

USACE LEVEE INVENTORY TOOLS

Introduction to Load Data Toolbar

Agenda

Classroom Training

Lab Exercise



US Army Corps of Engineers
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LOAD DATA TOOLBAR

INTRODUCTION TO LOAD DATA TOOLBAR

9 AM – 12:15 PM

U.S. Army Corps of Engineers

Introduction to the Load Data and Bulk Load Tools

2 hours

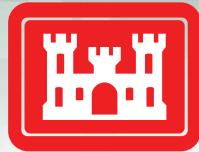
- Introduction: Overview/Purpose of the Load Data toolbar and toolbar functions;
- Load Data and Bulk Load Tools: Purpose & Functions;
- Load Data and Bulk Load Tools: Compare & Contrast;
- QC Control Checks & Load Data Tool Configuration/Process;
- Exercise A: Lesson 1.

Highlight Required Fields, Reverse Direction, and Generate Centerline Tools

1 hour

- Introduction: Overview/Purpose of Highlight Required Fields, Reverse Direction, and Generate Centerline.
- Highlight Required Fields: Purpose & Functions;
- Reverse Direction Tool: Purpose & Functions;
- Generate Centerline Tool: Purpose & Functions;
- Exercise A: Lesson 2, 3, & 4.

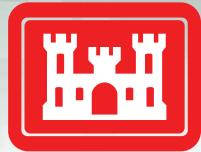
web training: www.goheresomeday.com



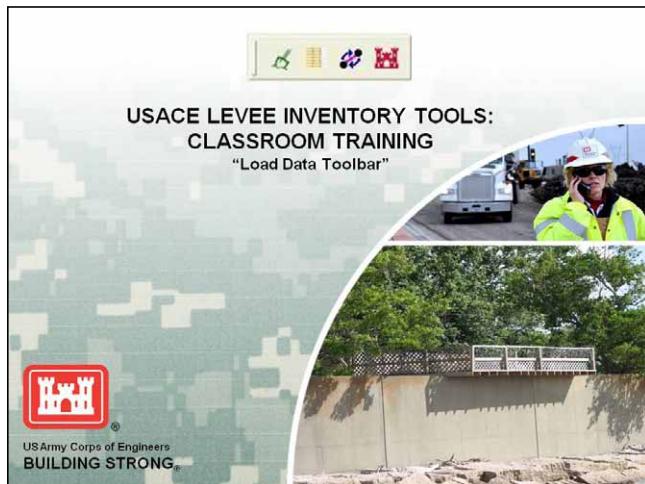
LOAD DATA TOOLBAR

Load Data Toolbar

Classroom Training Lecture Notes



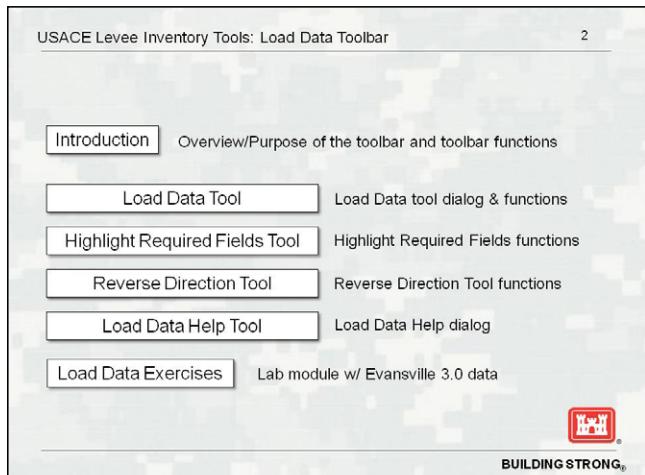
LOAD DATA TOOLBAR



USACE LEVEE INVENTORY TOOLS:
CLASSROOM TRAINING
“Load Data Toolbar”

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The slide features a toolbar icon at the top left, followed by the title and subtitle. Below the title is a photograph of a person in a hard hat and safety vest standing next to a white truck. To the right is a photograph of a concrete levee wall with trees in the background. The slide is set against a camouflage background.



USACE Levee Inventory Tools: Load Data Toolbar 2

Introduction Overview/Purpose of the toolbar and toolbar functions

Load Data Tool Load Data tool dialog & functions

Highlight Required Fields Tool Highlight Required Fields functions

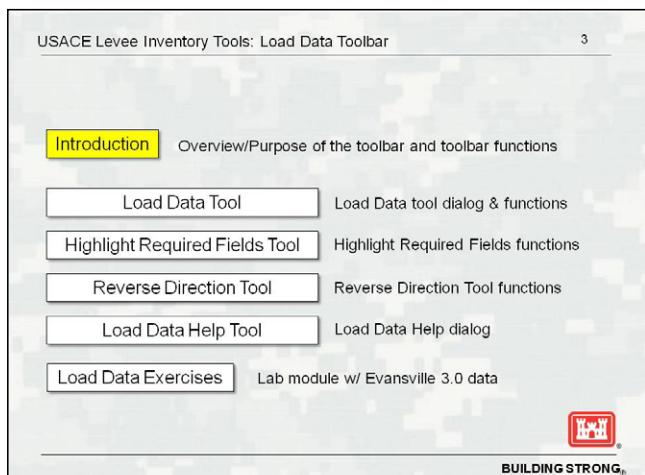
Reverse Direction Tool Reverse Direction Tool functions

Load Data Help Tool Load Data Help dialog

Load Data Exercises Lab module w/ Evansville 3.0 data

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This slide provides a detailed overview of the Load Data Toolbar. It includes a table mapping toolbar buttons to their respective functions and a link to a lab module. The slide is numbered '2' at the top right.



USACE Levee Inventory Tools: Load Data Toolbar 3

Introduction Overview/Purpose of the toolbar and toolbar functions

Load Data Tool Load Data tool dialog & functions

Highlight Required Fields Tool Highlight Required Fields functions

Reverse Direction Tool Reverse Direction Tool functions

Load Data Help Tool Load Data Help dialog

Load Data Exercises Lab module w/ Evansville 3.0 data

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This slide is identical to slide 2, providing the same detailed overview of the Load Data Toolbar functions and linking to the same lab module. It is numbered '3' at the top right.



LOAD DATA TOOLBAR

USACE Levee Inventory Tools: Load Data Toolbar 4

Module Introduction

Overview

The Load Data Toolbar features three buttons: **Load Data**, **Highlight Required Fields**, and **Reverse Line Direction**.

The **Load Data** and **Reverse Line Direction** are editing tools, they directly modify the GIS data loaded into the map. **Highlight Required Fields** is a visualization tool. It helps the user identify errors and data omissions in the required fields in an NLD 3.0 database.

Skills Learned

- Populate or update an existing NLD 3.0 database from source data;
- Highlight NLD 3.0 required fields in a feature class or table to help find null or missing data that should be fixed before submission;
- Use the Reverse Direction tool to fix digitizing errors;

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Module Introduction

Getting Started:

For the **Load Data Tool** the target NLD feature classes and tables must be loaded into the map, and an edit session started:

- If there are data from different sources in the map, ensure that the edit session is started on the correct target geodatabase.

The **Highlight Required Fields** tool operates only on open tables or feature class attribute tables.

For the **Reverse Direction Tool**, there must be an active edit session, and at least one linear feature from a data source in the active session must be selected.

- The button will reverse the digitized direction for all selected editable linear features.

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Module Introduction

Getting Started:

The **Load Data** tool enables the user to select one or more source shapefiles, feature classes, or tables, map the source data to an existing NLD geodatabase and then copy data from the source.

NLD Geodatabase 3.0

Feature Classes For Example

- Levee Centerline Floodwall Line
- Levee Station Point

Tables

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LOAD DATA TOOLBAR

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Module Introduction

Getting Started:

The **Highlight Required Fields Tool** enables the user to highlight the required fields in an NLD geodatabase table or feature class attribute table.

NLD Geodatabase 3.0
Feature Class Attribute Tables
Tables

USACE Levee Inventory Tools: Load Data Toolbar 8

Module Introduction

Getting Started:

The **Reverse Direction Tool** enables the user to reverse the digitized direction of a linear feature.

NLD Geodatabase 3.0
Linear Feature Classes

USACE Levee Inventory Tools: Load Data Toolbar 9

Module Introduction

Getting Started:

The **Load Data Help** tool enables the user to open the Levee Inventory Tools User Guide within an active ArcMap session.

