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Sample Design In MonitoringResources.org

Recent Content

- **Sample Design:** 16597 PIT Array Operation & Maintenance, Marsh Creek, N. Fork Salmon River And Looksa R - Idaho Department Of Fish And Game (IDFG) (8/11/2020, 3:03:18 PM)
- **Method:** 6859 Pool Qualifications And Measurements V1.0 (8/4/2020 8:03:11 PM)
- **Method:** 6852 Channel Morphology: Stream Gradient V2.0 (8/4/2020 3:43:17 PM)

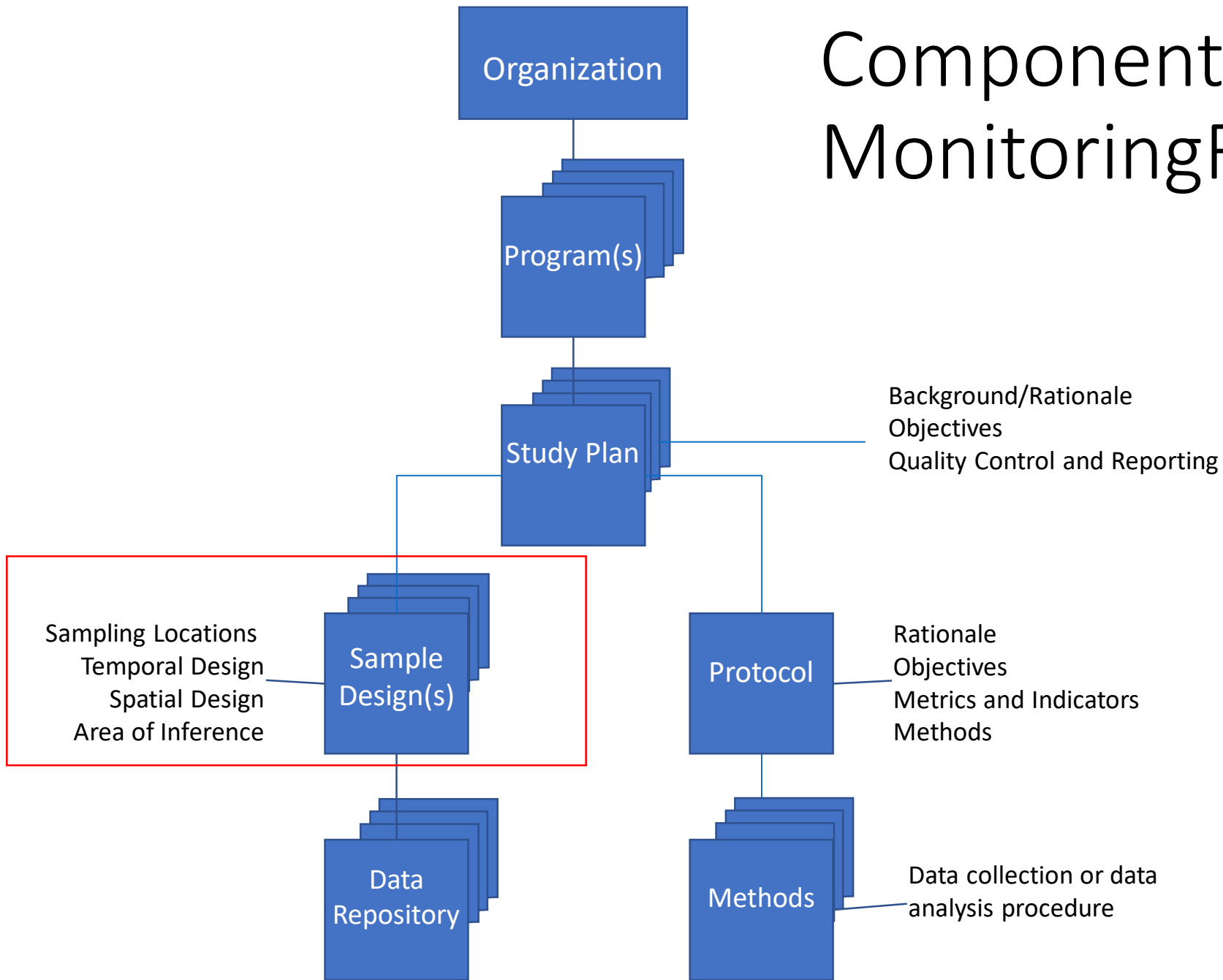
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General MonitoringResources.org Tips

- Login to Edit!
- If you have a question, check the FAQ or glossary.
- Only owners and colleagues can edit or make new versions.
- Components must be Finalized (formerly called “Published”).
- You can make new versions or clone published content.
- Within components, red asterisk fields * are required.

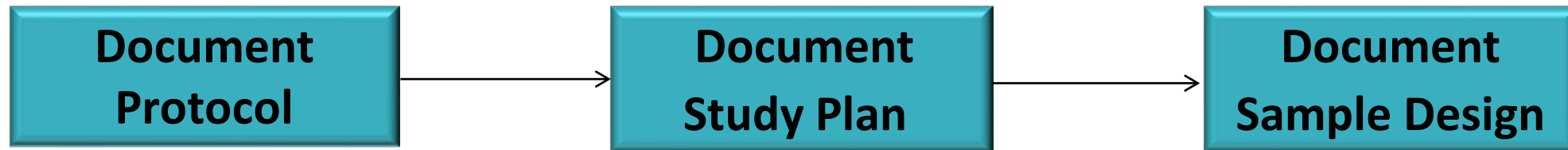
Components of MonitoringResources.org



Workflow for MonitoringResources.org

If you have a new project to document, login into MonitoringResources.org, then follow these steps:

1. Create and finalize a Protocol.
2. Create a Study Plan. In the Study Plan, link to your Protocol.
3. Create a Sample Design. In the Sample Design, link to your Study Plan.

