

**PRIVATE DETENTION BASIN /
STORMWATER QUALITY BEST MANAGEMENT PRACTICE
MAINTENANCE AGREEMENT AND EASEMENT
(SF-19-15)**

This PRIVATE 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 **FLRD #2, LLC** (Developer) and **Forest Lakes Metropolitan District** (Metro 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, Developer is the owner of certain real estate (the Property or Subdivision) in El Paso County, Colorado, which Property is legally described in Exhibit A attached hereto and incorporated herein by this reference; and

B. WHEREAS, Developer desires to plat and develop on the Property a subdivision to be known as **Forest Lakes Filing No. 5**; and

C. 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

D. 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

E. 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

F. 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

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G. 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

H. WHEREAS, Developer desires to construct for the subdivision one detention basin/stormwater quality BMP(s) (“detention basin/BMP(s)”) 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(s); and

I. WHEREAS, Developer desires to construct the detention basin/BMP(s) on property that will be platted as **Tract A and Tract D, Forest Lakes Filing No. 5**, and as set forth on **Exhibit B** attached hereto; and

J. WHEREAS, Developer shall be charged with the duty of constructing the detention basin/BMP(s) and the Metro District shall be charged with the duties of operating, maintaining and repairing the detention basin/BMP(s) on the property described in **Exhibit B**; and

K. WHEREAS, it is the County’s experience that subdivision developers and metro districts 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

L. 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 basins/BMPs when developers and homeowners’ associations 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/BMP(s) serving this Subdivision due to the Developer’s or the Metro District’s failure to meet its obligations to do the same; and

M. WHEREAS, the County conditions approval of this Subdivision on the Developer’s promise to so construct the detention basin/BMP(s), and further conditions approval on the Metro 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(s) serving this Subdivision; and

N. 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 Metro District’s promises contained herein; and

O. 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

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 Metro 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 shall construct on that portion of the Property described in Exhibit B attached hereto and incorporated herein by this reference, one detention basin/BMP(s). Developer shall not commence construction of the detention basin/BMP(s) until the El Paso County Planning and Community Development Department (PCD) has approved in writing the plans and specifications for the detention basin/BMP(s) and this Agreement has been signed by all Parties and returned to the PCD. Developer 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 its 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 Metro District agrees for itself and its successors and assigns that it will regularly and routinely inspect, clean and maintain the detention basin/BMP(s), and otherwise keep the same in good repair, all at their own cost and expense. No trees or shrubs that will impair the structural integrity of the detention basin/BMP(s) shall be planted or allowed to grow on the detention basin/BMP(s).

5. Creation of Easement: Developer hereby grants the County and the Metro 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 Metro District to access, inspect, clean, repair and maintain the detention basin/BMP(s); 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(s).

6. County's Rights and Obligations: Any time the County determines, in the sole exercise of its discretion, that the detention basin/BMP(s) is not properly cleaned, maintained and/or otherwise kept in good repair, the County shall give reasonable notice to the Developer, the Metro District, and their respective successors and assigns, that the detention basin/BMP(s) 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(s).

7. Reimbursement of County's Costs: The Developer and the Metro District agree and covenant, for themselves and 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(s) 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 Tract A, as indicated on the final plat of the subdivision, from Developer to the Metro District (which will include a reservation of easement in favor of the County for purposes of accessing, inspecting, cleaning, maintaining, and repairing of the detention basin/BMP(s)), and recording of the Deed for the same.

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 hereunder 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 Development 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 Metro District agree, for themselves and 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(s), 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 Metro District, or their respective successors and assigns, including any individual lot owners in the Subdivision, 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(s) 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 Metro 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 Metro 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 obligations and liabilities 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 completes the construction of the detention basin/BMP(s) and transfers all applicable maintenance and operation responsibilities to the Metro District. By execution of this agreement, the Metro 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 Tract A from Developer to the Metro District.

IN WITNESS WHEREOF, the Parties affix their signatures below.

Executed this 19th day of June, 2020, by:

FLRD #2, LLC

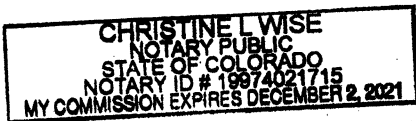
By: [Signature]
Manager

The foregoing instrument was acknowledged before me this 19th day of June, 2020, by Manager, FLRD #2, LLC

Witness my hand and official seal.

My commission expires: 12-02-2021

Christine R. Wise
Notary Public

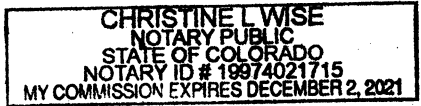



Executed this 19th day of June, 2020, by:
FOREST LAKES METROPOLITAN DISTRICT, a quasi-municipal corporation.

By: 
Doug Stimple, Board Member

The foregoing instrument was acknowledged before me this 19th day of June,
2020, by Doug Stimple, Board Member, FOREST LAKES METROPOLITAN DISTRICT, a Colorado
nonprofit corporation.


Witness my hand and official seal.
My commission expires: 12-02-2021




Notary Public

Executed this 9th day of July, 2020, 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 9th day of July, 2020, by Craig Dossey, Executive Director of El Paso County Planning and Community Development Department.

Witness my hand and official seal.

My commission expires: 9-16-2022

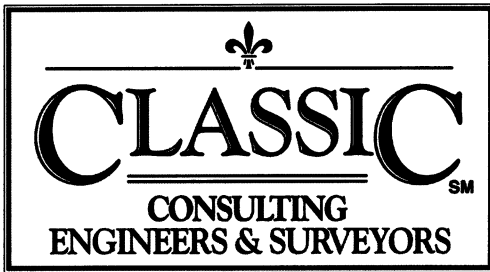


Notary Public

TERRY LOWDERMAN NOTARY PUBLIC STATE OF COLORADO NOTARY ID 19904011569 MY COMMISSION EXPIRES SEPTEMBER 16, 2022
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Approved as to Content and Form:


Assistant County Attorney



619 N. Cascade Avenue, Suite 200 (719)785-0790
 Colorado Springs, Colorado 80919 (719)785-0799(Fax)

JOB NO. 1175.00-26R
 JUNE 14, 2019
 REV. JUNE 21, 2019
 PAGE 1 OF 2

LEGAL DESCRIPTION: FOREST LAKES FILING NO. 5 BOUNDARY

A PARCEL OF LAND BEING A PORTION OF THE SOUTHWEST QUARTER OF SECTION 28, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: A PORTION OF THE NORTHERLY BOUNDARY OF FOREST LAKES FILING NO. 1 RECORDED UNDER RECEPTION NO. 206712407 RECORDS OF EL PASO COUNTY, COLORADO, BEING MONUMENTED AT BOTH ENDS BY A NO. 4 REBAR AND RED PLASTIC SURVEYORS CAP STAMPED "ROCKWELL PLS 19586" ASSUMED TO BEAR N89°29'26"E, A DISTANCE OF 3103.31 FEET.

COMMENCING AT THE SOUTHWESTERLY CORNER OF FOREST LAKES DRIVE AS PLATTED IN FOREST LAKES FILING NO. 1 RECORDED UNDER RECEPTION NO. 206712407 RECORDS OF EL PASO COUNTY, COLORADO SAID POINT BEING A POINT ON CURVE, SAID POINT ALSO BEING THE POINT OF BEGINNING;

THENCE ON THE SOUTHERLY RIGHT OF WAY LINE OF SAID FOREST LAKES DRIVE, THE FOLLOWING (2) TWO COURSES:

1. ON THE ARC OF A CURVE TO THE RIGHT WHOSE CENTER BEARS S16°10'29"W, HAVING A DELTA OF 12°23'40", A RADIUS OF 220.00 FEET AND A DISTANCE OF 47.59 FEET TO A POINT OF REVERSE CURVE;
2. ON THE ARC OF A CURVE TO THE LEFT HAVING A DELTA OF 15°25'25", A RADIUS OF 355.00 FEET AND A DISTANCE OF 95.56 FEET TO A POINT ON CURVE;

THENCE ON THE ARC OF A CURVE TO THE RIGHT WHOSE CENTER BEARS N03°22'58"W, HAVING A DELTA OF 44°10'32", A RADIUS OF 277.00 FEET AND A DISTANCE OF 213.57 FEET TO A POINT OF REVERSE CURVE;

THENCE ON THE ARC OF A CURVE TO THE LEFT HAVING A DELTA OF 00°51'09", A RADIUS OF 223.00 FEET AND A DISTANCE OF 3.32 FEET TO A POINT ON CURVE;

THENCE S39°56'26"W, A DISTANCE OF 130.00 FEET;

