Los Angeles County Public Works
Stormwater Engineering Division (SWED)
Workbook for the Check List for
County Building Permit Applications for
Projects in Flood Hazard Areas
June 2025

For questions, please email us at FloodAnalysis@pw.lacounty.gov

*Note: Building in flood hazard areas is a significant and complex undertaking. Doing so to be reasonably safe from flooding without impacting existing buildings and neighboring parcels can be very difficult to achieve, and at times may not be feasible. The **Check List for County Building Permit Applications for Projects in Flood Hazard Areas (Check List)** and this workbook for it are thus extensive. It is recommended that the Permit Applicant complete this workbook and the **Check List** with the assistance of a California licensed design professional with experience in building in flood hazard areas in Los Angeles County.*

Use the information from this workbook to fill out the ***Check List*** (https://pw.lacounty.gov/wmd/nfip/)

Identifying flood hazard areas:

Public Works' Flood Zone Determination website (https://pw.lacounty.gov/floodzone) shows federal ***Flood Insurance Rate Map, County Floodway Map*** flood areas and links to those maps. The website also has links to ***Los Angeles County Assessor's Maps*** that may show flood hazard areas identified by County-approved Tract Maps and Parcel Maps. Type in the site address or Assessor's Parcel Number (APN) of your project in the Search Bar on these websites to answer the following:

a. **Federal Emergency Management Agency (FEMA) – Mapped Flood Hazard Areas**
(See image on Page 3 of this workbook.)

i. **Flood Insurance Rate Map (FIRM) Panel No.** (06037C_____(F or G)). ***Public Works' Flood Zone Determination website*** will identify the FIRM Panel No. Specify on the ***Check List (Page 1)***.

ii. **Special Flood Hazard Area (SFHA).** Is the project parcel in a Federal Emergency Management Agency (FEMA)-mapped SFHA (Zone A, AE, AH, AO, or VE (a Coastal Hazard Area))?

☐ No. Proceed to subsection b (Page 3 of this workbook).

☐ Yes. Specify the SFHA Zone on the ***Check List (Page 1)***. If the project parcel is in Zone A, please email FloodAnalysis@pw.lacounty.gov and request the County to provide any available Base Flood flow information. (See example email under subsection d on Page 5 of this workbook.) Proceed to subsection iii. (Page 2 of this workbook).

iii. **Regulatory Floodway.** If Yes to subsection ii (Page 1 of this workbook), is any part of the proposed project in a mapped regulatory floodway within the SFHA?

☐ No. Proceed to subsection iv.

☐ Yes. Specify on the ***Check List (Page 1)***. The project cannot place in the floodway elements that obstruct flows. Proceed to subsection b (Page 3 of this workbook).

iv. **Zone X-Shaded Area.** If No to subsection ii (Page 1 of this workbook), is the proposed project parcel in a FEMA-Mapped Zone X-Shaded (0.2 percent annual chance (500-year) flood area)?

☐ No. Proceed to subsection v.

☐ Yes. Specify on the ***Check List (Page 1)***. If the project parcel is next to Zone A, please email FloodAnalysis@pw.lacounty.gov and request the County to provide any available 500-Year flood flow information. (See example email under subsection d on Page 5 of this workbook.) Proceed to subsection b.

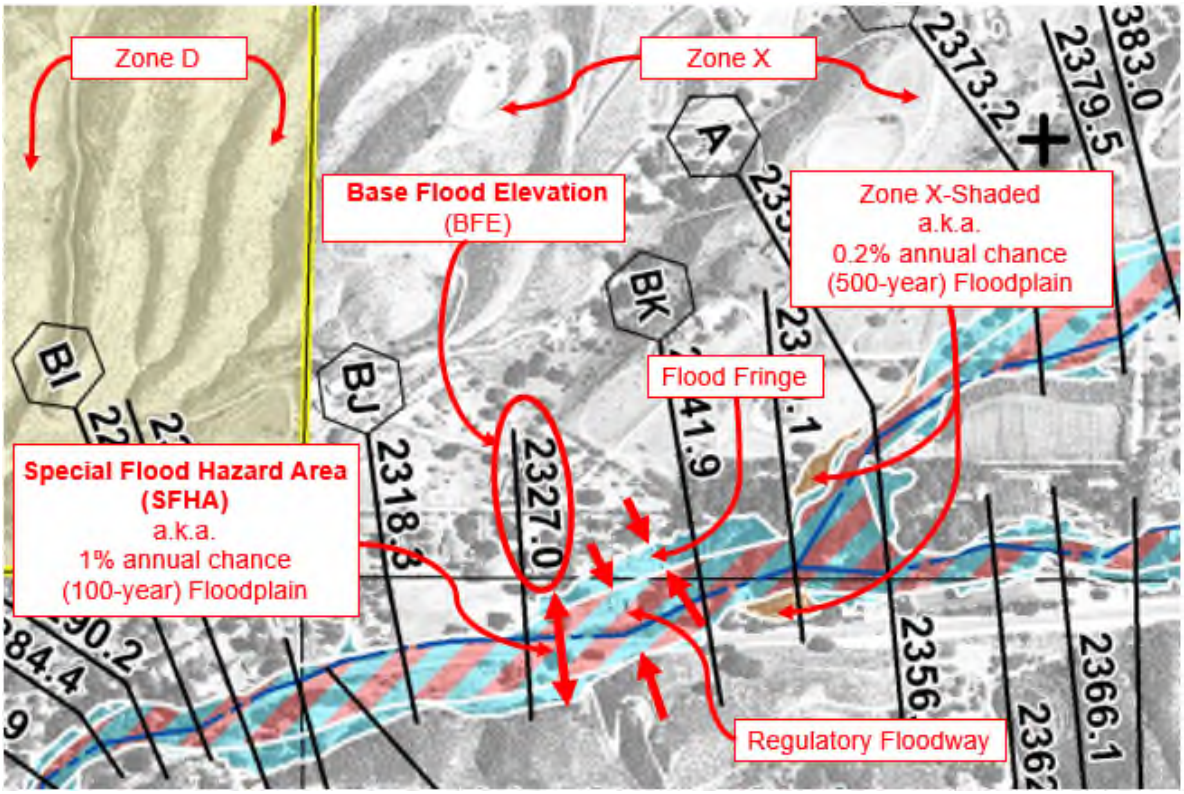
v. **Zone D.** If No to subsection iv, is the proposed project parcel in a FEMA-mapped Zone D (area of possible but unknown flood risk)?