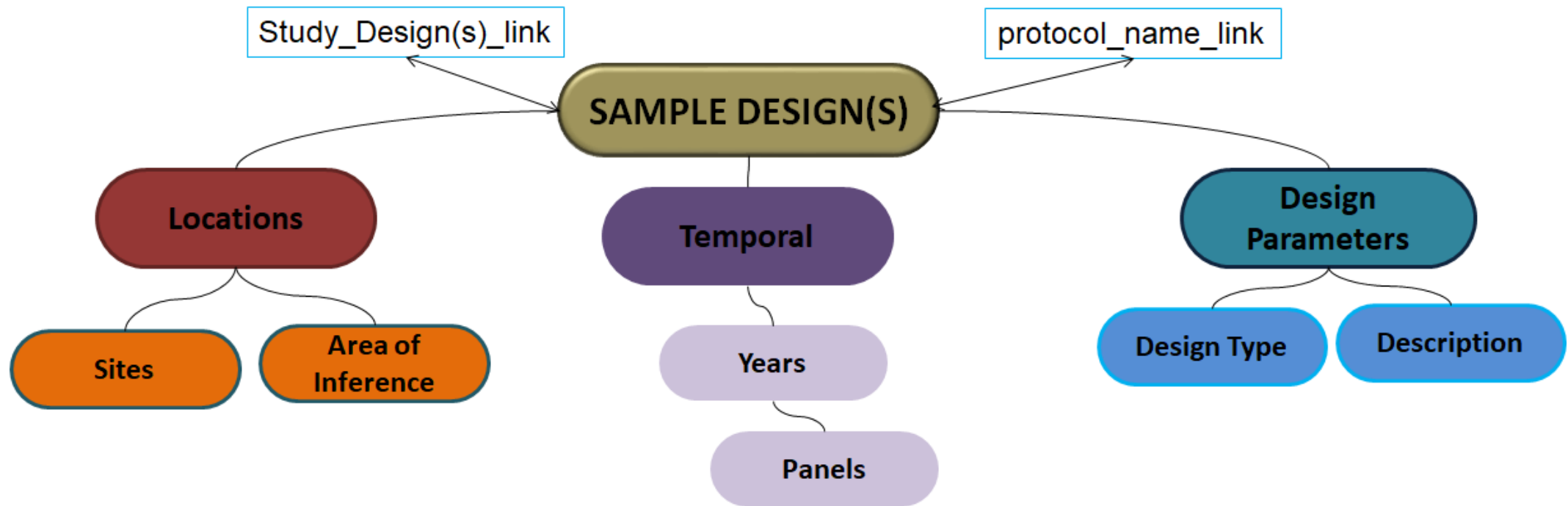


After you complete the documentation you can perform your field work. After performing field work for the season or the year, you can return to your Sample Design to revise planned locations to document the actual locations that you sampled, for the dates you sampled, and add post-implementation notes about each site sampled. You can use this same workflow to complete drafts of metadata that you or a colleague started some time ago.

What is a Sample Design?

Documentation of the spatial and temporal designs applied to data collection and analysis

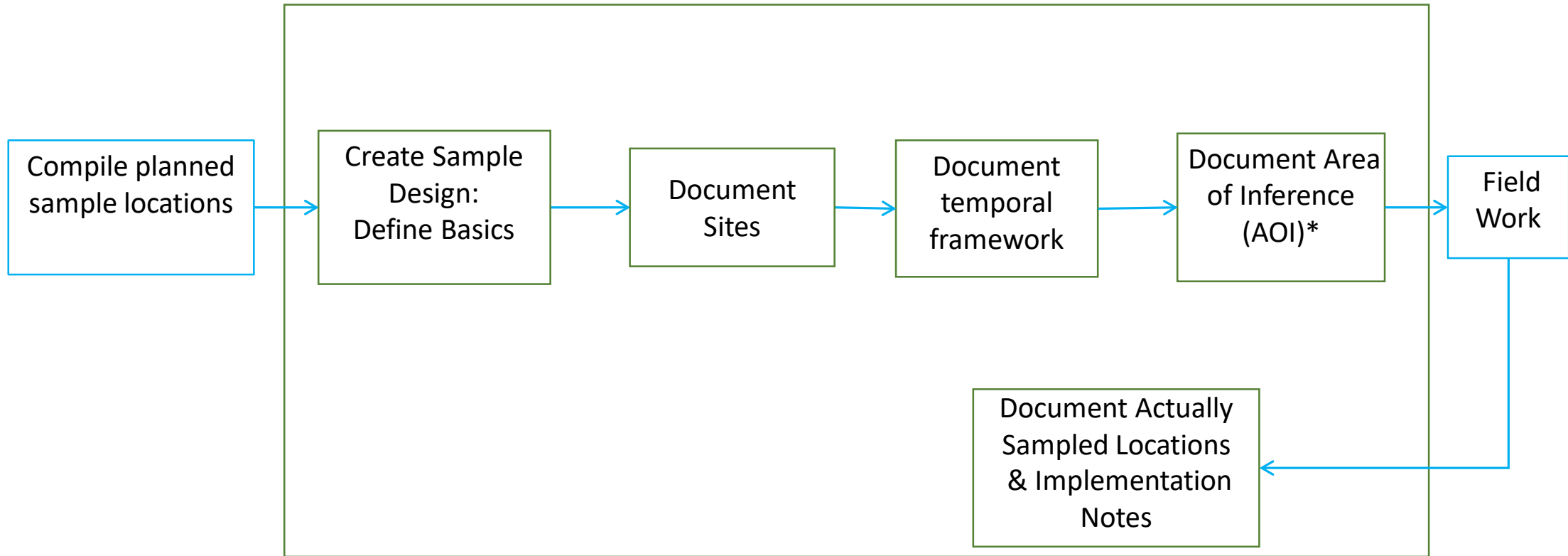
- **Spatial Design:** where metrics will be determined And how and why locations were chosen
- **Temporal Design:** the total duration (# years) and the frequency sites will be sampled



