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CRS ENGINEERS
Answers to Infrastructure®

WEBER COUNTY
STORM DRAIN IMPACT FEE FACILITIES PLAN
for West Weber and Ogden Valley Areas

4246 S. Riverboat Rd. Ste 200 | Salt Lake City, Utah | 84213
T 801.359.5565 | F 801.359.4272

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1.0 IMPACT FEE CERTIFICATION

As required in Utah Code Title 11 Chapter 36a-306, an impact fee facilities plan requires a written certification.

CRS Engineers certifies that the attached impact fee facilities plan:

1. Includes only the costs of public facilities that are:
   a. Allowed under the Impact Fees Act; and
   b. Actually incurred; or
   c. Projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
2. Does not include:
   a. Costs of operation and maintenance of public facilities;
   b. Costs for qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service that is supported by existing residents; or
   c. An expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement; and
3. Complies with the Impact Fees Act.

Seal 

Date April 27, 2018

2.0 INTRODUCTION

This Impact Fee Facilities Plan, prepared according to the Impact Fees Act (Title 11, Chapter 36a of the Utah Code), identifies storm drain projects that will be necessary to support future growth and development in Weber County over the next ten years and what proportion of the cost of those projects may be funded by impact fees.

According to the Impact Fees Act, an impact fee is a payment of money imposed upon new development activity as a condition of development approval to mitigate the impact of the new development on public infrastructure. Impact fees may not be imposed to remedy existing deficiencies or to raise the established level of service of a public facility. Impact fees may only include capital expenses and may not include any operations and maintenance costs. Impact fees collected must be spent within six years of being collected.

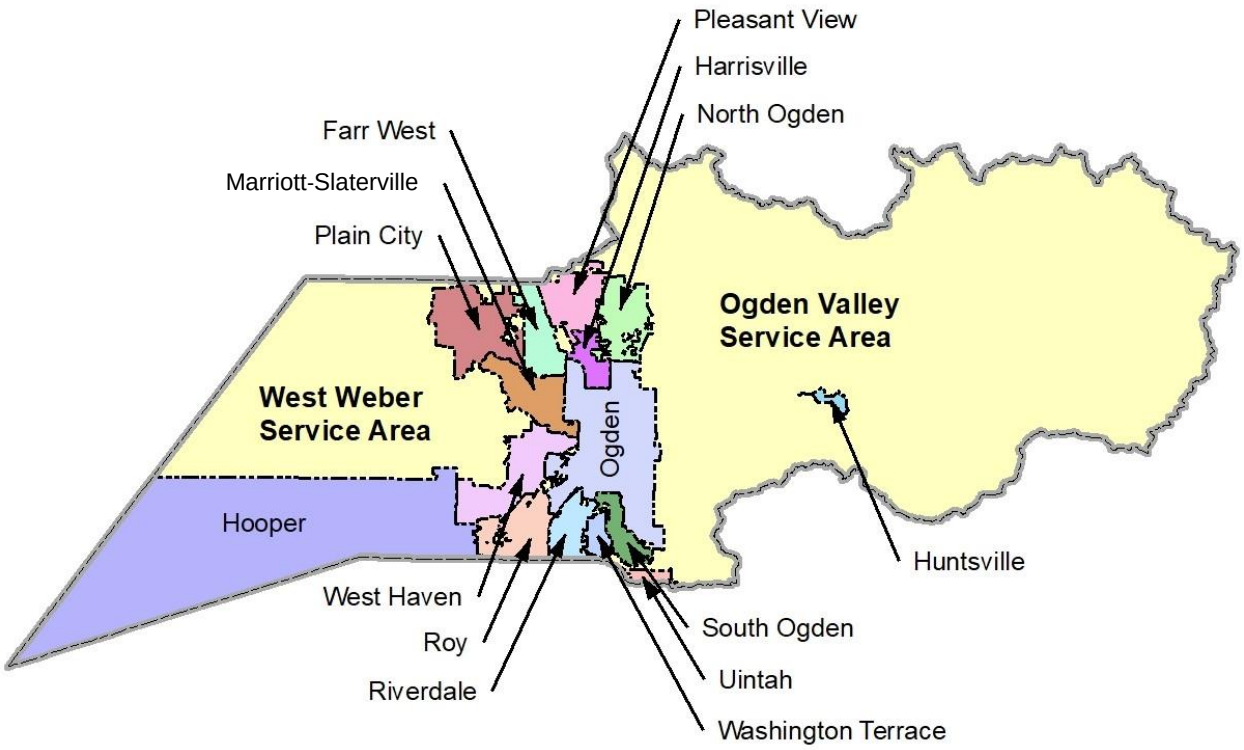
Per 11-36a-302, an impact fee facilities plan shall identify the existing level of service, a proposed level of service, any excess capacity to accommodate future growth at the proposed level of service, identify demands placed upon existing public facilities by new development activity at the proposed level of service, and identify the means by which the political subdivision will meet those growth demands.

3.0 METHODOLOGY AND ASSUMPTIONS

3.1 Service Areas

There are two areas in Weber County for which an impact fee analysis has been made – the West Weber Service Area and the Ogden Valley Service Area, as depicted in Figure 3.1 below. The West Weber area is north of Hooper and east of the Great Salt Lake. This area is characterized by light rural development, farmland and wetlands (Hansen Allen Luce, 2015). The Ogden Valley area, which is located east of Ogden near Pine View Reservoir, is characterized by rural farmland. The mountain watersheds in this area drain to Pineview Reservoir.

Figure 3.1 - Service Areas Map



3.2 Demand Units

Weber County Ordinance for Storm Water Utility measures storm water demand based on the area of impervious surface in a given development. Impervious surfaces are any man-made structure or surface that restricts the absorption of water into the soil, and may include buildings, parking lots, sidewalks, driveways, or any other hard surface. In measuring the impact a development has on the storm water system, the County uses an Equivalent Service Unit (ESU) based on the average impervious surface of a typical residence in the County. Based on studies performed by the County, one ESU is equal to 6200 square feet.

3.3 Level of Service Standards

The level of service is defined as the performance standard or unit of demand for each capital component of a public facility within a service area. The proposed level of service may diminish or equal the existing level of service, but may not raise the established level of service.

3.3.1 Existing Level of Service

The level of service established in the Stormwater Master Plan (Hansen Allen Luce, 2015) is a 10-year capacity for the initial system, which consists of roadside ditches, curb and gutter, and storm drains, and a 100-year capacity where flooding of homes may occur and on major channels, swales, and culverts and regional detention/retention facilities. This has been accepted by the County as the existing level of service. The Stormwater Master Plan also identified deficiencies in the system, where the existing infrastructure does not provide adequate capacity. These deficiencies will be discussed in section 4.

3.3.2 Proposed Level of Service

The County wishes to maintain the existing Level of Service for the protection of life and property in the County. Therefore, the proposed level of service will be 10-year capacity for the initial system and 100-year capacity for the major system. Capital improvements recommended herein will follow this established standard level of service.

4.0 EXISTING CONDITIONS

4.1 Existing Infrastructure

The Weber County Stormwater Master Plan (Hansen Allen Luce, 2015) (SWMP) identifies storm water infrastructure that needs to be improved in order to provide the established level of service. The SWMP also provided data that was used to estimate the value of the existing infrastructure. These values were calculated based on the size of the pipe, the material, and the estimated costs provided in the SWMP. The estimated values of these pipe segments are provided in Appendix A.

4.1.1 Existing Deficiencies

As stated above, the Stormwater Master Plan (Hansen Allen Luce, 2015) focuses on the improvements necessary to provide the established level of service. Where the existing infrastructure is determined to not have the capacity to convey the design flow, it is considered deficient. Per the Impact Fee Act, the County plans to address these deficiencies using funds other than impact fees. Infrastructure that is needed to meet the demands of new development will use impact fees. These costs have been calculated into the proposed capital improvements in Section 5.

4.2 Excess Capacity

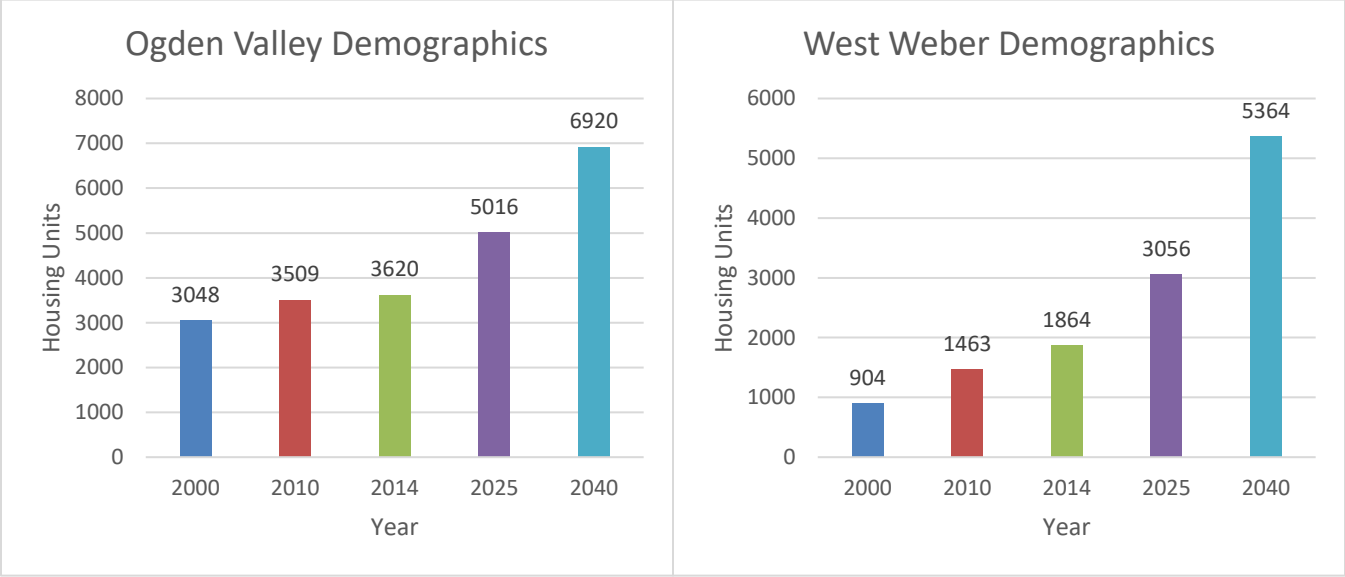
Excess capacity in existing storm drain infrastructure may be utilized to support future growth. The Impact Fee Act allows an impact fee to recoup the actual costs incurred for excess capacity in an existing system improvement. However, it has been determined that excess capacity and the actual costs that were incurred to install existing infrastructure is too difficult to quantify. The impact fee calculation herein will exclude any costs related to excess capacity in existing storm drain infrastructure. Furthermore, the Stormwater Master Plan (Hansen Allen Luce, 2015) does not include a full inventory of every storm water feature throughout the County, but focuses on those structures that are deficient. The pipe segments identified in the SWMP have little or no excess capacity.

5.0 FUTURE DEVELOPMENT

5.1 Demographics

Weber County is projecting a high level of development over the next 10 years. The Weber County Transportation Master Plan (Hales Engineering, 2014) shows the projected population growth in the unincorporated areas of Weber County. According to that data (given below) the number of housing units in Ogden Valley is projected to increase approximately 40% by 2025, and 90% by 2040. West Weber's housing units will increase by 65% and 190%, respectively, in the same time periods.