THENCE N80°58'21"W, A DISTANCE OF 65.91 FEET;

THENCE N66°55'20"W, A DISTANCE OF 70.00 FEET;

THENCE N68°26'22"W, A DISTANCE OF 65.83 FEET;

THENCE N78°27'13"W, A DISTANCE OF 63.25 FEET;

THENCE N82°34'46"W, A DISTANCE OF 140.00 FEET;

THENCE N74°26'58"W, A DISTANCE OF 70.71 FEET;
THENCE N82°34'46"W, A DISTANCE OF 140.00 FEET;
THENCE N79°22'05"W, A DISTANCE OF 89.26 FEET;
THENCE N80°45'58"W, A DISTANCE OF 80.95 FEET;
THENCE N72°39'38"W, A DISTANCE OF 87.89 FEET;
THENCE N63°44'20"W, A DISTANCE OF 87.89 FEET;
THENCE N58°46'47"W, A DISTANCE OF 83.08 FEET;
THENCE N60°03'46"W, A DISTANCE OF 80.62 FEET;
THENCE N52°56'16"W, A DISTANCE OF 140.00 FEET;
THENCE N50°49'54"W, A DISTANCE OF 86.84 FEET;
THENCE N37°27'32"W, A DISTANCE OF 106.40 FEET;
THENCE N21°35'34"W, A DISTANCE OF 119.75 FEET TO A POINT ON CURVE;

THENCE ON THE ARC OF A CURVE TO THE RIGHT WHOSE CENTER BEARS N15°01'18"W, HAVING A DELTA OF 00°44'01", A RADIUS OF 3045.00 FEET AND A DISTANCE OF 39.13 FEET TO A POINT ON CURVE;
THENCE N14°17'53"W, A DISTANCE OF 90.00 FEET;
THENCE N14°22'43"W, A DISTANCE OF 180.00 FEET;
THENCE N74°54'03"E, A DISTANCE OF 79.46 FEET;
THENCE N73°15'37"E, A DISTANCE OF 79.43 FEET;
THENCE N71°35'22"E, A DISTANCE OF 82.41 FEET;
THENCE S19°15'40"E, A DISTANCE OF 195.00 FEET TO A POINT ON CURVE;
THENCE ON THE ARC OF A CURVE TO THE LEFT WHOSE CENTER BEARS N19°15'40"W, HAVING A DELTA OF 05°11'19", A RADIUS OF 2970.00 FEET AND A DISTANCE OF 268.96 FEET TO A POINT OF REVERSE CURVE;
THENCE ON THE ARC OF A CURVE TO THE RIGHT HAVING A DELTA OF 68°49'01", A RADIUS OF 610.00 FEET AND A DISTANCE OF 732.66 FEET TO A POINT OF REVERSE CURVE;
THENCE ON THE ARC OF A CURVE TO THE LEFT HAVING A DELTA OF 44°35'14", A RADIUS OF 170.00 FEET AND A DISTANCE OF 132.29 FEET TO A POINT OF TANGENT;
THENCE N89°46'48"E, A DISTANCE OF 183.07 FEET TO A POINT ON THE BOUNDARY OF SAID FOREST LAKES FILING NO. 1;

THENCE ON SAID BOUNDARY, THE FOLLOWING (8) EIGHT COURSES:

1. CONTINUING N89°46'48"E, A DISTANCE OF 30.97 FEET TO A POINT OF CURVE;
2. ON THE ARC OF A CURVE TO THE LEFT HAVING A DELTA OF 72°40'04", A RADIUS OF 70.00 FEET AND A DISTANCE OF 88.78 FEET TO A POINT OF TANGENT;
3. N17°06'44"E, A DISTANCE OF 29.40 FEET;
4. S72°53'16"E, A DISTANCE OF 60.00 FEET;
5. S17°06'44"W, A DISTANCE OF 29.40 FEET TO A POINT OF CURVE;
6. ON THE ARC OF A CURVE TO THE RIGHT HAVING A DELTA OF 46°47'45", A RADIUS OF 130.00 FEET AND A DISTANCE OF 106.18 FEET TO A POINT ON CURVE
7. S26°02'29"E, A DISTANCE OF 239.56 FEET;
8. S16°10'29"W, A DISTANCE OF 383.49 FEET TO THE POINT OF BEGINNING.

CONTAINING A CALCULATED AREA OF 24.251 ACRES.

LEGAL DESCRIPTION STATEMENT:

I, DOUGLAS P. REINELT, A LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY STATE THAT THE ABOVE LEGAL DESCRIPTION WAS PREPARED UNDER MY RESPONSIBLE CHARGE AND ON THE BASIS OF MY KNOWLEDGE, INFORMATION AND BELIEF, IS CORRECT.

**DOUGLAS P. REINELT, PROFESSIONAL LAND SURVEYOR
COLORADO P.L.S. NO. 30118
FOR AND ON BEHALF OF CLASSIC CONSULTING
ENGINEERS AND SURVEYORS**

DATE

EXHIBIT "B"

Tract A and Tract D, Forest Lakes Filing No. 5

**Stormwater Best Management Practices
Inspection and Maintenance Plan (IM Plan)**

for:

***Forest Lakes Filing No. 5
POND C***

Prepared for:

***Forest Lakes Residential Development, LLC
6385 Corporate Drive, Suite 200
Colorado Springs CO 80919***

Prepared by:

***Classic Consulting Engineers & Surveyors, LLC
619 N. Cascade Avenue, Suite 200
Colorado Springs CO 80903***

Appendix A

General Location and Description of Stormwater Best Management Practices

A. General Site Description

Forest Lakes Filing No. 5 is a 24.25-acre site located in the county of El Paso within Section 27, Township 28 South, Range 67 West of the Sixth Principal Meridian, El Paso County, Colorado. The overall site is located east of Forest Lakes Filing No. 1 and dead-end roads of Forest Lakes Drive and Mesa Top Drive. The Filing 5 boundary ends just short of the confluence of Beaver Creek, Hell Creek, and North Beaver Creek. Filing No. 5 is proposed for 33 single family lots with several tracts for open space, drainage, landscaping and trails. Pond C is located within Tract A of Filing No. 5 north of Forest Lakes Drive, between Lots 29 & 30.

The average soil condition reflects Hydrologic Group "B", as determined by the "Soil Survey of El Paso County Area," prepared by the Soil Conservation Service. For the purposes of the hydrologic calculations within this report, the soil type B was utilized.

B. General Stormwater Management Description

All stormwater is conveyed via rear yard sheet flow into a conventional 12" collection pipe storm sewer to the proposed sand filter basin that provides both water quality treatment and detention. Restricted release rates from the sand filter basins are discharged into Beaver Creek via a proposed 12" outfall pipe.

C. Stormwater Facilities Site Plan

Inspection or maintenance personnel may utilize the documents in Appendix F for locating the stormwater facilities within this development.

D. On-Site/Off-Site Stormwater Management Facilities

Storage Facilities (Detention)

Forest Lakes Filing 5 is provided in the proposed facility in Tract A

Water Quality Facilities

Forest Lakes Filing 5 is provided in proposed facility in Tract A

Source Control Best Management Practices

Residential site does not include any permanent nonstructural BMPs.

**Stormwater Best Management Practices
Inspection and Maintenance Plan (IM Plan) Procedures/Forms**

for:

Sand Filter Basins (SFBs)

Reference:

This plan is adapted from various maintenance manuals developed in the Colorado Front Range

**Stormwater Best Management Practices
Inspection and Maintenance Plan Procedures/Forms for
Sand Filter Basins (SFBs)**

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Maintenance Agreement (included in IM Plan submittal to City)

Appendices

- Appendix A** - Description of Stormwater Best Management Practices (included in IM Plan submittal to City)
- Appendix B** - Standard Operation Procedures (SOP)
- Appendix C** - Inspection Form
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- Appendix E** - Annual Inspection and Maintenance Submittal Form
- Appendix F** - Erosion and Stormwater Quality Control Plan/As-Builts (included in IM Plan submittal to City)
- Appendix G** - BMP Maintenance Cost Estimates (included in IM Plan submittal to City)
- Appendix H** - PE Certification (included in IM Plan submittal to City)

**Stormwater Best Management Practices
Inspection and Maintenance Plan Procedures/Forms for
Sand Filter Basins (SFBs)**

I. Compliance with Stormwater Best Management Practices Maintenance Requirements

All property owners are responsible for ensuring that stormwater best management practices (BMPs) or 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 and need to be familiar with the contents of this Inspection and Maintenance Plan (IM Plan). Maintenance agreement(s) associated with this property are provided.

In some cases, the City of Colorado Springs may agree to provide the required inspection and maintenance for some stormwater facilities that once the warranty period has ended will become public. In these cases, a City of Colorado Springs maintenance agreement will be included for those facilities that are agreed to be included in the City of Colorado Springs 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 Best Management Practices Inspection and Maintenance Plan.

Verification that the stormwater BMPs have been properly inspected and maintained and submittal of the required Inspection and Maintenance Forms shall be provided to the City on an annual basis. The annual reporting form shall be provided to the City prior to May 31st of each year.

Copies of the Inspection and Maintenance forms for each of the stormwater BMPs are located in Appendix C and D. A standard annual reporting form is provided in Appendix E. Each form shall be reviewed and submitted by the property owner or property manager to the City of Colorado Springs/Stormwater Team.

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. Common pollutants include sediment, trash & debris, chemicals, pet 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 use, storage, and disposal of hazardous wastes and chemicals. Promptly clean up any spilled materials and dispose of properly.
- Plan lawn care to minimize and properly use 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.
- Encourage pet owners to clean up pet wastes.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean any private storm drainage system components, including inlets, storm sewers, and outfalls.
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

IV. Access and Right to Enter

All stormwater management facilities located on the site should have both a designated access location and the City has the right to enter for the purpose of inspecting and for maintaining BMPs where the owner has failed to do so.

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, number of personal, and equipment.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to emergency services at 911 (non-emergency number is 444-7000). If a toxic or flammable substance is discovered, leave the immediate area and contact the local emergency services at 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 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 emergency services at 911 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 BMPs:

- Protective clothing and boots.
- Safety equipment (vest, hard hat, confined space entry equipment [if certified to perform confined space entry]).
- Communication equipment.
- IM Plan for the site.

- Clipboard.
- Stormwater BMP Inspection Forms (See Appendix C).
- 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), but should be available in the vehicle driven to the site. Specialized equipment may require specific training related to that equipment and should only be used by trained individuals.

VII. Inspecting Stormwater BMPs

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of permanent BMPs. Stormwater BMPs 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 BMPs are required to be inspected a minimum of once per year. Inspections should follow the inspection guidance found in the SOP for the specific type of facility. (Appendix B 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 C. A copy of each inspection form shall be kept by the owner a minimum of 5 years.

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 must 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. 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 BMP Inspection Form provides a record of inspection of the facility. Inspection Forms for each facility type are provided in Appendix C. Verification of the inspection of the stormwater facilities and the facility inspection form(s) shall be provided to the City of Colorado Springs/Stormwater Team on an annual basis. The verification and the inspection form(s) shall be reviewed and submitted by the property owner or property manager on behalf of the property owner.

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

VIII. Maintaining Stormwater BMPs

Stormwater BMPs 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 BMP maintenance programs are separated into three broad categories of work. 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 the City of Colorado Springs/Stormwater Team; however, inspection and maintenance forms shall be completed with the information also being reported on the annual report forms that are submitted to the City.

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 do not require prior correspondence with City of Colorado Springs/Stormwater Team, but do require that completed maintenance forms be submitted to City of Colorado Springs/Stormwater Team with the annual report forms.

Rehabilitation Work

This work consists of large-scale maintenance and major improvements needed to address failures within the stormwater BMP. This work requires consultation with City of Colorado Springs/Stormwater Team and may require an engineering design with construction plans to be prepared for review and approval by the City. 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 City of Colorado Springs/Stormwater Team and require that completed maintenance forms be submitted to City of Colorado Springs/Stormwater Team with the annual report forms.

B. Maintenance Personnel

Maintenance personnel should be qualified to properly maintain stormwater BMPs, especially for restoration or rehabilitation work. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs. Periodic training will be offered by the City of Colorado Springs/Stormwater Team (fees apply).

C. Maintenance Forms

The Stormwater BMP Maintenance Form provides a record of maintenance activities and includes general cost information to assist property owners in budgeting for future maintenance. Maintenance Forms for each facility type are provided in Appendix D. Maintenance Forms shall be completed by the property owner, management company, or 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 by May 31st to the following address:

City of Colorado Springs/Stormwater Team
Attn: Ensure O&M Program Inspector
PO Box 1575, MC 520
Colorado Springs, CO 80901-1575

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

Appendix B

Standard Operation Procedures for Inspection and Maintenance

Sand Filter Basins (SFBs)

May 2008



CITY OF COLORADO SPRINGS
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SFB-1 BACKGROUND

Sand Filter Basins (SFBs) are a common type of stormwater best management practice (BMP) utilized within the Front Range of Colorado. A SFB consists of a sedimentation chamber, a flat surfaced area of sand (sometimes covered with grass or sod), a filtration chamber, and a flat sand filter bed with an underdrain system. A surcharge zone exists within the sedimentation and filtration chambers for temporary storage of the Water Quality Capture Volume (WQCV). During a storm, runoff enters the sedimentation chamber, where the majority of sediments are deposited. The runoff then enters the filtration chamber where it ponds above the sand bed and gradually infiltrates into the underlying sand filter, filling the void spaces of the sand. The underdrain gradually dewateres the sand bed and discharges the runoff to a nearby channel, swale, or storm sewer. SFBs provide for filtering and absorption of pollutants in the stormwater¹. The popularity of SFBs has grown because they allow the WQCV to be provided on a site that has little open area available for stormwater management. However, there are limitations on their use due to potential clogging from large amounts of sediment.

SFB-2 INSPECTING SAND FILTER BASINS (SFBs)

SFB-2.1 Access and Easements

Inspection and maintenance personnel may utilize the figures located in Appendix F containing the locations of the access points and potential maintenance easements of the SFBs within this development.

SFB-2.2 Stormwater Best Management Practice (BMP) Locations

Inspection and maintenance personnel may utilize the figures located in Appendix F containing the locations of the SFBs within this development.

SFB-2.3 Sand Filter Extended Detention Basin (SFB) Features

SFBs have a number of features that are designed to serve a particular function. Many times the proper function of one feature depends on another. It is important for maintenance personnel to understand the function of each of these features to prevent damage to any feature during maintenance operations. Below is a list and description of the most common features within a SFB and the corresponding maintenance inspection items that can be anticipated:

**TABLE SFB-1
Typical Inspection & Maintenance Requirements Matrix**

	Sediment Removal	Mowing Weed control	Trash/ Debris Removal	Erosion	Overgrown Vegetation Removal	Removal/ Replacement	Structure Repair
Inflow Points/Splitter Box	X		X				X
Sedimentation Chamber	X	X	X	X	X		
Filter Media	X	X	X	X	X	X	
Underdrain System	X					X	
Overflow Outlet Works	X		X				X
Embankment		X	X	X	X		

¹ Design of Stormwater Filtering Systems, Centers for Watershed Protection, December 1996

SFB-2.3.1 Inflow Points/Splitter Box

Inflow points or outfalls into SFBs are the point of stormwater discharge into the facility. An inflow point is commonly a curb cut with a concrete or riprap rundown or a storm sewer pipe outfall with a flared end section.

SFBs are designed to treat only the WQCV. The WQCV is a volume of water that runs off a site during an 80th percentile event. Any amount over the WQCV is allowed to go to the storm sewer system without water quality treatment. The splitter box is generally constructed of reinforced concrete. The splitter box typically has a lower wall that has a height that will trap the required WQCV. Volumes over the WQCV are allowed to spill over the wall and enter a storm sewer system that often conveys the runoff to a regional detention facility. Proper inspection and maintenance of the splitter box is essential in ensuring the long-term operation of the SFB.

An energy dissipater is typically immediately downstream of the splitter box, at the discharge point into the SFB, to protect the sedimentation and filtration chambers from erosion. In some cases, the splitter box outfall can have a toe-wall or cut-off wall immediately below the structure to prevent undercutting of the outfall from erosion.

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

- a. Riprap Displaced* – Many times, because of the repeated impact/force of water, the riprap can shift and settle. If any portion of the riprap apron appears to have settled, soil is present between the riprap, or the riprap has shifted, maintenance may be required to ensure future erosion is prevented.
- b. 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 of the upstream infrastructure, sediment that accumulates in this area must be removed on a timely basis.
- c. Structural Damage* – Structural damage can occur at anytime during the life of the facility. Typically for an inflow, the structural damage occurs to the pipe flared end section (concrete or steel). Structural damage can lead to additional operating problems with the facility, including loss of hydraulic performance.

