Urban Drainage and Flood Control District

E-19 Surveys

Cold Springs Gulch Confluence Gage
ALERT ID: 2243
LID: CGCC2

HDR Engineering, Inc.
303 E 17th Ave. Suite 300
Denver CO, 80203

Introduction

HDR Engineering Inc. was contracted by the Urban Drainage and Flood Control District to survey various flood warning stage gages to provide information to be included as part of the National Weather Service's E-19 program. On March, 9, 2000, five sites were surveyed by HDR personnel in the Bear Creek vicinity. This report is a summary of the work done and information gathered for the Cold Springs Gulch Confluence gage. The gage is located on Bear Creek immediately upstream of the confluence with Cold Springs Gulch. Included in this report are elevations of critical points in the vicinity of the site, and estimates of stages causing flood damage in vicinity of the gage.

Site

The stream gage is located two miles east of Kittridge along Highway 74 on Bear Creek. The ALERT ID number for this gage is 2243 while the National Weather Service LID is CGCC2 and is referred to as Cold Spring Gulch confluence. A weir is located just upstream of the stream gage. Because the gage is located downstream of the weir the gage is better suited to measure tailwater resulting from the confluence of the two streams, rather than just flow along Bear Creek from Evergreen. Potential flooding at the gage site itself would be minimal. At high flood stages the potential for flooding will be downstream in the towns of Idledale and Morrison. Figure 1 shows a general location map of the site.

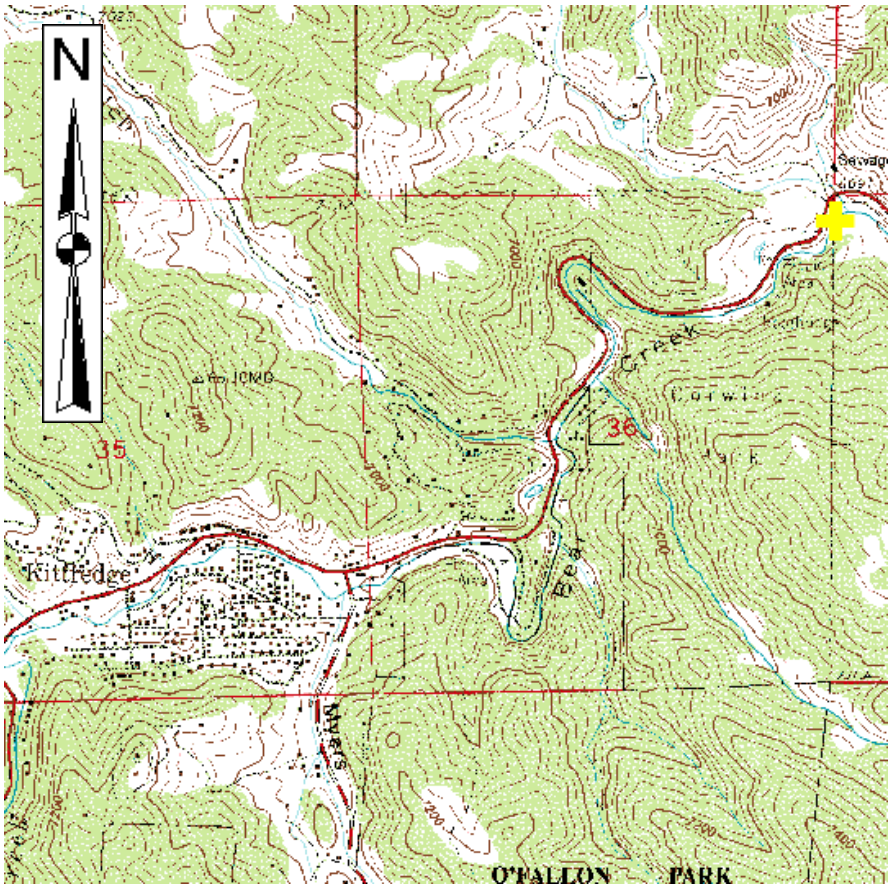

Figure – 1 Location Map

Surveyed locations

Ground elevations were surveyed along a cross section for a possible future rating curve for the site. In addition the elevations and locations of any buildings near the gage site were surveyed, along with water surface elevations up and down stream from the gage. Figure 2 shows locations of the surveyed points in the vicinity of the gage. The base of the ALERT transmitter was surveyed at an elevation of 100.00 for a temporary benchmark. The flow line elevation is at 91.1 feet. The bankfull stage will be at 6.0 feet above the flow line. Based on the topography of the area, the estimated channel energy slope is 0.7 percent based on the average of the up and downstream slopes.

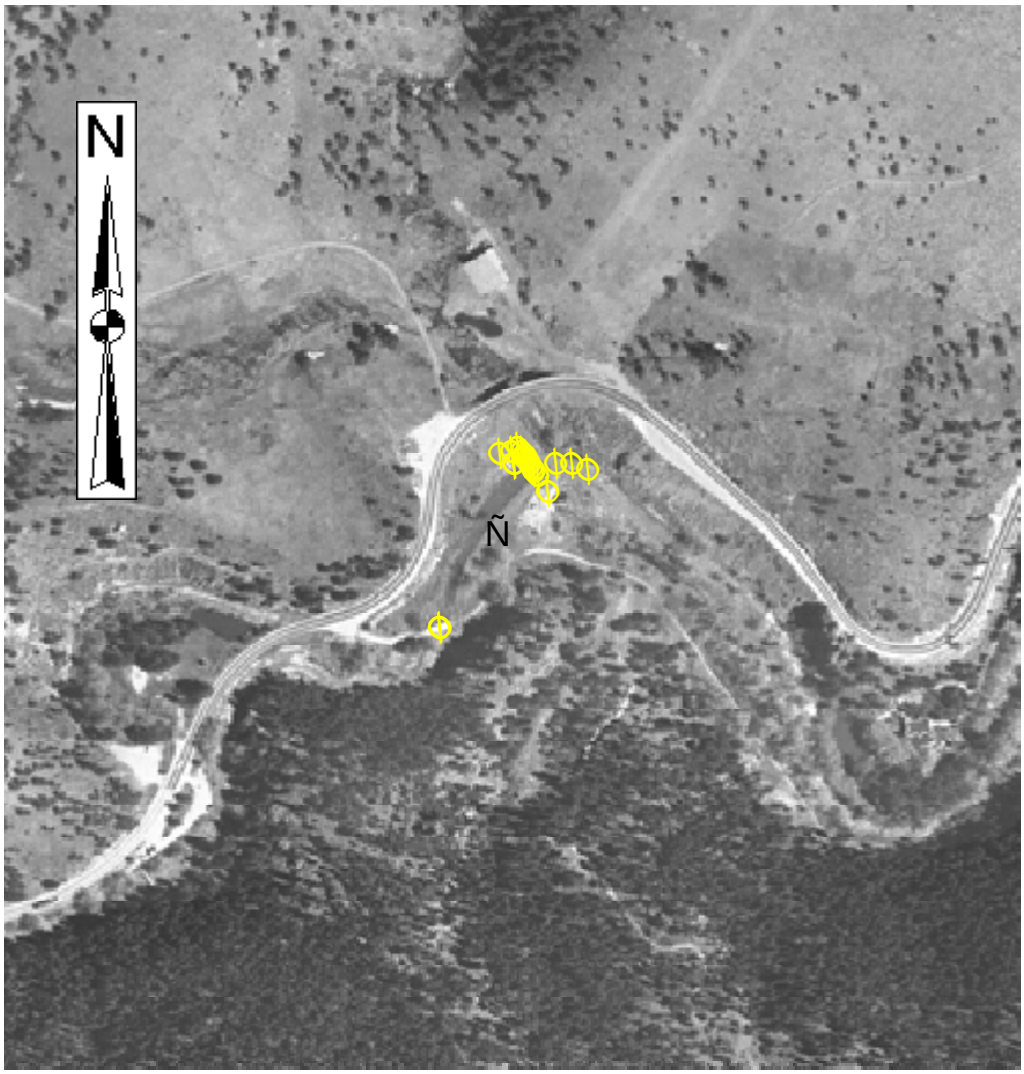

Figure – 2 Surveyed Points

Site photographs

Several photographs were taken of the site. Figure 3 shows Bear Creek at the gage location looking downstream. Figure 4 shows Bear Creek at the gage location looking upstream.

Figure – 3 Looking Downstream

Figure – 4 Looking Upstream

Historic records

There is limited information available for this gage. The location has been recently converted to a pressure transducer with an ALERT transmitter. Since the gauge installation date in April, 1991, a peak stage of 2.6 feet (corresponding to 700 cfs) was recorded on June 9, 1995. Historically, there have been a total of 24 floods since the 1860's.

Flood warning template

The graphics template was created based on the surveyed information, historic records, another information supplied by the Urban Drainage and Flood Control District and the National Weather Service. The graphics template is compatible with the flood warning system and has been created and installed on the District's WebServer. This template is named 2243e19.tpt and is located in the appropriate directory in the District's WebServer. Figure 5 shows the graphics template online from the WebServer.

