



**US Army Corps
of Engineers** ®
Omaha District

Lake County, South Dakota Section 22 Study

Hydrologic and Hydraulic Analysis



May 2016

Contents

Executive Summary	1
Purpose.....	Error! Bookmark not defined. 2
Authority.....	2
Background.....	
Results.....	
Appendix A. Hydrology Analysis	
Appendix B. Hydraulic Analysis	

Executive Summary

Lake County, South Dakota entered into an agreement with the Corps of Engineers on May 12, 2014 for a Section 22 Study under the authority of the Water Resources Development Act of 1974, (Public Law 93-251), as amended. The study was conducted to investigate flood risk management for the waterways known as Park Creek, Park Creek Tributary, and Silver Creek along with the water bodies of Lake Herman, Lake Madison, Brant Lake, Long Lake, Bourne Slough, and Redfield Slough in Lake County, SD near Madison, SD. The study comprised two components: hydrology update and hydraulic analysis. See Figures 1 and 2 for site location and study region.

The purpose of the hydrology study was to update the flow frequencies for streams and the pool-elevation frequencies for lakes in the vicinity of Madison, South Dakota. Streams included in the analysis are Park Creek, the Park Creek tributary and Silver Creek. Lakes and water bodies include Lake Herman, Lake Madison, Round Lake, Brant Lake, Long Lake, Bourne Slough and Redfield Slough. Flow frequencies presented in the study include the 500-, 100-, 50-, 10- and 2-year peak flows and pool elevations. The hydrologic model for Lake County, South Dakota was updated with current data and processes. No stream gage data were available for calibration so the updated model results were compared in terms of peak flows and runoff volumes to those of the past Banner 1995 study. The two sources of observed pool elevations used to check model results included the State of South Dakota Department of Environment and Natural Resources (SD 2014) estimated 30 years of collected seasonal pool elevations for the lakes in this study and the 1995 Banner study.

The hydraulic analysis was completed to update the water surface profiles for various flood events up to the 0.2%-chance exceedance event (500-yr flood). The updated water surface profiles were used to delineate flood inundation boundaries for the various flood events. Streams included in the analysis are Park Creek, the Park Creek tributary and Silver Creek. Flow frequencies modeled include the 500, 100, 50, 10 and 2 year peak flows. Flows were computed in a separate hydrologic study based on current watershed characteristics and updated hydrologic modeling methods. The available existing HEC-RAS models for Park Creek, Park Creek Tributary and Silver Creek were used to reproduce existing FIS water surface profiles. The Silver Creek hydraulic model was extended approximately 2 miles upstream to Lake Herman. The Park Creek hydraulic model was extended upstream approximately 3 1/2 miles to just downstream of U.S. Hwy 81.

