

Hydro Event Management (HEM) Tools

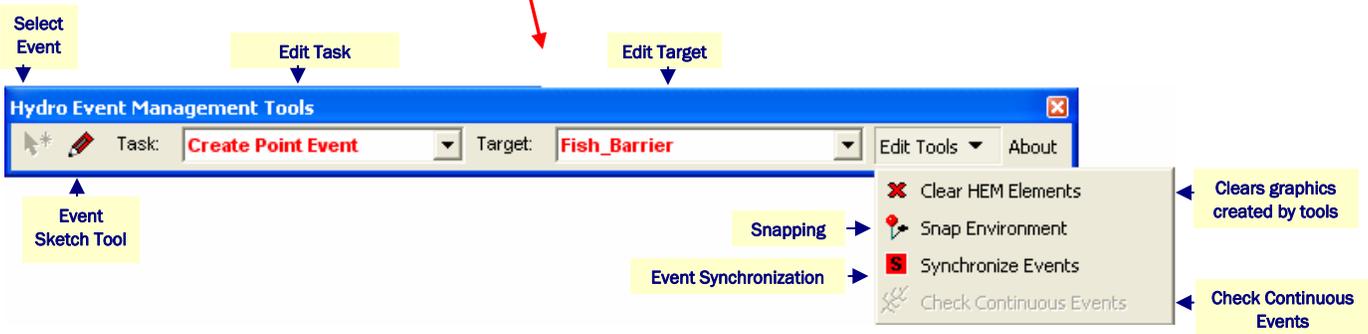
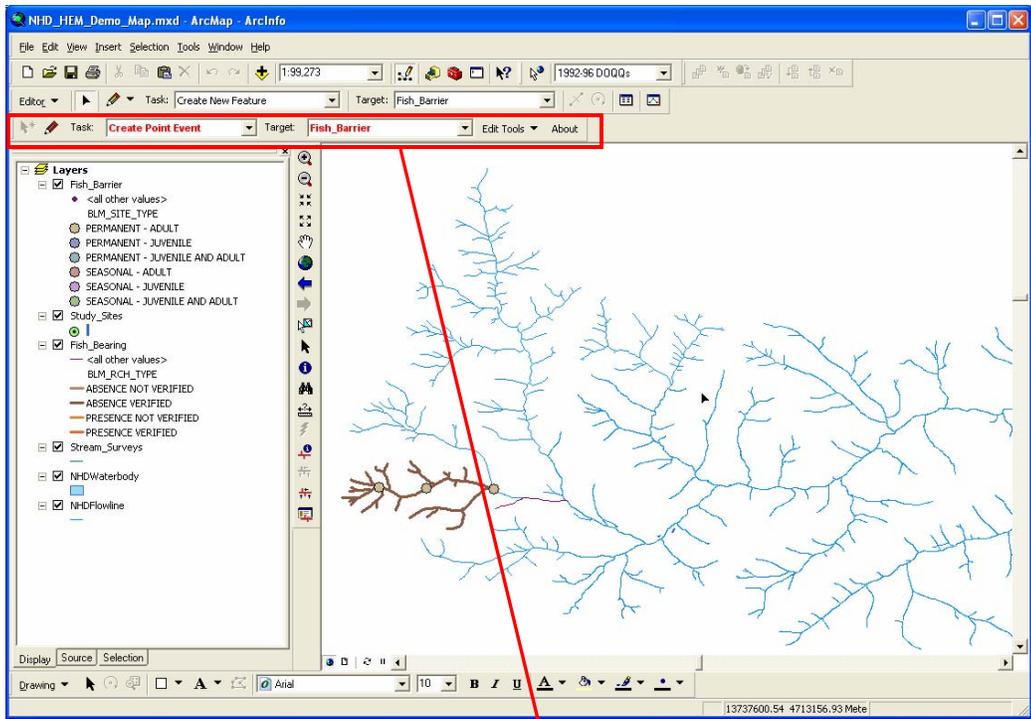
The Pacific Northwest Hydrography Framework Partners are collaborating on the design of a set of tools to be used for managing event data. The Event Management Tools are designed to support the creation, management, and refresh of event data that is referenced to stream data in the NHD format. The tools are accessed via ArcMap and ArcCatalog and include functions for the following:

Event Table Management—create, update, delete event featureclasses.