☐ No. If No to the project parcel being in a SFHA, Zone X-Shaded, or Zone D, the project is in a **Zone X** (outside the 0.2 percent annual chance (500-year) flood area). Specify "Zone X" on the ***Check List (Page 1)***. Proceed to subsection b.

☐ Yes. Specify on ***Check List (Page 1)***. Does ***Public Works' Flood Zone Determination website*** (https://pw.lacounty.gov/floodzone) show any streambeds (blue-line streams) coming into or through the project parcel?

☐ Yes. Specify on ***Check List (Page 1)***. Please email Public Works at FloodAnalysis@pw.lacounty.gov and request the County's determination on whether flow information will be needed to determine flood resiliency requirements, and if so the County provide any available flow information for the project parcel. (See example email under subsection d on Page 5 of this workbook.) Proceed to subsection b.

☐ No. Proceed to subsection b (Page 3 of this workbook).



Elements of a FEMA ***Flood Insurance Rate Map***

b. **County-Mapped Severe Flood Hazard Areas**

i. **County Floodway Map.** Is the proposed project parcel in a floodplain/floodway shown on an adopted or not-adopted ***County Floodway Map***? (See image on Page 4 of this workbook.)

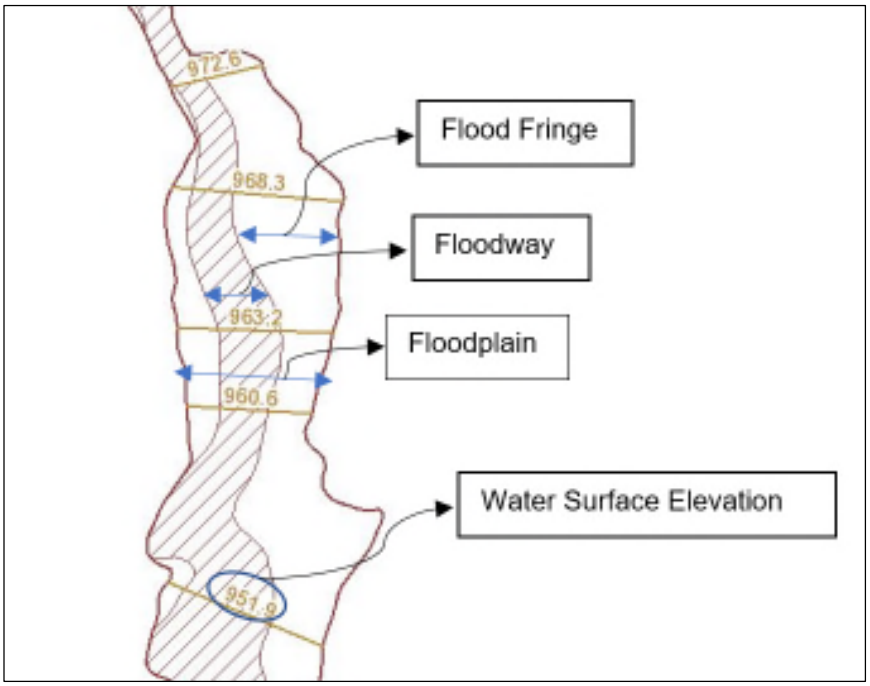
☐ Yes. Proceed to subsection ii.

☐ No. Proceed to subsection ii.

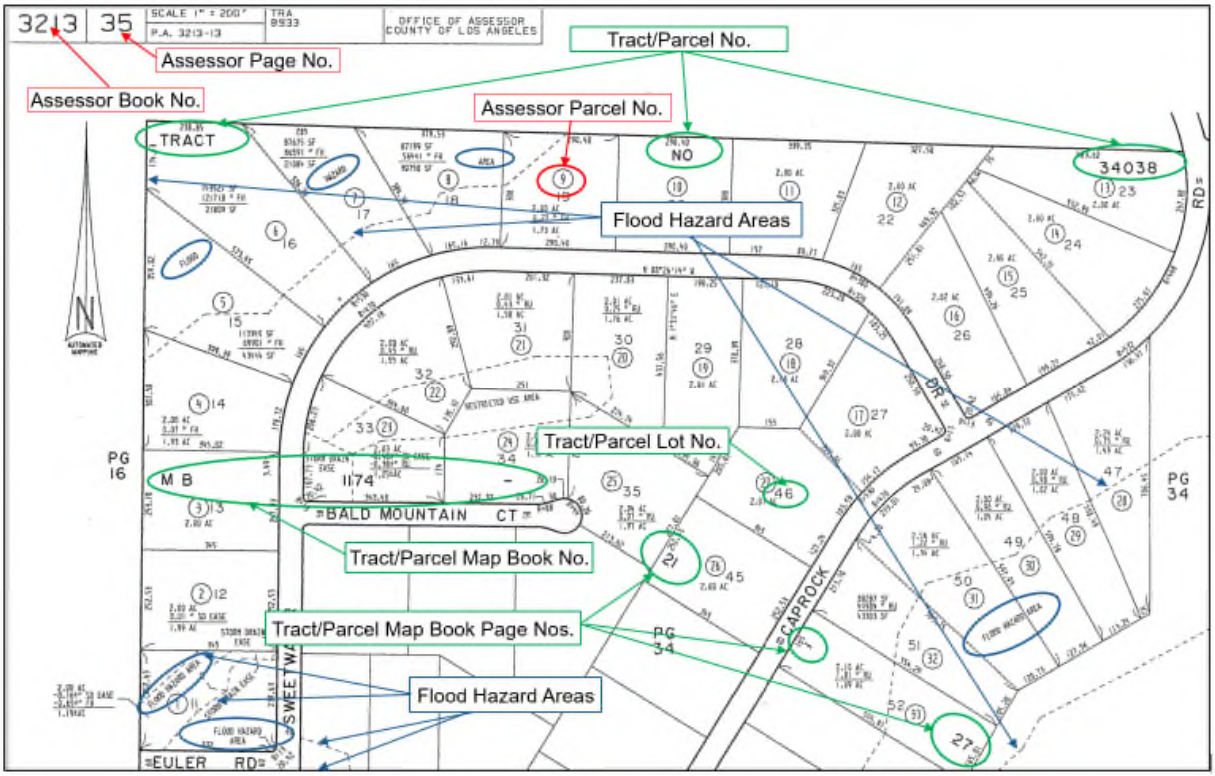
ii. **County Assessor's Map.** Is the proposed project parcel in a Flood Hazard Area shown on the Los Angeles ***County Assessor's Map***? (See image on Page 4 of this workbook.)

