

## **APPENDIX B**



# **Development, Permit and Review Fees**

Option Analysis for System Development Fees

Technical Memorandum

Final

May 5, 2008



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## Executive Summary

### ***Introduction***

SEMSWA has contracted with AMEC to review and analyze options for system development fees to be charged for new development in the SEMSWA service area. The project included, among other tasks, the analysis of various options to be considered for the development fee. The options considered include the following:

- 1) Fees proportional to the costs of new facilities;
  - a. By individual basin
  - b. By basin groups
  - c. By individual basins where CIP costs exist and by basin group costs where none exist
  - d. By the entire service area
- 2) Fees proportional to the costs of existing infrastructure
  - a. By groups of basins
  - b. By the entire service area

This memorandum explains the methods, calculations, and results of the analysis. The above options were developed to consider the pros and cons of what the **amount** of the fees should be based on planned total build-out of each basin. The issue of when development will actually occur to enable collection of fees, how rapidly fees will accumulate and the terms with which they will be used to fund and finance the projects, is equally important, however was not considered as part of the options analysis.

### ***Task Force***

A Task Force was formed as part of this project to provide public comment on the new fee structure. The Task Force's role was to provide input and information of an advisory nature. The input and information will be used, along with the analysis presented by staff and the consultant, to formulate the proposed fees. The proposed fees will be presented to the SEMSWA Board at a public hearing for public comment and subsequent Board action.

### ***Development Fee vs. Annual Fee***

The annual fee charged by SEMSWA is not related to the development fee. However, it is important to distinguish between the two fees for a better understanding of the rationale behind each of the fee systems.

The annual fee is charged by SEMSWA to every parcel owner within the service area with impervious area. The annual fee funds the public portion of regional projects (with possible additional funding from UDFCD, CDOT, and others). The annual fee revenue is also used to fund all SEMSWA programs:

- CIP, maintenance and remedial projects,
- NPDES, Development Review, Design,
- Master Planning,
- Billing, customer service, finance, accounting, legal, and administration.

The development fee is a one time charge paid by new development to finance the construction of developments' portion of facilities needed to serve it. Development will pay their portion through the development fee, the remaining portion, or the public portion, of the projects will be paid with funds collected through the annual fee, UDFCD, and other sources.

## ***Development of Base Information***

### **Definitions**

It is helpful to define the following terms that will be used throughout this report.

System Development Fees are one time charges paid by new development to finance the construction of public facilities needed to serve it.

#### Rational Nexus Principals –

- Relationship between new development and required improvements
- Cost must be developed rationally
- The costs attributed to new development should be reasonably proportionate to their share

Best Available Information- the fees must be based on the best information available to allow for the fairest and most accurate analysis.

Impervious Area – A hard surface area (e.g., parking lot) that prevents or retards the entry of water into the soil, thus causing water to run off the surface in greater quantities and at an increased rate of flow.

Off-site Projects- These are “regional projects” as identified in UDFCD master plans.

On-site Projects- These projects normally consist of curb and gutter, inlets, storm sewers and small channels that convey the development's drainage to the regional system and are not included in UDFCD Master Plans.

Developable Area/Acres – The remaining part of a property that can be developed based on the potential percentage as determined by the Arapahoe County Comprehensive Plan and the City of Centennial Comprehensive Plan and the land use type per the Arapahoe County/ UDFCD criteria.

### **Capital Improvement Projects**

Capital Improvement Projects (CIP) were identified through the review of existing Urban Drainage and Flood Control District (UDFCD) master plans and other documents and adjusted per SEMSWA staff knowledge of the areas and the projects. A CIP master list was developed in 2004 during the process of establishing the Authority. That CIP master list was revised to include only the projects within the SEMSWA service area (exclude those areas annexed by incorporated entities), removal of those projects which are no longer necessary or relevant, and the addition of projects that were not identified in 2004.

The master plans developed by UDFCD vary in age from 1987 to 2007. The costs associated with each project were adjusted using current 2007 data from the Engineering News Record construction costs indices for the Denver Metropolitan Area. The total costs were then grouped into each basin, to calculate the total cost of new projects in 2007 dollars per basin.

Approximately half of the basins do not have completed master plans. Without a completed master plan, no projects are identified within those basins and therefore no CIP costs are attributed to those basins. This does not mean that there are no projects needed in those basins, only that they have not been identified through the UDFCD master planning process.

The master project list is located in Appendix A. A summary of costs by basin group is shown in Table E1.

**Table E1: Summary of CIP Costs by Basin Group**

<b>Basin Group</b>	<b># of Projects</b>	<b>Total Cost of Identified Projects (2007\$)</b>
Basin Group 1	51	\$ 34,952,000
Basin Group 2	35	\$ 82,513,000
Basin Group 3	8	\$ 7,732,000
Basin Group 4	7	\$ 48,092,000
Basin Group 5	3	\$ 1,554,000
<b>Total</b>	<b>104</b>	<b>\$ 174,843,000</b>

## Basin Groups

The SEMSWA service area covers a large and diverse area in terms of land use, age of development, receiving waters, and development activity. For this project, the SEMSWA service area was to be initially divided into three major groups that represented the diverse service area. The three groups included the area west of I-25, the area between I-25 and Gun Club Road, and the area east of Gun Club Road. These are the same groupings used during the original discussions of the formation of SEMSWA.

After a brief analysis of the three areas, it was determined that a more accurate analysis would be provided by dividing the service area into smaller groups. The areas were divided into basin groups which share the same watershed which they drain to, similar percentage of the basin developed, similar level of development activity, similar age of development, same water district boundaries, and other special considerations. The result is that SEMSWA was divided into an additional two Basin Groups for a total of 5 Basin Groups that consist of entire basins. A map of the service area and the Basin Groups is shown in Appendix B, Figure 1.

Table E2 below shows the characteristics of each basin group. Figure 1 in Appendix B shows the boundaries of each Basin Group. Table E3 lists the basins included in each basin group.

**Table E2: Basin Group Characteristics**

Basin Group	Percent Developable	Average Age	Level of Development Activity	Watershed
1	7%	30 years	Low	S. Platte
2	21%	15 years	Medium	Upper Cherry Creek
3	6%	15 years	High	Sand Creek
4	71%	New	Low	Sand Creek
5	12%	20 years	Medium/ Low	Lower Cherry Creek/ S. Platte

**Table E3: Basins in each Basin Group**

<b>Basin Group 1</b>	<b>Basin Group 2</b>	<b>Basin Group 4</b>
Bear Creek	Antelope Creek	Coal Creek
Big Dry Creek	Cottonwood Creek	First Creek
Coon Creek	Dove Creek	Murphy Creek
Dutch Creek	Happy Canyon Creek	Sand Creek
Greenwood Gulch	Lone Tree Creek	Lower Senac Creek
Lee Gulch	Piney Creek	Upper Senac Creek
Little Dry Creek	Saddle Rock Ranches	
Little's Creek	Sampson Gulch	<b>Basin Group 5</b>
SJCD(N)	UDFCD ID 4406	5000
SJCD(S)	Upper Cherry Creek	Harvard Gulch
Slaughterhouse Gulch	Upper Goldsmith Gulch	Lower Cherry Creek
UDFCD ID 66	Windmill Creek	Lower Goldsmith Gulch
UDFCD ID 67		Lower Goldsmith Gulch
Willow Creek	<b>Basin Group 3</b>	Westerly Creek
	East Toll Gate Creek	
	Unnamed Creek	
	West Toll Gate Creek	

## Estimate of Remaining Impervious Area

For each basin and basin group, the percent developable and the remaining developable impervious acres were used to calculate the potential fee assessed per basin or basin group. The remaining developable impervious acres were estimated using the SEMSWA GIS information from the billing database and future land use information.

The remaining developable impervious area was estimated using the land use information obtained from the Arapahoe County Comprehensive Plan and the City of Centennial Comprehensive Plan. From the comprehensive plans, the land use for each



undeveloped or partially developed parcel was established and the impervious area percentage for each land use type was applied according to standard Arapahoe County and UDFCD criteria.

Additional data used to estimate the remaining developable impervious area was obtained from the current SEMSWA billing database, including the existing impervious area currently billed outside of the right of way. For each basin, the basin area within the SEMSWA service area, the existing right-of-way area, the existing impervious acres, the percentage not developable, and the percent developable were calculated.

### **Impervious Area**

Existing impervious area was derived based on criteria established by SEMSWA for stormwater billing for the annual fee program. The criteria include capturing structure rooflines, parking lots driveways, private sidewalks and private streets. Other features were excluded such as public streets (or right-of-ways), water-control features, and dirt or gravel driveways. The “existing impervious acres currently billed” listed in Table E4 is the impervious areas established for the annual fee program.

The “remaining developable impervious acres” listed in Table E4, was captured during an on-screen digitizing process using aerial imagery provided by Arapahoe County. The impervious area was then associated with the appropriate parcel and the percent of the parcel that was developed for each property. The percent developable is the amount of remaining potential impervious area up to the potential percent impervious for each land use type.

Table E4 summarizes the remaining impervious area calculations for the basin groups. The complete analysis can be found in Appendix C.

**Table E4: Impervious Area by Basin Group**

<b>Basin Group</b>	<b>Basin Acres within SEMSWA</b>	<b>Existing ROW Acres</b>	<b>Existing Impervious Acres Currently Billed (Outside ROW)</b>	<b>Remaining Developable Impervious Acres (Outside ROW, To Be Billed)<sup>(2)</sup></b>	<b>Percent Not Developable<sup>(1)</sup></b>	<b>Percent Developable</b>
<b>Group 1 Total</b>	<b>10,797</b>	<b>2,019</b>	<b>2,816</b>	<b>793</b>	<b>93%</b>	<b>7%</b>
<b>Group 2 Total</b>	<b>14,335</b>	<b>1,832</b>	<b>3,048</b>	<b>3,073</b>	<b>79%</b>	<b>21%</b>
<b>Group 3 Total</b>	<b>5,067</b>	<b>902</b>	<b>849</b>	<b>324</b>	<b>94%</b>	<b>6%</b>
<b>Group 4 Total</b>	<b>27,381</b>	<b>296</b>	<b>115</b>	<b>14,818</b>	<b>46%</b>	<b>54%</b>
<b>Group 5 Total</b>	<b>2,151</b>	<b>331</b>	<b>698</b>	<b>256</b>	<b>88%</b>	<b>12%</b>
<b>Grand Total</b>	<b>59,731</b>	<b>5,380</b>	<b>7,525</b>	<b>19,264</b>	<b>68%</b>	<b>32%</b>

(1) This figure represents all area within parcels that may not be developed, including existing impervious area and all area that must remain undeveloped per land use designation.

(2) The developable area figure is derived from the potential %-development possible within each land use category for undeveloped and partially-developed properties.

## ***Option Analysis***

An option under consideration in this Technical Memorandum is a developer fee that is proportional to the costs of new facilities. This option allocated CIP costs to new development based on the percentage of land that remains to be developed (shown in Table E4). The total costs of the new facilities were established based on the CIP master list, discussed above and shown in Appendix A.

The total CIP cost allocated to new development is equal to the total CIP cost multiplied by the remaining percentage of land to be developed, from the impervious area calculations discussed above. The development fee per impervious area is then the developer share of the CIP costs divided by the remaining impervious area to be developed in acres.

### **Example Calculation**

Total CIP Costs =	\$1,000,000
Remaining % of Land to be Developed =	25%
CIP Costs Allocated to New Development =	\$250,000
Impervious Acres Remaining to be Developed =	100 acres
Development Fee per Impervious Acre =	\$2,500

Four sub-options were analyzed to compare the advantages and disadvantages and the financial implications of each method or option. The four sub-options are:

- 1.a Basin by Basin
- 1.b Basin Group
- 1.c Basin by Basin plus Cost by Basin Group
- 1.d Entire Service Area

### ***Recommended Option***

Various options for system development fees were considered, including the four sub-options for a fee proportional to the cost of new facilities, a buy-in approach and hybrids that combined the options. The details of the options are included in subsequent sections of this report.

The recommended option is Option 1.c. Option 1.c uses the best available information for the basins that have identified projects and also applies a fee to the basins without an identified project to provide SEMSWA revenue to build projects in these basins. This approach generates approximately \$41,000,000 potential revenue from the development impact fees at total system build out. The revenue generated is slightly more than the basin by basin (Option 1a) approach and less than the basin group (Option 1b) and entire service area (Option 1d) approach.

Option 1c allows for the best relationships between new development and the required improvements when compared to the other options considered. The system development fees (SDFs) in basins with identified projects have a direct relationship to the costs of improvements, while the others have an estimated relationship. The costs are developed rationally and use the best information available, based on up to date

master plans. For basins without identified projects, the costs were estimated using the information available from the remainder of the basin group. Option 1c is a fair and equitable system. Compared to the Options 1a, 1b, and 1d, this approach provides direct equity, regional equity and lower administrative costs. It also provides for a good level of financial flexibility since the funds can be used anywhere in the basin group while keeping the funds collected in a basin group within that basin group, i.e. the funds cannot be transferred out of the basin group in which they were collected.

### **1.c. Basin by Basin plus Cost by Basin Group**

An analysis was completed by combining the basin by basin approach with the basin group approach. For this option, the developer pays fees for the specific basin the project is located in; however, in basins with no identified projects, the basin fee equals the basin group fee, calculated by a weighted average.

The developer fee per impervious acre is calculated as follows:

- Basin by Basin approach for basins with projects
  - Part 1: "Total Cost of Identified Project" per Basin multiplied by "Percent Developable Area" per Basin equal the "Developer Share" per Basin
  - Part 2: "Developer Share" per Basin divided by "Remaining Developable Impervious Area" equals the "Fee per Impervious Acre"
- For basins without projects
  - Part 1: The "Fee per Impervious Acre" equals the "Total Developer Share for the Basin Group" divided by the Total Remaining Developable Impervious Area in Basins with Projects.
  - Part 2: The fee per impervious acre is applied to all basins with no projects

Table E5 below shows the fee per impervious acre for each basin for Option 1c. Option 1c applies the Basin by Basin fee for basins with identified projects, and the Basin Group fee (calculated by a weighted average) for the basins without identified projects. Basins listed in table E5, where the basin group fee applies, are highlighted.

For basins with identified projects, the fee per impervious acre is the same as the Basin by Basin approach. The total cost of the projects is multiplied by the percent of developable area to estimate the developer share of the projects. The developer share is then divided by the remaining developable impervious areas for the basin to achieve the fee per impervious acre. The potential fee assessed is equal to the fee per impervious acre multiplied by the remaining developable impervious area. The potential fees assessed assume that all of the remaining developable area will be developed without regard to time frame to complete the development.

See Table E6 and its description for an explanation of how the weighted average based group fees were calculated.

