



Memo

Date: Monday, December 23, 2019

Project: Uinta Basin Railway

To: Seven County Infrastructure Coalition,

Josh Wayland, Surface Transportation Board, Office of Environmental Analysis

From: Glen Krogman, HDR

Subject: Bridge and Culvert Drainage Crossing Summary

This memorandum responds to the information request in the STB November 11, 2019 letter for hydrological and hydraulic model results, including identification of surface water crossing locations specific for each alternative and type of structure (bridge or culvert) to be built.

Stream Crossing Identification Analysis

HDR used an automated GIS process, based on USGS topography, to identify the stream and drainage crossings. These crossings are generated by the intersection of flowlines and three (Indian Canyon, Whitmore Park, and Wells Draw) project route alignments. The flowlines have a lower contributing drainage area limit of 60 acres and were developed from flow raster grids. The stream crossing points generated from the automated process were reviewed to eliminate multiple crossing points of meandering flowlines, add additional crossing points not generated from the automated process, and make adjustments to drainage area grouping. Drainage areas were not delineated during this process. The estimated contributing area was generated by determining the number of flow raster grids assigned to the stream crossing point. This analysis is sufficient to preliminarily identify the large and mid-sized stream crossings. It is recognized that with the lower drainage area cutoff limit set at 60 acres there are many stream crossing points not in the point file or on the crossing lists and to account for these smaller areas potentially requiring smaller culverts two culverts were assumed per mile. A bridge and culvert drainage spreadsheet is attached for each alignment that includes an object ID, lat/long, drainage area grouping, and stream name. The spreadsheet identifies whether the drainage crossing is on the bridge list, culvert sizes, channel change locations, irrigation canal and FEMA zone crossings.

[Preliminary Hydrologic Analysis Methodology](#)

The crossing points were sorted into the following drainage area categories:

- o 0 to 60 acres
- o 60 acres to 0.5 square mile
- o 0.5 to 1 square mile
- o 1 to 4 square miles
- o greater than 4 square miles



Based on past experience that a bridge or multiple barrel box culvert is required when the 100-year flow is 1000 cfs or greater. The USGS regression equations (reference: <https://pubs.usgs.gov/sir/2007/5158/>) were used to determine the approximate drainage area resulting in a 100-year peak flow of 1000 cfs.

The proposed alignments cross different USGS regression equation zones, and drainage areas resulting in 1000 cfs are different as the equations change for each zone. Review of the regression equation results determined drainage areas over four square miles are a conservative break point between a box culvert and bridge. Through a similar process, delineated drainage areas of 60 acres to 0.5 square mile were associated with a 48 inch culvert, 0.5 to 1 square mile drainage areas were associated with a 72 inch culvert, and 1 to 4 square mile drainage areas were associated with an 8x8 box culvert.

For the estimated drainage areas below 60 acres that were not specifically identified, two 36 inch culverts were assumed per mile.

Indian Canyon

The Indian Canyon alignment has an estimated 352 bridge and culvert drainage crossings as follows:

Drainage Area	Stream Crossings	Estimated Structure Size
Less than 60 acres	160 ¹	36 inch CMP
60 acres to 0.5 square mile	110	48 inch CMP
0.5 to 1 square mile	14	72 inch CMP
1. to 4 square miles	30	8x8 box culvert
greater than 4 square miles	35	Bridge or culvert
Irrigation Ditches	3	
Total Crossings	352	

1. Estimation based on 2 culverts per route mile

This analysis estimates that there are 35 bridge drainage crossings with a contributing area greater than 4 sq.mi. However, the bridge list submitted under request of information #3 has less than 35 hydraulic bridges, because many of these crossings will be multiple box culverts. The current bridge and culvert for drainage crossings list identifies 15 bridges and 5 road/drainage combination bridges.

It is noted that while the analysis is based on estimated peak flows from contributing drainage areas, terrain along the route is steep and sparsely vegetated which will result in a high sediment and or debris load. While the estimated design flows are below 1000 cfs, indicating box culverts may be appropriate to convey the peak flow for nearly all of the stream crossings, final design will need to account for potential debris and sediment loads which may warrant bridge structures to reduce maintenance activities.



Whitmore Park

The Whitmore Park alignment has an estimated 415 bridge and culvert crossings as follows:

Drainage Area	Base Route Stream Crossings	Estimated Structure Size
Less than 60 acres	180 ¹	36 inch CMP
60 acres to 0.5 sq.mi.	143	48 inch CMP
0.5 sq.mi. to 1 sq.mi.	21	72 inch CMP
1 sq.mi. to 4 sq.mi.	31	8x8 box culvert
greater than 4 sq.mi.	37	Bridge or culvert
Irrigation Ditches	3	
Total Estimated Crossings	415	

1. Estimation based on 2 culverts per route mile

Whitmore Park alignment generally follows the Indian Canyon alignment except for the divergence along Emma Park Road from Indian Canyon alignment milepost 8.5 to 17.4 and then again from milepost 48.1 to 55.1.

This analysis estimates that there are 37 bridge drainage crossings with a contributing area greater than 4 sq.mi. However, the bridge list submitted under request of information #3 does not have 37 hydraulic bridges, because many of these crossings will be multiple box culverts.

The Whitmore Park rail alignment follows Indian Canyon Creek and has the same channel realignment and sediment and debris load considerations as the Indian Canyon alignment.

Wells Draw

The Wells Draw alignment has an estimated 397 bridge and culvert drainage crossings as follows:

Drainage Area	Base Route Stream Crossings	Estimated Structure Size
Less than 60 acres	204 ¹	36 inch CMP
60 acres to 0.5 sq.mi.	105	48 inch CMP
0.5 sq.mi. to 1 sq.mi.	36	72 inch CMP
1 sq.mi. to 4 sq.mi.	29	8x8 box culvert
greater than 4 sq.mi.	19	Bridge or culvert
Irrigation Ditches	4	
Total Crossings	397	

1. Estimation based on 2 culverts per route mile



This analysis estimates that there are 19 bridge drainage crossings with a contributing area greater than 4 sq.mi. However, the bridge list submitted under request of information #3 does not have 19 hydraulic bridges, because many of these crossings will be multiple box culverts.

There are many drainage areas less than 60 acres located from mileposts 23 to 40 and mileposts 52 to 67. The estimated two culverts per mile account for the stream crossings in this area.

Stream Channel Changes

In order to meet grade criteria for rail operations, the project alignments follow valleys resulting in a rail alignment parallel to stream channels. While the rail alignment attempts to avoid impacting stream channels, it is not always possible due to the terrain, grade criteria and other infrastructure. In situations where avoiding filling the channel is not possible the channel location has to be changed, either relocated and/or realigned. Fourteen channel changes areas were identified along the Indian Canyon alignment. Whitmore Park alignment will have the same number channel changes. Wells Draw has two channel change locations. These locations are identifies in bridge and culvert drainage crossing spreadsheet.

FEMA Floodplain Crossings

Stream names, identified in the bridge and culvert drainage crossing spreadsheet were based on topo mapping. HDR conducted a preliminary review of alignments that may cross mapped FEMA zones. This review was based on FEMA digital Flood Insurance Rate Maps (FIRM) available online. FEMA mapping is not available for the portion of Utah County that the alignments cross nor is it available for Duchesne County, UT.

The Indian Canyon and Whitmore Park alignments do not cross mapped FEMA zones in Uintah County, however the Wells Draw alignment crosses a mapped FEMA Zone A at milepost 92 in Uintah County. The Whitmore Park alignment crosses seven mapped FEMA A Zones in Carbon County at the following mileposts: 13.0, 14.0, 14.4, 16.8, 17.8, 18.1, and 19.0.

Irrigation Canal Crossings

HDR conducted a preliminary review of Irrigation infrastructure based on the Utah Division of Water Rights online interactive GIS website (<https://maps.waterrights.utah.gov/EsriMap/map.asp?layersToAdd=canals>) and USGS topographic maps. All three alignments cross irrigation canals. These crossings are listed below and identified on the bridge and culvert drainage crossings spreadsheets.