☐ Yes. The map will also show information needed to access the Tract or Parcel Map from Public Works' ***Land Records Information website*** (https://pw.lacounty.gov/smpm/landrecords/). That map will be needed if the Flood Hazard Area has to be mapped on the project plans. Proceed to subsection iii.

☐ No. Proceed to subsection iii (Page 5 of this workbook).



Elements Shown on ***County Floodway Map***



Elements on a ***County Assessor's Map***

iii. **Repetitive Loss Area.** Go to the link to ***Los Angeles County's Repetitive Loss Area Analysis*** at https://pw.lacounty.gov/wmd/NFIP/FMP/ and see if its descriptions and maps show the proposed project parcel is in, or is possibly in, a Repetitive (flood) Loss Area. If so, please email FloodAnalysis@pw.lacounty.gov, and request the County provide any available information associated with the designation. (See example email under subsection d on Page 6 of this workbook.) Proceed to subsection c.

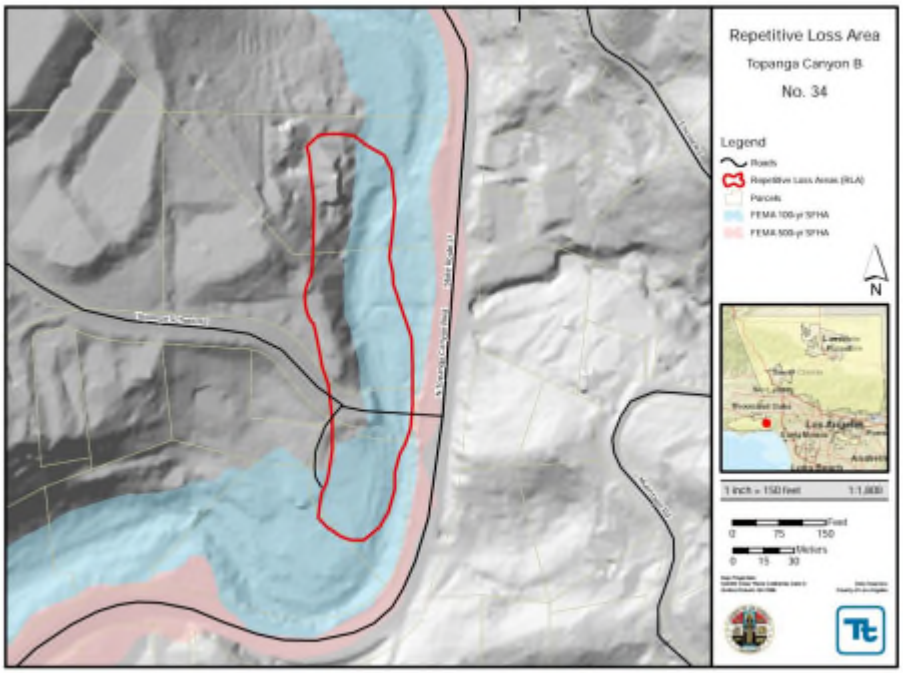


Figure 24-1. Topanga Canyon B Repetitive Loss Area

Example of Map in ***County's Repetitive Loss Area Analysis***

c. **Critical Facility.** Does the project have elements that are a critical facility (e.g., hospital, nursing home, school, police/fire station, emergency center, hazardous substance storage facility) or provide essential service to a critical facility (e.g., road, bridge, generator shed)?

☐ Yes. Specify on the ***Check List (Page 3)***. Proceed to subsection d.

☐ No. Specify on the ***Check List (Page 3)***. Most residential and accessory buildings are non-critical facilities. Proceed to subsection d.

d. **Request to County for Flood Information and Determinations.** The Applicant must:

- Email FloodAnalysis@pw.lacounty.gov and request the following:
  - o Repetitive Loss Area identification and information (as discussed in subsection b.iii;
  - o Flood flow information if the project parcel is in Zone A ,or Zone X-Shaded next to Zone A (as discussed in subsection a.iv (Page 3 of this workbook));

- County's determination of whether the adopted/not-adopted ***County Floodway Map***, or ***County Assessor's Map***, is the best available information on County-mapped flood hazards on your property and, if available, the appropriate Capital Flood flows;
- Whether the Repetitive Loss Area information is the best available information for identifying flood hazards on the project parcel instead of the FEMA and County maps;

- Specify in the email:
  - The project parcel address and Assessor's Parcel Number.
  - If the project parcel is in the Malibu Creek or Santa Clara River watershed.

