

earthwork activities across the Sterling Ranch Phase I site have altered the onsite runoff conditions to direct flows easterly to the Dines Boulevard roadway corridor and ultimately to a planned Temporary Sediment Basin located just the west of Sand Creek within the property, that allows for controlled discharge to the channel. Based upon the Sterling Ranch MDDP runoff from the planned site (portion of Basin SC3-13) will be treated by a Full Spectrum Detention Facility that will be constructed by formalizing the existing temporary sediment basin. A copy of the approved Sterling Ranch Phase I Onsite Early Grading and Erosion Control Plan is located in the appendix of this report.

## **FOUR STEP PROCESS**

**Step 1 Employ Runoff Reduction Practices.** –Approx. 2.4 acres of ground within the project is being set aside for Open Space/Trail use. Roof drains will be directed to side yard swales and as possible to a grass lined swale will be constructed to aid minimize direct connection of impervious surfaces.

**Step 2 Implement BMPs that provide a water quality capture volume with slow release.** – An existing Full Spectrum Detention Facility was planned for this site which will incorporate water quality capture volumes that are intended to slowly drain in 40 hours and excess urban runoff volumes that are intended to drain within 72 hours.

**Step 3 Stabilize streams.** – With the full spectrum detention facility in place, the runoff from the proposed residential development will be reduced to predevelopment conditions. The developed discharge from the site is less than existing and therefore is not anticipated to have negative effects on downstream drainageways.

**Step 4 Implement site specific and other source control BMPs.** – The proposed project will use silt fence, a vehicle tracking control pad, concrete washout area, inlet protection, temporary sediment basins, sediment control logs, mulching and reseeded to mitigate the potential for erosion across the site.

## **PROPOSED DRAINAGE CHARACTERISTICS**

### **General Concept Drainage Discussion**

The proposed drainage plan for Branding Iron at Sterling Ranch Filing No. 1 will mimic and formalize the grading patterns established with both the Sterling Ranch MDDP and the Master Development Drainage Report for Sterling Ranch Filing Nos. 1 & 2, and Final Drainage Report for Sterling Ranch Filing No.1 and with its approval allow for the constructing the internal subdivision roadways, utilities, sidewalks and ultimately the placement of homes. With the prior approval of the Sterling Ranch Filing Nos. 1 & 2, and Final Drainage Report for Sterling Ranch Filing No.1, construction plans have been recently approved by El Paso County which have allowed for the construction of the adjacent Dines Boulevard, storm sewer infrastructure and the formalization of the adjacent Full Spectrum Detention Facilities (Pond Nos. 4 & 8) and outlet structures which are needed to collect and convey the developed drainage to the existing channel. It should be noted that the construction of these facilities are occurring during the writing of this report. The following detailed drainage discussion provides an overview of the proposed development and ensures that no alternation of the planned improvements is necessary due to the assumptions meeting that of the previously submitted master development drainage plans.

### **Detailed Drainage Discussion**

This step is about permanent BMPs for high-intensity industrial and commercial uses (not construction BMPs). Address these types of uses specifically (ECM I.7.2.B.).

## **Water Quality/Full Spectrum Detention Facilities**

With the exception of the outer permeable western and southern edges of the development the majority of the developed runoff from Branding Iron at Sterling Ranch Filing No. 1 is collected within the internal streets and conveyed via existing storm sewer systems to the existing Full Spectrum Detention Facility Pond 8 that was approved for construction as a portion of the Sterling Ranch Filing No.1 improvements. Pond 8 will provide 0.46 acre feet of water quality and 2.90 acres of full spectrum detention for approximately 29 acres of Sterling Ranch development of which the Branding Iron at Sterling Ranch Filing No.1 is a portion. The pond initially sized and designed within Sterling Ranch Filing Nos. 1&2 MDDP using the Detention Design UD-Detention v3.05 workbook. It should be noted that this drainage report and the SR Filing 1 and 2 MDDP were developed concurrently. Thus the larger scale concept planning was very finite and thus allowed for the developed flow rates to align between the two documents and thereby not requiring modifications to facility which is often common between conceptual and final design. Refer to the approved Sterling Ranch Filing No. 1 Storm Sewer Plans for additional details of FSD Pond 8.

The flows generated by Basin OS13 will be routed south via overlot grading and swales to a temporary sediment basin (future Pond W-5), at the south end of the Sterling Ranch Development. Upon development of the Sterling Ranch Filing No. 2 infrastructure Pond W-5 will be constructed and flows from Basin OS13 will be treated as WQCV and Full Spectrum Detention. As such the proposed develop shall not adversely affect the downstream infrastructure.

## **EROSION CONTROL**

It is the policy of the El Paso County that a grading and erosion control plan be submitted with the drainage report. EPC approved “Early Grading Plan for Sterling Ranch Phase I Onsite Grading & Erosion Control”, November 18, 2015. And “Early Grading Plan for Sterling Ranch Phase I Offsite Grading & Erosion Control”, December 3, 2015. Grading and Erosion control operations are currently underway (August 2016). Grading and Erosion Control will cease with the final development of the site in the next 12-36 months.

## **CONSTRUCTION COST OPINION – BRANDING IRON AT STERLING RANCH FIL. NO. 1**

### **Drainage Facilities:**

There are no planned improvements with the development of Branding Iron at Sterling Ranch Filing No. 1. Construction costs have been accounted for in the “Master Development Drainage Report for Sterling Ranch Filing Nos. 1 &2 , and Final Drainage Report for Sterling Ranch Filing No.1” prepared by MS Civil Consultants, dated April 2017. Please see Drainage and Bridge Fees below.

## **DRAINAGE & BRIDGE FEES – BRANDING IRON AT STERLING RANCH FIL. NO. 1**

This site is within the Sand Creek Drainage Basin. The 2017 Drainage and Bridge Fees per El Paso County for the BRANDING IRON AT STERLING RANCH FILING NO. 1 site are as follows:

**Address WQCV deviation (maintenance of vegetated buffer/swale/temporary BMP to be addressed in deviation request)**

Per Branding Iron at Sterling Ranch Filing No. 1 Plat – **Total Area** **10.545 Acres**

**FILING NO. 1 FEES:**

<b>Drainage Fees:</b>	10.545	x	50%	\$	16,270.00	=	\$	<del>85,783.58</del>
<b>Bridge Fees:</b>	10.545	x	50%	\$	4,929.00	=	\$	<del>25,938.86</del>
							<b>Total</b>	<b>\$ 111,722.44</b>

**SUMMARY**

**\$25,988.15,**  
**\$111,771.73?**

Developed runoff from Branding Iron at Sterling Ranch Filing No.1 will be conveyed into the existing drainage systems shown on the enclosed Drainage Map. The majority of the stormwater will be convey to the south within the proposed rights of way and public storm sewer systems to the Existing Pond No. 8 which will provide full spectrum detention. As a portion of the design the pond will discharge runoff to Sand Creek at rates that are equivalent or less than the pre-developed condition in patterns that concur with the both the Sterling Ranch MDDP and the Sterling Ranch filing No.1 and 2 MDDP. As such, the development of this site will not adversely affect the surrounding development and is anticipated to have no negative impact to downstream facilities. The detention facilities treating the runoff from Branding Iron at Sterling Ranch Filing No.1 and the surface and subsurface improvements to convey runoff located outside the public right of way shall be owned and maintained by the Sterling Ranch Metropolitan District.