Figure 5.1 - Population Growth in Weber County (Number of Households)



5.1.1 Storm Water Demands Based on Projected Development

Assuming that each of the households discussed above is one ERU, then the Storm Water demand in Ogden Valley will increase by 40% by 2025. In other words, the amount of runoff that enters the County's system will increase by 40% because it is not absorbed into the soil. The increase in West Weber is projected to be 65%. In order to meet these demands, new storm water improvements are needed.

5.2 Design Flows

As stated in Weber County's storm drainage ordinance, the County Engineer may require developers to release stormwater at undeveloped or natural condition runoff rates. It has been determined that the undeveloped flow rate is equivalent to an average of **0.10 cfs/acre**. Future

storm drainage facilities proposed herein have been sized to convey flows that are released from developments at this areal flow rate.

5.3 Proposed Capital Improvements

In order to safely convey the necessary flows, the Stormwater Master Plan (Hansen, Allen and Luce, 2015) identifies 107 problems in the existing infrastructure. Some of these problems contain multiple pipe segments. The SWMP divides these problems into two categories: **project** or **watch** (based on the priority level). This Impact Fee Facilities Plan uses the **project** category identified in the SWMP as the proposed Capital Improvements. Estimated costs for these improvements are based on the calculations in the SWMP, however those costs are divided into system costs and existing deficiency costs as laid out in Section 6.

6.0 CAPITAL FACILITY ANALYSIS

6.1 System and Existing Deficiency Costs

System improvements (System) are considered to be the infrastructure necessary for the County's system to meet the additional demand caused by development. These costs have been divided into two subcategories based on the time frame of the projected development. The County will base its impact fees on the system costs for 2025 identified in the Capital Facility Analysis (see Appendix B). The buildout system costs are based on the 2040 population model. These costs are determined using the projected growth in the vicinity of the project. For example, if the projected population growth in the Development Area where the project is located is 25%, then 25% of the cost to upgrade that pipe are considered to be system costs.

The costs for Existing Deficiencies (Ex. Deficiency) are calculated based on the existing population (number of households), and projected growth rate in the vicinity of the project. For example, if the projected population growth in the Development Area where the project is located is 25%, then 75% of the cost to upgrade that pipe are existing deficiency costs. Maps showing the projected population growth by region are provided in Appendix C.

6.2 Funding of Future Facilities

Per 11-36a-302, consider all revenue sources including grants, bonds, interfund loans, impact fees and anticipated or accepted dedications of system improvements. Impact fees may only be imposed when they are necessary to maintain the proposed level of service.

County Funding

The County has considered all revenue sources in preparing this Impact Fee Facilities Plan. As stated above, the County will use funds other than impact fees to pay the portion of the costs attributed to existing deficiencies.

Federal\State Funding

The County may seek Federal and State funding through grants and loans. At the present time, no Federal or State funding is expected. Should such funding become available, the County would credit back any impact fees that may have been collected towards State or Federally funded projects.

7.0 REFERENCES

Gardener Engineering. *General Water Infrastructure Master Plan Ogden Valley Storm Drainage Master Plan*. March 2003.

Hales Engineering. *Weber County Transportation Master Plan Ogden Valley (UT13-529)*. August 2015.

Hales Engineering. *Weber County Transportation Master Plan West Weber* (UT13-529). December 2014.

Hansen, Allen and Luce. *Stormwater Master Plan* (HAL Project No.: 259.02.100). January 2015.

APPENDIX A:
EXISTING STORM DRAIN INFRASTRUCTURE

Table A.1 - Ogden Valley Existing Storm Drain Infrastructure

Estimate of Existing Value

Problem ID	Feature ID	Location	Ex. Size	Material	Ex. Value
UV - 01	6240	950 S 6800 E	12"	CMP	$3,582.71
UV - 04	8516	2950 E 4100 N	36"	CMP	$7,745.13
UV - 04	8517	2900 E 4100 N	36"	RCP	$7,745.13
UV - 04	8532	4100 N 3300 E	36"	CMP	$7,853.84
UV - 04	8533	4100 N 3300 E	30"	CMP	$10,510.28
UV - 04	8534	4100 N 3300 E	24"		$4,873.86
UV - 04	8535	4100 N	36"	CMP	$7,853.84
UV - 05	7375	6825 N	84"	RCP	$29,786.23
UV - 07	6009	4990 E 2725 N	18" (2)	RCP	$7,859.79
UV - 07	8141	2800 N 4975 E	18"	RCP	$15,405.64
UV - 07	8144	2800 N 4975 E	18"	RCP	$18,667.01
UV - 07	8145		18"		$9,263.33
UV - 10	8480	Shaw Dr	60"	CMP	$14,095.52
UV - 10	8481	Shaw Dr	60"	CMP	$14,095.52
UV - 13	7380		90"	CMP	$21,232.82
UV - 13	8551		72"	CMP	$17,830.45
UV - 13	11924		90"	CMP	$21,232.82
UV - 15	5956	3700 N 3500 E	36"	RCP	$7,853.84
UV - 15	5958	3500 E	36"	CMP	$7,853.84
UV - 15	5959	3750 E	60"	CMP	$16,188.92
UV - 16	5961	3500 E	30"	CMP	$9,423.25
UV - 18	6024		36"	HDPE	$13,941.24
UV - 18	6034		30"	CMP	$7,021.46
UV - 18	8196		4' x 2'	Concrete	$25,581.71
UV - 26	5988	3300 E River Dr	48"	CMP	$10,023.98
UV - 26	7178	Patio Springs Rd, above WCGC	36"	RCP	$11,103.70
UV - 26	7201	Creek View Dr	36"	RCP	$10,326.85
UV - 26	7206	3450 N (east of Foothill Ln)	48"	RCP	$9,638.39
UV - 26	7207	4500 E Fuller Dr	48"	RCP	$9,885.24
UV - 26	7211	Patio Springs Dr and Fairway Oaks	36"	RCP	$27,868.12
UV - 28	5932	Fairways Dr	72"	CMP	$18,006.99
UV - 28	7213	Creek View Dr	84"	RCP	$25,417.58
UV - 34	7665	SR 158 (below WC resort)	24"	RCP	$19,436.02
UV - 34	7667	SR 158 (below WC resort)	36"	RCP	$25,255.48
UV - 35	5962	Buckhorn Dr	48"	RCP	$19,111.46
UV - 35	5964	Wapiti Rd	36"	RCP	$16,522.95
UV - 35	7055	Elkhorn Dr	36"	RCP	$7,745.13
UV - 35	7537	Eagle Crest Dr	36"	RCP	$19,104.67
UV - 35	7600	Porcupine Ridge Dr	36"	RCP	$7,837.91
UV - 35	7637	Elk Ridge Trail	36"	RCP	$12,192.30
UV - 36	7076	4480 N Sheep Creek Dr	30"	RCP	$8,390.56

Note:
For pipe locations, refer to Figure B.1.

Table A.1 - Ogden Valley Existing Storm Drain Infrastructure

Estimate of Existing Value

Problem ID	Feature ID	Location	Ex. Size	Material	Ex. Value
UV - 37	-	Sheep Creek Xing	box	Concrete	$14,862.97
UV - 37	8484	5750 N 3100 E	60"	CMP	$14,793.32
UV - 37	8500	5200 N 3500 E	36" (3)	RCP	$36,843.74
UV - 37	8503	5200 N 3600 E	84"	RCP	$20,056.06
UV - 37	8564	5600 N	48"	RCP	$9,925.70
UV - 41	6078	1100 N 7800 E	15"	CMP	$3,508.84
UV - 44	8475	5950 N	box	Concrete	$18,738.14
UV - 45	8522	3250 E 4800 N	15"	RCP	$4,776.94
UV - 45	8523	3250 E 4800 N	15"	RCP	$4,776.94
UV - 46	8524	4650 N	18"	RCP	$3,582.71
UV - 48	5952	3700 N 2900 E	18" (2)	CMP	$8,421.21
UV - 49	5969	3350 N 2900 E	24"	CMP	$7,310.80
UV - 50	8518	3930 N 2900 E	18"	CMP	$3,403.57
UV - 50	8536	4000 N 3300 E	12"	CMP	$3,245.20
UV - 51	8549	4100 N 3800 E	15"	RCP	$23,645.86
UV - 52	6022	Nordic Valley Rd	36"	CMP	$7,729.61
UV - 52	6030	2700 N Nordic Valley Way	42"	CMP	$8,441.55
UV - 52	6031	2500 N Viking Dr	36"	CMP	$7,729.61
UV - 60	5931	Snowflake Dr	box	Concrete	$21,779.41
UV - 63	6019	3100 N 3500 E	15"	RCP	$3,946.17
UV - 64	6067	5800 E 2200 N	24"	RCP	$5,178.48
UV - 68	5939	5300 E Elkhorn Dr	24"	RCP	$8,833.88
UV - 68	5940	5300 E Elkhorn Cir	24"	CMP	$9,443.11
UV - 76	-	3500 E (across from ski resort)	12"		$5,044.82
UV - 80	-	Sierra Dr / 5300 E / 2600 N			$3,946.17
UV - 81	-	Elkhorn Dr, east of Elkview Dr			$17,199.85
UV - 82	-	Behind Juniper Ln, downstream of UDOT culverts			$12,845.46
				UV Total:	$855,375.62

Note:
For pipe locations, refer to Figure B.1.

TABLE A.2 WEST WEBER COUNTY STORM DRAIN INFRASTRUCTURE					
Estimate of Existing Value					
Problem ID	**Feature ID**	**Location**	**Ex. Size**	**Material**	**Ex Value**
WW-01	4773	3900 W 1800 S	12"		$2,596
WW-01	4774	3950 W 1800 S	24"	RCP	$42,513
WW-01	4778	4000 W 1800 S	24"	RCP	$29,526
WW-01	4781	3700 W 1800 S	18"	RCP	$9,901
WW-01	4782	3600 W 1800 S	15"	CMP	$1,075
WW-01	4838	4300 W 1800 S	12"	Smooth Plastic	$8,924
WW-01	4989	2200 S 3900 W	12"	CMP	$4,760
WW-01	5010	1600 S 3500 W	36"	CMP	$6,184
WW-01	5011	1700 S 3500 W	16"	CMP	$1,968
WW-01	5013	1700 S 3500 W	18"	CMP	$8,842
WW-01	5016	3470 W 1800 S	12"	RCP	$6,446
WW-01	5017	3470 W 1800 S	18"	RCP	$3,344
WW-01	5019	3400 W 1800 S	15"	RCP	$18,874
WW-01	5020	3400 W 1800 S	15"	RCP	$5,569
WW-01	5023	3400 W 1800 S	12"	RCP	$26,345
WW-01	5024	3400 W 1800 S	12"	RCP	$4,204
WW-01	5025	3500 W 1800 S	24"	CMP	$4,341
WW-01	5026	3500 W 1800 S	21"	RCP	$11,776
WW-01	5028	1800 S 3500 W	15"	RCP	$3,045
WW-01	5029	1850 S 3500 W	10"	Smooth Plastic	$16,122
WW-01	6336	1900 S 3500 W	15"	RCP	$2,329
WW-01	6338	Taylor Canal	18"	Smooth Plastic	$2,687
WW-01	6340	Taylor Canal	15"	Smooth Plastic	$22,929
WW-01	6346	Taylor Canal	15"	Smooth Plastic	$30,632
WW-01	9385	Taylor Canal	18"	RCP	$20,503
WW-01	9386	1700 S 4700 W	18"	Smooth Plastic	$9,514
WW-01	9387	1700 S 4700 W	18"	Smooth Plastic	$16,075
WW-01	9388	1700 S 4700 W	18"	RCP	$4,912
WW-01	9392	1800 S 4700 W	18"	RCP	$22,452
WW-01	9393	1825 S 4700 W	18"	RCP	$12,898
WW-01	9394	1850 S 4700 W	18"	RCP	$13,375
WW-01	9395	1900 S 4700 W	18"	RCP	$10,032
WW-01	9416	2000 S 3500 W	15"	RCP	$619
WW-01	9434	3450 W 1800 S	15"	RCP	$16,708
WW-01	9436	3400 W 1800 S	12"	RCP	$12,332
WW-01	9523	Taylor Canal	15"	RCP	$22,888
WW-01	9524	Taylor Canal	15"	Smooth Plastic	$17,555

Note:
For pipe locations, refer to Figure B.2.

TABLE A.2 WEST WEBER COUNTY STORM DRAIN INFRASTRUCTURE					
Estimate of Existing Value					
Problem ID	**Feature ID**	**Location**	**Ex. Size**	**Material**	**Ex Value**
WW-01	9543	3900 W 1800 S	24"	Smooth Plastic	$12,172
WW-01	9545	3900 W 1800 S	15"	RCP	$2,877
WW-01	9643	3900 W 1800 S	15"	RCP	$2,150
WW-01	10706	1800 S 4300 W	18"	RCP	$32,313
WW-01	10707	1800 S 4300 W	18"	RCP	$19,184
WW-01	10708	1900 S 4300 W	18"		$1,476
WW-01	10853	1800 S 4300 W	18"	RCP	$358
WW-02	4437	5500 W 1400 N	18"		$17,387
WW-03	4745	4200 W 1400 S	15"	RCP	$6,091
WW-03	4746	4200 W 1400 S	15"	RCP	$10,211
WW-03	4747	4200 W 1400 S	21"	RCP	$2,103
WW-03	4748	4100 W 1400 S	15"	RCP	$11,106
WW-03	4749	4100 W 1400 S	15"	RCP	$1,194
WW-03	4751	4000 W 1400 S	12"	RCP	$10,385
WW-03	4752	4000 W 1400 S	12"	RCP	$9,573
WW-03	4753	3900 W 1400 S	18"	RCP	$3,583
WW-03	4754	3850 W 1400 S	12"	RCP	$1,514
WW-03	4755	3800 W 1400 S	15"	RCP	$33,916
WW-03	4756	3700 W 1400 S	15"	RCP	$6,807
WW-03	4757	3650 W 1400 S	15"	RCP	$37,234
WW-03	4758	3600 W 1400 S	15"	RCP	$32,641
WW-03	4759	3550 W 1400 S	15"	RCP	$12,659
WW-03	4990	3000 W 1400 S	15"	RCP	$10,509
WW-03	4991	3050 W 1400 S	12"	RCP	$7,139
WW-03	4992	3100 W 1400 S	24"	RCP	$45,007
WW-03	4995	3400 W 1400 S	15"	RCP	$45,142
WW-03	4997	3450 W 1400 S	12"	RCP	$18,498
WW-03	4999	1400 S 3500 W	12"	RCP	$10,601
WW-03	5119	2800 W 1400 S	15"	RCP	$3,344
WW-03	5120	1400 S 2800 W	15"	CMP	$2,866
WW-03	9444	3350 W 1400 S	15"	RCP	$16,122
WW-03	9446	3700 W 1400 S	18"	RCP	$10,662
WW-03	10189	4400 W 1400 S	18"	RCP	$1,254
WW-03	10190	4400 W 1400 S	24"	RCP	$4,184
WW-03	10194	4350 W 1400 S	15"	RCP	$29,020
WW-03	10195	1400 S 4300 W	18"	RCP	$4,120
WW-04	4980	4400 W 2200 S	18"	CMP	$1,433
WW-04	4983	4300 W 2200 S	15"	CMP	$27,587
WW-04	10243	2200 S 4500 W	12"	RCP	$2,596
WW-05	5275	4300 W 1200 S	30"	RCP	$11,653

Note:
For pipe locations, refer to Figure B.2.

TABLE A.2 WEST WEBER COUNTY STORM DRAIN INFRASTRUCTURE					
Estimate of Existing Value					
Problem ID	**Feature ID**	**Location**	**Ex. Size**	**Material**	**Ex Value**
WW-05	5290	4150 W 900 S	18"	RCP	$15,286
WW-05	5306	1000 S 4100 W	15"	CMP	$2,627
WW-05	5370	1100 S 4300 W	30"	CMP	$1,626
WW-05	5371	1100 S 4300 W	24"	CMP	$2,285
WW-06	5498	7400 W 900 S	18"		$1,194
WW-06	5499	2200 S 7500 W	27"		$4,299
WW-06	5501	1900 S 7500 W	27"		$1,612
WW-06	5503	1800 S 7500 W	18"		$1,612
WW-06	9642	7400 W 900 S	15"	RCP	$10,509
WW-06	9644	7400 W 900 S	15"	RCP	$2,150
WW-06	9645	7400 W 900 S	15"	RCP	$915
WW-06	9659	1250 S 7500 W	15"	RCP	$23,407
WW-06	9661	1400 S 7500 W	15"	RCP	$10,270
WW-06	9663	1400 S 7500 W	15"	RCP	$1,640
WW-06	9668	1600 S 7500 W	18"	RCP	$8,419
WW-06	9670	1600 S 7500 W	18"	RCP	$21,855
WW-06	9671	1650 S 7500 W	18"	RCP	$2,150
WW-06	9672	1650 S 7500 W	18"	RCP	$3,045
WW-06	9674	1700 S 7500 W	18"	RCP	$14,331
WW-06	9675	1700 S 7500 W	15"	RCP	$537
WW-06	9676	1750 S 7500 W	15"	RCP	$9,494
WW-06	9677	1800 S 7500 W	15"	RCP	$12,719
WW-06	10861	1800 S 7500 W	15"	CMP	$2,508
WW-07	5631	400 S 7900 W	12"		$15,415
WW-07	5632	400 S 7900 W	15"		$1,856
WW-07	5638	7900 W 500 S	15"		$1,547
WW-07	5639	7900 W 500 S	15"		$2,785
WW-08	5489	7300 W 900 S	18"		$6,807
WW-08	5514	650 S 7500 W	18"		$22,027
WW-08	5515	850 S 7500 W	18"		$8,491
WW-08	5525	7700 W 900 S	18"		$1,453
WW-08	5526	7700 W 900 S	18"		$1,453
WW-08	5527	7800 W 900 S	18"		$1,453
WW-08	5614	8800 W 900 S	30'		$2,091
WW-08	5643	7900 W 900 S	18"		$1,453
WW-08	5654	1150 S 7500 W	15"		$2,166
WW-08	5676	1100 S 7100 W	12"		$4,765
WW-08	9647	7500 W 900 S	36"	CMP	$7,884
WW-08	9652	1000 S 7500 W	12"	RCP	$19,315
WW-08	9653	1000 S 7500 W	15"	RCP	$9,404

Note:
For pipe locations, refer to Figure B.2.

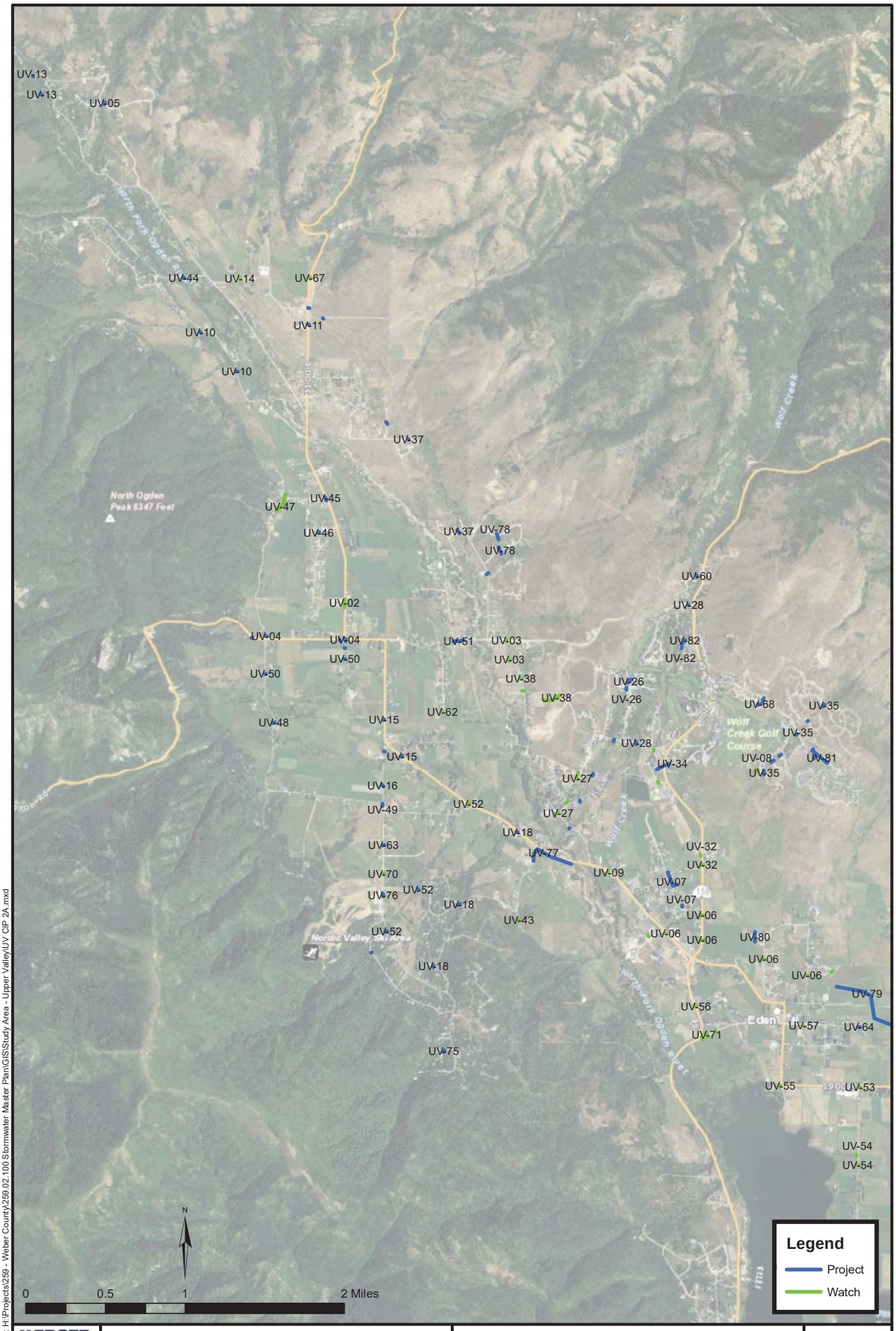
TABLE A.2 WEST WEBER COUNTY STORM DRAIN INFRASTRUCTURE					
Estimate of Existing Value					
Problem ID	**Feature ID**	**Location**	**Ex. Size**	**Material**	**Ex Value**
WW-08	9654	1100 S 7500 W	12"	RCP	$9,249
WW-08	9685	7900 W 900 S	18"	RCP	$1,965
WW-08	9685	7900 W 900 S	18"		$1,453
WW-08	9686	8000 W 900 S	24"		$30,064
WW-14	4920	4800 W 700 S	15"	RCP	$84,352
WW-14	10762	4800 W 700 S	24"	CMP	$2,864
WW-15	4938	5000 W 500 N	40"	CMP	$4,304
WW-15	4939	5000 W 400 N	36"	RCP	$2,581
WW-15	5394	4000 W 300 S	21"	CMP	$1,682
WW-15	5417	4300 W 300 N	30"	CMP	$2,319
WW-15	5418	4300 W 400 N	30"	CMP	$3,015
WW-15	5419	4300 W 400 N	30"	CMP	$5,420
WW-16	10217	5100 W 2200 S	24"	RCP	$3,043
WW-16	10219	5100 W 2200 S	15"	CMP	$1,791
WW-16	10226	5300 W 2200 S	24"	RCP	$18,734
WW-16	10227	5200 W 2200 S	21"	RCP	$51,521
WW-16	10228	5100 W 2200 S	24"	RCP	$45,692
WW-16	10231	4900 W 2200 S	24"	RCP	$34,498
WW-16	10232	4800 W 2200 S	24"	RCP	$35,772
WW-16	10233	4750 W 2200 S	15"	RCP	$24,542
WW-16	10234	2299 S 4700 W	15"	RCP	$16,242
WW-16	10247	2220 S 4700 W	12"	CMP	$1,962
WW-16	10248	2230 S 4700 W	12"	RCP	$2,242
WW-16	10249	2250 S 4700 W	18"	RCP	$2,475
WW-16	10250	2300 S 4700 W	18"	RCP	$3,713
WW-16	10835	5000 W 2200 S	24"	RCP	$73,218
WW-19	4799	3700 W 2550 S	15"	RCP	$22,587
WW-19	5056	2800 S 3500 W	36"	CMP	$5,565
WW-19	5057	2800 S 3500 W	36"	RCP	$5,411
WW-19	5058	2800 S 3500 W	18"	RCP	$1,433
WW-19	5062	2900 S 3500 W	18"	RCP	$12,000
WW-19	5063	2900 S 3500 W	24"	RCP	$7,539
WW-19	5064	2900 S 3500 W	24"	RCP	$7,876
WW-19	5066	3000 S 3500 W	18"	RCP	$4,632
WW-19	5068	3000 S 3500 W	18"	RCP	$47,568
WW-19	5069	3100 S 3500 W	24"	RCP	$61,456
WW-19	5099	4300 W 3300 S	15"	CMP	$53,024
WW-19	9486	3700 W 2550 S	15"	RCP	$13,614
WW-20	5115	3000 S 5100 W	12"		$2,163
WW-20	5140	3000 S 5100 W	18"	RCP	$4,101

Note:
For pipe locations, refer to Figure B.2.

TABLE A.2 WEST WEBER COUNTY STORM DRAIN INFRASTRUCTURE					
Estimate of Existing Value					
Problem ID	**Feature ID**	**Location**	**Ex. Size**	**Material**	**Ex Value**
WW-20	5141	3000 S 5100 W	18"	RCP	$2,132
WW-20	5142	3000 S 5100 W	18"	CMP	$2,952
WW-21	4846	2800 S 4700 W	12"	RCP	$3,029
WW-21	4849	2770 S 4700 W	12"	RCP	$20,120
WW-21	4850	2750 S 4700 W	12"	RCP	$2,813
WW-21	4851	2700 S 4700 W	18"	RCP	$1,911
WW-21	4855	2700 S 4700 W	12"	CMP	$6,490
WW-21	4857	2670 S 4700 W	18"	RCP	$35,290
WW-21	4859	2650 S 4700 W	15"	CMP	$2,866
WW-21	4860	2630 S 4700 W	12"	CMP	$1,947
WW-21	4861	2600 S 4700 W	15"	CMP	$1,970
WW-21	4863	2550 S 4700 W	18"	CMP	$2,866
WW-21	4864	4700 W 2550 S	18"	RCP	$1,672
WW-21	10284	4600 W 2550 S	15"	Smooth Metal	$3,105
WW-21	10285	4600 W 2550 S	18"	RCP	$6,927
WW-21	10286	4600 W 2550 S	18"	RCP	$717
WW-21	10287	4600 W 2550 S	18"	RCP	$10,032
WW-21	10290	5000 W 2550 S	24"	RCP	$25,955
WW-21	10291	5100 W 2550 S	15"	CMP	$17,668
WW-21	10843	4700 W 2550 S	24"	RCP	$45,645
WW-21	10844	4800 W 2550 S	24"	RCP	$14,644
WW-21	10845	1900 W 2550 S	18"	RCP	$27,720
WW-21	11945	4300 W 2550 S	18"		$18,152
WW-22	4279	3950 W 1800 S	15"	RCP	$41,850
WW-22	4769	1800 S 4200 W	24"	RCP	$45,126
WW-22	4777	4000 W 1800 S	24"	RCP	$13,090
WW-22	4816	1760 S 4300 W	36 (2)	RCP	$3,097
WW-22	4832	1760 S 4300 W	36 (2)	RCP	$1,032
WW-22	9382	1760 S 4300 W	6' X 4'	Concrete	$38,164
WW-22	9383	1700 S 4700 W	5' X 2'	Concrete	$7,978
WW-22	9396	4750 W 1800 S	48"	CMP	$20,834
WW-22	10700	1760 4300 W	36 (2)	RCP	$13,628
WW-23	10780	13' X 3 ' Box	13' X 3'	Concrete	$22,197
WW-24		4550 W 2800 S			$30,852
				WW Total:	**$2,446,481**

Note:
For pipe locations, refer to Figure B.2.

APPENDIX B:
CAPITAL FACILITIES ANALYSIS



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HANSEN ALLEN & LUCE inc ENGINEERS	WEBER COUNTY STORMWATER MASTER PLAN	OGDEN VALLEY SERVICE AREA CAPITAL IMPROVEMENTS	FIGURE B.1

Table B.1 - Ogden Valley Storm Drain Projects

Estimate of Probable Costs (based on costs in 2017)

Project or Feature ID	Project or Feature Description	Cost Estimate	System (2025)	System (Buildout)	Ex. Deficiency
UV - 01					
6240	Install 36" culvert at 950 S 6800 E	$20,800	$5,408	$7,904	$7,488
	Subtotal:	$20,800	26%	38%	36%
UV - 04					
8516	Install 72" culvert, Maintain adequate channel at 2950 E 4100 N	$46,800			
8517	Install 72" culvert, Maintain adequate channel at 2900 E 4100 N	$46,800			
8532	Install 8' x 8' box culvert, Maintain adequate channel at 4100 N 3300 E	$53,040			
8533	Install 8' x 8' box culvert, Maintain adequate channel at 4100 N 3300 E	$94,640	$87,069	$121,274	$102,617
8534	Reroute flow to depression near Haight residence and install 30" culvert under 4100 N w\discharge channel south to Chicken Creek	$16,640			
8535	Install 8' x 8' box culvert, Maintain adequate channel at 4100	$53,040			
	Subtotal:	$310,960	28%	39%	33%
UV - 05					
7375	Install (2) 8' x 8' box culverts at 6825 N	$156,000	$29,640	$39,000	$87,360
	Subtotal:	$156,000	19%	25%	56%
UV - 07					
6009	Install 48" pipe and inlets as needed in low areas at 4990 E 2725 N. Develop general drainage and discharge plan for neighborhood	$29,120			
8141	Install 36" pipe and inlets as needed in low areas at 2800 N 4975 E. Develop general drainage and discharge plan for neighborhood	$89,440	$65,104	$87,890	$172,526
8144	Install 48" pipe and inlets as needed in low areas at 2800 N 4975 E. Develop general drainage and discharge plan for neighborhood	$138,320			
8145	Install 48" pipe and inlets as needed in low areas. Develop general drainage and discharge plan for neighborhood.	$68,640			
	Subtotal:	$325,520	20%	27%	53%

WEBER COUNTY

Table B.1 - Ogden Valley Storm Drain Projects

Estimate of Probable Costs (based on costs in 2017)

Project or Feature ID	Project or Feature Description	Cost Estimate	System (2025)	System (Buildout)	Ex. Deficiency
UV - 10					
8480	Install (2) 8' x 8' box culverts, Maintain adequate channel at Shaw Dr	$105,040	$29,411	$39,915	$140,754
8481	Install (2) 8' x 8' box culverts, Maintain adequate channel at Shaw Dr	$105,040			
	Subtotal:	$210,080	14%	19%	67%
UV - 13					
7380	Install (2) 8' x 8' box culverts	$105,040			
8551	Install (2) 8' x 8' box culverts	$105,040	$59,873	$78,780	$176,467
11924	Install (2) 8' x 8' box culverts	$105,040			
	Subtotal:	$315,120	19%	25%	56%
UV - 15					
5956	Install 8' x 8' box culvert, Maintain adequate channel at 3700 N 3500 E	$53,040			
5958	Install 8' x 8' box culvert, Maintain adequate channel at 3500 E	$53,040	$23,296	$31,616	$111,488
5959	Install 8' x 8' box culvert, Maintain adequate channel 3750 E	$60,320			
	Subtotal:	$166,400	14%	19%	67%
UV - 16					
5961	Install 72" culvert at 3500 E	$75,920	$21,258	$29,609	$25,054
	Subtotal:	$75,920	28%	39%	33%
UV - 18					
6024	Install 72" culvert. Increase to 100 Year Capacity	$84,240			
6034	Install 60" culvert, Increase to 100 Year Capacity	$44,720	$16,380	$23,400	$194,220
8196	Install 8' x 8' box culvert, Maintain adequate channel.	$105,040			
	Subtotal:	$234,000	7%	10%	83%

Table B.1 - Ogden Valley Storm Drain Projects

Estimate of Probable Costs (based on costs in 2017)

Project or Feature ID	Project or Feature Description	Cost Estimate	System (2025)	System (Buildout)	Ex. Deficiency
UV - 26					
5988	Install 8' x 8' box culvert at 3300 E River Dr	$53,040			
7178	Install 60" culvert at Patio Springs Rd, above WCGC	$53,040			
7201	Install 72" culvert at Creek View Dr	$62,400	$56,930	$77,262	$272,449
7206	Install 72" culvert at 3450 N (east of Foothill Ln)	$58,240			
7207	Install 72" culvert at 4500 E Fuller Dr	$46,800			
7211	Install 60" culvert at Patio Springs Dr and Fairway Oaks	$133,120			
	Subtotal:	$406,640	14%	19%	67%
UV - 28					
5932	Install 8' x 8' box culvert at Fairways Dr	$53,040	$22,724	$27,508	$69,368
7213	Install 8' x 8' box culvert at Creek View Dr	$66,560			
	Subtotal:	$119,600	19%	23%	58%
UV - 34					
7665	Outfall unknown. Reroute to Wolf Creek via detention at wastewater facility. Install 8' x 8' box culvert at SR 158 (below WC resort)	$226,720	$75,483	$91,374	$230,422
7667	Outfall unknown. Reroute to Wolf Creek via detention at wastewater facility. Install 8' x 8' box culvert at SR 158 (below WC resort)	$170,560			
	Subtotal:	$397,280	19%	23%	58%
UV - 35					
5962	Approx. 1.2 acre-feet detention available, but insufficient for 100 Year flow. Install 72" culvert and orifice at Buckhorn Dr	$90,480			
5964	Install 72" culvert at Wapiti Rd	$99,840			
7055	Install 72" culvert at Elkhorn Dr	$46,800	$76,201	$94,130	$277,909
7537	Install 72" culvert at Eagle Crest Dr	$115,440			
7600	Install 60" culvert at Porcupine Ridge Dr	$37,440			
7637	Install 60" culvert at Elk Ridge Trail	$58,240			
	Subtotal:	$448,240	17%	21%	62%

Table B.1 - Ogden Valley Storm Drain Projects

Estimate of Probable Costs (based on costs in 2017)