Tips for Sample Designs in MonitoringResources.org

- Document all the planned sampling locations for the total duration of your study. For example, if you plan to conduct your study from 2017-2026, include all planned locations across all years.
- After each field season, return to your Sample Design to document actual locations sampled, add new sites you sampled, and write any necessary post-implementation notes about each site.
- For BPA projects:
 - you may have Work Elements 157 *and* 162. When a project includes both of these WEs, document both planned data collection locations and the area of inference in one Sample Design.
 - If you have a WE 162 with no associated WE 157 in your contract, only document area of inference in one Sample Design, and select design type Analysis: Inference.

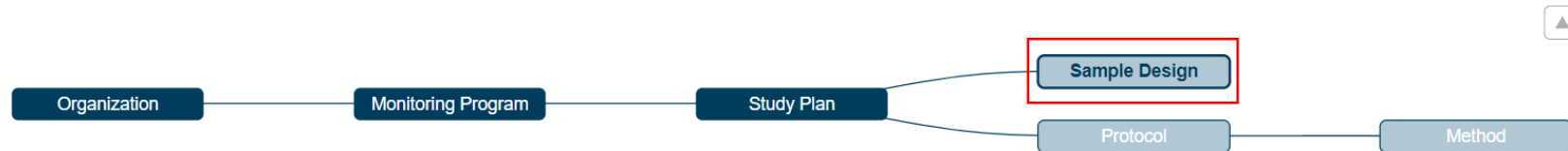
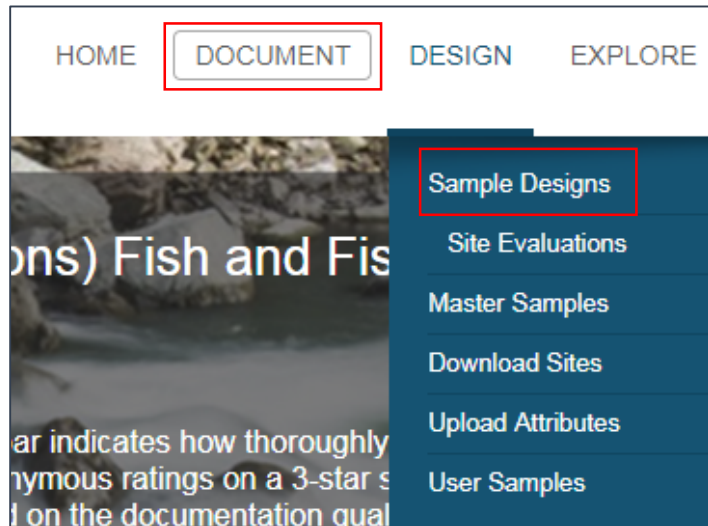
Sample Design Workflow



*for BPA projects, AOI is only documented for WE 162

Create A Sample Design

To create a new sample design, choose DESIGN/Sample Design from the top menu in MonitoringResources.org or use the road map. Then click the  button at the top right of the Sample Design table.



Select Sample Design Type

Choose from six sample design types. Each of these sample design types will begin a different workflow.

Organization — Monitoring Program — Study Design — Sample Design — Protocol — Method

Create a new sample design

Select the type of Sample Design you're creating.

- [Census](#): I want to document the full set of observations belonging to my population.
- [GRTS](#): I want to select sites from a [Master Sample](#) stored in MonitoringResource.org using the Generalized Random Tessellation Stratified (GRTS) algorithm to determine sampling locations
If you select this [spatial design](#) category, you will not be able to change to a different one later. If you selected the wrong [spatial design](#) category, you will need to return to this page and re-create your Sample Design.
- [Inference Design](#): I want to document an [area of inference](#), but no data collection locations.
If you select this [spatial design](#) category, you will not be able to change to a different one later. If you selected the wrong [spatial design](#) category, you will need to return to this page and re-create your Sample Design.
- [Model Based Design](#): I want to document a [model based design](#) that relies on on selection of sites based on the need to estimate parameters or coefficients of a model that will be used to make the population estimates.
- [Opportunistic Design](#): I want to document non-random sampling locations.
- [Probabilistic Design](#): I want to document sampling locations using a probabilistic method. Examples: Simple Random Sampling or any Generalized Random Tessellation Stratified ([GRTS](#)) samples created outside of MonitoringResources.org.

