NEW DOC

DETENTION BASIN / STORMWATER QUALITY BEST MANAGEMENT PRACTICE MAINTENANCE AGREEMENT AND EASEMENT BRANDING IRON AT STERLING RANCH FILING NO.1, OFFSITE DETENTION BASIN

This DETENTION BASIN / STORMWATER QUALITY BEST MANAGEMENT PRACTICE MAINTENANCE AGREEMENT AND EASEMENT (Agreement) is made by and between EL PASO COUNTY by and through THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO (Board or County) and SR Land, LLC ("Developer") and STERLING RANCH METROPOLITAN DISTRICT NO. 1 ("District"), a quasi-municipal corporation and political subdivision of the State of Colorado. The above may occasionally be referred to herein singularly as "Party" and collectively as "Parties."

Recitals

A. WHEREAS, the District provides various municipal services to certain real property in El Paso County, Colorado referred to as Sterling Ranch; and

B. WHEREAS, Developer is the owner of certain real estate in El Paso County, Colorado, which Property is legally described in Exhibit A attached hereto and incorporated herein by this reference; and

C. WHEREAS, Developer desires to plat and develop on the Property a subdivision to be known as Branding Iron at Sterling Ranch Filing No.1; and

D. WHEREAS, the development of this Property will substantially increase the volume of water runoff and will decrease the quality of the stormwater runoff from the Property, and, therefore, it is in the best interest of public health, safety and welfare for the County to condition approval of this subdivision on Developer's promise to construct adequate drainage, water runoff control facilities, and stormwater quality structural Best Management Practices ("BMPs") for the subdivision; and

E. WHEREAS, Chapter 8, Section 8.4.5 of the El Paso County Land Development Code, as periodically amended, promulgated pursuant to Section 30-28-133(1), Colorado Revised Statutes (C.R.S.), requires the County to condition approval of all subdivisions on a developer's promise to so construct adequate drainage, water runoff control facilities, and BMPs in subdivisions; and

F. WHEREAS, the Drainage Criteria Manual, Volume 2, as amended by Appendix I of the El Paso County Engineering Criteria Manual (ECM), as each may be periodically amended, promulgated pursuant to the County's Colorado Discharge Permit System General Permit (MS4 Permit) as required by Phase II of the National Pollutant Discharge Elimination System (NPDES), which MS4 Permit requires that the County take measures to protect the quality of stormwater from sediment and other contaminants, requires subdividers, developers, landowners, and owners of facilities located in the County's rights-of-way or easements to provide adequate permanent stormwater quality BMPs with new development or significant redevelopment; and

Chuck Broerman
12/20/2018 03:30:15 PM
Doc $0.00 52
Rec $0.00 Pages
El Paso County, CO
218145999

G. WHEREAS, Section 2.9 of the El Paso County Drainage Criteria Manual provides for a developer's promise to maintain a subdivision's drainage facilities in the event the County does not assume such responsibility; and

H. WHEREAS, developers in El Paso County have historically chosen water runoff detention basins as a means to provide adequate drainage, and water runoff control in subdivisions, which basins, while effective, are less expensive for developers to construct than other methods of providing drainage and water runoff control; and

I. WHEREAS, Developer desires to construct for the subdivision a detention basin/stormwater quality BMP ("detention basin/BMP") as the means for providing adequate drainage and stormwater runoff control, and to meet requirements of the County's MS4 Permit, and to provide for operating, cleaning, maintaining and repairing such detention basin/BMP; and

J. WHEREAS, Developer desires to construct the detention basin/BMP(s) on property that is located within Sterling Ranch under the ownership of SR Land, LLC described on Exhibit A, within an easement legally described in Exhibit B and depicted in Exhibit C attached hereto; and

K. WHEREAS, Developer and the District shall be charged with the duty of constructing the detention basin/BMP and the District shall be charged with the duties of operating, maintaining and repairing the detention sediment basin/BMP on the Property within the easement described in Exhibits B and C; and

L. WHEREAS, it is the County's experience that subdivision developers and property owners historically have not properly cleaned and otherwise not properly maintained and repaired these detention basins/BMPs, and that these detention basins/BMPs, when not so properly cleaned, maintained, and repaired, threaten the public health, safety and welfare; and

M. WHEREAS, the County, in order to protect the public health, safety and welfare, has historically expended valuable and limited public resources to so properly clean, maintain, and repair these detention basin/BMPs when developers and property owners have failed in their responsibilities, and therefore, the County desires the means to recover its costs incurred in the event the burden falls on the County to so clean, maintain and repair the detention basin/BMPs serving this Subdivision due to the Developer's or the District's failure to meet its obligations to do the same; and

N. WHEREAS, the County conditions approval of this Subdivision on the Developer's promise to so construct the detention basin/BMP, and further conditions approval on the District's promise to reimburse the County in the event the burden falls upon the County to so clean, maintain and/or repair the detention basin/BMP serving this Subdivision; and

O. WHEREAS, the County could condition subdivision approval on the Developer's promise to construct a different and more expensive drainage, water runoff control system and BMPs than those proposed herein, which more expensive system would not create the possibility of the burden of cleaning, maintenance and repair expenses falling on the County; however, the County is willing to forego such right upon the performance of Developer's and the District's promises contained herein; and

P. WHEREAS, the County, in order to secure performance of the promises contained herein, conditions approval of this Subdivision upon the Developer's grant herein of a perpetual Easement over a portion of the Property for the purpose of allowing the County to periodically access, inspect, and, when so necessary, to clean, maintain and/or repair the detention basin/BMP(s); and

Q. WHEREAS, Pursuant to Colorado Constitution, Article XIV, Section 18(2) and Section 29-1-203, Colorado Revised Statutes, governmental entities may cooperate and contract with each other to provide any function, services, or facilities lawfully authorized to each.

Agreement

NOW, THEREFORE, in consideration of the mutual Promises contained herein, the sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. Incorporation of Recitals: The Parties incorporate the Recitals above into this Agreement.

2. Covenants Running with the Land: Developer and the District agree that this entire Agreement and the performance thereof shall become a covenant running with the land, which land is legally described in Exhibit A attached hereto, and that this entire Agreement and the performance thereof shall be binding upon themselves, their respective successors and assigns.

3. Construction: Developer or the District shall construct on that portion of the Property described in the easement attached hereto and incorporated herein by this reference, a detention basin/BMP. Developer or the District shall not commence construction of the detention basin/BMP until the El Paso County Planning and Community Development Department (PCD) has approved in writing the plans, documents and specifications for the detention basin/BMP(s) for the subdivision and this Agreement has been signed by all Parties and returned to the PCD. Developer or the District shall complete construction of the detention basin/BMP(s) in substantial compliance with the County-approved plans and specifications for the detention basin/BMP(s). Failure to meet these requirements shall be a material breach of this Agreement, and shall entitle the County to pursue any remedies available to it at law or in equity to enforce the same. Construction of the detention basin/BMP(s) shall be substantially completed within one (1) year (defined as 365 days), which one year period will commence to run on the date the approved plat of this Subdivision is recorded in the records of the El Paso County Clerk and Recorder. Rough grading of the detention basin/BMP(s) must be completed and inspected by the El Paso County Planning and Community Development Department prior to commencing road construction.

In the event construction is not substantially completed within the one (1) year period, then the County may exercise its discretion to complete the project, and shall have the right to seek reimbursement from the Developer or the District and their respective successors and assigns, for its actual costs and expenses incurred in the process of completing construction. The term actual costs and expenses shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tool and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the Provisions arising herein, the County shall be entitled to its damages and costs, including reasonable

attorney fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same.

4. Maintenance: The District agrees for itself and its successors and assigns, that it will regularly and routinely inspect, clean and maintain the detention basin/BMP, and otherwise keep the same in good repair, all at its own cost and expense. No trees or shrubs that will impair the structural integrity of the detention basin/BMP shall be planted or allowed to grow on the detention basin/BMP.

5. Creation of Easement: Developer hereby grants the County and the District a non-exclusive perpetual easement upon and across that portion of the Property described in Exhibit B. The purpose of the easement is to allow the County and the District to access, inspect, clean, repair and maintain the detention basin/BMP; however, the creation of the easement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the detention basin/BMP.

6. County's Rights and Obligations: Any time the County determines, in the sole exercise of its discretion, that the detention basin/BMP is not properly cleaned, maintained and/or otherwise kept in good repair, the County shall give reasonable notice to the Developer, the District and their respective successors and assigns, that the detention basin/BMP needs to be cleaned, maintained and/or otherwise repaired. The notice shall provide a reasonable time to correct the problem(s). Should the responsible parties fail to correct the specified problem(s), the County may enter upon the Property to so correct the specified problem(s). Notice shall be effective to the above by the County's deposit of the same into the regular United States mail, postage pre-paid. Notwithstanding the foregoing, this Agreement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the detention basin/BMP.

7. Reimbursement of County's Costs / Covenant Running With the Land: The Developer and the District agree and covenant, for themselves, their respective successors and assigns, that they will reimburse the County for its costs and expenses incurred in the process of completing construction of, cleaning, maintaining, and/or repairing the detention-basin/BMP pursuant to the provisions of this Agreement.

The term "actual costs and expenses" shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tools and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the provisions arising herein, the County shall be entitled to its damages and costs, including reasonable attorney's fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same.

8. Contingencies of Subdivision Approval: Developer's and the Metro District's execution of this Agreement is a condition of subdivision approval. Additional conditions of this Agreement include, but are not limited to, the following:

a. Conveyance of detention basin/BMP, from Owner/Developer to the District (which will include the reservation of easement in favor of the County for purposes of accessing, inspecting, cleaning, maintaining, and repairing the detention sediment basin/BMP), and

b. A copy of the Covenants of the Subdivision, if applicable, establishing that the District is obligated to inspect, clean, maintain, and repair the detention basin/BMP.

The County shall have the right, in the sole exercise of its discretion, to approve or disapprove any documentation submitted to it under the conditions of this Paragraph, including but not limited to, any separate agreement or amendment, if applicable, identifying any specific maintenance responsibilities not addressed herein. The County's rejection of any documentation submitted hereunder shall mean that the appropriate condition of this Agreement has not been fulfilled.

9. Agreement Monitored by El Paso County Planning and Community Development Department and/or El Paso County Department of Public Works: Any and all actions and decisions to be made here under by the County shall be made by the Director of the El Paso County Planning and Community Development Department and/or the Director of the El Paso County Department of Public Works. Accordingly, any and all documents, submissions, plan approvals, inspections, etc. shall be submitted to and shall be made by the Director of the Planning and Community Services Department and/or the Director of the El Paso County Department of Public Works.

10. Indemnification and Hold Harmless: To the extent authorized by law, Developer and the District agree, for themselves, their respective successors and assigns, that they will indemnify, defend, and hold the County harmless from any and all loss, costs, damage, injury, liability, claim, lien, demand, action and causes of action whatsoever, whether at law or in equity, arising from or related to their respective intentional or negligent acts, errors or omissions or that of their agents, officers, servants, employees, invitees and licensees in the construction, operation, inspection, cleaning (including analyzing and disposing of any solid or hazardous wastes as defined by State and/or Federal environmental laws and regulations), maintenance, and repair of the detention basin/BMP, and such obligation arising under this Paragraph shall be joint and several. Nothing in this Paragraph shall be deemed to waive or otherwise limit the defense available to the County pursuant to the Colorado Governmental Immunity Act, Sections 24-10-101, *et seq.* C.R.S., or as otherwise provided by law.

11. Severability: In the event any Court of competent jurisdiction declares any part of this Agreement to be unenforceable, such declaration shall not affect the enforceability of the remaining parts of this Agreement.

12. Third Parties: This Agreement does not and shall not be deemed to confer upon or grant to any third party any right to claim damages or to bring any lawsuit, action or other proceeding against either the County, the Developer, the District, or their respective successors and assigns, because of any breach hereof or because of any terms, covenants, agreements or conditions contained herein.

13. Solid Waste or Hazardous Materials: Should any refuse from the detention basin/BMP be suspected or identified as solid waste or petroleum products, hazardous substances or hazardous materials (collectively referred to herein as "hazardous materials"), the Developer and the District shall take all necessary and proper steps to characterize the solid waste or hazardous materials and properly dispose of it in accordance with applicable State and/or Federal environmental laws and regulations, including, but not limited to, the following: Solid Wastes Disposal Sites and Facilities Acts, §§ 30-20-100.5 – 30-20-119, C.R.S., Colorado Regulations Pertaining to Solid Waste Disposal Sites and Facilities, 6 C.C.R. 1007-2, *et seq.*, Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992k, and Federal Solid Waste Regulations 40 CFR Ch. I. The County shall not be responsible or liable for identifying, characterizing, cleaning up, or disposing of such solid waste or hazardous materials. Notwithstanding the previous sentence, should any refuse cleaned up and disposed of by the County be determined to be solid waste or hazardous materials, the Developer and the District, but not the County, shall be responsible and liable as the owner, generator, and/or transporter of said solid waste or hazardous materials.

14. Applicable Law and Venue: The laws, rules, and regulations of the State of Colorado and El Paso County shall be applicable in the enforcement, interpretation, and execution of this Agreement, except that Federal law may be applicable regarding solid waste or hazardous materials. Venue shall be in the El Paso County District Court.

15. Limitation on Developer's Obligation and Liability: The obligation and liability of the Developer hereunder shall only continue until such time as the Final Plat as described in Paragraph Three (3) of the Recitals set forth above is recorded and the Developer or District completes the construction of the detention-basin/BMP and the Developer has transferred all applicable maintenance and operation responsibilities to the District. By execution of this agreement, the District agrees to accept all responsibilities and to perform all duties assigned to it, including those of the Developer, as specified herein, upon transfer of detention basin/BMP from Owner/Developer to the District.

IN WITNESS WHEREOF, the Parties affix their signatures below.

Executed this 12TH day of December, 2018, by:

SR LAND, LLC

By: _____
James Morley, Its Manager

The foregoing instrument was acknowledged before me this 12TH day of December, 2018, by James Morley, Manager, SR Land, LLC.

Witness my hand and official seal.
My commission expires: MAY 30, 2022

Notary Public

Executed this 12TH day of DECEMBER, 2018, by:

STERLING RANCH METROPOLITAN DISTRICT NO. 1

By: _____
James Morley, President

Attest:
By: _____
Secretary

The foregoing instrument was acknowledged before me this 12TH day of DECEMBER 2018.

2018, by James Morley, President, STERLING RANCH METROPOLITAN DISTRICT No. 1

Witness my hand and official seal.
My commission expires: MAY 30, 2022

Notary Public

Executed this 12TH day of DECEMBER, 2018, by:

BOARD OF COUNTY COMMISSIONERS
OF EL PASO COUNTY, COLORADO

By: _____

Craig Dossey, Executive Director
Planning and Community Development Department
Authorized Signatory Pursuant to LDC

The foregoing instrument was acknowledged before me this 12 day of December, 2018, by Craig Dossey, Executive Director of Planning and Community Development.

Witness my hand and official seal.

My commission expires: 09/02/2020

_____

Notary Public

Approved as to Content and Form:

_____

Assistant County Attorney

PETRA RANGEL
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20164033815
My Commission Expires 09-02-2020

EXHIBIT 'A'

M&S JOB NO. 09-001
STERLING RANCH
JOHNSON, RON-BOUNDARY
SEPTEMBER 29, 2014

THAT PORTION OF THE SOUTHEAST QUARTER OF SECTION 32 AND THAT PORTION OF SECTION 33, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M., EL PASO COUNTY, COLORADO, DESCRIBED AS FOLLOWS:

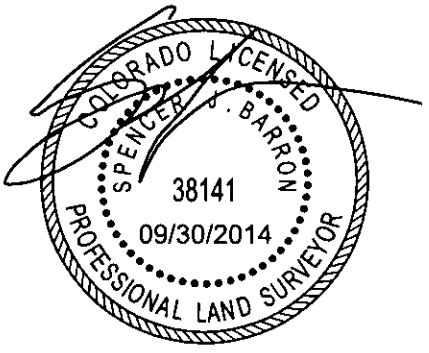
BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 27, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M., MONUMENTED AT ITS WEST END BY A 3 ¼" ALUMINUM CAP STAMPED 2006 ESI PLS 10376, AND AT ITS EAST END BY A 2 ¼" ALUMINUM CAP STAMPED PLS 4842, THE LINE BETWEEN THEM IS ASSUMED TO BEAR N89°05'36"E.

BEGINNING AT THE POINT OF INTERSECTION OF THE SOUTHEASTERLY RIGHT OF WAY LINE OF VOLLMER ROAD WITH THE WEST LINE OF THE EAST HALF OF THE NORTHWEST QUARTER OF SAID SECTION 33; THENCE N 39°33'48" E ON SAID SOUTHEASTERLY LINE OF VOLLMER ROAD, 1320.61 FEET; THENCE LEAVING SAID SOUTHEASTERLY LINE, RUN S 50°33'36" E, 40.00 FEET; THENCE ON THE ARC OF A CURVE TO THE RIGHT, HAVING A CENTRAL ANGLE OF 46°09'30", A RADIUS OF 595.00 FEET, AN ARC DISTANCE OF 479.34 FEET, THE CHORD OF SAID CURVE BEARS S 26°13'29" E, A CHORD DISTANCE OF 466.48 FEET; THENCE N 89°44'40" E, 67.89 FEET; THENCE ON THE ARC OF A CURVE TO THE LEFT, HAVING A CENTRAL ANGLE OF 50°10'52", A RADIUS OF 535.00 FEET, AN ARC DISTANCE OF 468.57 FEET, THE CHORD OF SAID CURVE BEARS N 64°39'14" E, A CHORD DISTANCE OF 453.73 FEET; THENCE N 39°33'48" E, TANGENT TO THE LAST MENTIONED CURVE, 93.02 FEET;
THENCE S 50°26'12" E, 60.00 FEET;
THENCE N 39°33'48" E, 534.01 FEET;
THENCE S 50°26'12" E, 806.13 FEET;
THENCE S 14°40'14" E, 112.26 FEET;
THENCE S 42°37'17" W, 138.57 FEET;
THENCE S 31°50'18" W, 229.19 FEET;
THENCE S 00°14'13" W, 243.48 FEET;
THENCE S 59°31'52" W, 178.71 FEET;
THENCE S 87°30'37" W, 117.08 FEET;
THENCE S 65°02'48" W, 632.56 FEET;

THENCE S 40°27'16" W, 150.60 FEET;
THENCE S 50°58'40" W, 94.24 FEET;
THENCE N 50°40'25" W, 72.52 FEET;
THENCE N 19°39'33" W, 163.51 FEET;
THENCE N 88°53'18" W, 56.14 FEET;
THENCE S 13°28'59" W, 371.46 FEET;
THENCE S 04°22'24" E, 296.69 FEET;
THENCE S 26°06'12" E, 393.42 FEET;
THENCE S 02°44'27" W, 452.46 FEET;
THENCE S 65°39'18" W, 252.42 FEET;
THENCE S 60°18'33" W, 166.84 FEET;
THENCE S 46°04'45" W, 252.38 FEET;
THENCE S 35°47'33" W, 139.61 FEET;
THENCE S 00°53'19" E, 131.63 FEET;
THENCE S 15°27'56" E, 241.77 FEET;
THENCE S 46°52'24" W, 128.28 FEET;
THENCE S 17°53'47" E, 105.91 FEET;
THENCE S 76°13'42" E, 391.79 FEET;
THENCE S 40°32'14" E, 104.08 FEET;
THENCE S 17°59'13" W, 156.80 FEET;
THENCE S 05°59'16" E, 253.00 FEET;
THENCE S 30°01'27" E, 151.07 FEET;
THENCE S 54°45'26" W, 199.63 FEET;
THENCE S 78°47'17" W, 182.32 FEET; THENCE S 35°56'43" W, 113.87 FEET TO THE SOUTH LINE OF SAID SECTION 33; THENCE S 89°04'30" W, ON SAID SOUTH LINE, 910.63 FEET TO THE NORTHWEST CORNER OF PAWNEE RANCHEROS FILING NO. 2 AS RECORDED IN PLAT BOOK U-2 AT PAGE 45 OF THE RECORDS OF EL PASO COUNTY; THENCE S 89°04'30" W ON THE SOUTH LINE OF SECTION 33, A DISTANCE OF 1200.12 FEET TO THE SOUTHWEST CORNER OF SAID SECTION 33; THENCE S 89°12'38" W, 290.51 FEET; THENCE N 49°38'29" W, 1077.27 FEET MORE OR LESS TO THE SOUTHEASTERLY RIGHT OF WAY LINE OF VOLLMER ROAD; THENCE N 40°21'31" E ON SAID SOUTHEASTERLY LINE, 1487.11 FEET; THENCE ON THE ARC OF A CURVE TO THE LEFT, HAVING A CENTRAL ANGLE OF 00°59'07", A RADIUS OF 10050.00 FEET, AN ARC DISTANCE OF 172.82 FEET, THE CHORD OF SAID CURVE BEARS N 39°51'58" E A CHORD DISTANCE OF 172.82 FEET; THENCE SOUTHEASTERLY ON THE ARC OF A CURVE TO THE LEFT, HAVING A CENTRAL ANGLE OF 16°45'54", A RADIUS OF 116.28 FEET, AN ARC DISTANCE OF 34.02 FEET, THE CHORD OF SAID CURVE BEARS S 83°58'46" E A CHORD DISTANCE OF 33.90 FEET TO THE WESTERLY LINE OF SAID SECTION 33; THENCE S 00°08'10" E ON SAID WESTERLY LINE, 631.32 FEET; THENCE N 89°17'25" E ON THE SOUTH LINE OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 33, A DISTANCE OF 977.15;
THENCE S 00°42'35" E, 539.36 FEET;
THENCE N 76°19'20" E, 33.45 FEET;
THENCE S 13°40'40" E, 150.00 FEET;

THENCE N 76°19'20" E, 852.10 FEET;
THENCE N 13°40'40" W, 155.29 FEET; THENCE NORTHWESTERLY ON THE ARC OF A CURVE TO THE LEFT, HAVING A CENTRAL ANGLE OF 18°23'00", A RADIUS OF 515.00 FEET, AN ARC DISTANCE OF 165.24 FEET, THE CHORD OF SAID CURVE BEARS N 22°52'10" W A CHORD DISTANCE OF 164.53 FEET; THENCE N 32°03'40" W, 133.45 FEET; THENCE NORTHWESTERLY ON THE ARC OF A CURVE TO THE RIGHT, HAVING A CENTRAL ANGLE OF 08°46'32", A RADIUS OF 615.00 FEET, AN ARC DISTANCE OF 94.19 FEET, THE CHORD OF SAID CURVE BEARS N 27°40'24" W A CHORD DISTANCE OF 94.10 FEET; THENCE NON-TANGENT TO LAST SAID CURVE, S 83°22'30" W, 173.73 FEET; THENCE S 80°21'06" W, 59.99 FEET; THENCE S 85°53'10" W, 114.34 FEET; THENCE N 04°15'23" W, 19.31 FEET; THENCE N 00°07'25" W ON THE EAST LINE OF THE WEST HALF OF THE WEST HALF OF SECTION 33, A DISTANCE OF 2414.11 FEET TO THE POINT OF BEGINNING AND CONTAINING 8,644,963 SQUARE FEET MORE OR LESS, OR 198.464 ACRES MORE OR LESS.

SPENCER J. BARRON
COLORADO REGISTERED PROFESSIONAL
LAND SURVEYOR NO. 38141



DESCRIPTION PREPARED BY:
M&S CIVIL CONSULTANTS, INC.
102 EAST PIKES PEAK AVENUE, SUITE 306
COLORADO SPRINGS, CO 80903

CIVIL CONSULTANTS, INC.

20 Boulder Crescent, STE 110
Colorado Springs, CO 80903
Mail to: PO Box 1360
Colorado Springs, CO 80901
719.955.5485

EXHIBIT B

STERLING RANCH FILING NO. 1
NOVEMBER 15, 2018

A PARCEL OF LAND LOCATED IN A PORTION OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS;

BASIS OF BEARINGS: THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 34, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M. EL PASO COUNTY, COLORADO. THE SOUTHWEST CORNER OF SAID SOUTHWEST QUARTER (SW 1/4) BEING MONUMENTED WITH A 2-1/2" ALUMINUM CAP STAMPED "LS 11624", FROM WHICH THE SOUTHEAST CORNER OF SAID SOUTHWEST QUARTER (SW 1/4) BEING MONUMENTED WITH A 2-1/2" ALUMINUM CAP STAMPED "LS 11624", BEARS N89°14'14"E, A DISTANCE OF 2,722.56 FEET.

COMMENCING AT THE SOUTHWEST CORNER OF SAID SOUTHWEST QUARTER (SW 1/4) OF SECTION 34;
THENCE N70°07'17"W, A DISTANCE OF 3679.65 FEET TO A POINT ON THE WEST RIGHT-OF-WAY LINE OF DINES BOULEVARD AS RECORDED IN THE PLAT OF "STERLING RANCH FILING NO. 1" UNDER RECEPTION NO. 218714151 IN THE RECORDS OF EL PASO COUNTY, COLORADO, AND THE POINT OF BEGINNING;

THENCE S83°22'30"W A DISTANCE OF 385.54 FEET TO THE WESTERLY LINE OF A 20 FOOT GAS EASEMENT AS DESCRIBED IN PERMANENT EASEMENT AGREEMENT UNDER RECEPTION NO. 201034022 IN THE RECORDS OF EL PASO COUNTY, COLORADO;
THENCE S00°07'25"E ALONG SAID WESTERLY LINE A DISTANCE OF 21.35 FEET;
THENCE S89°17'25"W A DISTANCE OF 120.00 FEET;
THENCE N00°42'35"W A DISTANCE OF 76.00 FEET TO THE SOUTHERLY LINE OF LOT 4 OF "AMENDED PLAT OF BARBARICK SUBDIVISION" UNDER RECEPTION NO. 217713390 IN THE RECORDS OF EL PASO COUNTY, COLORADO;
THENCE N89°17'25"E ALONG SAID SOUTHERLY LINE A DISTANCE OF 120.78 FEET TO THE SOUTHEAST CORNER OF SAID LOT 4, SAID CORNER ALSO BEING THE NORTHWEST CORNER OF TRACT M OF AFORESAID "STERLING RANCH FILING NO. 1";

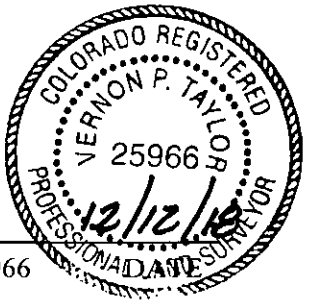
THENCE ALONG THE BOUNDARY OF SAID TRACT M THE FOLLOWING FIVE (5) COURSES:

1. THENCE S04°50'24"E A DISTANCE OF 20.00 FEET;
2. THENCE N85°09'36"E A DISTANCE OF 54.23 FEET;
3. THENCE N85°53'10"E A DISTANCE OF 59.92 FEET;
4. THENCE N80°21'06"E A DISTANCE OF 59.99 FEET;
5. THENCE N83°22'30"E A DISTANCE OF 194.64 FEET TO THE AFORESAID WEST RIGHT-OF-WAY LINE OF DINES BOULEVARD;

THENCE ALONG SAID WESTERLY RIGHT-OF-WAY, ON THE ARC OF A CURVE TO THE LEFT, SAID CURVE HAVING A RADIUS OF 595.00 FEET, A CENTRAL ANGLE OF 3°22'36", (THE CHORD OF WHICH BEARS S25°33'03"E, 35.06 FEET), AN ARC DISTANCE OF 35.06 FEET THE POINT OF BEGINNING,

SAID PARCEL CONTAINS A CALCULATED AREA OF 21,508 S.F. (0.494 ACRES) MORE OR LESS.

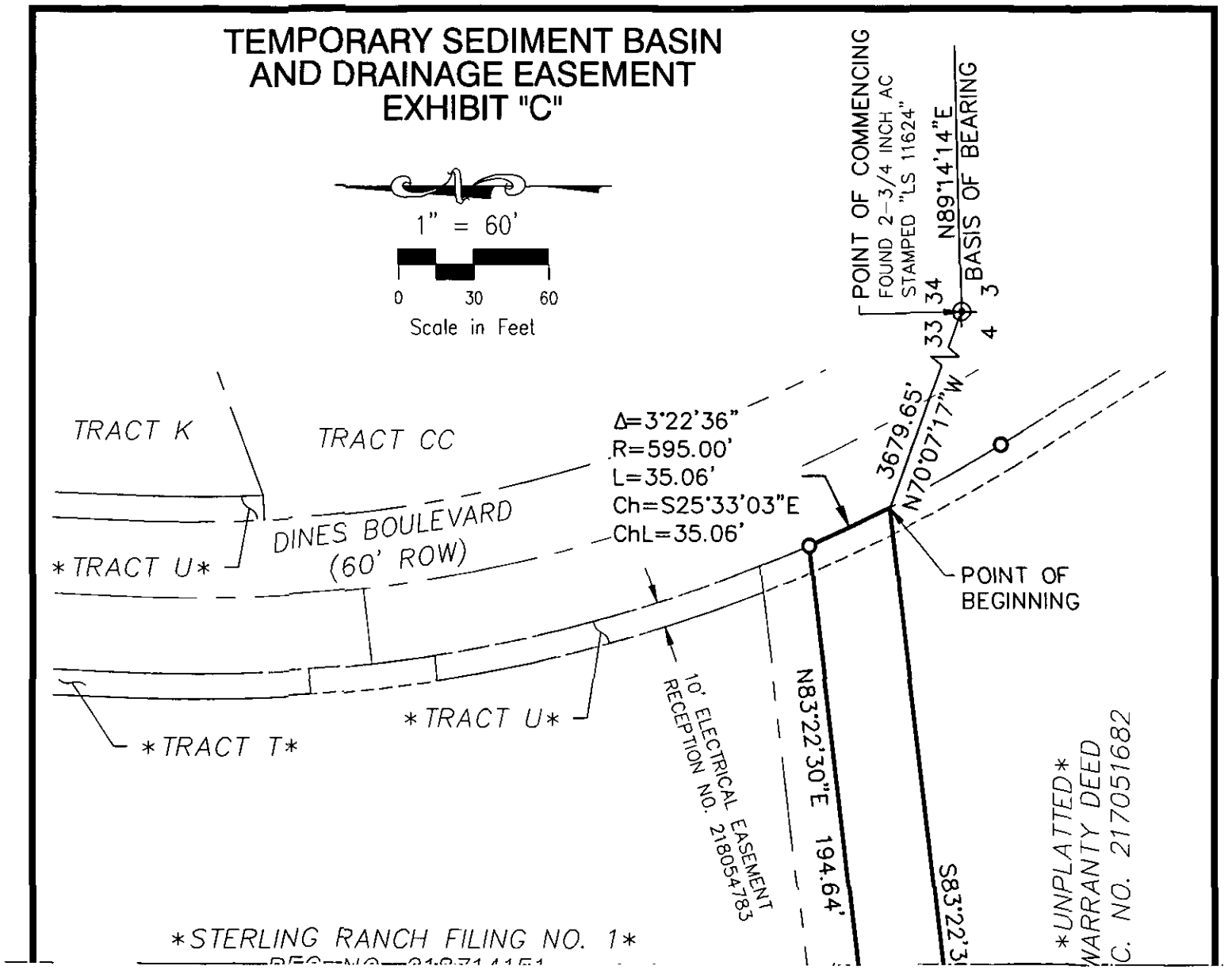
PREPARED BY:



Vernon P Taylor

VERNON P. TAYLOR, COLORADO P.L.S. NO. 25966 DATE 12/12/19
FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC
20 BOULDER CRESCENT, SUITE 110
COLORADO SPRINGS, CO 80903

TEMPORARY SEDIMENT BASIN AND DRAINAGE EASEMENT EXHIBIT "C"



Stormwater Management Facility
Operation and Maintenance (O&M) Manual

for:

Homestead at Sterling Ranch Filing No. 1 &
Branding Iron at Sterling Ranch Filing No. 1

Located at:

Homestead at Sterling Ranch Filing No. 1: Bounded by
Vollmer Road (west) and Dines Boulevard (east)
Branding Iron at Sterling Ranch Filing No. 1: Bounded by existing
Barbarick Subdivision (west) and Dines Boulevard (east)

Prepared for:

SR Land, LLC
20 Boulder Crescent, Suite 201
Colorado Springs, CO 80903
Jim Morley (719) 471-1742

Prepared by:

M&S Civil Consultants, Inc
20 Boulder Crescent, Suite 110
Colorado Springs, CO 80903
(719) 955-5485

Reference:
This manual is adapted from Town of Parker, Colorado, *STORMWATER PERMANENT BEST MANAGEMENT PRACTICES (PBMP) LONG-TERM OPERATION AND MAINTENANCE MANUAL*, October 2004

Stormwater Management Facility
Operation and Maintenance (O&M) Manual

Table of Contents

Stormwater Management Facility
Operation and Maintenance (O&M) Manual

I. Compliance with Stormwater Facility Maintenance Requirements

All property owners are responsible for ensuring that stormwater facilities installed on their property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. The maintenance responsibility for a stormwater facility may be designated on the subdivision plat, the site development plan, and/or within a maintenance agreement for the property. Property owners should be aware of their responsibilities regarding stormwater facility maintenance. Maintenance agreement(s) associated with this property are provided in Appendix A.

In some cases, the El Paso County (EPC) may agree to provide the required inspection and maintenance for some or all private stormwater facilities. In these cases, an EPC maintenance agreement will be included in Appendix A for those facilities that are agreed to be included in the EPC routine maintenance program.

II. Inspection & Maintenance – Annual Reporting

Requirements for the inspection and maintenance of stormwater facilities, as well as reporting requirements are included in this Stormwater Management Facility Operation and Maintenance (O&M) Manual.

Verification that the Stormwater facilities have been properly inspected and maintained; submittal of the required Inspection and Maintenance Forms and Inspector qualifications shall be provided to EPC on an annual basis. The annual reporting form shall be provided to EPC prior to May 31st of each year.

Copies of the Inspection and Maintenance forms for each of the stormwater facilities are located in Appendix D and E. A standard annual reporting form is provided in Appendix F. Each form shall be reviewed and submitted by the property owner or property manager to EPC.

Property owners are not required to provide Inspection and Maintenance Reports for stormwater facilities that have been agreed to be maintained by EPC. These reports will be generated through EPC's inspection & maintenance program.

III. Preventative Measures to Reduce Maintenance Costs

The most effective way to maintain your water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. A thoughtful maintenance program will include measures to address these

potential contaminants, and will save money and time in the long run. Key points to consider in your maintenance program include:

- Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs.
- Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings.
- Ensure the proper disposal of hazardous wastes and chemicals.
- Plan lawn care to minimize the use of chemicals and pesticides.
- Sweep paved surfaces and put the sweepings back on the lawn.
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean out the upstream components of the storm drainage system, including inlets, storm sewers and outfalls.
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

IV. Access and Easements

All stormwater management facilities located on the site have both a designated access location as well as a maintenance easement. Refer to the Stormwater Facilities Map located in Appendix G for access and easement locations.

V. Safety

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local Sheriff at 911.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local Sheriff's Office immediately for response by the Hazardous Materials Unit. The emergency contact number is 911.

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the pond that is greater than 48" in height, make the appropriate note/comment on the maintenance inspection form.

If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local Sheriff's Office immediately.

VI. Field Inspection Equipment

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all Stormwater Management Facilities:

- Protective clothing and boots.
- Safety equipment (vest, hard hat, confined space entry equipment).
- Communication equipment.
- Operation and Maintenance Manual for the site including stormwater management facility location maps.
- Clipboard.
- Stormwater Facility Maintenance Inspection Forms (See Appendix D).
- Manhole Lid Remover
- Shovel.

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.

VII. Inspecting Stormwater Management Facilities

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of permanent best management practices. Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual at a minimum of once per year. Inspections should follow the inspection guidance found in the SOP for the specific type of facility. (Appendix C of this manual).

B. Inspection Report

The person(s) conducting the inspection activities shall complete the appropriate inspection report for the specific facility. Inspection reports are located in Appendix D.

The following information explains how to fill out the Inspection Forms:

General Information

This section identifies the facility location, person conducting the inspection, the date and time the facility was inspected, and approximate days since the last rainfall. Property classification is identified as single-family residential, multi-family residential, commercial, or other.

The reason for the inspection is also identified on the form depending on the nature of the inspection. All facilities should be inspected on an annual basis at a minimum. In addition, all facilities should be inspected after a significant precipitation event to ensure the facility is draining appropriately and to identify any damage that occurred as a result of the increased runoff.

Inspection Scoring

For each inspection item, a score must be given to identify the urgency of required maintenance. The scoring is as follows:

0 = No deficiencies identified.

1 = Monitor – Although maintenance may not be required at this time, a potential problem exists that will most likely need to be addressed in the future. This can include items like minor erosion, concrete cracks/spalling, or minor sediment accumulation. This item should be revisited at the next inspection.

2 = Routine Maintenance Required – Some inspection items can be addressed through the routine maintenance program (See SOP in appendix A). This can include items like vegetation management or debris/trash removal.

3 = Immediate Repair Necessary – This item needs immediate attention because failure is imminent or has already occurred. This could include items such as structural failure of a feature (outlet works, forebay, etc), significant erosion, or significant sediment accumulation. This score should be given to an item that can significantly affect the function of the facility.

N/A This is checked by an item that may not exist in a facility. Not all facilities have all of the features identified on the form (forebay, micro-pool, etc.).

Inspection Summary/Additional Comments

Additional explanations to inspection items, and observations about the facility not covered by the form, are recorded in this section.

Overall Facility Rating

An overall rating must be given for each facility inspected. The overall facility rating should correspond with the highest score (0, 1, 2, 3) given to any feature on the inspection form.

C. Verification of Inspection and Form Submittal

The Stormwater Management Facility Inspection Form provides a record of inspection of the facility. Inspection Forms for each facility type are provided in Appendix D. Verification of the inspection of the stormwater facilities, the facility inspection form(s), and Inspector Qualifications shall be provided to EPC on an annual basis. The verification and the inspection form(s) shall be reviewed and submitted by the property owner or property manager.

Refer to Section II of this Manual regarding the annual reporting of inspections.

VIII. Maintaining Stormwater Management Facilities

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained.

A. Maintenance Categories

Stormwater management facility maintenance programs are separated into three broad categories of work. These categories are based largely on the Urban Drainage and Flood Control District's Maintenance Program for regional drainage facilities. The categories are separated based upon the magnitude and type of the maintenance activities performed. A description of each category follows:

Routine Work

The majority of this work consists of scheduled mowings and trash and debris pickups for stormwater management facilities during the growing season. This includes items such as the removal of debris/material that may be clogging the outlet structure well screens and trash racks. It also includes activities such as weed control, mosquito treatment, and algae treatment. These activities normally will be performed numerous times during the year. These items can be completed without any prior

correspondence with EPC; however, completed inspection and maintenance forms shall be submitted to EPC for each inspection and maintenance activity.

Restoration Work

This work consists of a variety of isolated or small-scale maintenance and work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment. These items require prior correspondence with EPC and require that completed maintenance forms be submitted to EPC for each maintenance activity.

Rehabilitation Work

This work consists of large-scale maintenance and major improvements needed to address failures within the stormwater management facilities. This work requires consultation with EPC and may require an engineering design with construction plans to be prepared for review and approval. This work may also require more specialized maintenance equipment, surveying, construction permits or assistance through private contractors and consultants. These items require prior correspondence with EPC and require that completed maintenance forms be submitted to EPC for each maintenance activity.

B. Maintenance Personnel

Maintenance personnel must be qualified to properly maintain stormwater management facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

C. Maintenance Forms

The Stormwater Management Facility Maintenance Form provides a record of maintenance activities. Maintenance Forms for each facility type are provided in Appendix E. Maintenance Forms shall be completed by the contractor completing the required maintenance items. The form shall then be reviewed by the property owner or an authorized agent of the property owner and submitted on an annual basis to the Southeast Metro Stormwater Authority.

Refer to Section II of this Manual regarding the annual reporting of inspections and maintenance activities performed.

APPENDIX A

APPENDIX B

Appendix B

General Location and Description of Stormwater Management Facilities

A. General Site Description

Homestead at Sterling Ranch Filing No. 1 is a 19.574 acre site and consists of single-family residential housing. The property is bound to the east by Dines Boulevard and to the west by existing Vollmer Road. The property is bound to the south by the existing Barbarick Subdivision and Branding Iron at Sterling Ranch Filing No. 1.

Branding Iron at Sterling Ranch Filing No. 1 is a 10.545 acre site and consists of single-family residential housing. The site is bound on the north by Homestead at Sterling Ranch Filing No.1. The property is bound to the east by Dines Boulevard and to the west by vacant industrial lots and a warehouse/storage site associated with the development of portions of the Barbarick Subdivision. An undeveloped parcel of land, proposed to be a future school site, within the Sterling Ranch development and future Sterling Ranch Road bound the proposed development to the south.

B. General Stormwater Management Description

The stormwater facilities specific to this O&M Manual consist of two vegetated swales, one located within Tract L west of both developments and the other adjacent to the southern border of Branding Iron Filing No. 1, and a temporary sediment basin (TSB #1). Both swales convey runoff to the temporary sediment basin to be treated for water quality.

C. Stormwater Facilities Site Plan

Inspection or maintenance personnel may utilize the Stormwater Facilities Map located in Appendix G for locating the vegetated swales within Tract L and adjacent to the southern border of Branding Iron Filing No. 1, as well as the temporary sediment basin No. 1 (TSB #1) within these developments.

D. On-Site Stormwater Management Facilities

Volume Reduction Facilities

Approximately 3.03 acres of ground within the project is being set aside for Open Space/Trail use. Roof drains will be directed to side yard swales and as possible to the two vegetated swales, one located within Tract L west of both developments and the other adjacent to the southern border of Branding Iron Filing No. 1. Both practices aid in minimizing direct connection of impervious surfaces.

Storage Facilities (Detention)

A temporary sediment basin (TSB #1) is being provided to treat runoff conveyed south by the vegetated swale in Tract L and west by the vegetated swale south of Branding Iron Filing No. 1.The temporary sediment basin will provide water quality for runoff produced within drainage basins N, OS1, OS13, and F (see maps in

Appendix G) until the construction of Pond W5 with the development of Sterling Ranch Filing No. 2.

Water Quality Facilities

Both residential developments will utilize a temporary sediment basin (TSB#1) to provide water quality for runoff produced within drainage basins N, OS1, OS13, and F (see maps in Appendix G) until the construction of Pond W5 with the development of Sterling Ranch Filing No. 2.

Source Control Best Management Practices

This O&M Manual does not include any nonstructural BMPs.

APPENDIX C

Standard Operation Procedures
for
Inspection and Maintenance

Grass Buffers Swales and Grass (GB-GS)

November 2018

Table of Contents

GB-GS-1 BACKGROUND

Grass Buffers and Grass Swales are common types of Stormwater Management Facilities utilized within the Front Range of Colorado. Grass Buffers and Grass Swales promote filtration, infiltration, and settling to reduce runoff volume.

Grass Buffers are uniformly graded and densely vegetated areas of turf grass. They are designed to accommodate sheet flow rather than concentrated or channelized flow. They are typically located adjacent to impervious areas such as parking lots or along highways and roads. Grass Buffers are designed to evenly distribute runoff across the width of the buffer to achieve uniform sheet-flow conditions. A flow spreader may be incorporated for this purpose. In some cases, grass buffers may have underdrain systems.

Grass Swales are densely vegetated drainageways with low-pitched side slopes that collect and convey runoff. Design of their longitudinal slope and cross section forces the flow to be slow and shallow, thereby facilitating sedimentation while limiting erosion. Berms or check dams may be installed perpendicular to the flow to decrease the slope and slow down the flow. Grass swales are used in open space and landscaped areas to collect and convey overland flows, and can be used as an alternative to curb and gutter to collect and convey street flows. Some grass swales are designed with underdrain systems.

GB-GS-2 INSPECTING GRASS BUFFERS AND SWALES (GB-GS)

GB-GS-2.1 Access and Easements

Inspection and maintenance personnel may utilize the stormwater facility map located in Appendix G containing the locations of the access points and maintenance easements of the GB-GSs within this development.

GB-GS-2.2 Stormwater Management Facilities Locations

Inspection and maintenance personnel may utilize the stormwater facility map located in Appendix G containing the locations of the GB-GSs within this development.

GB-GS-2.3 Grass Buffer - Grass Swale (GB-GS) Features

GB-GSs are unique stormwater quality facilities, in that they are typically viewed as landscaping or ground cover, and are often overlooked as water quality treatment facilities. GB-GSs have a number of features that are designed to serve a particular function. It is important for maintenance personnel to understand the function of each of these features. Below is a list of the common features of a Grass Swale or Grass Buffer and the corresponding maintenance inspection items that can be anticipated:

Table GB-GS-1
Typical Inspection & Maintenance Requirements Matrix

	Sediment Removal	Mowing Weed control	Trash & Debris Removal	Erosion	Removal/ Replacement	Structural Repair
Swale Bottom	X	X	X	X		
Side Slope		X	X	X		
Buffer Strip	X	X	X	X		
Inflows	X	X	X	X	X	X
Underdrain System					X	
Grade Control/Level Spreader				X		X
Irrigation System					X	

GB-GS-2.3.1 Grass Swale Bottom and Side Slopes; Grass Buffer Strips

Grass Swales and Grass Buffers require general maintenance of the turf grass and repair of any rill or gully development. The bottom and side slopes of grass swales and the area of grass buffer strips should be maintained with dense vegetative cover, and should not be eroded or bare. Inspection over the first few years will help to determine if any problems are developing.

The typical maintenance items that are required at the side slopes and bottoms of grass swales and within grass buffer areas are as follows:

a. Sediment Accumulation – The purpose of the grass swale or buffer is to slow down flow and allow sedimentation to occur. To prevent a loss in performance of the swale or buffer, sediment that accumulates must be removed on a timely basis.

b. Vegetation Sparse – Grass Swales and Buffers rely on a healthy, dense cover of grass to decrease the flow velocities and promote sedimentation and infiltration. Grasses that are diseased, dying or otherwise damaged should be replaced. All bare areas should be reseeded or patched. Causes which contribute to the damaged grass cover, including lack of adequate irrigation, traces of pedestrian or vehicular traffic, uncontrolled weeds etc., should be identified and remedied.

c. Erosion Present – Lack of adequate vegetative cover or excessive flow velocities may result in rill or gully development, and erosion of the swale or buffer strip. Erosion will require maintenance to prevent further damage to the area and to prevent sediment transport.

d. *Standing Water/Boggy Areas* – Grass swales and buffers are generally intended to drain and be dry in between rain events. If areas of standing water are present, the swale or buffer may need to be evaluated for proper grade to ensure drainage. In some cases, where underdrains are used, the underdrains should be inspected to ensure that they are not clogged.

GB-GS-2.3.2 Inflow Points

Inflow points are the points of stormwater discharge into the swale or buffer. Inflow points are typically pipe outfalls, other grass swales or buffers, or curb cuts from upstream impervious areas, such as parking lots. Some form of energy dissipation is typically provided immediately downstream of the inflow point into the grass swale or buffer. Energy dissipation devices may include riprap aprons, or flow spreader devices.

The typical maintenance items that are required at inflow points are as follows:

a. Riprap Displaced/Rundown Damaged – Often, because of, the repeated impact/force of water, the riprap can shift and settle. If any portion of the riprap rundown or apron appears to have settled, if soil is present between the riprap, or if the riprap has shifted, maintenance may be required to ensure future erosion is prevented.

b. Erosion Present/Outfall Undercut – In some situations, an energy dissipater may have not been provided, or may not have been sized, constructed, or maintained appropriately and erosion has occurred. Any erosion within the vicinity of the inflow point will require maintenance to prevent damage to the structure(s) and sediment transport within the facility.

c. Sediment Accumulation – Because of the turbulence in the water created by the energy dissipater, sediment often deposits immediately downstream of the inflow point. To prevent a loss in performance, sediment that accumulates in this area must be removed on a timely basis.

GB-GS-2.3.3 Underdrain System

Some grass swales and buffers that have a flatter slope or soils which do not allow adequate percolation or are in areas with a continuous base flow may have been installed with an underdrain system. Underdrains typically consist of a layer of geotextile fabric, gravel storage area and perforated PVC pipe. The geotextile fabric is utilized to prevent the filter material from entering the underdrain system. The gravel storage area allows for

storage of treated stormwater runoff prior to the discharge of the runoff through the perforated PVC pipe.

The typical maintenance activities that are required for the underdrain system are as follows:

With proper maintenance of the grassed areas, there should be a minimum amount of maintenance required on the underdrain system. Generally the only maintenance performed on the underdrain system is jet-vac cleaning in the event that it becomes clogged.

GB-GS-2.3.4 Grade Control Level Spreader

Grass swales that are installed in areas with steep longitudinal slopes often necessitate the use of grade control checks or drop structures. Grade control structures are typically either concrete walls or rip rap structures that serve to provide a reinforced drop at specific locations in the channel, reducing the longitudinal slope between the control structures.

Level Spreaders are installed on the upstream of grass buffers to evenly distribute flows along the design length. Level spreaders may consist of slotted curbing, modular block porous pavement, level walls or other spreader devices.

The typical maintenance activities that are required for grade control structures and level spreaders are as follows:

a. Erosion present – Grade control structures and level spreaders are provided to reduce the potential for erosion of the grassed swale or buffer areas. Erosion within the vicinity of the control structure or level spreader indicates that the structure is not functioning as intended and requires maintenance to prevent future erosion and damage.

b. Structural damage – Structural damage can occur at anytime along the life of the facility. Typically, structural damage occurs with the deterioration of concrete, including cracking, spalling or settling and the erosion and deterioration of the riprap structures. Level spreaders may settle unevenly creating low areas, which concentrate the flows.

GB-GS-2.3.5 Irrigation

Grass Buffers and Grass Swales depend on healthy, dense turf grass to function, and therefore require an irrigation system, to provide a consistent water supply. Typically, the condition of the grass cover will provide

evidence of the effectiveness and maintenance needs of the irrigation system.

The typical maintenance activities that are required for irrigation systems are as follows:

Irrigation systems will generally require routine periodic maintenance and adjustment to ensure that proper amounts of water are being applied given the weather conditions, and that they are providing coverage to all areas of the grass to eliminate bare spots.

GB-GS-2.3.6 Miscellaneous

There are a variety of inspection/maintenance issues that may not be attributed to a single feature within the GB-GS. This category on the inspection form is for maintenance items that are commonly found in the GB-GS, but may not be attributed to an individual feature.

a. Encroachment in Easement Area – SEMSWA requires that GB-GS be located in tracts or drainage easements. Property owners may place landscaping, trash, fencing, or other items within the easement area that may affect maintenance or the operation of the facility.

b. Public Hazards – Public hazards include items such as containers of unknown/suspicious substances, and exposed metal/jagged concrete on structures. **If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local Sheriff's Office at 911 immediately.**

c. Burrowing Animals/Pests– Prairie dogs and other burrowing rodents may cause damage to the GB-GS features and negatively affect the vegetation within the GB-GS.

d. Other – Any miscellaneous inspection/maintenance items not contained on the form should be entered here.

GB-GS-2.4 Inspection Forms

GB-GS Inspection forms are located in Appendix D. Inspection forms shall be completed by the person(s) conducting the inspection activities. Each form shall be reviewed and submitted by the property owner or property manager to El Paso County per the requirements of the Operations and Maintenance Manual. These inspection forms shall be kept indefinitely and made available to El Paso County upon request

GB-GS-3.4 Maintenance Categories and Activities

A typical GB-GS Maintenance Program will consist of three broad categories of work: Routine, Minor and Major. Within each category of work, a variety of maintenance activities can be performed on a GB-GS. A maintenance activity can be specific to each feature within the GB-GS, or general to the overall facility. This section of the SOP explains each of the categories and briefly describes the typical maintenance activities for a GB-GS.

A variety of maintenance activities are typical of GB-GSs. The maintenance activities range in magnitude from routine trash pickup to the reconstruction of the GB-GS or underdrain system. Below is a description of each maintenance activity, the objectives, and frequency of actions.

GB-GS-3.5 Routine Maintenance Activities

The majority of this work consists of scheduled mowing, trash and debris pickups and landscape care for the GB-GS during the growing season. It also includes activities such as weed control. These activities normally will be performed numerous times during the year. These items do not require any prior approval by SEMSWA, however, completed inspection and maintenance forms shall be submitted to SEMSWA for each inspection and maintenance period.

The Routine Maintenance Activities are summarized below, and further described in the following sections.

Table GB-GS-2
Summary of Routine Maintenance Activities

Maintenance Activity	Minimum Frequency	Indication Action is Needed:	Maintenance Action
Trash/Debris Removal	Twice annual and before mowing	Trash & debris in GB-GS	Remove and properly dispose of trash and debris
Mowing	Routine – as necessary to maintain 2" – 4" grass height	Excessive grass height/aesthetics	2"-4" grass height for turf grass; 4" to 6" for native grass
Irrigation (Automatic)	Three times annually	Areas of insufficient or excess watering; broken or missing parts	SPRING: start up system; test for even coverage and correct timer settings SUMMER: test for even coverage and correct timer settings FALL: drain and winterized system (follow watering regulations)
Irrigation (Not Automatic)	As needed to maintain healthy grass	Areas of insufficient or excess watering	Water as needed to maintain healthy grass; (follow watering regulations)
Weed Control	Minimum twice annually	Noxious weeds; Unwanted vegetation	Treat w/herbicide or hand pull; consult a local Weed Inspector

Maintenance Activity	Minimum Frequency	Indication Action is Needed:	Maintenance Action
Mosquito Treatment	As needed, based upon inspections	Standing water/ mosquito habitat	Perform maintenance to eliminate standing water; Treat w/ EPA approved chemicals
Level Spreader (Grass Buffer only)	As needed, based upon inspections	Evidence of uneven flow/localized erosion	Look for cause; repair, fill or revegetate areas of erosion
Rodent Damage	As needed, based upon inspections	Holes, small piles of dirt, raised burrows	Evaluate damage; contact Parks Dept. or Division of Wildlife for guidance

GB-GS-3.5.1 Trash/Debris Removal

Trash and debris must be removed from the GB-GS area to allow for proper functioning and to improve aesthetics. This activity must be performed prior to mowing operations.

Frequency – Routine – Prior to mowing operations and a minimum of twice annually.

GB-GS-3.5.2 Mowing

Routine mowing of the turf grass embankments is necessary to maintain an appropriate grass height and to improve the overall appearance of the GB-GS. Turf grass should be mowed to a height of 2 to 4- inches (4 – 6- inches for native grass) and shall be bagged to prevent potential contamination of the filter media.

Frequency – Routine – as necessary to maintain grass height.

GB-GS-3.5.3 Irrigation

Irrigation systems should be maintained in proper working order to provide an adequate water supply to support the grass cover. When automatic irrigation systems are not available, alternate methods for providing a water supply during times of drought must be provided.

Automatic irrigation systems should be maintained routinely throughout the growing season to ensure that they are providing the appropriate amounts of water, and are providing complete coverage of the area. Sprinkler heads should be adjusted as necessary, and checked for broken or missing parts.

Frequency - Routine as needed throughout the growing season, plus the following:

SPRING: Start up the system and test for even coverage and correct timer settings.

GB-GS-3 MAINTAINING GRASS BUFFERS & GRASS SWALES (GB-GS)

GB-GS-3.1 Maintenance Personnel

Maintenance personnel must be experienced to properly maintain GB-GSs. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

GB-GS-3.2 Equipment

It is imperative that the appropriate equipment and tools are taken to the field with the operations crew. The types of equipment/tools will vary depending on the task at hand. Below is a list of tools, equipment, and material(s) that may be necessary to perform maintenance on a GB-GS:

1.) Mowing Tractors
2.) Trimmers (extra string)
3.) Shovels
4.) Rakes
5.) All Surface Vehicle (ASVs)
6.) Engineers Level (laser)
7.) Erosion Control Blanket(s)
8.) Mulch
9.) Sod or Seed
10.) Illicit Discharge Cleanup Kits
11.) Trash Bags
12.) Stormwater Facility Operation and Maintenance Manual

Some of the items identified above may not be needed for every maintenance operation. However, this equipment should be available to the maintenance operations crews should the need arise.

GB-GS-3.3 Maintenance Forms

The GB-GS Maintenance Form provides a record of each maintenance operation performed by maintenance contractors. The GB-GS Maintenance Form shall be filled out in the field after the completion of the maintenance operation. Each form shall be reviewed and submitted by the property owner or property manager to El Paso County per the requirements of the Operations and Maintenance Manual. The GB-GS Maintenance form is located in Appendix E.

SUMMER: Test for even coverage and correct timer settings.
FALL: Drain and winterize the system.

GB-GS-3.5.4 Weed Control

Noxious weeds and other unwanted vegetation must be treated as needed throughout the GB-GS. This activity can be performed either through mechanical means (mowing/pulling) or with herbicide. Consultation with a local Weed Inspector is highly recommended prior to the use of herbicide. Herbicides should be utilized sparingly and as a last resort. All herbicide applications should be in accordance with the manufacturer's recommendations.

Frequency – Routine – As needed based upon inspections.

GB-GS-3.5.5 Mosquito Treatment

GB-GS facilities are intended to drain, and should not have areas of standing water which creates mosquito habitat. Causes of the standing water or boggy conditions should be investigated and remediated as necessary to eliminate the standing water. Only EPA approved chemicals should be applied in accordance with the recommendations of the manufacturer.

Frequency – As needed based upon inspections.

GB-GS-3.5.6 Level Spreader (Grass Buffer only)
Evidence of uneven flow and localized erosion downstream of the level spreader indicate that the flow is not evenly distributed along the length of the spreader. Areas of erosion should be repaired, filled and revegetated. Causes for the erosion should be investigated and repaired.

Frequency – As needed based upon inspections.

GB-GS-3.5.7 Rodent Damage
Small holes, piles of dirt, and raised burrows are evidence of rodent damage. Damaged areas should be repaired and revegetated. Consultation with an animal control specialist or the Division of Wildlife may be required for persistent problems.

Frequency – As needed based on inspections.

GB-GS-3.6 Minor Maintenance Activities
This work consists of a variety of isolated or small-scale maintenance/operational problems. Most of this work can be completed by a small crew, hand tools, and small equipment. These items require approval

by SEMSWA. Completed inspection and maintenance forms shall be submitted to SEMSWA for each inspection and maintenance activity.

Table GB-GS-3
Summary of Minor Maintenance Activities

Maintenance Activity	Minimum Frequency	Indication Action is Needed:	Maintenance Action
Sediment Removal	As needed.	Sediment build-up.	Remove and properly dispose of sediment
Erosion Repair	As needed, based upon inspection	Rills and gullies forming on slopes and other areas	Repair eroded areas & revegetate; address cause
Vegetation Removal	As needed, based upon inspection	Trees, willows, shrubs impeding flow	Remove vegetation; restore correct grade and surface
Revegetation	As needed, based upon inspection	Areas without grass	Replace grass by sodding or seeding
Irrigation (Automatic)	As needed, based upon inspection.	Evidence of broken or missing parts	Replace parts and test system
Level Spreader (Grass Buffer Only)	As needed, based upon inspection.	Evidence of uneven flow; erosion; or rills/gullies	Repair sections of level spreader and address cause
Fertilization or Soil Amendment	As needed, minimize fertilization	Grass with pale color; areas with poor grass growth not due to irrigation problems	Consult with turf specialist; Test soil
Vehicle Tracks (Along Roadways)	As needed, based upon inspection	Depressions from vehicle tracks; vegetation damage	Repair and fill depressions; sod or seed damaged areas

GB-GS-3.6.1 Sediment Removal

Sediment removal is necessary to ensure proper function of the grass swale or buffer. Care should be taken when removing sediment to prevent damage to the turf grass and surrounding areas. Excessive amounts of sediment are an indication of upstream erosion or lack of adequate BMPs during construction activities. Causes for contributions of excess sediment should be investigated and addressed.

Frequency – As needed based upon inspections.

GB-GS-3.6.2 Erosion Repair

The repair of eroded areas is necessary to ensure the proper functioning of the GB-GS, to minimize sediment transport, and to reduce potential impacts to other features. Erosion can vary in magnitude from minor repairs to vegetation and embankments, to rills and gullies in the embankments and inflow points. The repair of eroded areas may require the use of excavators, riprap, concrete, and sod. Extreme care should be taken when utilizing motorized or heavy equipment to ensure damage to the underdrain system does not occur. Major erosion in a GS-GB is generally the result of excessive velocities caused by steep slopes. It may be necessary to make design improvements to the swale or buffer when erosion becomes a major maintenance item.

Frequency – As necessary, based upon inspections.

GB-GS-3.6.3 Vegetation Removal

Weeds, Shrubs, Willows and other unwanted vegetation that develops in the grass swale or buffer area may impede the flow and cause standing water or back flow problems. It is necessary to remove unwanted vegetation as soon as it appears. Remove the unwanted vegetation, and restore the correct grade. Revegetate with seed or sod.

Frequency – As necessary, based upon inspections.

GB-GS -3.6.4 Revegetation

Bare areas should be repaired as soon as possible. Repair bare areas with grass or sod. Causes of the problem, such as inadequate water supply or diseased grasses, should be investigated and resolved.

Frequency – As necessary, based upon inspections.

GB-GS-3.6.5 Irrigation (Automatic)

Irrigation systems require routine maintenance in accordance with the manufacturer's recommendations (valves, timer, etc.), and maintenance of the pipe and heads to ensure that even coverage is being applied, and that there are no missing or broken parts. Timing systems should be checked to verify that the correct amount of water is being applied to the grassed areas for the seasonal conditions.

Frequency – As necessary, based upon inspections.

GB-GS-3.6.6 Level Spreader

Level Spreaders that are no longer level, or have developed damaged areas of cracking or spalling, allow flows to concentrate in these depressed areas instead of being distributed over the length of the structure. Also, build up of grasses along the edge of the spreader may create an uneven flow distribution. Rills, gullies and other erosion that develops downstream of level spreaders should be repaired and reseeded or sodded. Causes of the erosion should be investigated and addressed.

Frequency – As necessary, based upon inspections.

GB-GS-3.6.7 Fertilization/Soil Amendment

Grass Buffers and Swales rely on healthy, dense turf in order to function properly. Grasses that appear to be diseased, dying or unhealthy may require amendments. Fertilizers should be applied in the minimum amounts recommended by the manufacturer.

Frequency – As necessary, based upon inspections.

GB-GS-3.6.8 Vehicle Tracks

GB-GSs that are adjacent to roadway sections may be damaged by vehicle tracks. Rutted areas should be filled in and revegetated as soon as possible. Frequent problems associated with vehicle traffic (such as around corners) may require a barrier or sign to avoid vehicular traffic within the grassed areas.

Frequency – As necessary, based upon inspections.

GB-GB-3.7 Major Maintenance Activities

This work consists of larger maintenance/operational problems and failures within the stormwater management facilities. All of this work requires consultation with SEMSWA Engineering to ensure the proper maintenance is performed. This work requires that SEMSWA Engineering Staff review the original design and construction drawings to assess the situation and assign the necessary maintenance. This work may also require more specialized maintenance equipment, design/details, surveying, or assistance through private contractors and consultants.

Table GB-GS-4
Summary of Major Maintenance Activities

Maintenance Activity	Minimum Frequency	Look for:	Maintenance Action
Major Sediment/Pollutant Removal	As needed – based upon scheduled inspections	Large quantities of sediment	Remove and dispose of sediment. Repair vegetation as needed
Major Erosion Repair	As needed – based upon scheduled inspections	Severe erosion including gullies, excessive soil displacement, areas of settlement, holes	Repair erosion – find cause of problem and address to avoid future erosion
Structural Repair	As needed – based upon scheduled inspections	Deterioration and/or damage to structural components – level spreader, grade control structures, irrigation components, and ponding water.	Structural repair to restore the structure to its original design
GB-GS Rebuild	As needed – due to complete failure of PLD	Removal of filter media and underdrain system	Contact SEMSWA Engineering

GB-GS-3.7.1 Major Sediment/Pollutant Removal

Major sediment removal consists of removal of large quantities of pollutants/sediment /landscaping material. Stormwater sediments removed from GB-GSs do not meet the regulatory definition of "hazardous waste". However, these sediments can be contaminated with a wide array of organic and inorganic pollutants and handling must be done with care to insure proper removal and disposal. Sediments should be transported by motor vehicle only after they are dewatered. All sediments must be taken to a licensed landfill for proper disposal. Should a spill occur during transportation, prompt and thorough cleanup and disposal is imperative. Vegetated areas need special care to ensure design volumes and grades are preserved or may need to be replaced due to the removal activities.

Frequency – Non-routine – Repair as needed, based upon inspections.

GB-GS-3.7.2 Major Erosion Repair

Major erosion repair consists of filling and revegetating areas of severe erosion. Determining the cause of the erosion as well as correcting the condition that caused the erosion should also be part of the erosion repair. Care should be given to ensure design grades and volumes are preserved.

Frequency – Non-routine – Repair as needed, based upon inspections.

GB-GS-3.7.3 Structural Repair

A GB-GS generally includes level spreader and grade control structure that can deteriorate or be damaged during the service life of the facility. These structures are constructed of steel and concrete that can degrade or be damaged and may need to be repaired or re-constructed from time to time. Major repairs to structures may require input from a structural engineer and specialized contractors. Consultation with SEMSWA Engineering Staff shall take place prior to all structural repairs.

Frequency – Non-routine – Repair as needed, based upon inspections.

GB-GS-3.7.4 GB-GS Rebuild

In very rare cases, a GB-GS may need to be rebuilt. Generally, the need for a complete rebuild is a result of improper construction, improper maintenance resulting in structural damage to the underdrain system, or extensive contamination of the GB-GS. Consultation with SEMSWA Engineering Staff shall take place prior to any rebuild project.

Frequency – Non-routine – As needed based upon inspections.

Reference:

This Manual is adapted from the Douglas County, Colorado, Standard Operating Procedure for Extended Detention Basin (EDB) Inspection and Maintenance, July 2005

APPENDIX D

GRASS BUFFER-GRASS SWALE
INSPECTION FORM

Date:_____

Subdivision/Business Name:_____ Inspector:_____

Subdivision/Business Address:_____

Weather: _____

Date of Last Rainfall:_____ Amount:_____ Inches

Property Classification: Residential Multi Family Commercial Other:_____
(Circle One)

Reason for Inspection: Routine Complaint After Significant Rainfall Event
(Circle One)

INSPECTION SCORING - For each facility inspection item, insert one of the following scores:

0 = No deficiencies identified
1 = Monitor (potential for future problem)
2 = Routine maintenance required
3 =Immediate repair necessary
N/A = Not applicable

FEATURES

1.) Grass Swale Bottom & Side Slopes
- ____Sediment/Debris Accumulation
- ____Vegetation Cover
- ____Erosion Present
- ____Standing Water/Boggy Areas

2.) Grass Buffer
- ____Sediment/Debris Accumulation
- ____Vegetation Cover
- ____Erosion Present
- ____Standing Water/Boggy Areas

3.) Inflow Points
- ____Rip Rap Displaced/Rundown or Pipe Damage
- ____Erosion Present/Outfall Undercut
- ____Sediment Accumulation

4.) Underdrain System
- ____Standing water/Not draining
- ____Evidence of clogged system

5.) Grade Control
- ____Erosion Present
- ____Structural Damage

6.) Level Spreader
- ____Erosion Present
- ____Structural Damage
- ____Unlevel/Uneven Distribution of flow

7.) Irrigation
- ____General Grass Condition
- ____Bare Spots
- ____Broken sprinkler heads

8.) Miscellaneous
- ____Encroachment in Easement Area
- ____Public Hazards
- ____Burrowing Animals/Pests
- ____Other

Inspection Summary / Additional Comments:_____

OVERALL FACILITY RATING (Circle One)

0 = No Deficiencies Identified
1 = Monitor (potential for future problem exists)
2 = Routine Maintenance Required
3 = Immediate Repair Necessary

This inspection form shall be kept indefinitely and made available to the Southeast Metro Stormwater Authority upon request.

APPENDIX E

GRASS BUFFERS AND GRASS SWALES (GB-GS)
MAINTENANCE FORM

Subdivision/Business Name:_____ Completion Date:_____

Subdivision/Business Address:_____ Contact Name:_____

Maintenance Category: (Circle all that apply) Routine Restoration Rehabilitation

MAINTENANCE ACTIVITIES PERFORMED

ROUTINE WORK

____ MOWING
____ TRASH/DEBRIS REMOVAL
____ OUTLET WORKS CLEANING (TRASH RACK/WELL SCREEN)
____ WEED CONTROL (HERBICIDE APPLICATION)

RESTORATION WORK

____ SEDIMENT REMOVAL
- ____ INFLOW POINT
- ____ SWALE BOTTOM
- ____ SIDE SLOPE
- ____ BUFFER STRIP

____ EROSION REPAIR
- ____ INFLOW POINT
- ____ SWALE BOTTOM
- ____ SIDE SLOPE
- ____ BUFFER STRIP
- ____ GRADE CONTROL/LEVEL SPREADER

____ REVEGETATION
- ____ SWALE BOTTOM
- ____ SIDE SLOPE
- ____ BUFFER STRIP

REHABILITATION WORK

____ SEDIMENT REMOVAL (DREDGING)
- ____ SWALE BOTTOM
- ____ INFLOW POINT

____ EROSION REPAIR
- ____ INFLOW POINT
- ____ SWALE BOTTOM
- ____ SIDE SLOPE
- ____ BUFFER STRIP

____ STRUCTURAL REPAIR
- ____ INFLOW
- ____ UNDERDRAIN
- ____ LEVEL SPREADER

OTHER_____

_____
_____
_____
_____
_____

ESTIMATED TOTAL MANHOURS: _____

EQUIPMENT/MATERIAL USED: _____

_____

_____

COMMENTS/ADDITIONAL INFO: _____

_____

This Maintenance Activity Form shall be kept indefinitely and made available to the Southeast Metro Stormwater Authority upon request.

APPENDIX F

Annual Inspection and Maintenance Reporting Form
for
Stormwater Facilities

(This form to be submitted to El Paso County each year)

Date: _____

To: **El Paso County**
Attn: El Paso County Planning and Community Development
2880 International Circle, Suite 110
Colorado Springs, CO 80910

Re: **Certification of Inspection and Maintenance; Submittal of forms**

Property/Subdivision Name: _____

Property Address: _____

Contact Name: _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Stormwater Facilities Maintenance Agreement and the Operations and Maintenance Manual associated with the above referenced property.

The required Stormwater Facility Inspection and Maintenance forms are hereby provided.

_____ _____
Name of Party Responsible for Inspection & Maintenance | Property Owner

_____ _____
Authorized Signature | Signature

APPENDIX G

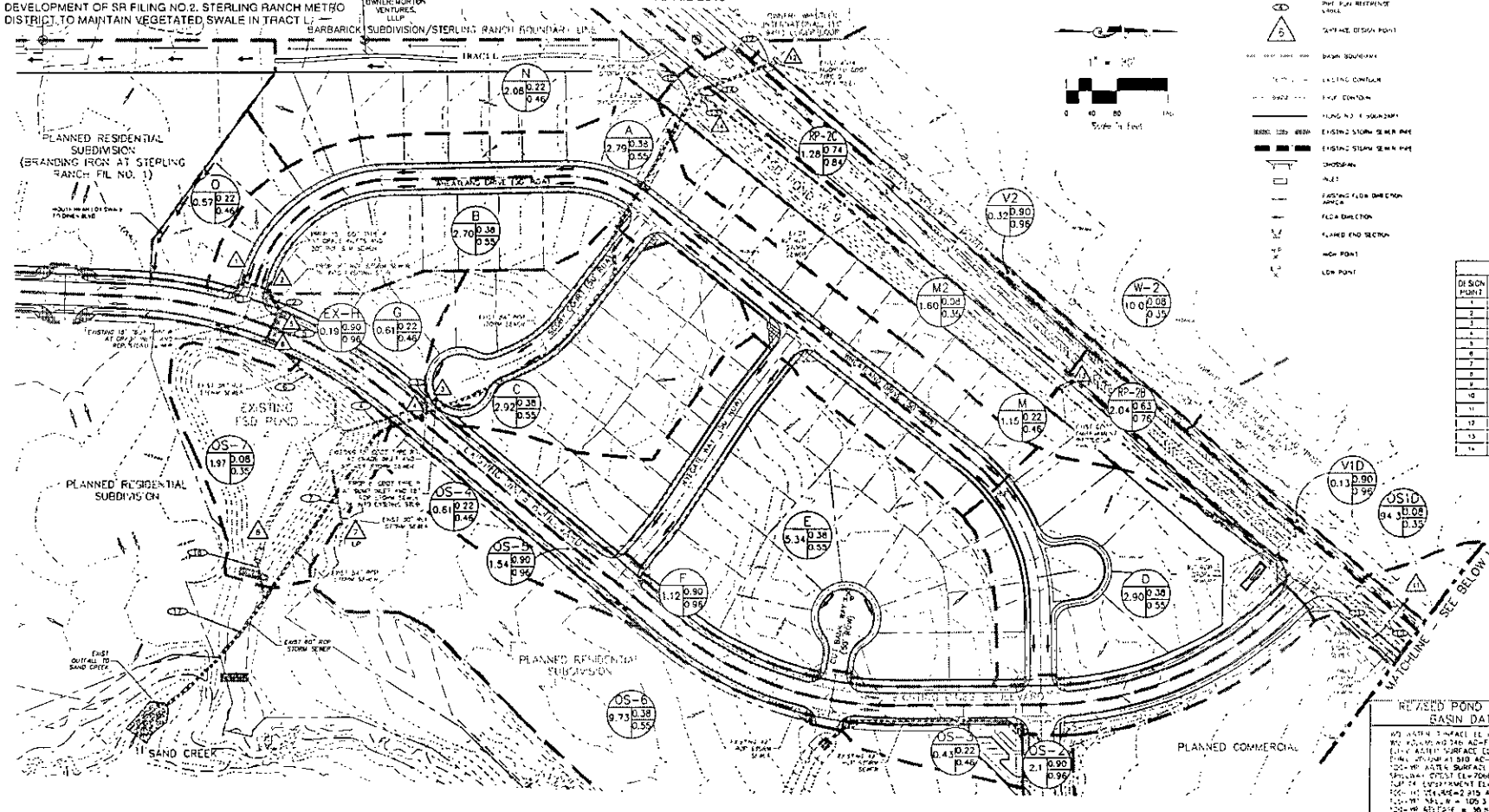
HOMESTEAD AT STERLING RANCH FILING NO. 1

COUNTY OF EL PASO, STATE OF COLORADO

FINAL DRAINAGE MAP

APRIL 2018

DEVIATION REQUEST RUNOFF FROM BASIN N TO BE ROUTED VIA OVERLOT GRADING, VEGETATED SWALE AND HISTORIC DRAINAGE PATTERNS TO A TEMPORARY SEDIMENT BASIN AT THE SOUTH END OF PLANNED BRANDING IRON AT SR FILING NO 1. FLOWS WILL BE ROUTED TO POND W5 AND WILL BE TREATED UPON CONSTRUCTION OF POND W5 WITH THE DEVELOPMENT OF SR FILING NO.2. STERLING RANCH METRO DISTRICT TO MAINTAIN VEGETATED SWALE IN TRACT L.



LEGEND

BASIN DESIGNATION — Z / 25 / 35 — AREA (ACRES), C_{5}, C_{100}

PIPE RUN REFERENCE LABEL

5 — SURFACE DESIGN POINT

BASIN BOUNDARY

EXISTING CONTOUR

NEW CONTOUR

FLOW PATH

EXISTING STORM SEWER PIPE

EXISTING STORM SEWER PIPE

CROSSPAN

INLET

EXISTING FLOW DIRECTION ARROW

FLOW DIRECTION

FLARED END SECTION

HIGH POINT

LOW POINT

1" = 80'

0 40 80 160

Scale in Feet

BASIN SUMMARY			
BASIN	AREA (ACRES)	C_5	C_{100}
OS2	2.10	0.90	0.96
OS3	0.43	0.04	0.35
OS4	0.61	0.63	0.76
OS5	1.84	0.86	0.90
OS6	9.73	0.23	0.39
OS7	1.97	0.07	0.33
A	2.79	0.36	0.52
B	2.70	0.36	0.52
C	2.92	0.43	0.61
D	2.90	0.43	0.61
E	5.34	0.82	0.92
F	1.12	0.41	0.72
G	0.61	0.05	0.18
EX-H	0.19	0.04	0.11
M	1.60	0.04	0.22
N	2.08	0.19	0.37
O	0.57	0.05	0.19
M-2	12.00	0.27	0.47
OS1 to TOMC	111.70	0.18	0.34
SUB-BASIN OS1A	2.76	0.07	0.33
SUB-BASIN OS1B	1.04	0.24	0.78
SUB-BASIN OS1C	5.64	0.13	0.41
SUB-BASIN OS1D	94.3	0.13	0.35
V1A	0.38	0.90	0.96
V1B	0.26	0.90	0.96
V1C	0.21	0.90	0.96
V1D	0.13	0.90	0.96
V2	0.32	0.90	0.96
W-2	10.0	0.08	0.35
RP-2B	2.04	0.63	0.76
RP-2C	1.28	0.74	0.84

