National Trails Intermountain Region

National Park Service
Department of the Interior

The National Trails Intermountain Region's Sign Plan Program

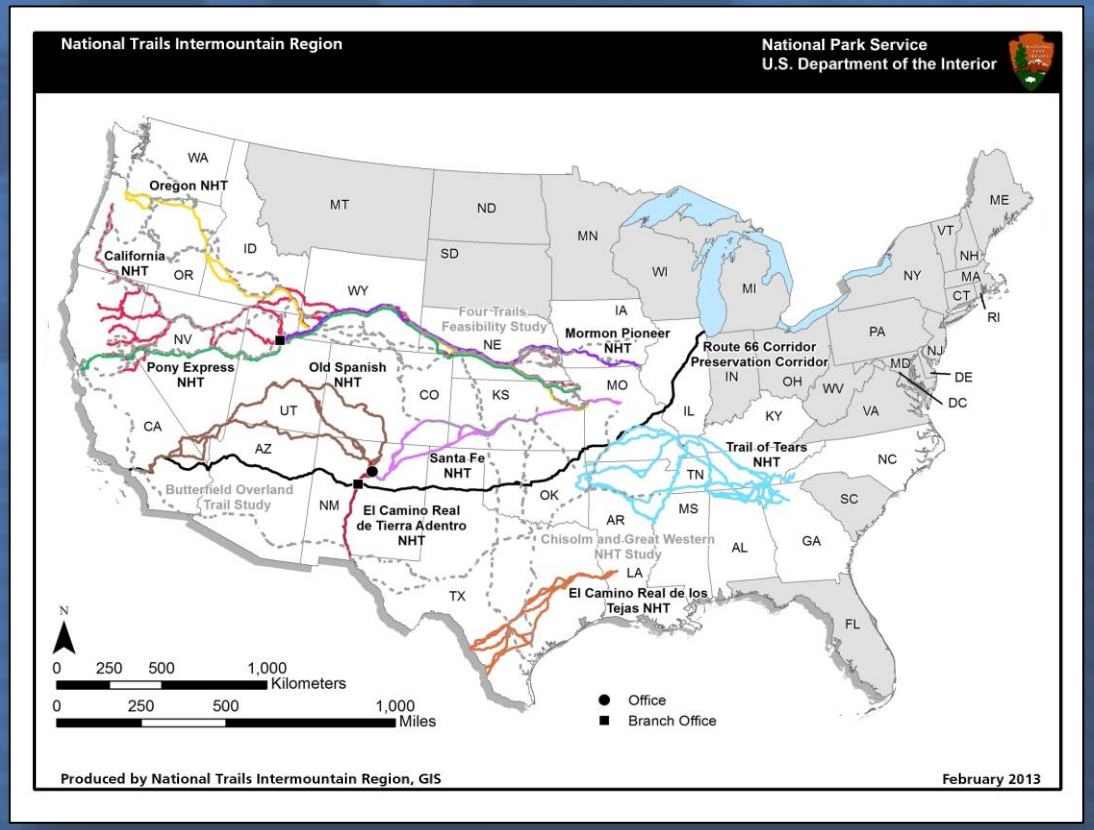
National Trails System GIS Network

May 15, 2018

Overview. . .

- Office background
- Introduction to the Sign Plan Program
- Step-by-step workflow
- ArcGIS Online and Sign Plan Report Tool
- Final product
- Future of the Sign Plan Report Tool

Trails Are Complex. . .



- We have **3** office locations
- Numerous Partners
- **25,000+** Miles
- **4** NPS Regions
- **24** States
- **466** Counties
- **113** Congressional Districts

Administration

Cultural Resource Management

Planning

History

Visitor Use, Experience & Engagement

Resource Information Management

Landscape Architects

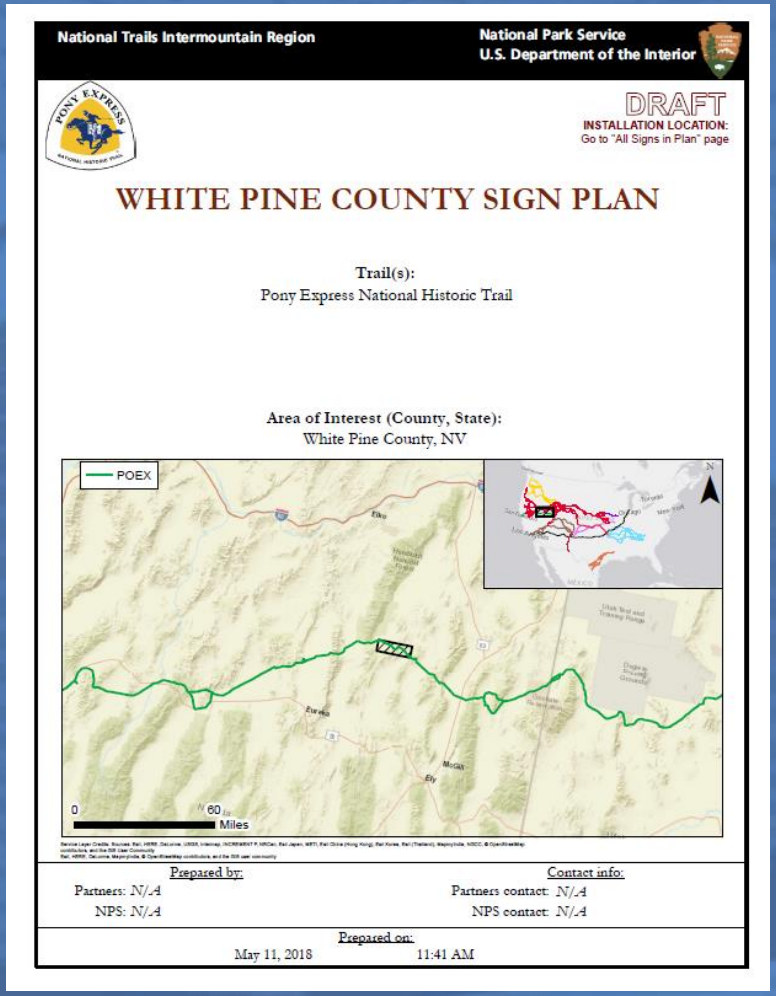
GIS

Purpose of Sign Plan Program

- Follows the National Trail System Act (as amended) and follows trail marking guidelines of the CMPs
- Signing the trails raises public awareness
- Opportunity for partners to collaborate and receive technical assistance from trail administration

