

**FINAL
WATER QUALITY LETTER
FOR STATE HIGHWAY NO. 21
POWERS BLVD CORRIDOR IMPROVEMENTS
SOUTH CAREFREE CIRCLE TO
DUBLIN BLVD. PROJECT
COLORADO SPRINGS, COLORADO**

A Part of Sections 7, 18, 19, 30, and 31 Township 13 South, Range 65 and
Sections 12, 13, 24, 25, and 36 Township 13 South, Range 66 West of the 6th P.M.,
City Colorado Springs and County of El Paso, Colorado

Submittal: June 25, 2014

Prepared for:

Colorado Department of Transportation
1480 Quail Lake Loop, Suite A
Colorado Springs, CO 80906

Prepared by:

Felsburg Holt & Ullevig
508 South Tejon Street
Colorado Springs, CO 80906
(719) 314-1800
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Contacts: Kevan P. Kuhnel

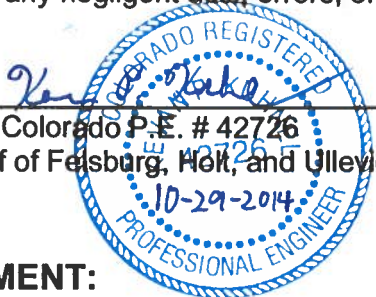
info@fhueng.com
<http://www.fhueng.com/>

FHU Reference No. 12-266-09
CDOT Project SHE 0212-006, Sub Account No. 19500

E - Submitted

ENGINEER'S STATEMENT:

The attached water quality plan and letter were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said water quality letter has been prepared according to the criteria established by the City for water quality letters and said letter is in conformity with the master plan of the drainage basin area. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.



Kevan P. Kuhnel
Kevan P. Kuhnel, Colorado P.E. # 42726
For and On Behalf of Felsburg, Holt, and Ullevig

Date

CDOT STATEMENT:

I, the Owner, have read and will comply with all of the requirements specified in this water quality letter and plan.

Owner: Colorado Department of Transportation

By: Andrew Stecklein
Andrew Stecklein

Title: CDOT Region 2 – North Program Hydraulics Engineer

Address: 1480 Quail Lake Loop
Colorado Springs, CO 80906

Phone Number: 719/227-3264

CITY OF COLORADO SPRINGS ONLY:

Filed in accordance with Section 7.7.906 of the Code of the City of Colorado Springs, 2001, as amended.

Lydia A. Maring
For the City Engineer

11/5/14
Date

Conditions:

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1. GENERAL LOCATION AND DRAINAGE OVERVIEW

This report presents the water quality analysis for the State Highway 21 improvements. The project consists of adding acceleration and deceleration lanes along the Powers Blvd (SH 21) corridor between South Carefree Circle and Dublin Blvd. The scope will consist of constructing 12 foot auxiliary lanes and 4 foot shoulders on the outside. Drainage will be conveyed by a combination of proposed roadside ditches and curb and gutter to the existing storm sewer infrastructure. The areas adjacent to the project are a mix of commercial, residential, and undeveloped rangeland uses. The project is located in a part of Sections 7, 18, 19, 30, and 31, Township 13 South, Range 65 and Sections 12, 13, 24, 25, and 36 Township 13 South, Range 66 West of the 6th P.M., City Colorado Springs and County of El Paso, Colorado. **Figure 1** indentifies the overall project limits.