**Table E5: Option 1.c Fees Proportional to Cost of New Facilities: Basin by Basin plus Cost by Basin Group**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable Area (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 1</b>							
Bear Creek			22%	\$ -	10	\$ 3,533	\$ 35,327
Big Dry Creek	24	\$ 18,297,000	7%	\$ 1,280,790	206	\$ 6,217	\$ 1,280,790
Coon Creek			0%	\$ -	0	\$ 3,533	\$ -
Dutch Creek	1	\$ 462,000	9%	\$ 41,580	13	\$ 3,198	\$ 41,580
Greenwood Gulch	2	\$ 933,000	12%	\$ 111,960	46	\$ 2,434	\$ 111,960
Lee Gulch	1	\$ 4,620,000	5%	\$ 231,000	12	\$ 19,250	\$ 231,000
Little Dry Creek	9	\$ 3,793,000	6%	\$ 227,580	157	\$ 1,450	\$ 227,580
Little's Creek	3	\$ 3,061,000	2%	\$ 61,220	16	\$ 3,826	\$ 61,220
SJCD(N)			12%	\$ -	19	\$ 3,533	\$ 67,122
SJCD(S)			15%	\$ -	3	\$ 3,533	\$ 10,598
Slaughterhouse Gulch			3%	\$ -	20	\$ 3,533	\$ 70,655
UDFCD ID 66			41%	\$ -	7	\$ 3,533	\$ 24,729
UDFCD ID 67			34%	\$ -	90	\$ 3,533	\$ 317,947
Willow Creek	11	\$ 4,012,000	8%	\$ 320,960	194	\$ 1,654	\$ 320,960
<b>Total</b>	<b>51</b>	<b>\$ 35,178,000</b>		<b>\$ 2,275,090</b>	<b>644</b>		<b>\$ 2,801,470</b>
<b>Basin Group 2</b>							
Antelope Creek			2%	\$ -	12	\$ 5,761	\$ 69,128
Cottonwood Creek	6	\$ 15,524,000	34%	\$ 5,278,160	958	\$ 5,510	\$ 5,278,160
Dove Creek	3	\$ 5,523,000	59%	\$ 3,258,570	390	\$ 8,355	\$ 3,258,570
Happy Canyon Creek	2	\$ 2,493,000	69%	\$ 1,720,170	231	\$ 7,447	\$ 1,720,170
Lone Tree Creek	2	\$ 1,484,000	31%	\$ 460,040	328	\$ 1,403	\$ 460,040
Piney Creek	4	\$ 17,816,000	3%	\$ 534,480	98	\$ 5,454	\$ 534,480
Saddle Rock Ranches			4%	\$ -	0	\$ 5,761	\$ -
Sampson Gulch			9%	\$ -	35	\$ 5,761	\$ 201,623
UDFCD ID 4406			0%	\$ -	0	\$ 5,761	\$ -
Upper Cherry Creek	6	\$ 29,711,000	9%	\$ 2,673,990	303	\$ 8,825	\$ 2,673,990
Upper Goldsmith Gulch	7	\$ 3,211,000	3%	\$ 96,330	12	\$ 8,028	\$ 96,330
Windmill Creek	5	\$ 7,413,000	46%	\$ 3,409,980	706	\$ 4,830	\$ 3,409,980
<b>Total</b>	<b>35</b>	<b>\$ 83,175,000</b>		<b>\$ 17,431,720</b>	<b>3026</b>		<b>\$ 17,702,470</b>

Note: Existing fees in Dove Creek, Lone Tree Creek and Windmill Creek will remain the same until the permits and property is transferred to SEMSWA.

**Table E5: Option 1.c Fees Proportional to Cost of New Facilities: Basin by Basin plus Cost by Basin Group (cont.)**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable Area (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 3</b>							
East Toll Gate Creek	1	\$ 905,000	15%	\$ 135,750	146	\$ 930	\$ 135,750
Unnamed Creek	7	\$ 6,876,000	3%	\$ 206,280	63	\$ 3,274	\$ 206,280
West Toll Gate Creek			6%	\$ -	115	\$ 1,637	\$ 188,198
<b>Total</b>	<b>8</b>	<b>\$ 7,781,000</b>		<b>\$ 342,030</b>	<b>209</b>		<b>\$ 530,228</b>
<b>Basin Group 4</b>							
Coal Creek	2	\$ 23,169,000	65%	\$ 15,059,850	12728	\$ 1,183	\$ 15,059,850
First Creek			66%	\$ -	1689	\$ 1,277	\$ 2,156,069
Murphy Creek	3	\$ 15,777,000	7%	\$ 1,104,390	239	\$ 4,621	\$ 1,104,390
Sand Creek			37%	\$ -	95	\$ 1,277	\$ 121,271
Lower Senac Creek	2	\$ 9,457,000	5%	\$ 472,850	66	\$ 7,164	\$ 472,850
Upper Senac Creek			0%	\$ -	0	\$ 1,277	\$ -
<b>Total</b>	<b>7</b>	<b>\$ 48,403,000</b>		<b>\$ 16,637,090</b>	<b>13033</b>		<b>\$ 18,914,430</b>
<b>Basin Group 5</b>							
5000			0%	\$ -	0	\$ 5,210	\$ -
Harvard Gulch	1	\$ 503,000	2%	\$ 10,060	5	\$ 2,012	\$ 10,060
Lower Cherry Creek			14%	\$ -	214	\$ 5,210	\$ 1,114,940
Lower Goldsmith Gulch	1	\$ 530,000	4%	\$ 21,200	1	\$ 21,200	\$ 21,200
Westerly Creek			15%	\$ -	35	\$ 5,210	\$ 182,350
<b>Total</b>	<b>2</b>	<b>\$ 1,033,000</b>		<b>\$ 31,260</b>	<b>6</b>		<b>\$ 1,328,550</b>

### Weighted Average Basin Group Fees

The basin group fee was calculated as follows as shown in Table E6:

1. The sum of the developer share for each basin group was entered for each basin group as developer share of identified projects.
2. The remaining developable impervious area was summed for only the basins with identified projects.
3. The fee per impervious acre was calculated by dividing the developer share by the developable impervious area in basins with identified projects.
4. The potential fees assessed is equal to the sum for each basin group from Table E5.

**Table E6: Option 1.c Fees Proportional to Cost of New Facilities**

Basin Group	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share of Identified Projects (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
Basin Group 1	51	\$ 35,178,000		\$ 2,275,090	793		\$ 2,801,470
Basin Group 2	35	\$ 83,175,000		\$ 17,431,720	3,073		\$ 17,702,470
Basin Group 3	8	\$ 7,781,000		\$ 342,030	324		\$ 530,228
Basin Group 4	7	\$ 48,403,000		\$ 16,637,090	14,817		\$ 18,914,430
Basin Group 5	2	\$ 1,033,000		\$ 31,260	255		\$ 1,328,550
<b>Total</b>	<b>103</b>	<b>\$ 175,570,000</b>		<b>\$ 36,717,190</b>	<b>19,262</b>		<b>\$ 41,277,148</b>

The pros of this system are:

- There is direct equity as development pays for its impacts within basins with identified projects.
- Money is collected in all basins within the basin group.
- Administration of this method is not as costly as the basin by basin approach.
- It is easier to accumulate enough money to build projects.
- There is more revenue generated since money is collected in basins where no projects have been identified through the master planning process and therefore the fee would be zero in the basin by basin approach (Option 1a).
- The total revenue generated reasonably approximates the cost of identified and unidentified projects.

The cons of this system are:

- It is less understandable than the other systems.
- Developers in basins with no identified projects don't have direct equity. Therefore, SEMSWA has potentially more liability in these basins.

## ***Existing Fees***

Arapahoe County, ACWWA, and IWS charge developer fees for basins within their jurisdiction. In most cases, the SEMSWA SDF will replace those fees collected by the other entities. The list of existing fees is shown in Table E7.

**Table E7: Existing Developer Fees**

### ***Four Square Mile Sub-Basins***

<b>Sub-basin</b>	<b>Fee/ Impervious Acre</b>
1 Westerly Creek	\$11,477
2 Cherry Creek	\$9,439
3 Cherry Creek	\$4,289
5 Cherry Creek	\$23,611
6 Cherry Creek	\$8,313
7 Cherry Creek	\$4,827
12 Cherry Creek	\$5,635
13 Cherry Creek	\$9,270
14 Cherry Creek	\$9,735
15 Cherry Creek	\$14,184
<b>Four Square Mile Average</b>	<b>\$10,078</b>

### ***Other Basins***

<b>Basin</b>	<b>Fee/ Impervious Acre</b>
Slaughterhouse Gulch	\$13,316
Cottonwood Creek basin	\$4,349
Box Elder Creek Basin	\$8,616
<b>Average</b>	<b>\$8,760</b>

**Overall Drainage Fee Average                      \$9,774**

<b>ACWWA</b>	<b>\$14,540</b>
All Basins	

<b>IWS</b>	<b>\$8,325</b>
	per impervious acre



# OPTION 1: Fees Proportional to Costs of New Facilities

## Options Analysis

### ***Option 1 Fees Proportional to the Costs of New Facilities Developer***

The option under consideration in this Technical Memorandum is a developer fee that is proportional to the costs of new facilities. This option allocated CIP costs to new development based on the percentage of land that remains to be developed. The total costs of the new facilities were established based on the CIP master list, discussed above and shown in Appendix A. The total CIP cost that is allocated to new development is equal to the total CIP cost multiplied by the remaining percentage of land to be developed, from the impervious area calculations discussed above. The development fee per impervious area is then the developer share of the CIP costs divided by the remaining impervious area to be developed in acres.

#### **Example Calculation**

Total CIP Costs =	\$1,000,000
Remaining % of Land to be Developed =	25%
CIP Costs Allocated to New Development =	\$250,000
Impervious Acres Remaining to be Developed =	100 acres
Development Fee per Impervious Acre =	\$2,500

Four sub-options were analyzed to compare the advantages and disadvantages and the financial implications of each method or option. The four sub-options are:

- 1.a Basin by Basin
- 1.b Basin Group
- 1.c Basin by Basin plus Cost by Basin Group
- 1.d Entire Service Area

#### **1.a Basin by Basin Approach**

Allocating the CIP costs to new development by individual basin was analyzed. With this option, the land developer pays fees according to the basin the project is located in. In addition, the assumption was made that collected funds are only spent for projects in the basin where they are collected. This assumption could be changed to allow funds to be spent throughout the basin group.

The development fee per impervious acre is calculated as follows:

- Part 1: "Cost of Identified Projects" per Basin multiplied by the "Percent Developable" per Basin equals the "Developer Share" per Basin.
- Part 2: "Developer Share" per Basin divided by the "Remaining Developable Impervious Area" equals the "Fee per Impervious Acre"

The pros of this system are:

- This is a simple system and easy to understand for developers as well as the public.
- There is Direct Equity- development pays for it's impacts within the basin.

The cons of this system are:

- The Basins with no identified projects will collect no fees and SEMSWA will be left short on funds to build the projects that are needed but are not yet identified. Existing rate payers will end up funding the projects.
- Administration is costly as there are individual funds for each basin.
- It will be difficult to accumulate enough money to build projects since it is restricted by basin.
- Regional benefits are not considered.

This system is not recommended due to the following issues:

- 25 out of 48 Basins do not have any projects identified and therefore do not have any projects or project costs associated with them. Projects will be needed in these basins.
- Total Revenue generated equal to the cost of the projects identified in the master plans \$38,905,376. which does not include costs for unidentified projects.

Table 1 below explains the Basin by Basin approach, separated by Basin Groups. As shown in Table 1, basins with no identified projects have a developer share cost of \$0, and a fee per impervious acre of \$0. In some instances, the remaining developable acres in basins with no projects is significant, indicating that there will be projects needed in these basins.

**Table 1: Option 1.a Fees Proportional to Cost of New Facilities: Basin by Basin Approach**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 1</b>							
Bear Creek			22%	\$ -	10	\$ -	\$ -
Big Dry Creek	24	\$ 18,297,000	7%	\$ 1,280,790	206	\$ 6,217	\$ 1,280,790
Coon Creek			0%	\$ -	0		\$ -
Dutch Creek	1	\$ 462,000	9%	\$ 41,580	13	\$ 3,198	\$ 41,580
Greenwood Gulch	2	\$ 933,000	12%	\$ 111,960	46	\$ 2,434	\$ 111,960
Lee Gulch	1	\$ 4,620,000	5%	\$ 231,000	12	\$ 19,250	\$ 231,000
Little Dry Creek	9	\$ 3,793,000	6%	\$ 227,580	157	\$ 1,450	\$ 227,580
Little's Creek	3	\$ 3,061,000	2%	\$ 61,220	16	\$ 3,826	\$ 61,220
SJCD(N)			12%	\$ -	19	\$ -	\$ -
SJCD(S)			15%	\$ -	3	\$ -	\$ -
Slaughterhouse Gulch			3%	\$ -	20	\$ -	\$ -
UDFCD ID 66			41%	\$ -	7	\$ -	\$ -
UDFCD ID 67			34%	\$ -	90	\$ -	\$ -
Willow Creek	11	\$ 4,012,000	8%	\$ 320,960	194	\$ 1,654	\$ 320,960
<b>Total</b>	<b>51</b>	<b>\$ 35,178,000</b>		<b>\$ 2,275,090</b>	<b>793</b>		<b>\$ 2,275,090</b>
<b>Basin Group 2</b>							
Antelope Creek			2%	\$ -	12	\$ -	\$ -
Cottonwood Creek	6	\$ 15,524,000	34%	\$ 5,278,160	958	\$ 5,510	\$ 5,278,160
Dove Creek	3	\$ 5,523,000	59%	\$ 3,258,570	390	\$ 8,355	\$ 3,258,570
Happy Canyon Creek	2	\$ 2,493,000	69%	\$ 1,720,170	231	\$ 7,447	\$ 1,720,170
Lone Tree Creek	2	\$ 1,484,000	31%	\$ 460,040	328	\$ 1,403	\$ 460,040
Piney Creek	4	\$ 17,816,000	3%	\$ 534,480	98	\$ 5,454	\$ 534,480
Saddle Rock Ranches			4%	\$ -	0		\$ -
Sampson Gulch			9%	\$ -	35	\$ -	\$ -
UDFCD ID 4406			0%	\$ -	0		\$ -
Upper Cherry Creek	6	\$ 29,711,000	9%	\$ 2,673,990	303	\$ 8,825	\$ 2,673,990
Upper Goldsmith Gulch	7	\$ 3,211,000	3%	\$ 96,330	12	\$ 8,028	\$ 96,330
Windmill Creek	5	\$ 7,413,000	46%	\$ 3,409,980	706	\$ 4,830	\$ 3,409,980
<b>Total</b>	<b>35</b>	<b>\$ 83,175,000</b>		<b>\$ 17,431,720</b>	<b>3073</b>		<b>\$ 17,431,720</b>
<b>Basin Group 3</b>							
East Toll Gate Creek	1	\$ 905,000	15%	\$ 135,750	146	\$ 930	\$ 135,750
Unnamed Creek	7	\$ 6,876,000	3%	\$ 206,280	63	\$ 3,274	\$ 206,280
West Toll Gate Creek			6%	\$ -	115	\$ -	\$ -
<b>Total</b>	<b>8</b>	<b>\$ 7,781,000</b>		<b>\$ 342,030</b>	<b>324</b>		<b>\$ 342,030</b>

**Table 1: Option 1.a Fees Proportional to Cost of New Facilities: Basin By Basin Approach (cont.)**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 4</b>							
Coal Creek	2	\$ 23,169,000	65%	\$ 15,059,850	12728	\$ 1,183	\$ 15,059,850
First Creek			66%	\$ -	1689	\$ -	\$ -
Murphy Creek	3	\$ 15,777,000	7%	\$ 1,104,390	239	\$ 4,621	\$ 1,104,390
Sand Creek			37%	\$ -	95	\$ -	\$ -
Lower Senac Creek	2	\$ 9,457,000	5%	\$ 472,850	66	\$ 7,164	\$ 472,850
Upper Senac Creek			0%	\$ -	0		\$ -
<b>Total</b>	<b>7</b>	<b>\$ 48,403,000</b>		<b>\$ 16,637,090</b>	<b>14817</b>		<b>\$ 16,637,090</b>
<b>Basin Group 5</b>							
5000			0%	\$ -	0		\$ -
Harvard Gulch	1	\$ 503,000	2%	\$ 10,060	5	\$ 2,012	\$ 10,060
Lower Cherry Creek			14%	\$ -	214	\$ -	\$ -
Lower Goldsmith Gulch	1	\$ 530,000	4%	\$ 21,200	1	\$ 21,200	\$ 21,200
Westerly Creek			15%	\$ -	35	\$ -	\$ -
<b>Total</b>	<b>2</b>	<b>\$ 1,033,000</b>		<b>\$ 31,260</b>	<b>255</b>		<b>\$ 31,260</b>

## 1.b Basin Group Approach

The main problem associated with the previously described basin by basin approach is that approximately half of the basins will not collect fees because there are no CIP costs identified for those basins. To alleviate this problem, the same analysis conducted for each individual basin was conducted for each basin group. Option 1b looks at each basin group as a whole, treating the basin group in the same manner as each basin was treated in Option 1a. In this approach the developer pays a fee according to the basin group the project is located in. Funds can be used for projects in the entire basin group where they are collected. All basins in the basin group are then charged the same fee.