Indian Canyon and Whitmore Park

1. Milepost 66.8 - Vernal Canal
2. Milepost 67.8 - Vernal Canal
3. Milepost 71.6 - Vernal Canal

**Wells Draw**

1. Milepost 81.7 – Upper Pleasant Valley Canal
2. Milepost 82.5 – Lower Pleasant Valley Canal
3. Milepost 89.2 – Myton Townsite Canal
4. Milepost 89.9 – Myton Townsite Canal

It is noted that many of the surface water streams have numerous water right diversion points, as permitted by the Utah Division of Water Rights. During final design, rail alignment stream crossings and stream changes (relocations or realignments) will need to consider these existing points of diversion to avoid potential conflicts.

Indian Canyon Route

Note: cells with <Null> identify points not generated by the automated process so rastervalues are not available.

Drainage Area Grouping

OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_	Stream Name	Bridge and Channel Change List	FEMA Crossing
1	Point	1	96464	23623	0.227962	40.16893	-109.933	X						
2	Point	2	96309	252935	2.440823	40.16686	-109.911			X				
3	Point	3	96637	46499	0.448715	40.16652	-109.943	X						
4	Point	4	96583	12763	0.123163	40.16489	-109.949	X						
5	Point	5	97338	29911	0.288641	40.16392	-109.952	X						
8	Point	8	98438	26885	0.25944	40.15603	-109.966	X						
9	Point	9	98548	31481	0.303792	40.15509	-110.017	X						
12	Point	12	98548	33582	0.324066	40.15493	-110.014	X						
13	Point	13	98162	10770	0.10393	40.15503	-110.035	X						
14	Point	14	98393	32119	0.309948	40.15476	-110.01	X						
15	Point	15	98448	16294	0.157237	40.15433	-109.97	X						
16	Point	16	98214	23785	0.229525	40.15344	-109.891	X						
18	Point	18	98531	30515	0.29447	40.15177	-109.882	X						
24	Point	24	98948	21589	0.208334	40.15236	-109.976	X						
25	Point	25	98410	231137	2.230472	40.15241	-109.989			X				
26	Point	26	98862	12933	0.124803	40.15068	-110.076	X						
27	Point	27	99471	24234	0.233858	40.14582	-110.094				X		road and drainage bridge	
28	Point	28	101382	406217	3.919994	40.13118	-110.167			X				
29	Point	29	101410	29375	0.283469	40.13079	-110.373	X					road and drainage bridge	
30	Point	30	102125	85377	0.823888	40.12976	-110.38		X					
31	Point	31	102858	20982	0.202476	40.12949	-110.427			x				
32	Point	32	103287	28390	0.273964	40.12936	-110.42			x				
33	Point	33	102470	157226	1.517231	40.12832	-110.4			X				
34	Point	34	103273	991976	9.572568	40.12796	-110.359				X		bridge	
35	Point	35	102516	36507	0.352293	40.12772	-110.34	X						
36	Point	36	101964	13522	0.130487	40.1279	-110.417	X						
37	Point	37	102059	10901	0.105195	40.12703	-110.334	X						
38	Point	38	103428	28610	0.276087	40.12746	-110.433	X						
39	Point	39	102019	17122	0.165227	40.1272	-110.438	X						
41	Point	41	102219	8625724	83.23824	40.12682	-110.436				X	Indian Canyon Creek		
42	Point	42	103340	2228579	21.50579	40.12593	-110.321				X		bridge	
44	Point	44	102249	151653	1.463452	40.12563	-110.441			X				
45	Point	45	102319	8462206	81.66029	40.12493	-110.442				X	Indian Canyon Creek	bridge	
46	Point	46	102333	118213	1.140755	40.1242	-110.313			X				
47	Point	47	102598	11478	0.110763	40.12438	-110.443	X						
48	Point	48	103168	29096	0.280776	40.11989	-110.305	X						
49	Point	49	103300	69842	0.673975	40.12029	-110.447		X					
50	Point	50	103368	10058	0.09706	40.11761	-110.191				X			
51	Point	51	104071	14178	0.136818	40.11565	-110.298	X						
53	Point	53	105415	138325	1.334836	40.11359	-110.197			X				
54	Point	54	104629	56716	0.547309	40.1148	-110.452		X					
55	Point	55	104191	30334	0.292723	40.11331	-110.204	X						
56	Point	56	104575	8222899	79.35098	40.11345	-110.454				X		channel change 2335+00 to 2350+00, no Indian Creek crossing	
58	Point	58	105094	95172	0.91841	40.10931	-110.457		X					
60	Point	60	104826	8111765	78.27853	40.10875	-110.459				X	Indian Canyon Creek	bridge	
61	Point	61	104787	8021201	77.40459	40.10868	-110.462				X		channel change 2304+00 to 2309+00, no Indian Creek crossing	
63	Point	63	104771	20469	0.197526	40.10854	-110.463	X						

Indian Canyon Route

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Drainage Area Grouping

OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_	Stream Name	Bridge and Channel Change List	FEMA Crossing
66	Point	66	104971	7996732	77.16846	40.10748	-110.466				X		channel change 2094+00 to 2300+00, no Indian Creek crossing	
67	Point	67	105153	7960161	76.81555	40.10697	-110.467				X		channel change 2094+00 to 2300+00, no Indian Creek crossing	
68	Point	68	105153	7960121	76.81517	40.10678	-110.467				X		channel change 2094+00 to 2300+00, no Indian Creek crossing	
69	Point	69	105381	119234	1.150608	40.1056	-110.282			X				
70	Point	70	105318	212303	2.048724	40.10475	-110.223			X			road and drainage bridge	
71	Point	71	105496	7701772	74.3221	40.10468	-110.468				X	Indian Canyon Creek	bridge	
72	Point	72	106098	349455	3.372241	40.1026	-110.28			X				
73	Point	73	106079	19117	0.184479	40.10165	-110.241	X						
74	Point	74	105917	12817	0.123684	40.10168	-110.276	X						
75	Point	75	107089	71215	0.687225	40.10138	-110.237		X					
76	Point	76	105938	17568400	169.5351	40.10133	-110.251				X	Antelope Creek	bridge	
77	Point	77	105834	12432	0.119969	40.10128	-110.25	X				irrigation ditch		
82	Point	82	108943	25083	0.242051	40.08527	-110.495	X						
83	Point	83	109555	7105619	68.56922	40.07996	-110.499				X	Indian Canyon Creek	bridge and channel change 2128+00 to 2146+00	
86	Point	86	110684	12245	0.118164	40.07231	-110.512	X						
87	Point	87	111021	6972273	67.28243	40.0709	-110.512				X	Indian Canyon Creek	bridge	
88	Point	88	112540	111332	1.074354	40.06884	-110.511			X				
89	Point	89	113053	18774	0.181169	40.06447	-110.515	X						
90	Point	90	114471	216288	2.087179	40.05753	-110.521			X				
93	Point	93	117042	59636	0.575487	40.04794	-110.528		X					
94	Point	94	117257	231308	2.232122	40.04241	-110.536			X				
101	Point	101	118518	24818	0.239494	40.03247	-110.541	X						
102	Point	102	117971	3254498	31.4059	40.03033	-110.544				X	Indian Canyon Creek	channel change and crossing	
103	Point	103	117970	16443	0.158675	40.02997	-110.546	X						
104	Point	104	118597	22444	0.216585	40.02709	-110.551	X						
105	Point	105	119364	120312	1.161011	40.02165	-110.557			X				
106	Point	106	119480	3014503	29.08995	40.01958	-110.558				X	Indian Canyon Creek	bridge	
108	Point	108	120090	218906	2.112443	40.0182	-110.558			X			channel change 1797+00 to 1799+00, no Indian Creek crossing	
112	Point	112	122275	16573	0.15993	40.00378	-110.576	X					channel change 1754+00 to 1761+00, no Indian Creek crossing	
113	Point	113	122885	71564	0.690593	39.99913	-110.583		X				channel change 1724+00 to 1733+00, no Indian Creek crossing	
116	Point	116	125251	45066	0.434887	39.98774	-110.6	X						
118	Point	118	124797	12142	0.11717	39.98323	-110.607	X					channel change 1660+00 to 1664+00, no Indian Creek crossing	
119	Point	119	125269	2130443	20.55877	39.97677	-110.617				X	Indian Canyon Creek	bridge	
123	Point	123	125733	38037	0.367057	39.97565	-110.618	X						
124	Point	124	125733	37382	0.360736	39.97482	-110.62	X						
125	Point	125	125733	35011	0.337856	39.97337	-110.622	X						
126	Point	126	126182	23528	0.227045	39.97009	-110.632	X						
127	Point	127	127091	1490808	14.3863	39.96766	-110.633				X	Indian Canyon Creek		
128	Point	128	128917	11038	0.106517	39.95229	-110.65	X						
129	Point	129	130426	39664	0.382758	39.95071	-110.652	X						
130	Point	130	131467	33680	0.325012	39.94321	-110.66	X					channel change 1440+00 to 1445+00	
131	Point	131	130246	1180033	11.38732	39.94247	-110.661				X	Indian Canyon Creek		
132	Point	132	130559	23760	0.229284	39.94163	-110.663	X						
133	Point	133	131741	23483	0.226611	39.93291	-110.671	X						
134	Point	134	132093	25783	0.248806	39.93105	-110.673	X						
135	Point	135	132941	119921	1.157238	39.92691	-110.68			X				
136	Point	136	134389	612059	5.906369	39.92463	-110.681	X						