An example email request is shown below.

Dear Los Angeles County Public Works-SWED:

I seek to obtain building permits for a project on my property *(insert address and Assessor's Parcel Number)*.

(If in or possibly in a Repetitive Loss Area) My property is in/possibly in a Repetitive Loss Area identified by the County. Please provide any information the County has associated with this designation. For the purposes of the Federal Privacy Act regarding properties in Repetitive Loss Areas, I confirm I am the Owner of Record for the property.

My property is in a FEMA-mapped Zone *(insert)*.
(If in Zone A, or in Zone X-Shaded next to Zone A, ask for any available Base Flood or 500-Year Flood information. If in Zone D and there is a streambed on the property, ask for any available flow information.)

My property has a County-mapped flood hazard area in it. I am checking all that applies to it:

__ Adopted County Floodway Map

__ Not-Adopted County Floodway Map

__ County Assessor's Map

__ in Malibu Creek watershed

__ in Santa Clara River watershed

Please inform me which County map is the best available information for the Capital Flood on my property and, if available, the appropriate Capital Flood flows.

Please inform me if the Repetitive Loss Area information is the best available information for identifying flood hazards on my property instead of the FEMA and County maps.

Name
Contact information

Example Email to the County for Flood information and Determinations

e. **County Determinations.** After receiving County's response to the email request in subsection d (Pages 5 and 6 of this workbook):

i. Is the project in a **Repetitive Loss Area**?

☐ Yes. County provided information associated with the determination:

☐ Yes

☐ No

☐ No.

Specify on the ***Check List (Page 3)***, and proceed to subsection ii.

ii. Did the County provide any flood flow information for:

A. FEMA Zone A or adjacent Zone X-Shaded

☐ Yes

☐ No

B. FEMA Zone D

☐ Yes

☐ No

Specify on the ***Check List (Page 1)***, and proceed to subsection iii.

iii. Which map did the County determine to be the best available information on County-mapped flood hazards for your property? After specifying below and on the ***Check List (Page 2)***, proceed to subsection iv.

☐ ***Adopted County Floodway Map***.

☐ ***Not-adopted County Floodway Map***.

☐ ***County Assessor's Map***.*

*Note: The Tract and Parcel Maps referenced on the County Assessor's Map can be accessed at ***Public Works' Land Records Information website***: https://pw.lacounty.gov/smpm/landrecords/. The Tract/Parcel Map for the project parcel will be useful in delineating the Flood Hazard Area limits on the project plans.

iv. Did the County determine the Repetitive Loss Area information to be the best information for the project instead of the FEMA and County maps? After specifying below and on the ***Check List (Page 2)***, proceed to Section 2 (Page 8 of this workbook).

☐ Yes.

☐ No.

2. **Basis of Design.**

   a. **Is the proposed project outside identified severe or moderate flood hazard areas?** Are all elements of the project outside all of the following: FEMA SFHA, FEMA Zone X-Shaded, FEMA Zone D, County Floodway Map/Flood Hazard Area, and Repetitive Loss Area?

   ☐ Yes. No special flood resiliency requirements apply to the project. Specify on the ***Check List (Page 3)***.

   ☐ No. Proceed to subsection b.

   b. **FEMA Zone X-Shaded Basis of Design.** If answering Yes to subsection 1.a.iv (Page 2 of this workbook):

      i. **Critical Facilities.** If answering Yes to subsection 1.c (Page 5 this workbook), there are project elements that are critical facilities or provide essential service to a critical facility:

         A. If located entirely outside a County-mapped flood hazard area: The basis of design is the FEMA 0.2 percent annual chance (500-Year) Flood, plus freeboard requirements specified in the ***Los Angeles County Building Codes*** (https://pw.lacounty.gov/building-and-safety/general). Specify on the ***Check List (Page 3)***. Proceed to subsection 3.b (Page 13 of this workbook) to determine the 500-Year Flood flows and flood elevations.

         B. If located partially or entirely within a County-mapped flood hazard area: The basis of design is the greater between the 500-year Flood and the County Capital Flood, plus the freeboard requirements specified in the ***Los Angeles County Building Codes*** (https://pw.lacounty.gov/building-and-safety/general). Proceed to subsection 3.c (Pages 13-15 of this workbook) to determine the Capital Flood flows and Water Surface Elevations. After comparing the 500-Year and Capital Flood flows and elevations, specify the greater on the ***Check List (Page3)***.

      ii. **Non-Critical Facilities.** If answering No to subsection 1.c (Page 5 this workbook):

         A. If located entirely outside a County-mapped flood hazard area: The County does not require, but highly encourages, the project elements be designed to the FEMA 500-Year Flood plus the freeboard requirements specified in the ***Los Angeles County Building Codes*** (https://pw.lacounty.gov/building-and-safety/general).

            1) If choosing the 500-Year Flood as the basis of design, specify on the ***Check List (Page 3)*** and proceed to subsection 3.b (Page 13 of this workbook) to determine the 500-Year Flood flows and flood elevations.

            2) If not choosing to the 500-Year Flood as the basis of design, specify “no special flood resiliency requirements” on the ***Check List (Page 3)***.

B. If located partially or entirely within a County-mapped flood hazard area: The basis of design is the County Capital Flood plus the freeboard requirements specified in the ***Los Angeles County Building Codes*** (https://pw.lacounty.gov/building-and-safety/general). Specify on the ***Check List (Page 3)***. Proceed to subsection 3.c (Pages 13-15 of this workbook) to determine the Capital Flood flows and Water Surface Elevations.

c. **FEMA SFHA Basis of Design.** If answering Yes to subsection 1.a.ii (Page 1 of this workbook):

i. **Outside Regulated Floodway.** If answering No to subsection 1.a.iii (Page 2 of this workbook):

A. **Critical Facilities.** If answering Yes to subsection 1.c (Page 5 of this workbook), see subsection b.i (Pages 7 and 8 of this workbook). There are subsection b.i standards that may apply to existing structures, if the project involves significant improvement or repairs of significant damage (SI/SD) to those structures. (Go to Section 4 (Pages 16 - 19 of this workbook) to determine if the project is SI/SD and what requirements apply to the existing structures.)