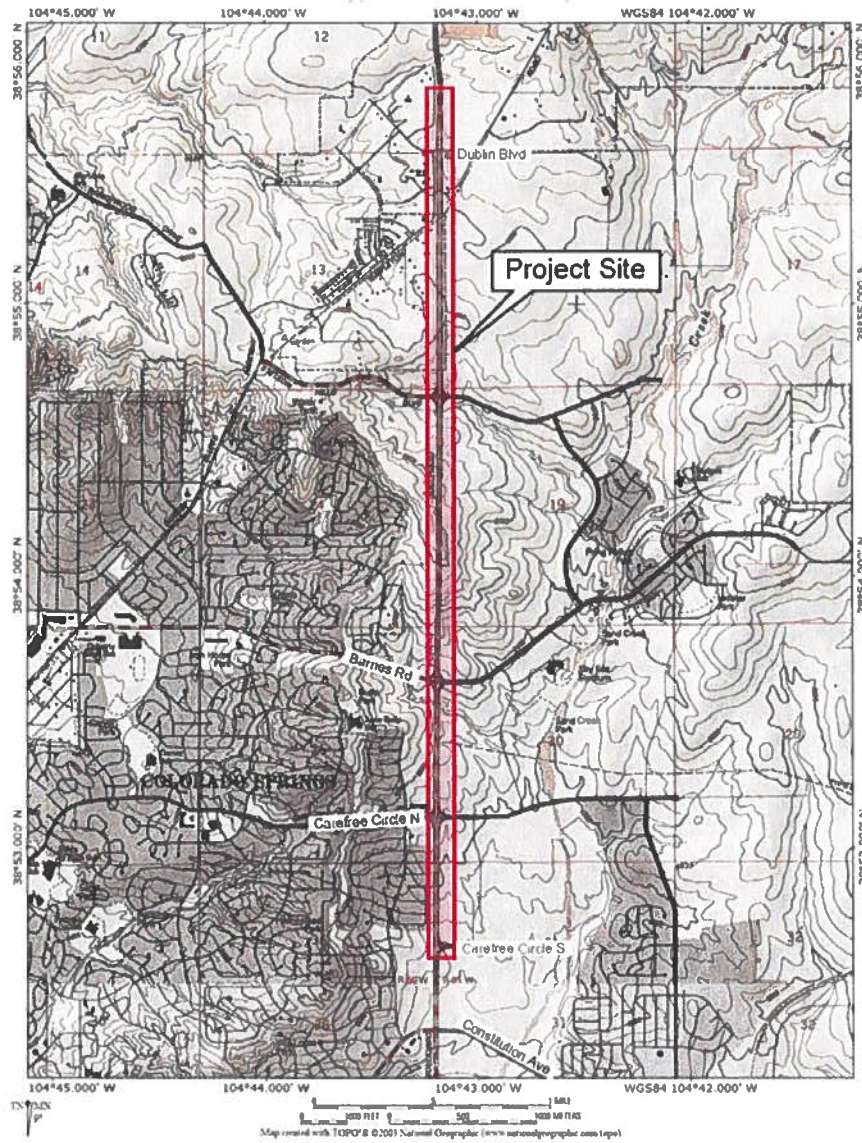


Figure 1. Vicinity Map

2. PERMANENT BEST MANAGEMENT PRACTICES

The proposed project is divided into two major drainage basins, Sand Creek and Cottonwood Creek. Erosion has been an ongoing problem for the corridor do to the lack of existing roadside drainage ditches. The combination of proposed ditches lined with permanent TRMs, rock check dams, riprap, and curb and gutter will greatly improve the water quality in the project area.

Additionally, the majority of the project falls within the Sand Creek drainage basin and will continue to utilize the existing downstream extended detention basin (EDB) located at the northeast corner of Constitution Ave. and Tutt Blvd. The pond is also known as Sand Creek Detention Basin No. 1. Currently, Basins A1, A2, B1, B2, C1, D1, D2, D3, D4, D5, E1, E2, F1, F2, G1, G2, H1, and H2 drain through a series roadside ditches, storm sewer systems, and Sand Creek to Sand Creek Detention Basin No. 1. Additionally, the northbound deceleration lane at Barnes Rd., southbound deceleration lane at Barnes Rd., and northbound deceleration lane at Stetson Blvd will all have a small increase in impervious area. The increase in impervious area for all improvements in the Sand Creek drainage basin is 3.84 ac. requiring a Water Quality Capture Volume (WQCV) of 0.192 ac-ft. The existing Sand Creek Detention Pond #1 is currently sized with 23.5 ac-ft of WQCV and therefore has adequate capacity to treat the minor increase in WQCV required by this project. **Appendix A** contains Water Quality Maps and calculations. Additionally, we have coordinated with the City of Colorado Springs on the proposed improvements as well as the minimal increase in required WQCV.

A small portion of the northern project lies within the Cottonwood Creek Drainage Basin. The project scope within this basin is comprised of the southbound deceleration and acceleration lanes at Dublin Blvd. The increase in impervious area is 0.63 ac. requiring a WQCV of 0.032 ac-ft. This area will be treated through the existing grass buffers and swales. We are not proposing any additional permanent BMPs given that we felt it was more sensible to avoid any disturbance to the existing highly erodible soils. Not to mention, the scope of this entire project is intended to serve as short term fix until Powers will become a full grade separated freeway.

3. REFERENCES

1. Felsburg Holt & Ullevig, progress and field meetings with staff from CDOT, various dates.
2. Urban Drainage and Flood Control District, Urban Storm Drainage Criteria Manual (USDCM), Volumes I, II, and III.
3. Colorado Department of Transportation, Drainage Design Manual, 2004.
4. City of Colorado Springs and El Paso County Drainage Criteria Manual revised 1994.
5. "Hazard Classification Report, Sand Creek Detention Basin No. 1," dated July 15, 1996, prepared by Kiowa Engineering Corporation.

APPENDIX A WATER QUALITY FORM AND MAPS

**Colorado Department of Transportation
Permanent Water Quality Project Inventory and Questionnaire Form**

1. Date:	1-24-2014		
2. Project Name:	State Highway No. 21 Powers Blvd Corridor Improvements		
3. Project Number:	SHE-0212-006		
4. Subaccount Number:	19500		
5. CDOT Region:	2		
6. Advertisement Date:	2-6-2014		
7. Finalization of Drainage Plan Date:	1-8-2014		
8. CDPS-SCP Number:	COR-03-XXXX		
9. Brief Description of Project:	This project consists of adding acceleration and deceleration lanes along the Powers Blvd (SH 21) corridor between South Carefree Circle and Dublin Blvd. This will consist of constructing 12 foot auxiliary lanes and 4 foot shoulders on the outside. Drainage will be conveyed by a combination of roadside ditches and curb and gutter to the existing storm sewer infrastructure.		
Check YES or NO for Items #10-12.		YES	NO
10. Are any portions of the project site located within the CDOT MS4 Boundary? If NO, stop here. Send this form to the RPEM. If YES, continue to question #11.	X		
11. Are permanent water quality BMPs required for the entire project site? If NO, go to #12. If YES, go to #13.	X		
12. Reference the applicable exclusion(s) below that describes why permanent water quality BMPs are not required for portions of or the entire project site and attach a narrative explanation.			
a. Portions Outside of MS4 Boundary			
b. Maintenance Activity			
c. Overlay Exemption #1			
d. Overlay Exemption #2			
e. Concrete White Topping/Flexible Pavement Exemption			
Stop here, if exemptions apply to the whole project site and no Permanent Water Quality BMPs are provided. Send this form (with #1-12 filled out) to the RPEM.			
13. Attach an Inventory map of all areas being treated. See Appendix E			
Send completed form to the RPEM.			

I have reviewed the engineering used to complete the project design; drainage construction plans, drainage report, specifications, water quality report and inventory map. To the best of my knowledge, the engineering, drainage concepts and information used to complete these documents is complete, true, accurate and supports the additional review necessary for the Environmental Specialists to provide the environmental clearance for permanent water quality.