[Next](#)

For BPA projects, Inference Design is a way to document "Area of Inference" for projects that only have analysis WEs (162) and no data will be collected. If your design is not one of these types, please contact both your COR and RM&E Support (rmesupport@bpa.gov).

Select Sample Design Type - Generalized Random Tessellation Stratified (GRTS)

When you choose GRTS, you will have the opportunity to develop a spatially balanced survey design using a GRTS algorithm.

You'll notice if you do not select a particular option for your GRTS design (such as: I will add attributes to the sites of my sample to help define the target frame), that option (Add Attributes) will not be available as you prepare your sites for your GRTS design.

Please contact gs-monitoringresources@usgs.gov for a consultation if you are designing a survey using the GRTS design tool.

Create a new sample design

Select the type of Sample Design you're creating.

- [Census](#): I want to document the full set of observations belonging to my population.
- [GRTS](#): I want to select sites from a [Master Sample](#) stored in MonitoringResource.org using the Generalized Random Tessellation Stratified (GRTS) algorithm to determine sampling locations
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- [Inference Design](#): I want to document an [area of inference](#), but no data collection locations.
If you select this [spatial design](#) category, you will not be able to change to a different one later. If you selected the wrong [spatial design](#) category, you will need to return to this page and re-create your Sample Design.
- [Model Based Design](#): I want to document a [model based design](#) that relies on on selection of sites based on the need to estimate parameters or coefficients of a model that will be used to make the population estimates.
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Select options for your GRTS design

Check all of the following that apply to your design. Using your answers, the STEPS TO BUILD YOUR SAMPLE DESIGN will be constructed in the box to the right. These steps will serve as your guide through the design process.

Tell us a little more about your intended design

- My sample design will include user sites or other sites that are not in a master sample. [?](#)
- I will add attributes to the sites of my sample to help define the target frame. [?](#)
- My sample design will have panels. [?](#)
- My sample design will be stratified. [?](#)
- I will add attributes to the sites of my sample to help stratify the sample. [?](#)
- None of the above apply.

- Introduction
- Basics
- PREPARE YOUR SITES
 - Import Sites
 - Add Attributes
- CREATE YOUR DESIGN
 - Select Master Sample
 - Define Frame
 - Select Other Sites
 - Create Panels
 - Compute Attributes
 - Stratify
 - Generate Sites
 - Area Of Inference

Select Sample Design Type - Inference Design

The Area of Inference is the area (basin, site, reach or population) you will analyze or the area to which you will extrapolate your data findings.

Will you extrapolate data to a 3rd field Hydraulic Unit Code (HUC), specific reach on a stream, or a population from points along a reach? If you will not draw an expanded inference, just specify the latitude and longitude where you collect the data points you will analyze.

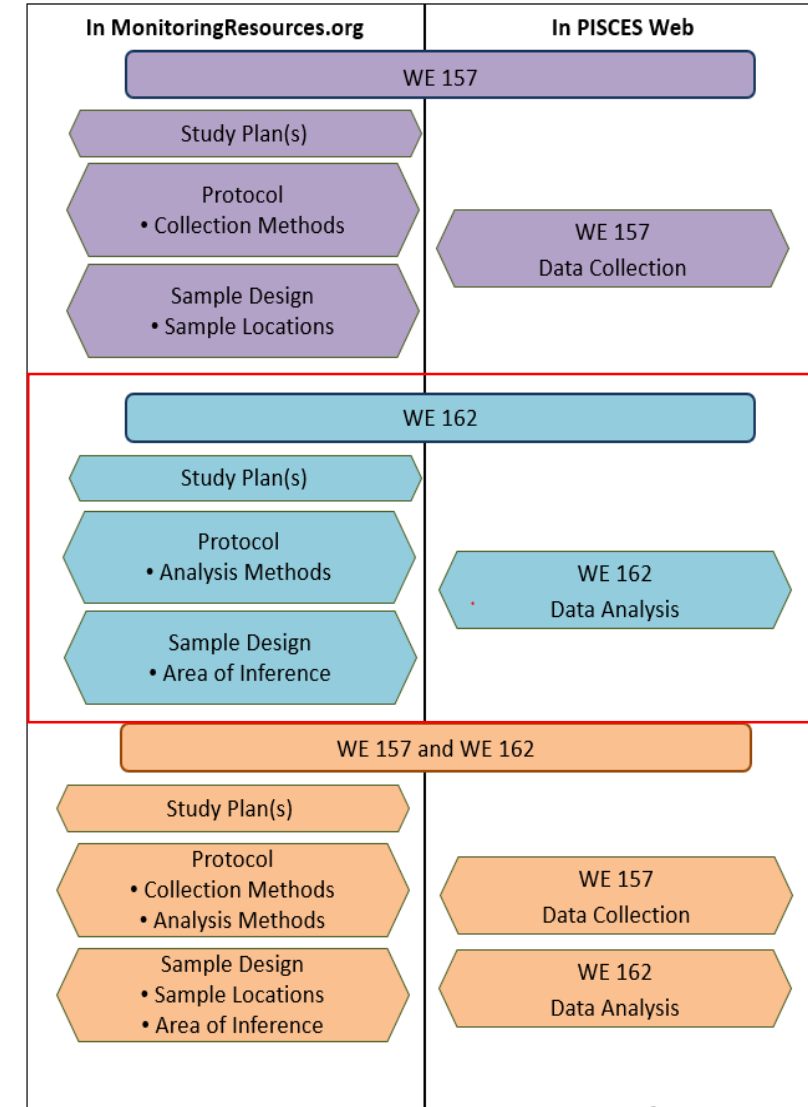
For BPA projects, if you have a WE 162 with no data collection, select Inference Design and you'll only need to define your area of inference (AOI).

Create a new sample design

Select the type of Sample Design you're creating.

- [Census](#): I want to document the full set of observations belonging to my population.
- [GRTS](#): I want to select sides from a [Master Sample](#) stored in MonitoringResource.org using the Generalized Random Tessellation Stratified (GRTS) algorithm to determine sampling locations
If you select this [spatial design](#) category, you will not be able to change to a different one later. If you selected the wrong [spatial design](#) category, you will need to return to this page and re-create your Sample Design.
- [Inference Design](#): I want to document an [area of inference](#), but no data collection locations.
If you select this [spatial design](#) category, you will not be able to change to a different one later. If you selected the wrong [spatial design](#) category, you will need to return to this page and re-create your Sample Design.
- [Model Based Design](#): I want to document a [model based design](#) that relies on on selection of sites based on the need to estimate parameters or coefficients of a model that will be used to make the population estimates.
- [Opportunistic Design](#): I want to document non-random sampling locations.
- [Probabilistic Design](#): I want to document sampling locations using a probabilistic method. Examples: Simple Random Sampling or any Generalized Random Tessellation Stratified (GRTS) samples created outside of MonitoringResources.org.

Next



Select Sites

Choose Select Sites from the Sample Design Edit menu.

There are two pathways to add your sites:
1) Using the Map to:

- search for a known site name (or its partial name) to add it to your design
- dropping a pin (clicking a point) on the map or entering the known latitude and longitude of a site
- using filters to add points to the map, then choose each point, click [Add to Design](#).

2) Uploading a *.csv file that describes multiple sites.

The screenshot displays the 'Select Sites' interface. On the left, a navigation menu includes 'Overview', 'Edit', 'Describe Sample', 'Select Sites' (highlighted with a red box), 'Plan Schedule', and 'Review'. The main content area features a search bar for 'Site Name' and a 'Sample Frame' dropdown set to '[All User Samples]'. Below this is an 'Advanced Search' section with various filters: State Name (Washington), County Name ([select one]), Ecoregion L1 ([select one]), Ecoregion L2 ([select one]), Ecoregion L3 ([select one]), Strahler Order (5), Land Ownership ([select one]), NHD Feature Type (Coastline), NHD Feature Code ([select one]), MPG ([select one]), and Population ([select one]). A 'Filter' button is located below the filters. The map section shows '0 sites currently on map' and a map of the Seattle area. A 'Site Info (1 of 2)' popup is open, displaying details for site 'WSES_45691' with latitude 47.606759 and longitude -122.331891. The 'Add To Design' button in the popup is highlighted with a red box. At the bottom, there is a table with columns for 'Site Name', 'Latitude', and 'Longitude', and an 'Import Sites' section with a 'Download Template CSV' link and a 'Choose File' button.

Select Sites – Create New Site

If you only have a few points to add to the map, [Create a New Site](#) by dropping a pin on the map.

- Click the + Create New Site button.
- Type a site name in the pop-up box
- Click on one of the green markers.
- Release your click
- Move your mouse to the map and click again on a point on the map

The latitude and longitude will appear in the pop-up box. When you click Create in that box, the site will appear in the table below the map.

You can also create a new site by typing in the Name, and the known latitude and longitude of your site, then click Create.

Save your site selections when you have chosen all your sites.

4 Sites

	Site Name	Latitude	Longitude
<input type="checkbox"/>	CLocks	45.662283926	-121.8988
<input type="checkbox"/>	Stevenson	45.690110460	-121.8934
<input type="checkbox"/>	Carson	45.716484908	-121.8123
<input type="checkbox"/>	NBonn	45.638764520	-121.9585

Select Sites- Suggested Site Name Conventions

Whether you identify sites on a map and name them one at a time, or you upload a prepared CSV file, it will be helpful to name your sites with descriptive, unique names that have no separators or spaces. Your site names will be machine readable and ultimately transferrable among data exchanges that are compliant with global standards. The following is a suggested convention for naming sites: code_year_project_WE

Where, code: unique identifier your agency assigns, e.g. wfhrw2 (West Fork Hood River Weir 2), or ccnvt7_5 (Catherine Creek North Bank Vegetation Transect 7_5 meter); year: start year of the monitored site; project: contract or project #; WE: work element letter if a BPA contract.

Comma Separated Value (*.csv) File Format Rules

- A .csv file for importing sites must have at least three columns with the headers: Name, Latitude, and Longitude. You can include as many columns of attributes after these first three as needed. Or after you import a file, you can use the Edit Schema section of the User Sample tool to add one attribute at a time.
- The names need to be descriptive enough so that you can return to the website and identify each site.
- If your locations are described in UTM's, convert to latitude and longitude. You will need to know the zone of your UTM's for accurate conversion. There are many converters available online and open source GIS programs to support data conversion.
- All .csv files upload will be converted to a projection of the **WGS84** datum; if the data file has a different projection, you will need to convert your data to WGS84.

Select Sites – Area of Inference (AOI)

For BPA projects, if you have a Work Element 162 (data analysis), defining an AOI is required.

Area of Inference was designed for aquatic monitoring in the Pacific Northwest. If you cannot find an appropriate area to define the extent of your work, skip this step or contact gs_monitoringresources@usgs.gov. After you have selected or uploaded your sites, to identify Area of Inference, select the button below the map to the right.

Define your Area of Inference by clicking on the Identify Area of Inference button below the map, from within the Select Sites menu. You will be shown the Area of Inference screen.

Overview

- Edit
 - Describe Sample
 - Select Sites**
 - Plan Schedule
 - Review
- Other Options

Sample Design: Test Historic Precedent

ID: 15798
State: Draft
Owner: PNAMP USER
Spatial Design Category: Historic Precedent
Version History: v1.0 Draft (8/9/2018)

Sites in Design: 0
Has Location Privacy: No
Data Repository: Action Effectiveness Monitoring

Created by: PNAMP USER
Created: 8/9/2018
Updated by: PNAMP USER
Updated: 11/13/2019

Select Sites

Select on the map, add one at a time or bulk upload a CSV of all your planned sampling locations.

Search by Site Name or use the Advanced Search to filter to your area of interest; click on your point(s) in the map. If a selected point belongs in your design, click "Add to Design" and it will be added to the table. If you can't find an appropriate site on the map, add sites one by one by clicking on the create new site, or add multiple sites at a time by importing a .csv file.

Search by Site Name: Sample Frame:

Advanced Search

0 Sites

Bulk Delete?	Site Name	Latitude

Import Sites

CSV file: No file chosen

Select Sites – Area of Inference

In the Area of Inference screen, click on the blue circle plus button in the upper right, then click on a point in the map

Next click on the description that represents the area to which you will expand your inference, based on your design and analyses.

After you click the + button, place the crosshair symbol + over one of your site locations and click to see layers.

You can then choose larger spatial extents, such as HUC3. Your choices will appear in the table below the map.

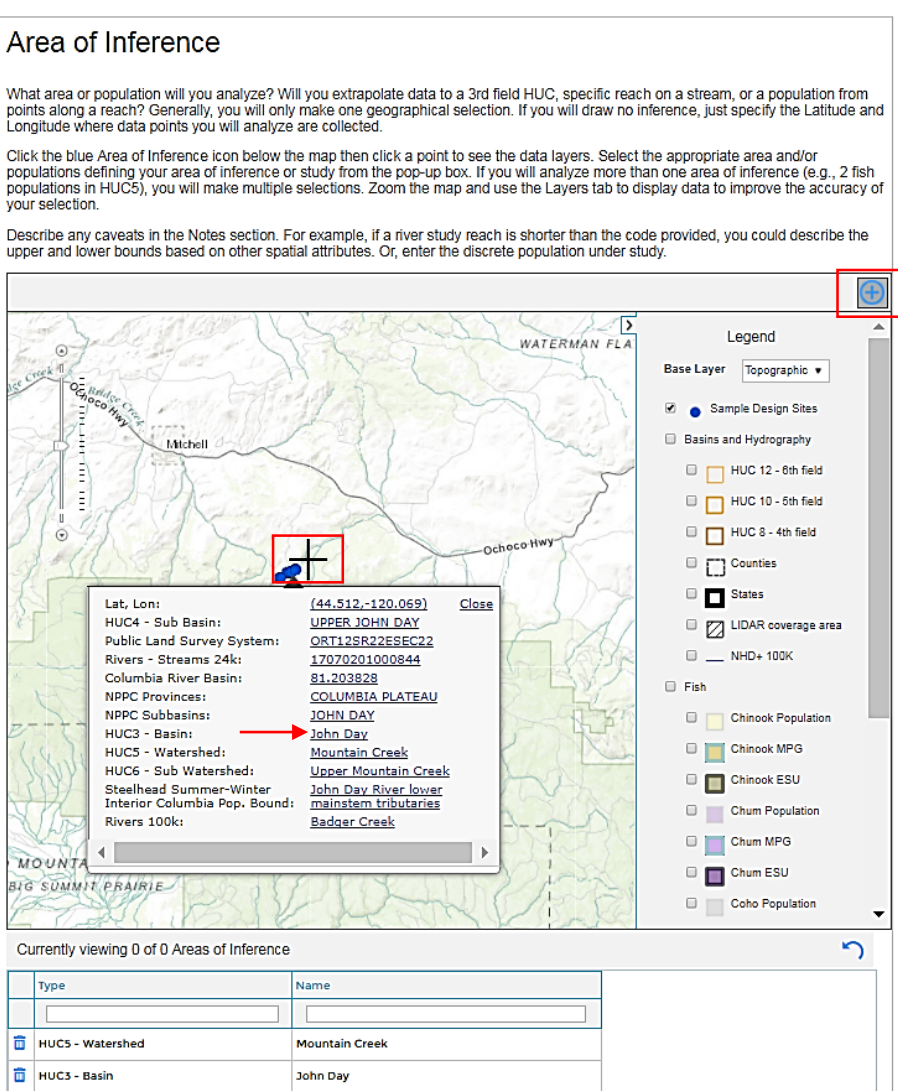
Then save your choices.

Area of Inference

What area or population will you analyze? Will you extrapolate data to a 3rd field HUC, specific reach on a stream, or a population from points along a reach? Generally, you will only make one geographical selection. If you will draw no inference, just specify the Latitude and Longitude where data points you will analyze are collected.

Click the blue Area of Inference icon below the map then click a point to see the data layers. Select the appropriate area and/or populations defining your area of inference or study from the pop-up box. If you will analyze more than one area of inference (e.g., 2 fish populations in HUC5), you will make multiple selections. Zoom the map and use the Layers tab to display data to improve the accuracy of your selection.

Describe any caveats in the Notes section. For example, if a river study reach is shorter than the code provided, you could describe the upper and lower bounds based on other spatial attributes. Or, enter the discrete population under study.



Legend

Base Layer: Topographic

- Sample Design Sites
- Basins and Hydrography
 - HUC 12 - 6th field
 - HUC 10 - 6th field
 - HUC 8 - 4th field
 - Counties
 - States
 - LIDAR coverage area
 - NHD+ 100K
- Fish
 - Chinook Population
 - Chinook MPG
 - Chinook ESU
 - Chum Population
 - Chum MPG
 - Chum ESU
 - Coho Population

Currently viewing 0 of 0 Areas of Inference

Type	Name
<input type="checkbox"/>	
<input checked="" type="checkbox"/> HUC5 - Watershed	Mountain Creek
<input checked="" type="checkbox"/> HUC3 - Basin	John Day

Plan Your Schedule

Schedule when you will visit your sites next.

Specify start and end years for the study, then click **SAVE**, unless you need to schedule a more complex schedule such as rotating panels or anything other than visiting each site once a year, check the box below and follow the instruction.

The screenshot shows the 'Plan Schedule' page for a sample design titled 'Hunters Creek Redband Trout Stock Assessment'. The page includes a navigation menu on the left, a header section with design details, and a main content area with a table of sites and scheduling options.

Navigation Menu:

- Overview
- Edit
 - Describe Sample
 - Select Sites
 - Plan Schedule**
 - Review
- Other Options

Header Section:

- Sample Design: Hunters Creek Redband Trout Stock Assessment
- ID: 15590
- State: Draft
- Version: 1.0

Metadata:

- State: Draft
- Owner: Casey Flanagan
- Spatial Design Category: Ease of Access
- Data Repository: Intermountain Province/Pend Oreille Subbasin Data Management Project
- Version History: v1.0 Draft (2/13/2018)
- Sites in Design: 0
- Has Location Privacy: No
- Created by: Casey Flanagan
- Created: 2/13/2018
- Updated by: Casey Flanagan
- Updated: 2/13/2018

Plan Schedule Section:

Indicate your start year and end year. If you have a more complex sampling schedule such as rotating panels or anything other than visiting each site once a year, check the box below and follow the instruction.

Site Name	Latitude	Longitude
CBW05583-105285	48.314238	-117.276549
CBW05583-122181	48.315014	-117.277204
CBW05583-163141	48.326915	-117.310946
CBW05583-253253	48.338271	-117.303537
CBW05583-384325	48.334190	-117.305616
WAM06600-041448	48.339629	-117.301817
WAM06600-081576	48.324399	-117.306945
WAM06600-124968	48.329261	-117.309816

Scheduling Options:

- Start Year: 2015
- End Year: 2019
- I have more complex scheduling needs

Plan Your Schedule – Complex Scheduling Needs

When you check the box "I have more complex scheduling needs" you can then choose to build rotating panels of site visits.

You select the number of panels, the years that panel will be sampled and assign sites to the panel.

The screenshot shows a software interface for scheduling site visits. At the top, there are dropdown menus for 'Start Year' (2020) and 'End Year' (2030). Below these is a checked checkbox labeled 'I have more complex scheduling needs'. The main section is titled 'Advanced Scheduling Options' and contains several input fields: 'Number Of Panels' (set to 2) and 'Selected Panel Name' (set to Panel 1). Below these are four columns: 'Panels', 'Year', 'Available Sites', and 'Assigned Sites'. The 'Panels' column shows 'Panel 1' selected with a radio button. The 'Year' column shows years from 2020 to 2030, with checkboxes for 2020, 2022, 2024, 2026, 2028, and 2030 checked. The 'Available Sites' column lists three site IDs: CBW05583-072594, CBW05583-445722, and CBW05583-449426. The 'Assigned Sites' column lists four site IDs: CBW05583-035098, CBW05583-135250, CBW05583-356634, and CBW05583-470930. At the bottom, there are navigation arrows and a 'Save' button.