B. **Non-Critical Facilities.** If answering No to subsection 1.c (Page 5 of this workbook):

1) If located entirely outside a County-mapped flood hazard area: The basis of design is the FEMA 1 percent annual chance (100-year) Flood (Base Flood), plus freeboard requirements specified in the ***Los Angeles County Building Codes*** (https://pw.lacounty.gov/building-and-safety/general). Specify on the ***Check List (Page 3)***. This basis of design may apply to existing structures, if the project involves significant improvement or repairs of significant damage (SI/SD) to those structures. (Go to Section 4 (Pages 16 -19 of this workbook) to determine if the project is SI/SD and what requirements apply to the existing structures.) Proceed to subsection 3.a (Pages 11 and 12 of this workbook) to determine the Base Flood flows and Base Flood Elevations.

2) If located partially or entirely within a County-mapped flood hazard area: The basis of design is at a minimum the greater between the FEMA Base Flood and the County Capital Flood, plus the freeboard requirements specified in the ***Los Angeles County Building Codes*** (https://pw.lacounty.gov/building-and-safety/general). This basis of design may apply to existing structures, if the project involves significant improvement or repairs of significant damage (SI/SD) to those structures. (Go to Section 4 (Pages 16 -19 of this workbook) to determine if the project is SI/SD and what requirements apply to the existing structures.) Proceed to subsection 3.c (Pages 13-15 of this workbook) for determining the Capital Flood flows and Water Surface Elevations. After comparing the Base Flood flows and

Base Flood Elevations with the Capital Flood flows and Water Surface Elevations, specify the greater on the ***Check List (Page3)***.

ii. **Within Regulated Floodway.** If answering Yes to subsection a.iii (Page 2 of this workbook):

A. **Critical Facilities.** If answering Yes to subsection 1.c (Page 5 of this workbook), see subsection c.i.A (Page 9 of this workbook), but the project cannot place in the floodway elements that obstruct flows.

B. **Non-Critical Facilities.** If answering No to subsection 1.c (Page 5 of this workbook), see subsection c.i.B (Pages 9 and 10 of this workbook), but the project cannot place in the floodway elements that obstruct flows.

iii. **Elevation Certificate required.** The Applicant will be required to submit to the County a correctly filled out ***Elevation Certificate*** for finished construction of each new/altered building located in a FEMA Special Flood Hazard Area. The County will review the ***Elevation Certificate*** for correctness, and will require corrections from the project proponent until the ***Elevation Certificate*** is correctly filled out. The County will not issue the ***Certificate of Occupancy*** for the building until the County deems the ***Elevation Certificate*** is correctly filled out. Since the ***Elevation Certificate*** is a FEMA compliance document, the ***Elevation Certificate*** must provide FEMA Base Flood Elevation information, even if the building's basis of design is based on higher flood elevations.

d. **FEMA Zone D Basis of Design.** If answering Yes to subsection 1.a.v (Page 2 of this workbook), and the County's response to the email in subsection 1.d (Page 7 of this workbook) determines that there are potential flood hazard issues, the basis of design for critical and non-crital facilities shall be consistent with the flood information provided by the County in its response.

e. **County-Mapped Flood Hazard Basis of Design.** If answering Yes to subsections 1.b.i, or 1.b.ii (Page 2 of this workbook), proceed as follows. *Note: Adopted County Floodway Maps, and some Not-Adopted County Floodway Maps, will delineate the floodway. However, if the Not-Adopted County Floodway Map does not show a floodway, or the County determines the Adopted/Not-Adopted County Floodway Maps are not the "best available information" for County-mapped flood hazards on the project parcel, the Applicant will need to use the process in subsection 3.c.ii.A (Pages 14 and 15 of this workbook) to identify the floodway.*

i. **Inside the County-Mapped Floodplain, but Outside the Floodway.**

A. **Critical Facilities.** If answering Yes to subsection 1.c (Page 5 of this workbook), the basis of design is the greater between the County Capital Flood and the FEMA 500-Year Flood, plus the freeboard requirements specified in the ***Los Angeles County Building Codes***

(https://pw.lacounty.gov/building-and-safety/general). Specify on the ***Check List (Page 3)***. Proceed to subsection 3.b (Page 13 of this workbook) to determine the 500-Year Flood flows and flood elevations, and subsection 3.c (Pages 13-15 of this workbook) to determine the Capital Flood flows and Water Surface Elevations. If the project involves significant improvement or repairs of significant damage (SI/SD) to an existing structure that is also mapped in a FEMA SFHA, the entire structure must meet this subsection e.i.A basis of design. (Go to Section 4 (Pages 16 -19 of this workbook) to determine if the project is SI/SD.)

B. **Non-Critical Facilities.** If answering No to subsection 1.c (Page 4 of this workbook): The basis of design is at a minimum the greater between the FEMA Base Flood and the County Capital Flood, plus the freeboard requirements specified in the ***Los Angeles County Building Codes*** (https://pw.lacounty.gov/building-and-safety/general). Specify on the ***Check List (Page 3)***. Proceed to subsection 3.a (Pages 11 and 12 of this workbook) to determine the Base Flood flows and Base Flood Elevations, and to subsection 3.c (Pages 13-15 of this workbook) for determining the Capital Flood flows and Water Surface Elevations. If the project involves significant improvement or repairs of significant damage (SI/SD) to an existing structure, the entire structure must be made to comply with this subsection e.i.B basis of design. (Go to Section 4 (Pages 16 -19 of this workbook) to determine if the project is SI/SD.)

ii. **Inside the County-Mapped Floodway.**

A. **Critical Facilities.** If answering Yes to subsection 1.c (Page 5 of this workbook), see subsection e.i.A (Pages 10 and 11 of this workbook), but the project cannot place in the floodway elements (including landscaping) that obstruct flows or increase flow velocities to exceed 10 feet per second.

