

Memorandum

To: Jeff Mark, Leroy Landhuis, Landhuis Development
From: Rich Wray, Kiowa Engineering, (retired)
Subject: Bull Hill and Rolling Meadows Basin Closing Analysis
El Paso County, Colorado
Date: November 1, 2022

CLOSED BASIN ANALYSIS- BULL HILL AND ROLLING MEADOWS PARCELS JIMMY CAMP CREEK DRAINAGE BASIN

I. Background information

- 2014 Jimmy Camp Creek DBPS- Kiowa Engineering hydrology, selected plan layout, improvement costs and fee estimates
- 1987 Jimmy Camp Creek DBPS
- 2022 drainage basin planning study (in-progress)
- 2022 Drainage fees as approved by BOCC
- 2006 Rolling Hills Ranch MDDP prepared by Kiowa Engineering

II. 2014 Jimmy Camp Creek DBPS

1. Study was approved and adopted by the City of Colorado Springs and the City of Fountain. Hydrology is now being used in the planning for future development of the Banning-Lewis Ranch (City of Colorado Springs), and for developments within the City of Fountain. The hydrology and hydraulic analyses conducted for the watershed covered the following drainageways:

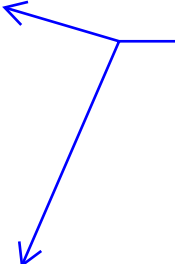
Major drainageways that lie in El Paso County include

Lower Jimmy Camp Creek	14,000 LF
Upper Jimmy Camp Creek	4,000 LF
Stripmine Tributary	7,600 LF
Franceville Tributary	8,500 LF
East Fork Jimmy Camp Creek	<u>21,500 LF</u>
Total Major Drainageways	55,600 LF

Sub-drainageways that lie in El Paso County include

Upper Jimmy Camp Creek	2,300 LF
Blaney Tributary	2,600 LF
Corral Tributary	5,000 LF
Stripmine Tributary	29,500 LF

These all need to be updated to account for annexed and improved reaches.



Franceville Tributary	14,500 LF
East Fork Jimmy Camp Creek	<u>22,200 LF</u>
Total Sub-drainageways	76,100 LF

subject
 The major receiving and sub-drainageways that were evaluated in the 2014 DBPS that impact the Landhuis property include:

East Fork Jimmy Camp Creek	now	13,000 LF
East Fork Jimmy Camp Creek Sub-drainageways		2,000 LF

should be higher
 From the above numbers, 23 percent of the major drainageways studied in the DBPS cross through The Bull Hill and Rolling Meadows properties, Three (3) percent of the sub-drainageways lie within the Bull Hill and Rolling Meadows properties.

2. DBPS was not approved and accepted by El Paso County for use in the planning for development along the major receiving drainageways. It is presently required by the County that the hydrology from the 2014 DBPS be used in the design of structures. Reason for non-adoption by the county was that the location of future full spectrum detention basins (FSDs), were not shown in the DBPS. From a technical perspective, the location of FSDs is not needed for the design of major drainageways and bridge structures. The hydrologic affect of FSD once fully implemented is the maintenance of peak discharges at existing development levels for all recurrence intervals. The required FSD storage volume was provided in the DBPS and costs associated with FSD provided for the area of the watershed within El Paso County,

3. Drainage fees were estimated for areas within the City of Colorado Springs and El Paso County. Drainage fees were based upon only the capital improvement costs to stabilize the major receiving and sub- drainageways as defined in the DBPS. A storage fee associated with FSD was provided in the DBPS for both the County and City.

Since the City's acceptance of the 2014 DBPS, the area of the watershed within the BLR were negotiated/determined to be a "closed basin" as part of the the Development Agreement between BLR and the City of Colorado Springs. With the assumption of a closed basin, drainage and bridge fees will not be assessed and reimbursement related to the construction of FSDs or stabilization of the major drainageways will not be allowed.

III. 1987 DBPS

This study is no longer used by the County when planning for development within the watershed, The location of regional detention basins shown in the 1987 DBPS are not used by the County for stormwater management planning. None of the regional detention basins shown in the 1987 DBPS have ever been built. However the present day drainage and bridge fees that were first determined in the 1987 DBPS were used by the County to develop the miscellaneous basin fees that are now assessed against plattable acreage within the JCC watershed.

IV. 2022 DBPS (in-progress)

EPC retained consulting engineering firm Stantec Engineering in 2021 to update the 2014 DBPS preliminary plan and to develop a fee structure for the County portion of the Jimmy Cam Creek watershed. At this time the study has progressed only into the analysis phase and specifically the hydraulic analysis for the watershed's major tributaries. The hydraulic section

This has been reviewed
and we are waiting for
revisions

fo the report is anticipated to be submitted in August to the County for review. It is not clear at this time what the deliverable is for the hydraulic phase of the study. Being that the study has not been completed or reviewed through the hydraulic analysis phase, it is estimated that the development of the fee structure will not occur until mid-2023. Adoption of the updated study and fee structure may not occur until late 2023 or 2024. Development of the fee structure is usually one of the last steps of a DBPS scope and is routinely provided for public review prior to advancing the DBPS and fee(s) to Drainage Board and ultimately the BOCC.

It is advised at this time that stakeholders within the watershed (such as Landhuis Development), inquire with the County what the timing is for the completion of the DBPS. Until such time the study is ready for adoption, the stakeholders should be included in the review of the the updated DBPS so that impact upon their properties can be evaluated. It is not clear what level of stakeholder outreach has been carried out thus far in the process.

V. Drainage Basin Fees

1987 DBPS Basin Fees

The drainage fees developed as part of the 1987 DBPS included major drainageway facilities necessary or the stabilization of Jimmy Camp Creek and its major receiving drainageways. The drainage fee also included the cost for the regional detention facilities that were shown in the 1987 DBPS. Stabilization of the drainageways was to be achieved through the installation of riprap bank linings in combination with drop or grade control structures necessary to reduce the longitudinal slopes. Location of the grade control structures was not defined in the 1987 DBPS. The hydraulic design of the major drainageways utilize the future development conduit discharges. Water quality storage was not considered in the design of the regional detention basins. Onsite water quality storage for developments was not required by the County when the 1987 DBPS was prepared.

Bridge fees were developed for the watershed. The location of future roadway crossings defined as bridges under EPC engineering criteria in use at the time of the 1987 DBPS was based upon the regional transportation plan in affect in 1987. A few of the bridges shown in the 1987 DBPS have been built. There have also been two bridges built associated with arterial roadway projects that were not shown on the regional transportation plan relied upon when the 1987 DBPS was prepared.

The drainage and bridge fees estimated in the 1987 DBPS (with annual adjustments), were assessed against platted acreage until 1999. At that time the watershed was reclassified as a miscellaneous basin since the watershed did not have a DBPS that adequately addressed stormwater management planning for the watershed. An average of the drainage and bridge fees using all watersheds that had had a DBPS prepared (since 1983) was calculated. This resulted in a significant increase in most all of the miscellaneous basins due in significant part to the high fees estimated in the 1987 DBPS. Additionally, by going to an average fee in 1999, the connection between fees and an actual list of identified stabilization measures was lost. The regional detention basin facilities and their contribution to the drainage fee is suspect as well. The use of regional detention is now discouraged by criteria and cannot be located across a receiving waterway as defined by the U. S. Army Corps of Engineers.

Subsequent to the averaging of fees in 1999, the County revised the per acre requirement to “per impervious acre”, which is what is applied today. It is the opinion of the writer that the use of percent imperviousness as required when fees are estimated for a given parcel, it caused the basin fee to be in deficit; that is, the cost of capital improvements remained unchanged but the plattable acreage subject to fee assessment decreased. This

causes less fees to be collected that can then be used for reimburse costs for public facilities constructed in accordance with the governing DBPS. With this revision the drainage fees became further detached from the actual cost of the required stabilization and storage facilities. Due to the uncertainty of the adequacy of the fee structure for Jimmy Camp Creek as estimated in 1999, a surety was developed charged against impervious acreage. It is not clear how the amount of the surety was determined by the County.