Goals

- Implement a standardized approach
- Use the capabilities of GIS to create, manage and share sign data
- Create a user-friendly process for partners to create sign plans


National Trails Intermountain Region

National Park Service
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DRAFT
INSTALLATION LOCATION:
Go to "All Signs in Plan" page

WHITE PINE COUNTY SIGN PLAN

Trail(s):
Pony Express National Historic Trail

Area of Interest (County, State):
White Pine County, NV

POEX

0 60 Miles

Prepared by:
Partners: N/A
NPS: N/A

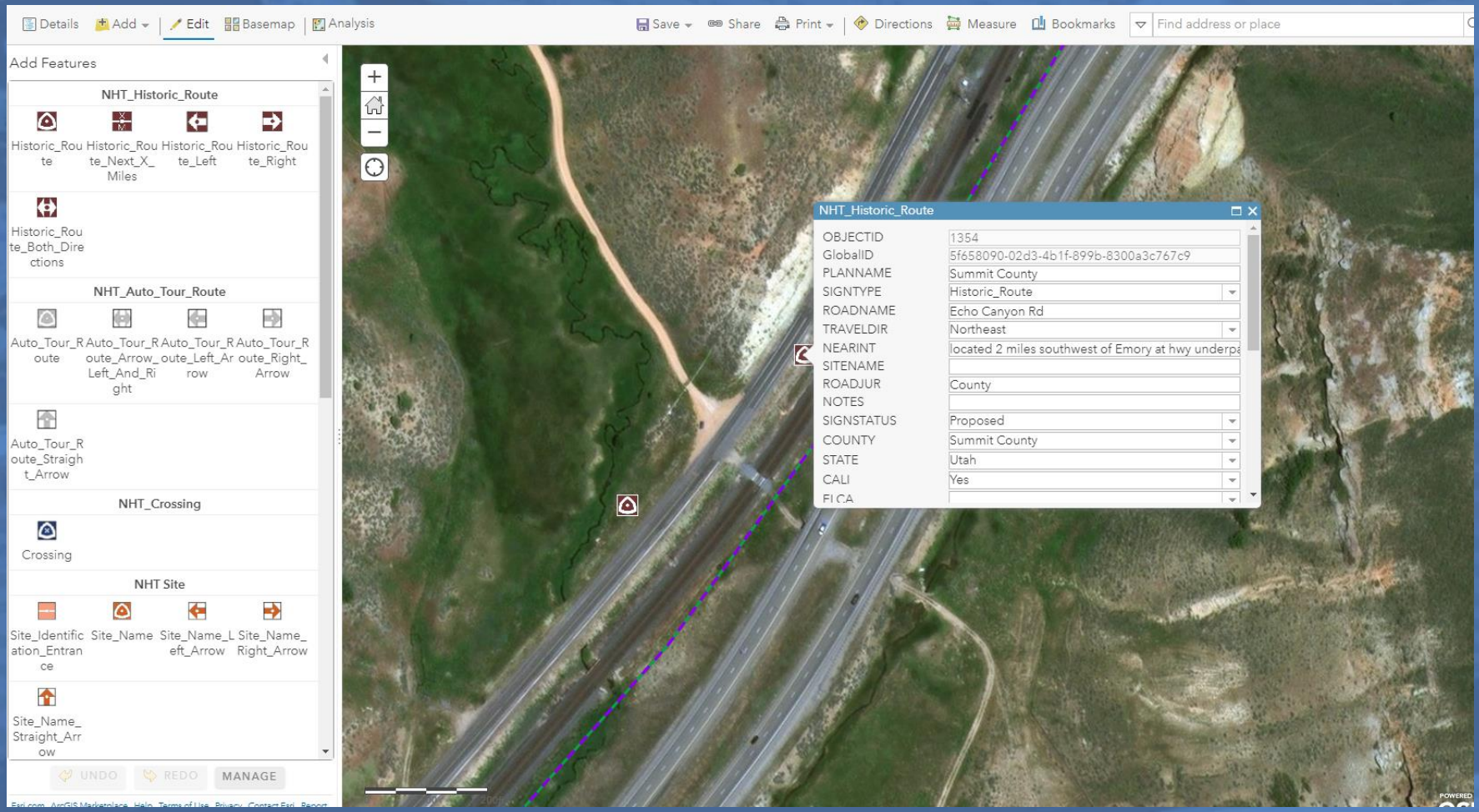
Contact info:
Partners contact: N/A
NPS contact: N/A