Indian Canyon Route

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Drainage Area Grouping

OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_	Stream Name	Bridge and Channel Change List	FEMA Crossing
137	Point	137	134389	610656	5.89283	39.92397	-110.682	X						
138	Point	138	134389	579282	5.590071	39.91735	-110.688				X	Indian Canyon Creek		
139	Point	139	134889	514811	4.967926	39.9141	-110.693				X	Indian Canyon Creek		
140	Point	140	134906	12642	0.121995	39.91303	-110.697	X						
141	Point	141	136623	35690	0.344409	39.91175	-110.688	X					tunnel	
142	Point	142	135683	421168	4.064271	39.90861	-110.703				X	Indian Canyon Creek		
143	Point	143	135791	22760	0.219634	39.90707	-110.707	X						
144	Point	144	135792	366866	3.540257	39.90702	-110.704			X				
145	Point	145	135792	366054	3.532421	39.90693	-110.705			X				
146	Point	146	136865	35107	0.338782	39.90641	-110.703	X						
147	Point	147	136436	299592	2.891063	39.90596	-110.709			X				
148	Point	148	136436	293795	2.835122	39.90559	-110.712			X				
149	Point	149	136865	30156	0.291005	39.90365	-110.703	X						
150	Point	150	136538	166296	1.604756	39.90318	-110.719			X				
155	Point	155	142631	37778	0.364558	39.86734	-110.74	X					tunnel	
156	Point	156	142718	88855	0.857451	39.86132	-110.744		X					
157	Point	157	144609	172111	1.660871	39.84797	-110.749			X			bridge	
158	Point	158	145071	702869	6.782686	39.84581	-110.766				X	Willow Creek		
159	Point	159	145414	758582	7.320316	39.84283	-110.774				X	Willow Creek		
160	Point	160	145379	11323	0.109267	39.84233	-110.755	X						
161	Point	161	145755	15712	0.151621	39.84169	-110.763	X						
162	Point	162	146505	23502	0.226794	39.83696	-110.782	X						
163	Point	163	145871	1181086	11.39748	39.83711	-110.957				X	Kyune Creek	bridge	
166	Point	166	149495	61651	0.594932	39.83632	-110.975		X					
167	Point	167	146355	27044690	260.9812	39.83622	-110.96				X	Price River	bridge	
168	Point	168	146260	18768	0.181111	39.83473	-110.972	X						
169	Point	169	146346	70214	0.677565	39.83416	-110.953		X					
171	Point	171	147223	2527542	24.39078	39.83302	-110.959				X	Beaver Creek	bridge	
172	Point	172	149124	2255549	21.76605	39.82791	-110.789				X	Willow Creek	bridge	
173	Point	173	147282	283959	2.740204	39.8319	-110.956				X			
174	Point	174	147271	28649330	276.466	39.82626	-110.95				X	Price River	bridge	
175	Point	175	147379	91961	0.887424	39.82561	-110.94		X					
177	Point	177	147860	154243	1.488445	39.82247	-110.933			X			road and drainage bridge	
179	Point	179	148297	22283	0.215031	39.82106	-110.921	X						
180	Point	180	148417	124214	1.198665	39.82087	-110.912			X			channel change and crossing	
181	Point	181	148419	313973	3.02984	39.82077	-110.907			X				
182	Point	182	148839	64294	0.620437	39.81852	-110.897		X					
183	Point	183	150095	50249	0.484903	39.81327	-110.811	X						
184	Point	184	149517	566926	5.470836	39.81122	-110.885				X		road and drainage bridge	
185	Point	185	150093	17145	0.165449	39.80917	-110.82	X						
186	Point	186	149918	227454	2.194931	39.80854	-110.874			X				
187	Point	187	150205	107727	1.039566	39.80737	-110.865			X				
190	Point	190	150206	17573	0.169579	39.80656	-110.861	X						
191	Point	191	150546	187134	1.805843	39.80368	-110.833			X				
361	Point	<Null>	<Null>	<Null>		4.5	40.12607	-110.323			X			
362	Point	<Null>	<Null>	<Null>	<Null>		40.10139	-110.255			X			
363	Point	<Null>	<Null>	<Null>		0.1	40.11602	-110.45	X					

Indian Canyon Route

Note: cells with <Null> identify points not generated by the automated process so rastervalues are not available.

Drainage Area Grouping

OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_	Stream Name	Bridge and Channel Change List	FEMA Crossing
366	Point	<Null>	<Null>	<Null>		0.1	40.11624	-110.45	X					
367	Point	<Null>	<Null>	<Null>		0.1	40.1065	-110.283	X					
368	Point	<Null>	<Null>	<Null>		0.2	40.10223	-110.269	X					
369	Point	<Null>	<Null>	<Null>		0.1	40.0903	-110.488	X					
370	Point	<Null>	<Null>	<Null>		0.1	40.09341	-110.485	X					
371	Point	<Null>	<Null>	<Null>		0.1	40.09529	-110.483	X					
372	Point	<Null>	<Null>	<Null>		0.1	40.09782	-110.479	X					
373	Point	<Null>	<Null>	<Null>		0.1	40.09952	-110.477	X					
374	Point	<Null>	<Null>	<Null>		0.1	40.10159	-110.474	X					
375	Point	<Null>	<Null>	<Null>		0.1	40.10316	-110.471	X					
376	Point	<Null>	<Null>	<Null>		0.1	40.06093	-110.518	X					
377	Point	<Null>	<Null>	<Null>		0.1	40.0515	-110.522	X					
378	Point	<Null>	<Null>	<Null>		0.1	40.04666	-110.529	X					
379	Point	<Null>	<Null>	<Null>		1	40.04446	-110.536	X					
380	Point	<Null>	<Null>	<Null>		0.1	40.03428	-110.539	X					
381	Point	<Null>	<Null>	<Null>		0.1	40.01418	-110.561	X					
382	Point	<Null>	<Null>	<Null>		0.1	40.01307	-110.562	X					
383	Point	<Null>	<Null>	<Null>		0.1	40.01203	-110.563	X					
384	Point	<Null>	<Null>	<Null>		0.1	40.01032	-110.566	X					
386	Point	<Null>	<Null>	<Null>		0.1	39.99416	-110.588	X					
387	Point	<Null>	<Null>	<Null>		0.1	39.99257	-110.59	X			channel change and crossing		
388	Point	<Null>	<Null>	<Null>		0.7	39.97841	-110.616	X					
389	Point	<Null>	<Null>	<Null>		0.1	39.96124	-110.637	X					
390	Point	<Null>	<Null>	<Null>		0.1	39.95923	-110.641	X					
391	Point	<Null>	<Null>	<Null>		0.2	39.95719	-110.645	X					
392	Point	<Null>	<Null>	<Null>		0.2	39.95538	-110.647	X					
393	Point	<Null>	<Null>	<Null>		0.2	39.94688	-110.656	X					
394	Point	<Null>	<Null>	<Null>		0.3	39.93932	-110.666	X					
395	Point	<Null>	<Null>	<Null>		0.1	39.92032	-110.686	X					
396	Point	<Null>	<Null>	<Null>		0.2	39.91833	-110.688	X					
397	Point	<Null>	<Null>	<Null>		0.1	39.85854	-110.746	X					
398	Point	<Null>	<Null>	<Null>		0.1	39.85455	-110.748	X					
399	Point	<Null>	<Null>	<Null>		0.1	39.85185	-110.748	X					
400	Point	<Null>	<Null>	<Null>		0.2	39.8186	-110.796	X					
401	Point	<Null>	<Null>	<Null>		0.2	39.81248	-110.813	X					
402	Point	<Null>	<Null>	<Null>		0.2	39.8154	-110.805	X					
403	Point	<Null>	<Null>	<Null>		0.2	39.81594	-110.802	X					
404	Point	<Null>	<Null>	<Null>		0.2	39.81745	-110.798	X					
405	Point	<Null>	<Null>	<Null>		0.2	39.81833	-110.797	X					
406	Point	<Null>	<Null>	<Null>		0.2	39.81964	-110.793	X					
407	Point	<Null>	<Null>	<Null>		0.1	39.82206	-110.79	X					
408	Point	<Null>	<Null>	<Null>		0.1	39.82402	-110.791	X					
409	Point	<Null>	<Null>	<Null>		0.2	39.82857	-110.944	X					
410	Point	<Null>	<Null>	<Null>		0.5	39.82144	-110.929	X					
411	Point	<Null>	<Null>	<Null>		0.2	39.82099	-110.914	X					
412	Point	<Null>	<Null>	<Null>		0.2	39.81586	-110.893	X					
413	Point	<Null>	<Null>	<Null>		0.2	39.83545	-110.973	X					

Indian Canyon Route

Note: cells with <Null> identify points not generated by the automated process so rastervalues are not available.

Drainage Area Grouping

OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_	Stream Name	Bridge and Channel Change List	FEMA Crossing
414	Point	<Null>	<Null>	<Null>	0.2	39.83514	-110.973	X						
416	Point	<Null>	<Null>	<Null>	<Null>	40.14972	-110.065				Irr	irrigation ditch		
417	Point	<Null>	<Null>	<Null>	<Null>	40.15275	-109.996				Irr	irrigation ditch		
415	Point	<Null>	<Null>	<Null>	<Null>	40.15291	-110.081				Irr	irrigation ditch		
							160	110	14	30	38			352

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Note: cells with <Null> identify points not generated by the automated process so rastervalues are not available.

Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
137	Point	137	149495	61651	0.594932	39.83632	-110.975		X					
193	Point	<Null>	<Null>	<Null>	0.2	39.83545	-110.973	X						
194	Point	<Null>	<Null>	<Null>	0.2	39.83514	-110.973	X						
139	Point	139	146260	18768	0.181111	39.83473	-110.972	X						
138	Point	138	146355	27044690	260.9812	39.83622	-110.96				X	Price River	bridge	
197	Point	<Null>	<Null>	<Null>	24.39078	39.83302	-110.959				X	Beaver Creek	bridge	
134	Point	134	145871	1181086	11.39748	39.83711	-110.957				X	Kyune Creek	bridge	
196	Point	<Null>	<Null>	<Null>	2.740204	39.8319	-110.956				X			
140	Point	140	146346	70214	0.677565	39.83416	-110.953	X						
145	Point	145	147271	28649330	276.466	39.82626	-110.95				X	Price River	bridge	
195	Point	<Null>	<Null>	<Null>	0.2	39.82857	-110.944	X						
146	Point	146	147379	91961	0.887424	39.82561	-110.94	X					road and drainage bridge and channel change	
148	Point	148	147860	154243	1.488445	39.82247	-110.933			X				
191	Point	<Null>	<Null>	<Null>	1	39.82144	-110.929	X						
150	Point	150	148297	22283	0.215031	39.82106	-110.921	X						
198	Point	<Null>	<Null>	<Null>	0.2	39.82099	-110.914	X						
151	Point	151	148417	124214	1.198665	39.82087	-110.912			X			crossing and channel change	
152	Point	152	148419	313973	3.02984	39.82077	-110.907			X				
153	Point	153	148839	64294	0.620437	39.81852	-110.897	X						
199	Point	<Null>	<Null>	<Null>	0.2	39.81586	-110.893	X						
155	Point	155	149517	566926	5.470836	39.81122	-110.885				X		road and drainage bridge	
157	Point	157	149918	227454	2.194931	39.80854	-110.874			X				
158	Point	158	150205	107727	1.039566	39.80737	-110.865			X				
162	Point	162	150206	17581	0.169657	39.80656	-110.861	X						
163	Point	163	150546	187134	1.805843	39.80368	-110.833			X				
156	Point	156	150093	17145	0.165449	39.80917	-110.82	X						
200	Point	<Null>	<Null>	<Null>	0.2	39.81248	-110.813	X						
154	Point	154	150095	50249	0.484903	39.81327	-110.811	X						
201	Point	<Null>	<Null>	<Null>	0.2	39.8154	-110.805	X						
202	Point	<Null>	<Null>	<Null>	0.2	39.81594	-110.802	X						
203	Point	<Null>	<Null>	<Null>	0.2	39.81745	-110.798	X						
204	Point	<Null>	<Null>	<Null>	0.2	39.81833	-110.797	X						
205	Point	<Null>	<Null>	<Null>	0.2	39.8186	-110.796	X						
206	Point	<Null>	<Null>	<Null>	0.2	39.81964	-110.793	X						
208	Point	<Null>	<Null>	<Null>	0.1	39.82402	-110.791	X						
207	Point	<Null>	<Null>	<Null>	0.1	39.82206	-110.79	X						
143	Point	143	149124	2255549	21.76605	39.82791	-110.789				X	Willow Creek	bridge	
133	Point	133	146505	23502	0.226794	39.83696	-110.782	X						
130	Point	130	145414	758489	7.319419	39.84283	-110.774				X	Willow Creek		
129	Point	129	145071	702869	6.782686	39.84581	-110.766				X	Willow Creek		
132	Point	132	145755	15712	0.151621	39.84169	-110.763	X						
131	Point	131	145379	11323	0.109267	39.84233	-110.755	X						
128	Point	128	144609	172111	1.660871	39.84797	-110.749			X			bridge	