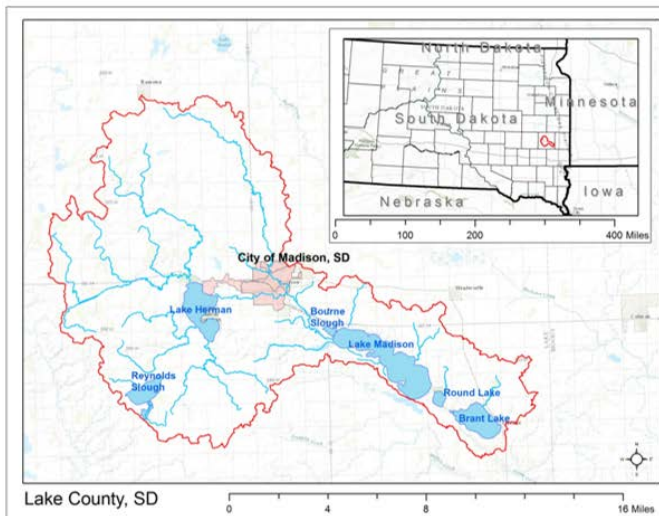


Figure 1. Site location

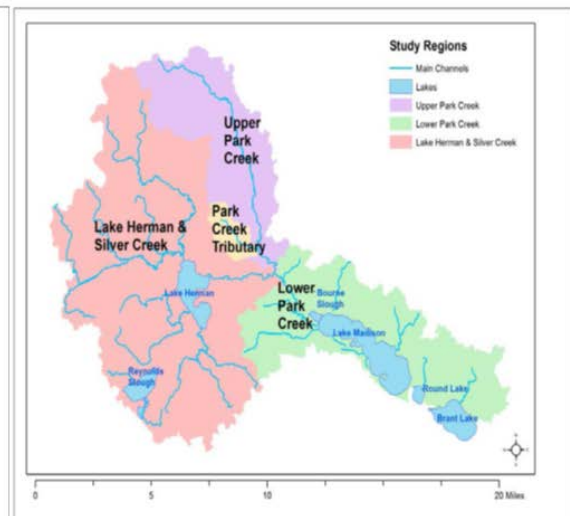


Figure 2. Study region

Purpose

The purpose of this report is to provide information on flood risk, quantifying the frequency of flooding and determining depths of flooding for various events to assist the community in determining a path forward for flood risk management.

Authority

The study was conducted under the USACE Planning Assistance to States and Tribes Program, authorized by Section 22 of the Water Resources Development Act (WRDA) of 1974 (PL 93-251), as amended by Section 605 of PL 96-596 and Section 221 of WRDA 1996 (PL 104-303). Under the Section 22 Program, USACE is authorized to assist states and tribes in preparing plans to manage water and related land resources. The authority of Section 22 is limited to plan preparation; it does not include detailed design preparation or project implementation. Section 22 assistance is 50/50 cost-shared basis.

Background

Lake County and the City of Madison have experienced repetitive flooding for over 30 years. Two of the largest events are the floods of July 1993 and July 2012. The flood of 1993 resulted from a thunderstorm with a high recorded precipitation depth of 5.6 inches over wet antecedent conditions. A documented 212 families were displaced by the flood with 17 of them still unable to return to their homes 70 days after the flood. The total damage assessed by Madison City was \$556,000. In 2012, approximately six inches of rain resulted in flash flooding. The flood damaged approximately 100 homes and led to one death.

Banner and Associates produced a HEC-1 model of the 133-square mile watershed to the outlet of Brant Lake for a sedimentation study in 1995. The Banner study separated the study area into five main regions (Lake Herman, Silver Creek, Upper Silver Creek, Lower Park Creek and the Park Creek Tributary shown in Figure 2) and 27 subareas. Two antecedent moisture conditions (AMC-II and AMC-III) were used in the computer model. The AMC-II condition represents normal conditions and the AMC-III condition represents the wet conditions similar to those before the 1993 flood. The Banner study determined peak-flow frequencies for the 100-, 50- and 25-year floods, compared the results with the 1982 FIS, and recommended the AMC-II results be adopted.

The majority of the watershed is rural cropland and the only large urban area is the City of Madison. The study area has no long-term stream gage and flows are largely lake affected. The USGS maintains a gage station, Skunk Creek at Sioux Falls, downstream of the study site with a contributing area of 622 square miles. Banner, however, believed the gage to not be representative of the upstream Lake County area due to the effects of lakes and non-contributing areas. The peak flow at this gage at the time of the Banner study was 29,700 cfs for the 622 square mile area.

Results

Appendix A and Appendix B in the report, comprised of the hydrologic and hydraulic analysis, provide peak flow frequency, annual maximum lake levels and updated water profiles. Flow frequency relationships along Park and Silver Creeks using rainfall for the 2, 10, 50, 100 and 500 year events from hydrology updates are reflected in Table 1.

Table 1. Peak Flow Frequencies

LOCATION	Flow Location No. on Map	PEAK FLOWS (CFS)				
		500 YR	100 YR	50 YR	10 YR	2 YR
<u>Upper Park Creek</u>						
Just upstream of confluence with Park Creek Tributary (node 20)	1	6,200	4,160	3,320	1,640	350
Just upstream of confluence with Silver Creek (node 40)	2	8,320	5,430	4,240	1,990	480
<u>Park Creek Tributary (basin 30)</u>	3	3,370	2,160	1,610	760	260
<u>Lake Herman & Silver Creek</u>						
HWY 34 crossing Lake Herman (Res. 51) N. Inlet at golf course	4	5,390	3,070	1,180	990	130
HWY 34 crossing (basin 70) 2.0 miles E. of Junius	5	2,360	1,210	870	370	80
HWY 34 crossing (node 80) 1.5 miles E. of Junius	6	6,860	3,520	2,520	1,010	210
HWY 34 crossing (basin 90) 0.75 miles E. of Junius	7	5,400	2,770	1,990	790	160
Sediment Control #1 Inflow (Res. 110)	8	1,850	1,010	720	240	50
SCS #1 Outflow	8	880	350	190	50	30
Sediment Control #2 Inflow (Res. 121)	9	3,290	2,030	1,510	610	130
SCS #2 Outflow	9	2,040	1,000	560	210	170
Sediment Control #3 Inflow (Res. 160)	10	7,840	4,180	3,040	1,250	230
SCS #3 Outflow	10	2,690	680	210	110	70
Total Lake Herman Inflow (Res. 102)	11	19,700	8,800	5,830	3,850	2,110
Lake Herman outflow	11	4,580	400	220	60	4
Silver Creek at mouth (node 200)	12	4,720	2,440	1,840	840	190
<u>Lower Park Creek</u>						
Just downstream of confluence with Silver Creek (node 45)	13	12,200	7,710	6,000	2,810	660
Just upstream of Lake Madison near gravel pits (node 210)	14	15,500	9,510	7,220	3,300	790
Total Lake Madison inflow (Res. 241)	15	23,200	13,900	11,800	8,100	4,630
Lake Madison outflow	15	2,630	1,070	750	260	50
Total Brant/Round Lake inflow (Res. 271)	16	17,500	11,800	9,510	4,270	1,940
Lake Brant/Round outflow	16	2,460	1,350	1,030	470	210

Hydraulic modeling results were compared against the published water surface elevations in the Flood Insurance study or from the LOMR HEC-RAS Modeling. Table 2-1, 2-2, and 2-3 displays the comparison of the existing FEMA FIS 100-year water surface elevations to the Section 22 Study 100-yr water surface elevation for Park Creek, Park Creek Tributary and Silver Creek.

Technical information developed in this study effort will assist the community of determining a path forward which may include the following:

- a. A decision by the sponsor to proceed into a Phase 2, Section 22 study to gather, analyze and evaluate additional information and gaps and to possibly develop a conceptual level of alternatives.
- b. A decision by the sponsor to proceed into a 205 Study which would focus on a technically sound alternative development and analysis.
- c. A decision by the sponsor to proceed with further studies in conjunction with non-Corps entities.

Table 2-1: Park Creek Tributary 100-yr water surface elevation comparison.

Cross Section Letter	FIS Station (ft)	Section 22 Station (ft)	100-Yr FIS (2009) (ft NAVD 88)	100-yr Section 22 (ft NAVD 88)	Difference
A	916	916	1681.0	1681.03	0.03
B	1,205	1,205	1682.3	1682.60	0.30
C	1,328	1,328	1682.4	1682.79	0.39
D	1,466	1,466	1682.4	1682.79	0.39
E	1,557	1,555	1683.2	1683.34	0.14
F	1,756	1,756	1683.3	1683.58	0.28
G	1,937	1,937	1683.4	1683.57	0.17
H	2,056	2,056	1684.8	1685.09	0.29
I	2,192	2,192	1684.9	1685.17	0.27
J	2,362	2,362	1684.9	1685.22	0.32
K	2,459	2,460	1687.1	1687.36	0.26
L	2,571	2,571	1687.1	1687.46	0.36
M	2,741	2,741	1687.2	1687.43	0.23
N	2,874	2,874	1688.1	1688.33	0.23
O	3,159	3,159	1688.1	1688.43	0.33
P	3,467	3,467	1688.4	1688.78	0.38
Q	3,666	3,666	1688.6	1689.06	0.46
R	3,800	3,800	1688.9	1689.17	0.27
S	-	3,897	-	1696.02	-
T	-	4,022	-	1696.07	-
U	-	4,228	-	1696.07	-
V	-	4,479	-	1696.07	-
W	-	4,686	-	1696.07	-
X	-	4,977	-	1696.07	-
Y	-	5,370	-	1696.10	-
Z	-	5,668	-	1696.38	-
AA	-	5,935	-	1698.23	-
AB	-	6,141	-	1699.53	-
AC	-	6,424	-	1700.25	-
AD	-	6,615	-	1700.81	-
AE	-	6,887	-	1701.06	-
AF	-	7,146	-	1701.64	-
AG	-	7,378	-	1703.40	-
AH	-	7,604	-	1706.75	-
AI	-	7,890	-	1708.75	-
AJ	-	8,084	-	1712.86	-
AK	-	8,203	-	1715.29	-

Table 2-2: Silver Creek 100-yr water surface elevation comparison.