SFB-2.3.2 Sedimentation Chamber

The sedimentation chamber is located adjacent to the splitter box and generally consists of a flat irrigated turf grass area followed by a water trapping device that allows water to be briefly held in the sedimentation chamber before being released into the filtration chamber. This slowing of the runoff allows sediments to be deposited in the sedimentation chamber and not the filtration chamber where they can cause clogging of the filter media.

The typical maintenance activities that are required within the sedimentation chamber are as follows:

- a. Mowing/woody growth control/weeds present* - Routine mowing of the turf grass within the sediment chamber is necessary to improve the overall appearance and to ensure proper function of the SFB. Turf grass should be mowed to a height of 2 to 4-inches and shall be bagged to prevent potential contamination of the filter media. If undesirable vegetation is not routinely mowed/removed, the growth can cause debris/sediment to accumulate, resulting in blockage of the filter media. Also, shrub,

grass and weed roots can cause damage to the filter media and underdrain system. Routine management is essential to prevent more extensive and costly future maintenance.

SBF-2.3.3 Filter Media

The filter media is the main pollutant removal component of the SFB. The filter media consists of 18-inches of washed sand. The filter media removes pollutants through several different processes, including sedimentation, filtration, infiltration and microbial uptake.

Sedimentation is accomplished by the slow release of stormwater runoff through the filter media. This slow release allows for sediment particles that were not deposited in the sedimentation chamber to be deposited on the top layer of the filter media where they are easily removed through routine maintenance. Other pollutants are also removed through this process because they are attached to sediment.

Filtration is the main pollutant removal mechanism of SFBs. When the stormwater runoff migrates down through the filter media, many of the particulate pollutants are physically strained out as they pass through the filter bed of sand and are trapped on the surface or among the pores of the filter media.

SFBs that are not lined with an impervious liner allow for infiltration into the native soils. This process also allows for additional pollutant removal.

Microbes that naturally occur in the filter media can assist with pollutant removal by breaking down organic pollutants.

The typical maintenance activities that are required within the filter media areas are as follows:

a. Mowing/woody growth control/weeds present - Noxious weeds and other unwanted vegetation must be treated as needed throughout the SFB. 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.

b. Sediment/Pollutant Removal – Although SFBs should not be utilized in areas where large concentrations of sediment and other pollutants will enter the SFB, it is inevitable that some sediment and other pollutants will enter the SFB. Most sediment will be deposited in the sedimentation chamber, however finer suspended particles will migrate to the filter media. These sediments need to be removed to ensure proper infiltration rates of the stormwater runoff.

c. Filter Replacement - The top layers of the filter media are the most susceptible to pollutant loading and therefore may need to be removed and disposed of properly on a semi-regular basis when infiltration rates slow.

d. Infiltration Rate Test - An infiltration test may be necessary to ensure proper functioning of the filter media. The infiltration test can be conducted by filling the sand filter with water to the elevation of the overflow wall in the splitter box. The sand filter needs to drain completely within 40-hours of the filling. If the drain time for the basin is longer than 40-hours, the filter is in need of maintenance.

SFB-2.3.4 Underdrain System

The underdrain system consists of a layer of geotextile fabric, gravel storage area and perforated PVC pipes. The geotextile fabric is utilized to prevent the filter media 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 filter media and sediment chamber, 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.

SFB-2.3.5 Overflow Outlet Works

Some SFBs include an overflow outlet works in place of the splitter box. The overflow outlet works allows runoff amounts that exceed the WQCV to exit the SFB to the detention facility. The outlet works is typically constructed of reinforced concrete into the embankment of the SFB. The concrete structure typically has steel orifice plates anchored/embedded into it to control stormwater release rates. The larger openings (flood control) on the outlet structure typically have trash racks over them to prevent clogging. Proper inspection and maintenance of the outlet works is essential in ensuring the long-term operation of the SFB.

The typical maintenance activities that are required for the overflow outlet works are as follows:

a. Structural Damage - The overflow outlet structure is primarily constructed of concrete, which can crack, spall, and settle. The steel grate on the overflow outlet structure is also susceptible to damage.

b. Mowing/woody growth control/weeds present – The presence of plant material not part of the original landscaping, such as wetland plants or other woody growth, can clog the overflow outlet works during a larger storm event, causing flooding damage to adjacent areas. This plant material may indicate a clogging of the filter media and may require additional investigation.

SFB-2.3.6 Embankments

Some SFBs utilize irrigated turf grass embankments to store the WQCV.

The typical maintenance activities that are required for the embankments areas are as follows:

a. Vegetation Sparse – The embankments are one of the most visible parts of the SFB and, therefore, aesthetics is important. Adequate and properly maintained vegetation can greatly increase the overall appearance of the SFB. Also, vegetation can reduce the potential for erosion and subsequent sediment transport to the filter media, thereby reducing the need for more costly maintenance.

b. Erosion – Inadequate vegetative cover may result in erosion of the embankments. Erosion that occurs on the embankments can cause clogging of the filter media.

c. Trash/Debris – Trash and debris can accumulate in the upper area after large events, or from illegal dumping. Over time, this material can clog the SFB filter media and outlet works.

d. Mowing/woody growth control/weeds present – The presence of plant material not part of the original landscaping, such as wetland plants or other woody growth, can result in difficulty in performing maintenance activities. These trees and shrubs may also damage the underdrain system of the SFB. This plant material may indicate a clogging of the filter media and may require additional investigation.

SFB-2.3.7 Emergency Overflow

An emergency spillway is typical of all SFBs and designed to serve as the overflow in the event the volume of the pond is exceeded. The emergency spillway is typically armored with riprap (or other hard armor), and is sometimes buried with soil or may be a concrete wall or other structure. The emergency spillway is typically a weir (notch) in the basin embankment. Proper function of the emergency spillway is essential to ensure flooding does not affect adjacent properties.

The typical maintenance activities that are required for the emergency overflow areas are as follows:

a. Riprap Displaced – As mentioned before, the emergency spillway is typically armored with riprap to provide erosion protection. Over the life of an SFB, the riprap may shift or become dislodged due to flow.

b. Erosion Present – Although the spillway is typically armored, stormwater flowing through the spillway can cause erosion damage. Erosion must be repaired to ensure the integrity of the basin embankment, and proper function of the spillway.

c. Mowing/weed/woody growth control – Management of woody vegetation is essential in the proper long-term function of the spillway. Larger trees or dense shrubs can capture larger debris entering the SFB and reduce the capacity of the spillway. These trees and shrubs may also damage the underdrain system of the SFB.

d. Obstruction/Debris – The spillway must be cleared of any obstruction (man made or natural) to ensure the proper design capacity.

SFB-2.3.8 Miscellaneous

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

a. Access – Access needs to be maintained.

b. Graffiti/Vandalism – Vandals can cause damage to the SFB infrastructure. If criminal mischief is evident, the inspector should forward this information to the local emergency agency.

c. Public Hazards – Public hazards include items such as vertical drops of greater than 4-feet, 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 emergency services at 911 immediately.

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

SFB-2.4 Inspection Forms

SFB Inspection forms are located in Appendix C. 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 the City of Colorado Springs/Stormwater Team per the requirements of the Inspection and Maintenance Plan. These inspection forms shall be kept a minimum of 5 years and made available to the City of Colorado Springs upon request.

SFB-3 MAINTAINING SAND FILTER BASINS (SFBs)

SFB-3.1 Maintenance Personnel

Maintenance personnel should be qualified to properly maintain SFBs. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

SFB-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 SFB:

- 1.) Mowing Tractors
- 2.) Trimmers (extra string)
- 3.) Shovels
- 4.) Rakes
- 5.) All Surface Vehicle (ASVs)
- 6.) Skid Steer
- 7.) Back Hoe
- 8.) Track Hoe/Long Reach Excavator
- 9.) Dump Truck
- 10.) Jet-Vac Machine
- 11.) Engineers Level (laser)
- 12.) Riprap (Minimum - Type M)
- 13.) Geotextile Fabric
- 14.) Erosion Control Blanket(s)
- 15.) Sod
- 16.) Illicit Discharge Cleanup Kits
- 17.) Trash Bags
- 18.) Tools (wrenches, screw drivers, hammers, etc)
- 19.) Confined Space Entry Equipment
- 20.) Approved Inspection and Maintenance Plan

21.) ASTM C-33 Sand

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.

SFB-3.3 Safety

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

SFB-3.4 SFB Maintenance Forms

The SFB Maintenance Form provides a record of each maintenance operation performed by maintenance contractors. The SFB 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 the City of Colorado Springs/Stormwater Team per the requirements of the Inspection and Maintenance Plan. The SFB Maintenance form is located in Appendix D.