Levee Inventory Tools Research User Guide (Version 3.0) - October 2010
U.S. Army Corps of Engineers
Engineering Research and Development Center
Cold Regions Research and Engineering Laboratory
Concord, NH 03301-3142 USA

A.A. Reverse Direction Button
Description: The Reverse Direction tool is used to flip the order of vertices in a selected feature. It is located in the Feature Class Tools toolbar under the Tools tab. To use this tool, select the feature you want to flip and click the Reverse Direction button. This will reverse the order of vertices in the feature's geometry.

B.B. Load Data Help Button
Description: The Load Data Help tool is used to open the Levee Inventory Tools User Guide within an active ArcMap session. It is located in the Feature Class Tools toolbar under the Tools tab. To use this tool, click the Load Data Help button. This will open the User Guide in a new window within your ArcMap session.

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LOAD DATA TOOLBAR

USACE Levee Inventory Tools: Load Data Toolbar 10

Introduction Overview/Purpose of the toolbar and toolbar functions

Load Data Tool Load Data tool dialog & functions

Highlight Required Fields Tool Highlight Required Fields functions

Reverse Direction Tool Reverse Direction Tool functions

Load Data Help Tool Load Data Help dialog

Load Data Exercises Lab module w/ Evansville 3.0 data


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USACE Levee Inventory Tools: Load Data Toolbar 11

Load Data Tool

Introduction Overview/Purpose of the toolbar and toolbar functions

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Reverse Direction Tool Reverse Direction Tool functions

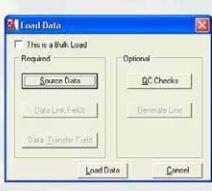
Load Data Help Tool Load Data Help dialog

Load Data Exercises Lab module w/ Evansville 3.0 data


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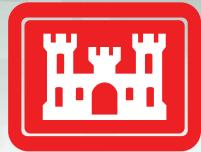
USACE Levee Inventory Tools: Load Data Toolbar 12

Load Data Tool






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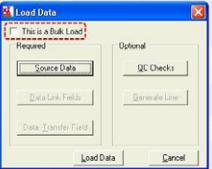
USACE Levee Inventory Tools: Load Data Toolbar 13

Load Data Tool

The Bulk Load option is used import data from an existing NLD geodatabase into NLD 3.0 schema.

The Bulk Load option includes a number of optimizations to improve performance, however these options do require some care. The most critical is that if you select the Bulk Load option, the tool assumes that the data is being loaded into an empty 3.0 geodatabase, and does not check for existing primary key values in the target feature classes and tables.

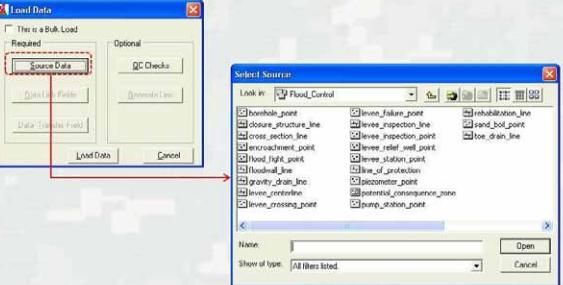
If you are using the bulk load option, click the check box. Before selecting the source data to access the auto-linking of feature classes and fields.



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Load Data Tool



Select Source

Look In: Flood_Control

holehole_point	levee_failure_point	rehabilitation_line
closure_structure_line	levee_inspection_line	sand_bol_point
cross_section_line	levee_inspection_point	soil_reinforcement_point
levee_leak_point	levee_leak_point	toe_drain_line
levee_light_point	levee_leakage_point	
levee_leak_line	levee_of_protection	
gravity_drain_line	piezometer_point	
levee_reinforce	potential_consequence_zone	
levee_crossing_point	young_station_point	

Name:

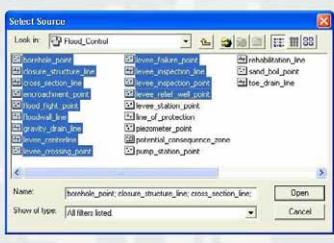
Show of type: All filters listed

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Load Data Tool

Hold the shift key and click to select contiguous sources



Select Source

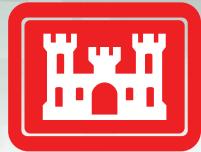
Look In: Flood_Control

holehole_point	levee_failure_point	rehabilitation_line
closure_structure_line	levee_inspection_line	sand_bol_point
cross_section_line	levee_inspection_point	soil_reinforcement_point
levee_leak_point	levee_leak_point	toe_drain_line
levee_light_point	levee_leakage_point	
levee_leak_line	levee_of_protection	
gravity_drain_line	piezometer_point	
levee_reinforce	potential_consequence_zone	
levee_crossing_point	young_station_point	

Name: holehole_point, closure_structure_line, cross_section_line

Show of type: All filters listed

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LOAD DATA TOOLBAR

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Load Data Tool

Hold the Ctrl key and click to select individual sources

Select Source

Look in: Flood_Control

Source Data:

- levee_centerline
- levee_failure_point
- levee_inspection_line
- levee_inspection_point
- levee_radar_well_point
- levee_right_bank
- levee_left_bank
- gravity_dike_line
- levee_on_tent_line
- levee_crossing_point

Name: [borehole_point; encasement_point; levee_centerline].lev

Show of type: All Items listed.

Open Cancel

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Load Data Tool

Data Link Fields enables after one or more sources have been selected

Load Data

This is a Bulk Load

Required:

- Source Data
- Data Link Fields
- Data Transfer Field

Optional:

- GC Checks
- Generate Line

LOAD DATA Cancel

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Load Data Tool

This is a Bulk Load

Required:

- Source Data
- Data Link Fields
- Data Transfer Field

Optional:

- GC Checks
- Generate Line

Link fields are the primary key fields. If a feature or table record with the same key already exists, the existing record will be updated.

Link Fields

Fields to uniquely identify entities during data transfer from source data to target NLD feature class.

Input Data Source | Input Data Source Field | Destination Feature Class | Destination Feature Class Field

Add Remove Apply Rollback OK Cancel

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LOAD DATA TOOLBAR

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Load Data Tool

The screenshot shows the 'Link Fields' dialog box. It has tabs for 'Input Data Source', 'Input Data Source Field', 'Destination Feature Class', and 'Destination Feature Class Field'. The 'Input Data Source' tab is selected. A red box highlights the 'OK' button at the bottom left of the dialog. An arrow points from the 'OK' button to the 'Add Link Field' dialog box below it. The 'Add Link Field' dialog box shows a dropdown menu for 'Source Name' with 'borehole_point' selected. The 'NLD Target Name' dropdown menu lists several options: borehole_point, encroachment_point, levee_centerline, levee_end_point, and stand_bor_point. The 'Source Field Name' dropdown menu shows 'ADDRESS'. The 'NLD Target Field Name' dropdown menu shows 'Levee_ID'. The 'OK' button is highlighted in the 'Add Link Field' dialog.

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Load Data Tool

If the source is a feature class, the NLD Target Name drop down will be filtered by geometry type as shown in the left hand image. If the source is a table, the drop down will show tables. Only feature classes and tables that have been added to the map will display.

The screenshot shows two 'Add Link Field' dialog boxes. The left one is for a feature class ('borehole_point') and the right one is for a table ('ADDRESS'). Both dialogs have dropdown menus for 'Source Name' and 'NLD Target Name'. In the left dialog, the 'NLD Target Name' dropdown is filtered to show only geometry types related to 'borehole_point'. In the right dialog, it shows various table names. A red box highlights the 'OK' button in the left dialog, with a note below stating 'OK button is disabled until all four fields have values.' The 'BUILDING STRONG®' logo is at the bottom.

OK button is disabled until all four fields have values.

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Load Data Tool

The screenshot shows the 'Link Fields' dialog box with the 'Input Data Source' tab selected. It displays a table with four rows: 'ADDRESS', 'Borehole_2004', 'Levee_centerline', and 'Levee_centerline'. The 'ADDRESS' row is currently selected. Below the table are five buttons: 'Remove', 'Save pending changes', 'Undo all changes since the last Apply', 'Save pending changes and close the dialog', and 'Undo pending changes and close the dialog'. The 'OK' button is also visible at the bottom. The 'BUILDING STRONG®' logo is at the bottom.