Project or Feature ID	Project or Feature Description	Cost Estimate	System (2025)	System (Buildout)	Ex. Deficiency
UV - 36					
7076	Install 72" culvert. Maintain adequate channel at 4480 N Sheep Creek Dr	$67,600	$18,252	$22,984	$26,364
	Subtotal:	$67,600	27%	34%	39%
UV - 37					
-	Install (4) 8' x 8' box culverts, Maintain adequate channel at Sheep Creek Crossing	$210,080	$127,691	$173,295	$611,094
8484	Install 8' x 8' box culvert, Maintain adequate channel at 5750 N 3100 E	$55,120			
8500	Install (4) 8' x 8' box culverts, Maintain adequate channel at 5200 N 3500 E	$331,760			
8503	Install (4) 8' x 8' box culverts, Maintain adequate channel at 5200 N 3600 E	$210,080			
8564	Install (2) 8' x 8' box culverts, Maintain adequate channel at 5600 N	$105,040			
	Subtotal:	$912,080	14%	19%	67%
UV - 41					
6078	Install 48" culvert at 1100 N 7800 E	$26,000	$9,100	$12,220	$4,680
	Subtotal:	$26,000	35%	47%	18%
UV - 44					
8475	Install (3) 8' x 8' box culverts at 5950 N	$198,640	$43,701	$55,619	$99,320
	Subtotal:	$198,640	22%	28%	50%
UV - 45					
8522	Install 30" culvert at 3250 E 4800 N	$20,800	$5,824	$7,904	$27,872
8523	Install 30" culvert at 3250 E 4800 N	$20,800			
	Subtotal:	$41,600	14%	19%	67%

Table B.1 - Ogden Valley Storm Drain Projects

Estimate of Probable Costs (based on costs in 2017)

Project or Feature ID	Project or Feature Description	Cost Estimate	System (2025)	System (Buildout)	Ex. Deficiency
UV - 46					
8524	Install 30" culvert, install catch basin if needed at 4650 N	$15,600	$2,184	$2,964	$10,452
	Subtotal:	$15,600	14%	19%	67%
UV - 48					
5952	Install 48" culvert; Maintain channel at 3700 N 2900 E	$31,200	$8,736	$12,168	$10,296
	Subtotal:	$31,200	28%	39%	33%
UV - 49					
5969	Install 30" culvert at 3350 N 2900 E	$24,960	$6,989	$9,734	$8,237
	Subtotal:	$24,960	28%	39%	33%
UV - 50					
8518	Install 24" culvert at 3930 N 2900 E	$11,440	$7,571	$10,546	$8,923
8536	Install 30" culvert at 4000 N 3300 E	$15,600			
	Subtotal:	$27,040	28%	39%	33%
UV - 51					
8549	Install 30" culvert at 4100 N 3800 E	$102,960	$14,414	$19,562	$68,983
	Subtotal:	$102,960	14%	19%	67%
UV - 52					
6022	Install 48" culvert at Nordic Valley Rd	$26,000	$5,460	$7,800	$64,740
6030	Install 48" culvert at 2700 N Nordic Valley Way	$26,000			
6031	Install 48" culvert at 2500 N Viking Dr	$26,000			
	Subtotal:	$78,000	7%	10%	83%

Table B.1 - Ogden Valley Storm Drain Projects

Estimate of Probable Costs (based on costs in 2017)

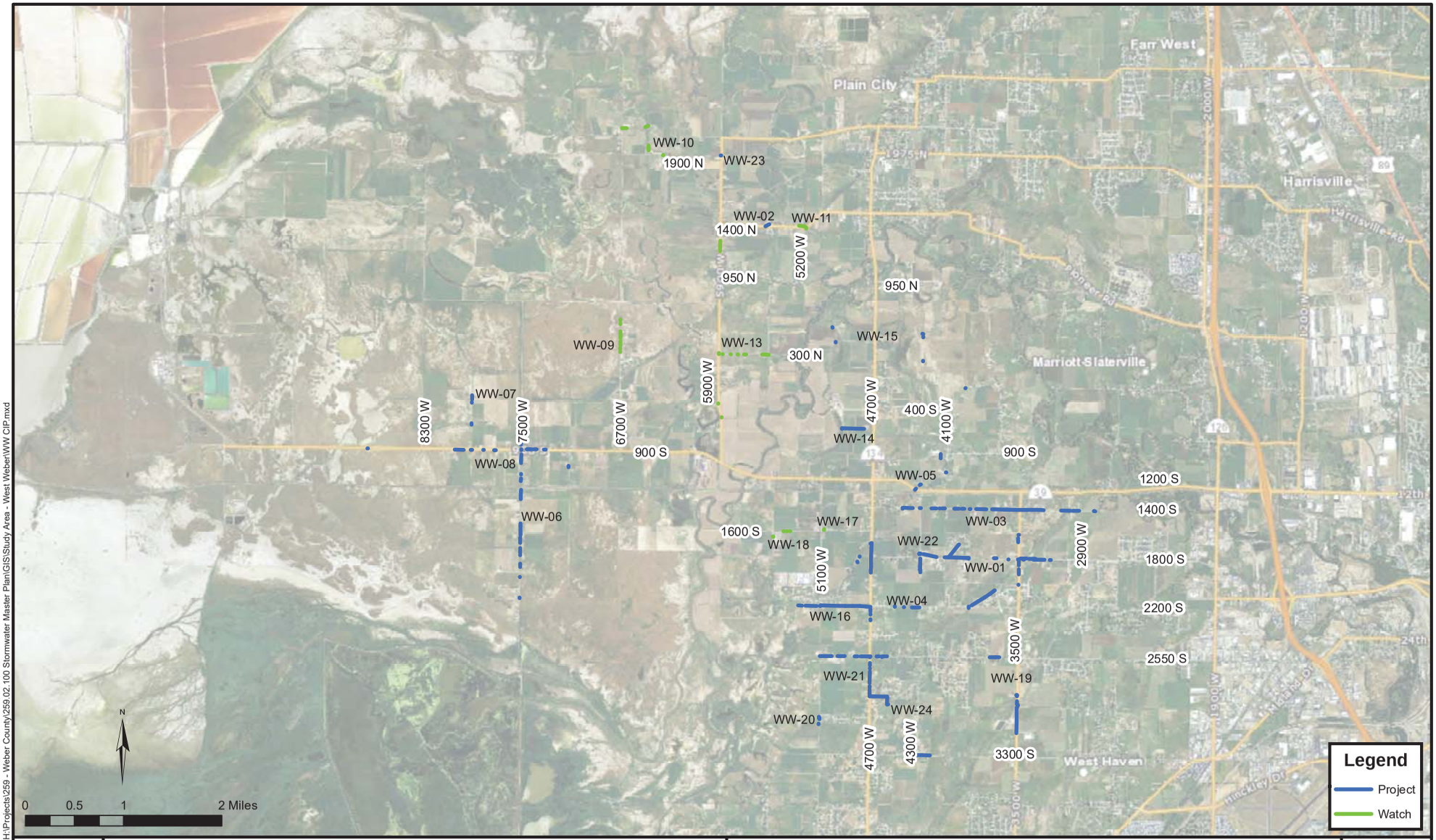
Project or Feature ID	Project or Feature Description	Cost Estimate	System (2025)	System (Buildout)	Ex. Deficiency
UV - 60					
5931	Install 8' x 8' box culvert at Snowflake Dr	$76,960	$19,240	$19,240	$38,480
	Subtotal:	$76,960	25%	25%	50%
UV - 63					
6019	Install 18" culvert at 3100 N 3500 E	$10,400	$728	$1,040	$8,632
	Subtotal:	$10,400	7%	10%	83%
UV - 64					
6067	Install 30" culvert at 5800 E 2200 N	$17,680	$4,243	$6,011	$7,426
	Subtotal:	$17,680	24%	34%	42%
UV - 68					
5939 5940	Install 30" culvert at 5300 E Elkhorn Dr Install 30" culvert at 5300 E Elkhorn Cir	$30,160 $32,240	$10,608	$13,104	$38,688
	Subtotal:	$62,400	17%	21%	62%
UV - 72					
-	Rerout and/or install culvert at Earl Chambers home	$20,800	$1,040	$1,456	$18,304
	Subtotal:	$20,800	5%	7%	88%
UV - 73					
-	Install culvert to divert runoff to Chicken Creek at 3300 E	$20,800	$5,824	$8,112	$6,864
	Subtotal:	$20,800	28%	39%	33%
UV - 74					
-	Install culverts at Avon Divide	$40,560	$7,706	$10,140	$22,714
	Subtotal:	$40,560	19%	25%	56%
UV - 75					
-	Install new culvert and rout to Pole Canyon at 3804 E 2050 N (Nordic Valley area)	$11,440	$801	$1,144	$9,495
	Subtotal:	$11,440	7%	10%	83%

Table B.1 - Ogden Valley Storm Drain Projects

Estimate of Probable Costs (based on costs in 2017)

Project or Feature ID	Project or Feature Description	Cost Estimate	System (2025)	System (Buildout)	Ex. Deficiency
UV - 76					
-	Replace and upsize pipe to 24" at 3500 E (across from ski resort)	$18,720	$1,310	$1,872	$15,538
	Subtotal:	$18,720	7%	10%	83%
UV - 77					
-	Install pipes through two properties at 4650 E	$238,160	$33,342	$45,250	$159,567
	Subtotal:	$238,160	14%	19%	67%
UV - 78					
-	Upsize according to County determination at Sheep Creek Ph. 2 &3 (4600 N Sheep Creek Dr)	$20,800	$5,616	$7,072	$8,112
	Subtotal:	$20,800	27%	34%	39%
UV - 79					
-	Continue with 36" pipe through low area at Fields near 2300 N 5400 W	$1,107,600	$265,824	$376,584	$465,192
	Subtotal:	$1,107,600	24%	34%	42%
UV - 80					
-	Increase ditch capacity. Regional detention proposed upstream at Sierra Dr / 5300 E / 2600 N	$82,160	$19,718	$27,934	$34,507
	Subtotal:	$82,160	24%	34%	42%
UV - 81					
-	Increase capacity or reroute to Heinz Canyon at Elkhorn Dr, east of Elkview Dr	$82,160	$13,967	$17,254	$50,939
	Subtotal:	$82,160	17%	21%	62%
UV - 82					
-	Upsize culverts if needed; coordinate with UDOT at Behind Juniper Ln, downstream of UDOT culverts	$61,360	$11,658	$14,113	$35,589
	Subtotal:	$61,360	19%	23%	58%
	TOTALS:	**$6,584,240**	**$1,220,326**	**$1,634,786**	**$3,729,128**

WEBER COUNTY



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WEBER COUNTY STORMWATER MASTER PLAN

WEST WEBER SERVICE AREA CAPITAL IMPROVEMENTS

FIGURE B.2

TABLE B.2 - WEST WEBER STORM DRAIN PROJECTS						
Estimate of Probable Costs (based on costs in 2017)						
Problem ID/ Feature ID	**Project/Feature Description**	**Location**	**Cost Estimate**	**System (2025)**	**System (Buildout)**	**Ex. Deficiency**
WW-01						
4773	Install 36" culvert	3900 W 1800 S	$16,640			
4774	Install (2) 48" culverts	3950 W 1800 S	$494,000			
4778	Install 12' x 3' box culvert	4000 W 1800 S	$513,760			
4781	Install 24" culvert	3700 W 1800 S	$33,280			
4782	Install 36" culvert	3600 W 1800 S	$6,240			
4838	Install 36" culvert	4300 W 1800 S	$57,200			
4989	Install 30" culvert	2200 S 3900 W	$22,880			
5010	Install (2) 48" culverts	1600 S 3500 W	$41,600			
5011	Install 42" culvert	1700 S 3500 W	$12,480			
5013	Install 48" culvert	1700 S 3500 W	$65,520			
5016	Install 24" culvert	3470 W 1800 S	$23,920			
5017	Install 30" culvert	3470 W 1800 S	$14,560			
5019	Install 24" culvert	3400 W 1800 S	$63,440			
5020	Install 24" culvert	3400 W 1800 S	$18,720			
5023	Install 24" culvert	3400 W 1800 S	$97,760			
5024	Install 24" culvert	3400 W 1800 S	$15,600			
5025	Install 36" culvert	3500 W 1800 S	$19,760			
5026	Install 36" culvert	3500 W 1800 S	$58,240			
5028	Install 36" culvert	1800 S 3500 W	$17,680			
5029	Install 36" culvert	1850 S 3500 W	$112,320			
6336	Install 36" culvert	1900 S 3500 W	$13,520			
6338	Install 36" culvert	Taylor Canal	$15,600			
6340	Install 36" culvert	Taylor Canal	$133,120	$1,005,534	$1,768,354	$693,472
6346	Install 36" culvert	Taylor Canal	$177,840			
9385	Install 42" culvert	Taylor Canal	$130,000			
9386	Install 42" culvert	1700 S 4700 W	$60,320			
9387	Install 42" culvert	1700 S 4700 W	$101,920			
9388	Install (2) 48" culverts	1700 S 4700 W	$72,800			
9392	Install 30" culvert	1800 S 4700 W	$97,760			
9393	Install 30" culvert	1825 S 4700 W	$56,160			
9394	Install 30" culvert	1850 S 4700 W	$58,240			
9395	Install 30" culvert	1900 S 4700 W	$43,680			
9416	Install 24" culvert	2000 S 3500 W	$2,080			
9434	Install 24" culvert	3450 W 1800 S	$56,160			
9436	Install 24" culvert	3400 W 1800 S	$45,760			
9523	Install 30" culvert	Taylor Canal	$120,640			
9524	Install 36" culvert	Taylor Canal	$101,920			
9543	Install (2) 48" culverts	3900 W 1800 S	$141,440			
9545	Install (2) 48" culverts	3900 W 1800 S	$42,640			
9643	Install 30" culvert	3900 W 1800 S	$9,360			
10706	Install 42" culvert	1800 S 4300 W	$204,880			
10707	Install 24" culvert	1800 S 4300 W	$64,480			
10708	Install 42" culvert	1900 S 4300 W	$9,360			
10853	Install 36" culvert	1800 S 4300 W	$2,080			
		Subtotal:	**$3,467,360**	29%	51%	20%

TABLE B.2 - WEST WEBER STORM DRAIN PROJECTS						
Estimate of Probable Costs (based on costs in 2017)						
Problem ID/ Feature ID	**Project/Feature Description**	**Location**	**Cost Estimate**	**System (2025)**	**System (Buildout)**	**Ex. Deficiency**
WW-02						
4437	Install 42" culvert	5500 W 1400 N	$110,240	$15,434	$40,789	$54,018
		Subtotal:	**$110,240**	14%	37%	49%
WW-03						
4745	Install 36" culvert	4200 W 1400 S	$35,360			
4746	Install 36" culvert	4200 W 1400 S	$59,280			
4747	Install 36" culvert	4200 W 1400 S	$10,400			
4748	Install 36" culvert	4100 W 1400 S	$64,480			
4749	Install 30" culvert	4100 W 1400 S	$5,200			
4751	Install 36" culvert	4000 W 1400 S	$66,560			
4752	Install 36" culvert	4000 W 1400 S	$61,360			
4753	Install 30" culvert	3900 W 1400 S	$15,600			
4754	Install 30" culvert	3850 W 1400 S	$7,280			
4755	Install 30" culvert	3800 W 1400 S	$147,680			
4756	Install 24" culvert	3700 W 1400 S	$22,880			
4757	Install 42" culvert	3650 W 1400 S	$236,080			
4758	Install 42" culvert	3600 W 1400 S	$206,960			
4759	Install 30" culvert	3550 W 1400 S	$55,120	$593,466	$1,059,760	$466,294
4990	Install 30" culvert	3000 W 1400 S	$45,760			
4991	Install 30" culvert	3050 W 1400 S	$34,320			
4992	Install 36" culvert	3100 W 1400 S	$204,880			
4995	Install 36" culvert	3400 W 1400 S	$262,080			
4997	Install 36" culvert	3450 W 1400 S	$118,560			
4999	Install 30" culvert	1400 S 3500 W	$50,960			
5119	Install 30" culvert	2800 W 1400 S	$14,560			
5120	Install 30" culvert	1400 S 2800 W	$12,480			
9444	Install 36" culvert	3350 W 1400 S	$93,600			
9446	Install 42" culvert	3700 W 1400 S	$67,600			
10189	Install 36" culvert	4400 W 1400 S	$7,280			
10190	Install 42" culvert	4400 W 1400 S	$20,800			
10194	Install 36" culvert	4350 W 1400 S	$168,480			
10195	Install 36" culvert	1400 S 4300 W	$23,920			
		Subtotal:	**$2,119,520**	28%	50%	22%
WW-04						
4980	Install 30" culvert	4400 W 2200 S	$6,240			
4983	Install 36" culvert	4300 W 2200 S	$160,160	$46,509	$82,285	$50,086
10243	Install 30" culvert	2200 S 4500 W	$12,480			
		Subtotal:	**$178,880**	26%	46%	28%

TABLE B.2 - WEST WEBER STORM DRAIN PROJECTS						
Estimate of Probable Costs (based on costs in 2017)						
Problem ID/ Feature ID	**Project/Feature Description**	**Location**	**Cost Estimate**	**System (2025)**	**System (Buildout)**	**Ex. Deficiency**
WW-05						
5275	Install 42" culvert	4300 W 1200 S	$44,720			
5290	Install 30" culvert	4150 W 900 S	$66,560			
5306	Install 30" culvert	1000 S 4100 W	$11,440	$27,872	$54,350	$57,138
5370	Install 42" culvert	1100 S 4300 W	$6,240			
5371	Install 36" culvert	1100 S 4300 W	$10,400			
		Subtotal:	**$139,360**	20%	39%	41%
WW-06						
5498	Install 30" culvert	7400 W 900 S	$5,200			
5499	Install 36" culvert	2200 S 7500 W	$16,640			
5501	Install 36" culvert	1900 S 7500 W	$6,240			
5503	Install 36" culvert	1800 S 7500 W	$9,360			
9642	Install 30" culvert	7400 W 900 S	$45,760			
9644	Install 30" culvert	7400 W 900 S	$9,360			
9645	Install 42" culvert	7400 W 900 S	$58,240			
9659	Install 30" culvert	1250 S 7500 W	$101,920			
9661	Install 30" culvert	1400 S 7500 W	$44,720			
9663	Install 42" culvert	1400 S 7500 W	$10,400	$0	$74,360	$669,240
9668	Install 36" culvert	1600 S 7500 W	$48,880			
9670	Install 36" culvert	1600 S 7500 W	$126,880			
9671	Install 36" culvert	1650 S 7500 W	$12,480			
9672	Install 36" culvert	1650 S 7500 W	$17,680			
9674	Install 36" culvert	1700 S 7500 W	$83,200			
9675	Install 36" culvert	1700 S 7500 W	$3,120			
9676	Install 36" culvert	1750 S 7500 W	$55,120			
9677	Install 36" culvert	1800 S 7500 W	$73,840			
10861	Install 36" culvert	1800 S 7500 W	$14,560			
		Subtotal:	**$743,600**	0%	10%	90%
WW-07						
5631	Install 36" culvert	400 S 7900 W	$98,800			
5632	Install 24" culvert	400 S 7900 W	$6,240	$0	$9,568	$110,032
5638	Install 24" culvert	7900 W 500 S	$5,200			
5639	Install 24" culvert	7900 W 500 S	$9,360			
		Subtotal:	**$119,600**	0%	8%	92%

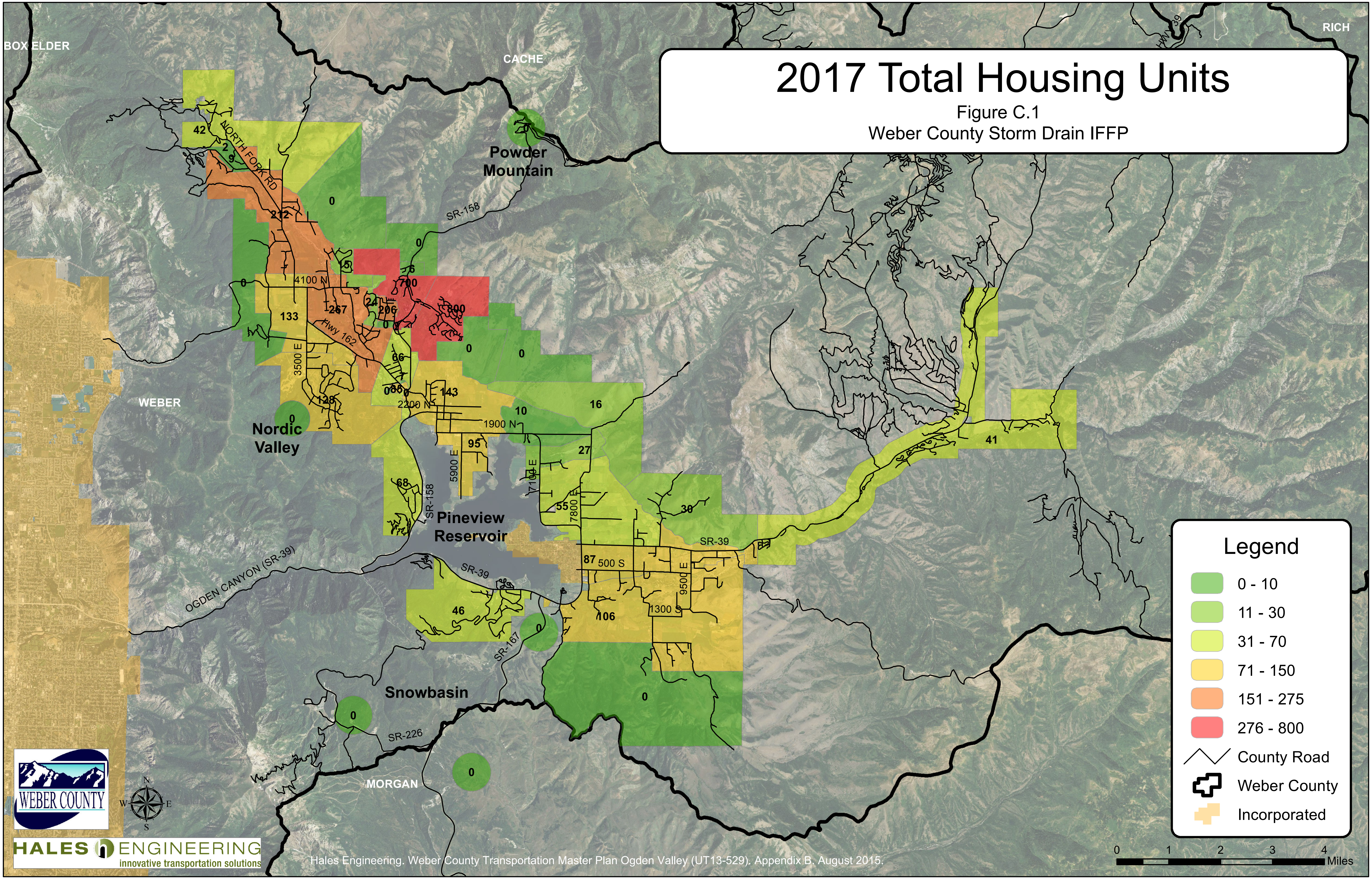
TABLE B.2 - WEST WEBER STORM DRAIN PROJECTS						
Estimate of Probable Costs (based on costs in 2017)						
Problem ID/ Feature ID	**Project/Feature Description**	**Location**	**Cost Estimate**	**System (2025)**	**System (Buildout)**	**Ex. Deficiency**
WW-08						
5489	Install 24" culvert	7300 W 900 S	$22,880			
5514	Install 12' x 3' box culvert	650 S 7500 W	$488,800			
5515	Install (2) 48" culverts	850 S 7500 W	$125,840			
5525	Install 12' x 3' box culvert	7700 W 900 S	$32,240			
5526	Install 12' x 3' box culvert	7700 W 900 S	$32,240			
5527	Install 12' x 3' box culvert	7800 W 900 S	$32,240			
5614	Install 12' x 3' box culvert	8800 W 900 S	$28,080			
5643	Install 12' x 3' box culvert	7900 W 900 S	$32,240			
5654	Install 24" culvert	1150 S 7500 W	$7,280	$0	$0	$1,696,240
5676	Install 24" culvert	1100 S 7100 W	$17,680			
9647	Install (2) 48" culverts	7500 W 900 S	$53,040			
9652	Install 42" culvert	1000 S 7500 W	$135,200			
9653	Install 48" culvert	1000 S 7500 W	$69,680			
9654	Install 24" culvert	1100 S 7500 W	$34,320			
9685	Install (2) 48" culverts	7900 W 900 S	$29,120			
9685	Install 12' x 3' box culvert	7900 W 900 S	$32,240			
9686	Install 12' x 3' box culvert	8000 W 900 S	$523,120			
		Subtotal:	**$1,696,240**	0%	0%	100%
WW-14						
4920	Install (2) 48" culverts	4800 W 700 S	$1,250,080	$228,010	$494,021	$544,690
10762	Install 48" culvert	4800 W 700 S	$16,640			
		Subtotal:	**$1,266,720**	18%	39%	43%
WW-15						
4938	Install 12' x 3' box culvert	5000 W 500 N	$40,560			
4939	Install 12' x 3' box culvert	5000 W 400 N	$26,000			
5394	Install 30" culvert	4000 W 300 S	$6,240	$35,256	$62,286	$19,978
5417	Install 48" culvert	4300 W 300 N	$10,400			
5418	Install 48" culvert	4300 W 400 N	$13,520			
5419	Install 42" culvert	4300 W 400 N	$20,800			
		Subtotal:	**$117,520**	30%	53%	17%

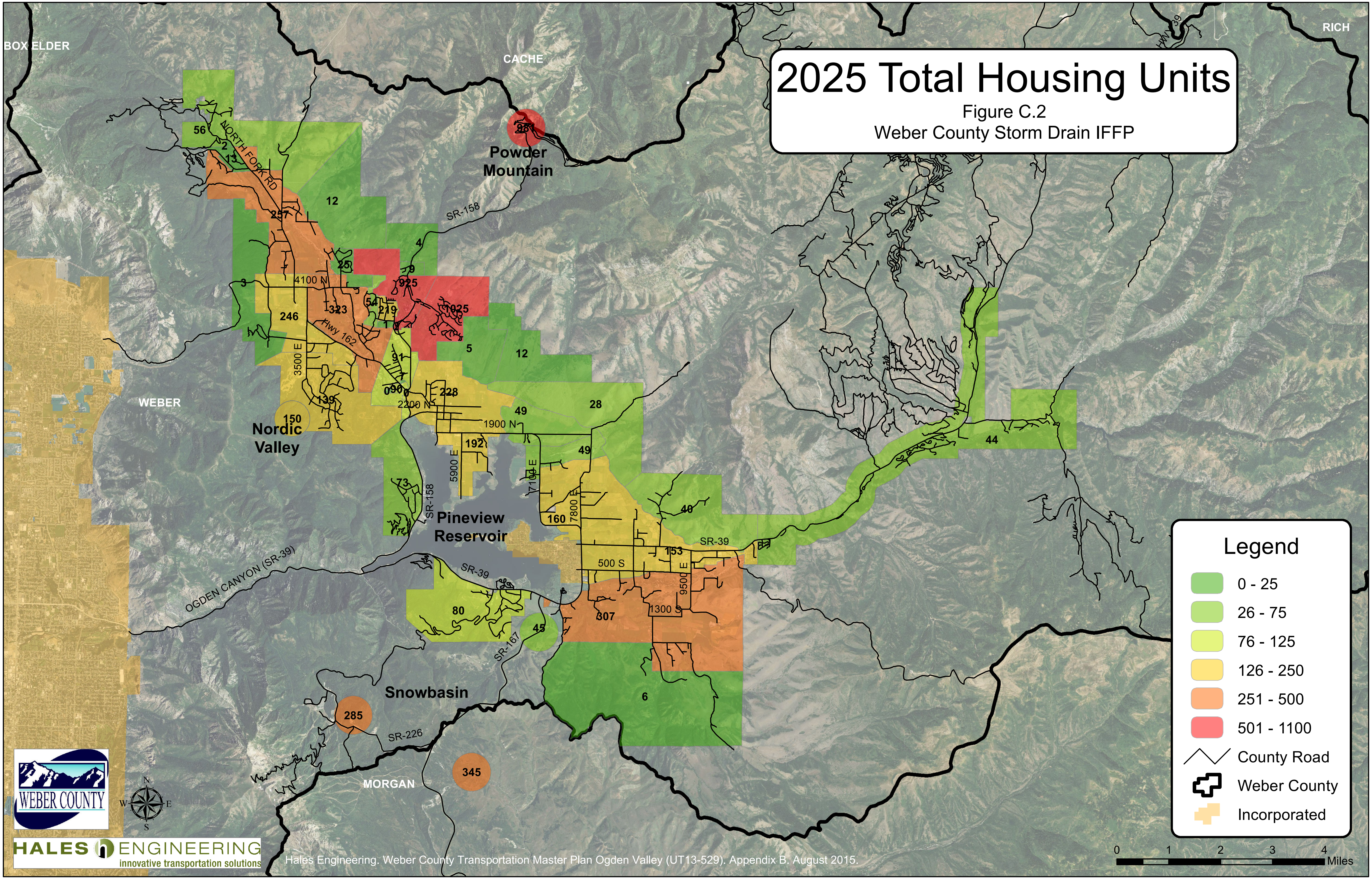
TABLE B.2 - WEST WEBER STORM DRAIN PROJECTS						
Estimate of Probable Costs (based on costs in 2017)						
Problem ID/ Feature ID	**Project/Feature Description**	**Location**	**Cost Estimate**	**System (2025)**	**System (Buildout)**	**Ex. Deficiency**
WW-16						
10217	Install (2) 48" culverts	5100 W 2200 S	$35,360			
10219	Install 36" culvert	5100 W 2200 S	$10,400			
10226	Install 36" culvert	5300 W 2200 S	$85,280			
10227	Install 36" culvert	5200 W 2200 S	$254,800			
10228	Install 36" culvert	5100 W 2200 S	$208,000			
10231	Install 36" culvert	4900 W 2200 S	$157,040			
10232	Install 42" culvert	4800 W 2200 S	$177,840	$478,119	$601,505	$462,696
10233	Install 36" culvert	4750 W 2200 S	$142,480			
10234	Install 30" culvert	2299 S 4700 W	$70,720			
10247	Install 24" culvert	2220 S 4700 W	$7,280			
10248	Install 24" culvert	2230 S 4700 W	$8,320			
10249	Install 24" culvert	2250 S 4700 W	$8,320			
10250	Install 24" culvert	2300 S 4700 W	$12,480			
10835	Install 42" culvert	5000 W 2200 S	$364,000			
		Subtotal:	**$1,542,320**	31%	39%	30%
WW-19						
4799	Install 24" culvert	3700 W 2550 S	$75,920			
5056	Install (2) 48" culverts	2800 S 3500 W	$37,440			
5057	Install (2) 48" culverts	2800 S 3500 W	$36,400			
5058	Install 36" culvert	2800 S 3500 W	$8,320			
5062	Install (2) 48" culverts	2900 S 3500 W	$177,840			
5063	Install 36" culvert	2900 S 3500 W	$34,320	$379,142	$704,122	$270,816
5064	Install (2) 48" culverts	2900 S 3500 W	$91,520			
5066	Install 48" culvert	3000 S 3500 W	$34,320			
5068	Install 42" culvert	3000 S 3500 W	$301,600			
5069	Install 36" culvert	3100 S 3500 W	$279,760			
5099	Install 30" culvert	4300 W 3300 S	$230,880			
9486	Install 24" culvert	3700 W 2550 S	$45,760			
		Subtotal:	**$1,354,080**	28%	52%	20%