SFB-3.5 SFB Maintenance Categories and Activities

A typical SFB 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 SFB. A maintenance activity can be specific to each feature within the SFB, 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 SFB.

A variety of maintenance activities are typical of SFBs. The maintenance activities range in magnitude from routine trash pickup to the reconstruction of the SFB filter media or underdrain system. Below is a description of each maintenance activity, the objectives, and frequency of actions:

SFB-3.6 Routine Maintenance Activities

The majority of this work consists of scheduled mowings, trash and debris pickups for the SFB 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 typically do not require any prior correspondence with the City, however, completed inspection and maintenance forms shall be submitted to the City of Colorado Springs/Stormwater Team for each inspection and maintenance.

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

TABLE SFB-2
Summary of Routine Maintenance Activities

Maintenance Activity	Minimum Frequency	Look for:	Maintenance Action
Mowing	Twice annually	Excessive grass height/aesthetics	2"-4" grass height
Trash/Debris Removal	Twice annually	Trash/debris in SFB	Remove and dispose of trash and debris

Splitter Box/Overflow Outlet Works Cleaning	As needed - after significant rain events – twice annually minimum	Clogged outlet structure; ponding water	Remove and dispose of debris/trash/sediment to allow outlet to function properly
Woody growth control /Weed removal	Minimum twice annually	Noxious weeds; Unwanted vegetation	Treat w/herbicide or hand pull; consult a local Weed Inspector

SFB-3.6.1 Mowing

Routine mowing of the turf grass embankments and turf grass located in the sedimentation chamber is necessary to improve the overall appearance of the SFB and ensure proper performance of the sediment chamber. Turf grass should be mowed to a height of 2 to 4-inches and shall be bagged to prevent potential contamination of the filter media.

Frequency – Routine - Minimum of twice annually or depending on aesthetics.

SFB-3.6.2 Trash/Debris Removal

Trash and debris must be removed from the entire SFB area to minimize outlet clogging and to improve aesthetics. This activity must be performed prior to mowing operations.

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

SFB-3.6.3 Splitter Box/Overflow Outlet Works Cleaning

Debris and other materials can clog the splitter box/overflow outlet work's grate. This activity must be performed anytime other maintenance activities are conducted to ensure proper operation.

Frequency - Routine – After significant rainfall event or concurrently with other maintenance activities.

SFB- 3.6.4 Woody Growth Control/Weed Removal

Noxious weeds and other unwanted vegetation must be treated as needed throughout the SFB. This activity can be performed either through mechanical means (mowing/pulling) or with herbicide. Consultation with a local County 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 on inspections.

SFB-3.7 Restoration 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 do not require prior approval from the City.

Completed inspection and maintenance forms shall be submitted to City of Colorado Springs/Stormwater Team for each inspection and maintenance period. In the event that the SFB needs to be dewatered, care should be given to ensure sediment, filter material and other pollutants are not discharged. All dewatering activities shall be appropriately permitted.

**TABLE SFB-3
Summary of Restoration Maintenance Activities**

Maintenance Activity	Minimum Frequency	Look for:	Maintenance Action
Sediment/Pollutant Removal	As needed; typically every 1 –2 years	Sediment build-up in sedimentation chamber and filter media; decrease in infiltration rate	Remove and dispose of sediment
Erosion Repair	As needed, based upon inspection	Rills/gullies on embankments or sedimentation in the forebay	Repair eroded areas & revegetate; address cause
Jet-Vac/Cleaning Underdrains	As needed, based upon inspection	Sediment build-up /non-draining system	Clean drains; Jet-Vac if needed

SFB-3.7.1 Sediment Removal/Pollutant Removal

Sediment removal is necessary to ensure proper function of the filter media. The infiltration rate of the SFB needs to be checked in order to ensure proper functioning of the SFB. A SFB should drain completely within 40-hours of a storm event. If drain times exceed the 40-hour drain time than maintenance of the filter media shall be required.

At a minimum, the top 3-inches of filter media should be removed at each removal period. Additional amounts of filter media may need to be removed if deeper sections of the filter media are contaminated. New filter media will need to be placed back into the SFB when the total amount of sand removed reaches 9-inches. This may take multiple maintenance events to accomplish. It is critical that only sand that meets the American Society for Testing and Materials (ASTM) C-33 standard be utilized in the replacement of the filter media.

ASTM C-33 Sand Standard

US Standard Sieve Size (Number)	Total Percent Passing (%)
9.5 mm (3/8 inch)	100
4.75 mm (No. 4)	95-100
2.36 mm (No. 8)	80-100
1.18 mm (No. 16)	50-85
600µm (No. 30)	25-60
300µm (No. 50)	10-30
150µm (No. 100)	2-10

Other types of sand and soil material may lead to clogging of the SFB. The minor sediment removal activities can typically be addressed with shovels, rakes and smaller equipment. Major sediment removal activities will require larger and more specialized equipment. Extreme care should be taken when utilizing motorized or heavy equipment to ensure damage to the underdrain system does not occur. The major sediment removal activities will also require surveying with an engineer's level, and consultation with the City's Engineering staff to ensure design volumes/grades are achieved.

Stormwater sediments removed from SFBs 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 ensure 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.

Frequency – Non-routine – As necessary, based upon inspections. Sediment removal in the sedimentation chamber may be necessary as frequently as every 1-2 years.

SFB-3.7.2 Erosion Repair

The repair of eroded areas is necessary to ensure the proper functioning of the SFB, to minimize sediment transport, and to reduce potential impacts to other features. Erosion can vary in magnitude from minor repairs to filter media and embankments, to rills, and gullies in the embankments and inflow points. The repair of eroded areas may require the use of excavators, earthmoving equipment, 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 repair to the pond embankments, spillways, and adjacent to structures will require consultation with the City's Engineering staff.

Frequency – Non-routine – As necessary, based upon inspections.

SFB-3.7.3 Jet-Vac/Clearing Drains

A SFB contains an underdrain system that allows treated stormwater runoff to exit the facility. These underdrain systems can develop blockages that can result in a decrease of hydraulic capacity and also create standing water. Many times the blockage to this infrastructure can be difficult to access and/or clean. Specialized equipment (jet-vac machines) may be necessary to clear debris from these difficult areas.

Frequency – Non-routine – As necessary, based upon inspections.

SFB-3.8 Rehabilitation Maintenance Activities

This work consists of larger maintenance/operational problems and failures within the stormwater management facilities. All of this work requires approval from the City's Engineering staff to ensure the proper maintenance is performed. This work requires that Engineering staff review the original design and construction drawings to assess the situation and assign the necessary maintenance activities. This work may also require more specialized maintenance equipment, design/details, surveying, or assistance through private contractors and consultants. In the event that the basin needs to be dewatered, care should be given to ensure sediment, filter material and other pollutants are not discharged. Proper permitting is required prior to any dewatering activity.

**TABLE SFB-4
Summary of Rehabilitation Maintenance Activities**

Maintenance Activity	Minimum Frequency	Look for:	Maintenance Action
Major Sediment/Pollutant Removal	As needed – based upon scheduled inspections	Large quantities of sediment in the sedimentation chamber and/or filter media; reduced infiltration rate /capacity	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 – broken concrete, damaged pipes & outlet works	Structural repair to restore the structure to its original design
SFB Rebuild	As needed – due to complete failure of SFB	Removal of filter media and underdrain system	Contact City Engineering

SFB-3.8.1 Major Sediment/Pollutant Removal

In very rare cases the filter media of the SFB may be contaminated so badly that the entire 18-inches of the filter media may need to be removed.

Major sediment/pollutant removal consists of removal of large quantities of sediment/filter media. Extreme care should be taken when utilizing motorized or heavy equipment to ensure damage to the underdrain system does not occur. The sediment/filter media needs to be carefully removed, transported and properly disposed. Vegetated areas need special care to ensure design volumes and grades are preserved or may need to be replaced due to the removal activities. Stormwater sediments removed from SFBs 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.

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

SFB-3.8.2 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. Extreme care should be taken when utilizing motorized or heavy equipment to ensure damage to the underdrain system does not occur.

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

SFB-3.8.3 Structural Repair

A SFB generally includes a splitter box or concrete overflow outlet 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 the City's Engineering staff shall take place prior to all structural repairs.

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

SFB-3.8.4 SFB Rebuild

In very rare cases a SFB 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 SFB. Consultation with the City's Engineering staff shall take place prior to any rebuild project.

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



CITY OF COLORADO SPRINGS

SAND FILTER BASIN (SFB) 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 2 = Routine maintenance required
1 = Monitor (potential for future problem) 3 = Immediate repair necessary
N/A = Not applicable

FEATURES

1.) Inflow Points/Splitter Box

- Riprap Displaced
- Sediment Accumulation
- Structural Damage (pipe, end-section, etc.)
- Trash/Debris

2.) Sedimentation Chamber

- Mowing /weed/woody growth control
- Erosion Present
- Trash/Debris
- Sediment Accumulation

3.) Filter Media

- Mowing /weed/woody growth control
- Sediment/Pollutant Removal
- Filter Replacement
- Infiltration Rate Check

4.) Underdrain System

- Evidence of clogged system
(jet-vac cleaning required)

5.) Outlet Works

- Structural Damage (concrete, steel, subgrade)
- Mowing /weed/woody growth control

6.) Embankments

- Vegetation Sparse
- Erosion Present
- Trash/Debris
- Mowing /weed/woody growth control

7.) Emergency Overflow

- Riprap Displaced
- Erosion Present
- Woody Growth/Weeds Present
- Obstruction/Debris

8.) Miscellaneous

- Encroachment in Easement Area
- Graffiti/Vandalism
- Public Hazards
- Other

Inspection Summary / Additional Comments: _____

OVERALL FACILITY RATING (Circle One)

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

This inspection form shall be kept a minimum of 5 years and made available to the City of Colorado Springs upon request.



CITY OF COLORADO SPRINGS

SAND FILTER BASIN (SFB) 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/SPLITTER BOX
 - ___ OUTLET WORKS
 - ___ FILTER MEDIA
 - ___ SEDIMENTATION CHAMBER
 - ___ EMERGENCY OVERFLOW
- ___ EROSION REPAIR
 - ___ INFLOW POINT/SPLITTER BOX
 - ___ OUTLET WORKS
 - ___ EMBANKMENTS
 - ___ SEDIMENTATION CHAMBER
 - ___ EMERGENCY OVERFLOW
 - ___ FILTER MEDIA
- ___ REVEGETATION
- ___ JET-VAC/CLEARING DRAINS
 - ___ INFLOWS
 - ___ OUTLET WORKS
 - ___ UNDERDRAIN

REHABILITATION WORK

- ___ SEDIMENT REMOVAL (DREDGING)
 - ___ FILTER MEDIA
 - ___ SEDIMENTATION CHAMBER
- ___ EROSION REPAIR
 - ___ INFLOW POINT/SPLITTER BOX
 - ___ OUTLET WORKS
 - ___ EMBANKMENTS
 - ___ SEDIMENTATION CHAMBER
 - ___ EMERGENCY OVERFLOW
 - ___ FILTER MEDIA
- ___ STRUCTURAL REPAIR
 - ___ INFLOW POINT/SPLITTER BOX
 - ___ OUTLET WORKS
 - ___ FILTER MEDIA
 - ___ SEDIMENTATION CHAMBER
 - ___ EMERGENCY OVERFLOW

OTHER _____

ESTIMATED TOTAL MANHOURS: _____

COSTS INCURRED (include description of costs): _____

EQUIPMENT/MATERIAL USED (include hours of equipment usage and quantity of material used):

COMMENTS/ADDITIONAL INFO:

This Maintenance Activity Form shall be kept a minimum of 5 years and made available to the City of Colorado Springs upon request.

Appendix E: Annual Inspection and Maintenance Submittal Form



Annual Inspection and Maintenance Reporting Form for Stormwater BMPs

(This form to be submitted to City of Colorado Springs prior to May 31 of each year)

Date: _____

**To: City of Colorado Springs/Stormwater Team
Attn: Ensure Operations and Maintenance Program Inspector
PO Box 1575, MC 520
Colorado Springs, CO 80901-1575**

Re: Certification of Inspection and Maintenance; Submittal of forms

Property/Subdivision Name: _____

Property Address: _____

Contact Name: _____

Contact Phone #: _____

Contact Email Address: _____

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

The required Stormwater Facility Inspection and Maintenance forms are attached to this form.

Name of Party Responsible for Inspection
& Maintenance

Property Owner

Authorized Signature

Signature

Appendix F

As-Built Plans (When Complete)

Appendix G

BMP Maintenance Cost Estimates (2007)

Routine maintenance costs can usually be predicted for an annual budget and may range from four percent of original capital construction costs per year for an EDB to nine percent of original capital costs per year for an infiltration BMP.

A general rule of thumb is that annual maintenance costs may run from \$100 per acre for minor maintenance, such as mowing, to \$500 per acre for more intensive maintenance including weed control, debris removal, etc.

Non-routine maintenance costs, however, can be substantial over the long run, especially when considering the possibility of eventual BMP replacement. To lessen the immediate financial impact of non-routine costs, it is advised that a BMP maintenance fund, with annual contributions, be established.

As an example, for EDBs, which need to have sediment removed once every two to ten years, ten to 50 percent of anticipated dredging costs should be collected annually. In addition, the average EDBs has a life expectancy of 20 to 50 years. A separate fund that collects two to five percent a year should be established for replacement. Anticipated interest may be used to offset the effects of inflation.

Type of BMP	Sediment Removal Frequency	Facility Life Span*
Retention Pond	5 to 15 years	20 to 50 years
EDB	2 to 10 years	20 to 50 years
Sand Filter	Every 6 months or as required	20 to 50 years
PLD	5 to 10 years	10 to 25 years
Grass Swale/Grass Buffer	As needed	10 to 25 years
Porous Paving	3 to 4 times per year	25 years

*Assumes the facility is maintained on a regular basis.

Estimating and Planning for Non-routine Costs for BMPs

Costs for non-routine maintenance of BMPs are highly specific and will vary depending upon:

- ◆ the type, size, and depth of the facility;
- ◆ the volume of the sediment trapped in the BMP;
- ◆ the accessibility of the BMP; and
- ◆ whether or not on-site disposal of the sediment is possible.

Retention Pond and EDB Sediment Removal

The technique used to remove sediment from a retention pond or EDB is very site-specific. The information below provides an estimate of costs associated with the dredging process.

◆ Mobilization and Demobilization of Machinery

Associated Costs: \$1,000 to \$10,000

Large retention ponds or regional facilities will often require a waterborne operation during which an excavator or a crane must be mounted to a floating barge and moved into position. For smaller ponds, larger ponds that can be drained or dredged from the shore, and extended detention basins, a perimeter or dry operation will usually suffice. In this case, a backhoe, truck equipment, or crane may be used to scoop out the sediment. Additional costs for the construction and restoration of access roads for trucks and heavy equipment may be accrued.

◆ Dredging

Associated Costs: \$10 per cubic yard to \$20 per cubic yard

The cost of dredging a BMP depends on the volume of sediment removed. The cost (expressed by cubic yard) is largely influenced by the depth of the water and the distance between the excavation area and the "staging area" where sediment is transferred to trucks for removal. Another consideration is whether equipment can easily access the BMP bottom. The following equation can be used to estimate the volume of sediment in cubic yards.

Equation to Estimate the Volume of Sediment in a BMP (in cubic yards)

$$\text{surface area} \text{ ______ (acres) } \times \text{depth of sediment} \text{ ______ (feet) } \times 43,560 = \text{ ______ cubic feet}$$
$$\text{cubic feet} \text{ ______ } / 27 = \text{ ______ cubic yards}$$

◆ Disposal

Associated Costs: \$5 per cubic yard - on-site to \$47 per cubic yard - off-site

The primary determinant of disposal costs is whether on-site disposal is an option. If on-site disposal is not available, then locating a landfill or large area to apply the spoils may prove challenging and transportation costs may increase considerably. Dredged materials will require special disposal if found to contain hazardous materials.

Adding the likely costs of the sediment removal components establishes a range in which an owner can expect to pay for sediment/pollutant removal. For a facility with a small surface area (0.25 acres) overall costs can range from \$4,000 to \$10,000+. For a large facility (10 acres) overall costs can range from \$170,000 to \$550,000+.

	Maintenance	Annual Associated Cost
PLD	Removal of sediments and replacement of some level of soil is required periodically. Mulch should be replaced annually, or as needed.	Between \$1,500 and \$2,000, depending upon the size and complexity of the facility.
Grass Swale/ Grass Buffer	Remove sediments, replace check dams (usually made of earth, riprap, or wood), reseed or sod (if grassed) or replace dead plants, every two years.	
Porous Paving	Vacuum sediments from surface, twice a year.	Between \$500 and \$1,000, depending on the size of the facility.
Sand Filter	Remove the top filter cloth and remove/replace the filter gravel, when a semiannual inspection reveals that it is necessary. Remove and replace the filter cloth and gravel every three to five years.	Between \$3,000 to \$10,000, depending on the type and size of the sand filter and the amount of impervious surface draining to it.

If an oil sheen is present in the facility, it should be removed by a qualified oil recycler, which increases costs. Other expenses, such as removal of trash and hydrocarbons from water traps may also be required.

Removing sediment from stormwater facilities can be a considerable expense. Look for opportunities to reduce the amount of sediment entering the pond from the surrounding drainage area.

Reference: Information adapted from "Maintaining Stormwater Systems, A Guidebook for Private Owners and Operators in Northern Virginia", January 2007, Northern Virginia Regional Commission

Appendix H

Civil Engineer Stormwater Best Management Practice (permanent) Certification Letter

(date)

City of Colorado Springs
City Engineering Division, Stormwater Enterprise
30 S. Nevada Avenue, Suite 502
PO Box 1575, MC 520
Colorado Springs, CO 80901-1575

Attn.: Lisa Ross, P.E.
Stormwater Engineering Interim Manager

Gentlemen:

The permanent stormwater Best Management Practices (BMPs) for *(Name of project & Subdivision Name (required) & address)* consist of *(description of the BMPs, e.g., type, WQCV, drainage area, etc.)*. *(Name of Civil Engineering Firm)* has reviewed the attached letter(s) from *(Name of Geotechnical Engineering Firm)* and from *(Name(s) Landscape Architect Firm and/or Other Involved Firms)*, as appropriate. Based upon this information and information gathered during periodic site visits to the project during significant/key phases of the stormwater BMP installation, *(Name of Engineering Firm)* is of the opinion that the stormwater BMPs have been constructed in general compliance with the approved Erosion and Stormwater Quality Control Plan, Construction Plans, and Specifications as filed with the City.

Statement Of Engineer In Responsible Charge:

I, _____ *(print name)*, a registered Professional Engineer in the State of Colorado, in accordance with Sections 5.2 and 5.3 of the Bylaws and Rules of the State Board of Registration for Professional Engineers and Professional Land Surveyors, do hereby certify that I or a person under my responsible charge periodically observed the construction of the above mentioned project. Based on the on-site field observations and review of pertinent documentation, it is my professional opinion that the required permanent BMPs have been installed and are in general compliance with the approved Erosion and Stormwater Quality Control Plan, Construction Plans, and Specifications as filed with the City of Colorado Springs. For BMPs with a Water Quality Capture Volume (WQCV), I have attached the post-construction As-Built drawings. The As-Built drawings accurately depict the final installation of the stormwater BMPs and verify the WQCV.

(Name of Engineer, P.E.) Colorado No. XXXXX

Seal & Signature of P.E. Goes Here

RECORD OF ADMINISTRATIVE ACTION

APPROVAL OF A FINAL PLAT FOR FOREST LAKES FILING NO. 5 (SF-19-015)

WHEREAS, FLRD NO. 2 LLC, did file an application with the El Paso County Planning and Community Development Department for the approval of a final plat for the Forest Lakes Filing No. 5 Subdivision for property in the unincorporated area of El Paso County as described in Exhibit A, which is attached hereto and incorporated herein by reference; and

WHEREAS, pursuant to § 30-28-133.5 (1.5), C.R.S., a Board of County Commissioners may delegate to one or more County administrative officials the authority to approve or deny final plats, amendments to final plats, and correction plats provided certain criteria have been met; and

WHEREAS, § 2.2.4 of the El Paso County Land Development Code ("Code"), amended by the Board of County Commissioners of El Paso County, Colorado ("Board") on August 27, 2019 pursuant to Resolution No. 19-329, delegates to the Planning and Community Development Director ("Director") the authority to approve final plats, vacations, replats, and final plat amendments pursuant to the provisions of the Code; and

WHEREAS, on June 11, 2020, the Director reviewed the studies, reports, plans, designs, documents and other supporting materials submitted with respect to the above application; and

WHEREAS, based on the evidence, exhibits, consideration of the master plan for the unincorporated area of the County, comments of the El Paso County Planning and Community Development Department and other County representatives, comments of public officials and agencies, comments from all interested persons, and comments by the general public, the Director finds as follows:

- 1. The application was properly submitted for consideration by the Planning and Community Development Executive Director.**
- 2. Proper publication, and public notice were provided as required by law for the administrative review of the application by the Planning and Community Development Director.**
- 3. The administrative review of the application by the Planning and Community Development Director was extensive and complete, all pertinent facts, matters and issues were submitted and reviewed, and all interested persons were provided a fourteen day (14) time period to submit comments.**

Chuck Broerman
06/11/2020 10:03:00 AM
Doc \$0.00
Rec \$43.00

El Paso County, CO

7
Pages
220081175

4. All exhibits were received into evidence.
5. The subdivision is in conformance with the goals, objectives, and policies of the Master Plan.
6. The subdivision is in substantial conformance with the approved preliminary plan.
7. The subdivision is consistent with the subdivision design standards and regulations and meets all planning, engineering, and surveying requirements of El Paso County for maps, data, surveys, analyses, studies, reports, plans, designs, documents, and other supporting materials.
8. At a public hearing on the preliminary plan held on November 5, 2019, the Board found that a sufficient water supply has been acquired in terms of quantity, quality, and dependability for the type of subdivision proposed, as determined in accordance with the standards set forth in the water supply standards [C.R.S. §30-28-133(6)(1)] and the requirements of Chapter 8 of the Code.
9. A public sewage disposal system has been established or, if other methods of sewage disposal are proposed, the system complies with State and local laws and regulations [C.R.S. §30-28-133(6)(b)] and the requirements of Chapter 8 of the Code.
10. All areas of the proposed subdivision which may involve soil or topographical conditions presenting hazards or requiring special precautions have been identified and that the proposed subdivision is compatible with such conditions [C.R.S. §30-28-133(6)(c)].
11. Adequate drainage improvements are proposed that comply with State Statute [C.R.S. §30-28-133(3)(c)(VIII)] and the requirements of the Code and Engineering Criteria Manual ("ECM").
12. Legal and physical access is provided to all parcels by public rights-of-way or recorded easement, acceptable to El Paso County in compliance with the Code and the ECM.
13. Necessary services, including police and fire protection, recreation, utilities, and transportation systems, are or will be made available to serve the proposed subdivision.
14. Final plans provide evidence to show that the proposed methods for fire protection comply with Chapter 6 of the Code.

15. Off-site impacts were evaluated and related off-site improvements are roughly proportional and will mitigate the impacts of the subdivision in accordance with applicable requirements of Chapter 8 of the Code.
16. Adequate public facilities or infrastructure, or cash-in-lieu, for impacts reasonably related to the proposed subdivision have been constructed or are financially guaranteed through the Subdivision Improvements Agreement so that the impacts of the subdivision will be adequately mitigated.
17. The subdivision meets other applicable sections of Chapters 6 and 8 of the Code.
18. The extraction of any known commercial mining deposit shall not be impeded by this subdivision [C.R.S. §§34-1-302(1), et. seq.].
19. The proposed subdivision of land conforms to the El Paso County Zoning Resolutions.


The El Paso County Planning and Community Development Director therefore APPROVES the final plat application for the Forest Lakes Filing No. 5 Subdivision.

The following conditions and notations shall be placed upon this approval:

CONDITIONS

1. All Deed of Trust holders shall ratify the plat. The applicant shall provide a current title commitment at the time of submittal of the Mylar for recording.
2. Colorado statute requires that at the time of the approval of platting, the subdivider provides the certification of the County Treasurer's Office that all ad valorem taxes applicable to such subdivided land, or years prior to that year in which approval is granted, have been paid. Therefore, this plat is approved on the condition that the subdivider or developer must provide to the Planning and Community Development Department, at the time of recording the plat, a certification from the County Treasurer's Office that all prior years' taxes have been paid in full.
3. The subdivider or developer must pay, for each parcel of property, the fee for tax certification in effect at the time of recording the plat.
4. The applicant shall submit the Mylar to Enumerations for addressing.

5. The developer shall comply with federal and state laws, regulations, ordinances, review and permit requirements, and other agency requirements, if any, of applicable agencies including, but not limited to, the Colorado Parks and Wildlife, Colorado Department of Transportation, U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service regarding the Endangered Species Act, particularly as it relates to the Preble's Meadow Jumping Mouse as a listed species.
6. Driveway permits will be required for each access to an El Paso County owned and maintained roadway. Driveway permits are obtained from the El Paso County Planning and Community Development Department.
7. The Subdivision Improvements Agreement, including the Financial Assurance Estimate as approved by the ECM Administrator, shall be filed at the time of final plat recordation.
8. Collateral sufficient to ensure the public improvements as listed in the approved Financial Assurance Estimate shall be provided when at the time of final plat recordation.
9. The subdivider(s) agrees on behalf of him/herself and any successors and assignees that subdivider and/or said successors and assigns shall be required to pay traffic impact fees in accordance with the El Paso County Road Impact Fee Program Resolution (Resolution No. 18-471), or any amendments thereto, at or prior to the time of building permit submittals. The fee obligation, if not paid at final plat recording, shall be documented on all sales documents and on plat notes to ensure that a title search would disclose the fee obligation before sale of the property.
10. The County Attorney's Conditions of Compliance shall be adhered to at the appropriate time.
11. Urban park fees (Urban Area 1) in lieu of land dedication in the amount of \$9,504.00 shall be paid at the time of final plat recordation. No regional parks fees are due as a result of land being dedicated with this final plat in lieu of such fees.
12. Drainage fees for the Beaver Creek drainage basin in the amount of \$115,426.34 apply at the time of final plat recordation. The developer has established


Plat Fees Recording
7 Pgs SIA; Det. Pond; 3 pr Mylar
mt. AS. 10 pages

drainage fee credits in the amount of \$271,388.50. The credits are eligible to be applied towards the fees due.

NOTATIONS

- 1. Approval of the final plat will expire after twenty-four (24) months unless the final plat has been recorded or a request for extension has been granted.**
- 2. No school fees are due upon plat recordation pursuant to a previous 10-acre land dedication to benefit Lewis Palmer School District No. 38.**

DONE THIS 11th day of June 2020 at Colorado Springs, Colorado.

**CRAIG DOSSEY, EXECUTIVE DIRECTOR
EL PASO COUNTY PLANNING AND COMMUNITY
DEVELOPMENT DEPARTMENT**



EXHIBIT A

**FOREST LAKES FILING NO. 5
LEGAL DESCRIPTION:**

A PARCEL OF LAND BEING A PORTION OF THE SOUTHWEST QUARTER OF SECTION 28, TOWNSHIP 11 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: A PORTION OF THE NORTHERLY BOUNDARY OF FOREST LAKES FILING NO. 1 RECORDED UNDER RECEPTION NO. 206712407 RECORDS OF EL PASO COUNTY, COLORADO, BEING MONUMENTED AT BOTH ENDS BY A NO. 4 REBAR AND RED PLASTIC SURVEYORS CAP STAMPED "ROCKWELL PLS 19586" ASSUMED TO BEAR N89°29'26"E, A DISTANCE OF 3103.31 FEET.

COMMENCING AT THE SOUTHWESTERLY CORNER OF FOREST LAKES DRIVE AS PLATTED IN FOREST LAKES FILING NO. 1 RECORDED UNDER RECEPTION NO. 206712407 RECORDS OF EL PASO COUNTY, COLORADO SAID POINT BEING A POINT ON CURVE, SAID POINT ALSO BEING THE POINT OF BEGINNING;

THENCE ON THE SOUTHERLY RIGHT OF WAY LINE OF SAID FOREST LAKES DRIVE, THE FOLLOWING (2) TWO COURSES:

- 1. ON THE ARC OF A CURVE TO THE RIGHT WHOSE CENTER BEARS S16°10'29"W, HAVING A DELTA OF 12°23'40", A RADIUS OF 220.00 FEET AND A DISTANCE OF 47.59 FEET TO A POINT OF REVERSE CURVE;**
- 2. ON THE ARC OF A CURVE TO THE LEFT HAVING A DELTA OF 15°25'25", A RADIUS OF 355.00 FEET AND A DISTANCE OF 95.56 FEET TO A POINT ON CURVE;**

THENCE ON THE ARC OF A CURVE TO THE RIGHT WHOSE CENTER BEARS N03°22'58"W, HAVING A DELTA OF 44°10'32", A RADIUS OF 277.00 FEET AND A DISTANCE OF 213.57 FEET TO A POINT OF REVERSE CURVE;

THENCE ON THE ARC OF A CURVE TO THE LEFT HAVING A DELTA OF 00°51'09", A RADIUS OF 223.00 FEET AND A DISTANCE OF 3.32 FEET TO A POINT ON CURVE;

THENCE S39°56'26"W, A DISTANCE OF 130.00 FEET;

THENCE N80°58'21"W, A DISTANCE OF 65.91 FEET;

THENCE N66°55'20"W, A DISTANCE OF 70.00 FEET;

THENCE N68°26'22"W, A DISTANCE OF 65.83 FEET;

THENCE N78°27'13"W, A DISTANCE OF 63.25 FEET;

THENCE N82°34'46"W, A DISTANCE OF 140.00 FEET;

THENCE N74°26'58"W, A DISTANCE OF 70.71 FEET;

THENCE N82°34'46"W, A DISTANCE OF 140.00 FEET;

THENCE N79°22'05"W, A DISTANCE OF 89.26 FEET;

THENCE N80°45'58"W, A DISTANCE OF 80.95 FEET;

THENCE N72°39'38"W, A DISTANCE OF 87.89 FEET;

THENCE N63°44'20"W, A DISTANCE OF 87.89 FEET;

THENCE N58°46'47"W, A DISTANCE OF 83.08 FEET;

THENCE N60°03'46"W, A DISTANCE OF 80.62 FEET;
THENCE N52°56'16"W, A DISTANCE OF 140.00 FEET;
THENCE N50°49'54"W, A DISTANCE OF 86.84 FEET;
THENCE N37°27'32"W, A DISTANCE OF 106.40 FEET;
THENCE N21°35'34"W, A DISTANCE OF 119.75 FEET TO A POINT ON CURVE THENCE ON THE ARC OF A CURVE TO THE RIGHT WHOSE CENTER BEARS N15°01'18"W, HAVING A DELTA OF 00°44'01", A RADIUS OF 3045.00 FEET AND A DISTANCE OF 39.13 FEET TO A POINT ON CURVE;
THENCE N14°17'53"W, A DISTANCE OF 90.00 FEET;
THENCE N14°22'43"W, A DISTANCE OF 180.00 FEET;
THENCE N74°54'03"E, A DISTANCE OF 79.46 FEET;
THENCE N73°15'37"E, A DISTANCE OF 79.43 FEET;
THENCE N71°35'22"E, A DISTANCE OF 82.41 FEET;
THENCE S19°15'40"E, A DISTANCE OF 195.00 FEET TO A POINT ON CURVE;
THENCE ON THE ARC OF A CURVE TO THE LEFT WHOSE CENTER BEARS N19°15'40"W, HAVING A DELTA OF 05°11'19", A RADIUS OF 2970.00 FEET AND A DISTANCE OF 268.96 FEET TO A POINT OF REVERSE CURVE;
THENCE ON THE ARC OF A CURVE TO THE RIGHT HAVING A DELTA OF 68°49'01", A RADIUS OF 610.00 FEET AND A DISTANCE OF 732.66 FEET TO A POINT OF REVERSE CURVE;
THENCE ON THE ARC OF A CURVE TO THE LEFT HAVING A DELTA OF 44°35'14", A RADIUS OF 170.00 FEET AND A DISTANCE OF 132.29 FEET TO A POINT OF TANGENT;
THENCE N89°46'48"E, A DISTANCE OF 183.07 FEET TO A POINT ON THE BOUNDARY OF SAID FOREST LAKES FILING NO. 1;

THENCE ON SAID BOUNDARY, THE FOLLOWING (8) EIGHT COURSES:

1. CONTINUING N89°46'48"E, A DISTANCE OF 30.97 FEET TO A POINT OF CURVE;
2. ON THE ARC OF A CURVE TO THE LEFT HAVING A DELTA OF 72°40'04", A RADIUS OF 70.00 FEET AND A DISTANCE OF 88.78 FEET TO A POINT OF TANGENT;
3. N17°06'44"E, A DISTANCE OF 29.40 FEET;
4. S72°53'16"E, A DISTANCE OF 60.00 FEET;
5. S17°06'44"W, A DISTANCE OF 29.40 FEET TO A POINT OF CURVE;
6. ON THE ARC OF A CURVE TO THE RIGHT HAVING A DELTA OF 46°47'45", A RADIUS OF 130.00 FEET AND A DISTANCE OF 106.18 FEET TO A POINT ON CURVE
7. S26°02'29"E, A DISTANCE OF 239.56 FEET;
8. S16°10'29"W, A DISTANCE OF 383.49 FEET TO THE POINT OF BEGINNING.

CONTAINING A CALCULATED AREA OF 24.251 ACRES.