Remove selected rows
Save pending changes
Undo all changes since the last Apply
Save pending changes and close the dialog
Undo pending changes and close the dialog

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Load Data Tool

Data Transfer Field enables after at least one source has been linked.

Load Data enables after all sources have been linked.

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Load Data Tool

The list of transferfields will be auto-populated with fields where the field name and datatype are the same in the source and target.

These buttons are the same as in the Link Fields dialog

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Load Data Tool

The NLD TargetName auto populates with the linked target when the Source is selected.

If you map fields with different data types, this dialog asks you to confirm the mapping.

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Load Data Tool

The QC Checks button allows the user to perform Quality Control checks on primary key, foreign key, and domain bound field values in the source data. Quality Control check failures can either be written out to a comma delimited text file, or corrected interactively after the data loading is complete. If the source files are large, interactive failure correction will be disabled.

Click this checkbox to correct errors interactively.

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USACE Levee Inventory Tools: Load Data Toolbar 26

Load Data Tool

The point source drop down is filtered on point geometry sources.
The Centerline Target is filtered on linear geometry feature classes.
Use the Centerline ID Field dropdown to select the field in the point source that holds the primary ID for linear feature being created.
If there is a field in the point source that identifies start points for individual linear features, use these controls. The Start Value dropdown is populated with the unique values in the field selected in the Value Field dropdown.

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USACE Levee Inventory Tools: Load Data Toolbar 27

Load Data Tool

If there are more than 2500 total features and table rows in the selected sources, the following dialog will display. The requirement to save edits while processing is due to a limitation on the number of pending edits supported within ArcMap. Clicking 'No' in this dialog cancels the data load. The Link and Data Transfer field mappings are preserved.

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LOAD DATA TOOLBAR

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Load Data Tool

This dialog displays while data is loading.

The text shows the feature class or table currently being processed.

The progress bar is for the combined total of features and table rows.

Canceling a data load is not allowed.



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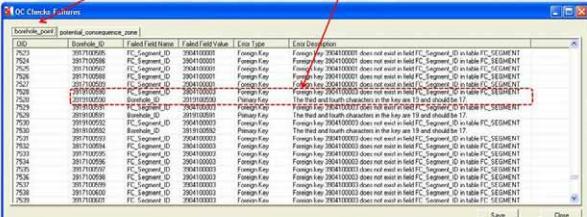
USACE Levee Inventory Tools: Load Data Toolbar 29

Load Data Tool

The QC Checks Failures dialog

One tab for each feature class or table with errors.

A feature or table row will be reported once for each error.

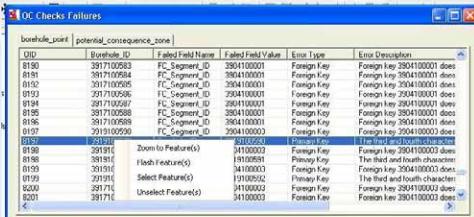


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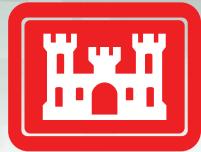
USACE Levee Inventory Tools: Load Data Toolbar 30

Load Data Tool

Right clicking in the list view brings up a context menu. The menu options will operate on all selected features. If the tab is displaying table rows, the Zoom To ... and Flash ... menu options will be disabled.



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Load Data Tool

QC Checks Failures

ID	Branch_ID	Table/Field Name	Table/Field Value	Error Type	Error Description
7523	3917100046	FC_Segment_ID	3004100001	Foreign Key	Foreign key 3004100001 does not exist in field FC_Segment_ID in table FC_SEGMENT
7524	3917100098	FC_Segment_ID	3004100001	Foreign Key	Foreign key 3004100001 does not exist in field FC_Segment_ID in table FC_SEGMENT
7525	3917100098	FC_Segment_ID	3004100001	Foreign Key	Foreign key 3004100001 does not exist in field FC_Segment_ID in table FC_SEGMENT
7526	3917100098	FC_Segment_ID	3004100001	Foreign Key	Foreign key 3004100001 does not exist in field FC_Segment_ID in table FC_SEGMENT
7527	3917100099	FC_Segment_ID	3004100001	Foreign Key	Foreign key 3004100001 does not exist in field FC_Segment_ID in table FC_SEGMENT

Save As

Save as:

- Save as
- DATACT
- INLAND
- PhasedITest

File name: District[XX]_[Date]_LoadDataQCChecks

Save Cancel

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Load Data Tool

Once data loading completes, the following dialog will display. Note that "successfully copied" does not mean there are no QC Check failures.

Load Data

The following source file(s):
branch, joint
potential consequence zone
Have been successfully copied to the HLD geodatabase:
30.mxd.mdb

OK



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Introduction Overview/Purpose of the toolbar and toolbar functions

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Load Data Exercises Lab module w/ Evansville 3.0 data

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LOAD DATA TOOLBAR

USACE Levee Inventory Tools: Load Data Toolbar 34

Introduction Overview/Purpose of the toolbar and toolbar functions

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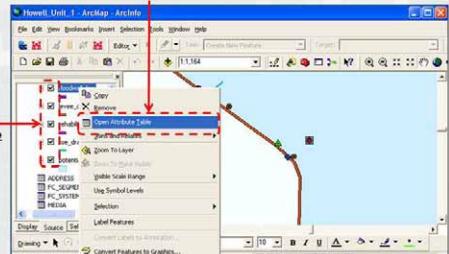
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USACE Levee Inventory Tools: Load Data Toolbar 35

Highlight Required Fields Tool

Right click a feature class in the map and select the "Open Attribute Table" option

[Open Attribute Table](#)



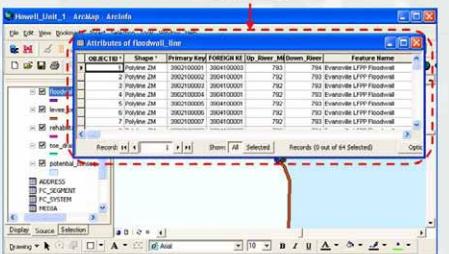
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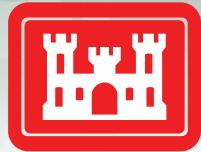
Highlight Required Fields Tool

The attributes of the feature class

[Attributes Table](#)



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LOAD DATA TOOLBAR

USACE Levee Inventory Tools: Load Data Toolbar 37

Highlight Required Fields Tool

Click the "Highlight Required Fields" button

Highlight Required Fields

The screenshot shows the ArcMap application window titled "Howell_Unit_1 - ArcMap - ArcInfo". A red box highlights the "Highlight Required Fields" button in the toolbar. The toolbar also includes other buttons like "Select by Attribute", "Select by Location", and "Select by Value". To the right of the toolbar is a table titled "OBJECTS" with columns for ID, Type, and Description.

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USACE Levee Inventory Tools: Load Data Toolbar 38

Highlight Required Fields Tool

The Highlight Required Fields button will turn white

Highlight Required Fields: a white background indicates that clicking the button will turn off highlighting.

The screenshot shows the ArcMap application window titled "Howell_Unit_1 - ArcMap - ArcInfo". The "Highlight Required Fields" button in the toolbar is now white, indicating it has been activated. The table to the right is the same as in the previous screenshot.

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Highlight Required Fields Tool

The required fields will be highlighted in orange

Required fields

The screenshot shows the ArcMap application window titled "Howell_Unit_1 - ArcMap - ArcInfo". The "Highlight Required Fields" button in the toolbar is orange, indicating it has been activated. The table to the right is the same as in the previous screenshots.

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Highlight Required Fields Tool

Click the "Source" tab in the map

The screenshot shows the ArcMap interface with a map view displaying a levee segment. On the left, there is a table of contents with several layers checked. The bottom-left corner of the toolbar has a red box around the 'Source' tab. The status bar at the bottom right shows coordinates: -87.62 37.074 Decimal Degrees.

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Highlight Required Fields Tool

Right click a table in the map and select the "Open" option

The screenshot shows the ArcMap interface with a map view. A red box highlights the 'Tables' button in the bottom-left corner of the toolbar. A red arrow points from the 'Tables' button to a context menu that is open over a table in the table of contents. The 'Open' option is highlighted in the menu. The status bar at the bottom right shows coordinates: -87.62 37.074 Decimal Degrees.