2014 DBPS Basin Fees

Two fees were proposed for the Jimmy Camp Creek watershed the 2014 DBPS; a major drainageway fee and a storage fee. in City The drainageway fee was for the capital costs of stabilizing the **major receiving drainageways** (reference Exhibit 1, 2014 Jimmy Camp Creek DBPS). Only the major drainageway of East Fork Jimmy Camp Creek impacts Bull Run and Rolling Meadows properties. For the major drainageways a variety of stabilization measures were proposed in the 2014 DBPS aimed at addressing environmental standards, floodplain preservation and long-term invert degradation depending upon the nature of the localized hydrology and floodplain configurations. Drainage fees were provided separately for both the City of Colorado Springs and El Paso County. Calculations not completed for EPC?
See 12/8/2014 letter.

The storage fee for the watershed was determined using an estimate of the total FSD storage volume that would be required to store the increase in runoff due to development in the watershed. Unit costs for full FSD were developed using actual costs for FSDs constructed in the City and County. As with the drainage fee, a storage fee was estimated for both the City and the County. Per County requirements, the drainage and storage fees were combined into a single drainage basin fee.

As part of gaining approval for the 2014 DBPS, County requested that the drainage and storage fees estimated for the County area be omitted from the final report. Primary reason was that the 2014 DBPS did not go far enough in presenting the location(s) of FSDs within the County. Because of this the County reverted back to the current fee structure when assessing bridge and drainage fees.

It was discussed with the County that the location of the FSDs cannot be accurately determined and therefore just created potential conflicts in the future as the watershed develops. It was also pointed out that it does not matter where the FSDs are sited, only the total volume of the increase in runoff due to urbanization matters. Finally it was argued that a fee should not be assessed based upon facilities that are required by **criteria** and that the cost and implementation of FSD was the responsibility of the developer. It is therefore important at this time to understand the assumptions that will go into any fees developed as part of the County's ongoing DBPS update.

Bridge fees were not estimated in the 2014 DBPS. Reasoning for this was that all future bridges will be sized to carry existing condition discharges as presented in the 2014 DBPS. As such there is no technical basis to assessing a bridge fee since development is required to provide FSD which acts to maintain peak discharges to predevelopment conditions.

The fees developed for the City of Colorado Springs:

Major Drainageway Fee	\$ 6,519 per acre	●
Storage Fee	\$ 2,125 per acre	

The above fees are presented as a reference point to what could be expected for the area with El Paso County if similar assumptions are applied. As stated in the DBPS, only a per

acre fee to cover the stabilization costs for the major receiving and sub- drainageways was proposed for two reasons: (1) the major drainageways serve all areas within the watershed regardless of jurisdiction and therefore should be a shared cost even though the predevelopment discharges are assumed because of the implementation of FSD, and (2) even with FSD the major receiving drainageways will be negatively impacted by the urbanization of the watershed due to the increase in the duration of runoff. Bank and invert stabilization is still necessary even with the implementation of FSD.

Stabilization measures and associated costs for the subtributaries were included in the 2014 DBPS. It was suggested during the preparation and associated review of the 2014 DBPS that the stabilization of the subtributaries not be included in the estimation of drainage fee as their design and costs cannot be adequately defined at the DBPS level of analysis. Costs for the stabilization of the subtributaries were ultimately included in the total capital costs and used for the estimation of drainage fees.

A storage fee was estimated based upon the costs for existing FSD facilities constructed and in operation at the time the 2014 DBPS was prepared. A per acre storage volume was developed as well as a per acre storage fee. Storage fee estimated in the the 2014 DBPS was \$2,125 per acre. The cost to provide FSD is highly dependent upon the physical layout of the developing watershed. The future land uses assumed in this DBPS, while accurate for the proposes of a planning level study, cannot be used to exactly determine the location of future FSDs. As stated in the 2014 DBPS, the location of FSDs should be determined at the MDDP level.

I agree

As it relates to this analysis, it is the writer's opinion that fees to cover the costs of future FSDs should not be considered by the County since the implementation of FSD is a requirement of criteria. There is no reliable way to come up with a cost for FSD storage since the total FSD volume is dependent upon the imperviousness of the sub-watershed draining to it. As such the implementation of a "storage fee" would constantly be subject to revision as requests associated with the reimbursement of accepted FSDs are made to Drainage Board. Cost for the construction of FSDs should be borne solely by the developer and reimbursement of required FSD facilities not allowed.

VI. Analysis of "Closed Basin" for Bull Hill and Rolling Meadows Properties

The following given information has been used in the evaluation of an assumption that all proprieties owned by Landhuis should be considered for a closed basin due to the extensive holdings within the El Paso County portion of the watershed.

1. Area of watershed within EPC:	28.9 SM (18,496 acres)
2. Un-platted area of watershed within EPC:	21.9 SM (14,028 acres)
3. Platable acreage subject to fees	7,800 acres
4. Acreage owned by Landhuis Properties	1,520 acres
5. 2022 fees for JCC	Drainage \$21,134
	Bridge \$989
	Surety \$7,285

all lower
now

The platable acreage shown above was determined using the 14,028 acres shown in the DBPS less the areas within the County that has developed since 2014 (Lorson Ranch and the National Cemetery), and those areas of the County that were shown to be undevelopable, primarily that portion of the watershed that lie along the Corral Bluffs (reference Figure VII-2, 2014 DBPS). The drainage fee as currently assessed by the County theoretically includes the cost for stormwater storage facilities,

Costs for Major and Sub-drainageway Stabilization and Stormwater Storage

Using actual construction costs for the East Fork Jimmy Camp Creek within Lorson Ranch, a unit stabilization cost was estimated at \$1000 per lineal foot. The design of the drainageways offsite from Bull Hill and Rolling Meadows (42,600 lineal feet), upstream would probably be similar to what was constructed for the East Fork Jimmy Camp Creek in Lorson Ranch. Using this unit cost a total major drainageway cost of \$42.6 million was estimated.

A 30 percent design has been completed by Matrix Engineer for the East Fork Jimmy Camp Creek drainageway through Bull Hill and Rolling Meadows (13,000 lineal feet). A 30 percent design cost of \$20 million was estimated. Total estimate for the major drainageways in El Paso County is \$62.6 million.

Using the hydraulic design and channel sections developed in the 2014 DBPS for the sub-drainageways, a unit cost of \$600 per lineal foot was estimated. Using this unit cost the total cost for sub-drainageways in El Paso County was estimated at \$45.7 million.

In order to be consistent with the current fee structure that technically includes the cost of stormwater detention facilities, an estimate of the storage costs for the entire basin was made. The cost of the storage facilities was assumed to be equal to the per acre fee developed in the 2014 DBPS brought forward to 2022. Storage costs for El Paso County was estimated at \$22.7 million.

Total for the major and sub- drainageways and stormwater storage in El Paso County is estimated at \$131.0 million.

Total stormwater facility costs for Bull Hill and Rolling Meadows is estimated at \$31.2 million. The estimated cost for stormwater storage within Bull Hill and Rolling Meadows is \$4,3 million. Total stormwater facilities are estimated at \$35.4 million.

Drainage Fees for Bull Hill and Rolling Meadows

Based upon the **current** fee structure for the Jimmy Camp Creek watershed total fees have been estimated. Fees have been estimated using 1,460 developable acres which assumes that the East Fork Jimmy Camp Creek 100-year floodplain is not subject to fee assessment (60 acres per 2018 El Paso County Flood Insurance Study).

Drainage and Surety Fees:	\$28,419/acre
Acreage subject to fees	1,460
Total fees	\$41.5 million

The estimated for fees due on plattable land within for Bull Hill and Rolling Meadows far exceeds the total capital costs by a factor of 1.2. Note that this is using a very conservative unit cost for the stabilization of the major and sub-drainageways (low end estimate for 30% design cost is \$17,000,000) within Bull Hill and Rolling Meadows. The unit costs for the offsite major drainageways will most likely be be less than those applied herein because of the decreased discharges in the upper watershed due to lower densities of future development above Drennan Road. The conclusion that can only be reached is that the drainage and surety fees currently being assessed by El Paso County do not reflect the anticipated costs for stabilization and storage, and that the surety is not only excessive, but not necessary to cover future costs

This is not excessive for level of effort and would chip in to offsite improvements.

Projected Drainage Fees for Jimmy Camp Creek Watershed

Using the estimated lengths of the major and sub-drainageways and the the unit costs presented above, a total stabilization cost for the watershed, inclusive of Bull Hill and Rolling Meadows was determined. The total cost was then used to develop a per acre fee:

Total major drainageway stabilization	\$62.6 million
Total sub-drainageways	\$45.7 million
Storage cost	<u>\$22.8 million</u>
Total stormwater facility costs	\$131.0 million
Total developable acreage	7,800 acres
Drainage fee for stabilization and storage	\$16,799 per acre

The above fee was then recalculated to reflect the removal of the 1,460 developable acres associated with Bull Hill and Rolling Meadows. The cost of the stabilization of the major and sub- drainage ways within Bull Hill and Rolling Meadows was removed from the total stabilization costs estimated for the entire watershed:

Total major drainageway stabilization	\$42.6 million
Total sub-drainageway cost	\$44.5 million
Total storage costs	<u>\$18.5 million</u>
Total stormwater facilities	\$105.6 million
Total developable acreage	6,340 acres
Drainage fee for stabilization and storage	\$16,651 per acre

Needs to be updated and based on impervious acres.

As reflected in the the above fees estimates, removing the acreage and stabilization costs associated with Bull Hill and Rolling Meadows from the fee calculation shows that the fee would be no increase in the fee, and possibly a slight reduction. Accordingly those properties that would remain within the County's Jimmy Camp Creek fee system would not be impacted by higher fees as a result of the property covered by Bull Hill and Rolling Meadows being removed from the calculation of fees.

The affect of taking into account the impervious acreage in the closing calculations may have an impact upon whether the drainage fee is increased, or decreased with the removal of Bull Hill and Rolling Meadows from the overall watershed acreage. Calculations thus far have used gross acreage. An average impervious value of 57.5 percent was developed in the 2014 DBPS. It is very likely that the average imperviousness for the County portions of the Jimmy Camp Creek watershed including East Fork watershed is less than 57.5 percent.

Feasibility of Closing the Basin

When requesting that a property be closed from the overall watershed fee system what is being considered is that the subject property will not be assessed drainage fees in return for covering the cost of stabilization and storage as part of developing the property. Past experience with basin closing issues is that closing a property to fee assessment have only

been considered when the subject fees are **not increased at all** by the removal of a property. In this case it appears that removing the property encompassed by Bull Hill and Rolling Meadows **would not increase** the drainage fee. The cost estimates for drainageway stabilization shown herein and used for the calculation of fees shown above are feasibility level at best. Through further analysis it may be possible to mitigate any possible increase in the fee. Drainageway planning for the property as well as the Jimmy Camp Creek watershed in general as is now being conducted needs to advance to a higher level of design. **At that point a more accurate estimate of costs and fees can be applied.** In the end whether or not the closing of the basin within the Bull Hill and Rolling Meadows is feasible, the County will probably not make a decision until adoption of the updated DBPS ●

One other possibility to be considered could be to close the entire East Fork Jimmy Camp Basin related to the assessment of drainage fees. With what has already been constructed of the East Fork as part of the Lorson Ranch development and the 13,000 lineal feet that crosses through Bull Hill and Rolling Meadows, very little major drainageway remains in the East Fork watershed, all of which lies north of Drennan Road. The the land north of Drennan Road will more than likely develop at lower densities due to the topography of the upper watershed. Lower densities such a rural residential pay very little in drainage fees to begin with (due to lower imperviousness), and typically have lower overall stormwater facility costs.