Start Year: 2020 End Year: 2030

I have more complex scheduling needs

Advanced Scheduling Options

Number Of Panels: 2

Selected Panel Name: Panel 1

Panels	Year	Available Sites	Assigned Sites
Panel 1 <input checked="" type="radio"/>	2020 <input checked="" type="checkbox"/>	CBW05583-072594	CBW05583-035098
Panel 2 <input type="radio"/>	2021 <input type="checkbox"/>	CBW05583-445722	CBW05583-135250
	2022 <input checked="" type="checkbox"/>	CBW05583-449426	CBW05583-356634
	2023 <input type="checkbox"/>		CBW05583-470930
	2024 <input checked="" type="checkbox"/>		
	2025 <input type="checkbox"/>		
	2026 <input checked="" type="checkbox"/>		
	2027 <input type="checkbox"/>		
	2028 <input checked="" type="checkbox"/>		
	2029 <input type="checkbox"/>		
	2030 <input checked="" type="checkbox"/>		

Navigation: << >> Save

Review and Finalize your Sample Design

You will be asked if you are certain you wish to finalize the Sample Design.

Sample Designs do not go through a review process by the Monitoring Resources team like what is done for a Method or Protocol.

Sample Design: A test design

ID: 16598
State: Draft
Owner: Rebecca Scully
Spatial Design Category: Ease of Access
Version History: v1.0 Draft (8/14/2020)

Sites in Design: 7
Has Location Privacy: No
Data Repository: Columbia River Estuary Ecosystem Classification Ecosystem Complex (See Sample Design Overview for full list)

Created by: Rebecca Scully
Created: 8/14/2020
Updated by: Rebecca Scully
Updated: 8/14/2020

Review

This page offers a few tools for you to review the [sites](#) generated from the [sample design](#) in order to determine if they meet the needs of your particular study. If you need to [modify the sample design](#), you may [click back](#) to any of the previous steps, modify the design, and run the generation process again.

Once you're certain the design meets your needs, you'll need to Finalize the [sample design](#) in order to download a Shape file of it. Once a design is finalized, it is marked read only and may not be modified in the future.

Map of Selected Sample Sites

You may click on any of the orange site markers below to view additional information about that site. Use the dropdown menus above the map to filter the sites that are displayed on the map. For example, you can isolate sites in a specific [stream panel](#), or sample occasion (period).

Panel: All Panels | Occasion: All Years

Sample Sites

Below is the complete list of sample sites that were drawn using the criteria for this [sample design](#). In order to download these sites, you must finalize this design by clicking the Finalize button. This makes the [selected samples](#) available to you in a Shape file format, but will have the effect of disallowing future structural changes to this sample design. Therefore, before you finalize the design please verify that this is the set of sites you want to use in your research/study.

Currently viewing 7 of 7

Site Name	Latitude	Longitude	Sampling Years
CRW06883-036098	44.997272	-116.537725	2020, 2022, 2024, 2026, 2028, 2030
CRW06883-072894	45.038340	-116.418343	2021, 2023, 2025, 2027, 2029
CRW06883-136250	45.025796	-116.498687	2020, 2022, 2024, 2026, 2028, 2030
CRW06883-356634	44.963626	-116.578487	2020, 2022, 2024, 2026, 2028, 2030
CRW06883-445722	45.027069	-116.587940	2021, 2023, 2025, 2027, 2029
CRW06883-449426	45.062838	-116.478640	2021, 2023, 2025, 2027, 2029
CRW06883-470980	45.043064	-116.479622	2020, 2022, 2024, 2026, 2028, 2030

Area of Inference: <none>

AOI Notes: <none>

Finalize

Save

Field Sampling

Go out and do your field sampling and then return to your Sample Design for post-implementation notes

Document Data Collection Event and Post-implementation Notes

After you complete your field season, return to MonitoringResources.org, and choose Design/Sample Design. Search for your Sample Design. Or go to MonitoringResources.org click on your Portfolio and select your Sample Design from the components that display.

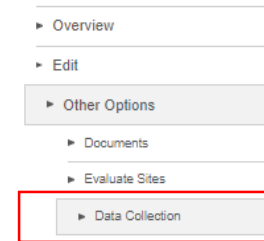
Open your Sample Design, choose Other Options, and then select the Data Collection tab.

Select the Data Collection Period on which you are reporting (i.e. 2019).

Select the + button to Create a New Data Collection Event. Change the Data Collection Period to the correct year to report your data collection.

Click the + button to add individual data collection events.

Troubleshooting: If no table appears in the Data Collection tab, return to the edit screen and check that you have filled in the Data Repository and the Sample Design is finalized.



A screenshot of the 'Sample Design' overview page. At the top, there is a header 'Sample Design: working through one'. Below this, there is a summary section with the following information: ID: 16430, State: Published, Owner: Sam Cimino, Spatial Design Category: Ease of Access, Version History: v1.0 Published (12/5/2019) Version..., Sites in Design: 8, Has Location Privacy: No, Data Repository: NOAA Salmon Population Summary (SPS) Database, Created by: Sam Cimino (12/5/2019), and Updated by: Sam Cimino (1/10/2020).

Data Collection

This design indicates that data collection will occur in 2019. Choose the data collection period you are interested in to view and edit information about that period below.

Data Collection Period: 2019

Total possible events: 8

Total possible events for 2019: 8

Overall Design Status: Incomplete

Data Repository: NOAA Salmon Population Summary (SPS) Database (Independent)



Data Collection Events Completed for 2019

Currently viewing 0 of 0 Data Collection Events

Actions	Name	Panel(s)	Latitude	Longitude	Event Date	Links