B. **Non-Critical Facilities.** If answering Yes to subsection 1.c (Page 4 of this workbook), see subsection e.i.B, but the project cannot place in the floodway elements (including landscaping) that obstruct flows or increase flow velocities to exceed 10 feet per second.

f. **Repetitive Loss Area Basis of Design.** If answering Yes to subsection 1.b.iii (Page 3 of this workbook), the basis of design will depend on the information provided by the County. Specify on the ***Check List (Page 3)***. If the project involves a critical facility, the basis of design may be higher than that of a non-critical facility.

3. **Determination and Use of FEMA Flood Flows/Elevations and County Capital Flood Flows/Water Surface Elevations (WSEs):**

a. **FEMA Base Flood (100-Year Flood).**

i. **Base Flood Elevations (BFEs) are shown on the FEMA map.** If Yes to BFEs being shown on the map, prepare and provide hydraulic analyses for the existing and

proposed conditions. The U.S. Army Corps of Engineer's ***HEC-RAS hydraulic model*** shall be used for the analyses. All elevations in the hydraulic model shall be based on the NAVD88 Datum. The Base Flood flows and BFEs for existing conditions are provided in FEMA's ***Flood Insurance Rate Maps (FIRMs)*** and ***Flood Insurance Study (FIS)*** for the Los Angeles County area. The FIRMs and FIS can be found on ***Public Works' Flood Zone Determination website*** (https://pw.lacounty.gov/floodzone).* The analysis for the proposed conditions must demonstrate the project does not increase the BFEs on: any existing buildings within the parcel of the project that are not proposed to be altered; in any Regulatory Floodway mapped by FEMA on the parcel; nor anywhere on neighboring parcels, even if those parcels are undeveloped.

***** Note: FEMA Zones AO and AH will have a defined Base Food depth instead of a BFE.

ii. **BFEs are not shown on the FEMA map.** If No to BFEs being shown, a hydrology analysis needs to first be prepared to obtain the FEMA Base Flood flow rate(s) going through the project area and neighboring parcels.

A. If a 100-year flood flow rate(s) from the ***U.S. Geological Survey's (USGS's) StreamStats website*** (https://streamstats.usgs.gov/ss/) is proposed to be used for the Base Flood flow rates(s) instead of a hydrology analysis, email FloodAnalysis@pw.lacounty.gov to obtain the County's prior approval to use the ***StreamStats*** flow rates(s). If the County does not approve the use of the ***StreamStats*** flow rates(s), prepare a hydrology analysis to determine the Base Flood flow rates. The U.S. Army Corps of Engineers' ***HEC-HMS hydrology model*** shall be used.

B. After obtaining the Base Flood flow rate(s), provide a hydraulic analysis of the existing conditions to determine the BFEs on the project's parcel and all neighboring parcels. Provide a second hydraulic analysis for the proposed project conditions. The second analysis shall demonstrate that the proposed project does not increase the BFEs on: any existing buildings within the parcel of the project that are not proposed for replacement or upgrades to current standards; in any regulatory floodway mapped by FEMA on the parcel; nor anywhere on neighboring parcels, even if those parcels are undeveloped.

iii. **Comparison with County Capital Flood Levels.**

Where a County-mapped flood hazard area has been mapped on the project parcel as well as a FEMA-mapped Special Flood Hazard Area (SFHA), whichever has the higher flood level shall be used as the basis of the project design (see subsections 2.c and 2.e (Pages 9-11 of this workbook)), and the hydrology/hydraulic analyses for that higher flood level shall be submitted with the project plans.

b. **FEMA 500-Year Flood.**

i. **500-Year Flood Areas are shown on FEMA maps**.

A. If the ***Flood Insurance Study (FIS)**** defines the 500-Year Flood flow rate(s) and flood elevations for the watercourse going through the project property, prepare and provide hydraulic analyses for the existing and proposed conditions. The U.S. Army Corps of Engineers' ***HEC-RAS hydraulic model*** shall be used for the analyses. All elevations in the hydraulic model shall be based on the NAVD88 Datum.

***** The FIS can be found on ***Public Works' Flood Zone Determination website*** (https://pw.lacounty.gov/floodzone).

B. If the ***FIS*** does not define the 500-Year Flood flow rate(s) and flood elevations for the watercourse going through the project property, a hydrology analysis needs to first be prepared to obtain the 500-Year Flood flow rate(s) going through the project area and neighboring parcels.

1) If a 500-Year Flood flow rate(s) from the ***U.S. Geological Survey's (USGS's) StreamStats website*** (https://streamstats.usgs.gov/ss/) is proposed to be used instead of a hydrology analysis, email FloodAnalysis@pw.lacounty.gov to obtain the County's prior approval to use the ***StreamStats*** flow rates(s). If the County does not approve the use of the ***StreamStats*** flow rates(s), prepare a hydrology analysis to determine the 500-Year Flood flow rates. The U.S. Army Corps of Engineers' ***HEC-HMS hydrology model*** shall be used.