VII. Conclusions and Recommendations

Based upon the feasibility level analysis conduct herein, conclusions and recommendations have been developed for consideration by Landhuis Development.

Conclusions

1. The current fee structure being used by the County for the assessment of drainage fees is overestimating the actual cost of future stabilization and storage measures and therefore causing high per acre fees. The assessment of a surety further inflates the fees being assessed.
2. The drainage fees as now assessed are not based upon a technically current concept for what the stabilization will look like going forward. Therefore the current drainage fees for Jimmy Camp Creek within El Paso County are not founded on a firm technical basis. Updating the DBPS should help to remedy this situation.
3. There is feasibility in pursuing the concept of closing the Bull Hill and Rolling Meadows properties to fee assessment. The finding of no impact upon fees as estimated herein may prove to be accurate, or not. **Future planning needs to be completed** to gain a more reliable estimate of future costs.
4. There appears not to be a reason to have a bridge fee in the Jimmy Camp Creek watershed. The construction of further arterial roadway bridges (which meet the County's definition of what qualifies to be considered a bridge), is not anticipated. Additionally the implementation of FSD by the County results in bridges only needing to have hydraulic capacity to pass existing condition discharges ← **not really**
5. It is likely that the fees produced in the update to the DBPS will be lower than the fees as now assessed. Sureties paid thus far would then have to refunded per the County resolution that established the surety.

Lorson doesn't want reimbursement for their bridges?

Interim Recommendations

1. Establish and maintain contact with El Paso County Engineering regarding the status of the DBPS update. If possible Landhuis should establish itself as a stakeholder in the basin. This is pretty routine in the process of completing a DBPS, however at this time it is not known if outreach to stakeholders has taken place thus far in the process.
2. Update the Rolling Hills MDDP so as to be better prepared to provide design concepts for the drainageway and so that the concepts can be reflected in the updated DBPS. (It is not clear if the County's consultant has incorporated the East Fork Jimmy Camp design as shown in the approved Rolling Hills MDDP or the design shown in the 2014 DBPS for that matter).
4. Landhuis should provide the County and its consultant updated development plans for Bull Hill and Rolling Meadows if they are available. If Landhuis is moving forward with the a revised site plan(s) the ODP will need to be updated as well. Siting of FSD's in the DBPS should be consistent with the what is envisioned in the ODP.
5. In the absence of timely approval of the updated Jimmy Camp Creek DBPS and the adoption of revised drainage fees (say two years from now or longer), Landhuis may want to seek an opinion as to whether or not the County can legally assess the drainage fees based upon the weak technical foundation related to capital drainageway costs as now represented in the current fee and surety. It has been established herein that the current fee is overestimating the actual costs of facilities.
6. As the DBPS update moves to completion, Landhuis should request to be included in the review capital costs and fee calculations. The calculation of a fee depends upon an accurate assessment of plattable acreage that remains in the basin. Once the plattable acreage is reestablished in the DBPS update, the potential impact of closing the basin can be more accurately assessed. Reviewing the updated DBPS in this regard is a key step.
7. Attend workshops that are used to inform the Drainage Board. Workshops have generally been conducted over one or two sessions depending upon the complexity of the watershed or the number of comments received by the Drainage Board regarding the update.

The estimated per-foot costs for the current design of
 $\$25\text{-}38 \text{ million} / 15,750 = \$1,600\text{-}\$2,400/\text{LF}$