The development fee per impervious acre is calculated as follows:

- Part 1: "Total Cost of Identified Projects" multiplied by the "Percent Developable" per Basin Group equals the "Developer Share" per Basin Group
- Part 2: "Developer Share" per Basin Group divided by the "Remaining Developable Impervious Area" for Basin Group equals the "Fee per Impervious Acre"
- Part 3: All basins in the basin group pay the same Fee per Impervious Acre

The pros of this system are:

- It is generally understandable by the public and developers.
- There is equity within each basin group as development pays for its impacts within that basin group.
- Money is collected in all basins within each basin group.
- Administration is not as costly as basin by basin approach.
- It is easier to accumulate enough money to build projects within the basin group.
- Regional benefits are considered.

The cons of this system are:

- The costs are not directly related to each basin, developers in basins with high costs are subsidized by developers in basins with low costs and vice versa. (This approach is therefore in conflict with the rationale nexus principal that costs must be developed rationally and using the best available information.)
- This approach ignores that better data, (i.e. best available information) is available for some basins.

Table 2 below shows the basin group fee for each basin group. The total costs per basin group were summed and then multiplied by the percent developable for the basin group as a whole. The developer share is equal to the total costs multiplied by the percent developable. The developer share is not equal to the sum of the developer share on a basin by basin approach. The developer share is divided by the developable impervious area for the entire basin group, resulting in the fee per impervious acre. This fee is then applied to all basins within that basin group, as shown in Table 3.

**Table 2: Option 1.b Fees Proportional to Cost of New Facilities: Fee Calculation by Basin Group**

Basin Group	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share of Identified Projects (2008\$)	Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
Basin Group 1	51	\$ 35,178,000	7%	\$ 2,462,460	793	\$ 3,105	\$ 2,462,460
Basin Group 2	35	\$ 83,175,000	21%	\$ 17,466,750	3073	\$ 5,684	\$ 17,466,750
Basin Group 3	8	\$ 7,781,000	6%	\$ 466,860	324	\$ 1,441	\$ 466,860
Basin Group 4	7	\$ 48,403,000	71%	\$ 34,366,130	14817	\$ 2,319	\$ 34,366,130
Basin Group 5	2	\$ 1,033,000	12%	\$ 123,960	255	\$ 486	\$ 123,960
<b>Total</b>	<b>103</b>	<b>\$ 175,570,000</b>		<b>\$ 54,886,160</b>	<b>19,262</b>		<b>\$ 54,886,160</b>

**Table 3: Option 1.b Fees Proportional to Cost of New Facilities: By Basin Group**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 1</b>							
Bear Creek			22%	\$ -	10	\$ 3,105	\$ 31,052
Big Dry Creek	24	\$ 18,297,000	7%	\$ 1,280,790	206	\$ 3,105	\$ 639,681
Coon Creek			0%	\$ -	0	\$ 3,105	\$ -
Dutch Creek	1	\$ 462,000	9%	\$ 41,580	13	\$ 3,105	\$ 40,368
Greenwood Gulch	2	\$ 933,000	12%	\$ 111,960	46	\$ 3,105	\$ 142,841
Lee Gulch	1	\$ 4,620,000	5%	\$ 231,000	12	\$ 3,105	\$ 37,263
Little Dry Creek	9	\$ 3,793,000	6%	\$ 227,580	157	\$ 3,105	\$ 487,524
Little's Creek	3	\$ 3,061,000	2%	\$ 61,220	16	\$ 3,105	\$ 49,684
SJCD(N)			12%	\$ -	19	\$ 3,105	\$ 59,000
SJCD(S)			15%	\$ -	3	\$ 3,105	\$ 9,316
Slaughterhouse Gulch			3%	\$ -	20	\$ 3,105	\$ 62,105
UDFCD ID 66			41%	\$ -	7	\$ 3,105	\$ 21,737
UDFCD ID 67			34%	\$ -	90	\$ 3,105	\$ 279,472
Willow Creek	11	\$ 4,012,000	8%	\$ 320,960	194	\$ 3,105	\$ 602,418
<b>Total</b>	<b>51</b>	<b>\$ 35,178,000</b>		<b>\$ 2,275,090</b>	<b>793</b>		<b>\$ 2,462,460</b>
<b>Basin Group 2</b>							
Antelope Creek			2%	\$ -	12	\$ 5,684	\$ 68,207
Cottonwood Creek	6	\$ 15,524,000	34%	\$ 5,278,160	958	\$ 5,684	\$ 5,445,215
Dove Creek	3	\$ 5,523,000	59%	\$ 3,258,570	390	\$ 5,684	\$ 2,216,737
Happy Canyon Creek	2	\$ 2,493,000	69%	\$ 1,720,170	231	\$ 5,684	\$ 1,312,990
Lone Tree Creek	2	\$ 1,484,000	31%	\$ 460,040	328	\$ 5,684	\$ 1,864,333
Piney Creek	4	\$ 17,816,000	3%	\$ 534,480	98	\$ 5,684	\$ 557,026
Saddle Rock Ranches			4%	\$ -	0	\$ 5,684	\$ -
Sampson Gulch			9%	\$ -	35	\$ 5,684	\$ 198,938
UDFCD ID 4406			0%	\$ -	0	\$ 5,684	\$ -
Upper Cherry Creek	6	\$ 29,711,000	9%	\$ 2,673,990	303	\$ 5,684	\$ 1,722,234
Upper Goldsmith Gulch	7	\$ 3,211,000	3%	\$ 96,330	12	\$ 5,684	\$ 68,207
Windmill Creek	5	\$ 7,413,000	46%	\$ 3,409,980	706	\$ 5,684	\$ 4,012,862
<b>Total</b>	<b>35</b>	<b>\$ 83,175,000</b>		<b>\$ 17,431,720</b>	<b>3073</b>		<b>\$ 17,466,750</b>



**Table 3: Option 1.b Fees Proportional to Cost of New Facilities: By Basin Group (cont.)**

Basin Group	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share (2008\$)	Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 3</b>							
East Toll Gate Creek	1	\$ 905,000	15%	\$ 135,750	146	\$ 1,441	\$ 210,375
Unnamed Creek	7	\$ 6,876,000	3%	\$ 206,280	63	\$ 1,441	\$ 90,778
West Toll Gate Creek			6%	\$ -	115	\$ 1,441	\$ 165,706
<b>Total</b>	<b>8</b>	<b>\$ 7,781,000</b>		<b>\$ 342,030</b>	<b>324</b>		<b>\$ 466,860</b>
<b>Basin Group 4</b>							
Coal Creek	2	\$ 23,169,000	65%	\$ 15,059,850	12728	\$ 2,319	\$ 29,520,963
First Creek			66%	\$ -	1689	\$ 2,319	\$ 3,917,419
Murphy Creek	3	\$ 15,777,000	7%	\$ 1,104,390	239	\$ 2,319	\$ 554,330
Sand Creek			37%	\$ -	95	\$ 2,319	\$ 220,340
Lower Senac Creek	2	\$ 9,457,000	5%	\$ 472,850	66	\$ 2,319	\$ 153,079
Upper Senac Creek			0%	\$ -	0	\$ 2,319	\$ -
<b>Total</b>	<b>7</b>	<b>\$ 48,403,000</b>		<b>\$ 16,637,090</b>	<b>14817</b>		<b>\$ 34,366,130</b>
<b>Basin Group 5</b>							
5000			0%	\$ -	0	\$ 486	-
Harvard Gulch	1	\$ 503,000	2%	\$ 10,060	5	\$ 486	\$ 2,431
Lower Cherry Creek			14%	\$ -	214	\$ 486	\$ 104,029
Lower Goldsmith Gulch	1	\$ 530,000	4%	\$ 21,200	1	\$ 486	\$ 486
Westerly Creek			15%	\$ -	35	\$ 486	\$ 17,014
<b>Total</b>	<b>2</b>	<b>\$ 1,033,000</b>		<b>\$ 31,260</b>	<b>255</b>		<b>\$ 123,960</b>

### 1.c. Basin by Basin plus Cost by Basin Group

An analysis was completed by combining the basin by basin approach with the basin group approach. For this option, the developer pays fees for the specific basin the project is located in; however, in basins with no identified projects, the basin fee equals the basin group fee, calculated by a weighted average.

The developer fee per impervious acre is calculated as follows:

- Basin by Basin approach for basins with projects
  - Part 1: “Total Cost of Identified Project” per Basin multiplied by “Percent Developable Area” per Basin equal the “Developer Share” per Basin
  - Part 2: “Developer Share” per Basin divided by “Remaining Developable Impervious Area” equals the “Fee per Impervious Acre”
- For basins without projects
  - Part 1: The “Fee per Impervious Acre” equals the Total Developer Share for the Basin Group” divided by the Total Remaining Developable Impervious Area in Basins with Projects.
  - Part 2: The fee per impervious acre is applied to all basins with no projects

The pros of this system are:

- There is direct equity as development pays for its impacts within basins with identified projects.
- Money is collected in all basins within the basin group.
- Administration of this method is not as costly as the basin by basin approach.
- It is easier to accumulate enough money to build projects.
- There is more revenue generated since money is collected in basins where no projects have been identified through the master planning process and therefore the fee would be zero in the basin by basin approach (Option 1a).
- The total revenue generated reasonably approximates the cost of identified and unidentified projects.

The cons of this system are:

- It is less understandable than the other systems.
- Developers in basins with no identified projects don’t have direct equity. Therefore, SEMSWA has potentially more liability in these basins.

Table 4 below shows the fee per impervious acre for each basin for Option 1c. Option 1c applies the basin by basin fee for basins with identified projects, and the basin group fee (calculated by a weighted average) for the basins without identified projects. Basins listed in table 4, where the basin group fee applies, are highlighted.

For basins with identified projects, the fee per impervious acre is the same as the basin by basin approach. The total cost of the projects is multiplied by the percent of developable area to estimate the developer share of the projects. The developer share is then divided by the remaining developable impervious areas for the basin to achieve the fee per impervious acre. The potential fee assessed is equal to the fee per impervious acre multiplied by the remaining developable impervious area. The potential fees assessed assume that all of the remaining developable area will be developed without regard to time frame to complete the development.

See Table 5 and its description for an explanation of how the weighted average based group fees were calculated.

**Table 4: Option 1.c Fees Proportional to Cost of New Facilities: Basin by Basin plus Cost by Basin Group**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable Area (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 1</b>							
Bear Creek			22%	\$ -	10	\$ 3,533	\$ 35,327
Big Dry Creek	24	\$ 18,297,000	7%	\$ 1,280,790	206	\$ 6,217	\$ 1,280,790
Coon Creek			0%	\$ -	0	\$ 3,533	\$ -
Dutch Creek	1	\$ 462,000	9%	\$ 41,580	13	\$ 3,198	\$ 41,580
Greenwood Gulch	2	\$ 933,000	12%	\$ 111,960	46	\$ 2,434	\$ 111,960
Lee Gulch	1	\$ 4,620,000	5%	\$ 231,000	12	\$ 19,250	\$ 231,000
Little Dry Creek	9	\$ 3,793,000	6%	\$ 227,580	157	\$ 1,450	\$ 227,580
Little's Creek	3	\$ 3,061,000	2%	\$ 61,220	16	\$ 3,826	\$ 61,220
SJCD(N)			12%	\$ -	19	\$ 3,533	\$ 67,122
SJCD(S)			15%	\$ -	3	\$ 3,533	\$ 10,598
Slaughterhouse Gulch			3%	\$ -	20	\$ 3,533	\$ 70,655
UDFCD ID 66			41%	\$ -	7	\$ 3,533	\$ 24,729
UDFCD ID 67			34%	\$ -	90	\$ 3,533	\$ 317,947
Willow Creek	11	\$ 4,012,000	8%	\$ 320,960	194	\$ 1,654	\$ 320,960
<b>Total</b>	<b>51</b>	<b>\$ 35,178,000</b>		<b>\$ 2,275,090</b>	<b>644</b>		<b>\$ 2,801,470</b>
<b>Basin Group 2</b>							
Antelope Creek			2%	\$ -	12	\$ 5,761	\$ 69,128
Cottonwood Creek	6	\$ 15,524,000	34%	\$ 5,278,160	958	\$ 5,510	\$ 5,278,160
Dove Creek	3	\$ 5,523,000	59%	\$ 3,258,570	390	\$ 8,355	\$ 3,258,570
Happy Canyon Creek	2	\$ 2,493,000	69%	\$ 1,720,170	231	\$ 7,447	\$ 1,720,170
Lone Tree Creek	2	\$ 1,484,000	31%	\$ 460,040	328	\$ 1,403	\$ 460,040
Piney Creek	4	\$ 17,816,000	3%	\$ 534,480	98	\$ 5,454	\$ 534,480
Saddle Rock Ranches			4%	\$ -	0	\$ 5,761	\$ -
Sampson Gulch			9%	\$ -	35	\$ 5,761	\$ 201,623
UDFCD ID 4406			0%	\$ -	0	\$ 5,761	\$ -
Upper Cherry Creek	6	\$ 29,711,000	9%	\$ 2,673,990	303	\$ 8,825	\$ 2,673,990
Upper Goldsmith Gulch	7	\$ 3,211,000	3%	\$ 96,330	12	\$ 8,028	\$ 96,330
Windmill Creek	5	\$ 7,413,000	46%	\$ 3,409,980	706	\$ 4,830	\$ 3,409,980
<b>Total</b>	<b>35</b>	<b>\$ 83,175,000</b>		<b>\$ 17,431,720</b>	<b>3026</b>		<b>\$ 17,702,470</b>

Note: Existing fees in Dove Creek, Lone Tree Creek and Windmill Creek will remain the same until the permits and property is transferred to SEMSWA.