Event Table Editing— create, update and delete event records.

Measure Functions—travel upstream a user defined distance or measure the stream distance between two points.

Event Refresh & QC—tools to facilitate quick update of event data in response to edits to the underlying stream data and a tool to validate continuous linear events.



PNW Hydrography Framework Clearinghouse

The Pacific Northwest Hydrography Framework is the cooperative effort of many federal, state, local, and tribal governmental organizations, as well as private organizations, to define, implement, and maintain a single high resolution hydrography dataset and a Hydrologic Unit Boundary (HU) dataset for the states of Washington and Oregon.

For more information about the PNWHF or the Event Management Tools, contact:

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Event Table Structure—Full NHD Compliant Schema

Simple feature class						Geometry <i>Point</i>		
Point_Events_Full_Schema						Contains M values <i>No</i>		
						Contains Z values <i>No</i>		
Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length	
SHAPE	Geometry	Yes						
OID	Object ID							
ComID	Long integer	No			0			
EventDate	Date	Yes			0	0	8	
ReachCode	String	No					14	
ReachSMDate	Date	No			0	0	8	
ReachResolution	Long integer	No	3		0			
FeatureComID	Long integer	Yes			0			
FeatureClassRef	Long integer	Yes			0			
SourceOriginator	String	Yes					130	
SourceDataDesc	String	Yes					100	
Source_FeatureID	String	Yes					40	
FeatureDetailURL	String	Yes					255	
Measure	Double	No			0	0		
Offset	Double	No			0	0		
EventType	Long integer	No			0			
ID	String	No					34	

Full Schema includes all attributes identified by the NHD Data Model for Event Data and those attributes needed for the Event Management Tools to function.

Simple feature class						Geometry <i>Polyline</i>		
Line_Events_Single_Route_Event_Full_Schema						Contains M values <i>No</i>		
						Contains Z values <i>No</i>		
Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length	
SHAPE	Geometry	Yes						
OID	Object ID							
ComID	Long integer	No			0			
EventDate	Date	Yes			0	0	8	
ReachCode	String	No					14	
ReachSMDate	Date	No			0	0	8	
ReachResolution	Long integer	No	3		0			
FeatureComID	Long integer	Yes			0			
FeatureClassRef	Long integer	Yes			0			
SourceOriginator	String	Yes					130	
SourceDataDesc	String	Yes					100	
Source_FeatureID	String	Yes					40	
FeatureDetailURL	String	Yes					255	
FMeasure	Double	No			0	0		
TMeasure	Double	No			0	0		
Offset	Double	No			0	0		
EventType	Long integer	No			0			
ID	String	No					34	
SHAPE_Length	Double	Yes			0	0		

Simple feature class						Geometry <i>Polyline</i>		
Line_Events_Multi_Route_Event_Full_Schema						Contains M values <i>No</i>		
						Contains Z values <i>No</i>		
Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length	
SHAPE	Geometry	Yes						
OID	Object ID							
ComID	Long integer	No			0			
EventDate	Date	Yes			0	0	8	
FReachCode	String	No					14	
TReachCode	String	No					14	
ReachResolution	Long integer	No	3		0			
FeatureComID	Long integer	Yes			0			
FeatureClassRef	Long integer	Yes			0			
SourceOriginator	String	Yes					130	
SourceDataDesc	String	Yes					100	
Source_FeatureID	String	Yes					40	
FeatureDetailURL	String	Yes					255	
FMeasure	Double	No			0	0		
TMeasure	Double	No			0	0		
Offset	Double	No			0	0		
EventType	Long integer	No			0			
ID	String	No					34	
SHAPE_Length	Double	Yes			0	0		

Multi-Route Events refer to linear events that may cross one or many NHD Flowline records. Detail ReachCode and Measure data is stored in the related “_M” table.

Table							
Line_Events_Multi_Route_Event_Full_Schema_M							
Field name	Data type	Allow nulls	Default value	Domain	Precision	Scale	Length
OID	Object ID						
ReachCode	String	No					14
ReachSMDate	Date	No			0	0	8
FMeasure	Double	No			0	0	
TMeasure	Double	No			0	0	
ID	String	Yes					255

Event Table Structure—Compressed Schema

Compressed Schema includes only those attributes that were identified as the minimum required attributes for the Event Management Tools to function.

Simple feature class						Geometry <i>Point</i>		
Point_Events_Compressed_Schema						Contains M values	<i>No</i>	
						Contains Z values	<i>No</i>	
Field name	Data type	Allow nulls	Default value	Domain	Prec- ision	Scale	Length	
SHAPE	Geometry	Yes						
OID	Object ID							
ComID	Long integer	No			0			
EventDate	Date	Yes			0	0	8	
ReachCode	String	No						14
ReachSMDate	Date	No			0	0	8	
ReachResolution	Long integer	No	3		0			
Measure	Double	No			0	0		
Offset	Double	No			0	0		
EventType	Long integer	No			0			
ID	String	No						34

Single-Route Events refer to linear events that do not cross multiple NHD Flowline records.

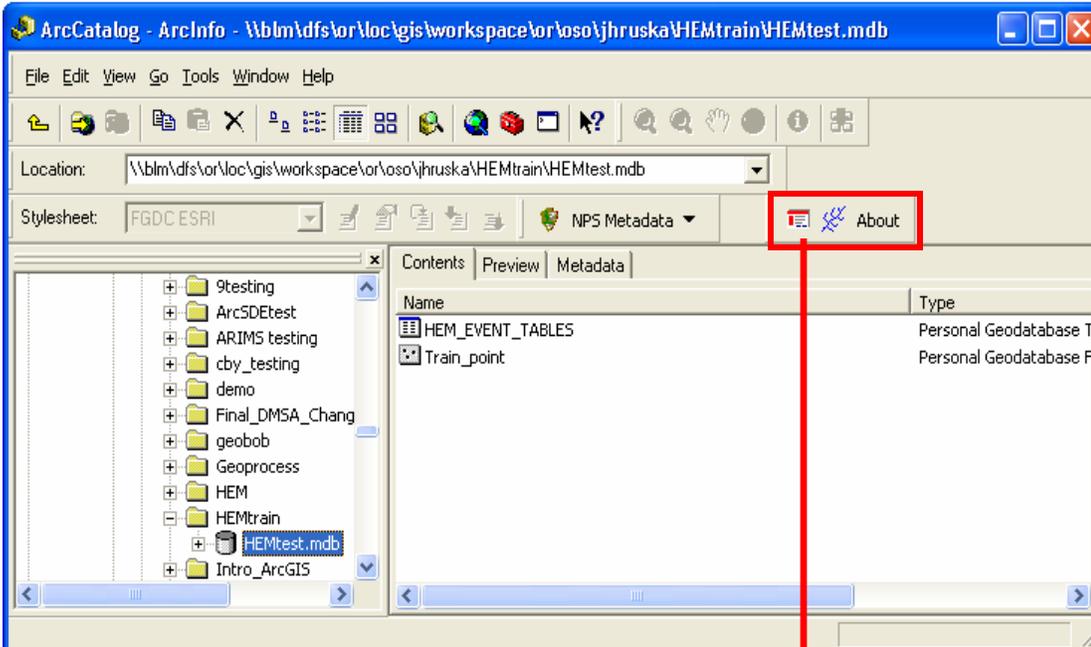
Simple feature class						Geometry <i>Polyline</i>		
Line_Events_Single_Route_Compressed_Schema						Contains M values	<i>No</i>	
						Contains Z values	<i>No</i>	
Field name	Data type	Allow nulls	Default value	Domain	Prec- ision	Scale	Length	
SHAPE	Geometry	Yes						
OID	Object ID							
ComID	Long integer	No			0			
EventDate	Date	Yes			0	0	8	
ReachCode	String	No						14
ReachSMDate	Date	No			0	0	8	
ReachResolution	Long integer	No	3		0			
FMeasure	Double	No			0	0		
TMeasure	Double	No			0	0		
Offset	Double	No			0	0		
EventType	Long integer	No			0			
ID	String	No						34
SHAPE_Length	Double	Yes			0	0		

Simple feature class						Geometry <i>Polyline</i>		
Line_Events_Multi_Route_Event_Compressed_Schema						Contains M values	<i>No</i>	
						Contains Z values	<i>No</i>	
Field name	Data type	Allow nulls	Default value	Domain	Prec- ision	Scale	Length	
SHAPE	Geometry	Yes						
OID	Object ID							
ComID	Long integer	No			0			
EventDate	Date	Yes			0	0	8	
FReachCode	String	No						14
TReachCode	String	No						14
ReachResolution	Long integer	No	3		0			
FMeasure	Double	No			0	0		
TMeasure	Double	No			0	0		
Offset	Double	No			0	0		
EventType	Long integer	No			0			
ID	String	No						34
SHAPE_Length	Double	Yes			0	0		

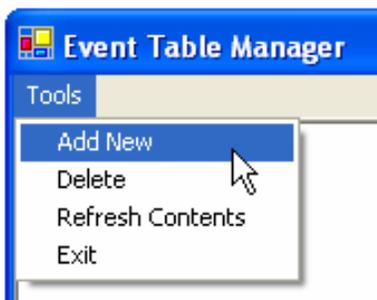
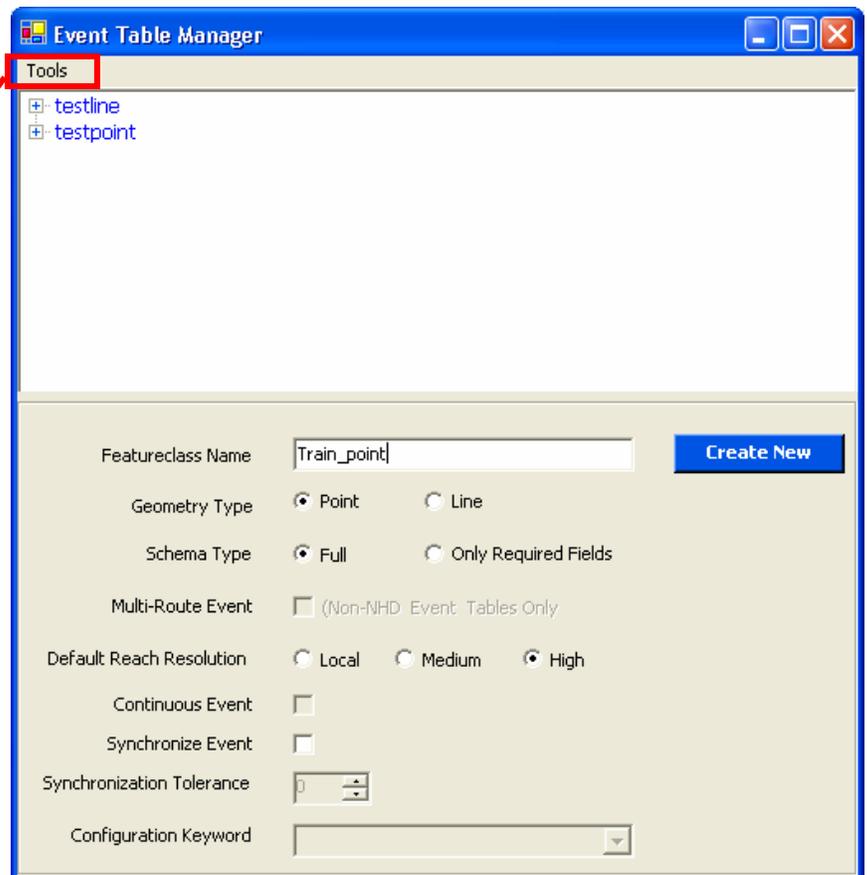
Table								
Line_Events_Multi_Route_Event_M								
Field name	Data type	Allow nulls	Default value	Domain	Prec- ision	Scale	Length	
OID	Object ID							
ReachCode	String	No						14
ReachSMDate	Date	No			0	0	8	
FMeasure	Double	No			0	0		
TMeasure	Double	No			0	0		
ID	String	Yes						255

Event Table Management

The **Event Table Manager** is provided to manage Event Table featureclasses. Using this tool for creating, modifying, and deleting event featureclasses ensures that the tracking tables that are used in conjunction with the editing tools are properly maintained.



The **Event Table Manager** is launched from the HEM ArcCatalog Toolbar.



Event Editing



 **Event Selection Tool**—used for selecting existing event records; useful for copying and deleting events.

 **Event Sketch Tool**—used for defining the point location or end points for event records.

Task —list of edit and measuring options.

Create Point Event—creates a new point event record in the target event featureclass.

Update Point Event—updates the spatial location of an existing point event record.

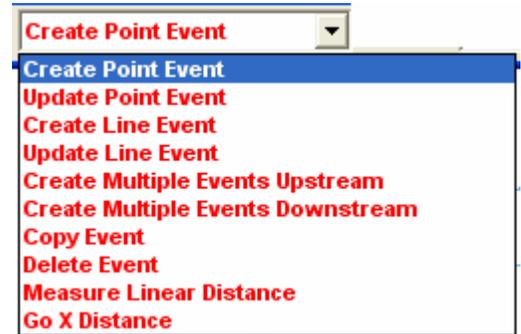
Create Line Event—creates a new linear event record in the target event featureclass.

Create Multiple Events Upstream— creates event records for all Flowline records upstream from a user defined point.

Create Multiple Events Downstream—creates event records based on a network trace downstream from a user defined point.

Copy Event—copies an existing event record into the target event featureclass.

Delete Event—deletes an existing event record.



Target— used for defining the target event featureclass for the edit; used in conjunction with creating and copying events.

Edit Example—Create a Point Event

1. Add one or more point featureclasses and the NHD Flowline dataset to the map; begin an edit session.



2. Set the Event Edit Task to Create Point Event.



3. Set the Event Edit Target to the featureclass where you would like to add new records.



4. Activate the Event Sketch Tool.



5. Click at a point along a stream.



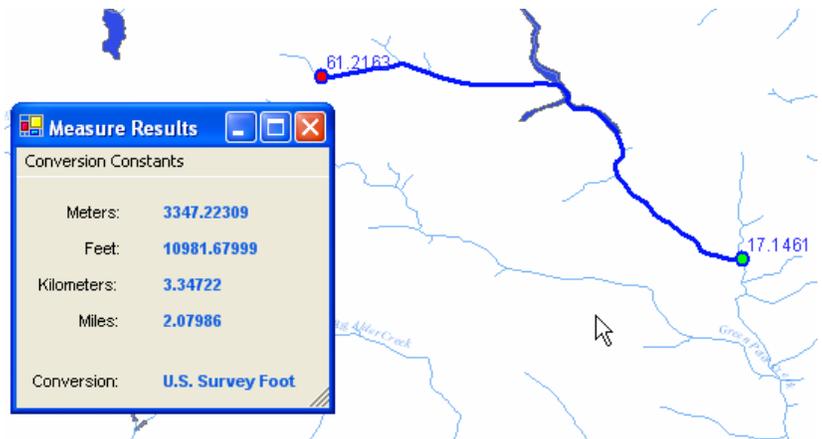
6. A new point event record will be added to the event featureclass.

Measure Functions

The purpose of the **Measure Linear Distance Tool** is to provide a method for calculating the stream linear distance between two user-identified points along a stream.

The steps for using this tool are similar to creating a new linear event—except the user changes the edit task to “Measure Linear Distance.”

The results are displayed to the user in meters, feet, kilometers, and miles.



The purpose of the **Go X Distance Tool** is to allow the user to find a point on a stream that is a specified distance from another point. This could be useful if you know that a stream survey starts 100 meters upstream from a bridge or other type of landmark that is easily identifiable using other spatial reference data.

The example to the right shows where a graphic is created 50 meters upstream from the user defined point.



Quality Control Tools

Check Continuous Event Records

The Check Continuous Event tool validates event featureclasses to ensure that there are no gaps or overlaps within the featureclass. This tool operates in both ArcCatalog (on the entire featureclass) and in ArcMap (on a selected set of event records).

Event Synchronization

The Event Synchronization Tool is a tool that assists the user with updating records that have become out of sync with the underlying NHDFlowline data. This tool will detect which event records have a potential error (based on the date of the last edit to the Flowline data) and provides an interface for easily updating those event records.