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Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
209	Point	<Null>	<Null>	<Null>	0.1	39.85185	-110.748	X						
210	Point	<Null>	<Null>	<Null>	0.1	39.85455	-110.748	X						
211	Point	<Null>	<Null>	<Null>	0.1	39.85854	-110.746	X						
110	Point	110	142718	88855	0.857451	39.86132	-110.744		X					
105	Point	105	142631	40755	0.393286	39.86538	-110.741	X					tunnel	
82	Point	82	139574	16882	0.162911	39.88533	-110.682	X						
75	Point	75	139237	54490	0.525829	39.88699	-110.676		X					
73	Point	73	138799	56852	0.548622	39.88777	-110.671		X					
71	Point	71	138769	11505	0.111023	39.88841	-110.666	X						
70	Point	70	138884	14906	0.143843	39.88933	-110.659	X						
69	Point	69	138233	682298	6.584176	39.89128	-110.656				X			
67	Point	67	137923	14144	0.13649	39.89403	-110.653	X						
63	Point	63	137737	66776	0.644388	39.89722	-110.643		X					
64	Point	64	137981	13910	0.134232	39.89647	-110.627	X						
68	Point	68	138667	12358	0.119255	39.89325	-110.598	X						
78	Point	78	140756	11444	0.110435	39.88561	-110.556	X						
80	Point	80	140942	12860	0.124099	39.88507	-110.548	X						
76	Point	76	139936	13933	0.134453	39.88607	-110.519	X						
81	Point	81	139937	10692	0.103178	39.88493	-110.515	X						
89	Point	89	140496	72852	0.703022	39.87975	-110.494		X					
91	Point	91	142606	12255	0.118261	39.87702	-110.489	X						
87	Point	87	139688	14027	0.135361	39.88146	-110.478	X						
79	Point	79	139161	11814	0.114005	39.88485	-110.474	X						
77	Point	77	139162	35836	0.345817	39.88559	-110.472	X						
74	Point	74	139214	15338	0.148012	39.88646	-110.467	X						
72	Point	72	139599	47547	0.458828	39.88732	-110.462	X						
83	Point	83	139913	15540	0.149961	39.8834	-110.453	X						
100	Point	100	142845	13837	0.133527	39.86857	-110.45	X						
85	Point	85	139914	32431	0.312959	39.88184	-110.45	X						
97	Point	97	142846	14578	0.140678	39.87082	-110.441	X						
96	Point	96	142963	43419	0.418993	39.87167	-110.433	X						
99	Point	99	141423	37340	0.360331	39.86867	-110.423	X						
102	Point	102	141424	20422	0.197072	39.86811	-110.422	X						
114	Point	114	143274	13443	0.129725	39.85747	-110.416	X						
122	Point	122	144807	29850	0.288052	39.85423	-110.413	X						
115	Point	115	143275	10605	0.102338	39.85703	-110.413	X						
126	Point	126	144807	33058	0.31901	39.85119	-110.412	X						
125	Point	125	146992	77864	0.751388	39.85296	-110.402		X					
123	Point	123	144592	14941	0.144181	39.85399	-110.393	X						
118	Point	118	143893	123843	1.195085	39.85478	-110.384			X				
113	Point	113	143702	51925	0.501076	39.8575	-110.368		X					
117	Point	117	143703	13909	0.134222	39.85613	-110.365	X						
127	Point	127	145321	47836	0.461617	39.8481	-110.358	X						

Wells Draw

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Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
119	Point	119	143633	66919	0.645768	39.854	-110.344		X					
121	Point	121	143634	77161	0.744604	39.85389	-110.34		X					
120	Point	120	143724	26191	0.252743	39.85384	-110.325	X						
116	Point	116	143725	57223	0.552202	39.85607	-110.322		X					
112	Point	112	143005	81011	0.781756	39.8587	-110.316		X					
111	Point	111	143006	50869	0.490886	39.85928	-110.312	X						
124	Point	124	144933	23478	0.226563	39.85293	-110.304	X						
108	Point	108	142756	42599	0.41108	39.86007	-110.295	X						
109	Point	109	142757	87677	0.846083	39.85959	-110.293		X					
107	Point	107	142781	14996	0.144711	39.86097	-110.281	X						
106	Point	106	142222	53648	0.517703	39.86315	-110.279		X					
104	Point	104	142237	52404	0.505699	39.86369	-110.276		X					
98	Point	98	141712	19930	0.192325	39.86798	-110.261	X						
101	Point	101	141713	20626	0.199041	39.86737	-110.259	X						
94	Point	94	141265	20492	0.197748	39.87148	-110.252	X						
92	Point	92	140867	26613	0.256815	39.87234	-110.247	X						
95	Point	95	140871	39044	0.376775	39.87125	-110.245	X						
61	Point	61	136497	49885	0.48139	39.91249	-110.242	X					road and drainage bridge	
65	Point	65	137678	142892	1.378908	39.89431	-110.241			X				
66	Point	66	138321	29183	0.281616	39.89309	-110.24	X						
62	Point	62	136084	14321	0.138198	39.90452	-110.238	X						
56	Point	56	136497	55499	0.535565	39.91502	-110.235		X					
57	Point	57	134450	10608	0.102367	39.91459	-110.235	X					road and drainage bridge	
60	Point	60	134868	18232	0.175939	39.91326	-110.231	X						
103	Point	103	143709	20706	0.199813	39.86676	-110.23	X						
59	Point	59	135391	288658	2.78555	39.91335	-110.23			X			road and drainage bridge	
58	Point	58	134788	13312	0.128461	39.91413	-110.228	X						
55	Point	55	134407	15270	0.147356	39.9157	-110.226	X						
54	Point	54	132280	67474	0.651124	39.93429	-110.203		X					
53	Point	53	130624	11923	0.115057	39.93839	-110.201	X						
52	Point	52	128160	42313	0.40832	39.96279	-110.177	X						
184	Point	<Null>	<Null>	<Null>		1.2	39.96381	-110.172			X			
51	Point	51	126907	16535		1.5	39.96561	-110.165			X			
50	Point	50	128767	164716		7	39.96803	-110.158				X		
181	Point	<Null>	<Null>	<Null>		0.3	40.0429	-110.151	X					
49	Point	49	124716	14892	0.143708	39.9789	-110.149	X						
180	Point	<Null>	<Null>	<Null>		1	40.04163	-110.149			1			
182	Point	<Null>	<Null>	<Null>		0.5	40.00938	-110.146	X					
48	Point	48	115826	26510		3	40.04432	-110.142			X			
47	Point	47	114473	23817	0.229834	40.052	-110.139				X			
183	Point	<Null>	<Null>	<Null>		1	40.05922	-110.137			1			
28	Point	28	102000	125366	1.209782	40.12762	-110.129				X			
27	Point	27	101617	32226		3	40.12865	-110.129			X			

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Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
26	Point	26	101344	61690	6	40.12978	-110.129				X			
25	Point	25	100900	19734	0.190433	40.13183	-110.129			X				
46	Point	46	111954	24593	2.5	40.06353	-110.124			X				
17	Point	17	99595	21418	0.206684	40.14565	-110.12	X						
29	Point	29	103210	2144644	20.69581	40.11909	-110.112				X			
30	Point	30	103680	12336	0.119042	40.11761	-110.108	X						
16	Point	16	99326	21869	1	40.1468	-110.106		X					
15	Point	15	99471	10778	0.104008	40.14687	-110.103	X						
32	Point	32	103647	6376942	61.53749	40.11654	-110.103				X			
31	Point	31	104346	22171	0.21395	40.11657	-110.101	X						
45	Point	45	108597	10828	0.5	40.08151	-110.099		X					
44	Point	44	108258	37551	0.5	40.08471	-110.095		X					
43	Point	43	107646	23546	0.227219	40.0914	-110.091	X						
41	Point	41	106046	31301	0.302055	40.10295	-110.091	X						
42	Point	42	105762	24894	1	40.10178	-110.091		X					
179	Point	<Null>	<Null>	<Null>	0.5	40.08985	-110.088	X						
178	Point	<Null>	<Null>	<Null>	0.7	40.09319	-110.084		X					
40	Point	40	105023	13252	1	40.10478	-110.069		X					
185	Point	<Null>	<Null>	<Null>	0.2	40.10556	-110.068	X						
215	Point	<Null>	<Null>	<Null>	<Null>	40.11306	-110.036				Irr	irrigation ditch		
35	Point	35	104094	63871	4	40.11341	-110.033			X				
214	Point	<Null>	<Null>	<Null>	<Null>	40.11299	-110.022				Irr	irrigation ditch		
36	Point	36	104111	134885	1.30164	40.11298	-110.02			X				
37	Point	37	105320	46312	0.446911	40.11261	-110.01	X						
34	Point	34	103777	231335	2.232383	40.11528	-110			X				
33	Point	33	103448	231653	2.235451	40.11541	-109.999			X				
177	Point	<Null>	<Null>	<Null>	1	40.12096	-109.991		X					
176	Point	<Null>	<Null>	<Null>	1	40.12255	-109.991		X					
24	Point	24	100451	10695210	103.2087	40.13429	-109.983				X			
21	Point	21	100451	10695410	103.2107	40.13485	-109.983	X						
19	Point	19	100386	28371	0.27378	40.13625	-109.983	X						
18	Point	18	100556	18718	10	40.14217	-109.981				x			
12	Point	12	97744	268283	2.588931	40.15775	-109.976			X				
9	Point	9	97296	31297	0.302016	40.16015	-109.97	X						
8	Point	8	96975	29956	0.289075	40.16608	-109.969	X						
7	Point	7	95617	606362	5.851393	40.17301	-109.966				X			
213	Point	<Null>	<Null>	<Null>	<Null>	40.17681	-109.957				Irr	irrigation ditch		
4	Point	4	95617	624066	6.022237	40.17709	-109.957				X			
2	Point	2	95617	633680	6.115012	40.17792	-109.955				X			
3	Point	3	95888	116153	1.120876	40.17785	-109.947			X				
212	Point	<Null>	<Null>	<Null>	<Null>	40.17747	-109.945				Irr	irrigation ditch		
1	Point	1	95391	20451	0.197352	40.17807	-109.926	X						
5	Point	5	95608	34584	3	40.17585	-109.918			X				