**Table 4: Option 1.c Fees Proportional to Cost of New Facilities: Basin by Basin plus Cost by Basin Group (cont.)**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable Area (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 3</b>							
East Toll Gate Creek	1	\$ 905,000	15%	\$ 135,750	146	\$ 930	\$ 135,750
Unnamed Creek	7	\$ 6,876,000	3%	\$ 206,280	63	\$ 3,274	\$ 206,280
West Toll Gate Creek			6%	\$ -	115	\$ 1,637	\$ 188,198
<b>Total</b>	<b>8</b>	<b>\$ 7,781,000</b>		<b>\$ 342,030</b>	<b>209</b>		<b>\$ 530,228</b>
<b>Basin Group 4</b>							
Coal Creek	2	\$ 23,169,000	65%	\$ 15,059,850	12728	\$ 1,183	\$ 15,059,850
First Creek			66%	\$ -	1689	\$ 1,277	\$ 2,156,069
Murphy Creek	3	\$ 15,777,000	7%	\$ 1,104,390	239	\$ 4,621	\$ 1,104,390
Sand Creek			37%	\$ -	95	\$ 1,277	\$ 121,271
Lower Senac Creek	2	\$ 9,457,000	5%	\$ 472,850	66	\$ 7,164	\$ 472,850
Upper Senac Creek			0%	\$ -	0	\$ 1,277	\$ -
<b>Total</b>	<b>7</b>	<b>\$ 48,403,000</b>		<b>\$ 16,637,090</b>	<b>13033</b>		<b>\$ 18,914,430</b>
<b>Basin Group 5</b>							
5000			0%	\$ -	0	\$ 5,210	\$ -
Harvard Gulch	1	\$ 503,000	2%	\$ 10,060	5	\$ 2,012	\$ 10,060
Lower Cherry Creek			14%	\$ -	214	\$ 5,210	\$ 1,114,940
Lower Goldsmith Gulch	1	\$ 530,000	4%	\$ 21,200	1	\$ 21,200	\$ 21,200
Westerly Creek			15%	\$ -	35	\$ 5,210	\$ 182,350
<b>Total</b>	<b>2</b>	<b>\$ 1,033,000</b>		<b>\$ 31,260</b>	<b>6</b>		<b>\$ 1,328,550</b>

### Weighted Average Basin Group Fees

The basin group fee was calculated as follows as shown in Table 5:

5. The sum of the developer share for each basin group was entered for each basin group as developer share of identified projects.
6. The remaining developable impervious area was summed for only the basins with identified projects.
7. The fee per impervious acre was calculated by dividing the developer share by the developable impervious area in basins with identified projects.
8. The potential fees assessed is equal to the sum for each basin group from Table 4.

**Table 5: Option 1.c Fees Proportional to Cost of New Facilities**

Basin Group	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share of Identified Projects (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
Basin Group 1	51	\$ 35,178,000		\$ 2,275,090	793		\$ 2,801,470
Basin Group 2	35	\$ 83,175,000		\$ 17,431,720	3,073		\$ 17,702,470
Basin Group 3	8	\$ 7,781,000		\$ 342,030	324		\$ 530,228
Basin Group 4	7	\$ 48,403,000		\$ 16,637,090	14,817		\$ 18,914,430
Basin Group 5	2	\$ 1,033,000		\$ 31,260	255		\$ 1,328,550
<b>Total</b>	<b>103</b>	<b>\$ 175,570,000</b>		<b>\$ 36,717,190</b>	<b>19,262</b>		<b>\$ 41,277,148</b>

Option 1c combines the basin by basin approach and the basin group approach. In Option 1c, the developer share is equal to the developer share in the basin by basin approach. However, because you are adding revenue to basins that previously had no fees assessed to them, the potential revenue is greater than the basin by basin approach and is therefore not equal to the developer share.

### 1.d. Entire Service Area Approach

An option considered was to apply the same fee for all basins and basin groups in the service area. This analysis looked at the entire service area as one unit. In this analysis, developers would be charged the same fee per impervious acre regardless of which basin their project was located in.

The development fee per impervious acre is calculated as follows:

- Part 1: "Total Cost of Identified Projects" for the entire service area multiplied by "Percent Developable" for the entire service area equals the "Developer Share" for the entire service area.
- Part 2: "Developer Share" divided by the "Remaining Developable Impervious Area" for the entire service area equals the "Fee per Impervious Acre"
- Part 3: All basins in the SEMSWA service area pay the same Fee per Impervious Acre.

The pros of this system are:

- It is easily understandable by the public and developers.
- Money is collected in all basins within the service area.
- Administration is the least costly.
- It may be easy to accumulate enough money to build projects.
- Regional, service area benefits are considered.
- Most cities surveyed use this approach.

The cons of this system are:

- The costs are not directly related to each basin, developers in basins with high costs are subsidized by developers in basins with low costs and vice versa. (This approach is therefore in conflict with the rationale nexus principal that costs must be developed rationally and using the best available information.)
- The fee is based on the total CIP costs identified, which will still leave SEMSWA short on funds to build the projects that will be needed but are not yet identified.
- This approach ignores that better data, (i.e. best available information) is available for some basins.

Table 6 below shows the method used to calculate the Entire Service Area approach. In this approach, the total cost is equal to the sum of all identified projects. The percent developable and the remaining developable impervious area looks at the SEMSWA service area as a whole. The developer share is the total cost multiplied by the percent developable. The fee per impervious acre is the developer share divided by the remaining developable impervious areas. This fee is applied to all basins within the service area.

**Table 6: Option 1.d Fees Proportional to Cost of New Facilities: Entire Service Area**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share of Identified Projects (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
SEMSWA Service Area	103	\$ 175,570,000	32%	\$ 56,182,400	19262	\$ 2,917	\$ 56,182,400

## Summary

The four sub-options presented under the “Fee Proportional to the Costs of New Facilities” option vary in their ranking compared to the rationale nexus principals. Table 11 is a semi-qualitative ranking of the sub-options.

### Rational Nexus Principals –

- Relationship between new development and required improvements
- Cost must be developed rationally
- The costs attributed to new development should be reasonably proportionate to their share

Best Available Information- the fees must be based on the best information available to allow for the fairest and most accurate analysis.

**Table 7: Relative Ranking of Options According to Rational Nexus Principals**

Principal	Option 1a Basin by Basin	Option 1b By Basin Group	Option 1c By Basin/ Basin Group	Option 1d Entire Service Area
<b>Relationship between new development and required improvements</b>	Poor – only new areas with master plans are assessed, other basins are left out. Best for basins with master plans.	Medium- Entire basin group treated the same.	Best – good for basins with master plans, estimated for others.	Poor- not well related.
<b>Cost must be developed rationally</b>	Best for basins with master plans. Poor for others.	Poor	Best	Poor
<b>The costs attributed to new development should be reasonably proportionate to their share</b>	Best for basins with master plans. Poor for others.	Poor	Best	Poor
<b>Fees should be based on the best available information</b>	Average	Poor	Best	Worst

The options have also been ranked according to related aspects including level of simplicity, the direct equity, regional benefits, SEMSWA administration costs, and the potential revenue generated. Table 8 below summarizes these qualitative criteria for each option.

**Table 8: Qualitative Summary of Options**

<b>Criteria</b>	<b>Option 1a Basin by Basin</b>	<b>Option 1b By Basin Group</b>	<b>Option 1c By Basin / Basin Group</b>	<b>Option 1d Entire Service Area</b>
<b>Understanding</b>	Good	Fair	Fair	Good
<b>Direct Equity</b>	Best	Low	Medium	Poor
<b>Regional Equity</b>	Least	Medium	Medium	Best
<b>Financial Flexibility</b>	Lowest	Good	Good	Best
<b>Administrative Cost</b>	High	Medium	Medium	Lowest
<b>Revenue Potential</b>	\$36M	\$55M	\$41M	\$56M



# OPTION 2: Buy-In Method

## ***Option 2: Buy-In Method***

Option 2 is the Fees Proportional to the Costs of Existing Infrastructure option or otherwise called the Buy-in method. This option takes the total depreciated cost of the stormwater infrastructure already built for the area and determines a dollar per impervious acre to be charged for new development. The new development fee is equal to the dollar per impervious acre fee as new development is “buying-in” to the stormwater system already built. New development in the area would need to buy-in to the existing system for use of the culverts, channels, pipes, and other stormwater infrastructure currently in the ground. This section explains the methods, calculations, and results of the option 2 analysis.

The pros of this system are:

- It is generally easy to understand.
- Development pays for its share of the system already in place.
- Works best in areas mostly developed.

The cons of the system are:

- This method doesn’t work well in undeveloped or mostly undeveloped areas.
- Infrastructure costs are estimated based on a limited survey.
- It is difficult to estimate the existing infrastructure without a full inventory assessment.

## **Estimate of Existing Infrastructure**

An estimate of the quantities of the existing stormwater infrastructure was made based on the information provided by Muller Engineering and AMEC in the Cost of Service, Rate and Revenue Report.

The Muller Engineering report estimated the infrastructure based on a one square mile area that was representative of the entire service area. Length of storm sewer and culvert pipe were based on unit relationships of pipe length per square miles and number of outfalls per square mile.

Major and minor channel lengths were estimated based on a compilation of UDFCD and SEMSWA information used to generate stream maps. In addition, the percentage of the major and minor channels was estimated per basin group.

The number of water quality and detention ponds was provided by SEMSWA.

## **Existing Infrastructure per Basin Group**

The existing stormwater infrastructure was estimated per basin group. Stormwater infrastructure was not estimated for Basin Group 4, as this area is fairly new.

The age of each Basin Group was estimated and varies between 15 years old to 30 years old. The percentage not developed and/or undevelopable was calculated for each Basin Group. These assumptions were used to extrapolate the existing infrastructure quantities throughout the service area by basin group.

The quantities of the existing stormwater infrastructure per basin are provided in Appendix E.

### Value of Existing Infrastructure

The value of the existing infrastructure was estimated based on industry knowledge of the unit replacement cost for each type of structure. The estimated cost of the water quality and detention ponds was provided by SEMSWA.

The total replacement value of the infrastructure was depreciated based on the age of the basin group. In addition, it was assumed that fifty percent of the infrastructure is public assets and the other fifty percent is contributed assets. The contributed assets are money that land developers put into the system at the time of development. Only the public assets portion is used in the development fee calculation.

### Fee per Impervious Acre

The fee per impervious acre is equal to the public assets divided by the existing impervious area currently billed.

$$\text{Fee per Impervious Acre} = \frac{\text{Value of Public Assets}}{\text{Existing Impervious Area currently billed outside ROW in acres}}$$

The fee per impervious acre varies from \$5,709 to \$13,965. The following table summarizes the calculation.

**Table 9: Option 2 – Estimate of Infrastructure Value for Buy-In Method Summary**

Basin Group #	Average Age of Infrastructure (yrs)	Total Basin Area (ac)	Total Basin Group Value	Total Depreciated Value	Public Assets Value	Contributed Asset Value	Fee Per Impervious Acre	Potential Revenue
Basin Group 1	30	10,797	\$80,376,017	\$32,150,407	\$16,075,203	\$16,075,203	\$5,709	\$4,525,142
Basin Group 2	15	14,335	\$107,492,520	\$75,244,764	\$37,622,382	\$37,622,382	\$12,343	\$32,386,469
Basin Group 3	15	5,067	\$33,885,901	\$23,720,131	\$11,860,065	\$11,860,065	\$13,965	\$4,523,313
Basin Group 5	30	2,151	\$13,713,308	\$5,485,323	\$4,885,971	\$599,353	\$7,005	\$1,749,469
<b>Grand Total</b>								<b>\$43,184,394</b>

## Summary Option 2

Option 2 considered assessing a fee for development based on the value of the existing stormwater infrastructure. The SEMSWA service area is very diverse in terms of age, development activity, and amount of existing stormwater infrastructure. The amount of infrastructure in place was estimated based on a previous study and then extrapolated for each basin group.

Option 2 was not considered beyond this analysis due to the following:

- The amount of existing infrastructure is a gross estimation, the actual amount of existing infrastructure will be determined when a full infrastructure inventory is completed.
- The public portion was funded by Arapahoe County and the City of Centennial, not by SEMSWA. Therefore, SEMSWA may be required to reimburse Arapahoe County and the City of Centennial a portion of the fees they collect.
- Equity in the buy-in option is not as great as the option 1 – fees proportional to the costs of new facilities.

# Option 3: Hybrid

***Option 3: Hybrid***

The hybrid option was to evaluate a combination development fee with Option 1: Fees Proportional to the Costs of New Facilities, and Option 2: Buy-In Method. A hybrid system may collect 50% of the fees proportional to the costs of new facilities and 50% of the fees from the fees proportional to the costs of existing facilities. However, since the buy-in option was not considered a viable alternative for SEMSWA, a hybrid of option 1 and option 2 is not applicable.

Hybrids were considered as part of option 1 – fees proportional to the costs of new facilities. Option 1c, the recommended option, is a hybrid of both a basin by basin fee and a basin group fee. In this hybrid, the basins with identified projects will be charged a basin fees that is calculated based on the developer share of the CIP costs for that basin. The basins without identified projects are charged a weighted average of the basins in their group that do have identified projects. This system therefore combines the basin by basin approach with the basin group approach to provide SEMSWA and the development community a fair and equitable system.

## **Appendix A – Project List**

## SEMSWA Development, Permit and Review Fees

## SEMSWA Project List

Basin	Basin Group	Study Year	Project	Location Description	Estimated Total Cost from Plan (\$1000s)	\$ Year	2008 \$ (\$1,000s)	Comments
Dutch Creek Count							1	
Dutch Creek Total							462	
Greenwood Gulch	1	?	Other Culverts (estimate)		430	2004	456	
Greenwood Gulch	1	?	Maintenance - 3 projects		450	2004	477	
Greenwood Gulch Count							2	
Greenwood Gulch Total							933	
Lee Gulch	1	1987	Two Check Structures		4355	2004	4,520	
Lee Gulch Count							1	
Lee Gulch Total							4,520	
Little Dry Creek	1		Holly Street to Arapahoe Road Crossing		38	2004	40	
Little Dry Creek	1	1989	MP Improvements	9 of 21	216	2004	229	
Little Dry Creek	1	1989	MP Improvements	8 of 21	315	2004	334	
Little Dry Creek	1	2004	Low flow stabilization/ checks	Arapahoe to Quebec	316	2004	335	
Little Dry Creek	1	2004	Bank Stabilization, low flow channel and trail replacement	Sheet 13	327	2004	347	
Little Dry Creek	1	2004	Drop structures, cobble embankment - Spruce St. riprap low flow channel, veg thinning/wetland mitigation	Sheet 7	362	2004	384	
Little Dry Creek	1	2004	Erosion Check Structures, Bank Stabilization, low flow channel and trail replacement	Sheet 14	433	2004	459	
Little Dry Creek	1	2004	Grouted sloping boulder drop structures, low flow channel and trail replacement, (2) 5'19" RCBC at Forest Street	Forest Street	769	2004	816	
Little Dry Creek	1	2004	Bank Stabilization, low flow channel and trail replacement	Sheet 12	800	2004	849	Shown in Greenwood Village
Little Dry Creek Count							9	
Little Dry Creek Total							3,793	
Littles Creek	1	1997	Broadway Improvements		919	2004	975	Littleson doing study
Littles Creek	1	1997	East Davies Avenue/Mark Hopkins Ballfield Detention Facility		967	2004	1,026	Upstream study underway
Littles Creek	1	1997	Highline Canal Spillway Improvements		1000	2004	1,061	
Littles Creek Count							3	
Littles Creek Total							3,061	
Willow Creek	1	1989	Water Control and Mobilization	19 of 21	28	2004	30	
Willow Creek	1	1989	MP Improvements	20 of 21	47	2004	50	
Willow Creek	1	1989	MP Improvements	10 of 21	67	2004	71	
Willow Creek	1	1989	Check structure, riprap embankment protection, grouted riprap at outfall, veg maint/wetland mitig. Geotexture/veg Mineral, water control and mobilization	Sheet 12 of 21	80	2004	85	
Willow Creek	1	2004	Low-flow Channel and Trail Replacement	16 of 38	111	2004	118	
Willow Creek	1	1989	Check structures, maint path surfacing, grading and walls	Sheet 14 of 21	151	2004	160	
Willow Creek	1	1989	check structures, riprap embankment protection, veg. maint/wetland mitig. Water control and mobilization	Sheet 11 of 21	228	2004	242	
Willow Creek	1	1989	Check structures, riprap embankment protection, wetland CMP/RCP, veg. maint/wetland mitig. Concrete encasement, sewer lines	Sheet 13 of 21	391	2004	415	





