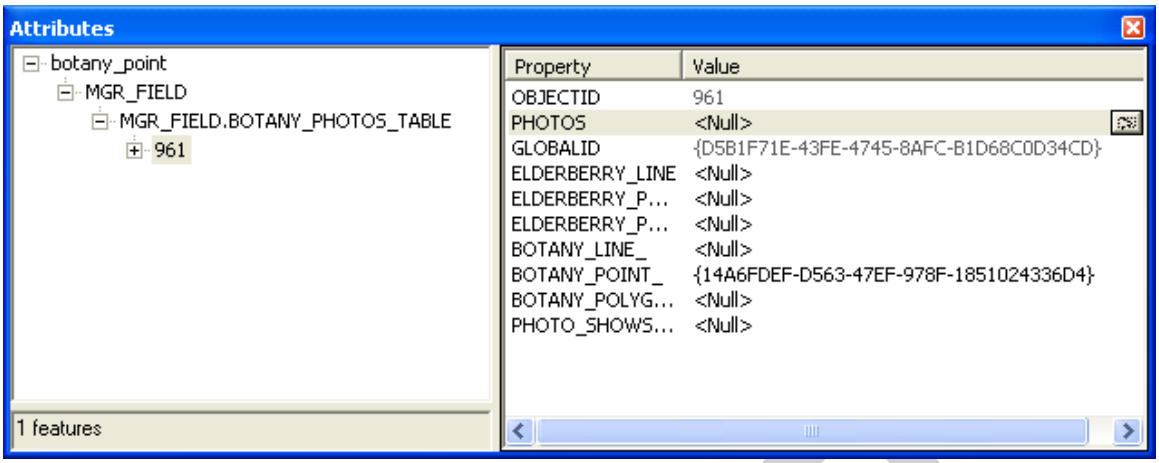
STEP 5: Click plus sign corresponding to feature class to expand table of contents. Once expanded, the left pane will display the value for the primary display field for the selected feature class (in this case, "MGR_FIELD"). The primary display field can be changed by right-clicking on the layer (layers in a map document point to feature classes) in the table of contents, and selecting "Properties". Within the "Properties" menu, select the "Fields" tab; from the resulting drop down menu, select from the list of available fields in the feature class. Returning to the "Attributes" window, when the value for the primary display field is selected (field is highlighted in blue when selected), the fields for the feature class are shown in the right pane. Note the date, GPSID and photo fields displayed in the right pane; these will be

used to find the corresponding photo to upload for this record. Shown in the left pane, there will be a plus sign next to the value shown for the primary display field. Click the plus sign to the left of the field name to show related feature classes and/or tables—in this case, the example includes one table (MGR_FIELD.BOTANY_PHOTOS_TABLE).



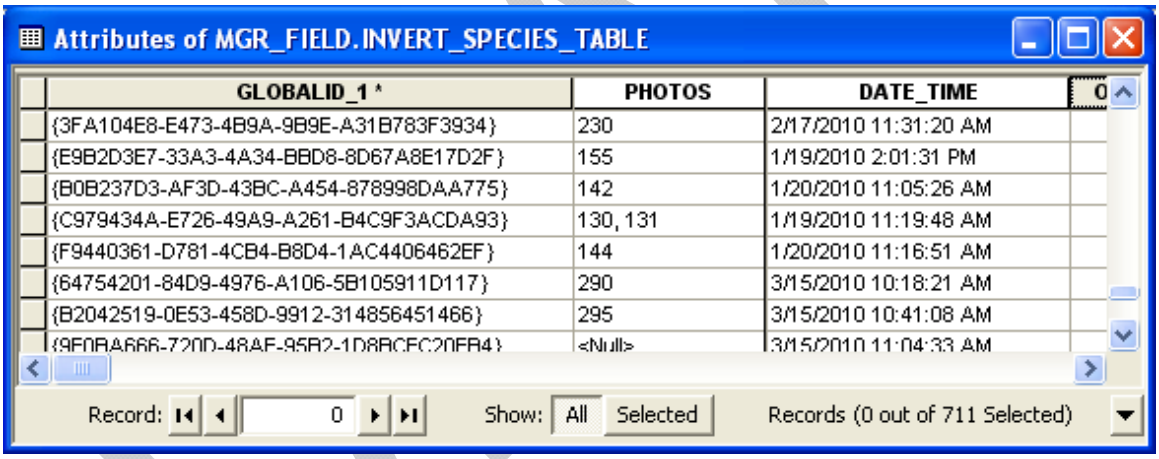
Property	Value
OBJECTID	798
DATE_	9/3/2009
TIME_	<Null>
OBSERVER1	Ellen Pimentel
OBSERVER2	Daniel Burmester
ScientificName	Symphyotrichum lentum (Aster lentus)
SURROUNDINGL...	recreation
VISIBLEDISTURB...	<Null>
THREATS	<Null>
Determination	Personal knowledge of species
PhotoPlant	No
PhotoHabitat	No
PhotoDiagnostic	No
COMMENTS	plants scattered along either side of point
ELEVATION	<Null>
NUMINDIVIDUALS	5
PercPhenVegeta...	0
PercPhenFlowering	100
PercPhenFruiting	0
ExistingCNDDB_...	No
HABITATDESCRI...	riprap with sandy shoreline
SiteOccQuality	Good
PHOTOS	216
GPS_ID	215600
QC_Done	No
ACCURACY_ME...	<Null>
EDIT_METH	9/3/2009
EDIT_DESC	<Null>
EDIT_SRC	<Null>
GLOBALID	{14A6FDEF-D563-47EF-978F-1851024336D4}
YEAR	2009
MONTH	9
DAY	3
NUM_INDIVIDU...	<Null>
EDITOR_NAME	MGR_FIELD
EDIT_DATE	3/17/2010
HABITAT_TYPE	<Null>

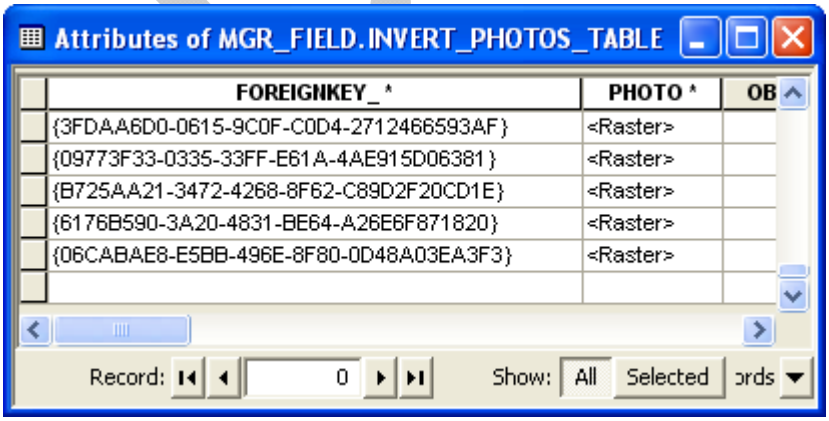
STEP 6: *Load Photo.* Right click on the related photo table ("MGR_FIELD.BOTANY_PHOTOS_TABLE"). Select "Add new" from the menu that opens. A value will appear for the primary display field of the photo table (in this example, "961" is displayed). Click on the new value. In the right pane all fields contained within the related table will be shown. Locate the field that is named PHOTOS or PHOTO. It is a raster field for loading and viewing rasters, which in this case are photographs. Click in the area to the right of "PHOTOS" and a little picture icon will appear at the far right. Click on the icon; a small window will appear with instructions telling user to right-click on the window. As instructed, right-click on the small window and a menu will appear; select "Load" from the options. From the "Load" window that appears, choose "JPEG" for the compression type (leave compression ratio as 75) and click the browse button to navigate to the photo referenced in the photo field from the feature class (the feature class and its related photo table both have a field called photo(s)). Select "OK".



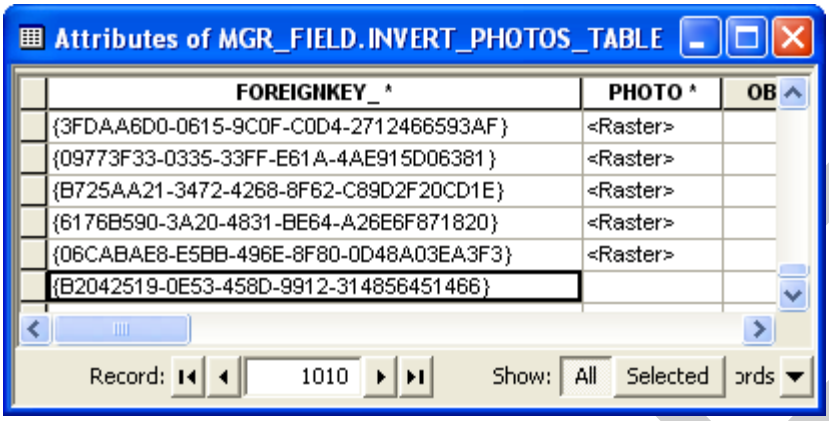
Section 2

STEP 4: *Start Edit session and open attribute tables.* Open the attribute table of both the species and photo tables. In this example, the invert_species_table and the invert_photos_table will be used. Once open, order the species table so that the primary key field, in this case named GLOBALID_1, is to the far left, followed by the PHOTOS field and DATE_TIME field and sort by OBJECTID. Order the fields in the photos table so the field holding the foreign key is to the far left, in this case named FOREIGNKEY, followed by the PHOTO field.

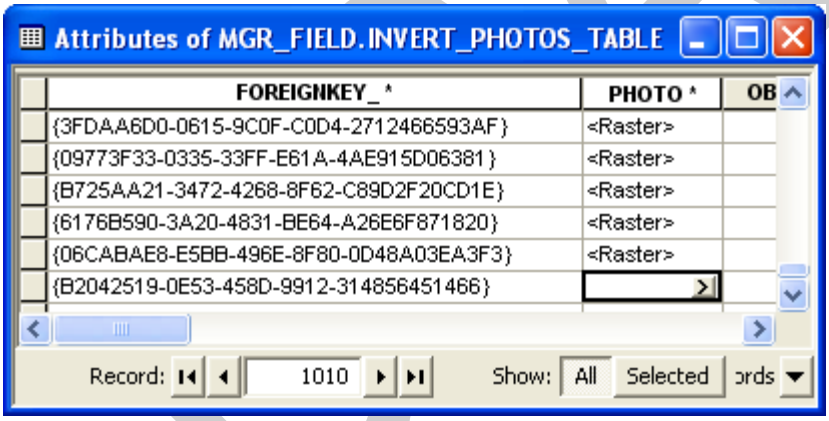




STEP 5: *Copy primary key value to foreign key cell for a new photo record.* Locate the first record in the species table for which to associate a photo or photos. Copy the value in the GLOBALID_1 (primary key) field. Scroll to the bottom of the photo table and paste the value in the first empty cell within the foreign key field.



STEP 6: *Load photo.* Click in the corresponding empty cell in the PHOTO field and a right-pointing arrow will appear. Left click on the arrow and a window will appear stating to right click on the window to load. Right click on the window and a menu will appear—select "Load". From the new window choose JPEG for the compression type (leave compression ratio as 75) and click the "browse to" button to navigate to the corresponding photo that is referenced in the features photo field. Press OK.



Process for Offsetting Avian Data

For the avian surveys, to avoid disturbing birds during surveys, the GPS location of the surveyors is recorded at a distance away from the bird. The distance and direction of the bird or bird nest is then estimated from the surveyors' location and recorded in the attribute table. This tutorial describes the step-by-step procedures used to offset the surveyor's GPS position for the distance and direction recorded.

STEP 1: Open ArcMap. Add avian_point_ver2 and avian_point_offset from the multiuser geodatabase.

STEP 2: Start an edit session.

STEP 3: Calculate X and Y fields. Open the attribute table for avian_point_ver2, right click on the field called X, and choose "Calculate Geometry". In the window that appears choose "X Coordinate of Point" from the drop down menu at the top, leave coordinate system as it is, make sure for the drop down menu at the bottom it says "Meters (m)", uncheck the box next to "Calculate selected records only", and press OK. Do the same for the field called Y except choose "Y Coordinate of Point" from the drop down menu at the top of the "Calculate Geometry" window.

NOTE: Steps 4-6 are contained in a model. To use the model first add the toolbox containing the model in ArcMap by first opening ArcToolBox in ArcMap and then right clicking on ArcToolBox located at the top of the ArcToolBox window and then selecting "Add Toolbox" from the menu and finally browsing to the Multiuser Geodatabase where the toolbox called MGR_FIELD.SurveySupportModels is located. Once added to ArcToolBox inArcMap, go to SurveySupportModels > AvianOffset2010 within the ArcToolBox window and right click on the model contained there. Choose "Edit". In Edit mode click "File" and choose "Validate Entire Model". Make sure steps 1 through 3 have been performed above and still in edit view of model builder press the play button on the far right of the toolbar to run the model. Once the model has completed please skip to step 7.

STEP 4: Calculate Quadrant. Part of calculating the offset requires knowing what quadrant within the XY grid the point will reside in. If the direction of the offset is between 0 and 90 degrees then the point will be in quadrant 1, if the direction will be between 90 and 180 degrees then the point will reside in quadrant 2, if between 180 and 270 then quadrant 3, and finally if between 270 and 360 then quadrant 4. To apply this logic to avian_point_ver2, open its attribute table. Right click on the field called "Quadrant" and choose "Field Calculator". Check the box next to "Advanced". Copy into the box that says "Pre-Logic VBA Script Code" the following:

```
Dim Output As Integer
If [DIRECTION_TEXT] >= 0 AND [DIRECTION_TEXT] < 91 Then
  Output = 1
ElseIf [DIRECTION_TEXT] > 90 AND [DIRECTION_TEXT] < 181 Then
  Output = 2
ElseIf [DIRECTION_TEXT] > 180 AND [DIRECTION_TEXT] < 271 Then
  Output = 3
ElseIf [DIRECTION_TEXT] > 270 AND [DIRECTION_TEXT] < 361 Then
  Output = 4
End If
```

In the box under where it says "QUADRANT =" type: Output. Then press OK.

STEP 5: *Calculate Offset X and Y.* Open the attribute table for avian_point_ver2. Right click on the X field and choose "Field Calculator". Check the box next to "Advanced". Copy into the box that says "Pre-Logic VBA Script Code" the following:

```
Dim Output As Double
Select Case [QUADRANT]
   Case 1
      Output = [X] + ( [DISTANCE_TEXT] * Cos (((90 - [DIRECTION_TEXT] ) * 0.0174532925)))
```

```
  Case 2
    Output = [X] + ( [DISTANCE_TEXT] * Cos ((( [DIRECTION_TEXT] - 90) * 0.0174532925)))
  Case 3
    Output = [X] - ( [DISTANCE_TEXT] * Cos (((270 - [DIRECTION_TEXT] ) * 0.0174532925)))
  Case 4
    Output = [X] - ( [DISTANCE_TEXT] * Cos ((( [DIRECTION_TEXT] - 270) * 0.0174532925)))
  Case Else
    Output = [X]
End Select
```

In the box where it says “X =” type: Output. Then press OK.

The trigonometric function used for the Y coordinate value offset is this: “offset distance = the Sin of the direction”. The function only works with right triangles so the direction must be between 0 and 90, which is the purpose for the quadrants. Also, ArcMap only recognizes direction in radians (not degrees), hence the conversion factor of 0.0174532925. Complete the same steps for the “Y” field, except copy the following text in the field calculator field “Pre-Logic VBA Script Code”:

```
Dim Output as Double
Select Case [QUADRANT]
  Case 1
    Output = [Y] + ( [DISTANCE_TEXT] * Sin (((90 - [DIRECTION_TEXT] ) * 0.0174532925)))
  Case 2
    Output = [Y] - ( [DISTANCE_TEXT] * Sin ((( [DIRECTION_TEXT] - 90) * 0.0174532925)))
  Case 3
    Output = [Y] - ( [DISTANCE_TEXT] * Sin (((270 - [DIRECTION_TEXT] ) * 0.0174532925)))
  Case 4
    Output = [Y] + ( [DISTANCE_TEXT] * Sin ((( [DIRECTION_TEXT] - 270) * 0.0174532925)))
  Case Else
    Output = [Y]
End Select
```

STEP 6: *Make XY Event Layer.* Within ArcToolBox, browse to Data Management Tools > Layers and Table Views > Make XY Event Layer and open the tool “Make XY Event Layer. Where it states “XY Table” choose avian_point_ver2 from the drop down. Where it states “X Field” choose X and at “Y Field” choose Y. Where it states “Layer Name or Table View” type AvianOffsetXY. Select OK. (Refer to image below)

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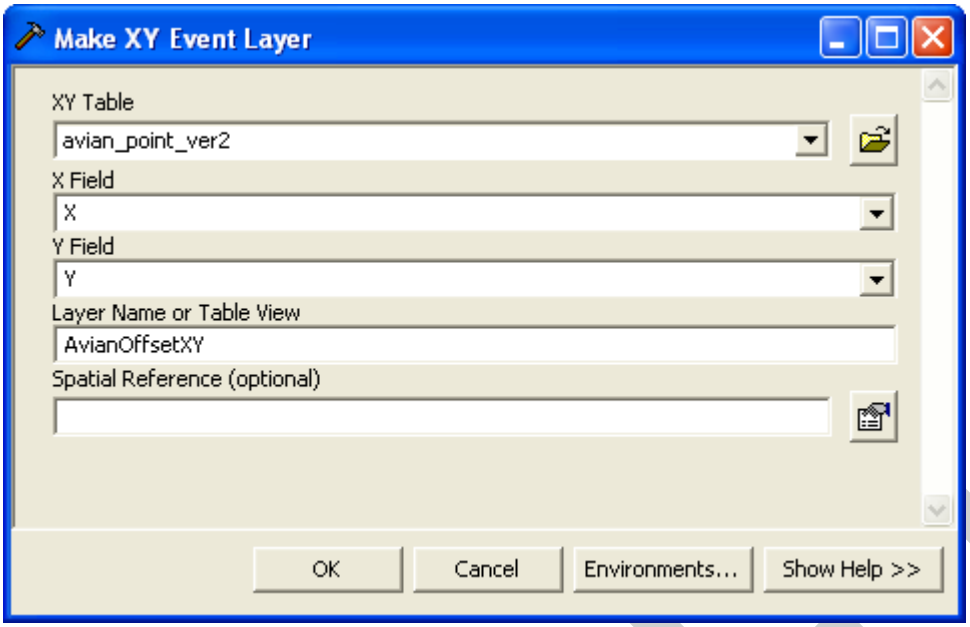

STEP 7: *Select New Records.* The feature class avian_point_offset is regularly updated, so most of the records contained in the new AvianOffsetXY layer that was just created have previously been copied into avian_point_offset. Open the attribute table for the new layer "AvianOffsetXY" and sort records by the OBJECTID field. Review the most recent records in AvianOffsetXY and compare them to the most recent records in the attribute table for avian_point_offset feature class. Once you have identified those records that are contained within AvianOffsetXY but not yet copied to avian_point_offset, select only these new records.

STEP 8: *Copy and Paste.* Click the copy button on the standard toolbar. Make sure the target on the editor toolbar is the "avian_point_offset" feature class and select the paste button. Save all edits when completed.

Metadata Creation Instructions

STEP 1: *Open ArcCatalog.* In the catalog tree, browse to and select the feature class or table for which metadata is to be updated.

STEP 2: *Open Metadata Editor.* In the right-hand pane, click on the Metadata tab. Make sure the metadata toolbar has been activated. Select "customize" from the "Tools" dropdown menu and click on the "Edit Metadata" button.

STEP 3: Fill Out Information. While adhering to DWR metadata standards, enter the new metadata. The DHCCP metadata standards are specified in the DWR document "Spatial Data Standards for the California Department of Water Resources", which can be located by contacting the DHCCP GIS coordinator.

Viewing Photos Stored in the Multiuser Geodatabase

Field photographs are accessed through the following tables:

- AVIAN_PHOTOS_TABLE
- BAT_PHOTOS_TABLE

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- BOTANY_PHOTOS_TABLE
- HERP_PHOTOS_TABLE
- INVERT_PHOTOS_TABLE

The photographs are accessed in ArcMap using the “identify” tool or by using the attribute table as described in the previous section “Working With Related Tables in ArcMap”.

To use the “identify” tool to access photographs:

STEP 1: *Activate the identify tool.* Select the "i" button next to the binoculars on the tools toolbar.

STEP 2: *Click on a feature.* Select a feature (e.g.; point, line) that is likely to have associated photos.