Wells Draw

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Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
6	Point	6	95906	317785	3.066625	40.17303	-109.906			X			bridge	A
165	Point	<Null>	<Null>	<Null>		0.1	40.17267	-109.902	X					
167	Point	<Null>	<Null>	<Null>		0.2	40.1686	-109.896	X					
168	Point	<Null>	<Null>	<Null>		1.2	40.16805	-109.896		X				
166	Point	<Null>	<Null>	<Null>		0.3	40.16996	-109.896	X					
171	Point	<Null>	<Null>	<Null>		1.2	40.16323	-109.896		X				
169	Point	<Null>	<Null>	<Null>		0.5	40.16724	-109.896	X					
170	Point	<Null>	<Null>	<Null>		1	40.16484	-109.896	X					
172	Point	<Null>	<Null>	<Null>		0.8	40.16033	-109.895	X					
173	Point	<Null>	<Null>	<Null>		0.5	40.1576	-109.894	X					
13	Point	13	98214	23756		2	40.15344	-109.891		X				
174	Point	<Null>	<Null>	<Null>		0.4	40.15231	-109.887	X					
175	Point	<Null>	<Null>	<Null>		0.4	40.15227	-109.887	X					
14	Point	14	98531	30515	0.29447	40.15177	-109.882	X						
216	Point	<Null>	<Null>	<Null>		1	40.00077	-110.146	X					
217	Point	<Null>	<Null>	<Null>		0.7	40.06048	-110.132	X					
218	Point	<Null>	<Null>	<Null>		0.2	40.10775	-110.091	X					
219	Point	<Null>	<Null>	<Null>		0.2	40.11049	-110.091	X					
220	Point	<Null>	<Null>	<Null>		1	40.11185	-110.091	X					
221	Point	<Null>	<Null>	<Null>		0.2	40.11646	-110.094	X					
222	Point	<Null>	<Null>	<Null>		0.4	40.11658	-110.097	X					
Total								105	36	29	23			

Whitmore Park

Note: cells with <Null> identify points not generated by the automated process so rastervalues are not available.

Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
1	Point	1	96464	23623	0.227962	40.16893	-109.933	X						
2	Point	2	96309	252935	2.440823	40.16686	-109.911			X				
3	Point	3	96637	46499	0.448715	40.16669	-109.943	X						
4	Point	4	96583	12763	0.123163	40.16506	-109.949	X						
5	Point	5	97338	29911	0.288641	40.16392	-109.952	X						
8	Point	8	98438	26885	0.25944	40.15606	-109.966	X						
9	Point	9	98548	31481	0.303792	40.15509	-110.017	X						
12	Point	12	98548	33582	0.324066	40.15493	-110.014	X						
13	Point	13	98162	10770	0.10393	40.15502	-110.036	X						
14	Point	14	98393	32119	0.309948	40.15476	-110.01	X						
15	Point	15	98448	16294	0.157237	40.15427	-109.971	X						
16	Point	16	98214	23785	0.229525	40.15344	-109.891	X						
18	Point	18	98531	30515	0.29447	40.15177	-109.882	X						
24	Point	24	98948	21589	0.208334	40.15236	-109.976	X						
25	Point	25	98410	231137	2.230472	40.15238	-109.989			X				
26	Point	26	98862	12933	0.124803	40.15068	-110.076	X						
27	Point	27	99471	24234	0.233858	40.14582	-110.094	X						
28	Point	28	101382	406217	3.919994	40.13118	-110.167			X				
29	Point	29	102858	20982	0.202476	40.12949	-110.427	X						
30	Point	30	103287	28390	0.273964	40.12936	-110.42	X						
31	Point	31	102470	157226	1.517231	40.12832	-110.4			X				
32	Point	32	101964	13522	0.130487	40.1279	-110.417	X						
33	Point	33	103428	28610	0.276087	40.12746	-110.433	X						
34	Point	34	102019	17122	0.165227	40.1272	-110.438	X						
36	Point	36	102219	8625724	83.23824	40.12682	-110.436				X	Indian Canyon Creek		
37	Point	37	102125	78901	0.761395	40.12642	-110.384	X						
38	Point	38	102249	151653	1.463452	40.12563	-110.441			X				
39	Point	39	102319	8462206	81.66029	40.12493	-110.442				X	Indian Canyon Creek Bridge		
40	Point	40	102598	11478	0.110763	40.12438	-110.443	X						
41	Point	41	103300	69842	0.673975	40.12029	-110.447	X						
42	Point	42	103368	10058	0.09706	40.11761	-110.191	X						
43	Point	43	105415	138325	1.334836	40.11359	-110.197			X				
44	Point	44	104629	56716	0.547309	40.1148	-110.452	X						
45	Point	45	104191	30334	0.292723	40.11331	-110.204	X						
46	Point	46	104575	8222899	79.35098	40.11345	-110.454				X	channel change 2649+00 to 2749+00, no Indian Creek crossing		
47	Point	47	104575	8222732	79.34937	40.11331	-110.454				X			
48	Point	48	104642	832404	8.032699	40.11144	-110.38				X			
49	Point	49	105022	58591	0.565403	40.11058	-110.319	X						
50	Point	50	105094	95172	0.91841	40.10931	-110.457	X						
52	Point	52	104826	8111765	78.27853	40.10875	-110.459				X	Indian Canyon Creek Bridge		
53	Point	53	104787	8021201	77.40459	40.10868	-110.462				X	channel change 2624+00 to 2629+00, no Indian Creek crossing		
55	Point	55	104771	20469	0.197526	40.10854	-110.463	X						
58	Point	58	104971	7996732	77.16846	40.10748	-110.466				X	channel change 2610+00 to 2616+00, no Indian Creek crossing		