Signature of CDOT Hydraulics Engineer or Qualified Environmental Specialist

2-20-2014

Date

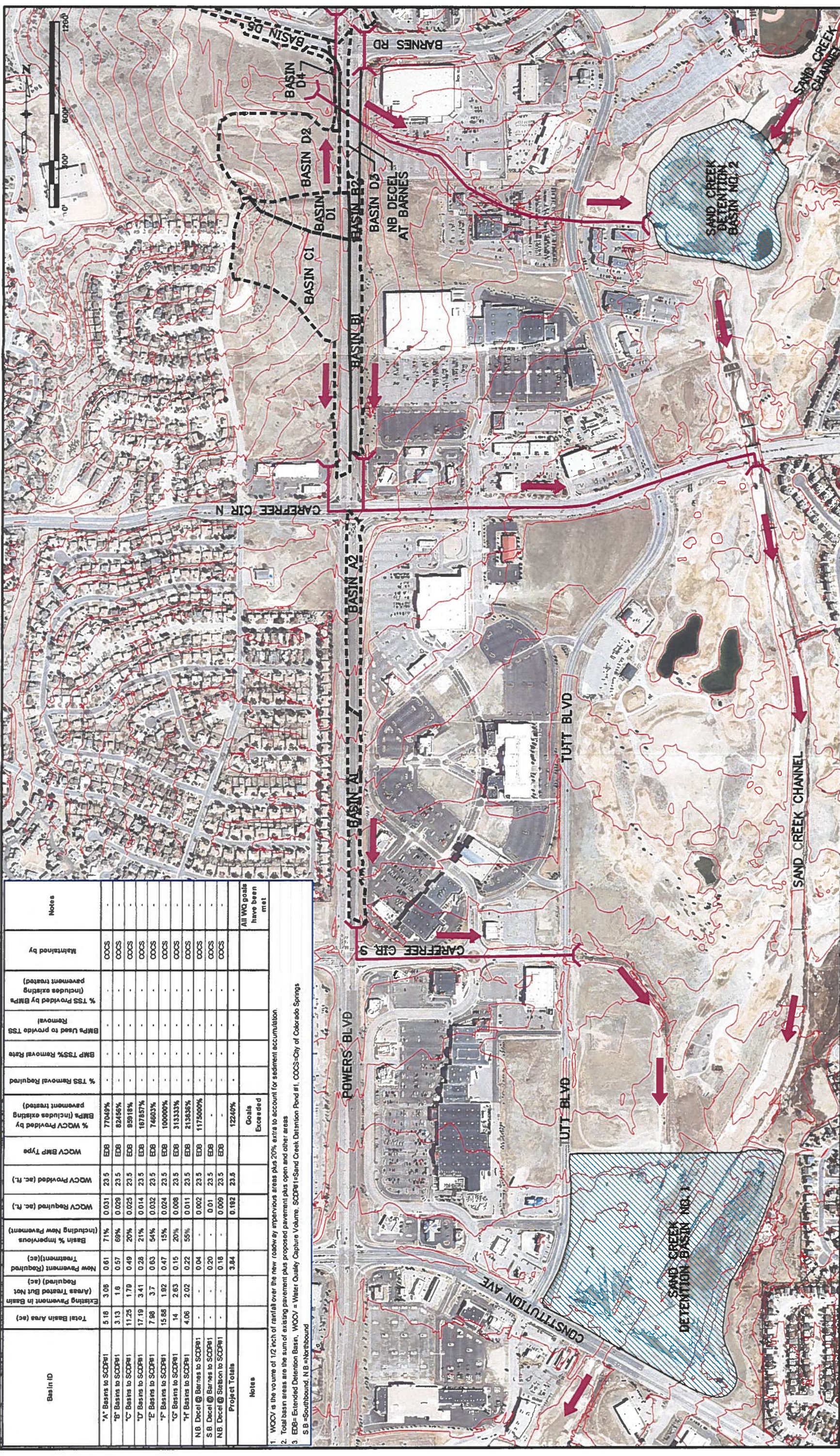
I have performed the engineering used to complete the project design; drainage construction plans, drainage report, specifications, water quality report and inventory map. To the best of my knowledge, the engineering, drainage concepts and information used to complete these documents is complete, true, accurate and supports the additional review necessary for the Environmental Specialists to provide the environmental clearance for permanent water quality.



Signature of Consultant or Local Agency Hydraulics Engineer

1-24-2014

Date



Basin ID	Total Basin Area (ac)	Existing Pavement in Basin (Areas Treated But Not New Treatment)(ac)	Basin % Impervious (Including New Pavement)	WQCV Required (ac. ft.)	WQCV Provided (ac. ft.)	WQCV BMP Type	% WQCV Provided by BMPs (Includes existing BMPs (includes existing TSS Removal))	% TSS Removal Required	BMPs Used to provide TSS	% TSS Provided by BMPs (Includes existing pavement treated)	Maintained by	Notes
*A Basins to SCOP#1	5.18	3.06	0.61	0.031	23.5	EDB	77049%	-	-	-	COCS	-
*B Basins to SCOP#1	3.13	1.6	0.57	0.029	23.5	EDB	82456%	-	-	-	COCS	-
*C Basins to SCOP#1	11.25	1.79	0.49	0.025	23.5	EDB	95918%	-	-	-	COCS	-
*D Basins to SCOP#1	17.19	3.41	0.28	0.014	23.5	EDB	187857%	-	-	-	COCS	-
*E Basins to SCOP#1	7.98	3.7	0.63	0.032	23.5	EDB	74603%	-	-	-	COCS	-
*F Basins to SCOP#1	15.66	1.92	0.47	0.024	23.5	EDB	100000%	-	-	-	COCS	-
*G Basins to SCOP#1	14	2.63	0.15	0.008	23.5	EDB	313333%	-	-	-	COCS	-
*H Basins to SCOP#1	4.06	2.02	0.22	0.011	23.5	EDB	213635%	-	-	-	COCS	-
NB Decel @ Barnes to SCOP#1	-	-	0.04	0.002	23.5	EDB	1175000%	-	-	-	COCS	-
NB Decel @ Barnes to SCOP#1	-	-	0.20	0.01	23.5	EDB	-	-	-	-	COCS	-
NB Decel @ Station to SCOP#1	-	-	0.18	0.009	23.5	EDB	-	-	-	-	COCS	-
Project Totals	-	-	3.84	0.182	23.5	-	1224%	-	-	-	-	All WQ goals have been met

Notes

1. WQCV is the volume of 1/2 inch of rainfall over the new roadway impervious areas plus 20% extra to account for sediment accumulation.

2. Total basin areas are the sum of existing pavement plus proposed pavement plus open and other areas

3. EDB= Extended Detention Basin, WQCV = Water Quality Capture Volume, SCOP#1=Sand Creek Detention Pond #1, COCS=City of Colorado Springs

S.B.=Southbound, N.B.=Northbound

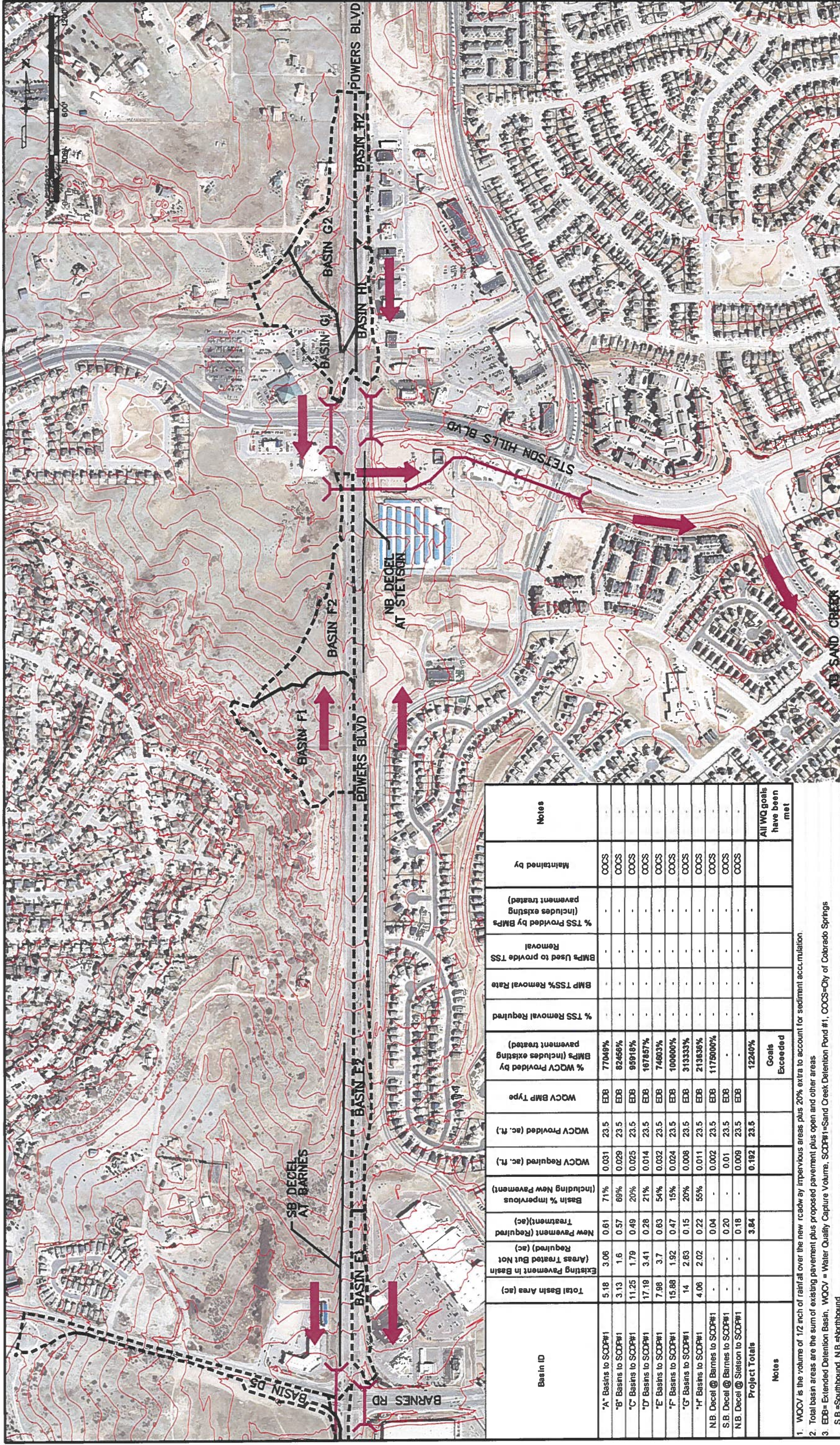
Print Date: 7/7/2014
 File Name: 19500Water_Quality_Plan_1_of_3.dgn
 Horiz. Scale: 1:600
 Unit Information: Unit Leader Initials: FELSBERG, HOLT & ULLEVIG
 508 South Tejon Street, Colorado Springs, CO 80903, (719) 314-1800

Sheet Revisions: 0000
 Date: _____ Init. _____
 Comments: _____

Colorado Department of Transportation
 14-80 Quail Lake Loop, Suite A, Colorado Springs, CO 80906
 Phone: 719-634-2323 FAX: 719-227-3298
 Region 2, MSA

As Constructed
 No Revisions:
 Revised:
 Void:

Project No./Code: SHE-0212-006
 Designer: KPK Structure Numbers
 Detailer: C.J.L.
 Sheet Subsets: WQ Subsets: WQ-1 OF 3
 Sheet Number: 19500R