STEP 3: *Click plus signs.* In the left pane of the “identify” window, click on plus signs to expand the table of contents until the photos table is located. If there are photographs associated with the selected feature, a plus sign will be shown next to the photos table.

STEP 4: *Click plus sign next to photo table.* Each photo record associated with the feature record will display below the photo table after clicking the corresponding plus sign. Click on one of the listed photograph records; the fields and their values for the selected record will appear to the right. Search for the "Photos" field containing a small picture icon.

STEP 5: *Click on the picture icon.* Selecting the picture icon will display the photograph in a viewer window. The viewer can be resized to whatever is preferred and multiple viewers can be open at the same time.

To use the attribute table to access photographs:

STEP 1: *Select a record from the attribute table of a specific feature.*

STEP 2: *Press the "options" button at the bottom of the attribute table.* When the options menu appears, hover the mouse pointer over "related tables" and then click on the name of photo table when it appears. This will open the photograph table with associated photo records selected.

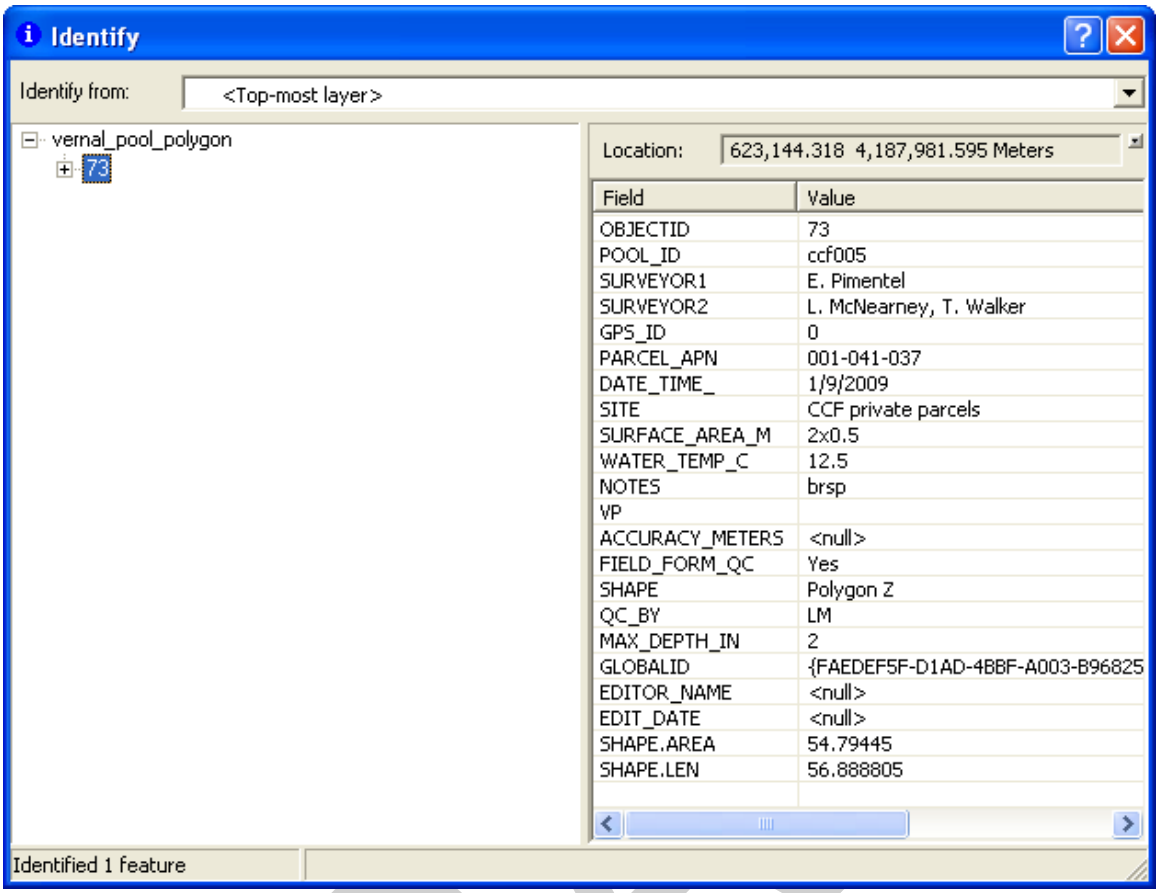
STEP 3: *Click the “Selected” button.* If the “Selected” button at the bottom of the photos table is selected, the table will show only those photograph records that are related to the selected feature.

STEP 4: *Scroll to the field titled "Photo".* Click in the cell that states "<Raster>". A small arrow will appear; click the arrow, which will produce a thumbnail of the photograph. Click the thumbnail to open a new viewer with the photograph.

Working with Related Tables in ArcMap

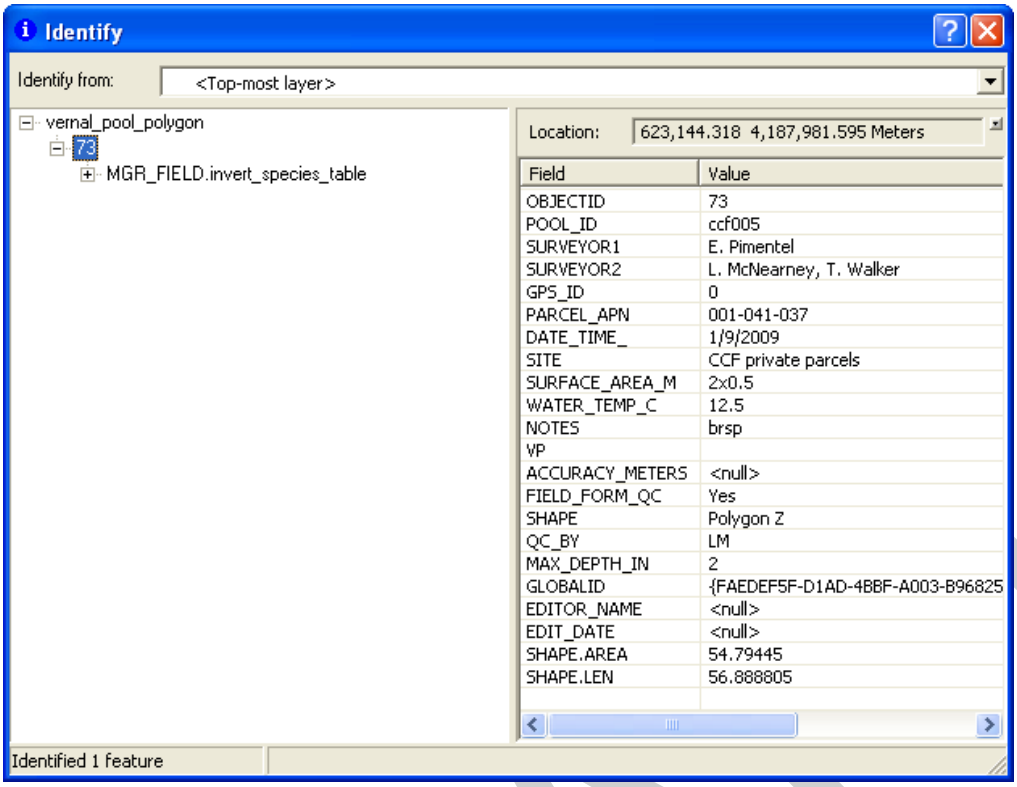
There are several feature classes that have been built to include relationships with data tables. For the purpose of this section data tables are different than photograph tables as their purpose is to store data other than photographs. Our feature classes that are related to data tables include: herp_amphibian_polygon, herp_frog_survey_point, vernal_pool_line, vernal_pool_point, vernal_pool_polygon, riparian_mammal_trap_line, and riparian_mammal_trap_point. Each feature class has a relationship with a photograph table except for the riparian mammals feature class. This section will provide instructions on working with relationships in ArcMap.

STEP 1: Using the identify tool: click on a feature in the display screen for which there is a related table. The window below will appear:

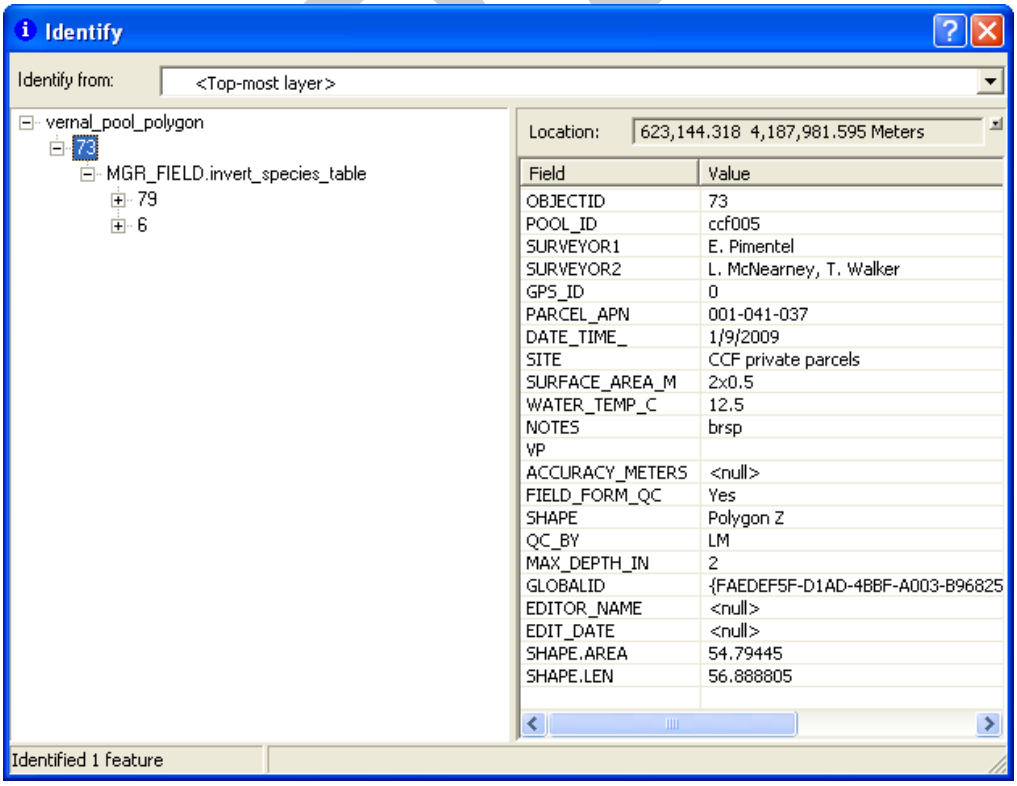


Notice in the left pane that the name of the layer and the value of the primary display field (often the OBJECTID) for the feature you selected are shown. If the value under the layer name is selected, all attributes for that selected record (feature) will be displayed in the pane to the right and the record value will be highlighted in blue.

STEP 2: Click the plus sign next to the value in the left pane to reveal a related table(s) as shown below:



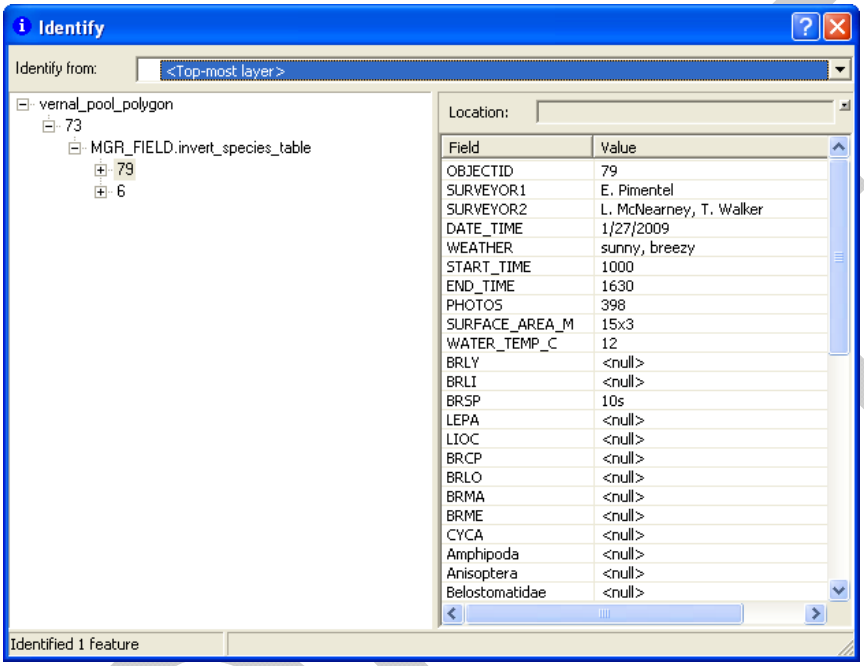
STEP 3: Click the plus sign next to the name of the related table to display the records related to the feature class as shown below:



Notice in the example above that in the right pane the attributes for the vernal_pool_polygon record (73) are still being displayed in the right pane. This is because, although other records have been displayed by clicking on corresponding plus signs, the record selection has not changed (indicated by blue highlight).

STEP 4: To see the attributes for one of the related records in the related table click on one of the values (if the primary display field has no values or are the same values for multiple records you may just see multiple nulls or repeats of the same value—rest assured they are separate records within the related table) under MGR_FIELD.invert_species_table.

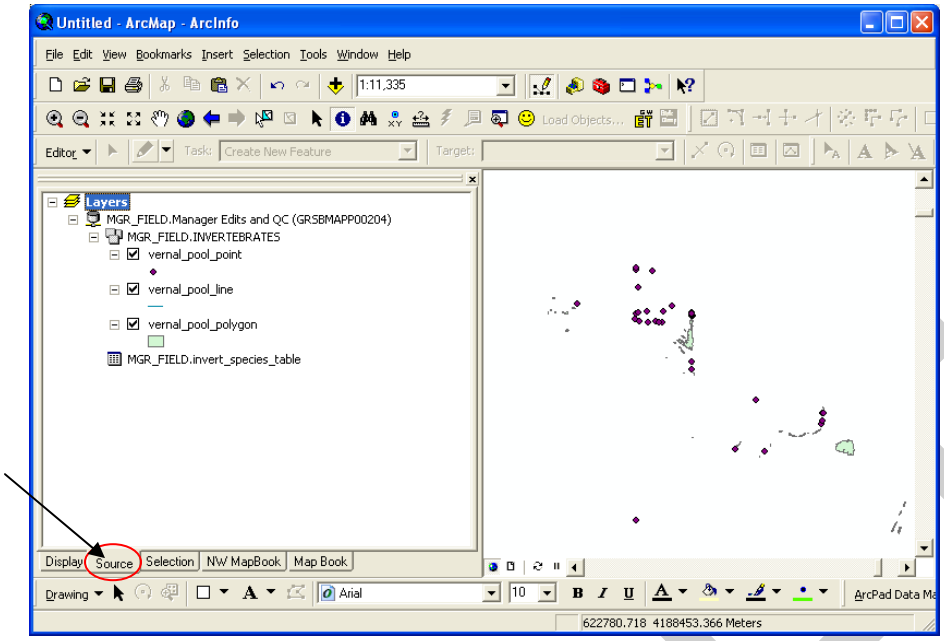
NOTE: If the primary display field has not been assigned a value for a related feature or the same value has been repeated for multiple related records, multiple nulls or repeats of the same value may be displayed. Individual records for each of these features shown under the related table do still exist.



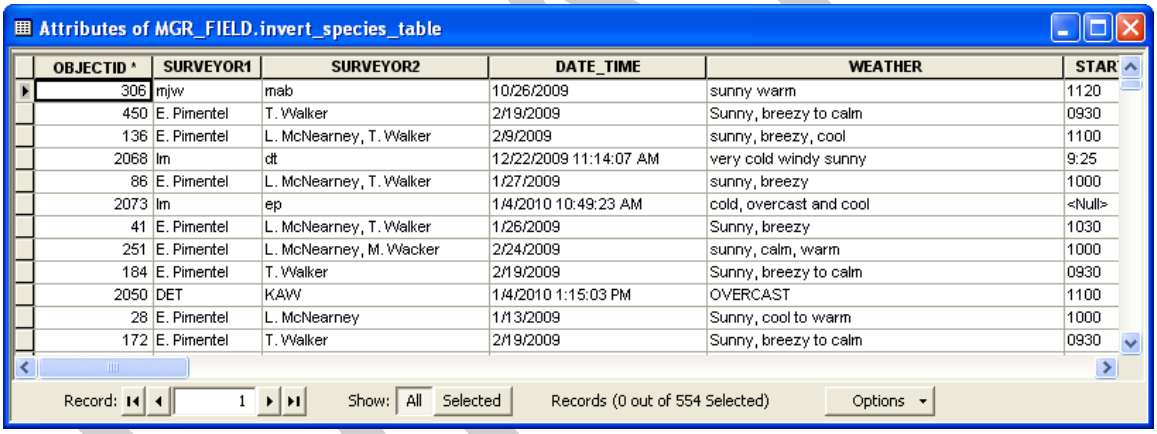
Selecting Rows in One Table Based on Rows Selected in Another

To select features from a feature layer based on a selection in the related table or vice versa, follow the instructions shown below.

STEP 1: Open the attribute table of an object from which you want to start the selection. In this example, we have opened the "MGR_FIELD.invert_species_table" attribute table which is also related to vernal_pool_point, vernal_pool_line, and vernal_pool_polygon. Click the "source" tab (circled in red in example below):



Locate MGR_FIELD.invert_species_table, right click the name and select "Open". The following will be displayed:



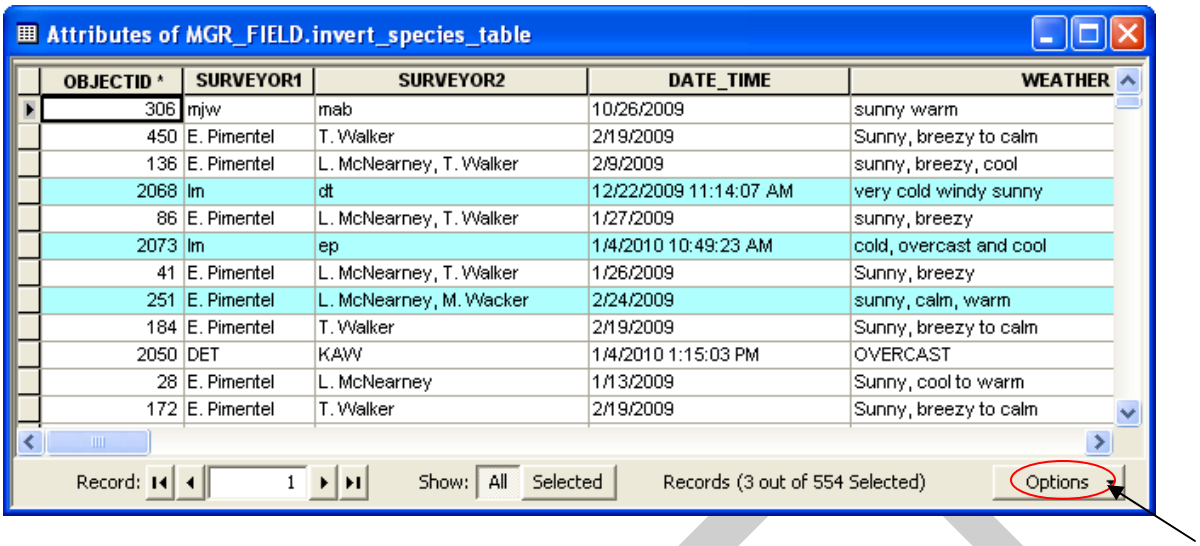
Attributes of MGR_FIELD.invert_species_table

OBJECTID *	SURVEYOR1	SURVEYOR2	DATE_TIME	WEATHER	STAR
306	mjw	mab	10/26/2009	sunny warm	1120
450	E. Pimentel	T. Walker	2/19/2009	Sunny, breezy to calm	0930
136	E. Pimentel	L. McNearney, T. Walker	2/9/2009	sunny, breezy, cool	1100
2068	lm	dt	12/22/2009 11:14:07 AM	very cold windy sunny	9:25
86	E. Pimentel	L. McNearney, T. Walker	1/27/2009	sunny, breezy	1000
2073	lm	ep	1/4/2010 10:49:23 AM	cold, overcast and cool	<Null>
41	E. Pimentel	L. McNearney, T. Walker	1/26/2009	Sunny, breezy	1030
251	E. Pimentel	L. McNearney, M. Wacker	2/24/2009	sunny, calm, warm	1000
184	E. Pimentel	T. Walker	2/19/2009	Sunny, breezy to calm	0930
2050	DET	KAW	1/4/2010 1:15:03 PM	OVERCAST	1100
28	E. Pimentel	L. McNearney	1/13/2009	Sunny, cool to warm	1000
172	E. Pimentel	T. Walker	2/19/2009	Sunny, breezy to calm	0930

Record: 1 Show: All Selected Records (0 out of 554 Selected) Options

STEP 2: Select rows. Click on the rows to be included while holding down the "Ctrl" key on the keyboard.

STEP 3: *Select records in the vernal_pool_polygon layer that are related to the rows selected in the MGR_FIELD.invert_species_table.* Click the "Options" button located at the bottom of the attribute table screen (circled in red below):



OBJECTID *	SURVEYOR1	SURVEYOR2	DATE_TIME	WEATHER
306	mjw	mab	10/26/2009	sunny warm
450	E. Pimentel	T. Walker	2/19/2009	Sunny, breezy to calm
136	E. Pimentel	L. McNearney, T. Walker	2/9/2009	sunny, breezy, cool
2068	lm	dt	12/22/2009 11:14:07 AM	very cold windy sunny
86	E. Pimentel	L. McNearney, T. Walker	1/27/2009	sunny, breezy
2073	lm	ep	1/4/2010 10:49:23 AM	cold, overcast and cool
41	E. Pimentel	L. McNearney, T. Walker	1/26/2009	Sunny, breezy
251	E. Pimentel	L. McNearney, M. Wacker	2/24/2009	sunny, calm, warm
184	E. Pimentel	T. Walker	2/19/2009	Sunny, breezy to calm
2050	DET	KAW	1/4/2010 1:15:03 PM	OVERCAST
28	E. Pimentel	L. McNearney	1/13/2009	Sunny, cool to warm
172	E. Pimentel	T. Walker	2/19/2009	Sunny, breezy to calm

A list of options will appear, choose “Related Tables”. To the side of the list of options will appear a list of related tables. For example, for MGR_FIELD.invert_species_table the following will appear:

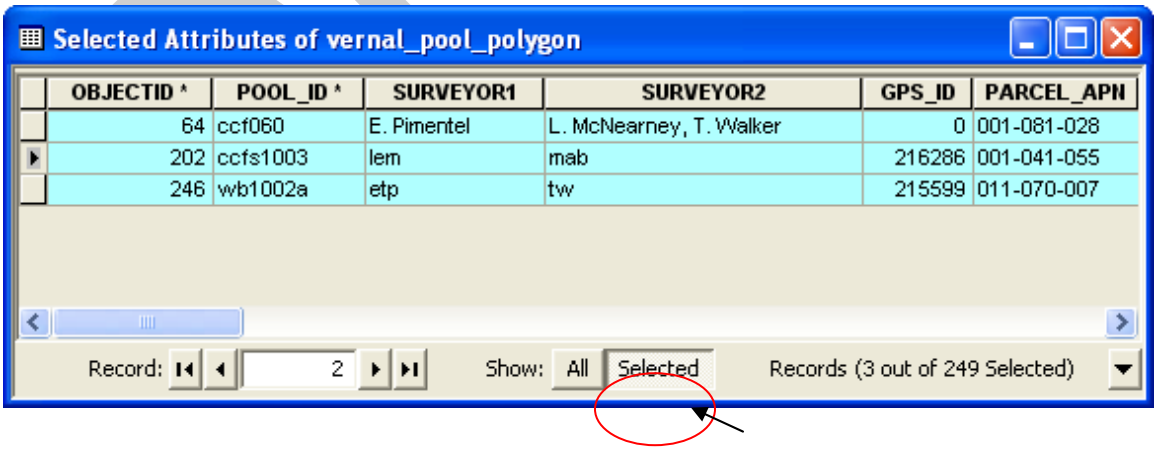
MGR_FIELD.invert_species_table_has_photos: INVERT_PHOTOS_TABLE

MGR_FIELD.vp_point_has_species: vernal_pool_point

MGR_FIELD.vp_line_has_species: vernal_pool_line

MGR_FIELD.vp_polygon_has_species: vernal_pool_polygon

For this example, the last option was selected by clicking it in the list of related tables. The attribute table for “vernal_pool_polygon” automatically opens with the related record(s) highlighted. By clicking the “Selected” button at the bottom of this new screen, the view will be limited to the selected record(s). On the map, the polygon itself will also be highlighted; clicking on the polygon feature will also zoom the user to the selected record.



OBJECTID *	POOL_ID *	SURVEYOR1	SURVEYOR2	GPS_ID	PARCEL_APN
64	ccf060	E. Pimentel	L. McNearney, T. Walker	0	001-081-028
202	ccfs1003	lem	mab	216286	001-041-055
246	wb1002a	etp	tw	215599	011-070-007

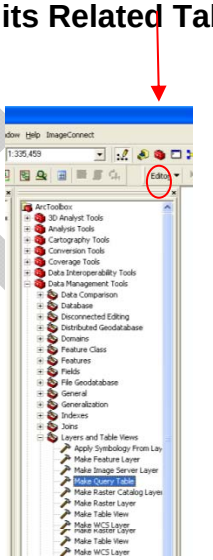
The function can also work the opposite way by beginning with the map feature itself. Following are instructions for doing so:

STEP 1: Select a feature on the map screen.

STEP 2: Right-click on the corresponding layer name in the table of contents and choose "Open Attribute Table" to access the feature's attribute table.

STEP 3: Click on "Options", then "Related Tables", and finally, select the related table within which to view related record(s).

Using the Query Table Tool to Combine a Feature Class and its Related Table into a Single Feature Class



When working with tables in ArcMap that have a one-to-many or many-to-many cardinality setup, it is not possible to symbolize, label, or write a definition query based on information in the related table. In order to perform such functions for these types of related tables, the feature class and related table must first be combined into a single feature class. If the relationship is one-to-one, an ArcMap "Join" can suffice. The "Make Query Table" tool, explained below, is used when working with one-to-many relationships.

STEP 1: Access the "Make Query Table" tool through ArcToolBox at Data Management Tools→Layers and Table Views→Make Query Table. Please refer to the screen shot below as each step is described.

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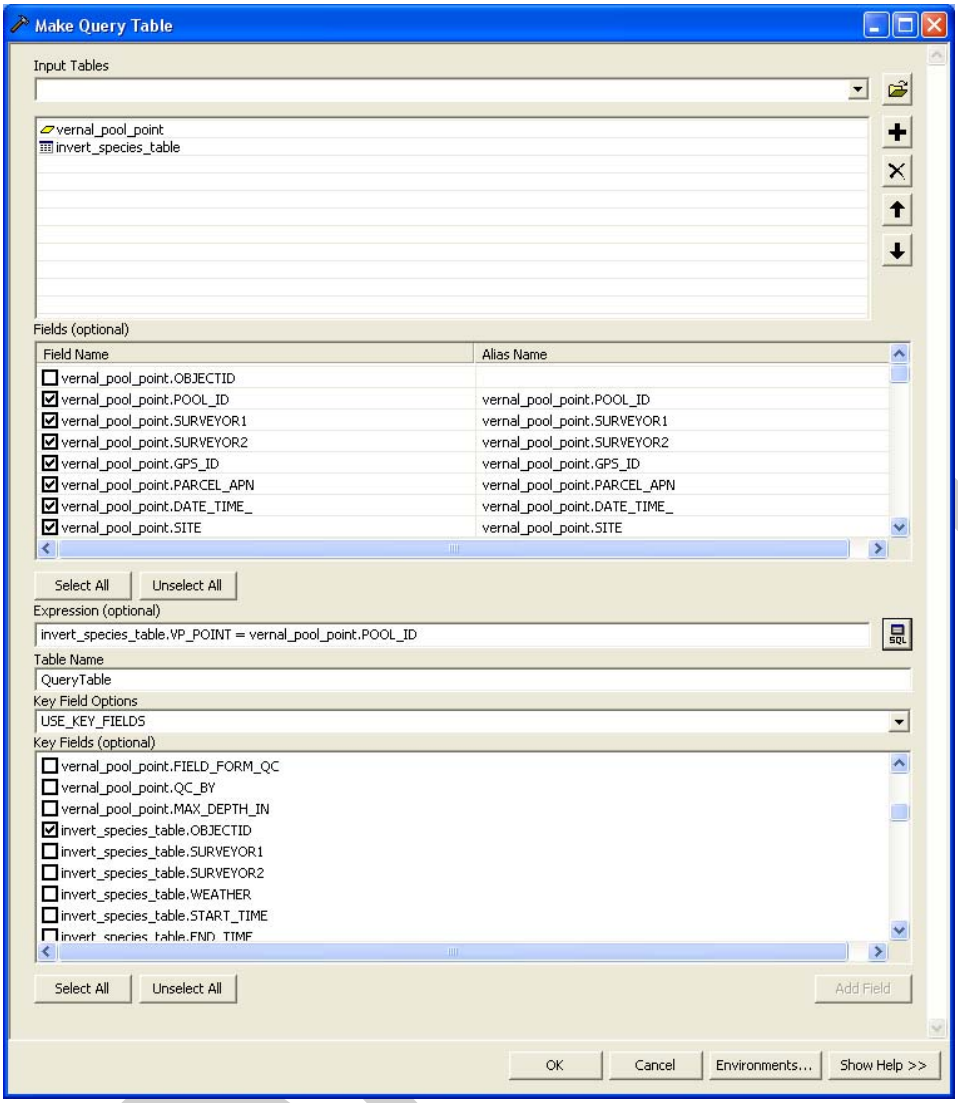


STEP 2: At the field “Input Tables”, browse to and add the feature class and related table.

STEP 3: Under “Fields (optional)”, check the box next to each field that should be included in the output feature class. In order to create a feature class (versus the creation of a table), be sure to select the shape field (called “Shape”) in the list. Also make sure the related table’s OBJECTID field is checked. (e.g.; invert_species_table.OBJECTID).

STEP 4: Look at where it says “Expression”. This is where the primary key field in the feature class that holds the unique feature ID is linked with the foreign key field in the related table that references the unique feature ID from the feature class. In some cases the primary key is a custom unique set of values like in this example with vernal pool point. In this example POOL_ID is the primary key field and the values are not auto-generated by the computer but by surveyors out in the field who assign each pool they survey with a unique pool ID. The foreign key field in the related table references the values from the POOL_ID field. When a custom unique ID field is not used, the GLOBALID field is used as the primary key. The foreign key for the related invert_species_table is the VP_Point field. In the example above, if the SQL button is pressed on the right a SQL editor tool will appear to help properly construct the statement. The basic formula for the Make Query Table Tool expression is: <Foreign Key>=<Primary Key>.

STEP 5: In the field “Table Name”, assign the new layer a name.

STEP 6: Leave the field “Key Field Options” as defaulted (USE_KEY_FIELDS).

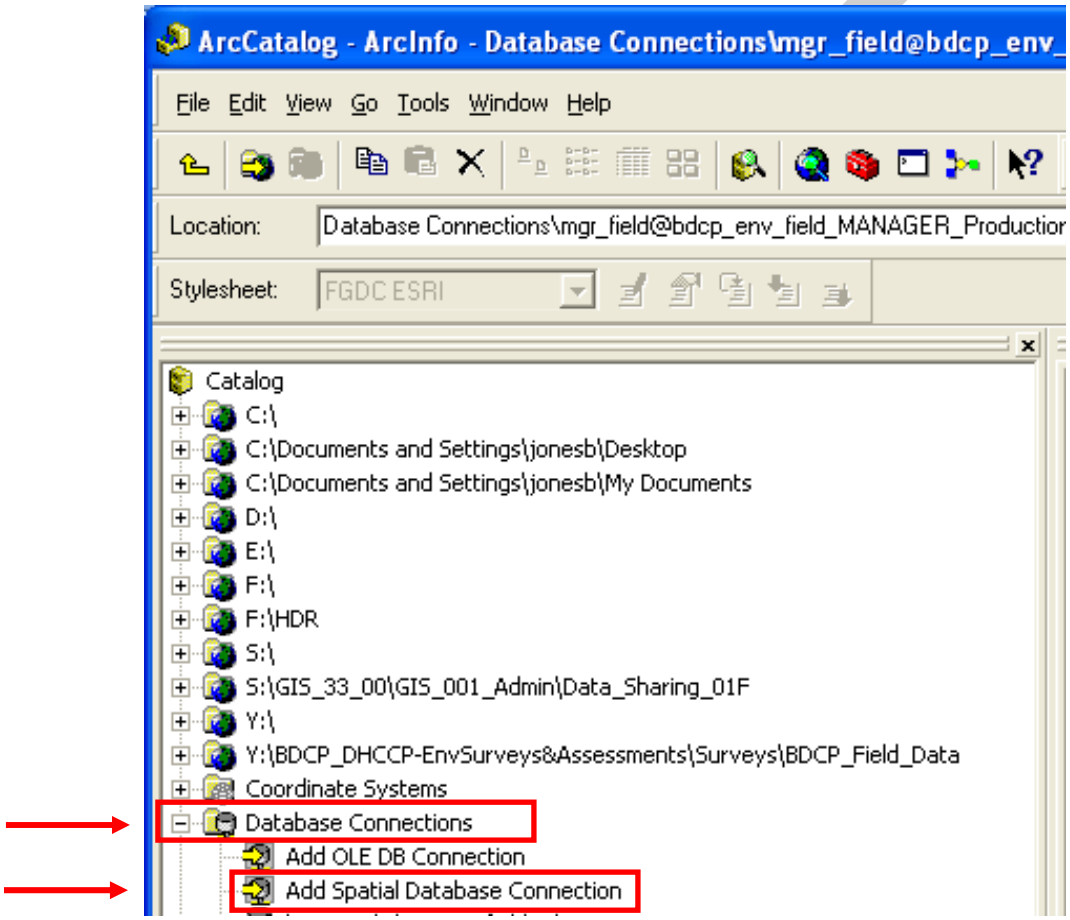
STEP 7: In the field “Key Fields (optional)”, select the OBJECTID field from the related table fields list (invert_species_table in this example).

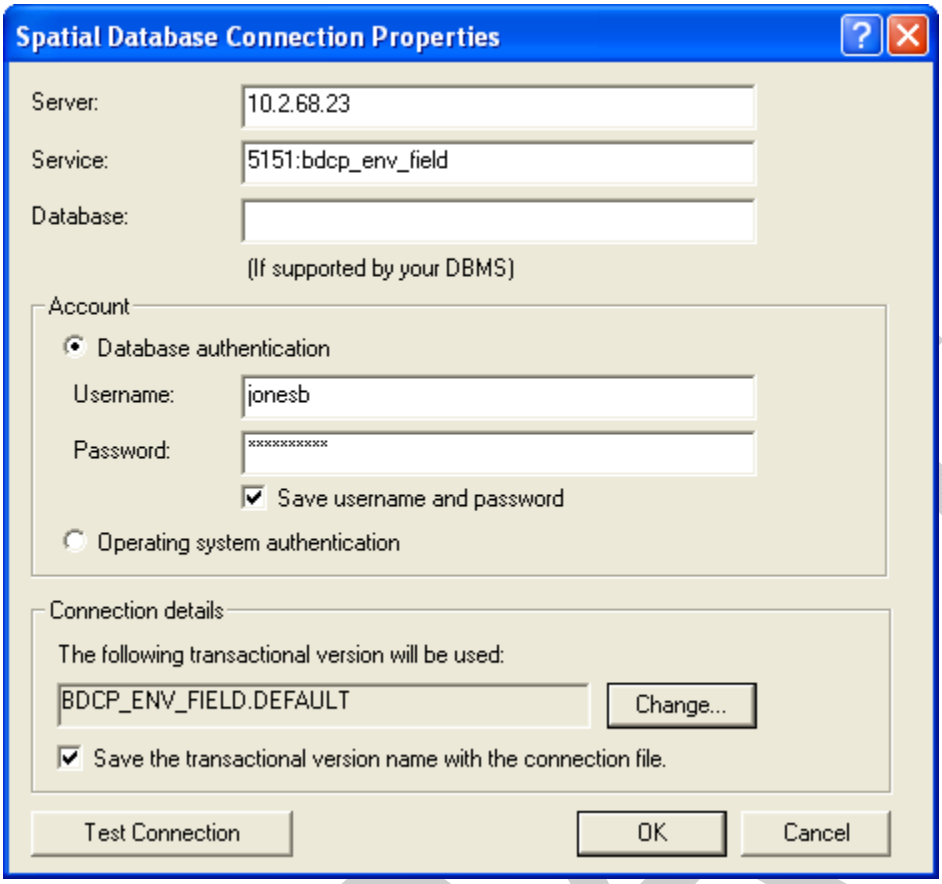
STEP 8: Select “OK” to create the new map layer.

MULTIUSER GEODATABASE PROCESSES

Connecting to “BDCP_ENV_FIELD” Mulituser Geodatabase

STEP 1: *Open ArcCatalog*. Locate “Database Connections” and click the plus sign to expand the folder. Double-click on “Add Spatial Database Connection”.

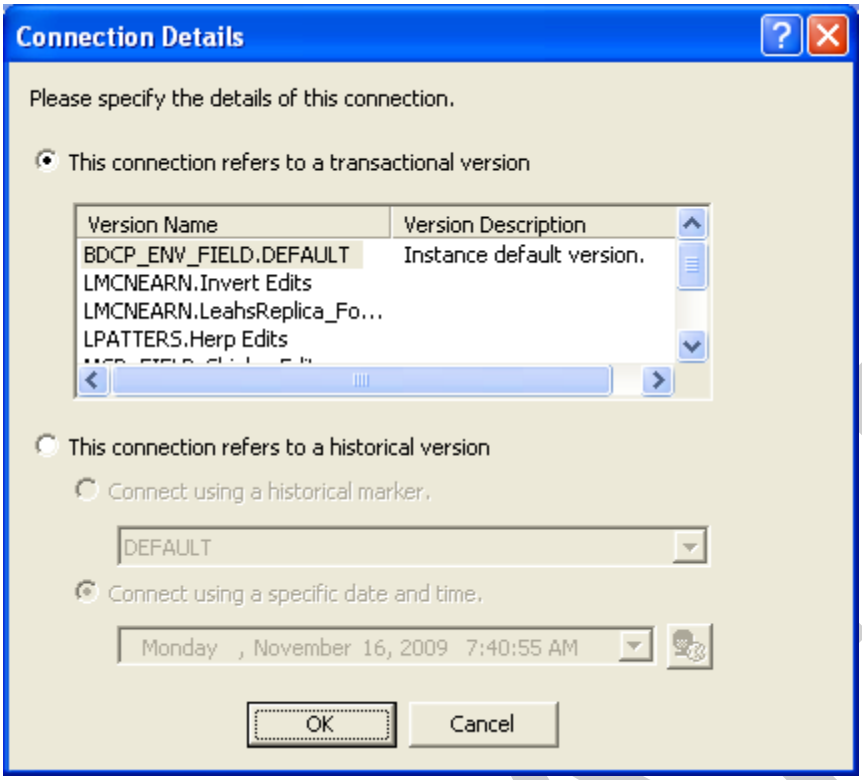




STEP 2: After double-clicking on "Add Spatial Database Connection" a "Spatial Database Connection" window will open. In the field next to "Server", type "**10.2.68.23**" . Directly below, in the "Service" field, type "**5151:bdcp_env_field**" (5151 is the port on the server through which you are connecting; bdcp_env_field is the name of the geodatabase to which you are connecting). Leave the "Database" field blank.

STEP 3: In the "Account" section of the screen, select the "Database authentication" option. The DHCCP GIS Coordinator or the database DBA will need to be contacted in order to obtain a username and password. In most cases, the username will be your DWR computer login username, although the manager of the geodatabase is an exception to this rule. For the manager, the generic username is "mgr_field". The SDEA also has been assigned the generic username "bdcp_env_field". After completing the Username and Password fields, select the "Save username and password" option.

STEP 4: The geodatabase version connection is specified at the bottom of the window under "Connection details". The field "The following transactional version will be used" will be defaulted to "<sde name>.DEFAULT", although connection to that version will not be available. Select the "Change" button; a "Connection Details" window will open, an example of which is shown below. Within the version list provided, find the correct one beneath the column titled "Version Name". There will be at least one version which is named "BDCP_ENV_FIELD.DEFAULT" so select any one of them as all versions will ultimately get checked back into the primary default version. Once the version is selected, click "OK". The selected version will now be displayed in the field. After returning to the "Spatial Database Connection" window, click on "OK" to create the connection.



STEP 5: Once the connection has been created, click to highlight the new connection file (will be displayed as "Connection to 10.2.68.23") which will be found in the "Database Connections" folder (the same folder mapped to in Step 1 above). Right-click the connection file and select "Rename". Following this naming convention: **<username>@bdcp_env_field_<VERSION>**, rename the file. For the Geodatabase Manager (with the defaulted username "mgr_field") and connected to the DEFAULT version, the connection name should read as follows: "**mgr_field@bdcp_env_field_DEFAULT**".

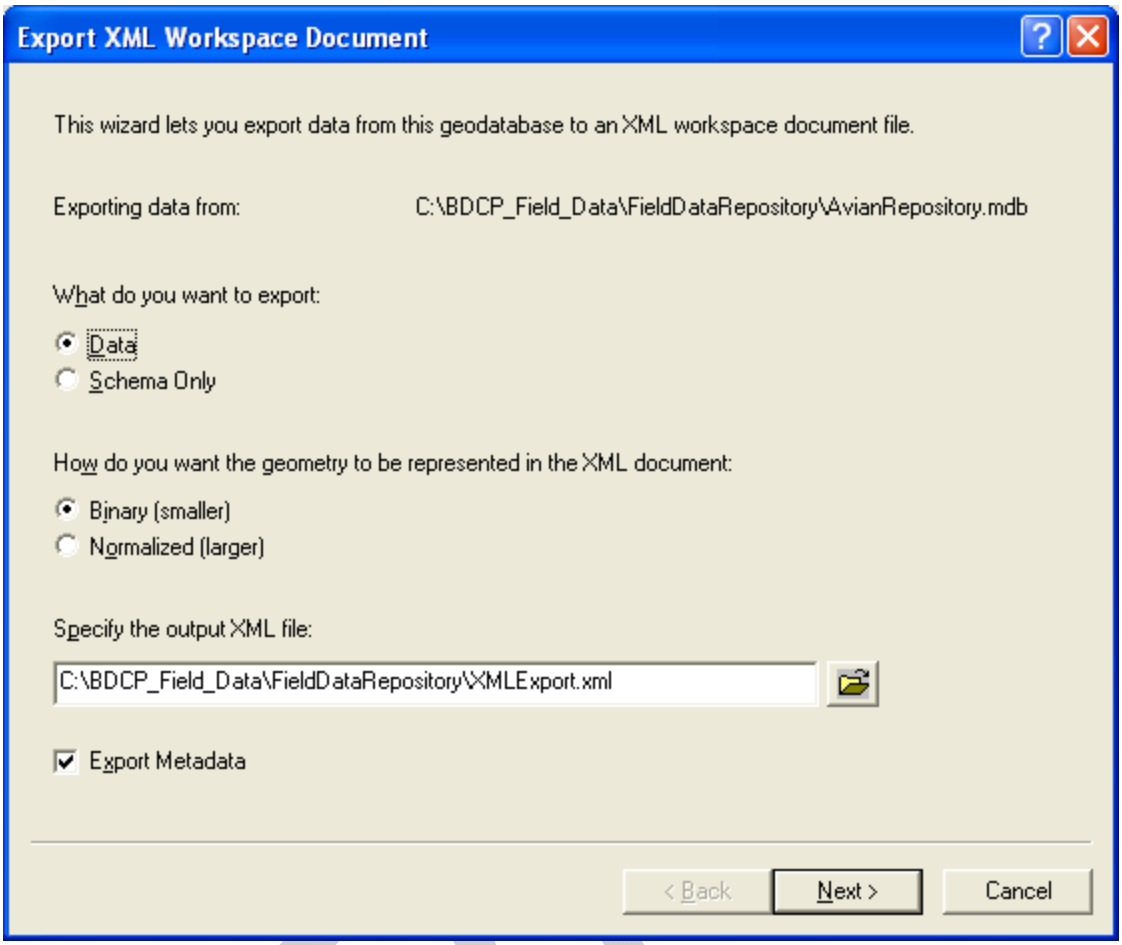
STEP 6: If a need should arise to change connection properties, right-click on the connection and select "Connection Properties". This will allow for modification(s) of the connected version.

STEP 7: In ArcMap, click the "Add Data" button. Click to access the drop down list on the window that opens and scroll to the bottom to select "Database Connections". A database connections window will open; the list will include the connection created in the above steps. Double-click on the new connection and the contents of the geodatabase will be displayed. Select the data that is to be added to the new map.

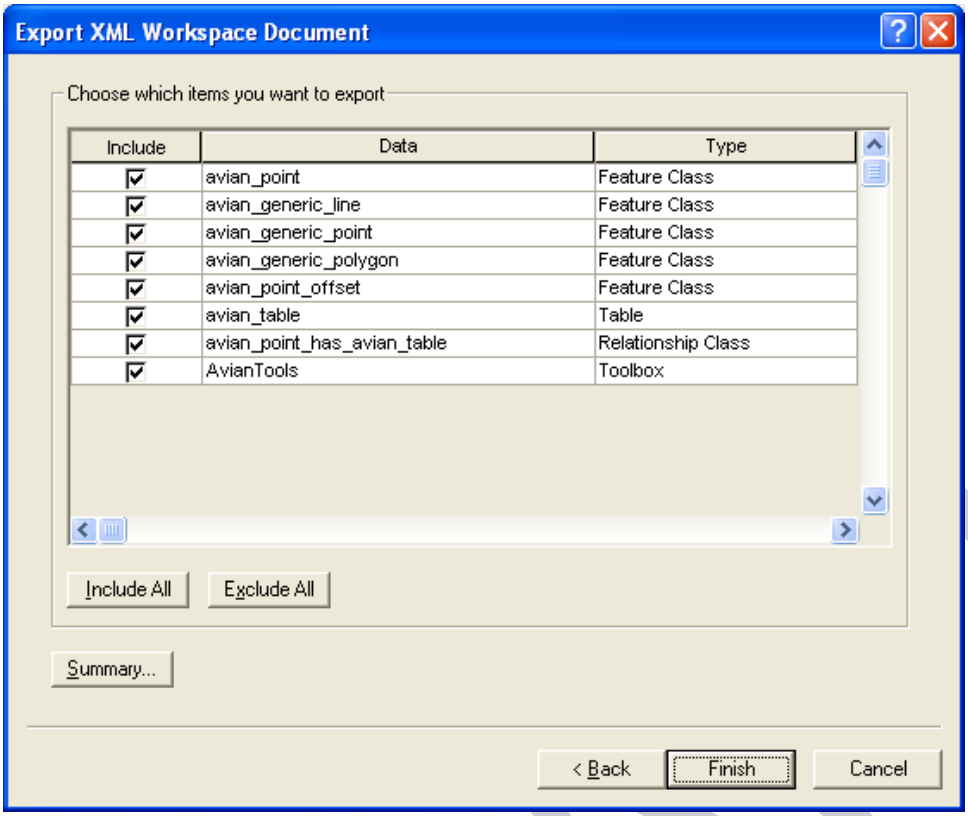
Transferring Schema and Data from One Geodatabase to Another

To maintain complex behavior, like relationship classes, the Database Schema must be transferred from one geodatabase to another using the "Export XML Workspace Document" tool (can also include data, if necessary).

STEP 1: *Export Schema from Source Geodatabase or Feature Dataset*. In ArcCatalog, right-click on either the Source Geodatabase or Source Feature Dataset and select "Export". From the list that appears, select "XML Workspace Document…" The following window will be opened:



STEP 2: In the first page of the "Export XML Workspace Document" tool, the option to export the Schema, with or without data, can be specified. The geometry coordinates can be stored in the XML in binary or normalized formats (normalized will be more legible to read, but this will not matter if only importing the XML into another geodatabase). Specification of location to save the XML file and whether or not to export the metadata is also included in this screen. After all selections have been made, click "Next".



STEP 3: On the second page, identify which objects to include in the export. After making the selection(s), click "Finish". The XML file will be created at the location specified and will be available for import into another geodatabase.

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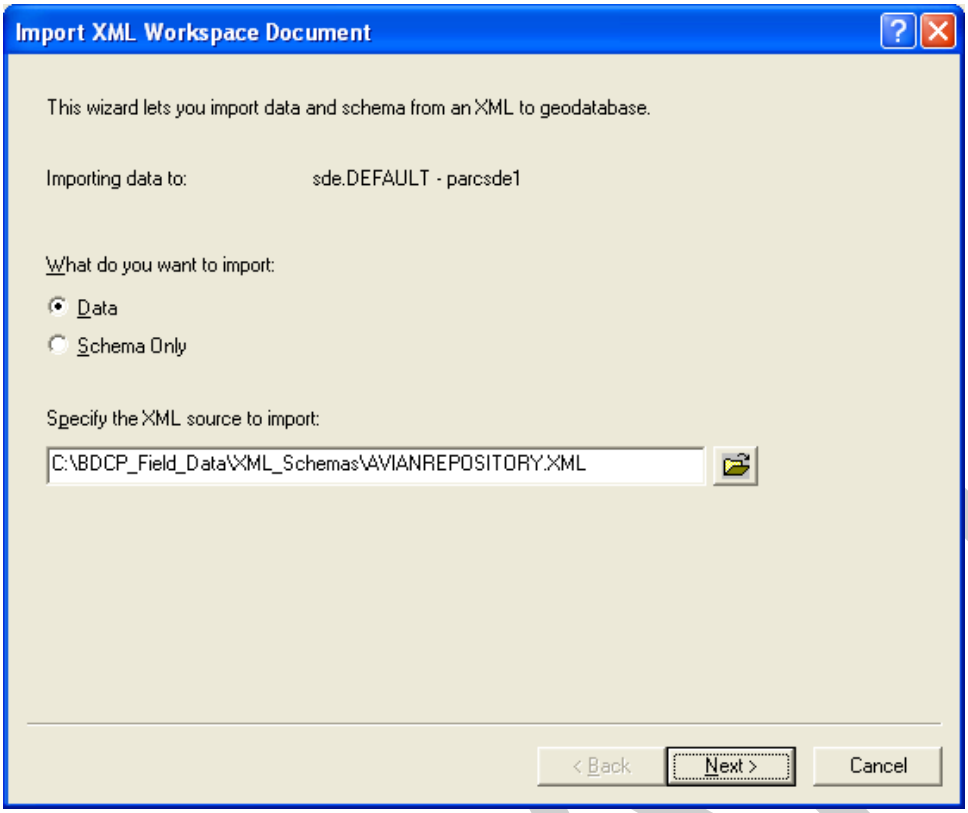

STEP 4: Import created XML file to new geodatabase. In ArcCatalog, navigate to the target geodatabase to import the Schema (and Data, if selected). Right-click the Geodatabase, select “import”, and “XML Workspace Document”. The “Import XML Workspace Document” tool will open. On the first page, select from the two options under “What do you want to import”. The first page also provides a field to specify where the XML file with the Schema (and Data) is saved. After both selections have been made, click “Next”.

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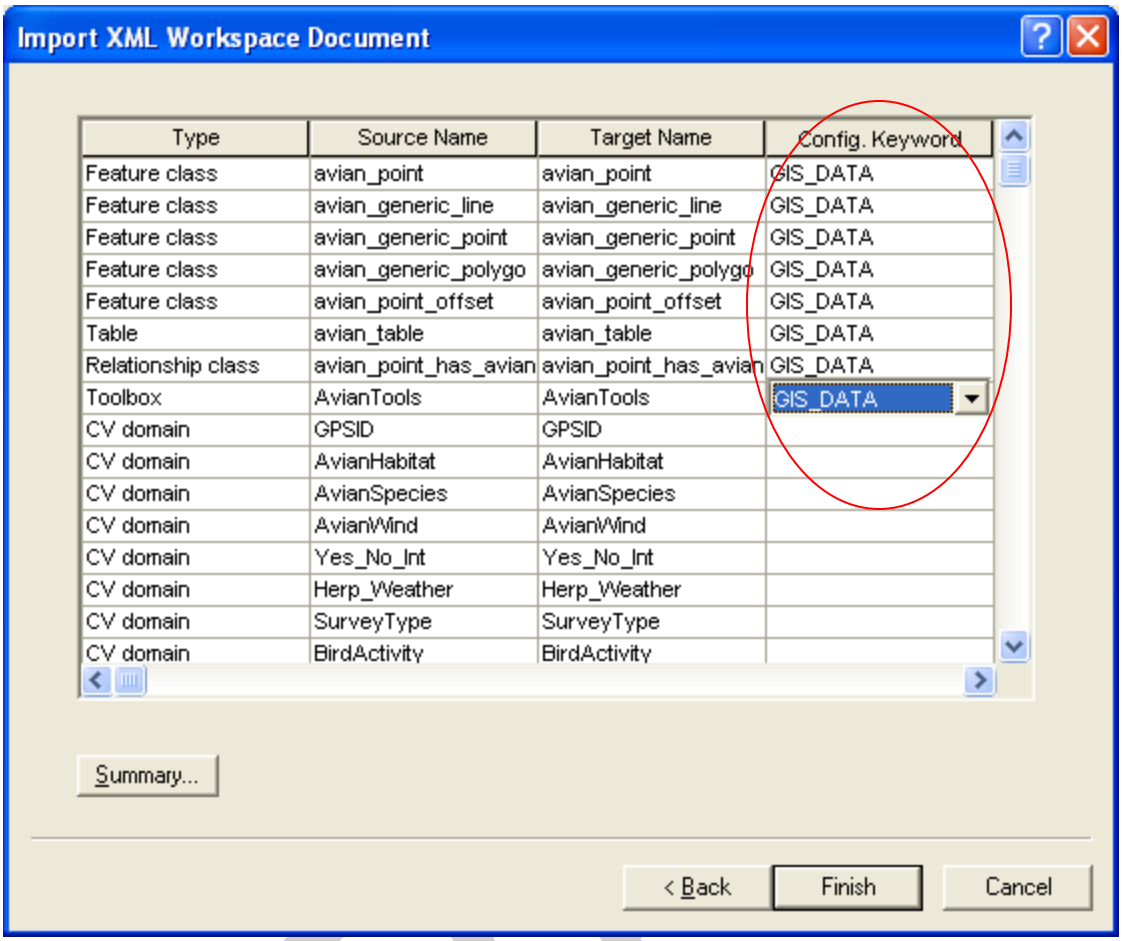
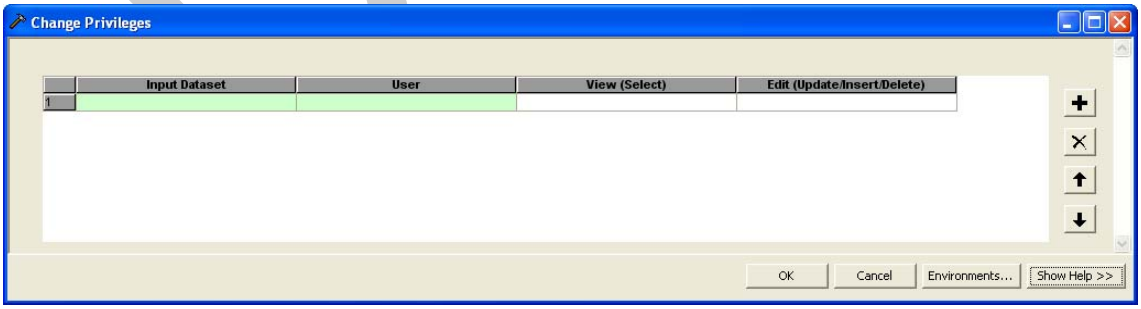


STEP 4: On the next page, in the "Config. Keyword" column change the keyword for each object to "GIS_DATA". After completing this step, click "Finish".

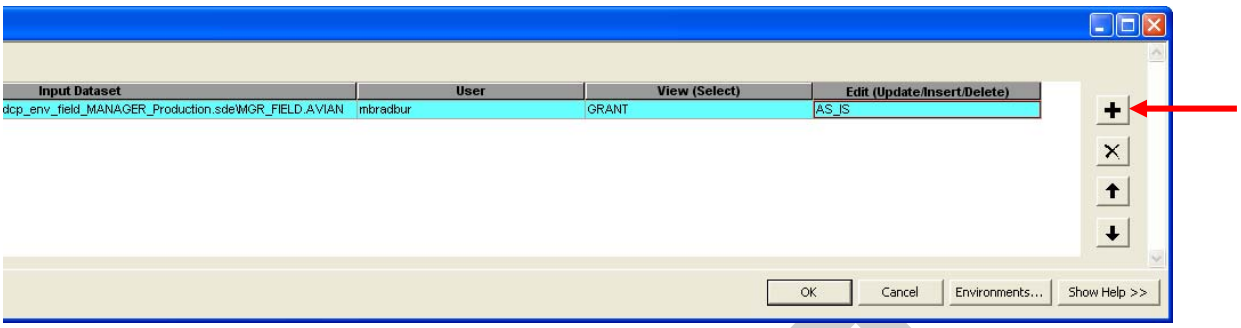
Granting/Revoking SDE Privileges

STEP 1: In ArcCatalog, start ArcToolBox and browse to **Data Management Tools > Table > Change Privileges**. Right-click "Change Privileges" and select "Batch…" The following screen will appear:

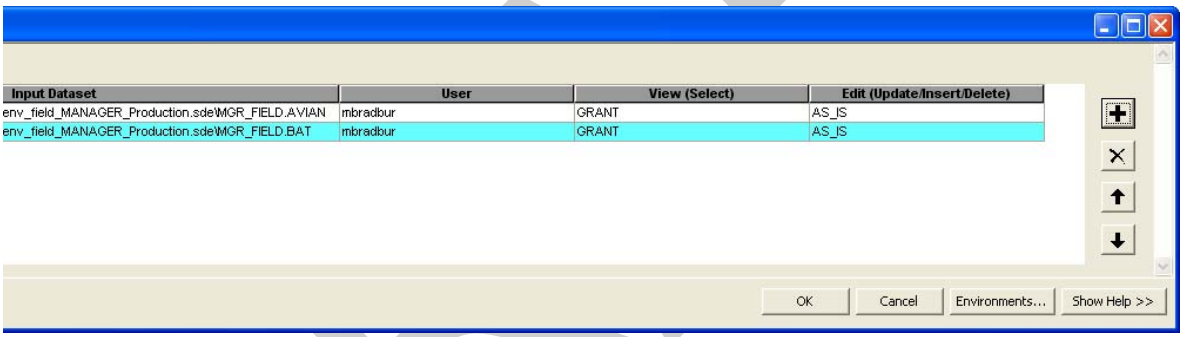


STEP 2: While viewing the contents of the SDE geodatabase on the left hand side of ArcCatalog, select an "Object" or "Feature Dataset" and drag it into the cell under "Input Dataset". In the cell located below "User", type in the user name or role for which to assign privileges. In the cell below "View (Select)",

select “Grant”, “As Is” or “Revoke”. In the cell under “Edit (Update/Insert/Delete)” select “Grant”, “As is”, or “Revoke” depending on whether it is or isn’t preferred for the user/role to have editing capability for the Object/Feature Dataset.



STEP 3: To grant additional privileges, select the entire row that was just completed. Next, press the plus sign located on the right hand side of the screen (see red arrow above). This will copy information from the first row into a second row. This allows the user to duplicate specific settings for additional Objects and/or Datasets. Additionally, further modifications can be made too the previously defined Object that was copied from the first row. To change to an alternate geodatabase Object or Feature Dataset, drag a different Object or Dataset name from the left side of the screen over into the new row’s cell under “Input Dataset”.



STEP 4: When finished, click “OK”.

Creating and Managing Versions for a Multiuser Geodatabase

STEP 1: In ArcCatalog, on the left side within “Database Connections”, double-click on the connection for which you want to create a version. This will activate the connection. Right-click on the connection and select “Versions…”

STEP 2: A window will open displaying all versions created of the geodatabase, the owner(s), assigned access levels, and date each version was last modified. All versions must have been created from an “existing” version and there will always be a “DEFAULT” version included in the list. To create a version as a Child of another version, right-click on the version from which you want to create the Child and select “New…”

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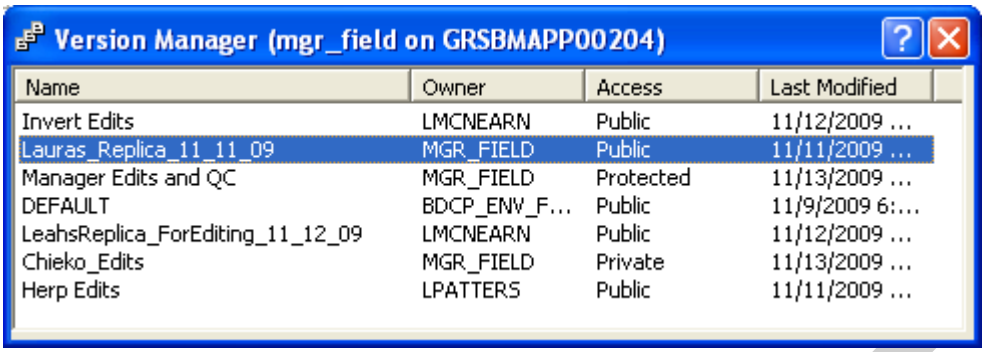
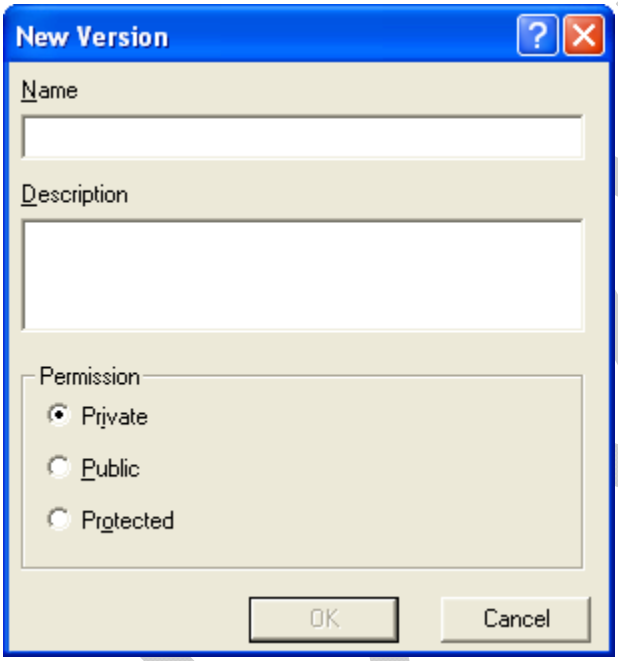


STEP 3: A window named "New Version" will open as in the example below. Type in a "Name" to identify the new version in the provided field and the version's "Description" in the second field. Finally, select the preferred access permissions to set for the "New Version". For Permissions, "Private" indicates that only the creator of the version can view and edit the version, "Public" allows anyone with appropriate object level privileges to view or edit the version, and "Protected" allows anyone with the appropriate object level permissions to view, but not edit the version.



STEP 4: The new version can be used to make edits or upload data while isolating the new file from other user's view and possible interference.

STEP 5: When version updates are complete and all edits made in the new version have been posted to the corresponding Parent Version, the new version is no longer necessary and should be deleted. To delete, in the "Version Manager" window (shown with STEP 2 above) right-click on the version and select "Delete".

Editing in a Multiuser Geodatabase

STEP 1: *Register the Feature Class for editing (if this has not yet been completed).* Open ArcCatalog and connect to the SDE Multiuser Geodatabase. Right-click on a geodatabase object (i.e.; Feature

Dataset, Feature Class, or Table). Select "Register as Versioned…" A window will appear providing the option to "move all edits to base automatically". Do not select the checkbox for this option and click OK.

STEP 2: *Make edits.* Ensure the SDE account being used has editing privileges. Contact the DS acting as the Geodatabase Manager to find out and request privileges if necessary. Start Arcmap and add the data to be edited. Start an edit session and perform edits in the same manner as previously described in the "editing a data layer" process.

STEP 3: *Save edits and end editing session.*

NOTE: If multiple people open the same map for editing at the same time, the user that saves edits first will prevent other users from saving their corresponding edits. As a result, a message will appear to the other users stating that the edits cannot be saved, and the edits of the first user have been merged into the active map for review. At this point, the other users can attempt to identify the updates that were made by the first user. When satisfied with the merged edits, the users can attempt the save again. As long as no one has saved since the last attempt to save, the process will be successful.

Copying a Subset of Data from one Geodatabase to Another

NOTE: For data that needs to be "post-differentially corrected", the AXF files must be checked into a Personal Geodatabase that has been GPS-enabled. When data is downloaded, the process includes being placed in the Personal Geodatabase, then post-differential corrections are made, and finally, the new data must be selected and copied into the SDE Multiuser Geodatabase following the instructions in this section.

STEP 1: Start ArcMap. Add the objects (Feature Classes and Related Tables) that are to be copied to ArcMap from the source Geodatabase as well as the corresponding objects from the target Geodatabase.

NOTE: If there are no related records that use the OBJECTID field as the Primary Field, then proceed to STEP 3.

STEP 2: If the primary key for the relationship is the "OBJECTID", the "OBJECTID" values in the Personal Geodatabase Feature Class should be copied to another field within the same Feature Class prior to copying the records to the target Geodatabase. This is because the "OBJECTID" will be reassigned when the records are copied, thus breaking the current relationship. If a field named: "OLD_OBJECTID" does not already exist, create in both the source Geodatabase Feature Class and its corresponding target Geodatabase Feature Class. Using the field calculator on the "OLD_OBJECTID" field, set the field to equal the "OBJECTID" field.

SOURCE GEODATABASE FEATURE CLASS ATTRIBUTE TABLE - example

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TARGET GEODATABASE FEATURE CLASS ATTRIBUTE TABLE – example

Attributes of herp_snake_trap_point

OBJECTID *	GPS_ID	OBSERVER1	OBSERVER2	Northing	UTM_EASTING	DATETIME_	SITE	TRAP_NUM	STARTDATE	ENDDATE	Habitat	Habitat_Mod	DOMINANT_AQU_VEG	DOM_AQU_VEG_PER_COV	DOMINANT
3617	215590	js, my	vw, eg	4206006.5047	630498.9798	9/18/2009 11:15:26 AM	<Null>	263	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
3618	215590	js, my	vw, eg	4205994.8411	630495.7626	9/18/2009 11:16:31 AM	<Null>	269	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
3619	215590	js, my	vw, eg	4205986.805	638491.952	9/18/2009 11:17:20 AM	<Null>	265	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
3620	215590	js, my	vw, eg	4205975.0063	638487.7152	9/18/2009 11:18:12 AM	<Null>	270	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
3621	215590	js, my	vw, eg	4205964.3325	638482.9471	9/18/2009 11:18:54 AM	<Null>	292	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
3622	215590	js, my	vw, eg	4205953.2799	638479.9315	9/18/2009 11:19:37 AM	<Null>	281	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
3623	215590	js, my	vw, eg	4205945.2167	638478.1116	9/18/2009 11:20:27 AM	<Null>	269	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
3624	215590	js, my	vw, eg	4205937.8856	638476.3969	9/18/2009 11:21:26 AM	<Null>	296	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
3625	215590	js, my	vw, eg	4205925.1619	638471.1571	9/18/2009 11:22:14 AM	<Null>	274	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
3626	215590	js, my	vw, eg	4205914.6834	638471.2572	9/18/2009 11:23:03 AM	<Null>	271	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
3627	215590	js, my	vw, eg	4205905.9805	638471.2883	9/18/2009 11:23:43 AM	<Null>	256	9/18/2009	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>

Record: 0 Show: All Selected Records (0 out of 3224 Selected) Options

STEP 3: Starting with the first object to be copied (feature class or table), open the "Attribute" tables of both the source Geodatabase object and the corresponding target Geodatabase object. Select all of the records in the source Geodatabase that do not already exist in the target Geodatabase. Start an edit session. Click on the "Copy" icon. After moving the cursor over the target geodatabase, click on the "Paste" icon. Verify that the records were successfully copied into the target Geodatabase.

NOTE: If there is not a related relationship class between the object just copied and another object, copying is complete and you can skip Steps 4-6 below.

STEP 4: If there is corresponding data stored in a related table, once the data from the Feature Class has been copied over, the append tool will be used to append related table records from the source Geodatabase to the target Geodatabase. With the features that were previously selected in Step 3 still selected (or reselected), go to the Options menu of the Feature Class' Attribute table and select "Related Tables". A list of related tables will appear. Select the related table from which to copy data. The related table's Attribute table will open displaying the data to be appended. In ArcToolBox, browse to Data Management Tools > General > Append. Double-click to select the Append tool and fill in the information as follows:

- The input dataset should have the related table from the target Geodatabase entered. Use the drop down arrow to select the table (not the "browse to" (folder icon) button.
- The target dataset (2nd field) will be populated with the target Geodatabase version of the same table. In this case, it is recommended to use the "browse to" button (folder icon) to add the dataset instead of the down arrow.
- For Schema Type, select "NO_TEST".

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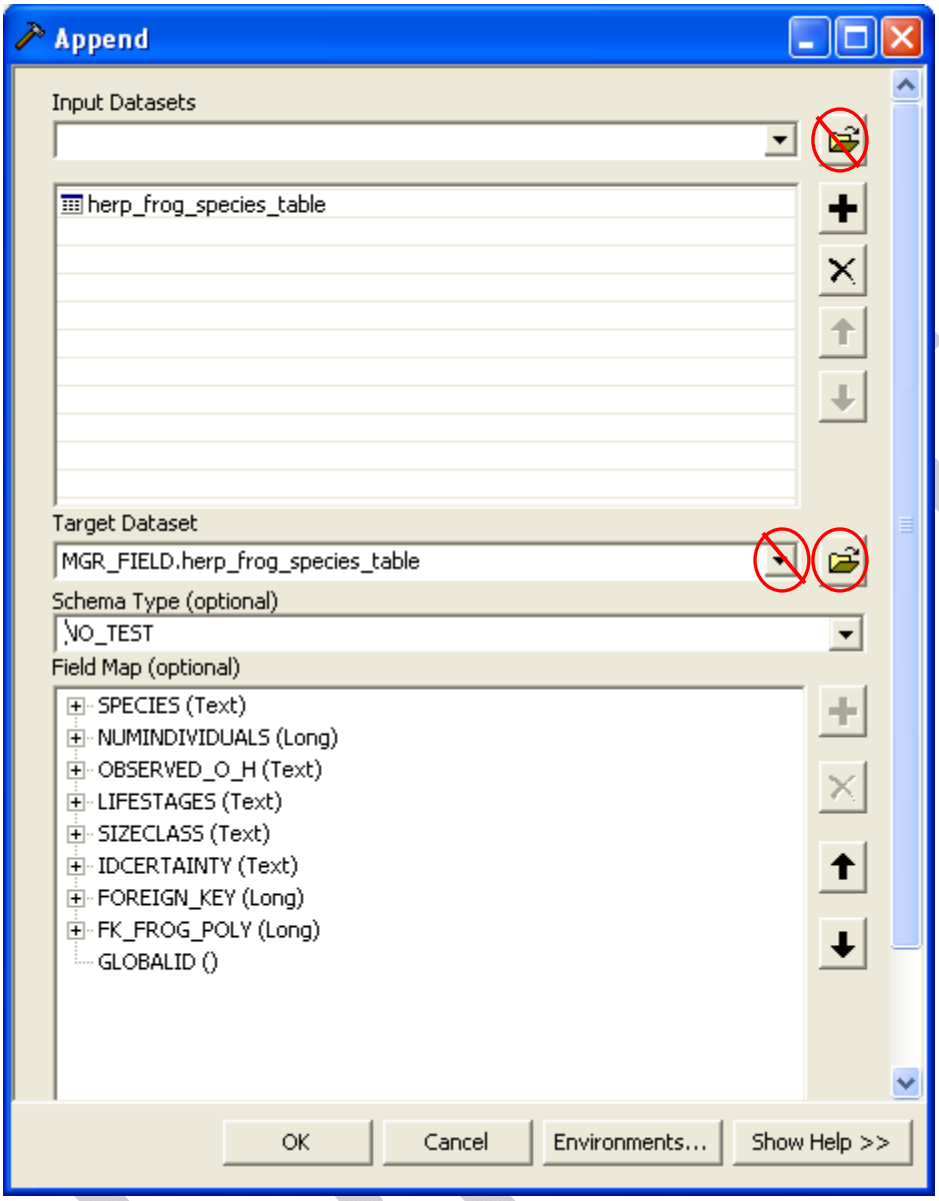
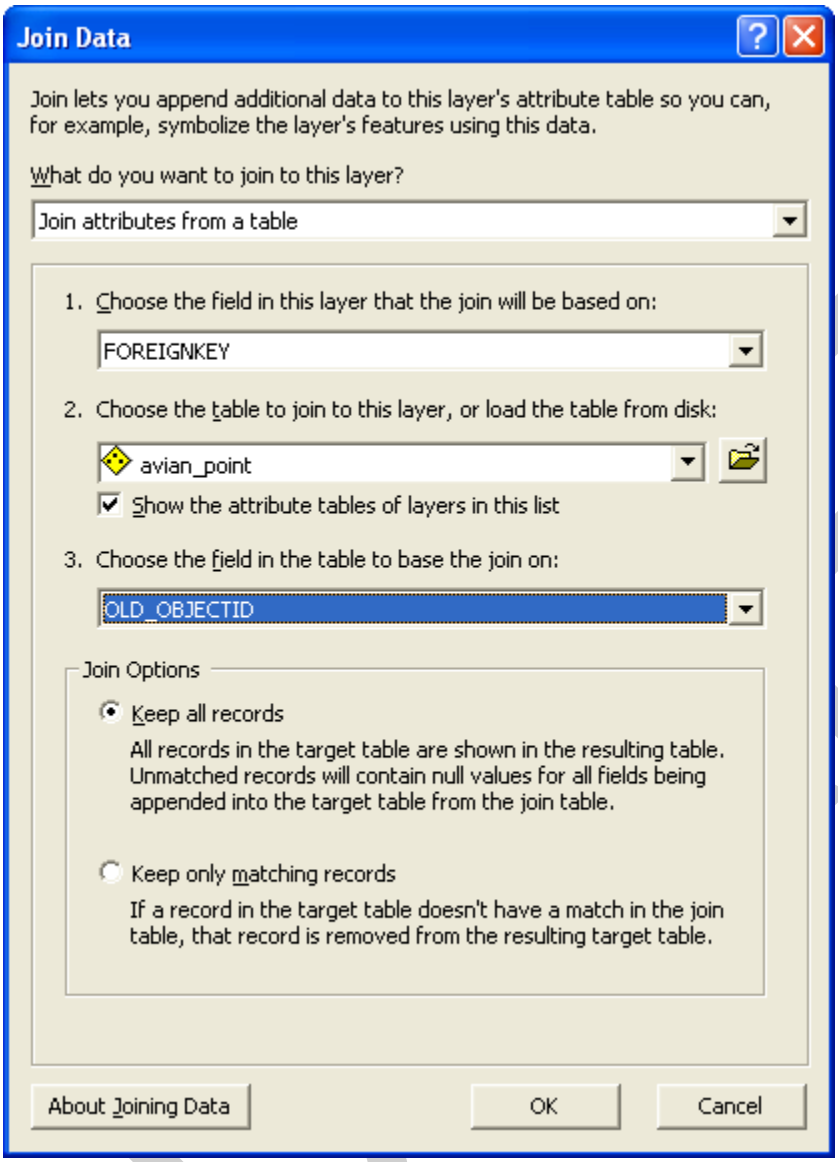


NOTE: If the OBJECTID field was not used as the primary key in the original dataset, copying is complete and you can skip Steps 5-6 below.

STEP 5: For datasets with relationships that use the "OBJECTID" as the Primary Key, the new "OBJECTIDs" must be copied into the Foreign Key field of the related table. In order to do so, you will create a "Join" between the targets Geodatabase's table and the Feature Class related to that table. To begin, open the Table of Contents in ArcMap and click on the "Source" tab. On the Source tab, right-click on the target Geodatabase' related table of interest and select "Joins and Relates", then select "Join…" Fill in the options with the following information:

- For the first option within the "Join" tool select "Join attributes from a table".
- For number 1. select "FOREIGNKEY"
- For number 2. select the related feature class from the SDE multiuser geodatabase
- For number 3. select "OLD_OBJECTID"

- For the “Join Options” select “Keep all records”
- Click on OK

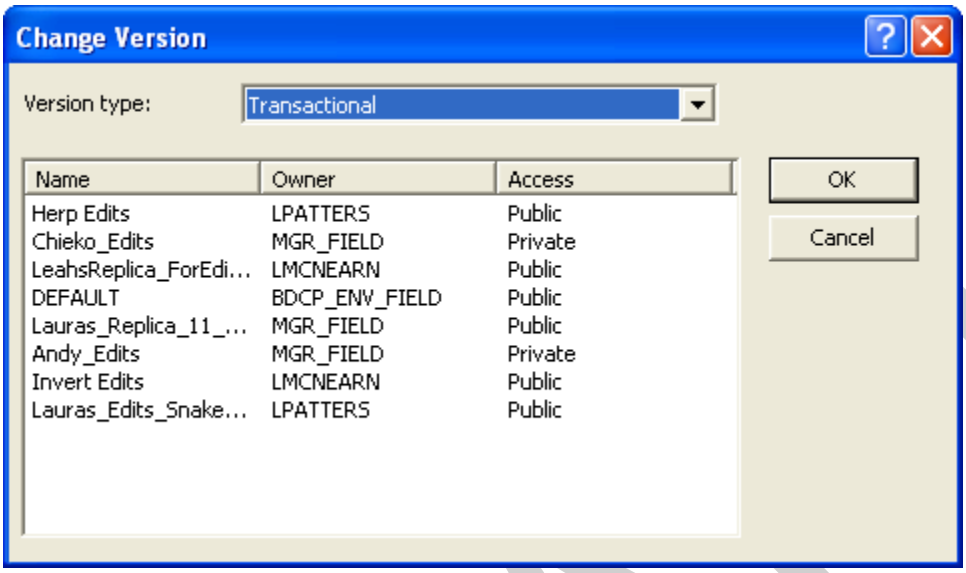


STEP 6: Open the Attribute Table of the related table that has just been joined. Using the field calculator for the “FOREIGNKEY” field, set the field equal to the Feature Class’ “OBJECTID” field. The related table’s “OBJECTID” will be listed first. Do not set the “FOREIGNKEY” equal to the related table’s “OBJECTID”. Follow down the list until the name of the Feature Class followed by “OBJECTID” is found. After completing the calculation function, verify that the new rows of Feature Classes and related records in the related table that were copied and joined through the previous steps reflect the same relationships as were seen in the original datasets.

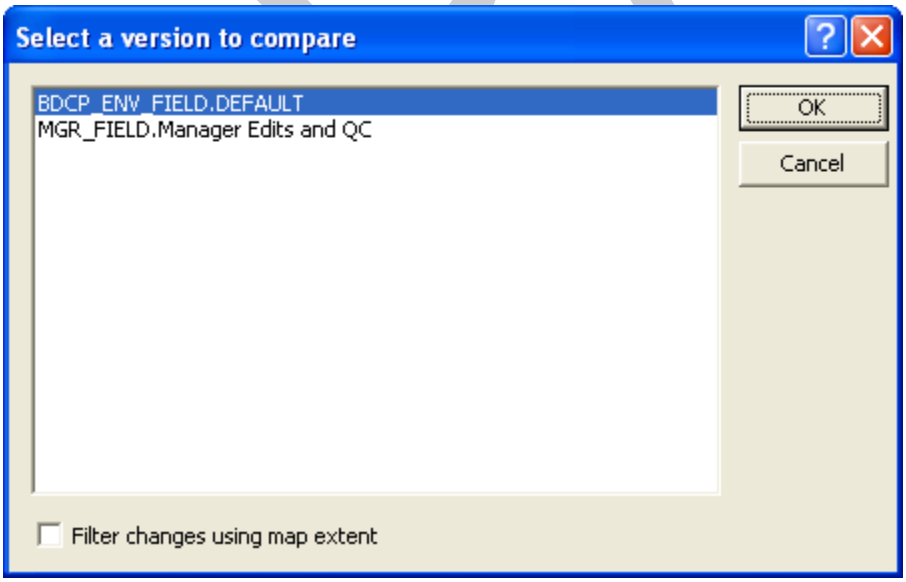
Reviewing Edits Made in Child Versions

STEP 1: Open ArcMap. In ArcMap add the data that has been changed and for which it is desired to review the changes by comparing to a parent version.

STEP 2: In order to view edits made in each of the Child versions, the first step is to change the displayed version to the Child. To do this, select the "source" tab at the bottom of the Table of Contents in ArcMap. Right-click on the name of the geodatabase version which should be displayed just below "Layers" in the table of contents. After right-clicking on the geodatabase, select "Change Version…" The "Change Version" window will appear. Select the Child Version for which you want to review edits and click on OK (the "version type" field should read "Transactional").

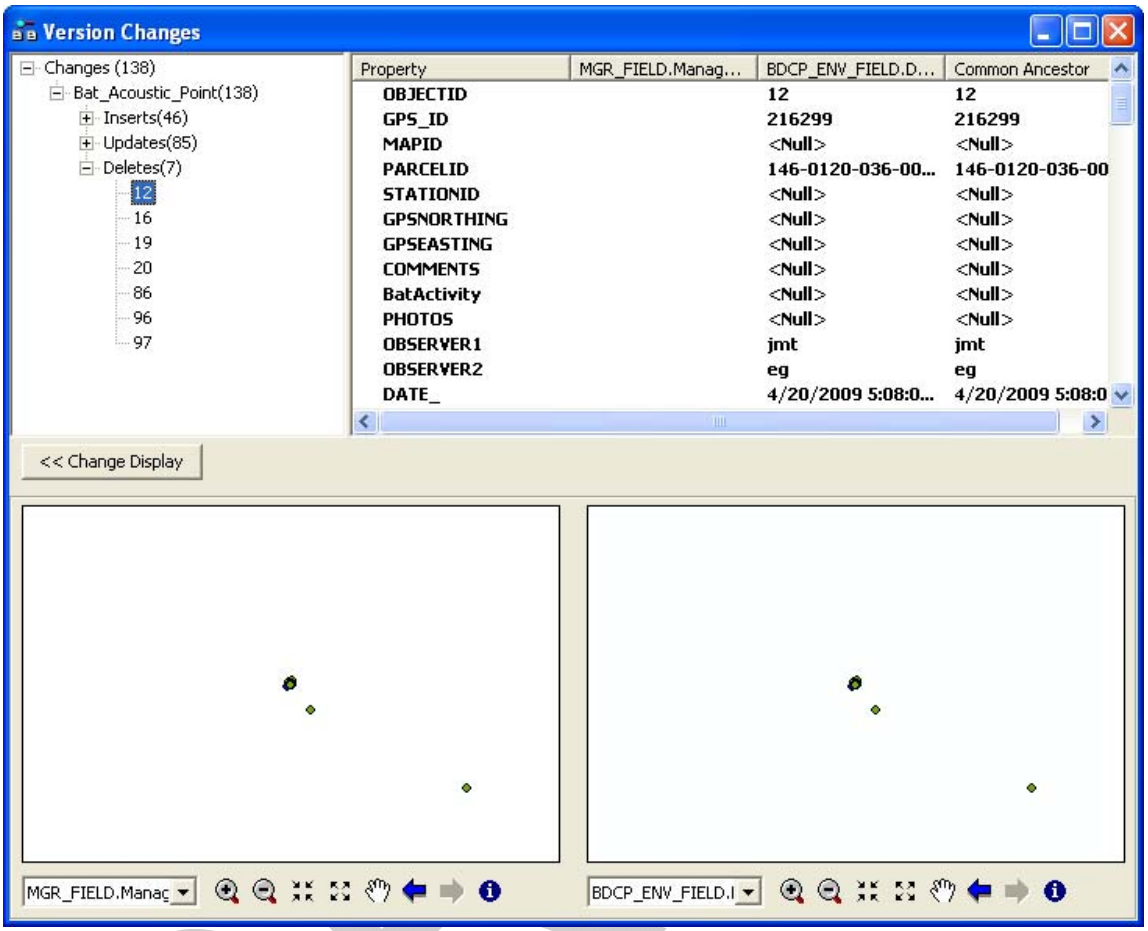


STEP 3: Confirm that the "Versioning" toolbar has been turned on in the map. Select the geodatabase in the Table of Contents. When the geodatabase is selected, the "View Changes" button on the "Versioning" toolbar will become active. The "Select a version to compare" window will also appear. Select the preferred Parent or Grandparent Version for which to compare the current version and click on OK.



STEP 4: At this point, a "Version Changes" window will appear. The top left hand side shows a table of contents of those layers with changes, and groups the changes by type (inserts, updates, or deletes). Under each type of change, the changed records are referenced by their OBJECTID. When an

OBJECTID is selected in the listing, the screen to the right displays the record's fields and their corresponding values. The right screen also displays both what the Parent field contained and what the Child currently has for values. Fields that were changed are displayed in bold. The bottom screens display an optional comparative geographic view of the data.

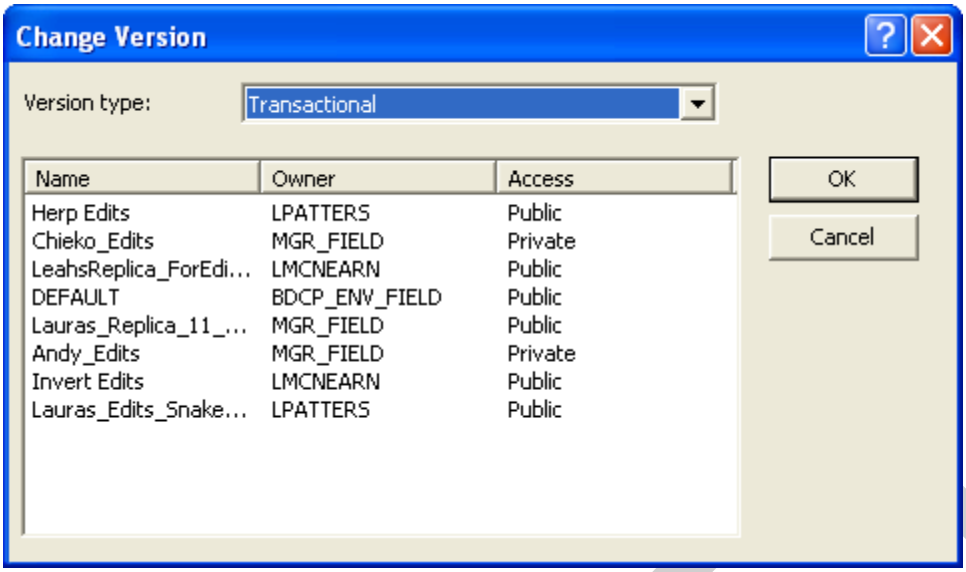


Reconciling and Posting Edits between Versions

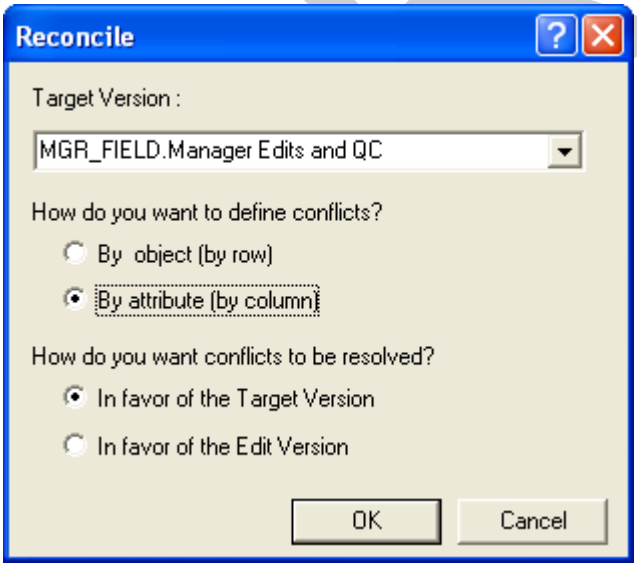
Reconciling brings any Parent version edits into the Child version and identifies editing conflicts if any exist. The posting function takes the Child edits after all conflicts have been resolved and posts them to the Parent version. The "Post" button will not be active until a "reconcile" has taken place.

STEP 1: *Open ArcMap*. Add data from the edited Child version of the SDE Multiuser Geodatabase that is to be reconciled and posted. In order to perform a "reconcile", the user logged into the geodatabase must have editing privileges for the data layers, and either be the owner of the Child Version or the Child Version itself must have a public access setting. To post the Child's changes to the Parent, the user must again have editing privileges for the data layers and either be the Owner of the Parent Version or the Parent Version itself must have public access.

STEP 2: To reconcile and post edits, the first step is to change the version of the data to the Child dataset. To do this, click the "source" tab at the bottom of the table of contents in ArcMap Right-click on the geodatabase name in the table of contents (should be located just below where it states "Layers") and select "Change Version…". A "Change Version" window will appear. From the list, select the Child version to reconcile and click OK (the Version type field should read "Transactional").

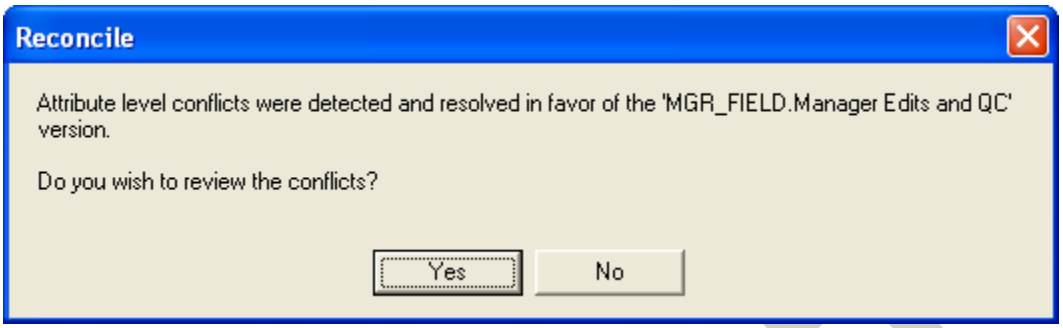


STEP 3: Make sure the "Versioning" toolbar has been turned on in the map. Start an Edit Session. The "Reconcile" button will become active on the "Versioning" toolbar. Click on the "Reconcile" button; a "Reconcile" window will open. The "Target Version" field on the window that appears will automatically be directed to the current versions' Parent. In most cases, this should be left to the default. The remaining fields in the window relate to editing conflicts. Conflicts can happen when a record in the Parent Version has been edited since the Child Version was created, and the Child Version also includes an edit for the same record. The first question about defining conflicts gives you the option to have the program either display conflicts between any records that have been edited in both versions (by object), regardless if the edits were in the same fields or not, or limit the conflicts displayed to cases where the same fields within the two versions were edited (by attribute). For most situations, it is better to choose "By attribute" to reduce the number of conflicts identified. In the event conflicts should arise, the second question asks the user if the Edit version (the Child) is to be changed to match the edit(s) of the Target version (the Parent) or vice versa. This option is dependent on each individual situation, so there is no preferred setting.



STEP 4: If there are conflicts, a message will appear with information as shown below. If you select "Yes", the "Conflicts" window will appear; if you select "No", the "Conflicts" window can be accessed by

clicking the “Conflicts” button on the “Versioning” toolbar. If you decide not to review the conflicts and you post the Child version to the Parent version, the ability to review those conflicts will be gone and the conflicts will have been resolved either in favor of the Parent or the Child depending on your answer to Step 3 above.



STEP 5: The “Conflicts” window is very similar to the “Version Changes” window. Refer to the previous section called “Viewing Edits Made in Child Versions”, Step 4 to get an overview of the display. The main difference in the “Conflicts” window is the added functionality of being able to switch the resolution rule set in Step 3 above for that individual field. To do this, right-click on a record listed in the table of contents (left top window) to change the record reference to an alternate version. To change the conflict resolution rule for only a specific field, right-click on the field in the top right screen and select the alternate version (of the two: Child or Parent).

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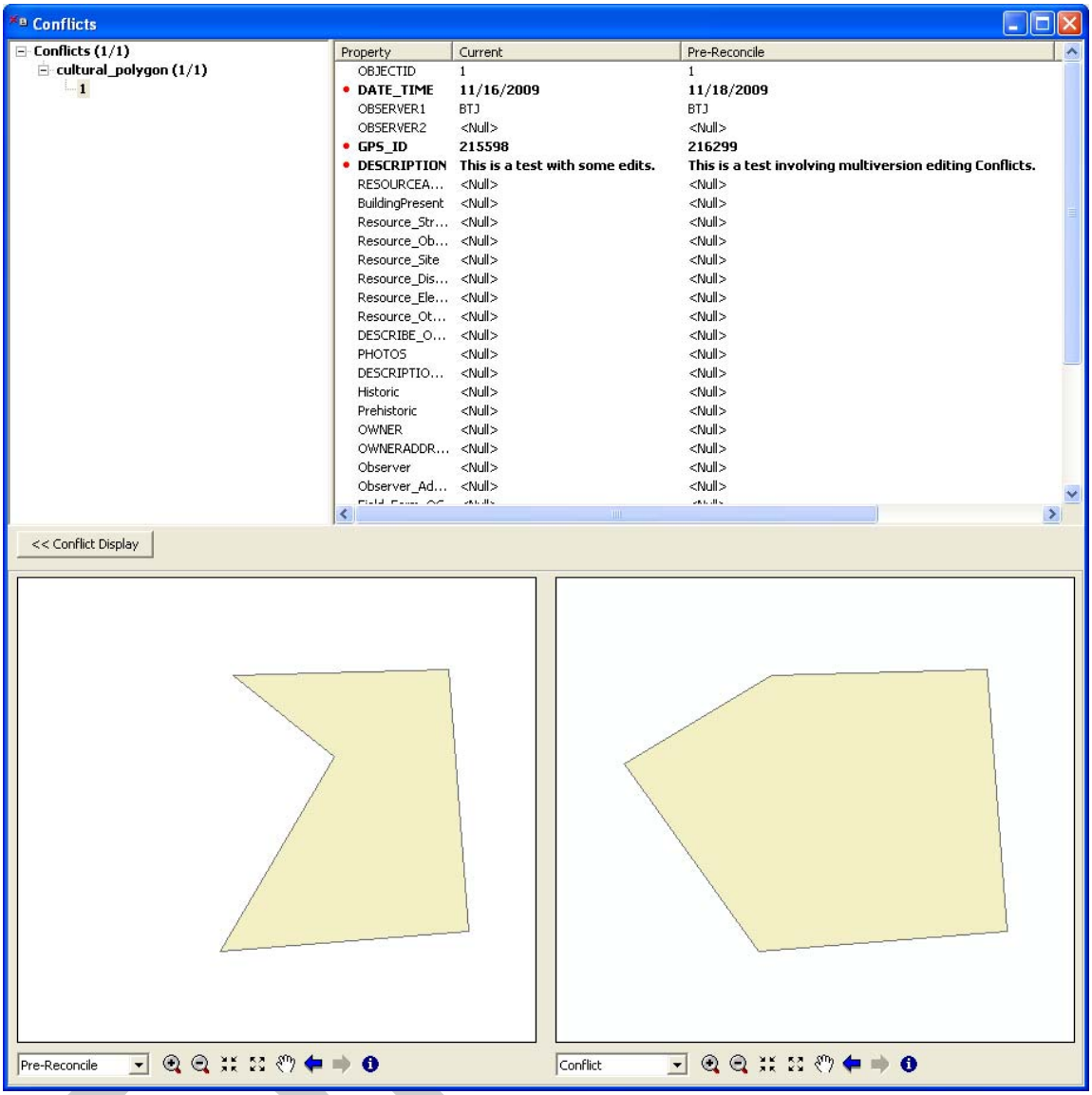


STEP 6: After reconciliation has been completed, click on the "post" button on the "Versioning Toolbar" to post the Child Version edits to the Parent.

Archiving DEFAULT Version

NOTE: Archiving cannot be activated for an entire geodatabase, but can only be enabled at the individual geodatabase object level (feature dataset, feature class, or table).

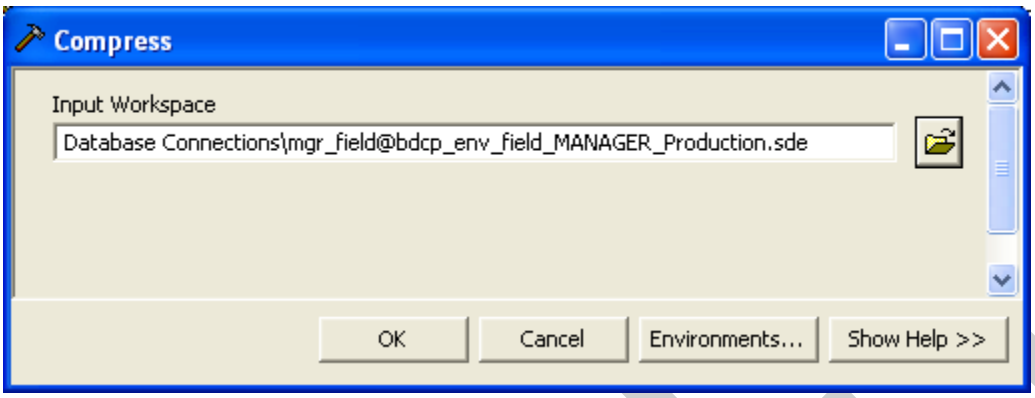
STEP 1: Open ArcCatalog. Create a connection to the SDE multiuser geodatabase for which you want to enable archiving. To enable archiving, right-click on an object (feature dataset, feature class, or table) and select "Archiving". Then select "Enable Archiving".

Note: Archiving prevents the compression tool from doing all that it is designed to do. For example, any data participating in archiving cannot be moved to base during compression.

Compression of the SDE Multiuser Geodatabase

NOTE: The connection to the SDE Multiuser Geodatabase that is used for the compress must have been made using the SDEA user account. In this case, it would be the user identified as "bdcp_env_field".

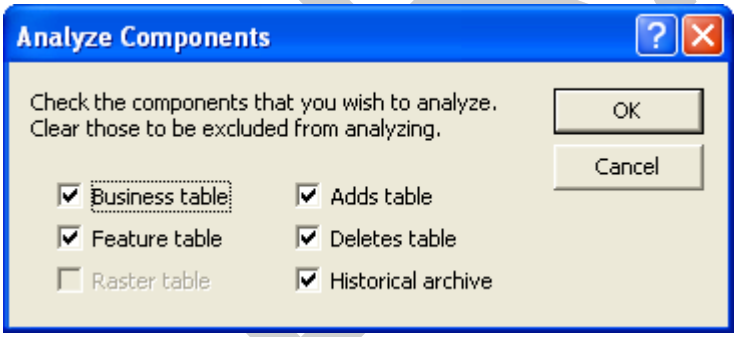
STEP 1: Open ArcCatalog. Open ArcToolBox and browse to Data Management Tools > Database > Compress. Double-click on "Compress".



STEP 2: From the navigation pane on the left hand side of ArcCatalog, click and drag the SDE multiuser geodatabase into the "Input Workspace" box in the window. Alternatively, another option is to click on the "browse to" button (folder icon) and locate the geodatabase for selection. Click on OK button.

Compute Statistics

Open ArcCatalog and connect to the target SDE multiuser geodatabase. It is not possible to compute statistics for the entire geodatabase simultaneously; each geodatabase object (feature dataset, feature class, or table) must have statistics generated for them individually. To generate statistics, right-click on an object and select "Analyze". Check all option boxes in the "Analyze Components" window and click on OK.



Initial Creation of a "One Way" Replica Geodatabase from Production Environment to the Publish Environment

NOTE: There are two servers running Oracle with SDE. The server for initial production/creation of the data is referred to as the production environment while the server for serving the data out to end users (i.e.; users who are not involved in editing or QC of the data, just consumption) is referred to as the publish environment. For more detailed information about the environments contact the DHCCP GIS coordinator to get access to the DHCCP GIS Data Management Plan. Once the data in the production environment has made it through QC and has been checked into the DEFAULT version it is ready to reside in the publish environment. To do this the DEFAULT version is copied to a geodatabase in the

publish environment. For the initial creation of the replica, the geodatabase in the publish environment must be empty. The SDE Administrator can use the replication wizard to complete the replication. The steps are as follows:

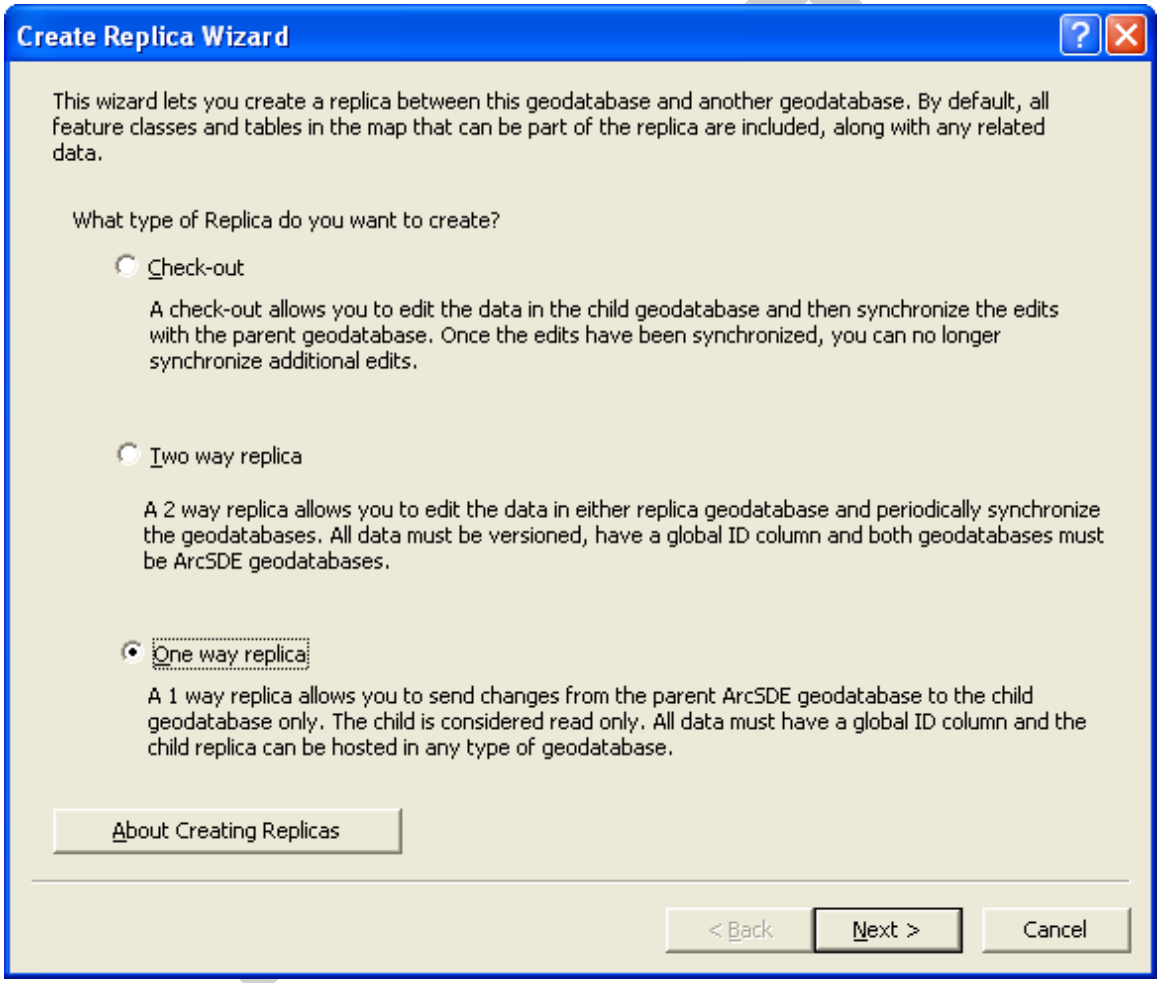
STEP 1: Open ArcMap.

STEP 2: Add the "Distributed Geodatabase" toolbar.

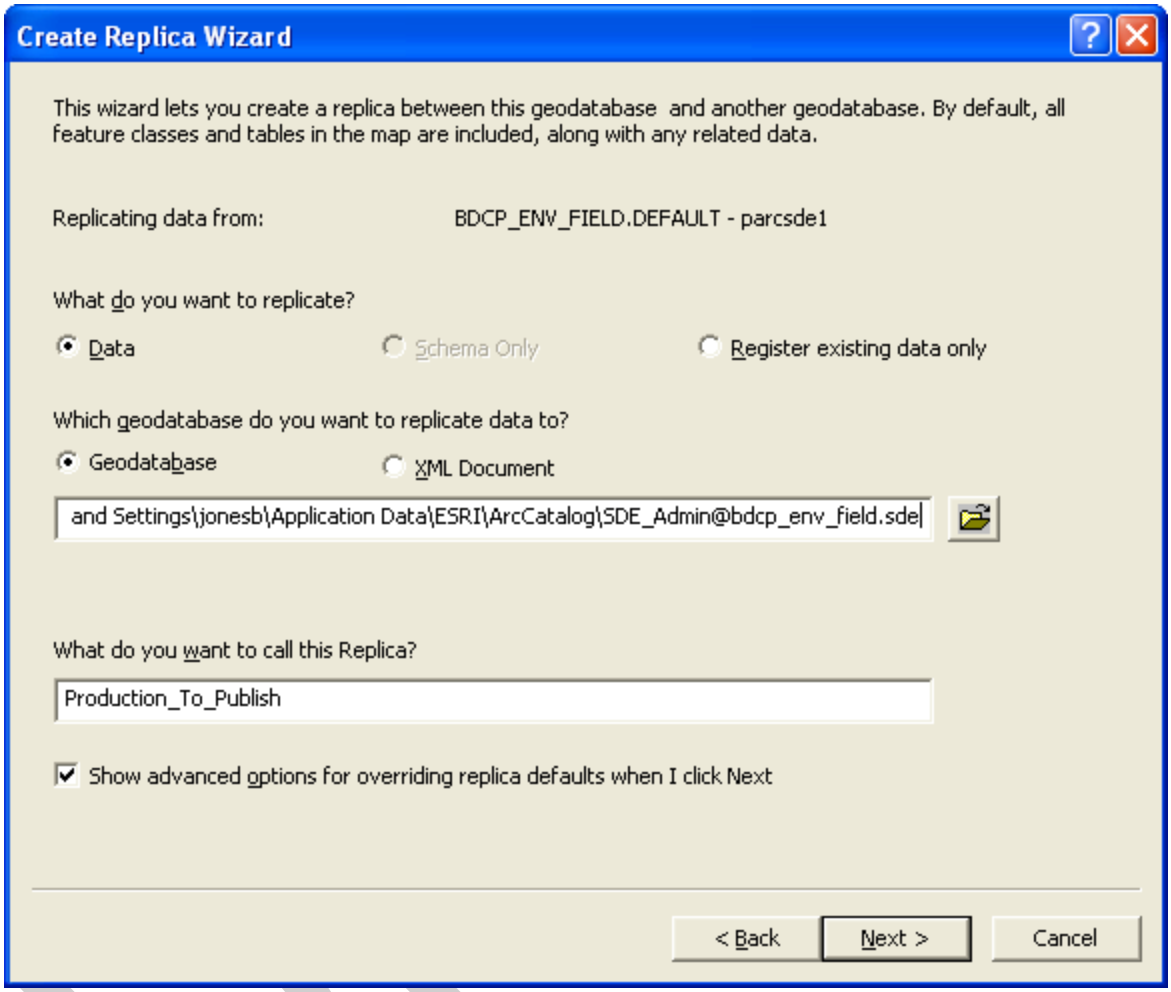
STEP 3: Add all DEFAULT version's feature classes to the map from the production geodatabase.

STEP 4: Press the "create replica" button:

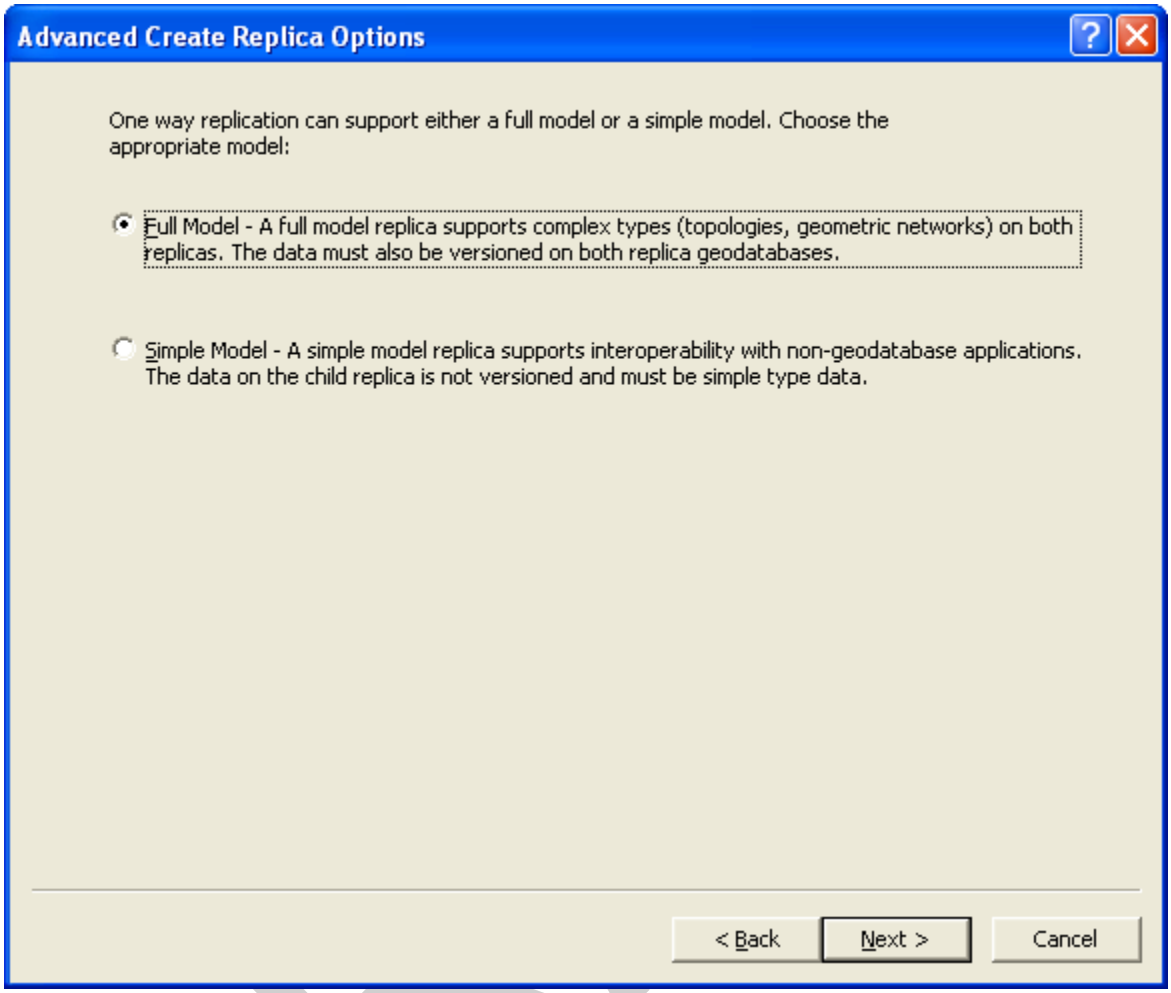
STEP 5: Choose "One way replica" and press"Next".



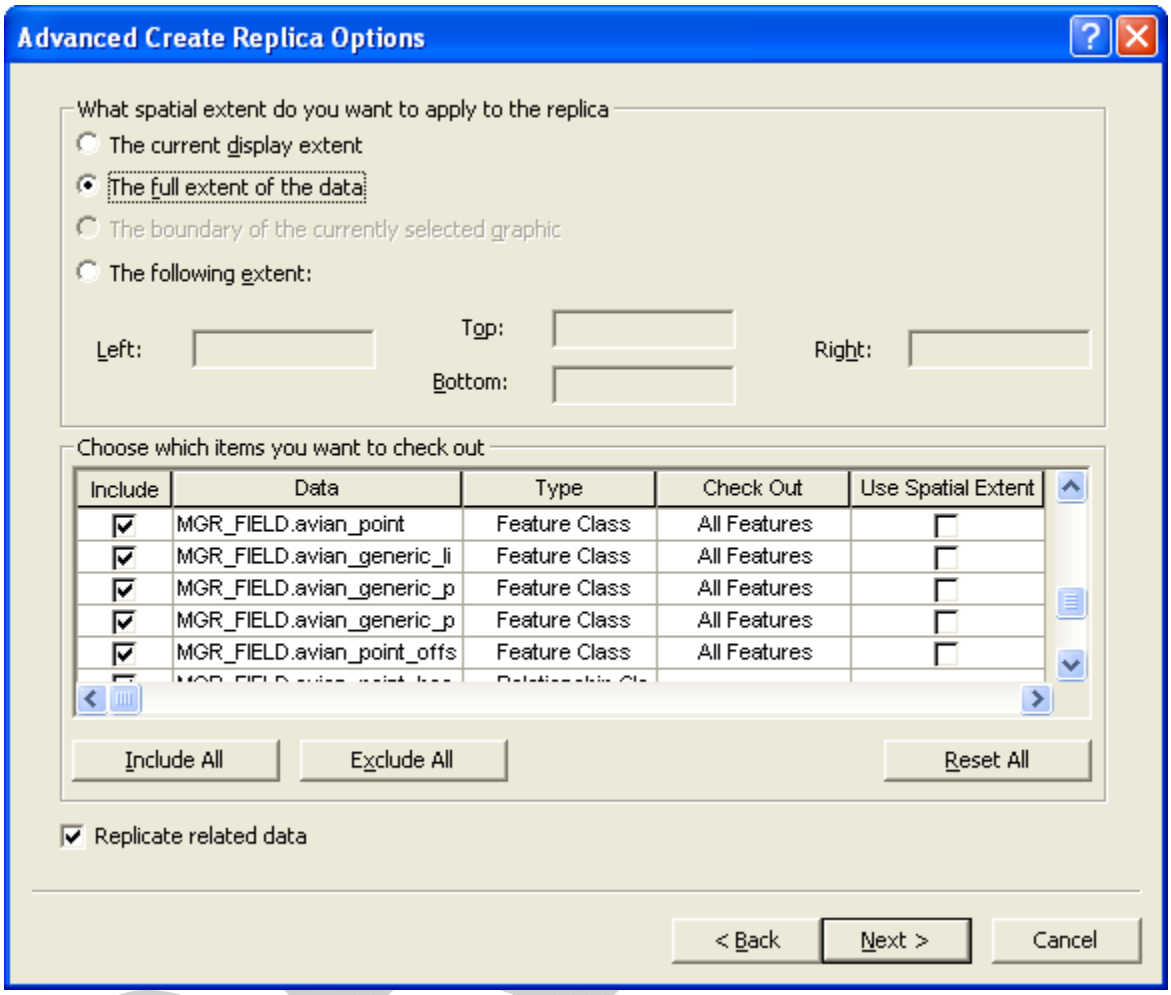
STEP 6: On the next screen confirm that the “Replicating data from:” field is populated with “BDCP_ENV_FIELD.DEFAULT - <production server name>”. At “What do you want to replicate?” select “Data”. For “Which geodatabase do you want to replicate data to?” select “Geodatabase” and then browse to your BDCP_ENV_FIELD connection on the publish server. In the field “What do you want to call this Replica?” enter “Production_To_Publish”. Finally, check the checkbox for “Show advanced options for overriding replica defaults when I click next”. Click the “Next” button.



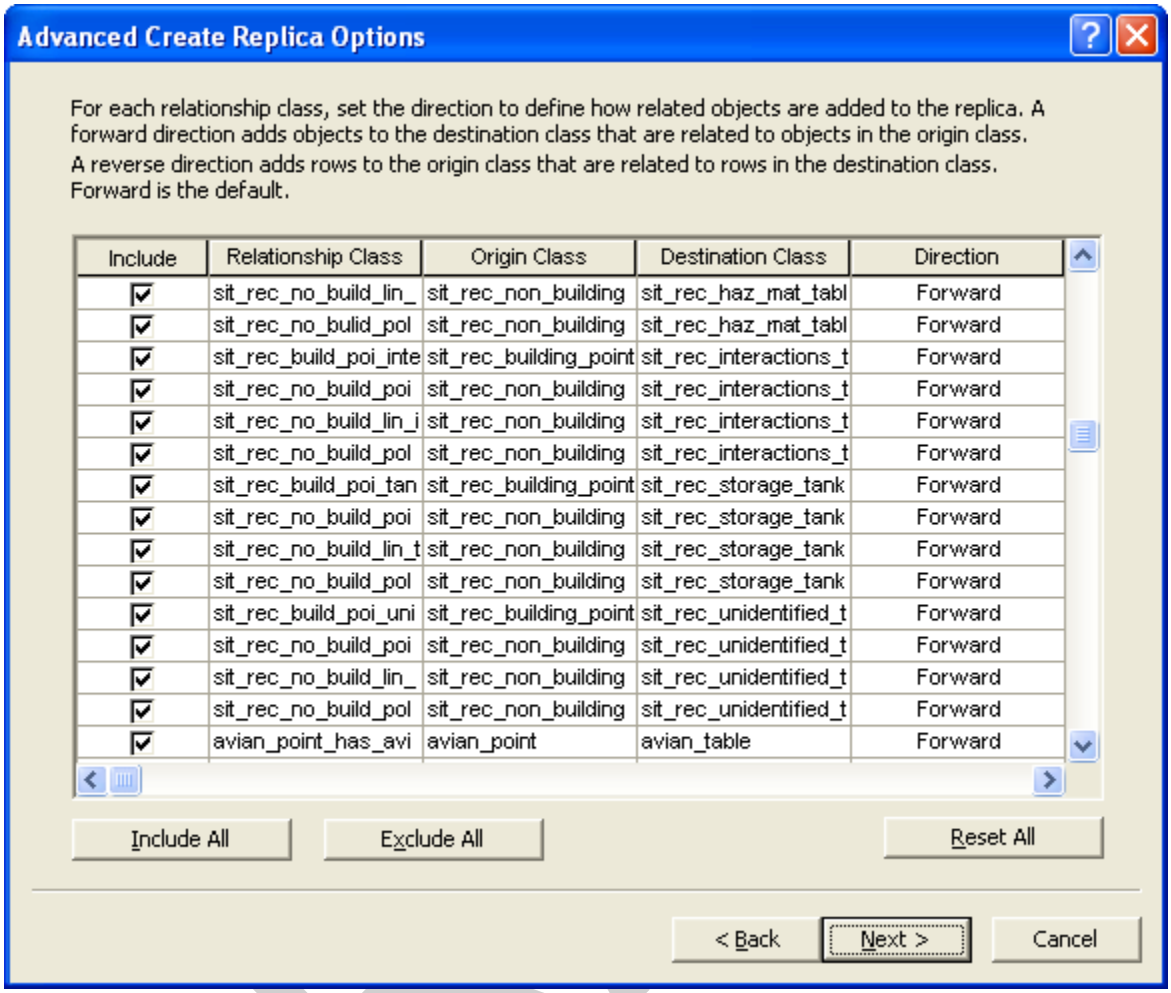
STEP 7: On the next screen select “Full Model” and click “Next”.



STEP 8: On the next screen select “The full extent of the data” option and leave all the displayed geodatabase objects checked as “Included”. Confirm “Replicate related data” is checked and click “Next”.



STEP 9: On the next screen leave everything as defaulted and click “Next”.



Include	Relationship Class	Origin Class	Destination Class	Direction
☑	sit_rec_no_build_lin_	sit_rec_non_building	sit_rec_haz_mat_tabl	Forward
☑	sit_rec_no_bulid_pol	sit_rec_non_building	sit_rec_haz_mat_tabl	Forward
☑	sit_rec_build_poi_inte	sit_rec_building_point	sit_rec_interactions_t	Forward
☑	sit_rec_no_build_poi	sit_rec_non_building	sit_rec_interactions_t	Forward
☑	sit_rec_no_build_lin_i	sit_rec_non_building	sit_rec_interactions_t	Forward
☑	sit_rec_no_build_pol	sit_rec_non_building	sit_rec_interactions_t	Forward
☑	sit_rec_build_poi_tan	sit_rec_building_point	sit_rec_storage_tank	Forward
☑	sit_rec_no_build_poi	sit_rec_non_building	sit_rec_storage_tank	Forward
☑	sit_rec_no_build_lin_t	sit_rec_non_building	sit_rec_storage_tank	Forward
☑	sit_rec_no_build_pol	sit_rec_non_building	sit_rec_storage_tank	Forward
☑	sit_rec_build_poi_uni	sit_rec_building_point	sit_rec_unidentified_t	Forward
☑	sit_rec_no_build_poi	sit_rec_non_building	sit_rec_unidentified_t	Forward
☑	sit_rec_no_build_lin_	sit_rec_non_building	sit_rec_unidentified_t	Forward
☑	sit_rec_no_build_pol	sit_rec_non_building	sit_rec_unidentified_t	Forward
☑	avian_point_has_avi	avian_point	avian_table	Forward

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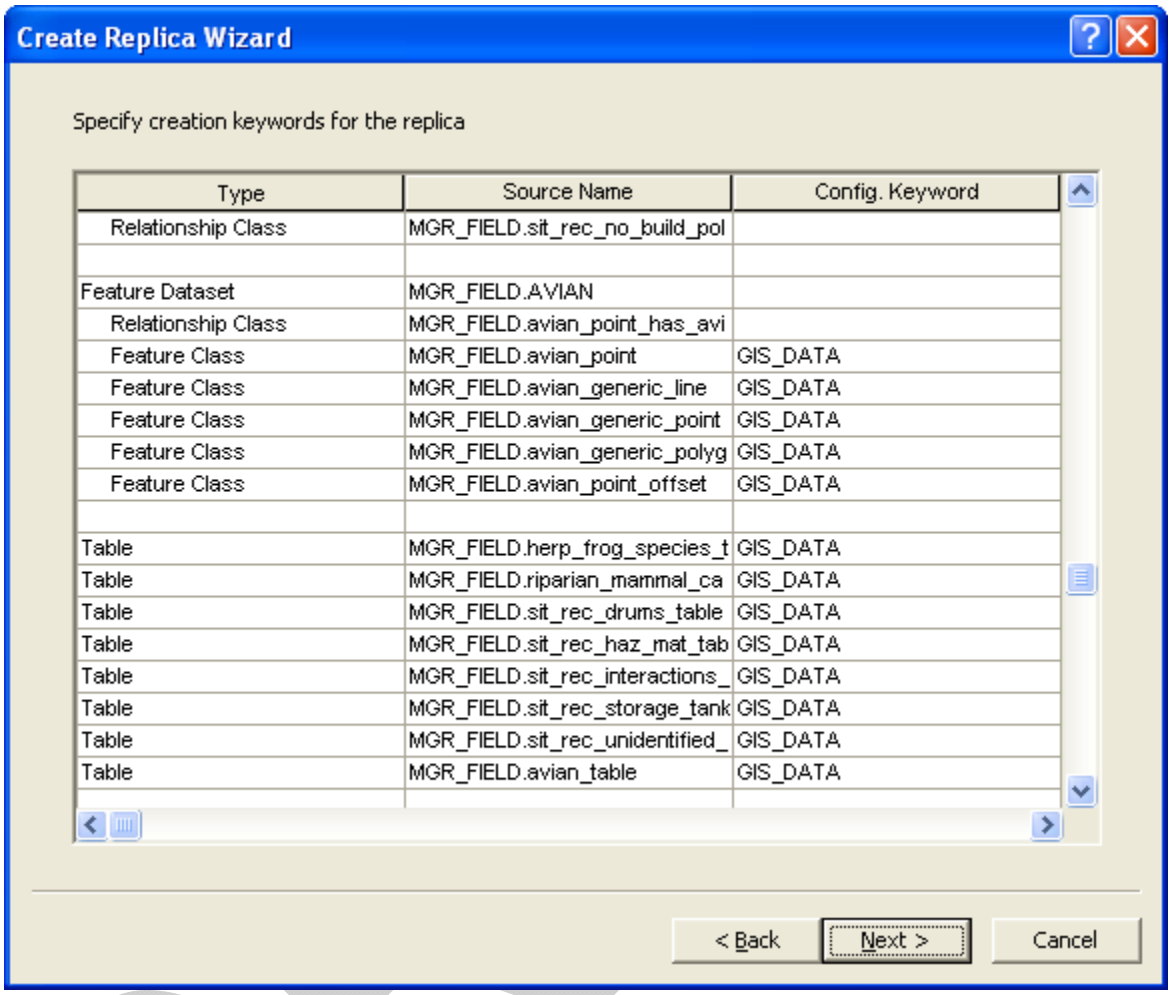
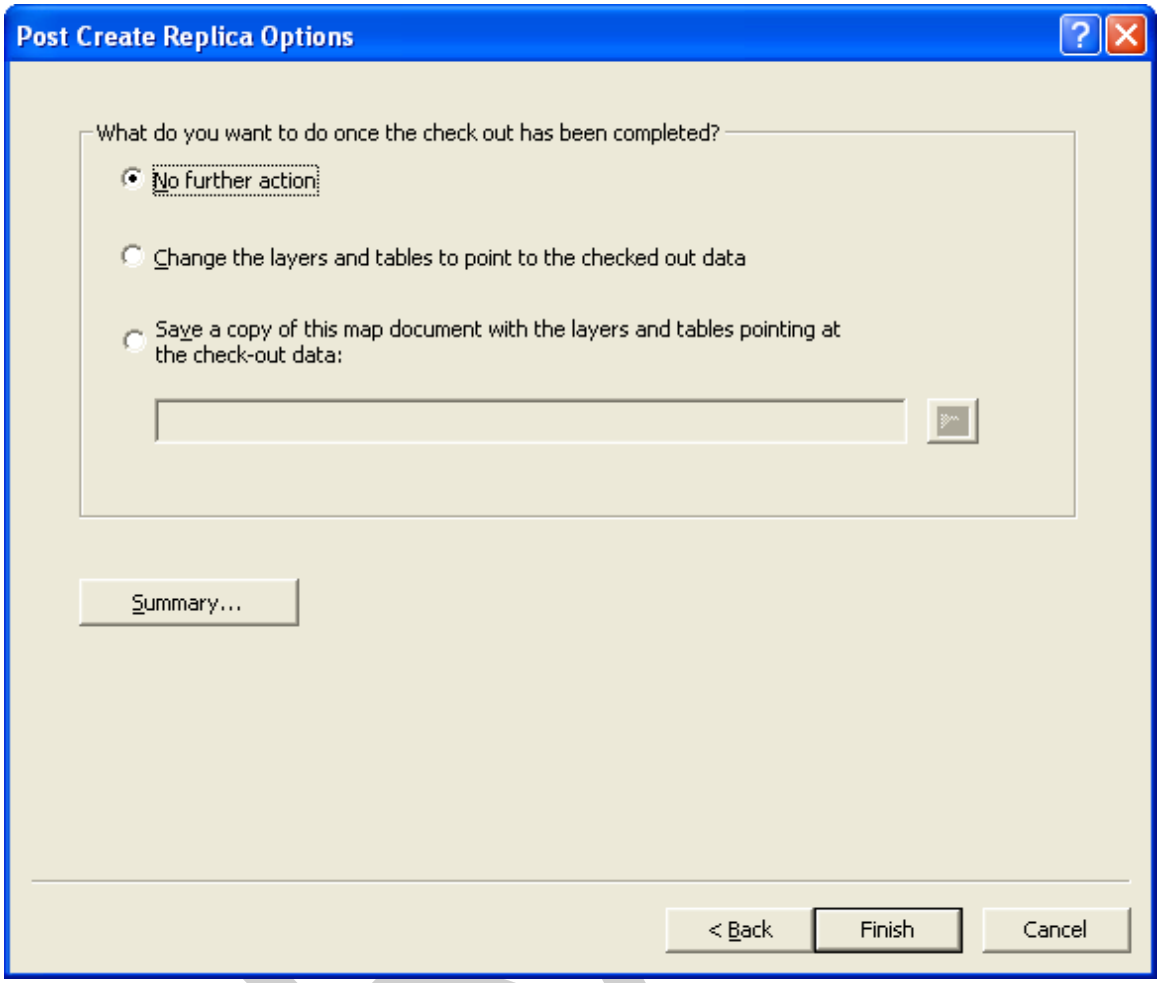
STEP 10: On the next screen change everything in the “Config. Keyword” column to “GIS_DATA” by choosing it from the drop down menu options. Click “Next”.



Type	Source Name	Config. Keyword
Relationship Class	MGR_FIELD.sit_rec_no_build_pol	
Feature Dataset	MGR_FIELD.AVIAN	
Relationship Class	MGR_FIELD.avian_point_has_avi	
Feature Class	MGR_FIELD.avian_point	GIS_DATA
Feature Class	MGR_FIELD.avian_generic_line	GIS_DATA
Feature Class	MGR_FIELD.avian_generic_point	GIS_DATA
Feature Class	MGR_FIELD.avian_generic_polyg	GIS_DATA
Feature Class	MGR_FIELD.avian_point_offset	GIS_DATA
Table	MGR_FIELD.herp_frog_species_t	GIS_DATA
Table	MGR_FIELD.riparian_mammal_ca	GIS_DATA
Table	MGR_FIELD.sit_rec_drums_table	GIS_DATA
Table	MGR_FIELD.sit_rec_haz_mat_tab	GIS_DATA
Table	MGR_FIELD.sit_rec_interactions_	GIS_DATA
Table	MGR_FIELD.sit_rec_storage_tank	GIS_DATA
Table	MGR_FIELD.sit_rec_unidentified_	GIS_DATA
Table	MGR_FIELD.avian_table	GIS_DATA

STEP 11: On the next screen leave the default selection to “No further action” and click “Finish”.



Transfer Data Edits from Production to the Published Environment

Refer to the section in this appendix under “Environmental Field Surveys Data Management Processes” named “Replica Synchronization”.

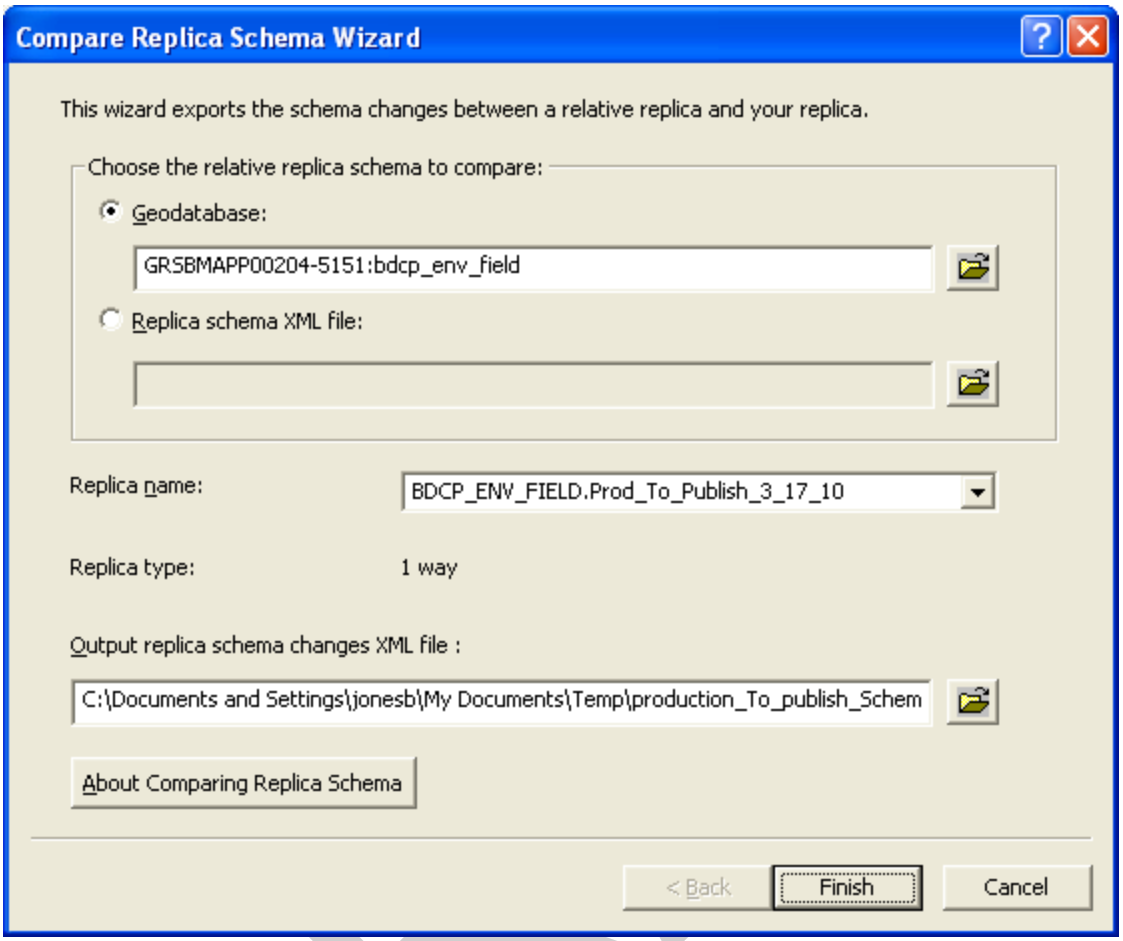
Transfer Schema Changes between Original Geodatabase and Replica Geodatabase

NOTE: If the following situations apply do not proceed with this tutorial but rather delete and recreate the replica:

- A geodatabase object is deleted and re-added with the same name. This typically happens when the fields need to be re-ordered in an object.
- A relationship class is added or removed. Instead of deleting the replica, the relationship classes may be manually removed or added. The recommendation is to delete and recreate the replica to ensure the success of synchronization.

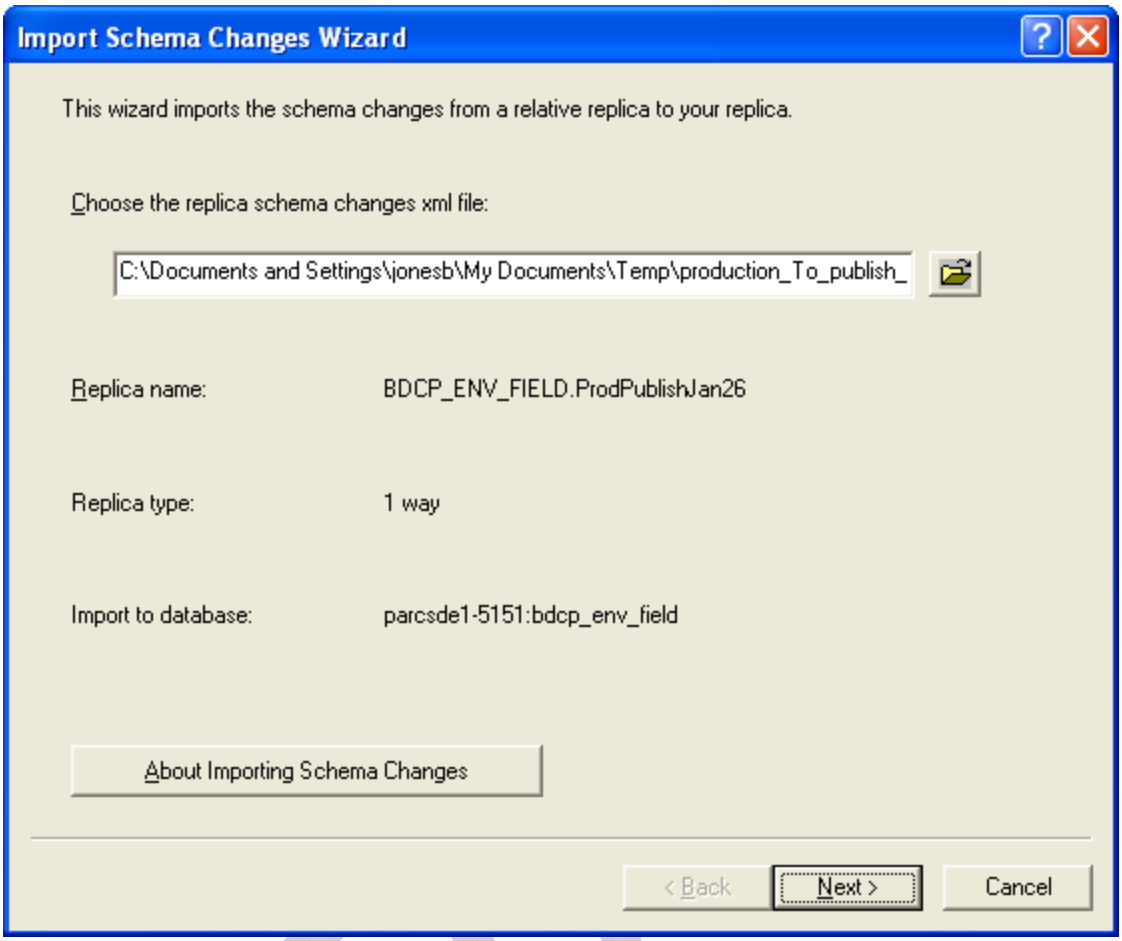
STEP 1: *Open ArcCatalog.* Navigate to the original geodatabase.

STEP 2: *Compare replica schema.* Right click on the original geodatabase and choose "Distributed Geodatabase". From the menu that appears choose "Compare replica schema". Refer to the image below:



For the geodatabase, navigate to the replica geodatabase that needs the schema change. The replica name should auto-populate. Where it states "Output replica schema changes XML file:" navigate to a location to store the XML file that will subsequently be used in another tool to import the schema changes. Press "Finish".

STEP 3: Import schema changes. Navigate to the replica geodatabase that is to receive the schema changes. Right click on it and hover the mouse pointer over "Distributed Geodatabase". From the menu that appears choose "Import Schema Changes". Refer to the image below:



On the first page of the “Import Schema Changes Wizard” where it says “Choose the replica schema changes xml file” navigate to the location of the XML file created by the “Compare Schema Changes” tool. Select “Next”.

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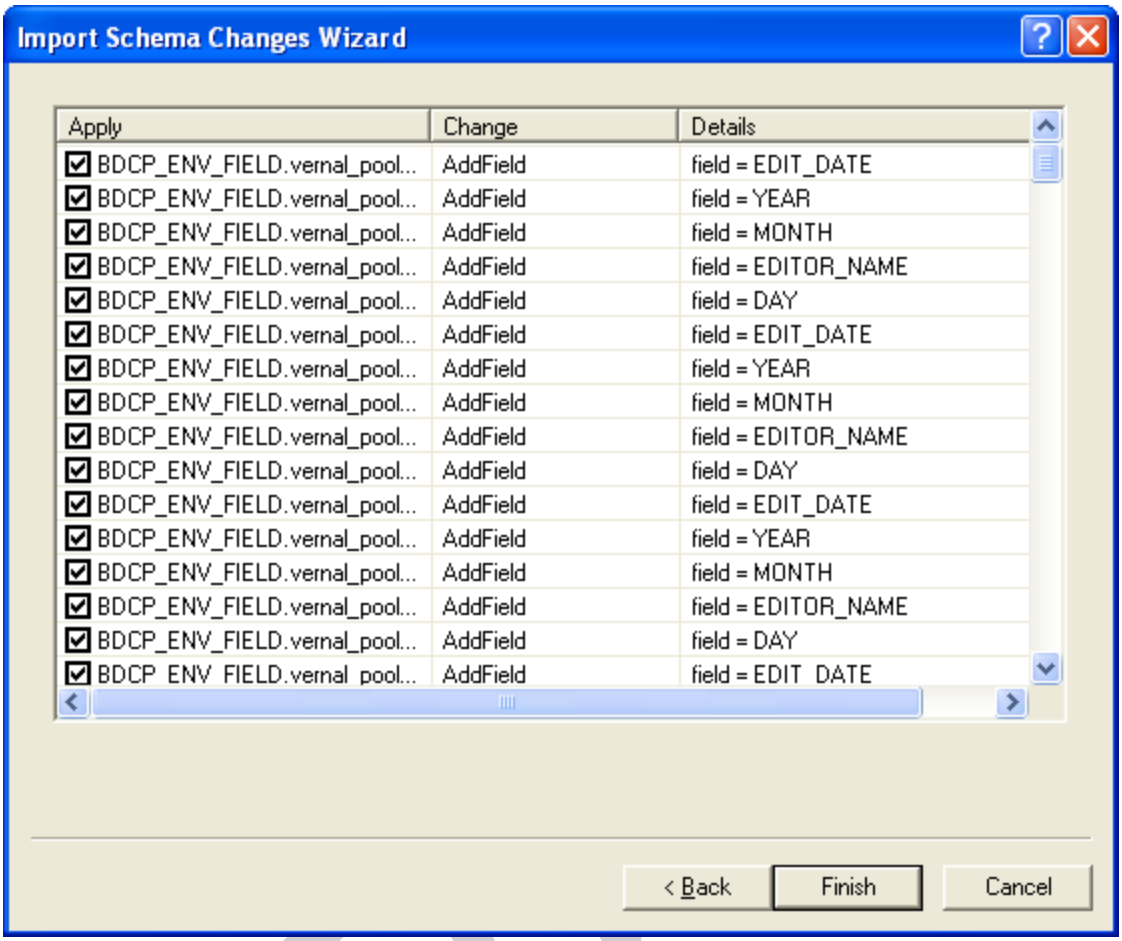

By default, the properties and objects to be deleted (as shown in the second page of the wizard) are all unchecked. Unless it is desired to leave those objects and properties in the replica, check all boxes. Select “Finish”.

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