Cross Section Letter	FIS Station (ft)	Section 22 Station (ft)	100-Yr FIS (2009) (ft NAVD 88)	100-yr Section 22 (ft NAVD 88)	Difference
A	967	967	1659.2	1658.93	-0.27
B	1,748	1,748	1659.7	1659.92	0.22
C	2,647	2,647	1660.3	1660.67	0.37
D	3,278	3,278	1663.7	1663.63	-0.07
E	3,852	3,531	1664.3	1663.93	-0.37
F	4,970	4,970	1664.7	1664.61	-0.09
G	5,705	5,705	1665.9	1665.83	-0.07
H	6,384	6,384	1666.2	1666.29	0.09
I	6,894	6,894	1668.2	1667.82	-0.38
J	7,447	7,447	1668.7	1668.29	-0.41
K	8,169	8,169	1669.3	1668.92	-0.38
L	8,783	8,783	1669.4	1669.05	-0.35
M	9,561	9,561	1669.5	1669.1	-0.4
	-	9,635	-	1669.95	-
N	-	9,704	-	1669.95	-
	-	10,298	-	1669.95	-
	-	10,612	-	1669.96	-
O	-	11,021	-	1669.96	-
	-	11,535	-	1669.97	-
	-	11,844	-	1669.97	-
P	-	12,096	-	1669.97	-
	-	12,424	-	1669.98	-
Q	-	12,714	-	1669.99	-
	-	13,070	-	1670	-
	-	13,101	-	1671.1	-
R	-	13,502	-	1671.11	-
	-	13,792	-	1671.12	-
S	-	14,058	-	1671.12	-
	-	14,839	-	1671.12	-
T	-	15,316	-	1671.12	-
	-	15,573	-	1671.13	-
U	-	15,887	-	1671.13	-
	-	16,422	-	1671.13	-
V	-	16,905	-	1671.14	-
	-	17,107	-	1671.14	-
	-	17,147	-	1671.72	-

Table 2-2: Silver Creek 100-yr water surface elevation comparison (continued).

Cross Section Letter	FIS Station (ft)	Section 22 Station (ft)	100-Yr FIS (2009) (ft NAVD 88)	100-yr Section 22 (ft NAVD 88)	Difference
W	-	17,375	-	1671.74	-
	-	17,733	-	1671.76	-
X	-	18,028	-	1671.77	-
	-	18,309	-	1671.77	-
Y	-	18,674	-	1671.77	-
	-	18,975	-	1671.77	-
	-	19,483	-	1671.77	-
Z	-	19,844	-	1671.79	-
	-	19,877	-	1672.2	-
AA	-	20,194	-	1672.22	-
	-	20,532	-	1672.22	-
AB	-	20,843	-	1672.28	-

Table 2-3 Park Creek 100-yr water surface elevation comparison.

Cross Section Letter	FIS Station (ft)	LOMR Station (ft)	Section 22 Station (ft)	100-Yr FIS (2009) (ft NAVD 88)	100-Yr LOMR 2012) (ft NAVD 88)	100-yr Section 22 (ft NAVD 88)	Difference
XU	-	-	352	-	-	1599.4	-
	-	-	1,186	-	-	1600.27	-
	-	-	1,430	-	-	1601.48	-
XV	-	-	1,655	-	-	1602.47	-
	-	-	1,851	-	-	1605.24	-
XW	-	-	1,896	-	-	1605.73	-
	-	-	2,049	-	-	1606.1	-
XX	-	-	2,099	-	-	1607.2	-
	-	-	2,851	-	-	1607.2	-
	-	-	4,443	-	-	1607.2	-
	-	-	6,062	-	-	1607.2	-
	-	-	7,654	-	-	1607.2	-
	-	-	9,629	-	-	1607.2	-
	-	-	11,713	-	-	1607.2	-
	-	-	13,572	-	-	1607.2	-
	-	-	15,707	-	-	1607.2	-
	-	-	17,542	-	-	1607.2	-
	-	-	19,332	-	-	1607.2	-
	-	-	20,841	-	-	1607.2	-