Basin ID	Total Basin Area (ac)	Existing Pavement in Basin (Areas Treated But Not New Treatment) (ac)	New Treatment (Required) (ac)	Basin % Impervious (Including New Pavement)	WQCV Required (ac, ft.)	WQCV Provided (ac, ft.)	WQCV BMP Type	% WQCV Provided by BMPs (Includes existing)	% TSS Removal Required	BMP TSS% Removal Rate	BMPs Used to provide TSS Removal	% TSS Provided by BMPs (Includes existing)	Maintained by	Notes
"A" Basins to SCDP#1	5.18	3.06	0.61	71%	0.031	23.5	EDB	77049%	-	-	-	-	COCS	
"B" Basins to SCDP#1	3.13	1.6	0.57	69%	0.029	23.5	EDB	82466%	-	-	-	-	COCS	
"C" Basins to SCDP#1	11.25	1.79	0.49	20%	0.025	23.5	EDB	98918%	-	-	-	-	COCS	
"D" Basins to SCDP#1	17.19	3.41	0.28	21%	0.014	23.5	EDB	167857%	-	-	-	-	COCS	
"E" Basins to SCDP#1	7.98	3.7	0.63	54%	0.032	23.5	EDB	74603%	-	-	-	-	COCS	
"F" Basins to SCDP#1	15.88	1.92	0.47	15%	0.024	23.5	EDB	100600%	-	-	-	-	COCS	
"G" Basins to SCDP#1	14	2.83	0.15	20%	0.008	23.5	EDB	313333%	-	-	-	-	COCS	
"H" Basins to SCDP#1	4.06	2.02	0.22	55%	0.011	23.5	EDB	213636%	-	-	-	-	COCS	
NB Decal @ Barnes to SCDP#1	-	-	0.04	-	0.002	23.5	EDB	1175000%	-	-	-	-	COCS	
S.B. Decal @ Barnes to SCDP#1	-	-	0.20	-	0.01	23.5	EDB	-	-	-	-	-	COCS	
N.B. Decal @ Stetson to SCDP#1	-	-	0.18	-	0.009	23.5	EDB	-	-	-	-	-	COCS	
Project Totals			3.84		0.192	23.5		12240%						All WQ goals have been met

1. WQCV is the volume of 1/2 inch of rain all over the new roadway impervious areas plus 20% extra to account for sediment accumulation.
 2. Total basin areas are the sum of existing pavement plus proposed pavement plus open and other areas.
 3. EDB= Extended Detention Basin, WQCV = Water Quality Capture Volume, SCDP#1=Sand Creek Detention Pond #1, COCS=City of Colorado Springs
 S.B.=Southbound, N.B.=Northbound

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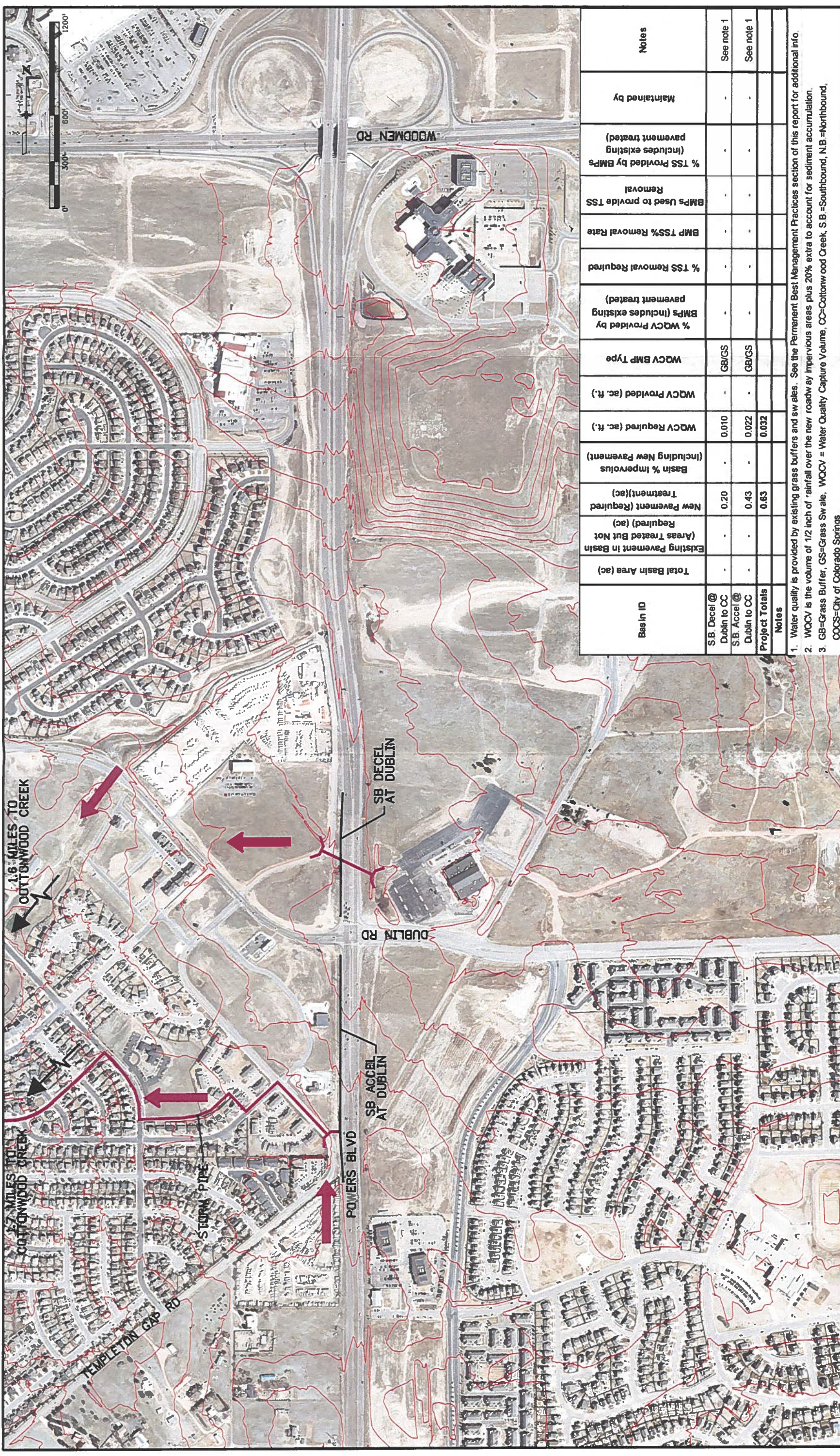
Colorado Department of Transportation
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 Colorado Springs, CO 80906
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 MSA