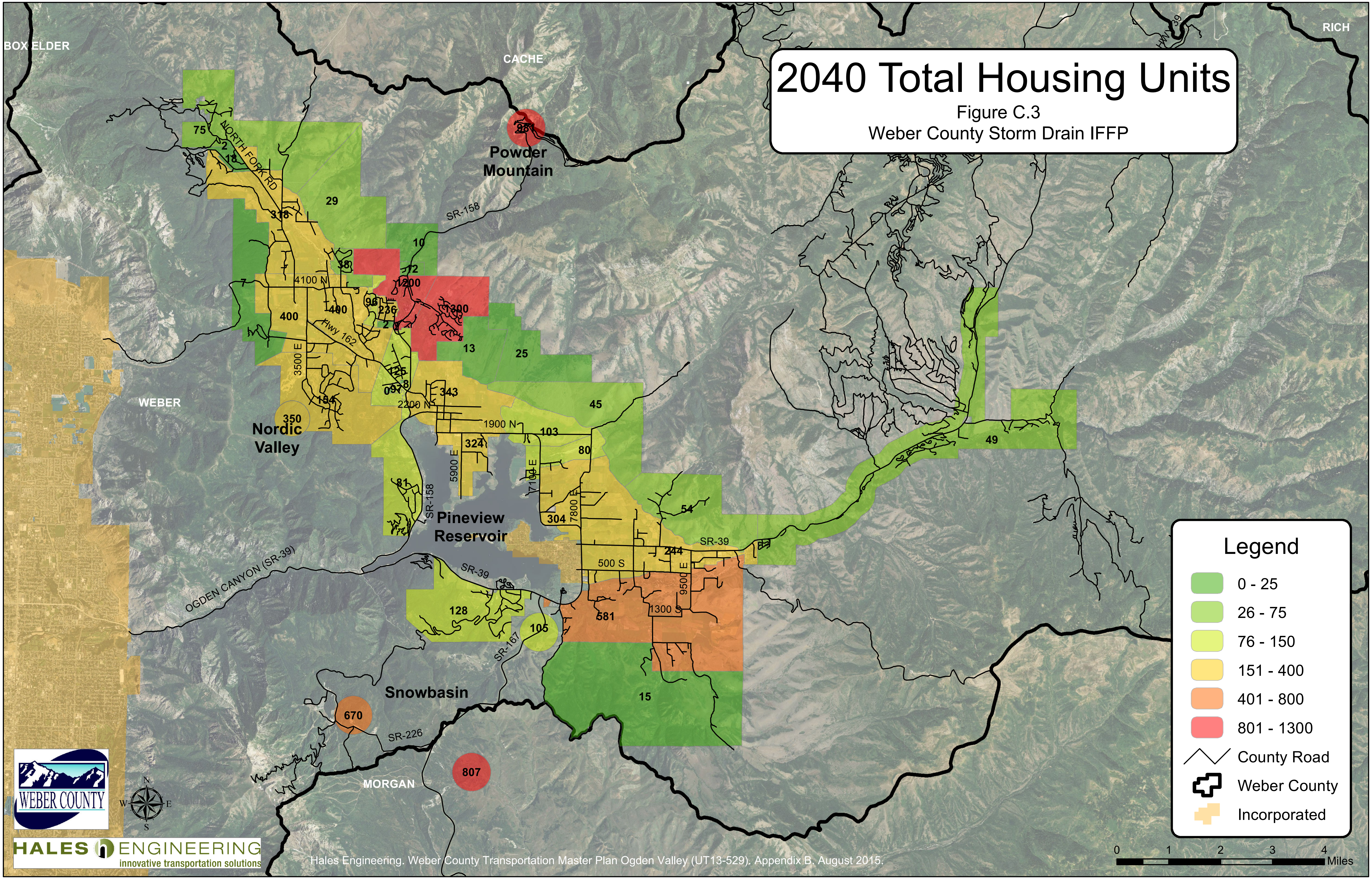
TABLE B.2 - WEST WEBER STORM DRAIN PROJECTS						
Estimate of Probable Costs (based on costs in 2017)						
Problem ID/ Feature ID	**Project/Feature Description**	**Location**	**Cost Estimate**	**System (2025)**	**System (Buildout)**	**Ex. Deficiency**
WW-20						
5115	Install 30" culvert	3000 S 5100 W	$10,400	$28,142	$17,846	$22,651
5140	Install 42" culvert	3000 S 5100 W	$26,000			
5141	Install 42" culvert	3000 S 5100 W	$13,520			
5142	Install 42" culvert	3000 S 5100 W	$18,720			
		Subtotal:	**$68,640**	41%	26%	33%
WW-21						
4846	Install 30" culvert	2800 S 4700 W	$14,560	$464,256	$947,856	$522,288
4849	Install 36" culvert	2770 S 4700 W	$128,960			
4850	Install 30" culvert	2750 S 4700 W	$13,520			
4851	Install 30" culvert	2700 S 4700 W	$8,320			
4855	Install 36" culvert	2700 S 4700 W	$41,600			
4857	Install 36" culvert	2670 S 4700 W	$204,880			
4859	Install 36" culvert	2650 S 4700 W	$16,640			
4860	Install 30" culvert	2630 S 4700 W	$9,360			
4861	Install 36" culvert	2600 S 4700 W	$11,440			
4863	Install 36" culvert	2550 S 4700 W	$16,640			
4864	Install 30" culvert	4700 W 2550 S	$7,280			
10284	Install 30" culvert	4600 W 2550 S	$13,520			
10285	Install 30" culvert	4600 W 2550 S	$30,160			
10286	Install 30" culvert	4600 W 2550 S	$3,120			
10287	Install 30" culvert	4600 W 2550 S	$43,680			
10290	Install 48" culvert	5000 W 2550 S	$150,800			
10291	Install 12' x 3' box culvert	5100 W 2550 S	$392,080			
10843	Install 48" culvert	4700 W 2550 S	$265,200			
10844	Install 42" culvert	4800 W 2550 S	$72,800			
10845	Install (2) 48" culverts	1900 W 2550 S	$410,800			
11945	Install 30" culvert	4300 W 2550 S	$79,040			
		Subtotal:	**$1,934,400**	24%	49%	27%

TABLE B.2 - WEST WEBER STORM DRAIN PROJECTS						
Estimate of Probable Costs (based on costs in 2017)						
Problem ID/ Feature ID	**Project/Feature Description**	**Location**	**Cost Estimate**	**System (2025)**	**System (Buildout)**	**Ex. Deficiency**
WW-22						
4279	Install 12' x 3' box culvert	3950 W 1800 S	$928,720	$719,264	$1,284,400	$565,136
4769	Install 12' x 3' box culvert	1800 S 4200 W	$785,200			
4777	Install 12' x 3' box culvert	4000 W 1800 S	$227,760			
4816	Install 12' x 3' box culvert	1760 S 4300 W	$15,600			
4832	Install 12' x 3' box culvert	1760 S 4300 W	$5,200			
9382	Install bridge or multiple box culverts	1760 S 4300 W	$254,800			
9383	Install bridge or multiple box culverts	1700 S 4700 W	$62,400			
9396	Install bridge or multiple box culverts	4750 W 1800 S	$220,480			
10700	Install 12' x 3' box culvert	1760 4300 W	$68,640			
		Subtotal:	**$2,568,800**	28%	50%	22%
WW-23						
10780	Replace existing 13' x 3' box culvert		$78,000	$3,120	$13,260	$61,620
		Subtotal:	**$78,000**	4%	17%	79%
WW-24						
	Install 24" pipe in road and route to 4700 W	4550 W 2800 S	$357,760	$85,862	$175,302	$96,595
		Subtotal:	**$357,760**	24%	49%	27%
		TOTALS:	**$17,863,040**	**$4,109,986**	**$7,390,063**	**$6,362,990**

APPENDIX C:
POPULATION GROWTH BY REGION

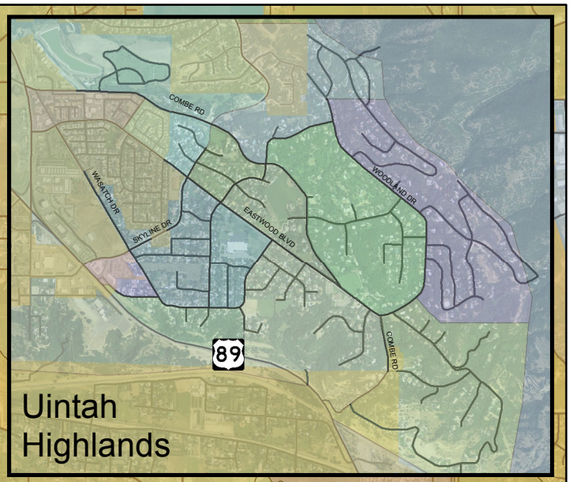

2017 Total Housing Units
Figure C.1
Weber County Storm Drain IFFP
BOX ELDER
CACHE
RICH
WEBER
MORGAN
Powder Mountain
Nordic Valley
Pineview Reservoir
Snowbasin
NORTH FORK RD
SR-158
4100 N
Hwy 162
3500 E
2200 N
1900 N
5900 E
7100 E
7800 E
500 S
9500 E
1300 S
SR-39
OGDEN CANYON (SR-39)
SR-167
SR-226
HWY 39
42
2
9
212
0
6
15
700
800
24
206
267
133
0
66
143
128
10
16
95
27
41
68
55
30
87
46
106
Legend
0 - 10
11 - 30
31 - 70
71 - 150
151 - 275
276 - 800
County Road
Weber County
Incorporated
WEBER COUNTY
HALES ENGINEERING
innovative transportation solutions
Hales Engineering. Weber County Transportation Master Plan Ogden Valley (UT13-529). Appendix B. August 2015.
0 1 2 3 4
Miles


2025 Total Housing Units
Figure C.2
Weber County Storm Drain IFFP
BOX ELDER
CACHE
RICH
WEBER
MORGAN
Powder Mountain
Nordic Valley
Pineview Reservoir
Snowbasin
NORTH FORK RD
SR-158
4100 N
Hwy 162
3500 E
2200 N
1900 N
5900 E
7100 E
7800 E
500 S
9500 E
1300 S
SR-39
OGDEN CANYON (SR-39)
SR-167
SR-226
56
2
13
257
12
4
25
9
925
1025
3
246
323
54
219
5
12
91
0
90
228
28
139
150
49
192
49
73
160
40
153
44
80
45
307
6
285
345
Legend
0 - 25
26 - 75
76 - 125
126 - 250
251 - 500
501 - 1100
County Road
Weber County
Incorporated
0 1 2 3 4 Miles
WEBER COUNTY
HALES ENGINEERING
innovative transportation solutions
Hales Engineering. Weber County Transportation Master Plan Ogden Valley (UT13-529). Appendix B. August 2015.


2040 Total Housing Units
Figure C.3
Weber County Storm Drain IFFP
BOX ELDER
CACHE
RICH
WEBER
MORGAN
Powder Mountain
Nordic Valley
Pineview Reservoir
Snowbasin
NORTH FORK RD
SR-158
4100 N
Hwy 162
3500 E
2200 N
1900 N
5900 E
7100 E
7800 E
SR-39
500 S
9500 E
1300 S
OGDEN CANYON (SR-39)
SR-167
SR-226
HWY 39
75
2
18
29
318
10
38
72
1200
7
96
236
400
400
1300
2
13
25
125
097
8
343
154
350
45
103
324
80
81
49
304
54
244
128
105
581
15
670
807
Legend
0 - 25
26 - 75
76 - 150
151 - 400
401 - 800
801 - 1300
County Road
Weber County
Incorporated
0
1
2
3
4
Miles
WEBER COUNTY
HALES ENGINEERING
innovative transportation solutions
Hales Engineering. Weber County Transportation Master Plan Ogden Valley (UT13-529). Appendix B. August 2015.

2017 Housing Units

Figure C.4
Weber County Storm Drain IFFP



Legend

- County or State Road
- 0 Housing Units
- Development Area
- Incorporated

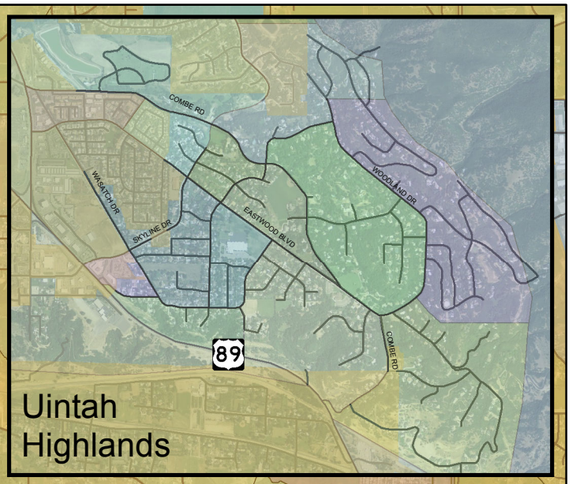
0 0.5 1 1.5 2 2.5 3 Miles

WEBER COUNTY

HALES ENGINEERING
innovative transportation solutions

2025 Housing Units

Figure C.5
Weber County Storm Drain IFFP



Legend

- County or State Road
- 0 Housing Units
- Development Area
- Incorporated

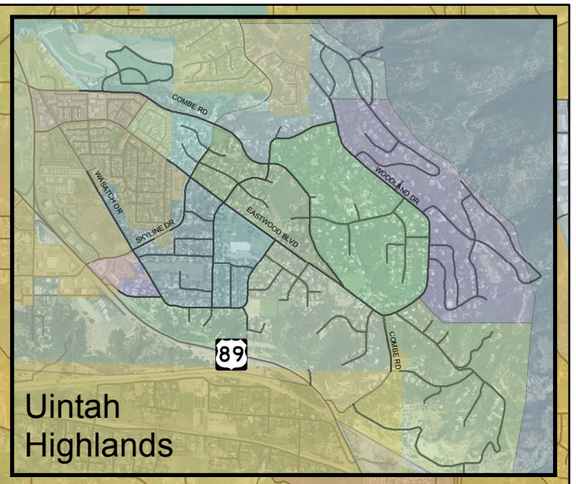
0 0.5 1 1.5 2 2.5 3 Miles

WEBER COUNTY

HALES ENGINEERING
innovative transportation solutions

2040 Housing Units

Figure C.6
Weber County Storm Drain IFFP



Legend

- County or State Road
- 0 Housing Units
- Development Area
- Incorporated

0 0.5 1 1.5 2 2.5 3 Miles

WEBER COUNTY

HALES ENGINEERING
innovative transportation solutions