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Highlight Required Fields Tool

Click the "Highlight Required Fields" button

The screenshot shows the ArcMap interface with a map view. A red box highlights the 'Highlight Required Fields' button in the bottom-left corner of the toolbar. The status bar at the bottom right shows coordinates: -87.62 37.074 Decimal Degrees.

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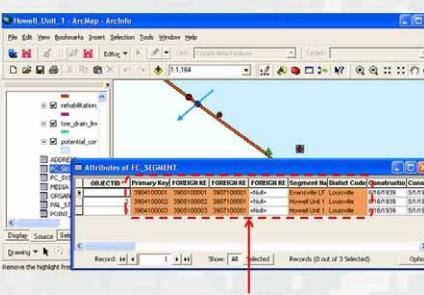


LOAD DATA TOOLBAR

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Highlight Required Fields Tool

The required fields will be highlighted in orange



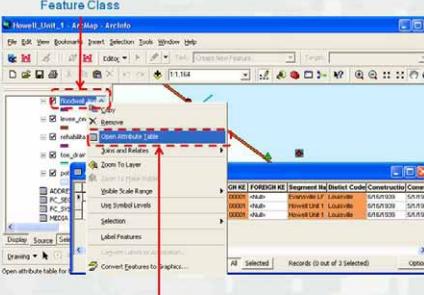
Required fields

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USACE Levee Inventory Tools: Load Data Toolbar 44

Highlight Required Fields Tool

Right click a feature class in the map and select the "Open Attribute Table" option



Open Attribute Table

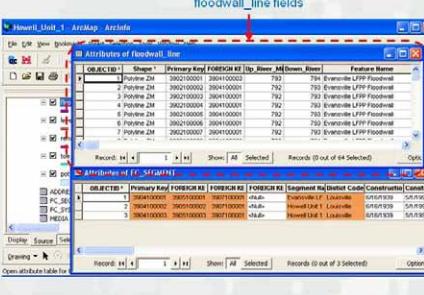
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Highlight Required Fields Tool

Note there are no highlighted fields in floodwall_line

floodwall_line fields



floodwall_line fields

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Highlight Required Fields Tool

Click button twice to see required fields

Highlight RequiredFields Required Fields: the required fields of the floodwall_line are now orange

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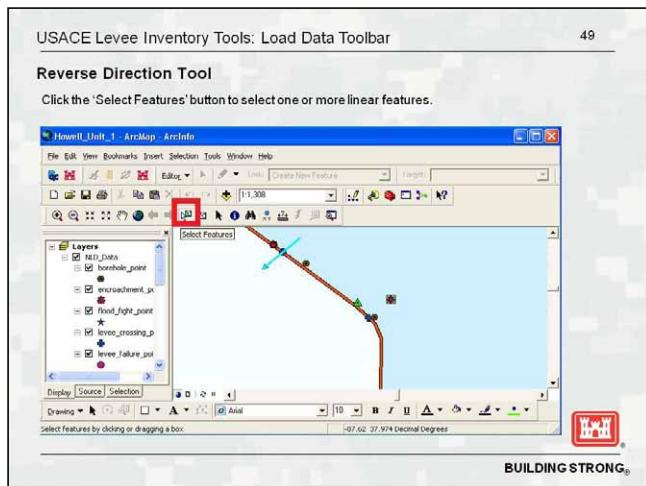
Load Data Tool

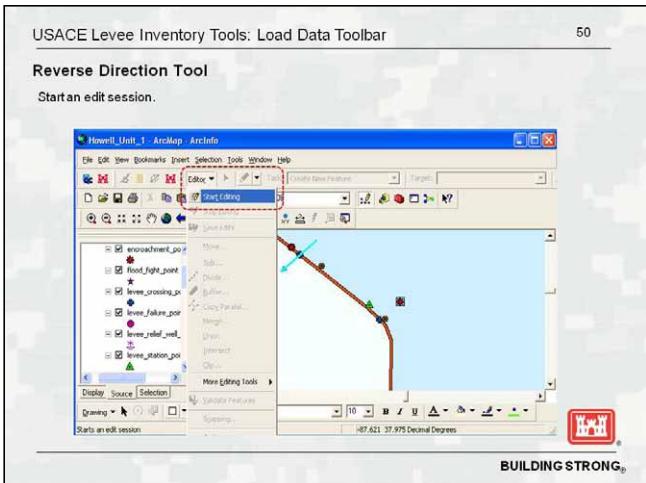
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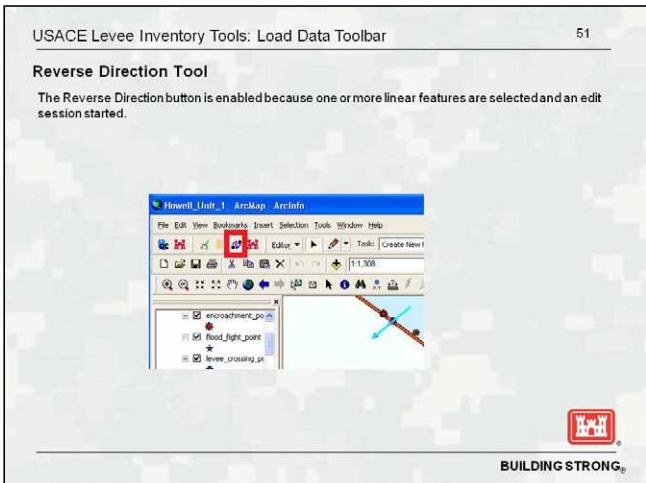
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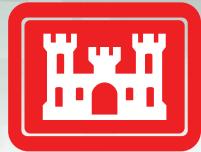


LOAD DATA TOOLBAR









LOAD DATA TOOLBAR

USACE Levee Inventory Tools: Load Data Toolbar 52

Reverse Direction Tool

Click the Reverse Direction button

A screenshot of the ArcMap application window titled "Howell_Draft_1 - ArcMap - ArcInfo". The toolbar at the top has a button highlighted with a red box. The main workspace shows a map with several features selected. A message box at the bottom right says "BUILDING STRONG®".

USACE Levee Inventory Tools: Load Data Toolbar 53

Reverse Direction Tool

A message box will appear with number and type of features

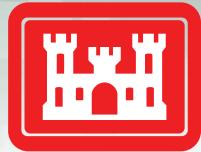
A screenshot of the ArcMap application window titled "Howell_Draft_1 - ArcMap - ArcInfo". A message box titled "Reverse Direction Count" is displayed, stating "The following number of features will be reversed: Gravity Drain Line: 1". Buttons for "OK" and "Cancel" are shown. A red arrow points from the text above to this dialog box.

USACE Levee Inventory Tools: Load Data Toolbar 54

Reverse Direction Tool

Click the "OK" button

A screenshot of the ArcMap application window titled "Howell_Draft_1 - ArcMap - ArcInfo". A message box titled "Reverse Direction Count" is displayed, stating "The following number of features will be reversed: Gravity Drain Line: 1". The "OK" button is highlighted with a red box. A red arrow points from the text above to this dialog box.



LOAD DATA TOOLBAR

USACE Levee Inventory Tools: Load Data Toolbar 55

Reverse Direction Tool
Note the feature direction is reversed

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USACE Levee Inventory Tools: Load Data Toolbar 56

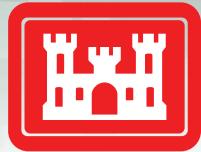
Introduction	Overview/Purpose of the toolbar and toolbar functions
Load Data Tool	Load Data tool dialog & functions
Highlight Required Fields Tool	Highlight Required Fields functions
Reverse Direction Tool	Reverse Direction Tool functions
Load Data Help Tool	Load Data Help dialog
Load Data Exercises	Lab module w/ Evansville 3.0 data

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USACE Levee Inventory Tools: Load Data Toolbar 57

Introduction	Overview/Purpose of the toolbar and toolbar functions
Load Data Tool	Load Data tool dialog & functions
Highlight Required Fields Tool	Highlight Required Fields functions
Reverse Direction Tool	Reverse Direction Tool functions
Load Data Help Tool	Load Data Help dialog
Load Data Exercises	Lab module w/ Evansville 3.0 data

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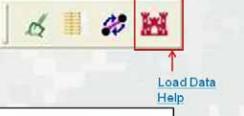


LOAD DATA TOOLBAR

USACE Levee Inventory Tools: Load Data 58

Load Data Help

The Load Data Help tool enables the user to open the Levee Inventory Tools User Guide within an active ArcMap session.



Levee Inventory Tools Research User's Guide (version draft)
U.S. Army Corps of Engineers
Engineering Research and Development Center
Civil Engineering Research and Engineering Laboratory
U.S. Army Corps of Engineers

Load Data Help

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USACE Levee Inventory Tools: Load Data Toolbar 59

Questions?



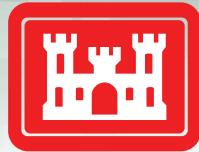
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USACE Levee Inventory Tools: Load Data Toolbar 60

Introduction Overview/Purpose of the toolbar and toolbar functions

Load Data Tool	Load Data tool dialog & functions
Highlight Required Fields Tool	Highlight Required Fields functions
Reverse Direction Tool	Reverse Direction Tool functions
Load Data Help Tool	Load Data Help dialog
Load Data Exercises	Lab module w/ Evansville 3.0 data

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LOAD DATA TOOLBAR

Load Data Toolbar

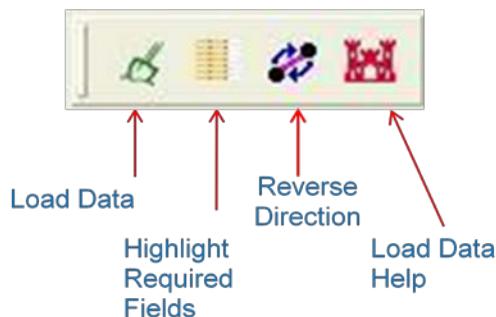
Lab Exercise



LOAD DATA TOOLBAR

INTRODUCTION TO LOAD DATA TOOLBAR

In this exercise, you will become comfortable with using the **Load Data Toolbar** in ArcMap (9.3 or 9.3.1) that is part of the NLD levee inventory tools suite. This toolbar features four main components: the Load Data Button, the Highlight Required Fields Button, the Reverse Direction Button, and the Help Button.



The data you will be using for this computer exercise are sample NLD geodatabase(s) (v. 2.2 and v 3.0) from the Evansville (Kansas) region.

The geodatabase(s) can be found on your computer's hard drive in **C:/Workspace/EvansvilleFailures**. You will be using this dataset throughout this exercise, as it has the necessary NLD data structure and layers.

In this exercise, you will perform 4 lessons:

1. Explore loading data into the NLD format by selecting the source data, mapping the primary key fields, and reviewing the transferred fields;
2. Experiment with running interactive Quality Control checks on loaded data and generate a zpolyline based on point source data;
3. Highlight Required fields and ensure that the necessary key fields are present for specific tables and features;
4. Reverse the direction of linear segments.

***** START THE EXERCISE BELOW! *****



These are important points that you should read before you go any further!



These are informative tips that may help you in the future!



LOAD DATA TOOLBAR

Lesson 1: Load data using Bulk Load (version 2.2 to 3.0 NLD database) and batch transfer functions (version 3.0 to 3.0 NLD database)

1. Activate ArcMap and use the Bulk Load tool to load a 2.2 database into the 3.0 format. To turn on the USACE Levee Load Data Toolbar select View → Toolbars → USACE Levee Load Data.

Activate the ArcMap Editor toolbar, select View → Toolbars → Editor.

- a. Open an NLD Database file, Go to:
C:/Workspace/EvansvilleFailures/My30Database.mdb.

The user **must** be in an ArcMap edit session for the following **Load Data** buttons to be active and enabled: **Load Data & Reverse Direction Tool.**

- b. From the ‘Flood Control’ dataset, add the following NLD feature classes (note: nothing will appear in the ArcMap window because this is a completely empty, unpopulated, database):

- borehole_point
- cross_section_line
- encroachment_point
- flood_fight_point
- gravity_drain_line
- levee_centerline
- levee_crossing_point



The user **must** have the blank 3.0 NLD geodatabase loaded into the ArcMap session in order to properly use the **Load Data** functions.

- c. On the **Editor Toolbar**, **Left click** on **Editor** → **Start Editing**. Make sure the editable layers (i.e. **Target**) are the feature classes that you just added.

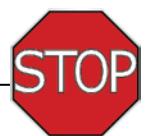
To select multiple features, hold the Ctrl key and **Left click** on the feature name (if the features are contiguous, use Shift).

- d. On the **USACE Levee Load Data Toolbar**, select the **Load Data** button.

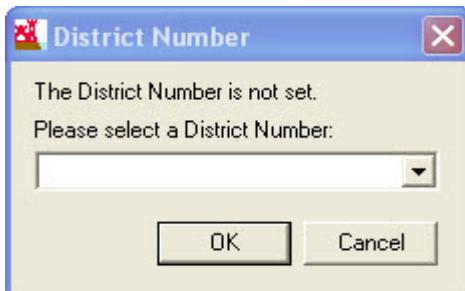




LOAD DATA TOOLBAR

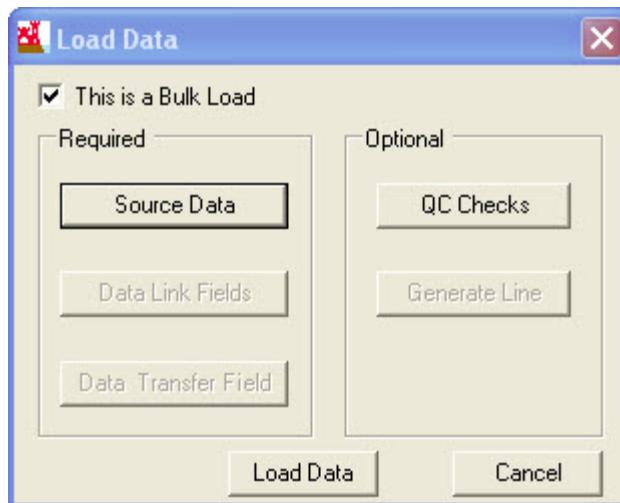


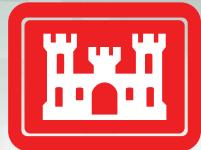
It is possible that if you have not taken this lab before on this computer (or have not completed the QC Toolbar Lab), that the below dialog box might appear when you select the **Load Data** button. To get past this step, select the District Number #39 (Louisville) to proceed, this check will be described in more detail in the QC Toolbar Lab.



- e. Left click the ‘This is a Bulk Load’ checkbox, and Left click the **Source Data** button. When the **Select Source** dialog opens, go to:

C:/Workspace/EvansvilleFailures/Evansville_NLD_GDB_010808.mdb





LOAD DATA TOOLBAR

f. From the ‘**Flood Control**’ dataset, add the following NLD feature classes:

- borehole_point
- cross_section_line
- encroachment_point
- flood_fight_point
- gravity_drain_line
- levee_centerline
- levee_crossing_point

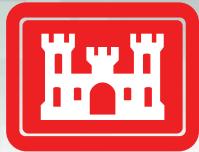


The **Bulk Load** option was intended for use *only* when the target geodatabase does *not* have any records in the feature classes populated. If the **Bulk Load** option is used and there are existing records in the target database, *duplication of key values is possible*.

Notable, **Bulk Load** processes are as follows:

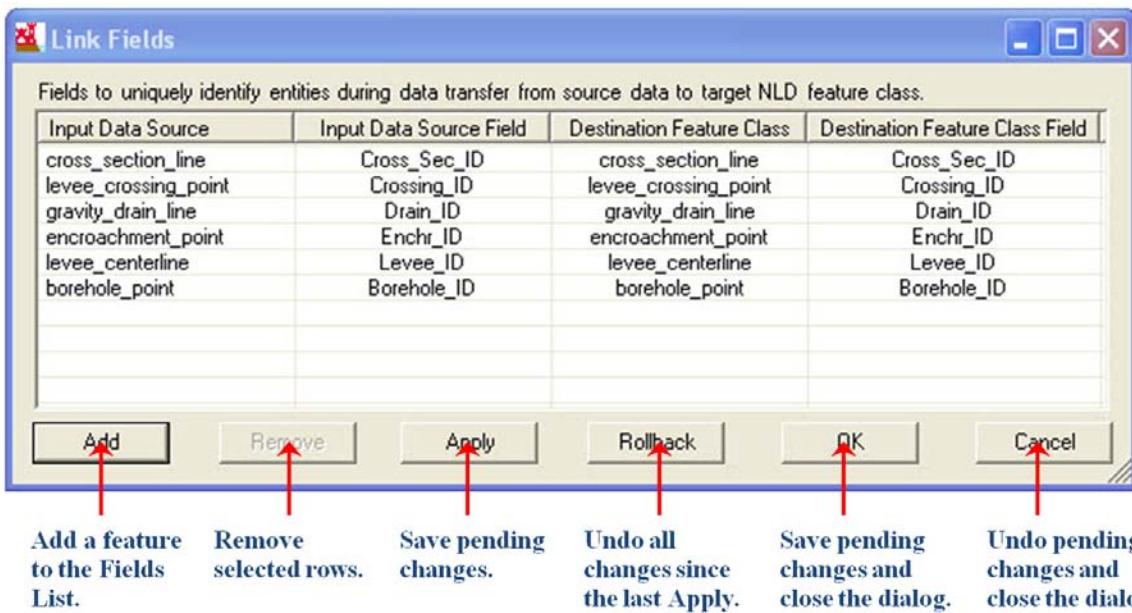
- Feature classes and primary key fields are auto linked when there are no name changes between versions.
- The check for existing records in the target geodatabase is not performed.
- Interactive correction of Load Data QC Errors is disabled, and QC errors are written out to the log file regularly to prevent memory overflow.
- Foreign key validation is performed against the existing data so that tables and feature classes do not have to be copied in a particular order.
- The Many-to-Many relationship classes are copied from the old geodatabase to the new one. A map of known relationship class name and field changes is included.
- Values that fail the QC check, will be reported, but still copied into the target geodatabase. This provides an easy way to search for and correct the invalid values in the new geodatabase.

In the case of primary key duplication, caused by the **Bulk Load** process, you can use the QC toolbar to find and fix such errors. Notably, all values that fail QC in Bulk Load mode will be logged, but still written into the target geodatabase. Writing the values makes it easier to search for and fix duplication errors.



LOAD DATA TOOLBAR

- g. From the **Load Data Dialog**, **Left click** the **Data Link Fields** button. In the **Link Fields Dialog** you should see a populated grid. If all the fields are blank, use steps h-i, below, to add each field. If the grid is populated, count the populated fields. There should only be six. To add the missing feature class (i.e. `flood_fight_point`) follow the steps below.



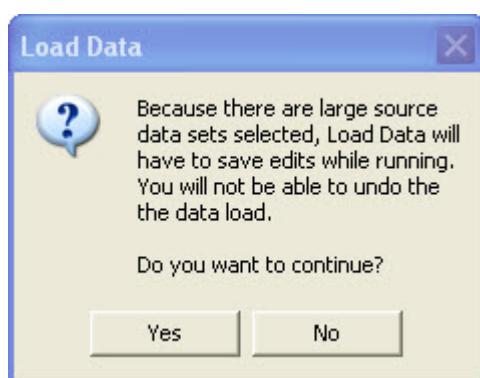
- h. The `flood_fight_point` did not auto link like the other feature classes because of a misspelling in the “Primary Key Identifier” alias name (if you open the feature class, and look at the attribute table, in the column “Identifier” is spelled “Identifier”, and is missing an “i”). To add `flood_fight_point`, **Left Click** the **Add** button. Link the fields similar to how it is shown here. Match the Field and Target Field Names accordingly. **Left Click OK**, and then **Apply**. In the **Link Fields Dialog**, select **OK**. (Note: if the fields were originally blank in the grid, repeat for all 7 classes).



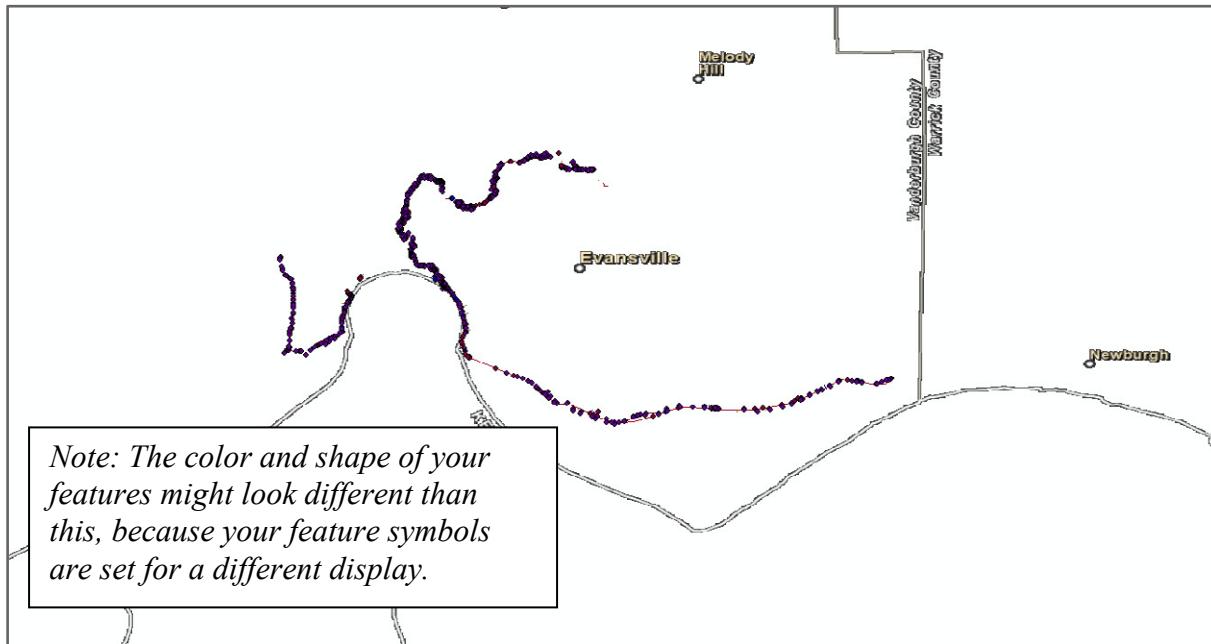


LOAD DATA TOOLBAR

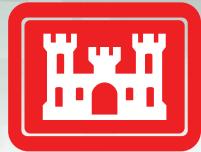
- i. In the **Load Data Dialog**, Left Click on **Data Transfer Field**. Review the 'Input Data Source' column in the **Data Transfer Fields Dialog**. Confirm that all seven added fields are included in the grid. **Left Click Apply**, and then **OK** in the **Load Data Dialog**. You should receive the following error message, select **Yes**. You will first see a processing toolbar, then the **Load Data Failures Dialog** (select **Save** to save the error record, then **Close**), and finally the populated fields on your screen.



The **Load Data** button at the bottom of the **Load Data Dialog** box enables after all sources have been linked.



LOAD DATA TOOLBAR



Load Data Failures				
	borehole_point	cross_section_line	encroachment_point	gravity_drain_line
OID	Source Field Name	Source Field Value	NLD Target Field	Error Message
670	Media_ID		Media_ID	Field Media_ID does not exist in NLD class borehole_pc
670	Horiz_Accuracy		Horiz_Accuracy	Field Horiz_Accuracy does not exist in NLD class boreh
670	Vert_Accuracy		Vert_Accuracy	Field Vert_Accuracy does not exist in NLD class borehc
670	Coordinate_Method		Coordinate_Method_d	Field Coordinate_Method_d does not exist in feature cla
670	Survey_Date		Survey_Date	Field Survey_Date does not exist in feature class or sha
670	Status_d		Status_d	Field Status_d does not exist in feature class or shapefil

2. Add a single NLD 3.0 feature class using batch transfer functions. Click on the **Add Data** button. From **C:/Workspace/EvansvilleFailures/ My30Database.mdb**, select the levee_station_point feature class, and **Left Click** the **Add** button.

- a. On the **USACE Levee Load Data Toolbar**, select the **Load Data** button.



- b. **Left click** the **Source Data** button. When the **Select Source** dialog opens, go to: **C:/Workspace/EvansvilleFailures/Evansville_NLD_GDB_010808.mdb**. From the ‘Flood Control’ dataset, add the following NLD feature classes:

- levee_station_point



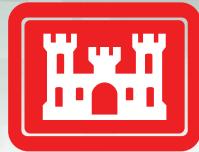
- c. From the **Load Data Dialog**, **Left click** the **Data Link Fields** button. In the **Link Fields Dialog** you should see an unpopulated grid.

Unlike the **Bulk Load** function, the batch transfer functions do **not** auto populate the linked fields.

- d. To add levee_station_point, **Left Click** the **Add** button. Link the fields similar to how it is shown here. Match the Field and Target Field Names accordingly. **Left Click OK**, and then **Apply**. In the **Link Fields Dialog**, select **OK**.

The dialog box shows the following settings:

- Source Name: levee_station_point
- NLD Target Name: levee_station_point
- Source Field Name: Levee_Station_ID
- NLD Target Field Name: Levee_Station_ID



LOAD DATA TOOLBAR

Lesson 2: Run Quality Control Checks using the Load Data toolbar, generate a zpolyline from point data

1. *Prepare to generate a 3D line from floodwall point and populate the floodwall_line feature class.*
 - a. Add the blank NLD 3.0 floodwall_line feature class from **C:/Workspace/EvansvilleFailures/My30Database.mdb**. Then add the floodwall point dataset from **C:/Workspace/floodwall_pts.shp**. Use the **Add Data** button.
 - b. On the **Editor Toolbar**, **Left click on Editor → Start Editing**. Make sure the editable layer (i.e. **Target**) is the floodwall_line feature class. **Right click** floodwall_pts, and select **Zoom to Layer**. Notice that there are three floodwalls included in the point shapefile.





LOAD DATA TOOLBAR

- c. On the USACE Levee Load Data Toolbar, select the Load Data button.

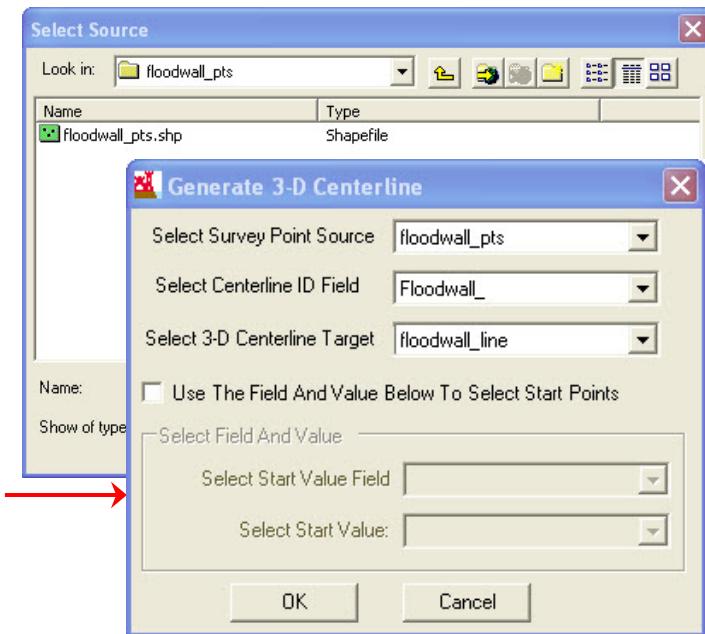


- d. Left click the Source Data button. When the Select Source dialog opens, go to:
C:/Workspace/floodwall_pts.shp.

- e. In the Load Data Dialog select the Generate Line button.

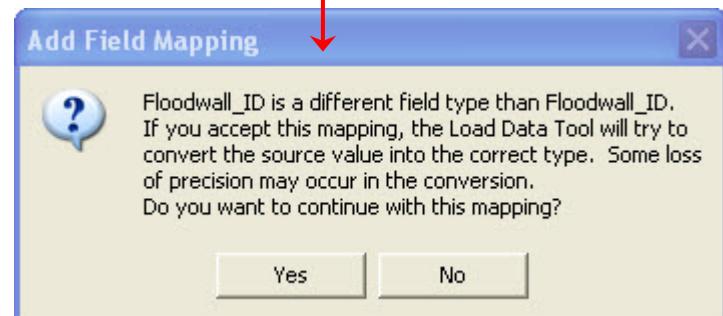
- f. In the **Generate 3-D Centerline Dialog** input the following values as shown in this image. Select the **OK** button when finished.

- g. In the **Select Levee Attribute Table Dialog** navigate the floodwall_line feature table in:
C:/Workspace/EvansvilleFailures/CenterlineCreationTester.mbd.



- h. fill out the appropriate details as shown in the image. Select **OK**.

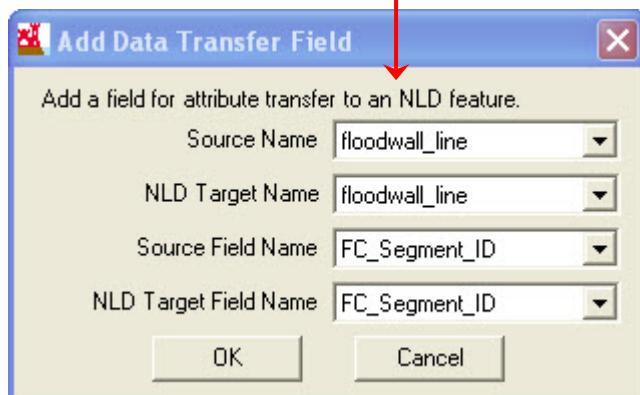
- i. Note the following error message, select **Yes**.





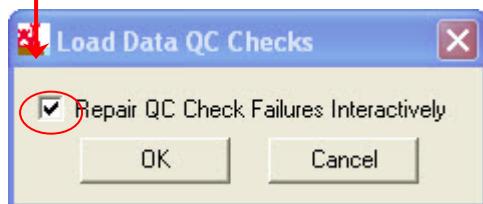
LOAD DATA TOOLBAR

- j. After you have selected the floodwall_line table, you will review the mapped fields. When you are returned to the **Load Data** main dialog, **Left Click** on the **Data Transfer Fields** button. In the **Add Data Transfer Fields** dialog, **Left Click** on the **Add** button and add a mapping from the **FC_Segment_ID** field in the source table to the **FC_Segment_ID** field in the NLD floodwall_line target feature class.

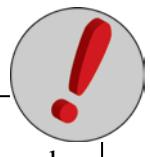


2. Turn on interactive QC Checks, and review data errors.

- a. In the **Load Data Dialog**, **Left Click** the **QC Checks** button. Select the checkbox next to the **Repair QC Check Failures Interactively**.



QC Checks validate the primary key, foreign keys, and the domain bound values of newly loaded data.



- b. At the bottom of the **Load Data Dialog** select the **Load Data** button, to generate a QC error log and the floodwall line segments.
- c. In the QC log report, an error log with 2 different errors (one for each floodwall segment) should be generated. To begin with, look at the errors that have the 'Error Type': Foreign Key. In the 'Error



LOAD DATA TOOLBAR

Description' column, the error(s) should read: "The check could not be completed because the required class FC_SEGMENT was not in the map". A plausible solution to this error would be adding the attribute table for FC_SEGMENT from our 3.0 database. To remember your error, **Left Click the Save button at the bottom of the QC Checks Failure**. Save the .csv file on your **C:/Temp** drive. Then **Left Click the Close button**. Click **OK** in the **Load Data Dialog**. Finally, **Editor → Stop Editing** and **DO NOT save your edits**.

floodwall_line					
OID	Floodwall_ID	Failed Field Name	Failed Field Value	Error Type	Error Description
13	3902100047	Wall_Type_d	0	Domain	Field Floodwall Type Code has an incorrect domain value of '0'.
13	3902100047	FC_Segment_ID	3904100001	Foreign Key	The check could not be completed because the required class FC_SEGMENT was not in the map.
14	3902100050	Wall_Type_d	0	Domain	Field Floodwall Type Code has an incorrect domain value of '0'.
14	3902100050	FC_Segment_ID	3904100001	Foreign Key	The check could not be completed because the required class FC_SEGMENT was not in the map.
15	3902100051	Wall_Type_d	0	Domain	Field Floodwall Type Code has an incorrect domain value of '0'.
15	3902100051	FC_Segment_ID	3904100001	Foreign Key	The check could not be completed because the required class FC_SEGMENT was not in the map.