## SEMSWA Development, Permit and Review Fees

## SEMSWA Project List

Basin	Basin Group	Study Year	Project	Location Description	Estimated Total Cost from Plan (\$1000s)	\$ Year	2008 \$ (\$1,000s)	Comments
Willow Creek	1	1999	check structures, riprap at footbridges, veg thinning/wetland mitg., maint path surfacing, grading and walls	Sheet 15 of 21	464	2004	492	
Willow Creek	1	1999	Storm sewer, riprap at Confluence, embankment protection, maint path surfacing, path crossing, retaining wall, initial veg thinning/wetland mitigation	Sheet 18 of 21	1040	2004	1,103	
Willow Creek	1	2004	Low flow channel and trail replacement, 3 check structures	Sheet 17 of 21	1175	2004	1,246	
Willow Creek Count							11	
Willow Creek Total							4,012	
East Toll Gate Creek	3	2006	Culverts at E. Crestline & E. Progress Circle	Dove Hill Subdivision, Gun	900	2007	905	2007/2008 SEMSWA project
East Toll Gate Creek Count							1	
East Toll Gate Creek Total							905	
Coal Creek	4	1990	Coal Creek Tributaries - drop structures and channels		6700	1990	8,964	Aurora to possibly annex. Channel stabilization projects that will be warranted as the property adjacent to the channel are developed.
Coal Creek	4	1990	Main Stem - multiple smaller projects - drop structures	Eastern most boundary last to be developed, possible chance to be annexed by Aurora	9000	1990	14,185	Aurora to possibly annex. Channel stabilization projects that will be warranted as the property adjacent to the channel are developed.
Coal Creek Count							2	
Coal Creek Total							23,169	
Murphy Creek	4	1990	Regional pond		610	1990	961	Need to construct pond to provide regional detention.
Murphy Creek	4	1990	Trib - channel improvements		1300	1990	2,049	Channel stabilization projects that will be warranted as the property adjacent to the channel are developed.
Murphy Creek	4	1990	Channel Improvements		9100	1990	12,767	Channel stabilization projects that will be warranted as the property adjacent to the channel are developed.
Murphy Creek Count							3	
Murphy Creek Total							15,777	
Senac Creek	4	1990	Tributary Stem		2000	1990	3,152	SEMSWA may be asked to participate, possible annexation by Aurora, check total cost
Senac Creek	4	1990	Main Stem drop structures		4000	1990	6,305	SEMSWA may be asked to participate, possible annexation by Aurora, check total cost
Senac Creek Count							2	
Senac Creek Total							9,457	
Unnamed Trib to W Tall Gate	4	2003	Outfall Channel, Check Structures	Outfall 4407-05, 60+00 to 69+57	296	2003	342	No FEMA floodplain delineation
Unnamed Trib to W Tall Gate	4	2003	Main Channel, Check Structures	Main 269+00 to 284+01	443	2003	510	Check structures to be implemented as needed
Unnamed Trib to W Tall Gate	4	2003	Outfall Channel, Check & Drop Structures	Outfall 4407-07, 22+00 to 34+02	542	2003	625	No FEMA floodplain delineation, Immediate
Unnamed Trib to W Tall Gate	4	2003	Outfall Channel, WQ & Check Structures	Outfall 4407-07, 0+00 to 22+01	639	2003	736	No FEMA floodplain delineation
Unnamed Trib to W Tall Gate	4	2003	Main Channel, Check Structures	Main 286+00 to 298+89	691	2003	796	Check structures to be implemented as needed
Unnamed Trib to W Tall Gate	4	2003	Main Channel, WQ & Check Structures	Main 113+00 to 141+01	1647	2003	1,898	Immediate need for WQ, Hampden will flood in 25-

## SEMSWA Development, Permit and Review Fees

## SEMSWA Project List

Basin	Basin Group	Study Year	Project	Location Description	Estimated Total Cost from Plan (\$1000s)	\$ Year	2008 \$ (\$1,000s)	Comments
Unnamed Trib to W Toll Gate	4	2003	Main Channel, WQ & Check Structures	Main 141+00 to 169+01	1708	2003	1,969	Immediate need for WQ, check structure needed if
Unnamed Trib to W Toll Gate Count							7	
Unnamed Trib to W Toll Gate Total							6,876	
Harvard Gulch	5		Detention Ponds and Outfall Construction		500	2007	503	In 5 year plan, approx \$500k left to spend, depended on the purchase of the last home
Harvard Gulch Count							1	
Harvard Gulch Total							503	
Lower Goldsmith Gulch	5	2005	North Section - Monaco/Eastman Project		500	2004	530	
Lower Goldsmith Gulch Count							1	
Lower Goldsmith Gulch Total							530	
Cottonwood Creek	2a	1991	Mainstem Channel Improvements from Dry Creek to County Line	Mainstem - Dry Creek to County Line (M1, M2, M3C) - Channel Rehab and Check Structures (17)	115	1991	179	
Cottonwood Creek	2a	1991	I-25 to Inverness Dr.	Tribs C1, C2 and C3	144	1991	224	Need easements through the golf course to get to the regional detention and WQ pond or develop will stop
Cottonwood Creek	2a	1991	Tributary A from Havana to Arapahoe Road.	Tributary A - Reach 4	1101	1991	1,713	
Cottonwood Creek	2a	1991	Mainstem Channel Improvements from Easter to Brianwood	Mainstem - reach M4	1800	1991	2,901	
Cottonwood Creek	2a	1991	Tributary B - Caley Pond, Conveyance and WQ	Tributary B	3408	1991	5,303	Verify Cost w/Approved drawings (Nolte Engineering)
Cottonwood Creek	2a	1991	Upstream Main stem Channel Improvements, Tributary C Channel Improvements, Tributary B Caley Pond Conveyance and WQ	Mainstem - Dry Creek to County Line (M1, M2, M3C), Channel Rehab and Check Structures, Tributary C, Tributary B	3408	1991	5,303	
Cottonwood Creek Count							6	
Cottonwood Creek Total							15,524	
Dove Creek	2a	1987	Dove Collector System (Plan ID DC-2)	Outfall to Channel upstream of Pond D-2 41+00 (at S. Eagle St. Outfall - sac)	120	1987	198	To be constructed with future development of Carmel property?
Dove Creek	2a	1987	Dove Detention and Water Quality Pond (Plan ID WQ-D2)	Jordan Road at Hinadale, Channel to Broncos Pkwy (37+00 to 60+00)	1458	1987	2,404	Own Pond property, 95% design, need upstream channel easement from Carmel - very resistant to date
Dove Creek	2a	1987	Dove Detention Pond, grass lined upstream channel to Otero (Plan ID WQ-D1, GLC-D2)	N of Broncos Pkwy (60+00), Chambers to HW (70+00 to 94+00)	1772	1987	2,921	Own D-1 property, need design, channel easement to Otero, no easement to HW, possibly for WQ may be considered

## SEMSWA Development, Permit and Review Fees

## SEMSWA Project List

Basin	Basin Group	Study Year	Project	Location Description	Estimated Total Cost from Plan (\$1000s)	\$ Year	2008 \$ (\$1,000s)	Comments
Dove Creek Count							3	
Dove Creek Total							5,523	
Happy Canyon	2a	2004	Green Acres Tributary		1100	2004	1,167	These projects would be driven by Development of the adjacent properties.
Happy Canyon	2a	2004	Main stem		1250	2004	1,326	These projects would be driven by Development of the adjacent properties.
Happy Canyon Count							2	
Happy Canyon Total							2,493	
Lonetree Creek	2a	1987	Lonetree Quantity/Quality Pond (Plan ID L-1)	Adjacent to Airport Runway	575	2005	589	FAA Property - no lease agreement need UDFCD approval
Lonetree Creek	2a	1987	Lonetree Detention Pond and upstream channel (Plan ID L-2, GLC-L2)	Broncos Pkwy to Airport (131+50 to 158+00)	850	2005	885	Own property and have approved design for Pond L-2
Lonetree Creek Count							2	
Lonetree Creek Total							1,484	
Upper Goldsmith Gulch	2a	2005	South - Maintenance Path		141	2004	150	
Upper Goldsmith Gulch	2a	2005	Water Quality Enhancements - Arapahoe Lake		338	2004	359	Same as above
Upper Goldsmith Gulch	2a	2005	Channel Stabilization and Improvements	N. of Peakview	350	2004	371	
Upper Goldsmith Gulch	2a	2005	Water Quality Ponds/Wetlands		375	2004	398	
Upper Goldsmith Gulch	2a	2005	Coley Crossing		473	2004	502	
Upper Goldsmith Gulch	2a	2005	Peakview Crossing		675	2004	716	Not in Master Plan
Upper Goldsmith Gulch	2a	2005	Water Quantity Improvements - Arapahoe Lake		675	2004	716	Same as above
Upper Goldsmith Gulch Count							7	
Upper Goldsmith Gulch Total							3,211	
Windmill Creek	2a	1987	Windmill Wetland Bottom low flow channel	Arapahoe to Jordan (99+50 to 104+00)	300	2005	313	No easement, small undevelopable parcel in Centennial 4 lots divided by the creek - possible problematic.
Windmill Creek	2a	1987	Windmill Wetlands and Grasslined channels w/drops & w/low flow (u/s of Blkhk)	Broncos to Fremont (141+00 to 180+00) & from W-5 (0+00 to 6+00)	896	2005	934	Own property for simple, need design, crosses through undeveloped property

## SEMSWA Development, Permit and Review Fees

## SEMSWA Project List

Basin	Basin Group	Study Year	Project	Location Description	Estimated Total Cost from Plan (\$1000s)	\$ Year	2008 \$ (\$1,000s)	Comments
Windmill Creek	2a	1987	Windmill Detention Pond and upstream channel (Plan ID W4)	Upstream of Pond W-4 to Airport (190+00 to 216+00)	1550	2006	1,569	Own Pond property, drainage easement for channel, UDFCD approval
Windmill Creek	2a	1987	Windmill Detention and Water Quality Pond (Plan ID W1/W2)	220+00	2606	1987	4,296	Need lease agreement w/Airport, need design, WQ outlet retrofit needed, developer design prepared but did not receive final approval and was not constructed in 2006.
Windmill Creek	2a	2006	Windmill Water Quality Pond (Plan ID W5)	S of Broncos Pkwy	300	2007	302	
Windmill Creek Count							5	
Windmill Creek Total							7,413	
Piney Creek	2b		Estancia Outfall (constructed w/Aras Rd Widening)	Estancia at Arapahoe Road	100	2007	101	
Piney Creek	2b	1989	Antelope Creek Tributary		1641	1989	2,605	area mostly built out
Piney Creek	2b	2003	Sampson Gulch Tributary		3618	1989	6,061	runs through Aurora, some SEMSWA responsibility
Piney Creek	2b	1989/2000	Piney Creek Mainstream	Piney Creek Ranches and bridge over Caley	5700	1989	9,049	Consider study for channel stabilization/maintenance
Piney Creek Count							4	
Piney Creek Total							17,816	
Upper Cherry Creek	2b		Grade Control/Bank Stabilization	Valley County Club (East Caley Drive) to Cherry Creek Reservoir	817	2004	867	
Upper Cherry Creek	2b	1999	Regional Detention Pond, Reach F-I, R-5	Southeast Regional Detention Facility	2333	2004	2,475	Isn't this being built by CDOT as part of the Parker/Arapahoe interchange project?
Upper Cherry Creek	2b		54-inch Storm Sewer	Cornerstar to Broncos Parkway	5017	2004	5,322	

## SEMSWA Development, Permit and Review Fees

## SEMSWA Project List

Basin	Basin Group	Study Year	Project	Location Description	Estimated Total Cost from Plan (\$1000s)	\$ Year	2008 \$ (\$1,000s)	Comments
Upper Cherry Creek	2b	1999	54-inch Storm Sewer	Cornerstar Development	6019	2004	6,385	Should be constructed with Cornerstar Development, cost share by Aurora
Upper Cherry Creek	2b		Grade Control/Bank Stabilization	Valley Country Club Acres to Arapahoe Road	6360	2004	6,747	portions build as part of Arapahoe Commons?
Upper Cherry Creek	2b		Grade Control/Bank Stabilization	Arapahoe County line to Tawgawa property (Fetter's Property)	7463	2004	7,917	Developer has offered to pay a large amount towards improvements for development
Upper Cherry Creek Count							6	
Upper Cherry Creek Total							29,711	
Grand Count							103	

# **Appendix B – Impervious Area Estimate**

## SEMSWA Developable Area and Basin Group

Basin Name	Basin Group	Basin Acres	Existing ROW Acres	Existing Impervious Acres Currently Billed (Outside ROW)	Remaining Developable Impervious Acres (Outside ROW, To Be Billed) <sup>(2)</sup>	Percent Not Developable <sup>(1)</sup>	Percent Developable
Bear Creek	1	44	6	20	10	78%	22%
Big Dry Creek	1	3,080	540	782	206	93%	7%
Coon Creek	1	8	1	1	-	100%	0%
Dutch Creek	1	141	13	34	13	91%	9%
Greenwood Gulch	1	371	50	104	46	88%	12%
Lee Gulch	1	256	56	71	12	95%	5%
Little Dry Creek	1	2,541	485	700	157	94%	6%
Little's Creek	1	745	168	168	16	98%	2%
SUCD(N)	1	162	23	25	19	88%	12%
SUCD(S)	1	22	4	5	3	85%	15%
Slaughterhouse Gulch	1	730	153	195	20	97%	3%
UDFCD ID 66	1	17	3	6	7	50%	41%
UDFCD ID 67	1	262	33	30	90	66%	34%
Willow Creek	1	2,410	467	657	194	92%	8%
<b>Group 1 Total</b>		<b>10,797</b>	<b>2,019</b>	<b>2,816</b>	<b>793</b>	<b>93%</b>	<b>7%</b>
Cottonwood Creek	2	2,781	326	874	958	66%	34%
Dove Creek	2	658	55	74	300	41%	59%
Happy Canyon Creek	2	336	34	15	231	31%	69%
Long Tree Creek	2	1,043	73	340	328	60%	31%
UDFCD ID 4406	2	1	0	-	-	100%	0%
Upper Goldsmith Gulch	2	334	61	120	12	97%	3%
Windmill Creek	2	1,536	144	341	706	54%	46%
Antelope Creek	2	598	50	44	12	98%	2%
Piney Creek	2	3,400	578	606	98	97%	3%
Saddle Rock Ranches	2	13	0	2	0	96%	4%
Sampson Gulch	2	388	30	20	35	91%	9%
Upper Cherry Creek	2	3,249	472	594	303	91%	9%
<b>Group 2 Total</b>		<b>14,335</b>	<b>1,832</b>	<b>3,048</b>	<b>3,073</b>	<b>79%</b>	<b>21%</b>
East Toll Gate Creek	3	941	65	22	146	85%	15%
Unnamed Creek	3	2,081	370	306	63	97%	3%
West Toll Gate Creek	3	2,045	467	521	115	94%	6%
<b>Group 3 Total</b>		<b>5,067</b>	<b>902</b>	<b>849</b>	<b>324</b>	<b>94%</b>	<b>6%</b>
Coal Creek	4	10,613	177	26	12,728	35%	65%
First Creek	4	2,582	45	11	1,680	34%	66%
Murphy Creek	4	3,249	53	13	230	93%	7%
Sand Creek	4	255	15	7	95	63%	37%
Lower Senac Creek	4	1,360	4	58	66	95%	5%
Upper Senac Creek	4	343	3	1	0	100%	0%
<b>Group 4 Total</b>		<b>27,381</b>	<b>296</b>	<b>115</b>	<b>14,818</b>	<b>46%</b>	<b>54%</b>
Lower Cherry Creek	5	1,407	211	501	214	86%	14%
Lower Goldsmith Gulch	5	16	4	4	1	96%	4%
Westerly Creek	5	227	21	91	35	85%	15%
5000	5	37	12	9	-	100%	0%
Harvard Gulch	5	270	63	66	5	98%	2%
Lower Goldsmith Gulch	5	105	21	28	2	98%	2%
<b>Group 5 Total</b>		<b>2,151</b>	<b>331</b>	<b>698</b>	<b>256</b>	<b>88%</b>	<b>12%</b>
<b>Grand Total</b>		<b>59,731</b>	<b>5,389</b>	<b>7,525</b>	<b>19,264</b>	<b>68%</b>	<b>32%</b>

(1) This figure represents all area within parcels that may not be developed, including existing impervious area and all area that must remain undeveloped per land use designation.