Prepared on:
May 11, 2018 11:41 AM

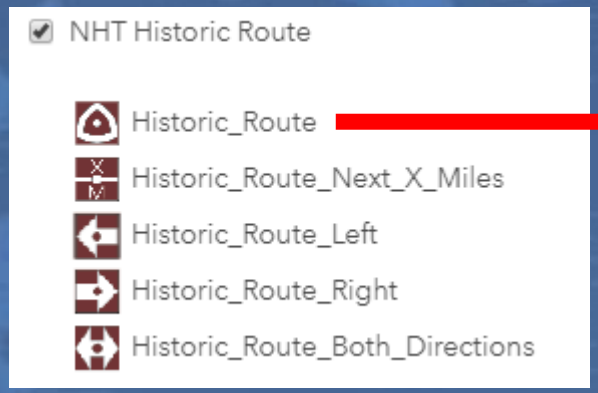
Step by step workflow

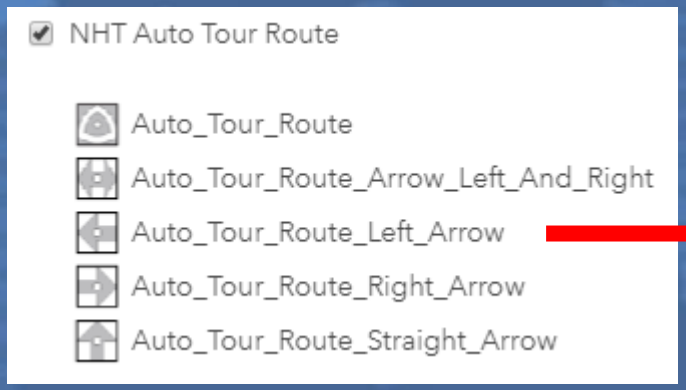
1. Partners initiate the process by identifying area and purpose to NTIR
2. ★ Partners use AGOL to input signs
3. NTIR collaborates with partners for revisions on the AGOL viewer
4. ★ NTIR runs the report tool
5. Partners use sign plan PDFs to take to local road jurisdictions along with an agreement form
6. Signs are ordered and installed

ArcGIS Online



Types of signs





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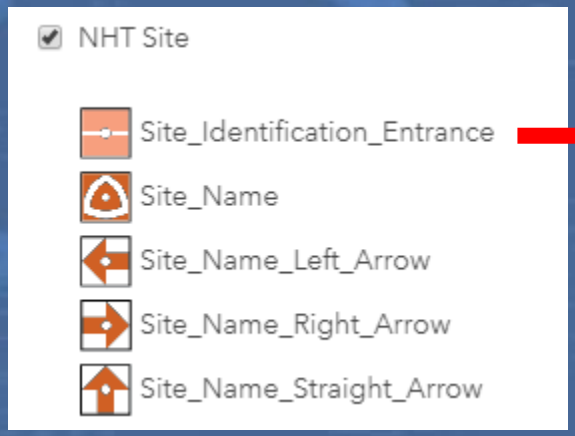
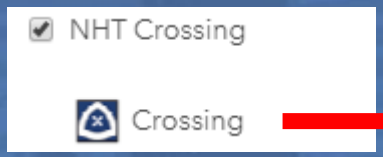
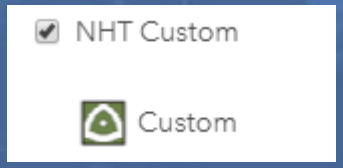






The Sign Plan Report Tool

Input Plan Name

Input Report Title

Select Trails in AOI

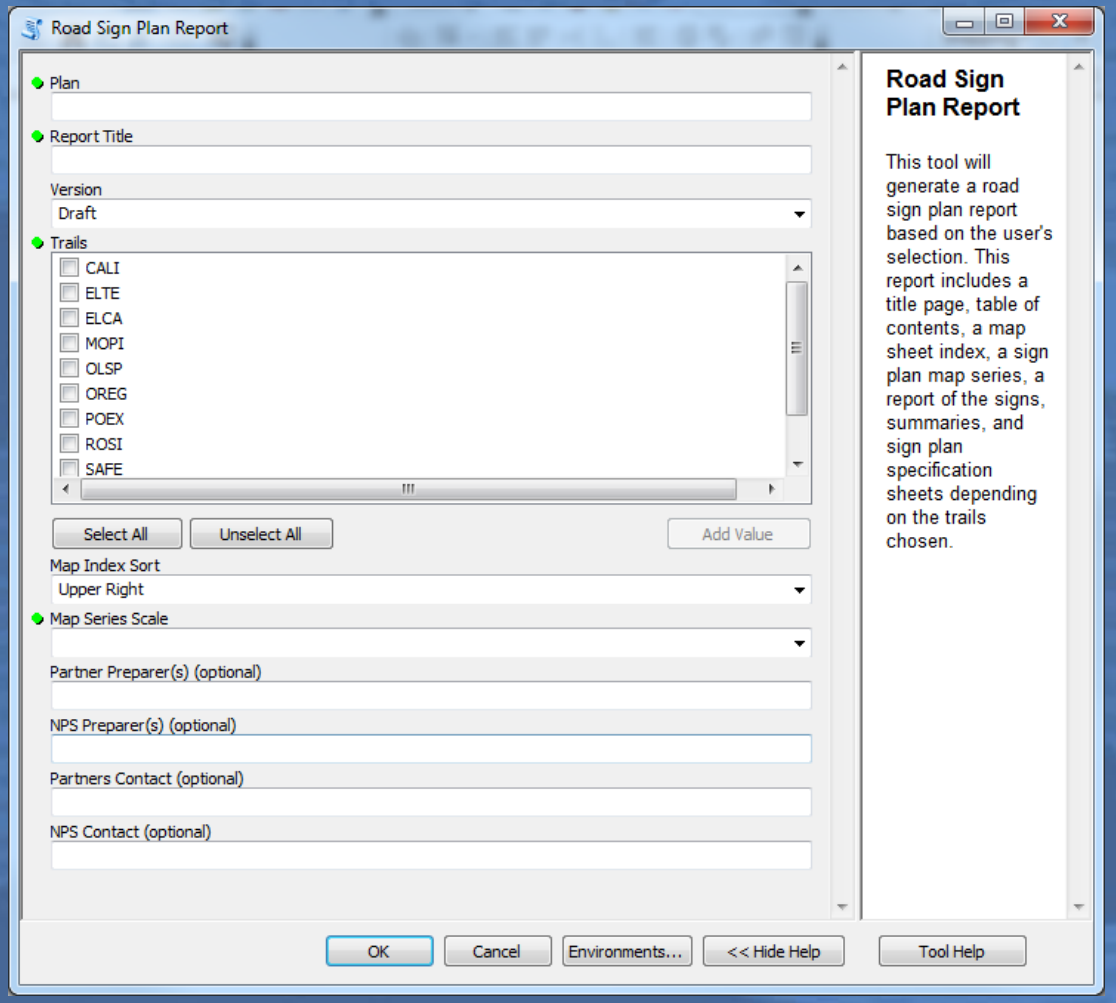
Sign ID Number Sort

Map Scale (Resolution)

Partner Preparers

NPS Preparers

Contact Info

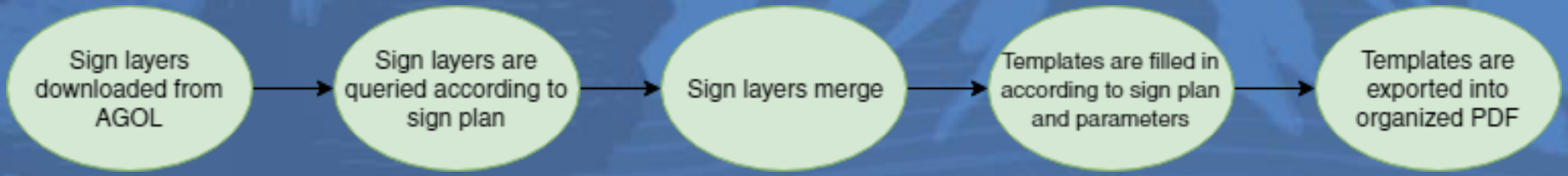


The Sign Plan Report Tool

```
el mxd

Set the index page extent to the minimum bounding box created previously and create a new temp mxd
mxd = arcpy.mapping.MapDocument(tempWorkspace + "\Signs_MapSeriesOverview3.mxd")
df = arcpy.mapping.ListDataFrames(pmxd)[0]
layer = arcpy.mapping.Layer(workspace + "\Temp_MBG.shp")
newextent = player.getExtent()
df.extent = pnewextent
mxd.saveACopy(tempWorkspace + "\Signs_MapSeriesOverviewCopy.mxd")
el pmxd, pdf, player, pnewextent

Replace filepath used for script creation to the filepath that user selected as workspace
xd = arcpy.mapping.MapDocument(spFiles + "\RoadSignsTemplates\Signs_MapSeriesPages.mxd")
djustVersionLabel(mxd)
xd.findAndReplaceWorkspacePaths(spFiles + "\RoadSignsTemplates\SignPlanTemplates", workspace, False)

Make the appropriate trails visible, so that only the trails of interest are shown in the legend
or lyr in arcpy.mapping.ListLayers(mxd):
    if lyr.name == trail1:
        lyr.visible = True
or lyr in arcpy.mapping.ListLayers(mxd):
    if lyr.name == trail2:
        lyr.visible = True
or lyr in arcpy.mapping.ListLayers(mxd):
    if lyr.name == trail3:
        lyr.visible = True
or lyr in arcpy.mapping.ListLayers(mxd):
    if lyr.name == trail4:
        lyr.visible = True
or lyr in arcpy.mapping.ListLayers(mxd):
    if lyr.name == trail5:
        lyr.visible = True

Assign User Generated Plan name onto Map Index Page
ptext = arcpy.mapping.ListLayoutElements(mxd, "TEXT_ELEMENT", "txtUGSignPlanName")[0]
ptext.text = planName
xd.saveACopy(tempWorkspace + "\Signs_MapSeriesPages2.mxd")
el mxd, lyr, sptext

Create a copy of the Estimates excel file, and then perform a spatial joins to assign the sign cost from the excel sheet to the associ
utTable = "Estimates"
rcpy.ExcelToTable_conversion(spFiles + "\\CostEstimates\\tbl_RoadSignCostEstimates.xlsx", workspace + '\\' + outTable, "Cost_Estimates
rcpy.AddField_management(workspace + '\Temp_Signs.shp', 'Cost_Join', 'TEXT', '#', '#', '#', '#', 'NULLABLE', 'NON_REQUIRED', '#')
rcpy.CalculateField_management(workspace + '\Temp_Signs.shp', 'Cost_Join', '!SIGNTYPE! + !REFLECT!', 'PYTHON_9.3', '#')
rcpy.AddField_management(workspace + '\Estimates', 'Cost_Join', 'TEXT', '#', '#', '#', '#', 'NULLABLE', 'NON_REQUIRED', '#')
rcpy.CalculateField_management(workspace + '\Estimates', 'Cost_Join', '!SIGN_TYPE! + !REFLECTIVI!', 'PYTHON_9.3', '#')
rcpy.JoinField_management(workspace + '\Temp_Signs.shp', 'Cost_Join', workspace + '\Estimates', 'Cost_Join', '#')
```

Over 1000 lines of code!

The Sign Plan Report Tool



The Sign Plan Report Tool

Works off pre-made templates

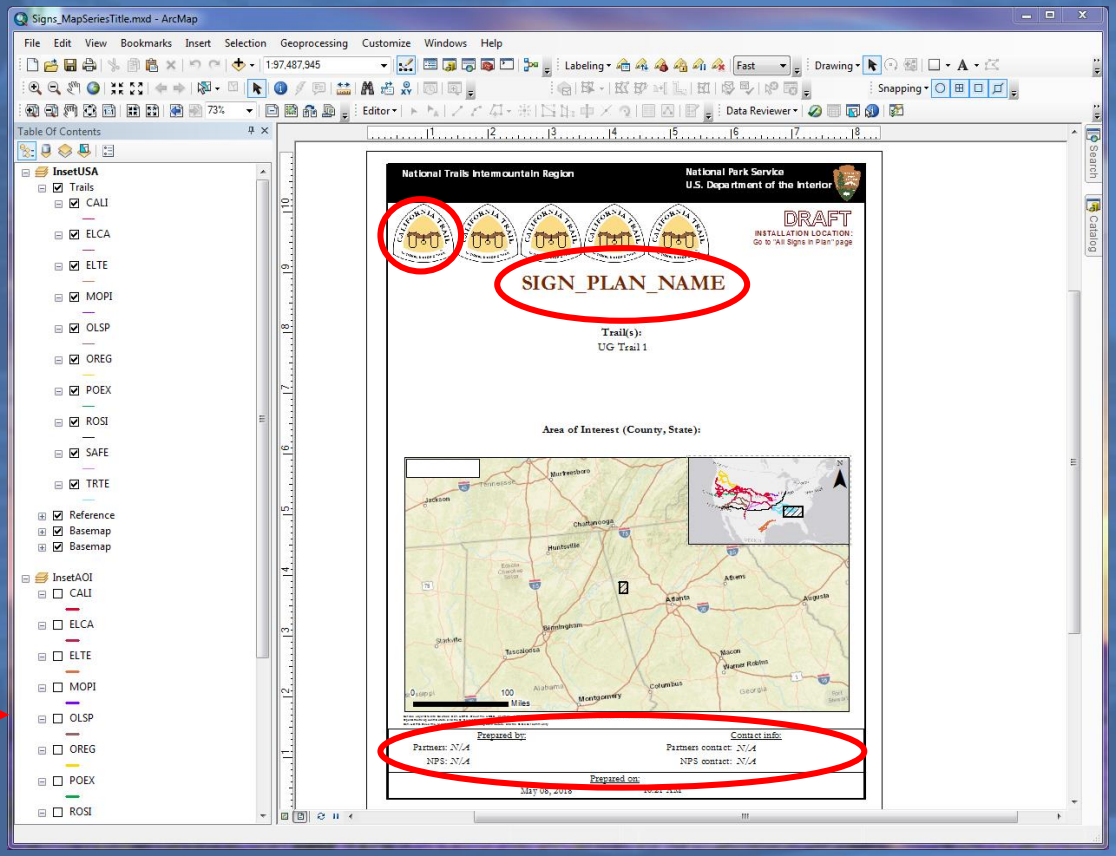
- tbl_PedSignCostEstimates.xlsx
- tbl_RoadSignCostEstimates.xlsx
- template_tbl_PedSignCostEstimates.xlsx

	A	B	C	D	E	F	G
1	SIGN_TYPE	REFLECTIVITY	COST_ESTIMATE				
2	Auto_Tour_Route	Engineer Grade	98.00				
3	Auto_Tour_Route_Left_Arrow	Engineer Grade	113.00				
4	Auto_Tour_Route_Right_Arrow	Engineer Grade	113.00				
5	Auto_Tour_Route_Straight_Arrow	Engineer Grade	113.00				
6	Auto_Tour_Route_Arrow_Left_And_Right	Engineer Grade	113.00				
7	Crossing	Engineer Grade	98.00				
8	Historic_Site_Name_Left_Arrow	Engineer Grade	125.00				
9	Historic_Site_Name_Right_Arrow	Engineer Grade	125.00				
10	Historic_Site_Name_Straight_Arrow	Engineer Grade	125.00				
11	Local_Tour_Route	Engineer Grade	98.00				
12	Local_Tour_Route_Left_Arrow	Engineer Grade	113.00				
13	Local_Tour_Route_Right_Arrow	Engineer Grade	113.00				
14	Local_Tour_Route_Straight_Arrow	Engineer Grade	113.00				
15	Local_Tour_Route_Arrow_Left_And_Right	Engineer Grade	113.00				
16	Historic_Route	Engineer Grade	98.00				
17	Historic_Route_Begin	Engineer Grade	117.00				
18	Historic_Route_End	Engineer Grade	117.00				
19	Historic_Route_Segment_Ends	Engineer Grade	123.00				
20	Site_Identification_Entrance	Engineer Grade	193.00				
21	To_Historic_Route_Left_Arrow	Engineer Grade	113.00				
22	To_Historic_Route_Right_Arrow	Engineer Grade	113.00				
23	To_Historic_Route_Straight_Arrow	Engineer Grade	113.00				
24	To_Original_Route_Arrow_Left_And_Right	Engineer Grade	113.00				
25	Historic_Site_Name	Engineer Grade	110.00				
26	Historic_Route_Next_X_Miles	Engineer Grade	123.00				
27	Auto_Tour_Route	High-Intensity	98.00				
28	Auto_Tour_Route_Left_Arrow	High-Intensity	113.00				
29	Auto_Tour_Route_Right_Arrow	High-Intensity	113.00				

The Sign Plan Report Tool

Works off pre-made templates

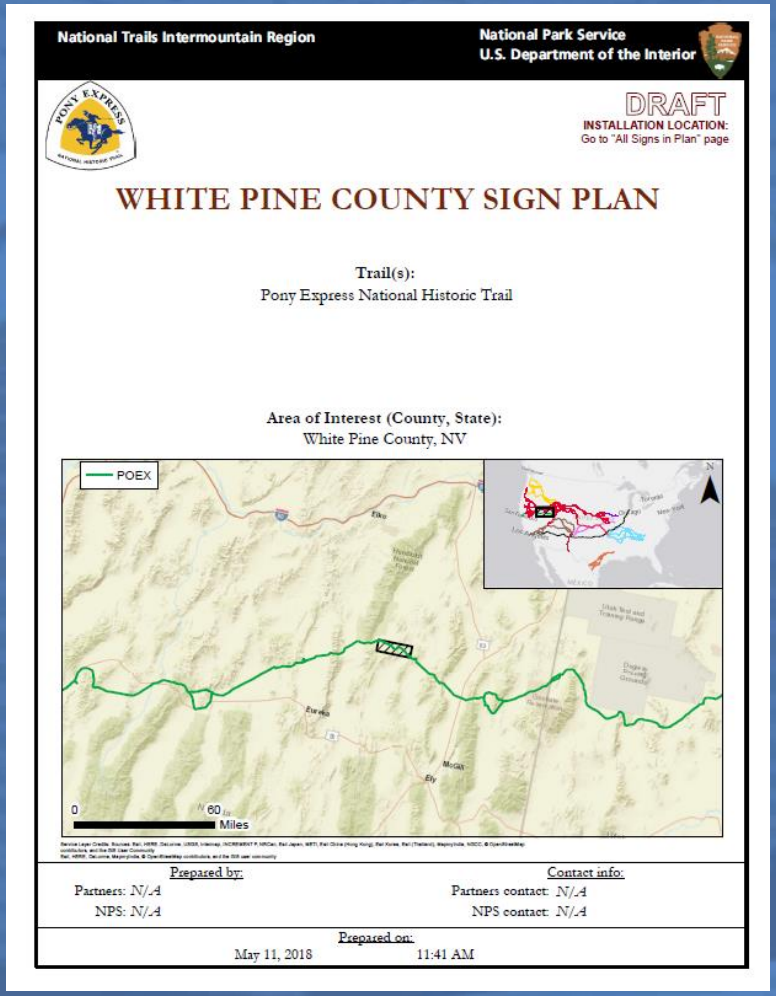
- Logos
- maps_10_2
- SignPlanTemplates
- TSSS_PDFs
- SignReportCostCounty.rlf
- SignReportCostRoadJur.rlf
- SignReportCostSum1.rlf
- SignReportCostSum2.rlf
- SignReportSignSum.rlf
- SignReportStatusSum.rlf
- SignReportSumCounty.rlf
- SignReportSumRoadJur.rlf
- Signs_MapSeriesIndex.mxd
- Signs_MapSeriesOverview.mxd
- Signs_MapSeriesPages.mxd
- Signs_MapSeriesTitle.mxd
- Signs_MapSeriesTOC.mxd



The Sign Plan Report

Sign Plan Report

- Title Page
- Table of Contents
- Overview Map
- Map Sheet Reference Index
- Map series
- Reports
  - Sign Summary
  - County/State Sign Summary
  - Road Jurisdiction Sign Summary
  - Cost Estimate Summary
  - County/State Cost Summary
  - Road Jurisdiction Cost Summary
  - Sign Status Cost Summary
- Sign Plan Specification Sheets


National Trails Intermountain Region

National Park Service
U.S. Department of the Interior

DRAFT
INSTALLATION LOCATION:
Go to "All Signs in Plan" page

WHITE PINE COUNTY SIGN PLAN

Trail(s):
Pony Express National Historic Trail

Area of Interest (County, State):
White Pine County, NV

POEX

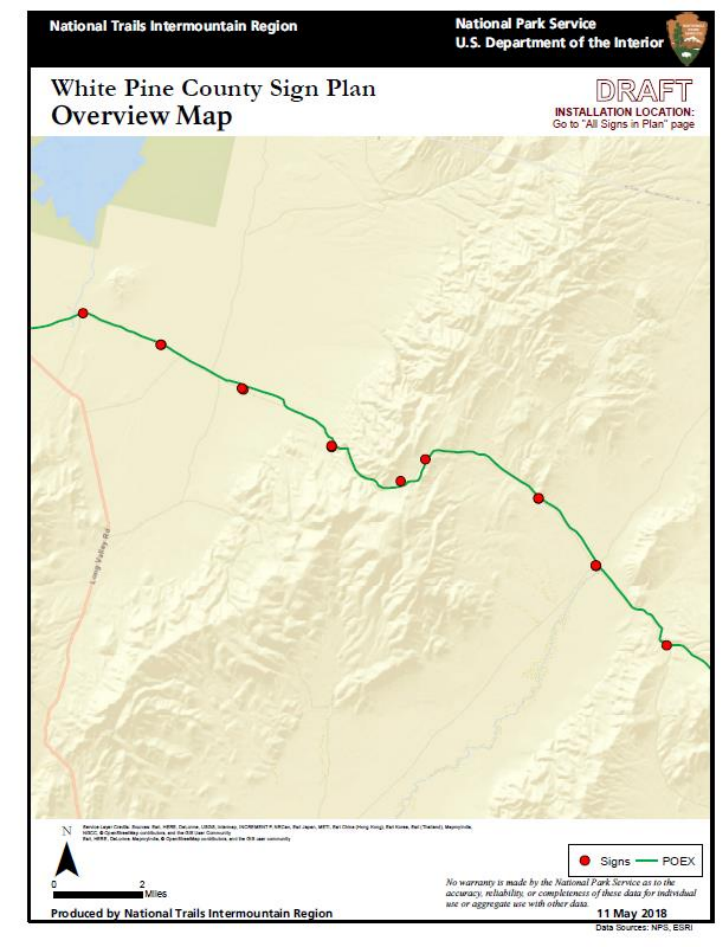
0 60 Miles

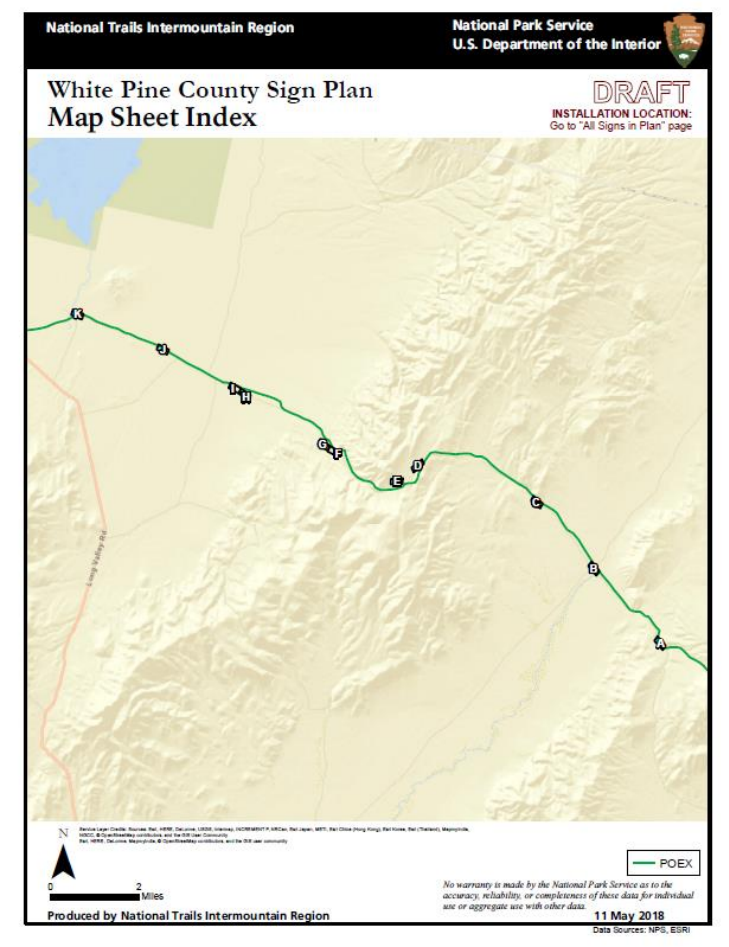
Prepared by:
Partners: N/A
NPS: N/A

Contact info:
Partners contact: N/A
NPS contact: N/A

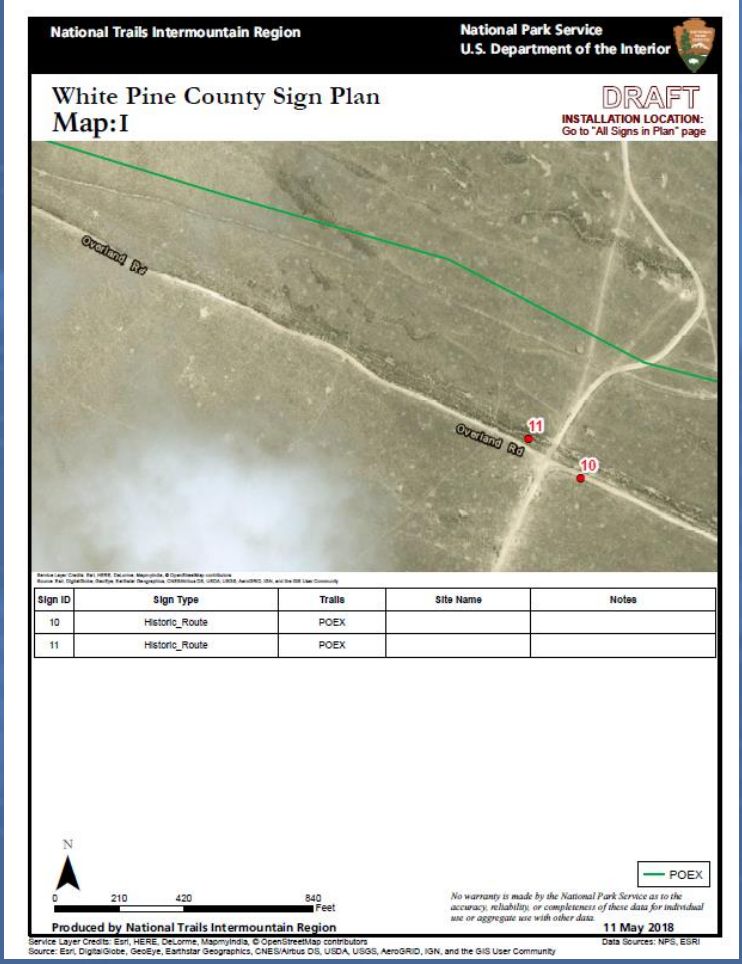
Prepared on:
May 11, 2018 11:41 AM

The Sign Plan Report





The Sign Plan Report



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White Pine County Sign Plan
Map:I

DRAFT

INSTALLATION LOCATION:
Go to "All Signs in Plan" page

Sign ID	Sign Type	Trails	Site Name	Notes
10	Historic_Route	POEX		
11	Historic_Route	POEX		

N

0 210 420 840 Feet

POEX

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Produced by National Trails Intermountain Region

11 May 2018

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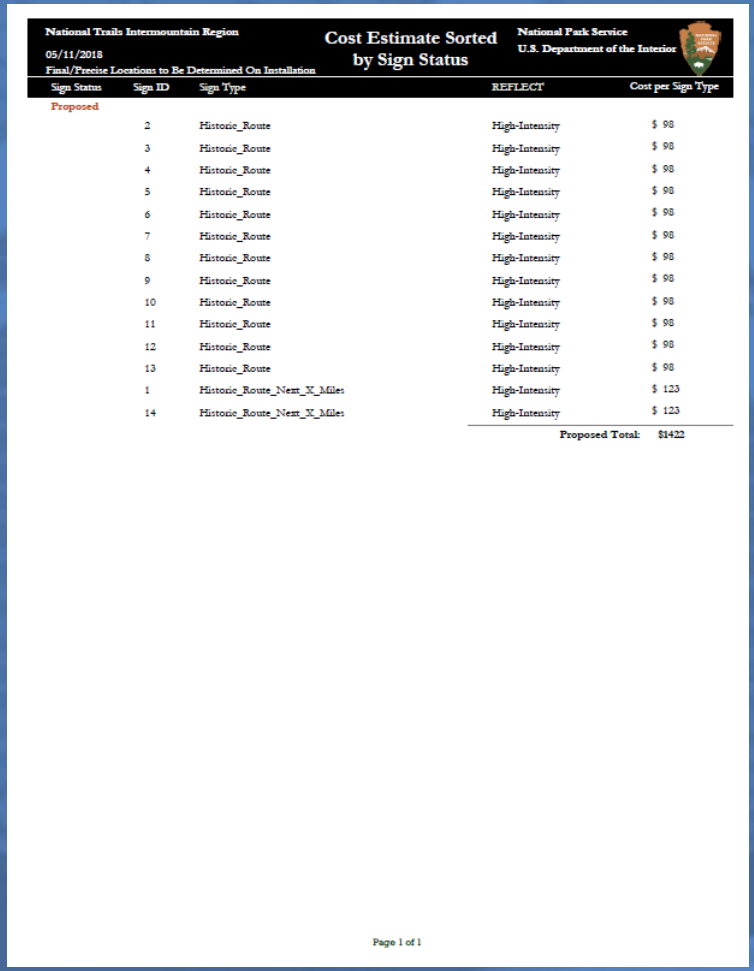
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Data Sources: NPS, ESRI



National Trails Intermountain Region
05/11/2018
Final/Precise Locations to Be Determined On Installation

Cost Estimate Sorted by Sign Status

National Park Service
U.S. Department of the Interior

Sign Status	Sign ID	Sign Type	REFLECT	Cost per Sign Type
Proposed				
	2	Historic_Route	High-Intensity	$ 98
	3	Historic_Route	High-Intensity	$ 98
	4	Historic_Route	High-Intensity	$ 98
	5	Historic_Route	High-Intensity	$ 98
	6	Historic_Route	High-Intensity	$ 98
	7	Historic_Route	High-Intensity	$ 98
	8	Historic_Route	High-Intensity	$ 98
	9	Historic_Route	High-Intensity	$ 98
	10	Historic_Route	High-Intensity	$ 98
	11	Historic_Route	High-Intensity	$ 98
	12	Historic_Route	High-Intensity	$ 98
	13	Historic_Route	High-Intensity	$ 98
	1	Historic_Route_Next_X_Miles	High-Intensity	$ 123
	14	Historic_Route_Next_X_Miles	High-Intensity	$ 123
			Proposed Total:	$1422

Page 1 of 1

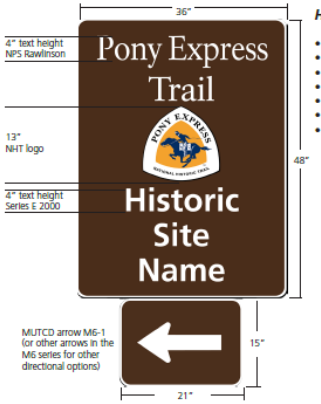
The Sign Plan Report

Pony Express National Historic Trail sign standards

General sign specifications

- Anodized aluminum backing, with engineering or high intensity grade reflective sheeting per road jurisdiction standards
- White text and border on a brown background
- Minimum 4" text height on all signs, fonts NPS Rawlinson (serif) and Series E 2000 (sans-serif)
- Holes pre-drilled per installer instructions or drilled on site by installer
- All signs typically manufactured by Utah Correctional Industries Sign Shop, although a local vendor may be selected under certain circumstances

Individual sign types All images are not to scale

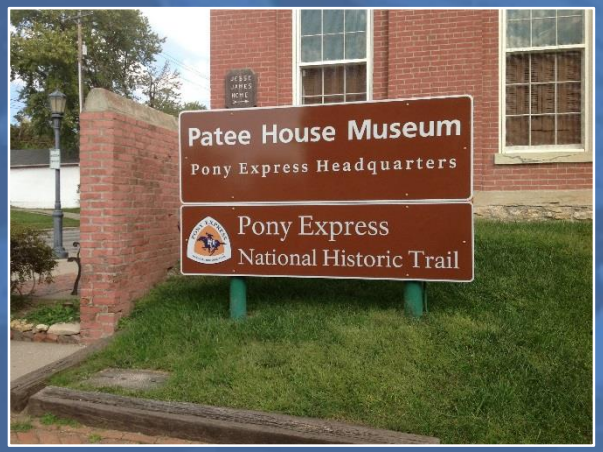


Historic Site Name standard directional signs

- 36" width x 48" height main panel
- 1" white border on main panel
- 21" width"x 15" height MUTCD arrows
- 4" text height
- 13.5" NHT logo
- 2 post mount typical
- Site name may include 1, 2 or 3 lines of text

Pony Express Historic Trail standard signs based on this model:

Sign Installation



The Future of the Sign Plan

- **Test compatibility w/ ArcGIS Pro**
  - **No report functionality on Pro**
- **Possibly find new python package**
  - **“Arcrest” is no longer being serviced**
  - **Move to ArcGIS API for python?**
- **Create an 11x17 inches parameter on tool window**

Thank You. . .

Contact Information:
Sarah Rivera
GIS Specialist
Sarah_Rivera@nps.gov

Partner resource:
https://www.nps.gov/orgs/1453/how-to-create-your-sign-plan.htm

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