



**Land Use Services Department**  
**Building and Safety Division**  
**Land Development**

**Drainage Study Review and Comment Check List**

**Application #:** Preliminary DRNSTY-YYYY-XXXXX or Final DRNSTY-YYYY-XXXXX

**Site Address:**

**APN:**

**Applicant/Contact:**

**Applicant Phone:**

**Applicant Email:**

**Plan Check Engineer:**

**Plan Check Engineer Phone:**

**Plan Check Engineer Email:**

☐ **1st Review:** Click for date. ☐ **2nd Review:** Click for date. ☒ **3rd Review:** Click for date.

**The project plans/documents have been reviewed for compliance with the following codes and standards:** San Bernardino County Hydrology Manual and addendum; and San Bernardino County Detention Basin Design Criteria.

Your application for a drainage study, together with plans and specifications, has been examined and you are advised that the issuance of a permit is withheld for the reasons hereinafter set forth. The approval of plans and specifications does not permit the violation of any section of the San Bernardino Hydrology Manual and addendum; Detention Basin Design Criteria; or other County of San Bernardino ordinances or laws.

**STANDARD**

- Please group all related sheets into a **single** file (i.e. Plans Package, Calcs Package) for resubmittal. Noncompliance **may** result in delays in the plan review process.
- Provide a written response indicating how each comment was resolved on the plans. Be as specific as possible especially if the revisions are not clouded. Failure to submit a detailed response letter will delay the review of your project.
- Drainage Study Reviews shall expire **180 days** from the date of filing.
- Comply with all comments on the marked plans and plan review comment check list as listed below. Additional comments and clarifications may apply following review of the revised plans, calculations, and related documents.
- Final drawings approved for permit issuance, shall be signed by appropriate California licensed design professional(s). Electronic signatures are acceptable.
- The plan checker is available by phone or email at the phone number and email listed above. **Please contact the plan check engineer if you have any questions.**

**References:**

- 1) San Bernardino County Hydrology Manual is available at:  
<https://www.sbcounty.gov/uploads/DPW/docs/HydrologyManual.pdf>
- 2) San Bernardino County Hydrology Manual Addendum is available at:  
[https://www.sbcounty.gov/uploads/DPW/docs/20100412\\_addendum.pdf](https://www.sbcounty.gov/uploads/DPW/docs/20100412_addendum.pdf)
- 3) AMC Map - Addendum Figure ADD-1 for Arid Region is available at:  
[https://www.sbcounty.gov/uploads/DPW/docs/20100412\\_map.pdf](https://www.sbcounty.gov/uploads/DPW/docs/20100412_map.pdf)
- 4) NRCS Web Soil Survey Report is available at:  
<https://websoilsurvey.sc.egov.usda.gov/app/WebSoilSurvey.aspx>
- 5) San Bernardino County Detention Basin Design Criteria is available at:  
<http://www.sbcounty.gov/Uploads/lus/PW/DETENTIONBASINDESIGN.pdf>
- 6) Stormwater Facility Mapping Tool is available at:  
<https://sbcountypdw.maps.arcgis.com/apps/webappviewer/index.html?id=302f46bbc77143519782936a535d0cfc>
- 7) Public San Bernardino County Map Viewer is available at:  
<https://sbcounty.maps.arcgis.com/apps/MapSeries/index.html?appid=f5a50c44766b4c36a3ae014497aa430d>
- 8) FEMA SFHA Maps are available at:  
<https://msc.fema.gov/portal/home>
- 9) DWR Best Available Map for floodplains is available at:  
<https://gis.bam.water.ca.gov/bam>

**C = Completed****R = Required (Not submitted)****N/A = Not Applicable****I = Incomplete (Submitted but incorrect/incomplete)****A. GENERAL**

No.	Description	REVIEW #			
		1	2	3	4
1	Report Format (minimum requirement): Cover Sheet, Table of Content, Project Description, Methodology, Conclusion, Appendices and References.				
2	Drainage Study Number preceded by "Preliminary" or "Final"				
3	Project Address and APN				
4	Report preparer: Name, Address, Phone No., Professional Registration Number, Stamp and Signature				
5	Owner's Name, Address and Phone No.				
6	Date of Report				
7	Vicinity Map				
8	Legend				
9	Record# per EZOP (PROJ, TTM, PRAA, etc.)				