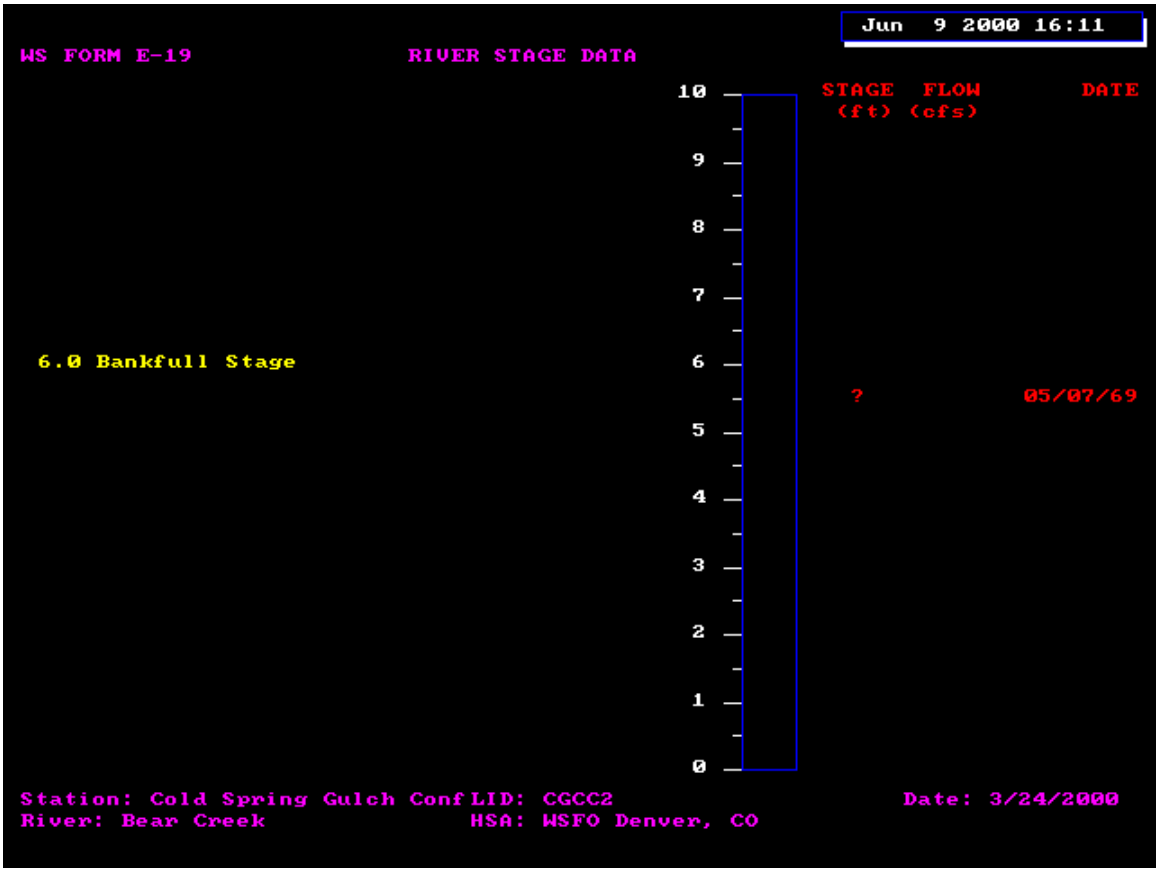

Figure – 5 Graphic Template

APPENDIX
Surveyed Data Points

Cold Springs Gulch Confluence Gage

ID	X (ft)	Y (ft)	Distance (ft)	Station (ft)	Z (ft)	Label
900	10000.00	10000.00			101.47	CP1
901	10018.59	10000.00			100.00	BASETRANSMIT
1000	10017.75	10015.63			98.57	TOPBANK
1001	10017.95	10022.47			95.45	BOTPTHOUSING
1002	10018.11	10022.74			97.21	TOPPTHOUSING
1003	10019.10	10027.86			92.69	H2OSURF
1004	10018.10	10028.75			92.78	ENDPTPIPE
1005	10018.03	10032.64			91.34	FL
1006	10017.96	10038.32			91.11	FL
1007	10018.02	10048.71			92.35	FL
1008	10016.06	10060.57			92.18	FL
1009	10016.89	10066.84			93.01	H2OSURF
1010	10016.87	10071.42			95.05	GR
1011	10017.75	10080.89			97.10	GR
1012	10014.58	10126.46			97.06	GR
1013	10071.01	10085.32			91.06	FL
1014	10102.78	10106.06		Slope D/S %	92.11	H2OSURF
1015	10124.85	10139.88	154.05	0.52	91.89	H2OSURF
1016	9988.17	10025.84			96.21	H2OTOPWEIR
1017	9988.84	10025.99		Slope U/S %	96.03	WEIR
1018	9616.58	10243.15	456.48	0.80	96.34	FL
1019	9616.47	10243.10			98.48	LC
1020	9615.61	10244.91			100.61	TOPBRIDGE
1021	9974.45	9989.26			104.01	NECORNDIVSTRX

Cross-Section Points

901	10018.59	10000.00		0.00	100.00	BASETRANSMIT
1000	10017.75	10015.63	15.66	15.66	98.57	TOPBANK
1001	10017.95	10022.47	6.84	22.49	95.45	BOTPTHOUSING
1005	10018.03	10032.64	10.17	32.66	91.34	FL
1006	10017.96	10038.32	5.68	38.34	91.11	FL
1007	10018.02	10048.71	10.39	48.74	92.35	FL
1008	10016.06	10060.57	12.02	60.76	92.18	FL
1009	10016.89	10066.84	6.32	67.09	93.01	H2OSURF
1010	10016.87	10071.42	4.58	71.66	95.05	GR
1011	10017.75	10080.89	9.50	81.17	97.10	GR
1012	10014.58	10126.46	45.69	126.86	97.06	GR