Table 2-3 Park Creek 100-yr water surface elevation comparison (continued)

Cross Section Letter	FIS Station (ft)	LOMR Station (ft)	Section 22 Station (ft)	100-Yr FIS (2009) (ft NAVD 88)	100-Yr LOMR 2012) (ft NAVD 88)	100-yr Section 22 (ft NAVD 88)	Difference
	-	-	22,602	-	-	1607.2	-
	-	-	24,138	-	-	1607.2	-
	-	-	25,839	-	-	1607.2	-
	-	-	27,662	-	-	1607.41	-
	-	-	29,573	-	-	1609.25	-
XY	-	1431	30,141	-	1609.39	1609.47	0.08
	-	-	30,535	-	-	1609.63	-
	-	-	30,648	-	-	1609.65	-
	-	1678	30,782	-	1610.58	1609.79	-0.79
	-	2007	31,103	-	1610.63	1610.46	-0.17
XZ	-	2087	31,191	-	1612.31	1612.31	0
	-	-	31,418	-	-	1613.21	-
ZA	-	-	33,368	-	-	1613.84	-
ZB	-	-	35,169	-	-	1614.04	-
	-	-	36,906	-	-	1620.32	-
	-	8102	37,196	-	1619.6	1620.98	1.38
ZC	-	9918	39,031	-	1626.6	1622.99	-3.61
	-	9968	39,072	-	1626.61	1622.98	-3.63
	-	10040	39,144	-	1626.66	1626.08	-0.58
	-	-	39,258	-	-	1626.36	-
ZD	-	10568	39,673	-	1626.64	1626.82	0.18
	-	10945	40,052	-	1627.49	1627.41	-0.08
ZE	-	11269	40,380	-	1628	1628.55	0.55
ZF	-	12091	41,190	-	1629.8	1630.28	0.48
	-	13003	42,106	-	1632.56	1632.86	0.3
ZG	-	13358	42,462	-	1633.95	1633.89	-0.06
ZH	-	13875	42,979	-	1634.1	1634	-0.1
	-	14632	43,735	-	1634.33	1634.4	0.07
	-	14939	44,036	-	1634.44	1635.32	0.88
ZI	-	15006	44,108	-	1635.53	1636.18	0.65
	-	15302	44,408	-	1645.04	1646.14	1.1
	-	-	44,483	-	-	1646.6	-
	-	15402	44,557	-	1645.04	1646.63	1.59
	-	-	45,305	-	-	1646.65	-
	-	-	45,458	-	-	1646.65	-
	-	16601	45,705	-	1645.09	1646.66	1.57

Table 2-3 Park Creek 100-yr water surface elevation comparison (continued)

Cross Section Letter	FIS Station (ft)	LOMR Station (ft)	Section 22 Station (ft)	100-Yr FIS (2009) (ft NAVD 88)	100-Yr LOMR 2012) (ft NAVD 88)	100-yr Section 22 (ft NAVD 88)	Difference
	-	-	45,910	-	-	1646.67	-
	-	17036	46,129	-	1645.11	1646.69	1.58
	-	17076	46,178	-	1645.11	1646.69	1.58
ZJ	-	17143	46,243	-	1646.27	1646.69	0.42
	-	17183	46,277	-	1646.31	1647.13	0.82
ZK	-	17403	46,497	-	1646.43	1647.18	0.75
	-	17892	46,977	-	1646.43	1647.11	0.68
ZL	-	18201	47,289	-	1646.93	1647.38	0.45
	-	18518	47,589	-	1647.63	1648.18	0.55
	-	18719	47,820	-	1647.69	1648.25	0.56
ZM	-	19084	48,185	-	1648.08	1648.41	0.33
	-	19572	48,669	-	1648.87	1648.83	-0.04
	-	19884	48,985	-	1649.23	1649.25	0.02
	-	20304.6	49,390	-	1652.67	1650.83	-1.84
ZN	-	20515	49,615	-	1652.97	1652	-0.97
	-	20707	49,807	-	1653.19	1653.36	0.17
	-	-	50,381	-	-	1654.8	-
ZO	-	21437	50,537	-	1655.53	1654.92	-0.61
	-	21765	50,864	-	1656.03	1655.35	-0.68
A	227	22030	51,152	1656.3	1656.34	1655.84	-0.46
-	-	22475	51,574	-	1657.43	1657.49	-
B	934	22758	51,857	1658.2	1658.17	1657.94	-0.26
C	1324	23121	52,247	1659.6	1659.55	1659.68	0.08
-	-	-	52,427	-	-	1659.75	-
D	1595	-	52,518	1661.6	-	1661.54	-0.06
E	1962	-	52,886	1662.1	-	1662.15	0.05
F	2244	-	53,168	1662.3	-	1662.35	0.05
-	-	-	53,364	-	-	1662.43	-
G	2505	-	53,429	1663.8	-	1665.09	1.29
-	-	-	54,317	-	-	1665.71	-
H	3834	-	54,757	1665	-	1665.79	0.79
I	4248	-	55,171	1665.2	-	1665.83	0.63
-	-	-	55,392	-	-	1665.85	-
J	4536	-	55,459	1665.3	-	1665.86	0.56
K	4901	-	55,824	1665.3	-	1665.91	0.61

Table 2-3 Park Creek 100-yr water surface elevation comparison (continued)

Cross Section Letter	FIS Station (ft)	LOMR Station (ft)	Section 22 Station (ft)	100-Yr FIS (2009) (ft NAVD 88)	100-Yr LOMR 2012) (ft NAVD 88)	100-yr Section 22 (ft NAVD 88)	Difference
-	-	-	55,995	-	-	1665.94	-
L	5142	-	56,065	1665.4	-	1665.93	0.53
M	5358	-	56,281	1665.4	-	1666.02	0.62
-	-	-	56,613	-	-	1666.12	-
-	-	-	56,672	-	-	1666.11	-
N	5992	-	56,915	1665.9	-	1666.14	0.24
-	-	-	56,990	-	-	1666.37	-
O	6126	-	57,050	1666	-	1666.46	0.46
P	6377	-	57,300	1666.3	-	-	-
-	-	-	57,319	-	-	1667.08	-
-	-	-	57,558	-	-	1667.74	-
Q	6706	-	57,629	1668.4	-	1667.79	-0.61
-	-	-	57,787	-	-	1667.88	-
R	6958	-	57,881	1668.4	-	1667.85	-0.55
-	-	-	57,947	-	-	1668.47	-
S	7095	-	58,018	1670.6	-	1670.65	0.05
-	-	-	58,219	-	-	1670.86	-
T	7429	-	58,352	1671.7	-	1671.79	0.09
-	-	-	58,475	-	-	1672.65	-
U	7645	-	58,569	1671.9	-	1672.89	0.99
-	-	-	58,698	-	-	1672.83	-
V	7931	-	58,854	1673.1	-	1673.27	0.17
-	-	-	58,979	-	-	1673.57	-
W	8237	-	59,160	1675.3	-	1675.68	0.38
-	-	-	59,425	-	-	1677.05	-
X	8751	-	59,675	1677.5	-	1677.99	0.49
-	-	-	59,790	-	-	1679.25	-
Y	9043	-	59,966	1680.4	-	1680.1	-0.3
-	-	-	60,118	-	-	1680.12	-
Z	9282	-	60,205	1680.6	-	1680.12	-0.48
AA	9380	-	60,304	1680.6	-	1680.17	-0.43
AB	9687	-	60,611	1680.8	-	1680.51	-0.29
-	-	-	60,800	-	-	1680.6	-
AC	10066	-	60,989	1680.8	-	1680.6	-0.2

Table 2-3 Park Creek 100-yr water surface elevation comparison (continued)

