



**Cochise County  
Community Development  
Highway and Floodplain Division**

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**INTEROFFICE MEMO**

**Date:** April 6, 2015  
**To:** Beverly Wilson, Planning Director  
**From:** Joaquin Solis, P.E. Floodplain Engineer  
**For:** Karen Riggs, P.E., RLS, Highway & Floodplain Director and Floodplain Administrator  
**Subject:** Approval of Drainage Report for J-6 Ranch, dated January 2015, Amended March 2015, sealed March 18, 2015 and prepared by Baker & Associates Engineering, Inc. for Easter Mountain Ranch, LLC.

After review of the above mentioned report by the Floodplain Division, the Drainage Report for the J-6 Ranch has been approved. Floodplains and erosion hazard setbacks shall be provided on Final Plat.

1. Include all Hydrologic data sheet information (existing and developed conditions) that is consistent with shown on the developed conditions hydrology map. Cannot verify runoff without information (some were not included).

**Response:** Based upon our telephone conversation on or about February 24, you stated that you were looking for data sheets at the new culvert locations within the existing file. We agreed that these were not needed - the important information is the discharge at the property boundary. Data sheets for each drainage area are included within the report. Therefore, no additional sheets are needed. **Noted.**

2. Delineated drainage areas are different than previous reports and drainage areas are inconsistent with previous reports. Ex. previous reports indicate drainage area DA #1A EX as 484 acres. Now that drainage area is 0.8 acres under existing conditions and 1.1 acres under developed conditions. Why does this change now? 1A, 2B, 3A and 3B have larger drainage areas under developed conditions, in comparison to existing conditions. Similarly the developed drainage area for subwatershed 2A Routing has a smaller drainage area than existing. The developed conditions areas should remain the same as the existing conditions, otherwise that

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would be diverting area (flow) to other areas which are not acceptable by the County. Please show consistency in watershed areas between existing and developed conditions.

**Response:** As we discussed, the new report was reconfigured in order to provide a clear presentation of the existing and post developed conditions and to address storm water detention. Previously submitted reports are of different format, are no longer valid and should not be used for comparison. As we discussed, existing and post-developed areas will differ. The limits of each post-developed drainage area boundary was established utilizing the current Cochise County regulations to determine vertical high and low point(s) within each private street profile that traverse the drainage area. As a result, the post-developed drainage area for each watershed will vary from the existing drainage area for the same watershed which is based solely upon existing topography. **Noted.**

3. The onsite existing watershed areas should equal the onsite developed watershed areas which should equal the project site area of 84.8 acres. The information provided does not show this. Please revise summary table to the sum of the drainage areas are equal for existing and developed condition.

**Response:** Pursuant to your request, each of the drainage areas are further reduced to include only the on-site portion (off-site contribution excluded) for purposes of analysis. A tabulation is provided for comparison of the computed results within the Addendum-1 section of the report. **Included.**

4. HEC-HMS analysis compares 100-yr discharges (PC-Hydro hydrographs) at downstream outlets between existing and developed conditions that have drainage areas that are different in size. Example: Hydrograph for routing area #2A (routing only) produces 147 cfs with 18.2 acres under existing conditions is not consistent with Hydrograph for routing channel #2A (routing only) producing 127 cfs with 14.9 acres. Please revise hydrographs to show consistency in drainage areas prior to modeling with HEC-HMS.

**Response:** As we discussed, the post-developed culvert crossing results in a reduced discharge routed through a smaller watershed area downstream of the culvert outlet. Therefore, a hydro-graph revision is not needed. **Noted.**

5. Sheet 2 of 3: Please include analysis of drainage swales next to Lynch Road (southern side) to show swales have capacity to convey flow from lots 18 through 21 to the proposed 24" pipe locations and low water crossings.

**Response:** As we discussed, the private streets are designed with cross-slope in the direction of the existing topography. Therefore, the need for drainage swales are not anticipated at this time. If it is determined that a swale is needed during improvement plans review, calculation will be provided as part of our response to review. Pursuant to your request, a post-development analysis is provided as part of Addendum-1 section of the report. The methodology used to apply run-off factors to the disturbed and impervious area(s) within the post-developed watershed in order to determine the weighted basin factor is discussed. **Noted.**

6. Please submit analysis for drainage swale along Hearon, Wagner and Fischer Roads. Reviewer cannot verify that swale has conveyance capacity.

**Response:** As stated above, the need for drainage swales are not anticipated at this time. If deemed needed in the future, calculations will be provided in conjunction with our response to improvement plans review. Noted.

7. Show analysis to verify erosion control is/is not needed at Hearon Rd. Cul-de-sac.

**Response:** As we discussed, the "head-cut" was created by flows traversing the existing topography. The post-developed flow will be substantially reduced by the cul-de-sac improvement. A standard 36-inch depth cut-off wall is to be provided at the edge of pavement. It is intended that the "head-cut" will be in-filled in conjunction with the street improvements. If deemed necessary, specific calculation will be provided in our response to improvement plans review. Noted.

8. Outlets at drain area 3D and 3E are shown to be within ROW again. Details on sheet 2 of 2 of developed conditions map, show splash pad and cut-off wall out of the right-of-way. If built per details, Addressed.

**Response:** We acknowledge your comment. Noted.

9. Per section 5.9, Standards for Subdivisions, Plan Information, C. Floodplain and Floodway Boundaries- Drainage Areas of the Cochise County Floodplain Regulations: All final plats and development plans shall indicate the limits of the regulatory floodplains, erosion hazard boundaries, and the limits of the federally established regulatory floodplains and floodway (if applicable), and be delineated in a surveyable manner (line data and curve data tables) and sealed by an Arizona Registered Land Surveyor.

**Response:** Regulatory flood plain does not traverse the J-6 Ranch property. Erosion hazard setbacks (EHS) will be delineated in a surveyable manner upon the Final Plat.

**NOTE: Per 3.2 ESTABLISHING AREAS OF Special Flood Hazard and Regulatory Floodplains, Floodways, Section C. In those areas where the regulatory floodplain and erosion hazard areas are not delineated pursuant to Sections 3.2.A and 3.2.B, and upon request for a county permit, the Floodplain Administrator may require the land owner to establish the regulatory floodplain and floodway limits through a hydrologic and hydraulic study prepared by an Arizona Registered Professional Civil Engineer. You have established this in your study. Per section 5.7... the base flood if such a flood has a peak flow rate equal or greater than fifty (50) cubic feet per second (CFS). Provide both Floodplain (FP) and Erosion Hazard Setbacks (EHS) in a surveyable manner on the Final Plat that have been established by the hydraulic study (greater than 100 cfs).**

10. The drainage report indicates that the developed conditions on-site hydrology produces a net increase of 93 cfs in comparison to the existing conditions runoff while the north end decreases by 132 cfs. Please note, that the west end developed runoff was not detained which implies that parcel/s owners on the west boundary of the project site still have excess water entering their site as it leaves the project west boundary. Please detain per Cochise County floodplain requirements.

**Response:** Based upon discussion during the February 25th meeting at the Cochise County offices, and your follow-up e-mail dated March 12, 2015, an analysis to determine the percent increase in the velocity of flows exiting the development boundary are provided in the Addendum-1 section of the report. Our calculations reveal that the increased discharge is 2.3-percent or less. **Noted.**

11. Hydraulic analysis results may or may not change as a result of hydrologic corrections. Please show that HEC-RAS analysis is consistent with hydrologic analysis.

**Response:** The HEC-RAS analysis remains unchanged.

**Noted.**

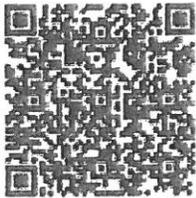
12. Please submit electronic files for hydrology (PC-Hydro, HEC-HMS) and hydraulic analysis (HEC-RAS) in Final plat submittal.

**Response:** We acknowledge the comment. **Noted.**

**From:** Jones, Dale  
**Sent:** Monday, July 21, 2014 9:44 AM  
**To:** Wilson, Beverly; Riggs, Karen  
**Subject:** RE: Legal on J6 Subdivision

Looks good to me!

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**From:** Wilson, Beverly  
**Sent:** Monday, July 21, 2014 9:06 AM  
**To:** Jones, Dale; Riggs, Karen  
**Subject:** Legal on J6 Subdivision

Hello Dale – I'm finishing up the review letter for the J6 subdivision project. Is the legal description correct on the 4<sup>th</sup> submitted TP? Please and thank you!

**Beverly Wilson, Planning Director**  
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