DESIGN POINT SUMMARY				
DESIGN POINT	Q_5	Q_{100}	BASIN	STRUCTURE
1	3.6	8.7	A	5' ALT-GRADE INLET
2	3.6	8.6	B	5' ALT-GRADE INLET
3	4.2	10.1	C	5' SUMP INLET
4	10.1	26.7	D, E, F	15' ALT-GRADE INLET
5	4.2	19.7	G, EX-H, FLOWBY DP4	DP 15' ALT-GRADE INLET
6	14.1	26.7	OS2, OS3, OS4, OS5	DP 15' ALT-GRADE INLET
7	12.6	30.5	OS6	DP 54" RCP
8	49.7	105.3	OS1, M4, M5, DP7	EX FSD POND 4
9	1.8	7.0	OS7A, V1A	DP 12" CMP CULVERT
10	4.8	26.3	OS1B, V1B, DP8	DP 15' ALT-GRADE INLET
11	2.7	12.2	OS1C, V1C	DP 15' ALT-GRADE INLET
12	18.9	133.7	OS1D, M2, M-2, V2	DP 15' ALT-GRADE INLET
13	2.0	5.5	M-2B	EX CMP CULVERT
14	9.9	21.2	M, M2, M2C, DP13	EX FSD POND W-9

STORM SEWER SUMMARY				
PIPE RUN	Q_5	Q_{100}	PIPE SIZE	CONTRIBUTING PIPES/DP'S
1	3.6	7.2	30" RCP	DP1
2	7.2	17.9	36" RCP	DP2, PR1
3	11.4	31.9	48" RCP	DP3
4	15.6	39.4	42" RCP	DP4, PR3
5	19.8	39.0	48" RCP	DP5, PR4
6	27.0	44.8	36" RCP	DP6, PR5
7	12.6	30.5	24" RCP	DP7
8	1.8	7.0	12" CMP	DP8
9	1.8	26.3	24" RCP	DP16
10	4.2	12.2	18" RCP	DP17
11	17.0	38.6	30" RCP	PR5, PR6
12	21.8	133.7	54" RCP	DP12
13	3.6	8.7	18" RCP	OUTFALL FOR SAND CREEK
14	7.5	17.2	30" RCP	PR7, PR8
15	23.4	164.3	54" RCP	PR9, PR10
16	2.7	16.2	30" RCP	OUTFALL FOR POND 5
17	26.5	200.5	66" RCP	PR11, PR12

REVISED POND 4 FSD BASIN DATA	REVISED POND W-9 FSD BASIN DATA
WQ WATER SURFACE EL = 7056.34	WQ WATER SURFACE EL = 7086.94
WQ VOLUME=0.246 AC-FT	WQ VOLUME=0.093 AC-FT
EURV WATER SURFACE EL = 7058.48	EURV WATER SURFACE EL = 7087.99
EURV VOLUME=1.918 AC-FT	EURV VOLUME=0.390 AC-FT
100-YR WATER SURFACE EL=7059.98	100-YR WATER SURFACE EL= 7088.84
SPILLWAY CREST EL=7060.0	SPILLWAY CREST EL=7089.14
TOP OF EMBANKMENT EL=7063.0	TOP OF EMBANKMENT EL=7090.5
100-YR VOLUME=2.215 AC-FT	100-YR VOLUME=0.635 AC-FT
100-YR INFLOW = 105.3 CFS	100-YR INFLOW = 21.2 CFS
100-YR RELEASE = 36.5 CFS	100-YR RELEASE = 5.7 CFS

FOR BURIED UTILITY INFORMATION 48 HRS BEFORE YOU DIG CALL 1-800-922-1987

20 PUBLISHER CROSSING SUITE 105
COLORADO SPRINGS, CO 80921
PHONE 719.955.5485

HOMESTEAD AT STERLING RANCH FIL NO. 1			
FINAL DRAINAGE MAP			
PROJECT NO 09-005	SCALE HORIZONTAL: 1"=80' VERTICAL: N/A	DATE 4/12/2018	
DESIGNED BY CWA DRAWN BY CWA CHECKED BY MAS		SHEET 1 OF 1	FDM01

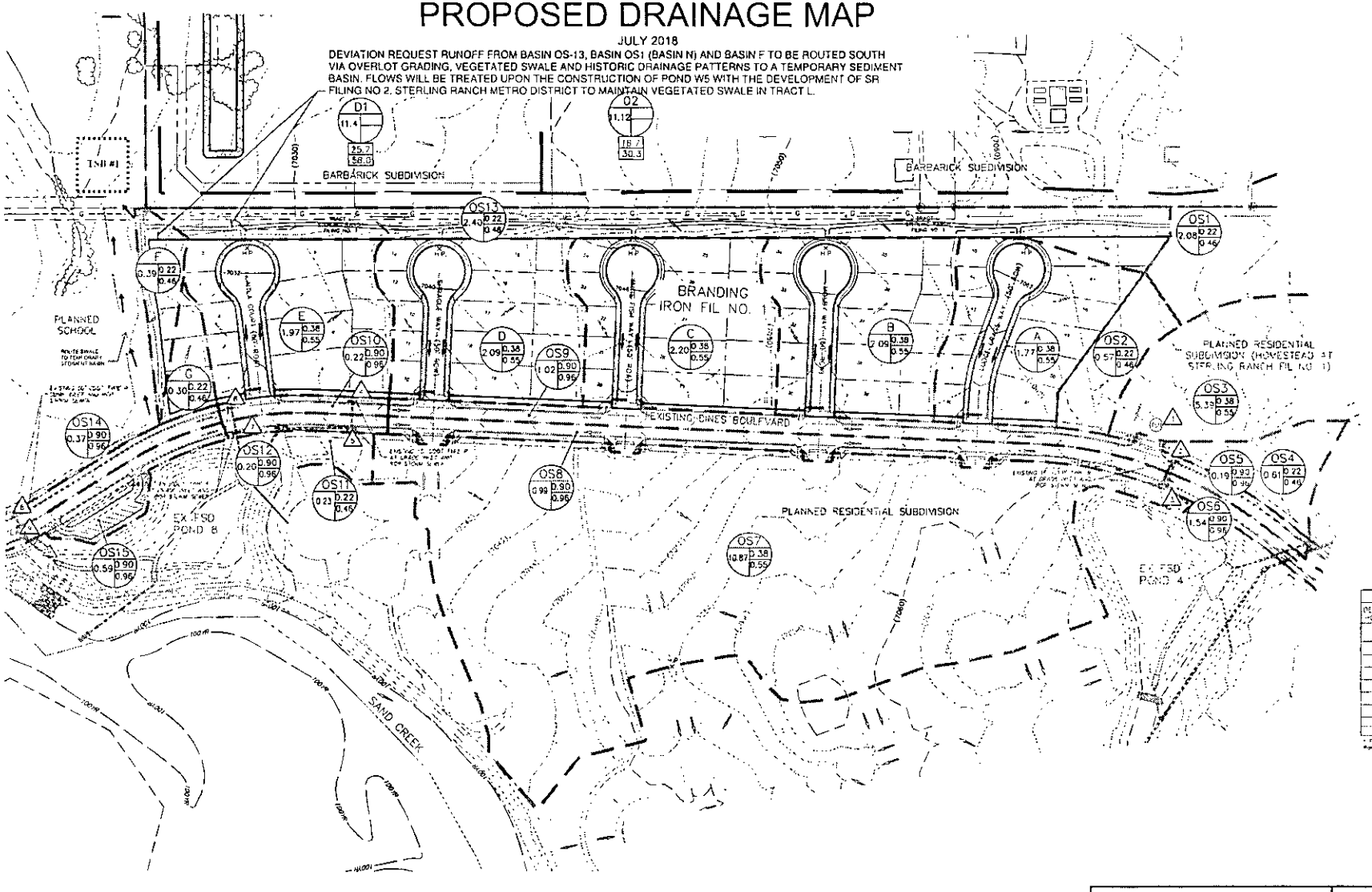
BRANDING IRON AT STERLING RANCH FILING NO. 1

COUNTY OF EL PASO, STATE OF COLORADO

PROPOSED DRAINAGE MAP

JULY 2018

DEVIATION REQUEST RUNOFF FROM BASIN OS-13, BASIN OS1 (BASIN N) AND BASIN F TO BE ROUTED SOUTH VIA OVERLOT GRADING, VEGETATED SWALE AND HISTORIC DRAINAGE PATTERNS TO A TEMPORARY SEDIMENT BASIN. FLOWS WILL BE TREATED UPON THE CONSTRUCTION OF POND W5 WITH THE DEVELOPMENT OF SR FILING NO 2. STERLING RANCH METRO DISTRICT TO MAINTAIN VEGETATED SWALE IN TRACT L.



LEGEND

BASIN SUMMARY			
BASIN	AREA (ACRES)	D_a	C_{100}
A	1.77	0.38	0.55
B	2.09	0.38	0.55
C	2.20	0.38	0.55
D	2.09	0.38	0.55
E	1.97	0.38	0.55
F	0.39	0.22	0.46
G	0.30	0.22	0.46
OS1	2.08	0.22	0.46
OS2	0.57	0.22	0.46
OS3	5.38	0.38	0.55
OS4	0.61	0.22	0.46
OS5	0.19	0.93	0.96
OS6	1.54	0.90	0.96
OS7	10.87	0.38	0.55
OS8	0.99	0.90	0.96
OS9	1.02	0.90	0.96
OS10	0.22	0.90	0.96
OS11	0.23	0.22	0.46
OS12	0.20	0.90	0.96
OS13	2.43	0.22	0.46
OS14	0.37	0.90	0.96
OS15	0.59	0.90	0.96

DESIGN POINT SUMMARY						
DESIGN POINT	Q_{100}	t_c	AREA			STRUCTURE
1	19.3					EX 15" RCP
2	25.7					EX 15" RCP
3	30.3					EX 15" RCP
4	58.8					EX 15" RCP
5	11.4					EX 15" RCP
6	11.12					EX 15" RCP
7	16.7					EX 15" RCP
8	30.3					EX 15" RCP

1" = 80'

0 40 80 160

Scale in Feet

TNB	ACRE	BASIN BOTTOM WIDTH	SPILLWAY CREST	HOLE DIAMETER
TNB #1 (LIGHT ACRES)	5	30 FEET	8 FEET	23 1/2 INCH

FROM URBAN STORM DRAINAGE CRITERIA MANUAL VOLUME 3, USE DETENTION BASIN SB5

FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES
FOR BURIED UTILITY INFORMATION
48 HRS BEFORE YOU DIG
CALL 1-800-922-1987

20 BOULDER CRESCENT SUITE 110
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
CIVIL, CONSULTANTS, INC.

BRANDING IRON AT SR FIL NO. 1

PROPOSED DRAINAGE MAP

PROJECT NO. 08-006	SCALE: HORIZONTAL: 1"=80' VERTICAL: N/A	DATE: 7/27/2018
DESIGNED BY: CMH		SHEET 1 OF 1
DRAWN BY: CMH		PDM
CHECKED BY: WAS		