Whitmore Park

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Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
59	Point	59	105153	7960161	76.81555	40.10697	-110.467				X		channel change 2610+00 to 2616+00, no Indian Creek crossing	
60	Point	60	105153	7960121	76.81517	40.10678	-110.467				X		channel change 2610+00 to 2616+00, no Indian Creek crossing	
61	Point	61	105381	119679	1.154902	40.10536	-110.281			X				
62	Point	62	105318	212303	2.048724	40.10475	-110.223			X			road and drainage bridge	
63	Point	63	105974	17543	0.16929	40.1045	-110.334	X						
64	Point	64	105496	7701772	74.3221	40.10468	-110.468				X	Indian Canyon Cree	Bridge	
65	Point	65	106098	349612	3.373756	40.10278	-110.28			X				
66	Point	66	106079	19117	0.184479	40.10178	-110.24	X						
67	Point	67	105917	12817	0.123684	40.10168	-110.276	X						
68	Point	68	107089	71215	0.687225	40.10138	-110.237		X					
69	Point	69	105938	17568400	169.5351	40.10133	-110.251				X	Antelope Creek	Bridge	
70	Point	70	105834	12432	0.119969	40.10128	-110.25	X				Irrigation		
71	Point	71	106301	17934	0.173063	40.10069	-110.345	X						
72	Point	72	106154	14191	0.136943	40.10012	-110.361	X						
73	Point	73	106155	1922346	18.55064	40.09924	-110.353				X			
74	Point	74	106288	12539	0.121001	40.09919	-110.353	X						
79	Point	79	108943	25083	0.242051	40.08527	-110.495	X						
80	Point	80	109555	7105619	68.56922	40.07996	-110.499				X	Indian Canyon Cree	Bridge and channel change 2128+00 to 2146+00	
83	Point	83	110684	12245	0.118164	40.07231	-110.512	X						
84	Point	84	111021	6972273	67.28243	40.0709	-110.512				X	Indian Canyon Cree	Bridge and channel change	
85	Point	85	112540	111332	1.074354	40.06884	-110.511			X				
86	Point	86	113053	18774	0.181169	40.06447	-110.515	X						
87	Point	87	114471	216288	2.087179	40.05753	-110.521			X				
90	Point	90	117042	59636	0.575487	40.04794	-110.528		X					
91	Point	91	117257	231308	2.232122	40.04241	-110.536			X				
98	Point	98	118518	24818	0.239494	40.03247	-110.541	X						
99	Point	99	117971	3254498	31.4059	40.03033	-110.544				X			
100	Point	100	117970	16443	0.158675	40.02997	-110.546	X						
101	Point	101	118597	22444	0.216585	40.02709	-110.551	X						
102	Point	102	119364	120312	1.161011	40.02165	-110.557			X				
104	Point	104	119531	10068	29	40.01941	-110.558				X	Indian Canyon Cree	Bridge	
105	Point	105	120090	218906	2.112443	40.0182	-110.558			X				
109	Point	109	122275	16573	0.15993	40.00378	-110.576	X					channel change 2074+00 to 2081+00, no Indian Creek crossing	
110	Point	110	122885	71564	0.690593	39.99913	-110.583		X				channel change 2043+00 to 2052+00, no Indian Creek crossing	
113	Point	113	125251	45066	0.434887	39.98774	-110.6	X						
115	Point	115	124797	12142	0.11717	39.98323	-110.607	X					channel change 1979+00 to 1983+00, no Indian Creek crossing	
116	Point	116	125269	2130443	20.55877	39.97677	-110.617				X	Indian Canyon Cree	Bridge	
117	Point	117	125733	2130434	20.55869	39.97672	-110.617				X	Indian Canyon Cree		
118	Point	118	125733	38355	0.370126	39.97626	-110.618	X						
119	Point	119	125733	38256	0.36917	39.97607	-110.618	X						
120	Point	120	125733	38037	0.367057	39.97565	-110.618	X						
121	Point	121	125733	37382	0.360736	39.97482	-110.62	X						
122	Point	122	125733	35011	0.337856	39.97337	-110.622	X						

Whitmore Park

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Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
123	Point	123	126182	23528	0.227045	39.97009	-110.632	X						
124	Point	124	127091	1490808	14.3863	39.96766	-110.633				X	Indian Canyon Creek		
125	Point	125	128917	11038	0.106517	39.95229	-110.65	X						
126	Point	126	130426	39664	0.382758	39.95071	-110.652	X						
127	Point	127	131467	33680	0.325012	39.94321	-110.66	X				channel change 1759+00 to 1764+00		
128	Point	128	130246	1180033	11.38732	39.94247	-110.661				X	Indian Canyon Creek		
129	Point	129	130559	23760	0.229284	39.94163	-110.663	X						
130	Point	130	131741	23483	0.226611	39.93291	-110.671	X						
131	Point	131	132093	25783	0.248806	39.93105	-110.673	X						
132	Point	132	132941	119921	1.157238	39.92691	-110.68			X				
133	Point	133	134389	612059	5.906369	39.92463	-110.681				X			
134	Point	134	134389	610656	5.89283	39.92397	-110.682				X			
135	Point	135	134389	579282	5.590071	39.91735	-110.688				X	Indian Canyon Creek		
136	Point	136	134889	514811	4.967926	39.9141	-110.693				X	Indian Canyon Creek		
137	Point	137	134906	12642	0.121995	39.91303	-110.697	X						
138	Point	138	136623	35690	0.344409	39.91175	-110.688	X					tunnel	
139	Point	139	135683	421168	4.064271	39.90861	-110.703				X	Indian Canyon Creek		
140	Point	140	135791	22760	0.219634	39.90707	-110.707	X						
141	Point	141	135792	366866	3.540257	39.90702	-110.704			X		Indian Canyon Creek		
142	Point	142	135792	366054	3.532421	39.90693	-110.705			X			rail and hydraulic Bridge	
143	Point	143	136865	35107	0.338782	39.90641	-110.703	X						
144	Point	144	136436	299592	2.891063	39.90596	-110.709			X		Indian Canyon Creek		
145	Point	145	136436	293795	2.835122	39.90559	-110.712			X		Indian Canyon Creek		
146	Point	146	136865	30156	0.291005	39.90365	-110.703	X						
147	Point	147	136538	166296	1.604756	39.90318	-110.719			X				
153	Point	153	142718	88855	0.857451	39.86132	-110.744		X					
154	Point	154	144609	172111	1.660871	39.84797	-110.749			X				
155	Point	155	149495	61771	0.59609	39.83632	-110.974		X				tunnel	
156	Point	156	146345	1214640	11.72128	39.83622	-110.956				X	Kyune Creek	Bridge	
157	Point	157	146355	27047030	261.0038	39.83487	-110.959				X	Price River	Bridge	
159	Point	159	146260	18759	0.181024	39.83459	-110.972	X						
160	Point	160	147223	2527545	24.39081	39.83422	-110.97				X			
161	Point	161	146346	70214	0.677565	39.83416	-110.953		X					
162	Point	162	147381	29087	0.280689	39.83224	-110.739	X						
163	Point	163	147543	31268	0.301736	39.82778	-110.902	X						
164	Point	164	147741	13976	0.134868	39.82759	-110.899	X						
165	Point	165	147387	274408	2.648037	39.82725	-110.89			X				
166	Point	166	147282	283959	2.740204	39.82697	-110.952			X				
167	Point	167	147271	28649330	276.466	39.82626	-110.95				X	Price River	Bridge	
168	Point	168	147379	91968	0.887491	39.82556	-110.94		X					
169	Point	169	147541	19301	0.186255	39.82451	-110.907	X						
170	Point	170	147543	32566	0.314262	39.82442	-110.907	X						
171	Point	171	147741	23565	0.227402	39.82423	-110.905	X						

Whitmore Park

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Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
172	Point	172	148240	26936	0.259932	39.82416	-110.883	X						
173	Point	173	148419	309175	2.983539	39.82329	-110.902			X				
174	Point	174	147860	154247	1.488484	39.82243	-110.933			X				
175	Point	175	148009	40958	0.395245	39.82166	-110.912	X						
176	Point	176	148033	79174	0.764029	39.82152	-110.91		X					
177	Point	177	149206	82542	0.79653	39.82144	-110.872		X					
178	Point	178	148419	313210	3.022476	39.8211	-110.906			X				
179	Point	179	148297	22284	0.215041	39.82101	-110.921	X						
180	Point	180	150480	40131	0.387264	39.82046	-110.735	X						
181	Point	181	148708	12710	0.122651	39.81896	-110.867	X						
182	Point	182	149340	101828	0.98264	39.8161	-110.863		X					
183	Point	183	149587	313048	3.020913	39.81412	-110.721			X				
184	Point	184	149057	18700	0.180455	39.81432	-110.857	X						
185	Point	185	149059	45294	0.437087	39.81432	-110.856	X						
186	Point	186	149703	49976	0.482268	39.8117	-110.792	X						A
187	Point	187	149588	142901	1.378995	39.81154	-110.718			X				
188	Point	188	149587	319419	3.082393	39.81146	-110.722			X				A
189	Point	189	149588	154196	1.487991	39.81089	-110.72			X				
190	Point	190	149713	10360	0.099974	39.81017	-110.798	X						
191	Point	191	150480	88166	0.850802	39.80966	-110.732		X					
192	Point	192	149868	33924	0.327367	39.8092	-110.839	X						
193	Point	193	149867	17750	0.171288	39.80911	-110.84	X						
194	Point	194	150095	54792	0.528743	39.80855	-110.809		X					
195	Point	195	150093	21543	0.20789	39.80828	-110.817	X						
196	Point	196	150160	14411	0.139066	39.80788	-110.804	X						
197	Point	197	150366	11846	0.114314	39.80729	-110.843	X						
198	Point	198	150480	102151	0.985757	39.80708	-110.731		X					A
199	Point	199	150111	94640	0.913276	39.80714	-110.835		X					
200	Point	200	150470	498554	4.811046	39.80553	-110.728				X			A
201	Point	201	151203	2540760	24.51833	39.80349	-110.78				X	Willow Creek	Bridge	A
202	Point	202	150934	246612	2.379806	39.80255	-110.774			X				A
203	Point	203	150764	31948	0.308298	39.80244	-110.765	X						
204	Point	204	152231	617077	5.954793	39.79867	-110.73				X	Minnie Maud Cree	Bridge	A
205	Point	<Null>	<Null>	<Null>	<Null>	40.15291	-110.081				Irr	Irrigation		
206	Point	<Null>	<Null>	<Null>	<Null>	40.14972	-110.065				Irr	Irrigation		
207	Point	<Null>	<Null>	<Null>	<Null>	40.15275	-109.996				Irr	Irrigation		
208	Point	<Null>	<Null>	<Null>		0.1 39.85185	-110.748	X						
209	Point	<Null>	<Null>	<Null>		0.1 39.85455	-110.748	X						
210	Point	<Null>	<Null>	<Null>		0.1 39.85854	-110.746	X						
211	Point	155	142631	37778	0.364558	39.86734	-110.74	X						
212	Point	<Null>	<Null>	<Null>		0.1 39.92032	-110.686	X						
213	Point	<Null>	<Null>	<Null>		0.2 39.91833	-110.688	X						
214	Point	<Null>	<Null>	<Null>		0.3 39.93932	-110.666	X						