(2) The developable area figure is derived from the potential %-development possible within each land use category for undeveloped and partially-developed properties.





## ***Figure 1 – Basin Group Boundaries***





## **Appendix C – Fee per Impervious Acre Calculations**

**SEMSWA Development Fee Options  
Fees Proportional to Costs of New Facilities**

**Option 1.a Fees Proportional to Cost of New Facilities  
Basin by Basin Approach**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 1</b>							
Bear Creek			22%	\$ -	10	\$ -	\$ -
Big Dry Creek	24	\$ 18,297,000	7%	\$ 1,280,790	206	\$ 6,217	\$ 1,280,790
Coon Creek			0%	\$ -	0		\$ -
Dutch Creek	1	\$ 462,000	9%	\$ 41,580	13	\$ 3,198	\$ 41,580
Greenwood Gulch	2	\$ 933,000	12%	\$ 111,960	46	\$ 2,434	\$ 111,960
Lee Gulch	1	\$ 4,620,000	5%	\$ 231,000	12	\$ 19,250	\$ 231,000
Little Dry Creek	9	\$ 3,793,000	6%	\$ 227,580	157	\$ 1,450	\$ 227,580
Little's Creek	3	\$ 3,061,000	2%	\$ 61,220	16	\$ 3,826	\$ 61,220
SJCD(N)			12%	\$ -	19	\$ -	\$ -
SJCD(S)			15%	\$ -	3	\$ -	\$ -
Slaughterhouse Gulch			3%	\$ -	20	\$ -	\$ -
UDFCD ID 66			41%	\$ -	7	\$ -	\$ -
UDFCD ID 67			34%	\$ -	90	\$ -	\$ -
Willow Creek	11	\$ 4,012,000	8%	\$ 320,960	194	\$ 1,654	\$ 320,960
<b>Total</b>	<b>51</b>	<b>\$ 35,178,000</b>		<b>\$ 2,275,090</b>	<b>793</b>		<b>\$ 2,275,090</b>
<b>Basin Group 2</b>							
Antelope Creek			2%	\$ -	12	\$ -	\$ -
Cottonwood Creek	6	\$ 15,524,000	34%	\$ 5,278,160	958	\$ 5,510	\$ 5,278,160
Dove Creek	3	\$ 5,523,000	59%	\$ 3,258,570	390	\$ 8,355	\$ 3,258,570
Happy Canyon Creek	2	\$ 2,493,000	69%	\$ 1,720,170	231	\$ 7,447	\$ 1,720,170
Lone Tree Creek	2	\$ 1,484,000	31%	\$ 460,040	328	\$ 1,403	\$ 460,040
Piney Creek	4	\$ 17,816,000	3%	\$ 534,480	98	\$ 5,454	\$ 534,480
Saddle Rock Ranches			4%	\$ -	0		\$ -
Sampson Gulch			9%	\$ -	35	\$ -	\$ -
UDFCD ID 4406			0%	\$ -	0		\$ -
Upper Cherry Creek	6	\$ 29,711,000	9%	\$ 2,673,990	303	\$ 8,825	\$ 2,673,990
Upper Goldsmith Gulch	7	\$ 3,211,000	3%	\$ 96,330	12	\$ 8,028	\$ 96,330
Windmill Creek	5	\$ 7,413,000	46%	\$ 3,409,980	706	\$ 4,830	\$ 3,409,980
<b>Total</b>	<b>35</b>	<b>\$ 83,175,000</b>		<b>\$ 17,431,720</b>	<b>3073</b>		<b>\$ 17,431,720</b>
<b>Basin Group 3</b>							
East Toll Gate Creek	1	\$ 905,000	15%	\$ 135,750	146	\$ 930	\$ 135,750
Unnamed Creek	7	\$ 6,876,000	3%	\$ 206,280	63	\$ 3,274	\$ 206,280
West Toll Gate Creek			6%	\$ -	115	\$ -	\$ -
<b>Total</b>	<b>8</b>	<b>\$ 7,781,000</b>		<b>\$ 342,030</b>	<b>324</b>		<b>\$ 342,030</b>

**SEMSWA Development Fee Options**  
**Fees Proportional to Costs of New Facilities**

**Option 1.a Fees Proportional to Cost of New Facilities**  
**Basin by Basin Approach**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 4</b>							
Coal Creek	2	\$ 23,169,000	65%	\$ 15,059,850	12728	\$ 1,183	\$ 15,059,850
First Creek			66%	\$ -	1689	\$ -	\$ -
Murphy Creek	3	\$ 15,777,000	7%	\$ 1,104,390	239	\$ 4,621	\$ 1,104,390
Sand Creek			37%	\$ -	95	\$ -	\$ -
Lower Senac Creek	2	\$ 9,457,000	5%	\$ 472,850	66	\$ 7,164	\$ 472,850
Upper Senac Creek			0%	\$ -	0	\$ -	\$ -
<b>Total</b>	<b>7</b>	<b>\$ 48,403,000</b>		<b>\$ 16,637,090</b>	<b>14817</b>		<b>\$ 16,637,090</b>
<b>Basin Group 5</b>							
5000			0%	\$ -	0	\$ -	\$ -
Harvard Gulch	1	\$ 503,000	2%	\$ 10,060	5	\$ 2,012	\$ 10,060
Lower Cherry Creek			14%	\$ -	214	\$ -	\$ -
Lower Goldsmith Gulch	1	\$ 530,000	4%	\$ 21,200	1	\$ 21,200	\$ 21,200
Westerly Creek			15%	\$ -	35	\$ -	\$ -
<b>Total</b>	<b>2</b>	<b>\$ 1,033,000</b>		<b>\$ 31,260</b>	<b>255</b>		<b>\$ 31,260</b>

**Option 1a Basin by Basin Summary by Basin Group**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share of Identified Projects (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
Basin Group 1	51	\$ 35,178,000		\$ 2,275,090	793		\$ 2,275,090
Basin Group 2	35	\$ 83,175,000		\$ 17,431,720	3073		\$ 17,431,720
Basin Group 3	8	\$ 7,781,000		\$ 342,030	324		\$ 342,030
Basin Group 4	7	\$ 48,403,000		\$ 16,637,090	14817		\$ 16,637,090
Basin Group 5	2	\$ 1,033,000		\$ 31,260	255		\$ 31,260
<b>Grand Total</b>	<b>103</b>	<b>\$ 175,570,000</b>		<b>\$ 36,717,190</b>	<b>19262</b>		<b>\$ 36,717,190</b>

**SEMSWA Development Fee Options  
Fees Proportional to Costs of New Facilities**

**Option 1.b Fees Proportional to Cost of New Facilities**

**By Basin Group - Basin Group fee based on the percent developable for basin group as a whole and the total remaining developable impervious acres**

Basin Group	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share of Identified Projects (2008\$)	Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
Basin Group 1	51	\$ 35,178,000	7%	\$ 2,462,460	793	\$ 3,105	\$ 2,462,460
Basin Group 2	35	\$ 83,175,000	21%	\$ 17,466,750	3073	\$ 5,684	\$ 17,466,750
Basin Group 3	8	\$ 7,781,000	6%	\$ 466,860	324	\$ 1,441	\$ 466,860
Basin Group 4	7	\$ 48,403,000	71%	\$ 34,366,130	14817	\$ 2,319	\$ 34,366,130
Basin Group 5	2	\$ 1,033,000	12%	\$ 123,960	255	\$ 486	\$ 123,960
<b>Total</b>	<b>103</b>	<b>\$ 175,570,000</b>		<b>\$ 54,886,160</b>	<b>19,262</b>		<b>\$ 54,886,160</b>

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 1</b>							
Bear Creek			22%	\$ -	10	\$ 3,105	\$ 31,052
Big Dry Creek	24	\$ 18,297,000	7%	\$ 1,280,790	206	\$ 3,105	\$ 639,681
Coon Creek			0%	\$ -	0	\$ 3,105	\$ -
Dutch Creek	1	\$ 462,000	9%	\$ 41,580	13	\$ 3,105	\$ 40,368
Greenwood Gulch	2	\$ 933,000	12%	\$ 111,960	46	\$ 3,105	\$ 142,841
Lee Gulch	1	\$ 4,620,000	5%	\$ 231,000	12	\$ 3,105	\$ 37,263
Little Dry Creek	9	\$ 3,793,000	6%	\$ 227,580	157	\$ 3,105	\$ 487,524
Little's Creek	3	\$ 3,061,000	2%	\$ 61,220	16	\$ 3,105	\$ 49,684
SJCD(N)			12%	\$ -	19	\$ 3,105	\$ 59,000
SJCD(S)			15%	\$ -	3	\$ 3,105	\$ 9,316
Slaughterhouse Gulch			3%	\$ -	20	\$ 3,105	\$ 62,105
UDFCD ID 66			41%	\$ -	7	\$ 3,105	\$ 21,737
UDFCD ID 67			34%	\$ -	90	\$ 3,105	\$ 279,472
Willow Creek	11	\$ 4,012,000	8%	\$ 320,960	194	\$ 3,105	\$ 602,418
<b>Total</b>	<b>51</b>	<b>\$ 35,178,000</b>		<b>\$ 2,275,090</b>	<b>793</b>		<b>\$ 2,462,460</b>
<b>Basin Group 2</b>							
Antelope Creek			2%	\$ -	12	\$ 5,684	\$ 68,207
Cottonwood Creek	6	\$ 15,524,000	34%	\$ 5,278,160	958	\$ 5,684	\$ 5,445,215
Dove Creek	3	\$ 5,523,000	59%	\$ 3,258,570	390	\$ 5,684	\$ 2,216,737
Happy Canyon Creek	2	\$ 2,493,000	69%	\$ 1,720,170	231	\$ 5,684	\$ 1,312,990
Lone Tree Creek	2	\$ 1,484,000	31%	\$ 460,040	328	\$ 5,684	\$ 1,864,333
Piney Creek	4	\$ 17,816,000	3%	\$ 534,480	98	\$ 5,684	\$ 557,026
Saddle Rock Ranches			4%	\$ -	0	\$ 5,684	\$ -
Sampson Gulch			9%	\$ -	35	\$ 5,684	\$ 198,938
UDFCD ID 4406			0%	\$ -	0	\$ 5,684	\$ -
Upper Cherry Creek	6	\$ 29,711,000	9%	\$ 2,673,990	303	\$ 5,684	\$ 1,722,234
Upper Goldsmith Gulch	7	\$ 3,211,000	3%	\$ 96,330	12	\$ 5,684	\$ 68,207
Windmill Creek	5	\$ 7,413,000	46%	\$ 3,409,980	706	\$ 5,684	\$ 4,012,862
<b>Total</b>	<b>35</b>	<b>\$ 83,175,000</b>		<b>\$ 17,431,720</b>	<b>3073</b>		<b>\$ 17,466,750</b>



**SEMSWA Development Fee Options**  
**Fees Proportional to Costs of New Facilities**

**Option 1.c Fees Proportional to Cost of New Facilities**

**Basin By Basin plus Cost by Basin Group**

Basin Group fee based on the sum of the developer share cost and the sum of the remaining developable impervious acres only for the basins with projects

Basin Group	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable Area (outside ROW)	Developer Share of Identified Projects (2008\$)	Developable Impervious Area in Basins with Identified projects (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
Basin Group 1	51	\$ 35,178,000		\$ 2,275,090	644	\$ 3,533	\$ 2,801,470
Basin Group 2	35	\$ 83,175,000		\$ 17,431,720	3026	\$ 5,761	\$ 17,702,470
Basin Group 3	8	\$ 7,781,000		\$ 342,030	209	\$ 1,637	\$ 530,228
Basin Group 4	7	\$ 48,403,000		\$ 16,637,090	13033	\$ 1,277	\$ 18,914,430
Basin Group 5	2	\$ 1,033,000		\$ 31,260	6	\$ 5,210	\$ 1,328,550
<b>Total</b>	<b>103</b>	<b>\$ 175,570,000</b>		<b>\$ 36,717,190</b>	<b>16,918</b>		<b>\$ 41,277,148</b>

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable Area (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 1</b>							
Bear Creek			22%	\$ -	10	\$ 3,533	\$ 35,327
Big Dry Creek	24	\$ 18,297,000	7%	\$ 1,280,790	206	\$ 6,217	\$ 1,280,790
Coon Creek			0%	\$ -	0	\$ 3,533	\$ -
Dutch Creek	1	\$ 462,000	9%	\$ 41,580	13	\$ 3,198	\$ 41,580
Greenwood Gulch	2	\$ 933,000	12%	\$ 111,960	46	\$ 2,434	\$ 111,960
Lee Gulch	1	\$ 4,620,000	5%	\$ 231,000	12	\$ 19,250	\$ 231,000
Little Dry Creek	9	\$ 3,793,000	6%	\$ 227,580	157	\$ 1,450	\$ 227,580
Little's Creek	3	\$ 3,061,000	2%	\$ 61,220	16	\$ 3,826	\$ 61,220
SJCD(N)			12%	\$ -	19	\$ 3,533	\$ 67,122
SJCD(S)			15%	\$ -	3	\$ 3,533	\$ 10,598
Slaughterhouse Gulch			3%	\$ -	20	\$ 3,533	\$ 70,655
UDFCD ID 66			41%	\$ -	7	\$ 3,533	\$ 24,729
UDFCD ID 67			34%	\$ -	90	\$ 3,533	\$ 317,947
Willow Creek	11	\$ 4,012,000	8%	\$ 320,960	194	\$ 1,654	\$ 320,960
<b>Total</b>	<b>51</b>	<b>\$ 35,178,000</b>		<b>\$ 2,275,090</b>	<b>644</b>		<b>\$ 2,801,470</b>
<b>Basin Group 2</b>							
Antelope Creek			2%	\$ -	12	\$ 5,761	\$ 69,128
Cottonwood Creek	6	\$ 15,524,000	34%	\$ 5,278,160	958	\$ 5,510	\$ 5,278,160
Dove Creek	3	\$ 5,523,000	59%	\$ 3,258,570	390	\$ 8,355	\$ 3,258,570
Happy Canyon Creek	2	\$ 2,493,000	69%	\$ 1,720,170	231	\$ 7,447	\$ 1,720,170
Lone Tree Creek	2	\$ 1,484,000	31%	\$ 460,040	328	\$ 1,403	\$ 460,040
Piney Creek	4	\$ 17,816,000	3%	\$ 534,480	98	\$ 5,454	\$ 534,480
Saddle Rock Ranches			4%	\$ -	0	\$ 5,761	\$ -
Sampson Gulch			9%	\$ -	35	\$ 5,761	\$ 201,623
UDFCD ID 4406			0%	\$ -	0	\$ 5,761	\$ -
Upper Cherry Creek	6	\$ 29,711,000	9%	\$ 2,673,990	303	\$ 8,825	\$ 2,673,990
Upper Goldsmith Gulch	7	\$ 3,211,000	3%	\$ 96,330	12	\$ 8,028	\$ 96,330
Windmill Creek	5	\$ 7,413,000	46%	\$ 3,409,980	706	\$ 4,830	\$ 3,409,980
<b>Total</b>	<b>35</b>	<b>\$ 83,175,000</b>		<b>\$ 17,431,720</b>	<b>3026</b>		<b>\$ 17,702,470</b>