2) After obtaining the 500-Year Flood flow rate(s), provide a hydraulic analysis of the existing conditions to determine the 500-Year Flood elevations on the project's parcel. Provide a second hydraulic analysis to determine the 500-Year Flood elevations for the proposed project conditions.

ii. **500-Year Flood Areas not shown on FEMA maps.** Prepare hydrologic and hydraulic analyses in accordance with subsection b.i.B.

iii. **Comparison with County Capital Flood Levels.**

A. Where a Capital Flood Water Surface elevation (WSE) has to be considered for the project as well as a FEMA 500-Year Flood elevation, whichever has the higher flood level shall be used as the basis of the project design (see subsections 2.b and 2.e (Pages 8-9 and 10-11 of this workbook)), and the hydrology/hydraulic analyses for that higher flood level shall be submitted with the project plans.

c. **County Capital Flood.**

i. **Adopted or Not-Adopted County Floodway Map has been determined to be the "best available information" for County flood hazards.**

A. **Hydraulic analyses.** Prepare and provide hydraulic analyses for the existing and proposed conditions. Use the Capital Flood flow rates and Water Surface

Elevations (WSEs) shown on the map for the existing conditions.* The U.S. Army Corps of Engineers' ***HEC-RAS hydraulic model*** shall be used for the analyses. All elevations in the hydraulic model shall be based on the NAVD88 Datum. The analysis for the proposed conditions must demonstrate the project does not increase the WSEs on: any existing buildings within the parcel of the project that are not proposed to be altered; in any floodway mapped by the County on the parcel; nor anywhere on neighboring parcels, even if those parcels are undeveloped.

* Note: All elevations on the ***County Floodway Map*** are based on the NGVD29 Datum, and will need to be converted to the NAVD88 Datum. Refer to FEMA's ***Flood Insurance Study (FIS)*** for Los Angeles County, Mapping Methods section, for vertical datum conversion factors for numerous watercourses in Los Angeles County. The ***County Floodway Map*** and FEMA ***FIS*** can be found on ***Public Works' Flood Zone Determination website*** (https://pw.lacounty.gov/floodzone).

B. **Comparison with FEMA flood levels.**

1) Where a FEMA Special Flood Hazard Area (SFHA) has been mapped on the project parcel as well as a County flood hazard area, whichever has the higher flood level shall be used as the basis of the project design (see subsections 2.c and 2.e (Pages 9-11 of this workbook)), and the hydrologic/hydraulic analyses for that higher flood level shall be submitted with the project plans.

2) Where a FEMA 500-Year Flood elevation has to be considered for the project as well as a Capital Flood WSE, whichever has the higher flood level shall be used as the basis of the project design (see subsections 2.b and 2.e (Pages 8-9 and 10-11 of this workbook)), and the hydrology/hydraulic analyses for that higher flood level shall be submitted with the project plans.

ii. **Updated Capital Flood flow rate(s) has been determined to be the "best available information" for County flood hazards.** This consideration applies to projects located in the watersheds of Malibu Creek and the Santa Clara River.

A. **Hydraulic analyses.** Prepare and provide hydraulic analyses for the existing and proposed conditions. The U.S. Army Corps of Engineers' ***HEC-RAS hydraulic model*** shall be used for the analyses. All elevations in the hydraulic model shall be based on the NAVD88 Datum. Prepare a hydraulic analysis of the existing conditions to define the extent of the Capital Flood floodplain on the project parcel and neighboring parcels. Defining the floodway is required. The floodway is the portion of the Capital Flood floodplain that must be kept clear of obstructions to pass the Capital Flood without the Water Surface Elevation (WSE) rising by more than 1.0 foot, or flow velocities exceeding 10 feet per second (fps). If the entire Capital Flood floodplain has a flow velocity equal to or greater than 10 fps, then the entire floodplain is in a floodway. After defining the floodway, the

analysis for the proposed conditions must demonstrate the project does not increase the WSEs on: any existing buildings within the parcel of the project that are not proposed to be altered; in any floodway on the parcel; nor anywhere on neighboring parcels, even if those parcels are undeveloped.

B. **Comparison with FEMA Flood Levels.** Refer to subsection c.i.B (Pages 13 and 14 of this workbook).

iii. **County Assessor Flood Hazard Area has been determined to be the "best available information" for County flood hazards.**

A. **Hydraulic analyses.**

1) If the County provided Capital Flow rate(s), refer to subsection c.ii.A .

2) If the County could not provide Capital Flood flow rate(s), prepare a hydrology analysis to determine the County Capital Flood flow rates for the parcel and neighboring parcels. Use the ***County's hydrology model*** in accordance with ***Public Works' Hydrology and Sedimentation Manuals*** (https://pw.lacounty.gov/core-service-areas/water-resources/publications/). Then proceed with the steps in subsection c.ii.A.

B. **Comparison with FEMA Flood Levels.** Refer to subsection c.i.B (Page 14 of this workbook).

d. **Repetitive Loss Area has been determined to be the "best available information" for County flood hazards.** The need for hydrology and hydraulic analyses will depend on the information the County provides for the Repetitive Loss Area.

Reminder for all cases (subsections a through d):

- *The project shall be designed to ensure flows from the proposed conditions do **not** increase flood hazards on: any existing buildings within the parcel of the project that are not proposed for replacement or upgrades to current standards; in any floodway; **nor** anywhere on neighboring parcels, **even if those neighboring parcels are undeveloped**.*
- *All hydrology and hydraulic analyses undertaken by the Applicant need to be prepared, signed, and stamped by a California licensed Professional Civil Engineer. Please provide all analyses with plan submittal for processing and review. All flood levels needed for hydraulic analysis review, and for proposed and existing buildings, need to be shown on the project plans.*

e. For proposed work on existing structures in FEMA and/or County severe flood hazard areas, proceed to Section 4 (Page 16 of this workbook).

4. **Is work on an existing structure a significant improvement or repair of significant damage (SI/SD)?**

   a. If the cumulative values of all past and proposed improvements to the existing building is 50 percent or more than the current market value of the building, then it will be considered a Substantially Improved/Substantially Damaged (SI/SD) project. Use the most current property tax bill to obtain the valuation of the existing building. To determine the valuation of the proposed project, please refer to the ***Marshall-Swift Valuation Guide Sheet*** available at your local Building and Safety Office.

   Is the project SI/SD?

   ☐ No. No flood resiliency upgrades are required for the existing structure. Specify on ***Check List (Page 3)***.

   ☐ Yes. The entire existing structure must meet all current developmental standards in the flood hazard areas per the ***Los Angeles County Building Codes*** (https://pw.lacounty.gov/building-and-safety/general).

   Specify on ***Check List (Page 3)***.

   If the cumulative value of all past and proposed improvements for the existing building is greater than 40 percent but less than 50 percent of the current market value of the building, then all the following are required:

   - an ***Owner's Affidavit: Substantial Improvement or Repair of Substantial Damage***; signed by the owner (email FloodAnalysis@pw.lacounty.gov to obtain the affidavit form);
   - a bid from a California licensed contractor for the proposed improvements/repairs; and
   - a copy of the owner's most recent property tax assessment bill, or an appraisal for the current market value.

   Note: During the review process, Public Works-SWED may request verification of the appraised value.

   Proceed to subsection b.

   b. **Is the structure "Pre-FIRM?"** "Pre-FIRM" structures in Los Angeles County are structures built or had permits for construction issued before December 2, 1980, the date of the first FEMA ***Flood Insurance Rate Maps (FIRMs)*** and ***County Floodway Maps*** in the County. To obtain permit records for your property, go to the County's ***Building Permit Viewer website*** (https://apps.gis.lacounty.gov/dpw/m/?viewer=bpv_wf5). If the permits are unavailable online, contact the County Building & Safety Office on your agency referral sheet for more information.

Is the structure Pre-FIRM?

☐ Yes. The structure is subject to the **Pre-FIRM** developmental standards***** for structures in FEMA and County flood hazard areas shown in Table 6-1a (for A Zones) and Table 6-1b (for V Zones) on Pages 18 and 19 of this workbook.

☐ No. The structure is **Post-FIRM** (structures permitted after December 2, 1980), and subject to the **Post-FIRM** developmental standards***** for structures in FEMA and County flood hazard areas shown in Table 6-1a (for A Zones) and Table 6-1b (for V Zones) on Pages 18 and 19 of this workbook.

***** *Note: Compliance includes prohibition of basements for new or SI/SD buildings in FEMA Special Flood Hazard Areas and in County-mapped flood hazard areas.*

Was the Compliance Matrix considered for the design of the project?

☐ Yes Specify on the ***Check List (Page 3)***.

☐ No*

** Note: If No, the project will <u>not</u> be reviewed by Public Works-SWED until FEMA's Compliance Matrix requirements are met.*

Table 6-1a. Compliance Matrix (A Zones)

Types of Work	Building is Pre-FIRM	Building is Post-FIRM
Rehabilitation (renovate or remodel), not SI	Compliance not required	Work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance
Rehabilitation (renovate or remodel), SI	Building required to comply	Work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance (see Note below table)
Lateral addition and Rehabilitation, SI	Addition required to comply; building required to comply	Addition required to comply; building required to comply (see Note below table)
Lateral addition, not SI	Addition not required to comply	Addition required to be elevated to at least the elevation of the existing lowest floor
Lateral addition, SI, not structurally connected	Addition required to comply; building not required to comply	Addition required to comply
Lateral addition, SI, structurally connected	Addition required to comply; building required to comply	Addition required to comply; building required to comply (see Note below table)
Vertical addition above building, not SI	Compliance not required	Work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance
Vertical addition above building, SI	Building required to comply	Work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance (see Note below table)
Repair foundation, not SI	Compliance not required	Repairs shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance
Repair foundation, SI	Building required to comply	Building required to comply (see Note below table)
Replace/extend foundation, SI (including "elevate-in-place")	Building required to comply	Building required to comply (see Note below table)
Repair damage, SD	Building required to comply	Work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance (see Note below table)
Reconstruct new building on existing or new foundation, SI	Reconstructed building required to comply	Reconstructed building required to comply (see Note below table)

Note: If a map revision has resulted in a higher BFE, a post-FIRM building must comply based on the new BFE.

Reference: ***SI/SD Desk Reference FEMA P-758***

Table 6-1b. Compliance Matrix (V Zones)

Types of Work	Building is Pre-FIRM	Building is Post-FIRM
Rehabilitation (renovate or remodel), not SI	Compliance not required	Work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance
Rehabilitation (renovate or remodel), SI	Building required to comply	Work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance (see Note below table)
Lateral addition and Rehabilitation, SI	Addition required to comply; building required to comply	Addition required to comply, and rehabilitation work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance (see Note below table)
Lateral addition, not SI	Addition not required to comply	Addition required to comply
Lateral addition, SI, not structurally connected	Addition required to comply; building required to comply	Addition required to comply (see Note below)
Lateral addition, SI, structurally connected	Addition required to comply; building required to comply	Addition required to comply; building required to comply (see Note below table)
Vertical addition above building, not SI	Compliance not required	Work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance
Vertical addition above building, SI	Building required to comply	Work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance (see Note below table)
Repair foundation, not SI	Compliance not required	Repairs shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance
Repair foundation, SI	Building required to comply	Building required to comply (see Note below table)
Replace/extend foundation, SI (including "elevate-in-place")	Building required to comply	Building required to comply (see Note below table)
Repair damage, SD	Building required to comply	Work shall comply and shall not be allowed to make the building non-compliant with any aspect of the building that was required for compliance (see Note below table)
Reconstruct new building on existing or new foundation, SI	Reconstructed building required to comply	Reconstructed building required to comply (see Note below table)

Note: If a map revision has resulted in a higher BFE, a post-FIRM building must comply based on the new BFE.

Reference: ***SI/SD Desk Reference FEMA P-758***