- d. **Left Click the Add Data button** and add the floodwall_line feature table in: **C:/Workspace/EvansvilleFailures/CenterlineCreationTester.mbd**. Also **Left Click the Add Data button** and add the FC_SEGMENT table from: **C:/Workspace/EvansvilleFailures/My30Database.mdb**.
-
- e. Repeat steps **1-b** thru **1-i**. In the **Load Data Dialog**, **Left Click the Data Transfer Field button**. Check if the FC_Segment_ID is linked (if not use the **Add** button, to link it). Select **OK**.
- f. Repeat steps **2-a** thru **2-b**.
- g. The errors that were returned in step **2-c** should have changed. The error should now read: "Foreign key {xxxxx} does not exist in field FC_Segment_ID in table FC_SEGMENT. In this case of 'Error Type': Foreign Key, the error has been generated because the FC_SEGMENT table that has been loaded does not have the required records. It is recommended that you note this error and use the QC toolbar to edit these missing foreign keys at a later time.

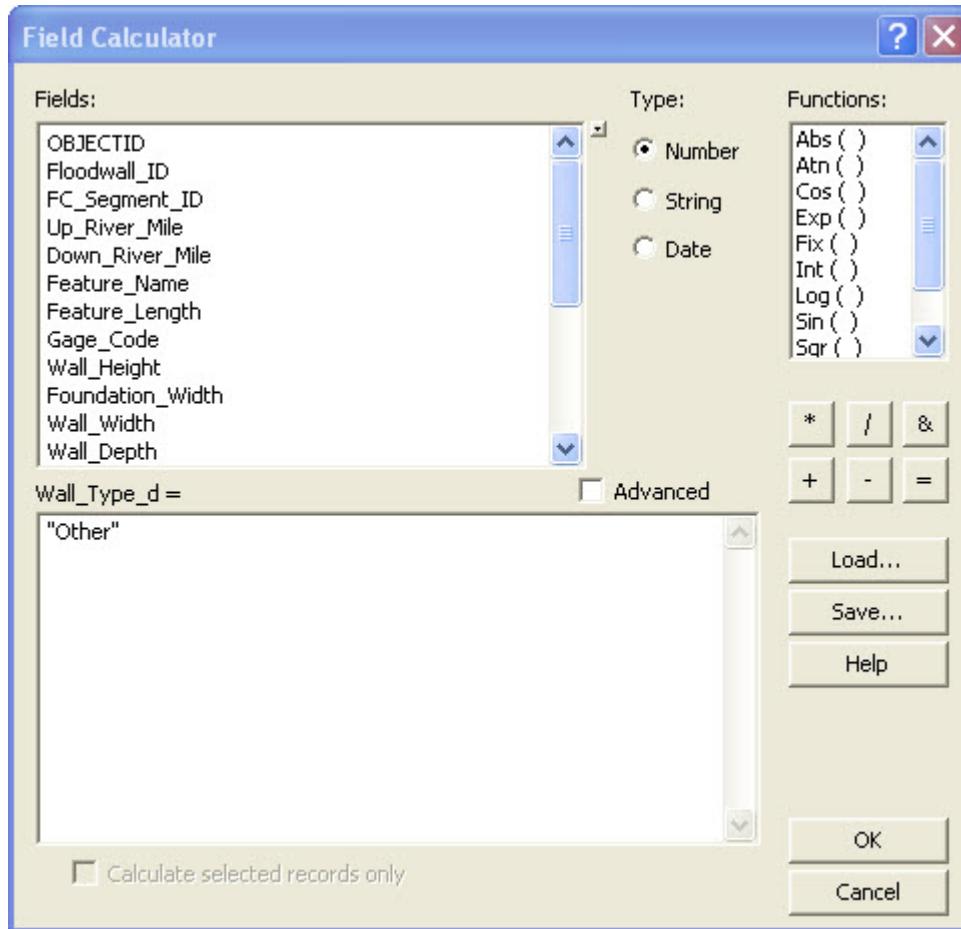


LOAD DATA TOOLBAR

- h. In the QC log report, a domain error exists ('Error Type': Domain). The error should read: "Field Floodwall Type Code has an incorrect domain value of 'O'". Essentially, the field Wall_Type_d in the floodwall_line feature table of your 2.2 attribute table does not have domain fields which match the 3.0 standard. This particular error can be fixed now without using the QC toolbar. To rectify this error, close the **QC Checks Failure Dialog** and go to **Editor → Stop Editing**. **DO NOT save your edits.**
- i. **Left Click** on **Editor → Start Editing**. Make sure the editor is targeting the floodwall_line feature table from: **C:/Workspace/EvansvilleFailures/CenterlineCreationTester.mbd**
- j. **Left Click** on the **Source** tab in the bottom of ArcMap's Table of Contents. **Right Click** on the floodwall_line feature table, and go to **Open Attribute Table**. In the attribute table, **Right Click** on the column name: Wall_Type_d. Select **Field Calculator**, and input "Other" into the calculator input box.
- k. **Left Click** on **Editor → Stop Editing**. **DO SAVE your edits.**
- l. Repeat steps **1-b** thru **1-i**. Then repeat steps **2-a** thru **2-b**



LOAD DATA TOOLBAR



- m. Repeat steps **1-b** thru **1-i**. Then repeat steps **2-a** thru **2-b**.
- n. The **QC Checks Failures Dialog** should now only show the Foreign Key Error. **Left Click** the **Save** button at the bottom of the **QC Checks Failure**. Save the .csv file on your **C:/Temp** drive. Then **Left Click** the **Close** button. Click **OK** in the **Load Data Dialog**. Finally, **Editor → Stop Editing**. **DO SAVE your edits.**



LOAD DATA TOOLBAR

floodwall_line			
Floodwall_ID	Error ...	Error Description	
3902100047	Forei...	Foreign key 3904100001 does not exist in field FC_Segment_ID in table FC_SEGMENT	
3902100050	Forei...	Foreign key 3904100001 does not exist in field FC_Segment_ID in table FC_SEGMENT	
3902100051	Forei...	Foreign key 3904100001 does not exist in field FC_Segment_ID in table FC_SEGMENT	

Lesson 3: Highlight Required Fields

1. Open the newly populated levee_centerline attribute table, and review if the required fields are present.
 - a. Right Click on the levee_centerline feature class and go to **Open Attribute Table**.
 - b. In the **Load Data Toolbar**, select the **Highlight Required Fields** button.
 - c. In the attribute table, review the highlighted fields. Left Click the **Highlight Required Fields** button again to turn off the fields. Repeat these steps for the other loaded feature classes.



LOAD DATA TOOLBAR

Attributes of levee_centerline										
OBJECTID *	SHAPE *	Primary Key Identifier *	FOREIGN KEY JOIN to FC_SEGMENT *	Up River Mile	Down River Mile	Feature Name	Feature Length	Gage Code	Gage Owner	
1	Polyline ZM	3901100012 <Null>		792	793	Evansville LFPP Levee	1.002054	03322000	USGS, USACE - Louisville Distri	
2	Polyline ZM	3901100056 <Null>		786	787	Evansville LFPP Levee	0.188295	03322000	USGS, USACE - Louisville Distri	
3	Polyline ZM	3901100055 <Null>		786	787	Evansville LFPP Levee	0.007046	03322000	USGS, USACE - Louisville Distri	
4	Polyline ZM	3901100054 <Null>		787	788	Evansville LFPP Levee	1.905241	03322000	USGS, USACE - Louisville Distri	
5	Polyline ZM	3901100053 <Null>		792	791	Evansville LFPP Levee	0.04194	03322000	USGS, USACE - Louisville Distri	
6	Polyline ZM	3901100052 <Null>		792	791	Evansville LFPP Levee	0.626797	03322000	USGS, USACE - Louisville Distri	
7	Polyline ZM	3901100051 <Null>		782	781	Evansville LFPP Levee	0.421563	03322000	USGS, USACE - Louisville Distri	
8	Polyline ZM	3901100050 <Null>		795	795	Evansville LFPP Levee	0.088474	03322000	USGS, USACE - Louisville Distri	
9	Polyline ZM	3901100049 <Null>		791	790	Evansville LFPP Levee	0.140973	03322000	USGS, USACE - Louisville Distri	
10	Polyline ZM	3901100048 <Null>		788	787	Evansville LFPP Levee	0.281904	03322000	USGS, USACE - Louisville Distri	

Lesson 4: Reverse the Direction of Linear Features

1. Select a levee centerline and reverse its feature direction. On the **Editor Toolbar**, select **Editor → Start Editing**.
 - a. Open Attribute Table. Left Click and select the row of the topmost feature (i.e. Primary Key: 3901100012).
 - b. On the **Load Data Toolbar** select the **Reverse Direction** button.
 - c. The following message should show, **Left Click OK**.