**SEMSWA Development Fee Options**  
**Fees Proportional to Costs of New Facilities**

**Option 1.c Fees Proportional to Cost of New Facilities**  
**Basin By Basin plus Cost by Basin Group**

Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable Area (outside ROW)	Developer Share (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
<b>Basin Group 3</b>							
East Toll Gate Creek	1	\$ 905,000	15%	\$ 135,750	146	\$ 930	\$ 135,750
Unnamed Creek	7	\$ 6,876,000	3%	\$ 206,280	63	\$ 3,274	\$ 206,280
West Toll Gate Creek			6%	\$ -	115	\$ 1,637	\$ 188,198
<b>Total</b>	<b>8</b>	<b>\$ 7,781,000</b>		<b>\$ 342,030</b>	<b>209</b>		<b>\$ 530,228</b>
<b>Basin Group 4</b>							
Coal Creek	2	\$ 23,169,000	65%	\$ 15,059,850	12728	\$ 1,183	\$ 15,059,850
First Creek			66%	\$ -	1609	\$ 1,277	\$ 2,156,069
Murphy Creek	3	\$ 15,777,000	7%	\$ 1,104,390	239	\$ 4,621	\$ 1,104,390
Sand Creek			37%	\$ -	95	\$ 1,277	\$ 121,271
Lower Senac Creek	2	\$ 9,457,000	5%	\$ 472,850	66	\$ 7,164	\$ 472,850
Upper Senac Creek			0%	\$ -	0	\$ 1,277	\$ -
<b>Total</b>	<b>7</b>	<b>\$ 48,403,000</b>		<b>\$ 16,637,090</b>	<b>13033</b>		<b>\$ 18,914,430</b>
<b>Basin Group 5</b>							
5000			0%	\$ -	0	\$ 5,210	\$ -
Harvard Gulch	1	\$ 503,000	2%	\$ 10,060	5	\$ 2,012	\$ 10,060
Lower Cherry Creek			14%	\$ -	214	\$ 5,210	\$ 1,114,940
Lower Goldsmith Gulch	1	\$ 530,000	4%	\$ 21,200	1	\$ 21,200	\$ 21,200
Westerly Creek			15%	\$ -	35	\$ 5,210	\$ 182,350
<b>Total</b>	<b>2</b>	<b>\$ 1,033,000</b>		<b>\$ 31,260</b>	<b>6</b>		<b>\$ 1,328,550</b>

**Option 1c Basin Plus Cost by Basin Group Summary**

Basin Group	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share of Identified Projects (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
Basin Group 1	51	\$ 35,178,000		\$ 2,275,090	793		\$ 2,801,470
Basin Group 2	35	\$ 83,175,000		\$ 17,431,720	3,073		\$ 17,702,470
Basin Group 3	8	\$ 7,781,000		\$ 342,030	324		\$ 530,228
Basin Group 4	7	\$ 48,403,000		\$ 16,637,090	14,817		\$ 18,914,430
Basin Group 5	2	\$ 1,033,000		\$ 31,260	255		\$ 1,328,550
<b>Total</b>	<b>103</b>	<b>\$ 175,570,000</b>		<b>\$ 36,717,190</b>	<b>19,262</b>		<b>\$ 41,277,148</b>



**SEMSWA Development Fee Options  
Fees Proportional to Costs of New Facilities**

**Option 1.d Fees Proportional to Cost of New Facilities  
Entire Service Area**

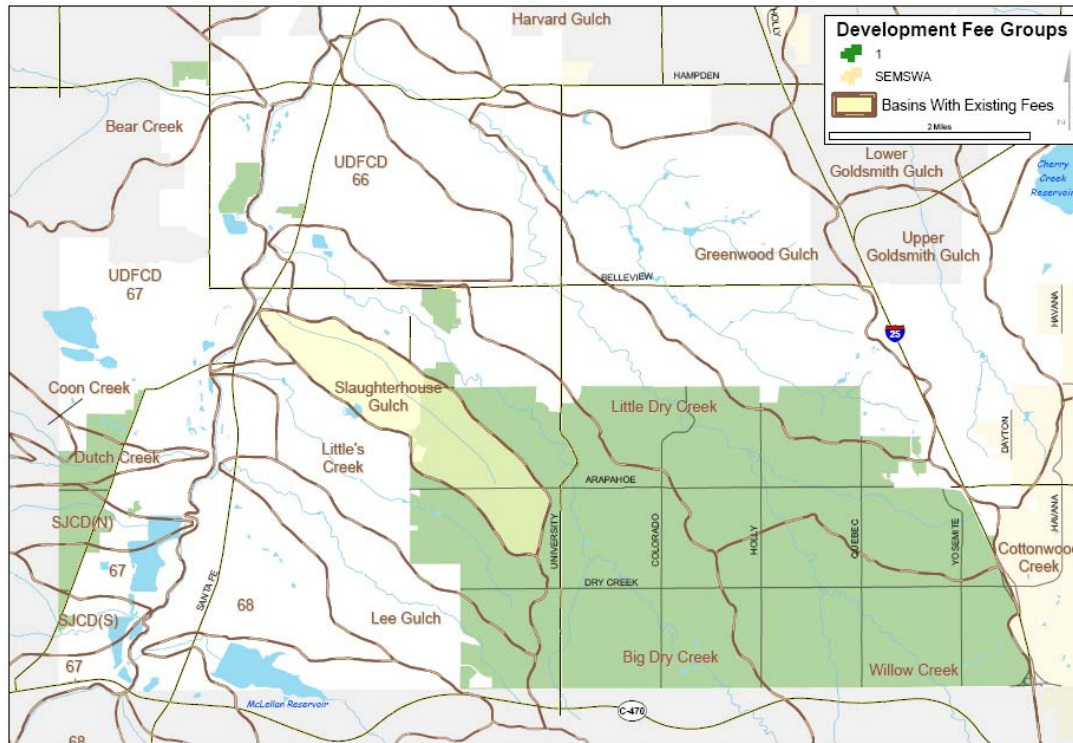
Basin	# of Projects	Total Cost of Identified Projects (2008\$)	Percent Developable (outside ROW)	Developer Share of Identified Projects (2008\$)	Remaining Developable Impervious Area (outside ROW) (acres)	Fee per Impervious Acre (\$)	Potential Fees Assessed (\$)
SEMSWA Service Area	103	\$ 175,570,000	32%	\$ 56,182,400	19262	\$ 2,917	\$ 56,182,400

**Option 1 Fees Proportional to Cost of New Facilities**

Summary of Options

Option	Fee per Impervious Acre (\$)			Developer Share of CIP Costs	Potential Fees Assessed (\$)
	Min.	Max.	Average		
Basin by Basin	\$0	\$21,200	\$3,665	\$ 36,717,190	\$36,717,190
Basin Group	\$486	\$5,684	\$2,607	\$ 54,886,160	\$54,886,160
Basin by Basin plus Cost by Basin Group	\$930	\$21,200	\$4,928	\$ 36,717,190	\$41,277,148
Entire Service Area	\$2,917	\$2,917	\$2,917	\$ 56,182,400	\$56,182,400

# **Appendix D – Basin Group Maps and Recommended Fee**

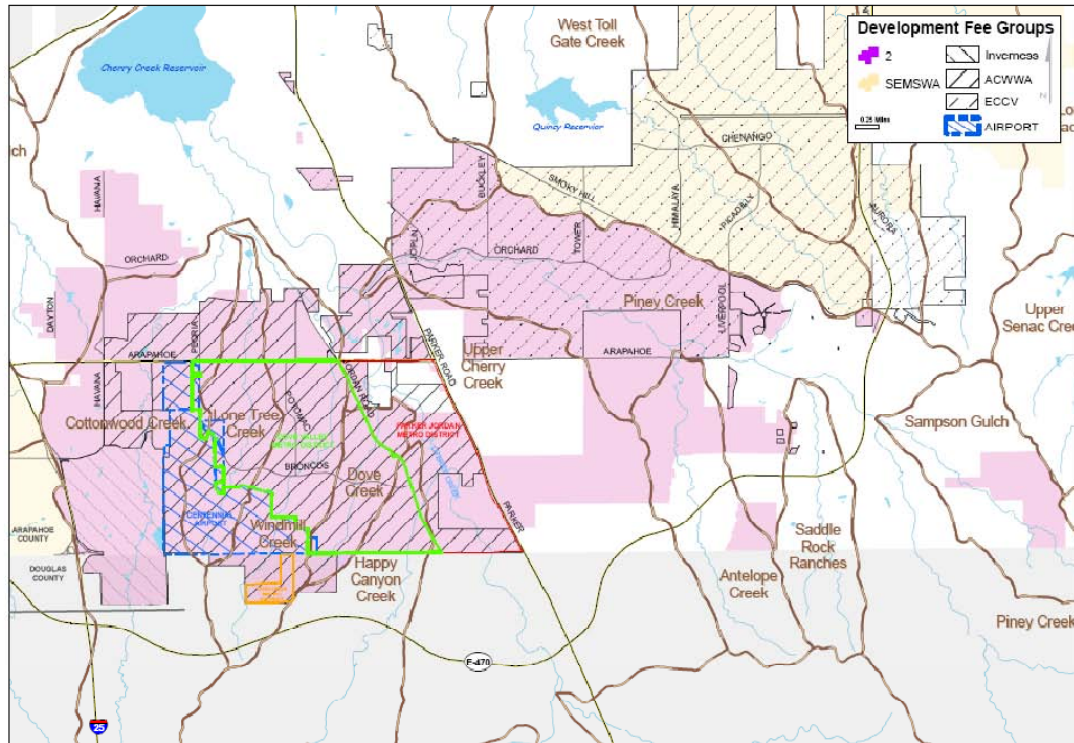


## Basin Group 1

5-8-2008

Basin	# of Projects	Estimated Project Costs (\$)	Percent Developable (outside ROW)	Remaining Developable Impervious Area (outside ROW) (acres)	Proposed Fees		Known Existing Fees	
					Fee per Impervious Acre (\$) (Option 1c)	Total Potential Fee Revenue (\$)	Fees	Entity
<b>Basin Group 1</b>								
Bear Creek		\$0	22%	10	\$3,533	\$35,327		
Big Dry Creek	24	\$18,297,000	7%	206	\$6,217	\$1,280,790		
Coon Creek		\$0	0%	0	\$3,533	\$0		
Dutch Creek	1	\$462,000	9%	13	\$3,198	\$41,580		
Greenwood Gulch	2	\$933,000	12%	46	\$2,434	\$111,960		
Lee Gulch	1	\$4,620,000	5%	12	\$19,250	\$231,000		
Little Dry Creek	9	\$3,793,000	6%	157	\$1,450	\$227,580		
Little's Creek	3	\$3,061,000	2%	16	\$3,826	\$61,220		
SJCD(N)		\$0	12%	19	\$3,533	\$67,122		
SJCD(S)		\$0	15%	3	\$3,533	\$10,598		
Slaughterhouse Gulch		\$0	3%	20	\$3,533	\$70,655	\$13,316	Centennial
UDFCD ID 66		\$0	41%	7	\$3,533	\$24,729		
UDFCD ID 67		\$0	34%	90	\$3,533	\$317,947		
Willow Creek	11	\$4,012,000	8%	194	\$1,654	\$320,960		
<b>Total</b>	<b>51</b>	<b>\$35,178,000</b>		<b>644</b>		<b>\$2,801,470</b>		





## Basin Group 2

5-8-2008

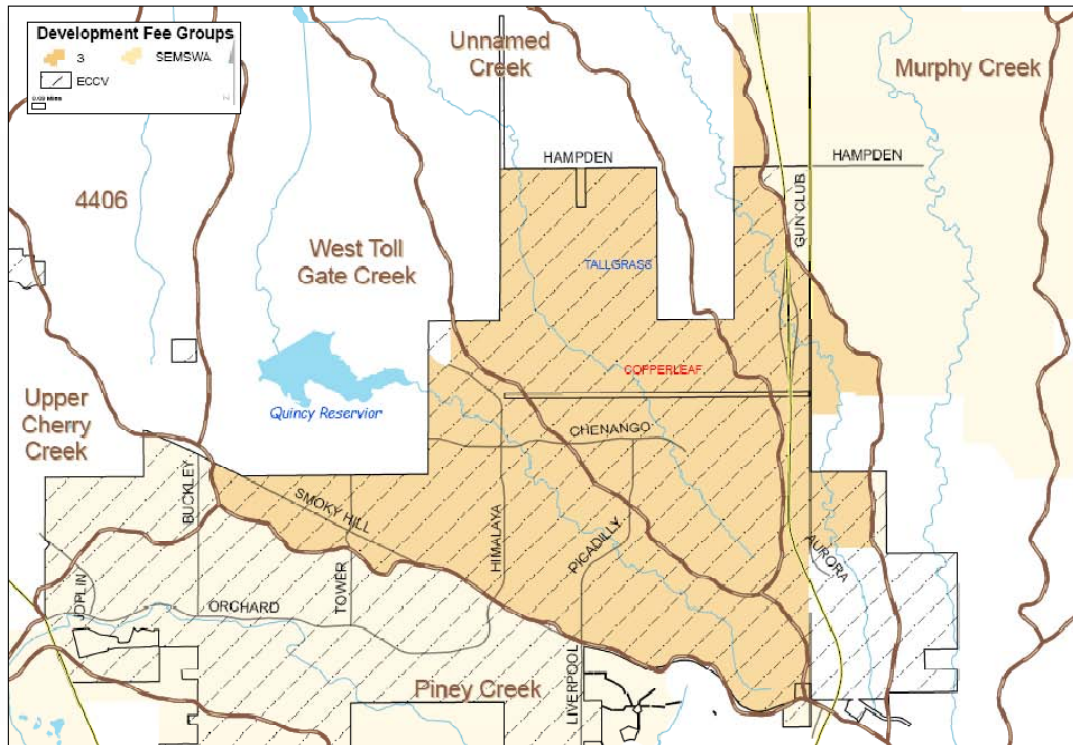
Basin	# of Projects	Estimated Project Costs (\$)	Percent Developable (outside ROW)	Remaining Developable Impervious Area (outside ROW) (acres)	Proposed Fees		Known Existing Fees	
					Fee per Impervious Acre (\$) [option 1c]	Total Potential Fee Revenue (\$)	Fees	Entity
<b>Basin Group 2</b>								
Antelope Creek		\$ -	2%	12	\$ 5,761	\$ 69,128		
Cottonwood Creek	6	\$ 15,524,000	34%	958	\$ 5,510	\$ 5,278,160	\$4,349 for portion in Arapahoe County \$8,325 for portion in IWS \$0 for portion in ACWWA	
Dove Creek	3	\$ 5,523,000	59%	390	\$ 8,355	\$ 3,258,570	\$14,540 for portion in ACWWA	
Happy Canyon Creek	2	\$ 2,493,000	69%	231	\$ 7,447	\$ 1,720,170	ACWWA	
Lone Tree Creek	2	\$ 1,484,000	31%	328	\$ 1,403	\$ 460,040	\$14,540 ACWWA	
Piney Creek	4	\$ 17,816,000	3%	98	\$ 5,454	\$ 534,480	\$985 Arapahoe County per Gross Acre ECCV	
Saddle Rock Ranches		\$ -	4%	0	\$ 5,761	\$ -		
Sampson Gulch		\$ -	9%	35	\$ 5,761	\$ 201,623		
UDFCD ID 440G		\$ -	0%	0	\$ 5,761	\$ -		
Upper Cherry Creek*	6	\$ 29,711,000	9%	303	\$ 8,825	\$ 2,673,990	\$ 14,540 for portion in ACWWA for portion in ECCV**	
Upper Goldsmith Gulch	7	\$ 3,211,000	3%	12	\$ 8,028	\$ 96,330		
Windmill Creek	5	\$ 7,113,000	46%	706	\$ 4,830	\$ 3,409,980	\$ 14,540 ACWWA	
<b>Total</b>	<b>35</b>	<b>\$83,175,000</b>		<b>3026</b>		<b>\$17,702,470</b>		

\* Note that Parker Jordan Metro District has set aside funding for new development projects.

\*\* See ECCV development impact fee schedule







## Basin Group 3

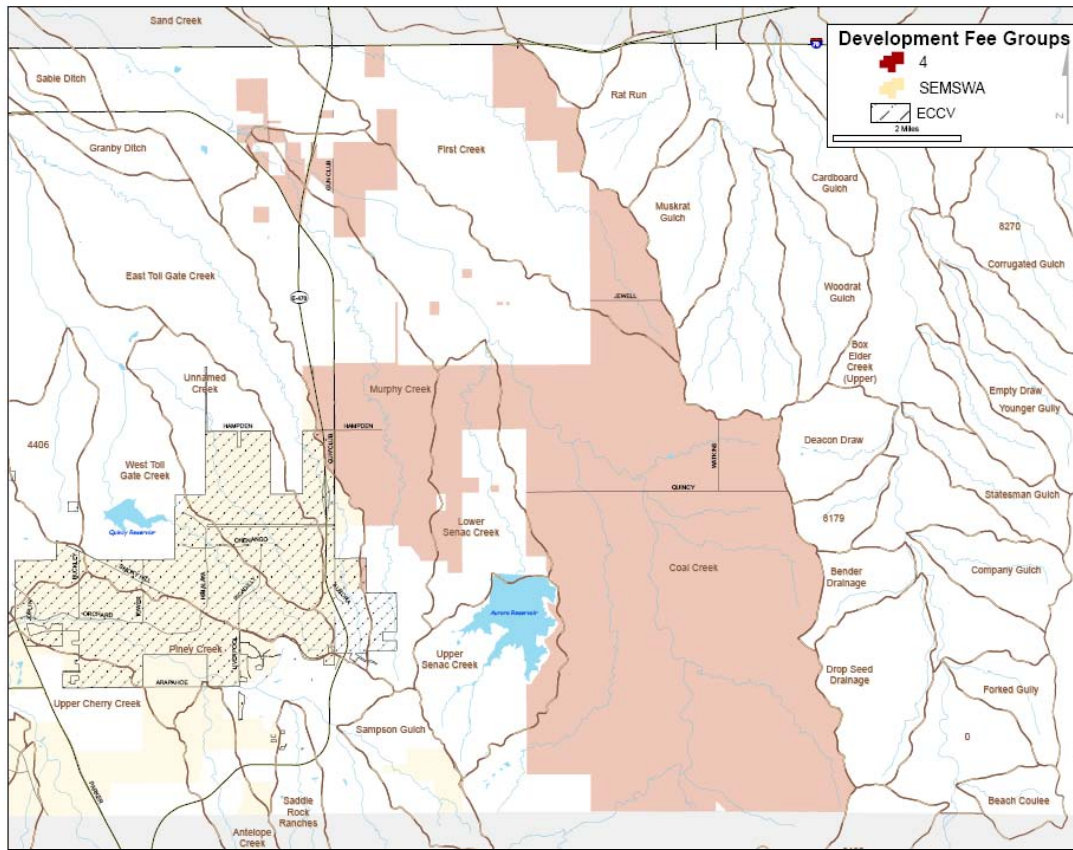
5-8-2008

Basin	# of Projects	Estimated Project Costs (\$)	Percent Developable (outside ROW)	Remaining Developable Impervious Area (outside ROW) (acres)	Proposed Fees		Known Existing Fees	
					Fee per Impervious Acre (\$) [Option 1c]	Total Potential Fee Revenue (\$)	Fees	Entity
<b>Basin Group 3</b>								
East Toll Gate Creek	1	\$905,000	15%	146	\$930	\$135,750		see ECCV rates
Unnamed Creek	7	\$6,876,000	3%	63	\$3,274	\$206,280		see ECCV rates
West Toll Gate Creek		\$0	6%	115	\$1,637	\$188,198		ECCV- Tallgrass*
								ECCV- Copperleaf*
								see ECCV rates
<b>Total</b>	<b>8</b>	<b>\$7,781,000</b>		<b>209</b>		<b>\$530,228</b>		

\* Tallgrass and Copperleaf have existing agreements. SEMSWA Development Fees will not replace the existing fees in Tallgrass and Copperleaf. Percent developable and remaining developable impervious area excludes Tallgrass and Copperleaf.





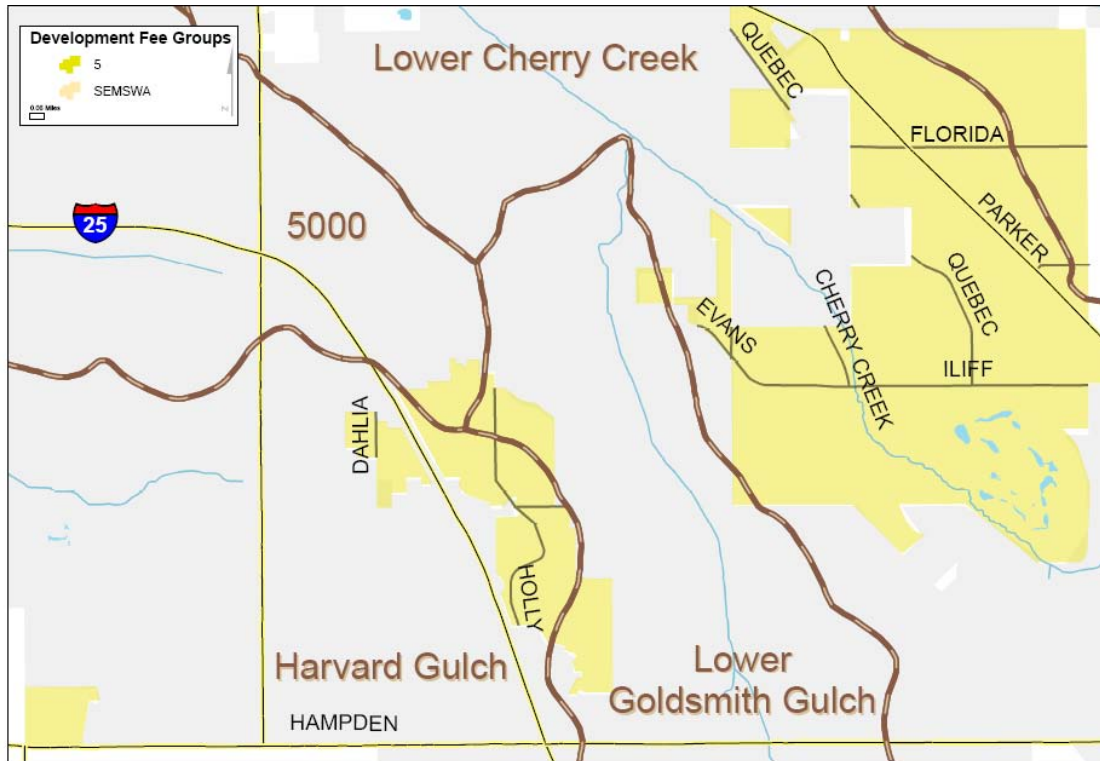


## Basin Group 4

5-8-2008

Basin	# of Projects	Estimated Project Costs (\$)	Percent Developable (outside ROW)	Remaining Developable Impervious Area (outside ROW) (acres)	Proposed Fees		Known Existing Fees	
					Fee per Impervious Acre (\$) (Option 1c)	Total Potential Fee Revenue (\$)	Fees	Entity
<b>Basin Group 4</b>								
Coal Creek	2	\$23,169,000	65%	12728	\$1,183	\$15,059,850		
First Creek		\$0	66%	1689	\$1,277	\$2,156,069		
Murphy Creek	3	\$15,777,000	7%	239	\$4,621	\$1,104,390		
Sand Creek		\$0	37%	95	\$1,277	\$121,271		
Lower Senac Creek	2	\$9,457,000	5%	66	\$7,164	\$472,850		
Upper Senac Creek		\$0	0%	0	\$1,277	\$0		
<b>Total</b>	<b>7</b>	<b>\$48,403,000</b>		<b>13033</b>		<b>\$18,914,430</b>		





## Basin Group 5

5-8-2008

Basin	# of Projects	Estimated Project Costs (\$)	Percent Developable (outside ROW)	Remaining Developable Impervious Area (outside ROW) (acres)	Proposed Fees		Known Existing Fees	
					Fee per Impervious Acre (\$) [Option 1c]	Total Potential Fee Revenue (\$)	Fees	Entity
<b>Basin Group 5</b>								
5000		\$ -	0%	0	\$ 5,210	-		
Harvard Gulch	1	\$ 503,000	2%	5	\$ 2,012	\$ 10,060		
Lower Cherry Creek		\$ -	14%	214	\$ 5,210	\$ 1,114,940	\$ 9,922	Arapahoe County (Average)*
Lower Goldsmith Gulch	1	\$ 530,000	4%	1	\$ 21,200	\$ 21,200		
Westerly Creek		\$ -	15%	35	\$ 5,210	\$ 182,350	\$ 11,477	
<b>Total</b>	<b>2</b>	<b>\$ 1,033,000</b>	<b>0%</b>	<b>6</b>	<b>\$ -</b>	<b>\$ 1,328,550</b>		

\* Fees vary by subbasin in 4 Square Mile area, the average fee is shown.



# **Appendix E – Option 2: Buy-in Method Calculations**

**Estimate of Infrastructure Value for Buy-In Method  
SEMSWA Development Fee Project**

Type of Infrastructure	Estimated Quantity	Unit	Group 1			Group 2			Group 3			Group 5		
			Cost per	Quantity	Total Cost	Cost per	Quantity	Total Cost	Cost per	Quantity	Total Cost	Cost per	Quantity	Total Cost
Average Age of Existing Infrastructure		yr	30			15			15			30		
Percent Not Developable / Undevelopable			83%			79%			94%			88%		
Basin area in square miles		sm		16.9			22.4			7.9			3.4	
Developed Parcel Area		sm		12.0			14.6			3.6			2.6	
Total length of major channels		lf		121,782			134,156			55,946			7,941	
Total length of minor channels		lf		126,073			175,906			51,068			3,914	
% major channels improved			50%	60,891		30%	40,247		50%	27,973		30%	2362	
% minor channels improved			25%	31,518		20%	35,181		25%	12,767		20%	783	
Improved Major Channels		lf	\$ 250	60,891	\$ 3,805,702	\$ 250	40,246.71	\$ 10,061,678	\$ 250	27,972.80	\$ 6,993,199	\$ 250	2,382.19	\$ 595,548
Improved Minor Channels		lf	\$ 55	31,518	\$ 837,255	\$ 55	35,181.25	\$ 1,934,969	\$ 55	12,766.90	\$ 702,179	\$ 55	782.80	\$ 43,054
<b>Structures in Channels</b>														
Drop Structures		each	\$ 75,000	115	\$ 8,649,324	\$ 75,000	78	\$ 5,716,862	\$ 75,000	53	\$ 3,975,409	\$ 75,000	5	\$ 338,380
Retaining Walls		lf		4,620	\$ -		3,771	\$ -		2,037	\$ -		106	\$ -
Paved Bike Paths		ss sy	\$ 25	23,102	\$ 577,559	\$ 25	18,857	\$ 471,425	\$ 25	10,185	\$ 254,623		791	\$ 19,781
													Public Assets	\$ 11,716,545
<b>Storm Sewer Systems</b>														
Pipe	157	lf	\$ 300	190,467	\$ 57,146,066	\$ 300	231,400	\$ 69,419,851	\$ 300	60,894	\$ 18,268,195			
Street Inlets and Catch Basins		each	\$ 10,000	390	\$ 3,900,421	\$ 10,000	474	\$ 4,741,793	\$ 10,000	125	\$ 1,248,647			
Outfalls		each	\$ 6,200	368	\$ 2,273,960	\$ 6,200	447	\$ 2,769,647	\$ 6,200	116	\$ 729,326			
Manholes		each	\$ 5,000	390	\$ 1,951,711	\$ 5,000	474	\$ 2,370,897	\$ 5,000	125	\$ 624,324			
Detention Ponds (for peak flow attenuation)		each			\$ 1,225,000			\$ 3,988,000			\$ 835,000			\$ 1,000,000
Water Quality Ponds (to improve water quality per NPDES permit)		each			\$ -			\$ 6,016,400			\$ 245,000			\$ -
<b>2007 Costs Total Value</b>					\$ 80,376,017			\$ 107,492,520			\$ 33,885,901			\$ 13,713,308
<b>Depreciated Value</b>	50	yr	40%		\$ 32,150,407	70%		\$ 75,244,764	70%		\$ 23,720,131	40%		\$ 5,485,323
<b>Public Assets</b>	50%				\$ 16,075,203			\$ 37,622,382			\$ 11,860,065			\$ 4,885,971
<b>Contributable Assets (Land Developers)</b>	50%				\$ 16,075,203			\$ 37,622,382			\$ 11,860,065			\$ 598,353
Existing Impervious Area Currently Billed (Outside ROW)		ac		2,916			3,048			949			698	
<b>Fee for Impervious Area</b>					\$ 5,709			\$ 12,343			\$ 13,965			\$ 7,005

**NOTES and ASSUMPTIONS**

THIS IS A BUDGETARY LEVEL ESTIMATE BASED ON BEST AVAILABLE INFORMATION. INFORMATION FROM THE INFRASTRUCTURE INVENTORY WILL REPLACE THIS ESTIMATE.

1. Unless otherwise noted, estimate based on measurements in representative areas completed by Muller Associates (not including channels).
2. Lengths of major and minor channels taken from compilation of UDFCD and SEMSWA information used to generate stream maps.
3. Number of drop structures estimated at 10 per stream mile for improved major channels (Assume existing slope of 1.2%, improved slope of 0.4%, then there is 42 vertical feet to build drops for per mile, each drop is 4 feet).
4. Paved bike paths estimated at 25% of improved channels.
5. Retaining wall length estimated at 5% of improved channels.
6. Pipe length estimated at 3 miles per DEVELOPED square mile by Muller study.
7. Assumes one inlet/manhole per 500 feet of storm sewer.
8. Developed area in square miles taken from AMEC estimate of basin area times % not developable.
9. Depreciated Value = (Design Life - Age of Infrastructure)/Design Life