Cross Section Letter	FIS Station (ft)	LOMR Station (ft)	Section 22 Station (ft)	100-Yr FIS (2009) (ft NAVD 88)	100-Yr LOMR 2012) (ft NAVD 88)	100-yr Section 22 (ft NAVD 88)	Difference
-	-	-	61,150	-	-	1680.64	-
-	-	-	61,246	-	-	1680.33	-
AD	10421	-	61,345	1680.8	-	1680.4	-0.4
AE	10902	-	61,825	1681.6	-	1681.38	-0.22
AF	11142	-	62,066	1681.7	-	1681.36	-0.34
		-	62,313	-	-	1682.64	-
AG	11492	-	62,416	1684.1	-	1683.96	-0.14
AH	11755	-	62,679	1684.6	-	1684.29	-0.31
AI	12640	-	63,564	1685.8	-	1685.43	-0.37
AJ	-	-	63,939	-	-	1685.83	-
AK	-	-	64,391	-	-	1685.73	-
AL	-	-	64,671	-	-	1687.78	-
AM	-	-	65,360	-	-	1689.8	-
AN	-	-	65,783	-	-	1689.89	-
AO	-	-	66,126	-	-	1690.41	-
AP	-	-	66,491	-	-	1691.24	-
AQ	-	-	66,824	-	-	1691.89	-
AR	-	-	67,188	-	-	1692.23	-
AS	-	-	67,609	-	-	1692.37	-
AT	-	-	68,097	-	-	1692.55	-
AU	-	-	68,622	-	-	1692.86	-
AV	-	-	69,071	-	-	1693.06	-
AW	-	-	69,624	-	-	1693.36	-
AX	-	-	70,152	-	-	1693.91	-
AY	-	-	70,783	-	-	1694.46	-
AZ	-	-	71,216	-	-	1694.77	-
BA	-	-	71,836	-	-	1695.18	-
BB	-	-	72,505	-	-	1695.68	-
		-	73,311	-	-	1696.31	-
BC	-	-	73,359	-	-	1696.79	-
BD	-	-	73,880	-	-	1697.09	-
BE	-	-	74,291	-	-	1697.21	-
BF	-	-	75,112	-	-	1697.54	-
BG	-	-	75,537	-	-	1697.98	-
BH	-	-	76,340	-	-	1699.45	-
BI	-	-	77,276	-	-	1701.62	-
BJ	-	-	77,900	-	-	1703.12	-

Table 2-3 Park Creek 100-yr water surface elevation comparison (continued)

Cross Section Letter	FIS Station (ft)	LOMR Station (ft)	Section 22 Station (ft)	100-Yr FIS (2009) (ft NAVD 88)	100-Yr LOMR 2012) (ft NAVD 88)	100-yr Section 22 (ft NAVD 88)	Difference
BK	-	-	78,267	-	-	1705.93	-
BL	-	-	78,792	-	-	1706.57	-
BM	-	-	79,317	-	-	1709.59	-
BN	-	-	79,814	-	-	1709.89	-
BO	-	-	80,453	-	-	1710.09	-
BP	-	-	80,926	-	-	1710.26	-
-	-	-	81,408	-	-	1710.63	-
BQ	-	-	81,465	-	-	1711.25	-
BR	-	-	81,888	-	-	1711.52	-
BS	-	-	82,331	-	-	1712.12	-
BT	-	-	82,690	-	-	1712.35	-
BU	-	-	82,960	-	-	1712.85	-
BV	-	-	83,524	-	-	1712.98	-
BW	-	-	83,659	-	-	1713.02	-
BX	-	-	83,992	-	-	1713.08	-
BY	-	-	84,234	-	-	1713.24	-
BZ	-	-	84,617	-	-	1713.58	-
CA	-	-	84,938	-	-	1713.92	-
CB	-	-	85,574	-	-	1714.57	-
CC	-	-	86,124	-	-	1715.68	-
CD	-	-	86,727	-	-	1716.24	-
CE	-	-	87,315	-	-	1717.21	-
CF	-	-	88,106	-	-	1717.57	-
CH	-	-	88,945	-	-	1718.16	-
CH	-	-	89,896	-	-	1718.76	-
CI	-	-	90,554	-	-	1719.75	-
CJ	-	-	90,813	-	-	1720.92	-
CK	-	-	91,456	-	-	1721.34	-
CL	-	-	91,698	-	-	1721.75	-
CM	-	-	91,902	-	-	1723.1	-
CN	-	-	92,132	-	-	1724.61	-
CO	-	-	92,431	-	-	1724.75	-