Region 2

Sheet Revisions: [Table with 3 columns: Date, Comments, Init.]

As Constructed: No Revisions: [Blank]
 Revised: [Blank]
 Void: [Blank]

Project No./Code: SHE-0212-006
 SHE-0212-006
 Designer: KPK Structure Numbers
 Detailer: C-JL
 Sheet Subsets: WQ Subset Sheets: WO-2 OF 3



Basin ID	Total Basin Area (ac)	Existing Pavement in Basin (Areas Treated But Not New Pavement (Required Treatment)(ac)	Basin % Impervious (Including New Pavement)	WQCV Required (ac. ft.)	WQCV Provided (ac. ft.)	WQCV BMP Type	% WQCV Provided by BMPs (Includes existing pavement treated)	% TSS Removal Required	BMP TSS% Removal Rate	BMPs Used to provide TSS Removal	% TSS Provided by BMPs (Includes existing pavement treated)	Maintained by	Notes
SB Decel @ Dublin to CC	-	0.20	-	0.010	0.010	GB/GS	-	-	-	-	-	-	See note 1
S.B. Accel @ Dublin to CC	-	0.43	-	0.022	0.022	GB/GS	-	-	-	-	-	-	See note 1
Project Totals		0.63		0.032									
Notes													
1. Water quality is provided by existing grass buffers and swales. See the Permanent Best Management Practices section of this report for additional info.													
2. WQCV is the volume of 1/2 inch of rainfall over the new roadway impervious areas plus 20% extra to account for sediment accumulation.													
3. GB=Grass Buffer, GS=Grass Swale, WQCV = Water Quality Capture Volume, WQCV = Water Quality Capture Volume, CC=Cottonwood Creek, SB =Southbound, NB =Northbound, COCS=City of Colorado Springs													

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As Constructed
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STATE HIGHWAY NO. 21
 POWERS BLVD CORRIDOR
 WATER QUALITY MAP

Designer: KPK Structure Numbers
 Detailer: C-JL Numbers
 Sheet Subset: WQ Subset Sheets: WQ-3 OF 3

Project No./Code
 SHE-0212-006
 19500R
 Sheet Number