**B. PROJECT DESCRIPTION**

No.	Description	REVIEW #			
		1	2	3	4
1	Watershed boundaries including offsite run-on				
2	Current land use and drainage pattern				
3	Proposed land use and drainage pattern				
4	Proposed hydrology and hydraulics methodology				
5	Impact of FEMA SFHA (including Zone X)				
6	DWR Best Available Map for floodplains				
7	Blueline stream				
8	Geotechnical Report with Infiltration Rate				

**C. METHODOLOGY**

No.	Description	REVIEW #			
		1	2	3	4
1	San Bernardino County Hydrology Manual and addendum				
2	Separate Hydrology Maps (Off-site run-on, Existing and Proposed with clear flow paths identified)				
3	Bar Scale and North Arrow				
4	Watershed boundary				
5	Existing and Proposed Contours				
6	Drainage Pattern and Flow Arrows				
7	Flow lengths and area of sub-areas				
8	Qs (with storm events reference) and TCs				
9	Storm Drain System (Existing and Proposed)				
10	FEMA Flood Zone overlay				
11	DWR Best Available Map for floodplains overlay				
12	Proposed drainage easement alignment (Estimated width for preliminary study)				
13	Blueline Stream				
14	Hydrology Calculations (Off-site run-on, Existing and Proposed)				
15	Soil Type with supporting map marking project site based on NRCS Web Soil Survey Report. If NRCS data is unavailable, use SBC Hydrology Manual data.				
16	Pervious ratio Impervious Assumptions:				

	<ul style="list-style-type: none"> <li>Solar Panels – 30% impervious</li> <li>Container – 100% impervious</li> <li>Pervious pavers, decomposed granite, aggregate, and other “pervious” surfaces – 20% impervious</li> <li>Structure/storage impervious surface based on roofline coverage</li> </ul>				
17	AMC value See Addendum Figure ADD-1 for Arid Region (link provided in reference section) with supporting map marking project site				
18	SCS Curve Number (SBC Hydrology Manual)				
19	Rainfall intensity value with supporting NOAA Atlas 14 precipitation datasheet with value highlighted				
20	Detention Basin Analysis (if needed) based on SBC Detention Basin Design Criteria.				
a	Detention Basin Analysis (Peak Flow Mitigation). Pre-development peak flow rates: 10-year peak flow using 5-year rainfall 25-year peak flow using 10-year rainfall 100-year peak flow using 25-year rainfall Post-development peak flow rates per SBC Hydrology Manual $Q_{\text{post-development}} < 0.9 Q_{\text{pre-development}}$				
b	Detention Basin Analysis (Volume Based Mitigation) 100-year storm at 100-year intensity for both pre and post development				
21	Preliminary Hydraulic Study for Preliminary Drainage Study				
22	Detailed hydraulic Study for Final Drainage Study				

#### D. CONCLUSION

No.	Description	REVIEW #			
		1	2	3	4
1	Narrative of how any drainage impacts is mitigated based on the hydrology study				
2	Off-site run-on mitigation measures				
3	Summary of Table for 100-year peak flow rates and times of Concentration (For Detention Basin, summary table per SBC Detention Basin Criteria.)				
4	Summary of Table for node numbers, upstream and downstream elevations, flow lengths, areas, land usages, soil types, % pervious, curve numbers and rainfall intensities.				
5	Proposed drainage easement(s)				

6	Compare detention basin volume to WQMP design capture volume				
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#### E. SUBMITTAL WITH FINAL DRAINAGE STUDY

No.	Description	REVIEW #			
		1	2	3	4
1	Detailed final hydraulic calculations for proposed storm water infrastructures				
2	Detailed final detention basin design				
3	FINAL WQMP (ready for approval)				
4	Riprap Sizing calculations				
5	Overland Release Flow Path for high flows and elevation				
6	Site Specific Geotechnical Study				

#### F. APPENDICES AND REFERENCES

No.	Description	REVIEW #			
		1	2	3	4
1	Soil Group Map with the Project location identified				
2	NOAA Atlas 14 statistical datasheet				
3	FEMA FIRM Panel Number, and the Effective Date with the Project location identified				
4	DWR Best Available Map for floodplains with the Project location identified				
5	NRCS Web Soil Survey Report				

#### G. OTHER APPROVALS (CONCURRENT OR APPROVED)

No.	Description	REVIEW #			
		1	2	3	4
1	WQMP or PCMP				
2					
3					

Additional Comments: