City of Monterey
Rooftop Rainwater Harvesting Permit Application & Inspection Checklist

A building permit is not required for a rainwater harvesting system if all of the following conditions are met:
- The rainwater harvesting system is used only for outdoor, non-spray irrigation.
- Cisterns have a maximum capacity of less than 5,000 gallons each and are supported directly on grade.
- The ratio of height to diameter (or width) of the cistern does not exceed 2 to 1.
- The rainwater harvesting system does not require electrical power.
- The rainwater harvesting system has no makeup water supply connection from any potable or alternative water source.

Completed applications are accepted Monday-Friday 8:00 AM – 4:00 PM by the Building Department located at 580 Pacific Street, Monterey. A permit application fee of $186.00 must accompany the application. Questions may be directed in person or by phone at 831-646-3891. This checklist is available at http://monterey.org/en-us/Departments/Plans-Public-Works/Building-Permit-Inspection

Applications will be accepted only after completion of the items on this checklist are verified by a Building Permit Specialist. The contents of this checklist are the minimum compliance requirements in Title 24, Part 5, Chapter 17 of the California Plumbing Code (CPC).

Minimum Submittals for a Building Permit Application
Three (3) complete sets of proposed construction plans and information described below:

1. **Building Permit Application**: Complete all required fields and answer all questions. In the project description section, list the intended use(s) of harvested rainwater. Use blue or black ink only.

2. **Property Location/Vicinity Map**: Depict nearest street intersections and north arrow. The property location/vicinity map may be placed on the site plan (see item #3)

3. **Site Plan**: (Minimum scale 1” - 20'; minimum sheet size 11” x 17”) to include all applicable items:
   a. North arrow.
   b. Official property address and assessors parcel number (APN).
   c. Parcel lot dimensions and boundaries.
   d. Easements including any and all encumbrances; access, public utility, private, etc.
   e. Existing and proposed impervious areas (building rooftops, driveways, sidewalks, etc.)
   f. Parking layout (if impacted by cistern placement).
   g. Location of potable water meter and name of potable water purveyor.
   h. Location of on site well(s).
   i. Location of proposed rainwater catchment (collection) surface and total rainwater catchment area (ft²).
   j. Location and height of trees adjacent to the proposed rainwater catchment surface.
   k. Location of rainwater harvesting cistern(s) and pumps must have a minimum 2’ setback for cisterns from property lines and structures.
   l. Approximate slope of landscaped and/or impervious areas adjacent to rainwater harvesting cistern(s).
   m. Location of indoor fixtures and dual plumbing piping supplying rainwater to fixtures.
   n. Location of landscaped area to be irrigated with rainwater and type of irrigation system; spray or drip.
   o. Location of septic system.
   p. Flood zones and stormwater drainage discharges on the property (including the path of seasonal or permanent water flows, stormwater inlets, building downspouts, etc.).
4. **Rainwater Harvesting Plan Details** (to include):
   a. Official property address and APN
   b. List all intended uses of harvested rainwater (irrigation, toilet flushing, clothes washing, etc.)
   c. Specify any new electrical work

**Conveyance & Filtration**
The design and size of rainwater conveyance system materials shall comply with Ch. 11 of the CPC. All materials shall be listed for the intended use.

d. Location and direction of flow of rainwater harvesting conveyance (drainage) system to the cistern. Indicate the material type and size of gutters, downspouts, and conveyance piping to the cistern inlet.

e. Location and type of debris excluder. Screening before storage is required. Roof washers/first-flush devices are optional.

**Cistern**

f. Provide information about the total capacity (gallons) of cistern(s), height, and diameter or width dimensions. Attach cistern manufacturers specifications.

g. Location of cistern(s)
   i. If the cistern is to be buried, submit additional construction details described in section 7.
   ii. If the cistern is above-ground (on grade), more than 5,000 gallons, or the ratio of height to diameter does exceed 2 to 1, submit additional construction plans described in section 7.
   iii. If the cistern is above-ground (on grade), less than 5,000 gallons, and the ratio of height to diameter does not exceed 2 to 1, provide information about:
      • The material type and depth of foundation pad or platform that will accommodate the load of the cistern when full. Sand shall not be used.
      • Screens (vegetative or structural) to shield the cistern from direct sunlight. Indicate height (if applicable)

**Cistern Plumbing Details**
All plumbing work must be done in accordance with the CPC. All materials must be listed for the intended use. The cistern plumbing details must include:

h. Locations of all plumbing equipment entering and existing the cistern(s), including:
   • Pipes for the cistern inlet, outlet, and overflow. Indicate pipe material and size.\(^1\)
   • Valves and unions.
   • Dual plumbing pipes supplying rainwater to non-potable fixtures listed in building application project description and item 4b. Indicate flow direction, material type, and size.
   • Pump and controls. Attach manufacturer’s specifications.\(^2\)
   • Filter(s) installed on rainwater supply piping to irrigation or indoor fixtures. Attach manufacturer’s specifications.\(^3\)
   • Reduced principle backflow prevention (required if there is a cross connection with potable water). Attach manufacturer’s specifications.
   • If potable water is used to recharge the cistern, the plan must indicate the location and height of an air gap\(^4\)

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\(^1\) The size of the overflow outlet must be equal to or greater than the aggregate size of all inlet pipes directing rainwater into the cistern.

\(^2\) Pumps supplying rainwater for indoor, non-potable uses shall be capable of delivering a minimum of 15 PSI residual pressure at the highest or most remote outlet served.

\(^3\) 100 micron minimum filtration is required.

\(^4\) Minimum air gap length shall be twice the diameter of the potable water supply pipe, measured from the top of the overflow pipe to the bottom of the potable water pipe inlet.
Cistern Overflow
i. Indicate how the overflow water from the cistern will be directed to minimize stormwater run-off from the property. Overflow to rain gardens, swales, dry creek beds, or other permeable landscaping is encouraged.
(Note: If the project involves the replacement or addition of more than 2,500 ft² of impervious area, submit a stormwater drainage plan to the Engineering Division at 831-646-3921)

5. Plumbing Plan Details for Indoor, Non-Potable Uses of Rainwater (Commercial/Multi-Family)
Required for commercial and multi-family buildings when existing plumbing is altered or new plumbing is installed to supply rainwater to toilets, urinals, clothes washers, and trap primers. All plumbing work must be done in accordance with the CPC. All plumbing materials must be listed. The plumbing plan diagram must include:
   a. Floor plan (Indicate the rooms in the building where rainwater will supply fixtures).
   b. Location of fixtures that will be supplied with rainwater.
   c. Location of new rainwater supply lines (dual plumbing) supplying indoor fixtures. Indicate direction of flow, material and size.
   d. Location and type of any disinfection systems (chlorination, ozone, or ultra-violet). Attach manufacturer’s specifications.
   e. Location of valves.
   f. Location of reduced principle backflow prevention (if there is a cross connection with potable water). Attach manufacturer’s specifications.

6. Electrical Plan Diagram (Commercial/Multi-Family)
Pumps and controls that plug into existing electrical outlets do not require an electrical plan. All electrical work must be done in accordance with the California Electrical Code. The electrical diagram must include the locations of any and all electrical equipment installed for the rainwater harvesting system, including but not limited to:
   a. Dedicated electrical outlets (indicate voltage)
   b. Pumps
   c. Controls
   d. Float switches
   e. Solenoid Valves
   f. Over current protection

7. Construction Plan Details
Required for cisterns > 5,000 gallons and > 2:1 height to width ratio, underground cisterns, and tanks located on slopes.

Above Ground Cisterns
Submit all applicable:
• Foundation plans
• Footing details
• Details for engineered support and anchoring systems
• Concrete retaining structure details (applicable to cisterns cited on slopes)

Below Ground Cisterns
Submit drawings demonstrating that:
• Holding tank covers are capable of supporting an earth load of not less than 300 lbs/ft²
• The combined weight of the tank (when empty) and hold down system meets or exceeds the buoyancy force of the tank.
• A manhole is present that is no less than 24” wide
• The manhole opening is no less than 4” above the surrounding grade that slopes away from the manhole.
• Attach a section of the excavation and indicate the depth and type of backfill material to be used.

Maintenance of the rainwater harvesting system is the responsibility of the property owner. All rainwater harvesting system components shall be inspected and maintained according to the system’s operations and maintenance manual and component manufacturer’s recommendations. The building inspector will ask to see an operation and maintenance manual at the time of the system inspection. (See Inspection Checklist below for specific operations and maintenance manual requirements).

9. Affidavit for Abandonment
If the owner of a rainwater harvesting system elects to cease use of, or fails to properly maintain the system, they shall abandon the system. Rainwater harvesting system abandonment and potable water installations require permit, inspection(s) and approval(s). To abandon the system, one shall:
  a. Remove the system entirely:
     a. Replace the rainwater harvesting pipe system with an approved potable water supply pipe system. Where in existing potable pipe system is already in place, fixtures may be reconnected to the existing potable pipe system, and
     b. Record the abandonment by obtaining a rainwater harvesting system demolition permit from the Permits & Inspections Division

Summary of minimum required attachments
  o Manufacturer specifications for cistern
  o Manufacturer specifications for pump and controls
  o Manufacturer specifications for post-pump filtration
  o Manufacturer specifications for disinfection systems (if applicable)
Building Inspection Checklist

The following checklist describes items required for a rainwater harvesting system to pass a building permit inspection. These items are in addition to the required items in the rainwater harvesting system plan submitted with the building permit application.

Labels & Safety:
- Cisterns must be marked with the words ‘DANGER-CONFINED SPACE’
- Cistern manholes must have a locking device.
- Cisterns must be marked with the words ‘NONPOTABLE RAINWATER’
- At each toilet and urinal supplied with rainwater, a sign must be posted with the following text: ‘TO CONSERVE WATER, THIS BUILDING USES RAINWATER TO FLUSH TOILETS AND URINALS’
- Equipment rooms containing non-potable rainwater harvesting equipment must have a visible sign posted in 1” letters with the following text: CAUTION NONPOTABLE WATER, DO NOT DRINK. DO NOT CONNECT TO DRINKING WATER SYSTEM. NOTICE: CONTAT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM’
- Hose bibs that convey rainwater must be marked with the words ‘CAUTION, NONPOTABLE RAINWATER, DO NOT DRINK’ and the following symbol: [image]
- Piping must be purple and marked with the words ‘CAUTION, NONPOTABLE RAINWATER, DO NOT DRINK’.

Screens & Filters
- Tree branches must be trimmed back sufficiently to not drop debris onto the roof catchment surface.
- Gutters must be clean and free of debris.
- Debris excluder (screen before storage) and first-flush device must be functioning properly.
- Screens with an aperture not greater than 1/16” must be installed on overflow pipes. One-way flap doors may be used.

Rainwater Harvesting Cistern & Plumbing
- All plumbing components must be water-tight. All piping will be tested at working pressure.
- Rainwater conveyance pipes entering the cistern should terminate in a return bend elbow pointing upward at the bottom of the tank, or an equivalent calming device.
- Cistern foundation and overflow is properly constructed to prevent erosion around the base of the cistern and the surrounding landscape. Sand shall not be used.

Operations and Maintenance Manual
The manual shall include:
- As-built diagrams of the entire rainwater harvesting system showing the location of system components.
- Instructions on operating and maintaining the system to obtain optimal water quality.
- Details on startup, shutdown, and deactivating the system for maintenance, repair, and other purposes.
- Contact information for the installer and/or manufacturer.
- Copies of manufacturer warranties and operation and maintenance information.
- Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.
Testing, inspection, and maintenance frequencies following the table below:

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum Frequency</th>
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<tbody>
<tr>
<td>Inspect and clean all filter and screens, and replace (if necessary)</td>
<td>Every 3 months</td>
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<tr>
<td>Inspect and clear debris from roof, gutters, downspouts, and roof washers/first flush devices</td>
<td>Every 3-6 months</td>
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<tr>
<td>Remove tree branches and vegetation overhanging roof collection surfaces</td>
<td>As needed</td>
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<tr>
<td>Inspect pump systems and valves and verify operation</td>
<td>After initial installation and every 12 months thereafter</td>
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<tr>
<td>Clear debris from and inspect cistern tanks and locking devices</td>
<td>After initial installation and every 12 months thereafter</td>
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<tr>
<td>Inspect caution labels and signage</td>
<td>After initial installation and every 12 months thereafter</td>
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<tr>
<td>Backflow and cross connection test (dual plumbing systems only)</td>
<td>After initial installation and every 12 months thereafter</td>
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