Whitmore Park

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Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
215	Point	<Null>	<Null>	<Null>	0.2	39.94688	-110.656	X						
216	Point	<Null>	<Null>	<Null>	0.1	39.96124	-110.637	X						
217	Point	<Null>	<Null>	<Null>	0.1	39.95923	-110.641	X						
218	Point	<Null>	<Null>	<Null>	0.2	39.95719	-110.645	X						
219	Point	<Null>	<Null>	<Null>	0.2	39.95538	-110.647	X						
220	Point	<Null>	<Null>	<Null>	0.7	39.97841	-110.616		X					
221	Point	<Null>	<Null>	<Null>	0.1	39.99416	-110.588	X						
222	Point	<Null>	<Null>	<Null>	0.1	39.99257	-110.59	X						
223	Point	<Null>	<Null>	<Null>	0.1	40.01418	-110.561	X						
224	Point	<Null>	<Null>	<Null>	0.1	40.01307	-110.562	X						
225	Point	<Null>	<Null>	<Null>	0.1	40.01203	-110.563	X						
226	Point	<Null>	<Null>	<Null>	0.1	40.01032	-110.566	X				channel change 2118+00 to 2120+00, no Indian Creek crossing		
227	Point	<Null>	<Null>	<Null>	0.1	40.03428	-110.539	X						
228	Point	<Null>	<Null>	<Null>	1	40.04446	-110.536		X					
229	Point	<Null>	<Null>	<Null>	0.1	40.04666	-110.529	X						
230	Point	<Null>	<Null>	<Null>	0.1	40.0515	-110.522	X						
231	Point	<Null>	<Null>	<Null>	0.1	40.06093	-110.518	X						
232	Point	<Null>	<Null>	<Null>	0.1	40.0903	-110.488	X						
233	Point	<Null>	<Null>	<Null>	0.1	40.09341	-110.485	X						
234	Point	<Null>	<Null>	<Null>	0.1	40.09529	-110.483	X						
235	Point	<Null>	<Null>	<Null>	0.1	40.09782	-110.479	X						
236	Point	<Null>	<Null>	<Null>	0.1	40.09952	-110.477	X						
237	Point	<Null>	<Null>	<Null>	0.1	40.10159	-110.474	X						
238	Point	<Null>	<Null>	<Null>	0.1	40.10316	-110.471	X						
239	Point	<Null>	<Null>	<Null>	0.1	40.11602	-110.45	X						
240	Point	<Null>	<Null>	<Null>	0.1	40.11624	-110.45	X						
241	Point	<Null>	<Null>	<Null>	0.2	40.10223	-110.269	X						
242	Point	<Null>	<Null>	<Null>	<Null>	40.10139	-110.255				X			
243	Point	<Null>	<Null>	<Null>	0.2	40.1064	-110.369	X						
244	Point	<Null>	<Null>	<Null>	0.5	40.10444	-110.367	X						
245	Point	<Null>	<Null>	<Null>	0.1	40.10137	-110.364	X						
246	Point	<Null>	<Null>	<Null>	0.1	40.11067	-110.316	X						
247	Point	<Null>	<Null>	<Null>	0.1	40.11097	-110.309	X						
248	Point	<Null>	<Null>	<Null>	0.1	40.11063	-110.307	X						
249	Point	<Null>	<Null>	<Null>	0.1	40.11053	-110.303	X						
250	Point	<Null>	<Null>	<Null>	0.1	40.11105	-110.296		0.1					
251	Point	<Null>	<Null>	<Null>	0.1	40.11149	-110.291	X						
252	Point	<Null>	<Null>	<Null>	0.1	40.11134	-110.284	X						
253	Point	<Null>	<Null>	<Null>	0.1	40.11	-110.282	X						
254	Point	<Null>	<Null>	<Null>	0.1	40.10755	-110.332	X						
255	Point	<Null>	<Null>	<Null>	0.1	39.83569	-110.974	X						
256	Point	<Null>	<Null>	<Null>	0.1	39.8353	-110.973	X						
257	Point	<Null>	<Null>	<Null>	0.1	39.83236	-110.955	X						

Whitmore Park

Note: cells with <Null> identify points not generated by the automated process so rastervalues are not available.

Drainage Area Grouping												Stream Name	Bridge and Channel Change List	FEMA Crossing
OBJECTID *	Shape *	pointid	grid_code	RASTERVALU	ContArea	LAT	LONG	F0_05	F05_1	F1_4	F4_			
258	Point	<Null>	<Null>	<Null>	10	39.83213	-110.963				X	Beaver Creek		
259	Point	<Null>	<Null>	<Null>	10	39.83328	-110.96				X	Beaver Creek		
260	Point	<Null>	<Null>	<Null>	10	39.83371	-110.958				X	Beaver Creek		
261	Point	<Null>	<Null>	<Null>	0.1	39.82814	-110.908	X						
262	Point	<Null>	<Null>	<Null>	0.1	39.82799	-110.897	X						
263	Point	<Null>	<Null>	<Null>	0.1	39.82829	-110.892	X						
264	Point	<Null>	<Null>	<Null>	0.1	39.82501	-110.885	X						
266	Point	<Null>	<Null>	<Null>	0.1	39.82256	-110.879	X						
267	Point	<Null>	<Null>	<Null>	0.1	39.80825	-110.847	X						
268	Point	<Null>	<Null>	<Null>	0.1	39.81216	-110.787	X						
269	Point	<Null>	<Null>	<Null>	0.1	39.8054	-110.821	X						
270	Point	<Null>	<Null>	<Null>	0.1	39.80474	-110.752	X						
271	Point	<Null>	<Null>	<Null>	0.1	39.80422	-110.75	X						
272	Point	<Null>	<Null>	<Null>	0.1	39.80291	-110.745	X						
273	Point	<Null>	<Null>	<Null>	0.1	39.80211	-110.743	X						
274	Point	<Null>	<Null>	<Null>	0.1	39.8009	-110.739	X						
275	Point	<Null>	<Null>	<Null>	0.1	39.80968	-110.73	X						
276	Point	<Null>	<Null>	<Null>	0.1	39.8243	-110.744	X						
277	Point	<Null>	<Null>	<Null>	0.1	39.827	-110.741	X						
278	Point	<Null>	<Null>	<Null>	0.1	39.8109	-110.72	X						
						180	143	21	31	40	415			