DESIGN INTENT

The landscape is designed to comply with the prescriptive compliance option of the locally adopted and state approved Water Efficient Landscape Ordinance (WELO), consistent with mandatory elements of WELO must be documented on landscape plans.

The plans are designed to demonstrate fire safe landscaping approaches with low, less woody plants close to buildings, and trees positioned to allow maintenance of branches 10’ away from building.

Low impact development (LID) elements such as permeable paving, and downsputs disconnected from storm sewers and draining to raingardens or landscape strips, are provided to help manage stormwater runoff on site. Increase groundwater recharge by lowering the amount of soil moisture available to plants thereby reducing irrigation needs.

LAWSCAPE DESIGN REQUIREMENTS

The planting is designed to comply with the appendix H, “Prescriptive Compliance Option” of WELO:

1. MEDIUM WATER USE PLANTING does not exceed 25 percent of the total planted and irrigated area.
2. LOW WATER USE or CLIMATE-ADAPTED SPECIES that require little or no summer water are selected for planting near buildings to maintain and irrigate.
3. Permitted landscape area must be smaller than 2500 sf of planted and irrigated area.
4. Plans are intended for use on sites with less than 25% slopes.
5. Plants are placed in appropriate microclimates by evaluating the direction the front yard is facing and north-south are indicated on plans.
6. Plants are grouped in irrigation zones (hydrozoned) based on similar water needs as defined by the state water use classifications of landscape species IV for plants 5’ below grade.
7. Irrigation design requirements are designed to comply with the prescriptive compliance option of the locally adopted WELO:

   1. Mandatory Elements of WELO must be documented on landscape plans.
   2. Plans are designed to demonstrate fire safe landscaping approaches with low, less woody plants close to buildings, and trees positioned to allow maintenance of branches 10’ away from building.
   3. Low impact development (LID) elements such as permeable paving, and downsputs disconnected from storm sewers and draining to raingardens or landscape strips, are provided to help manage stormwater runoff on site. Increase groundwater recharge by lowering the amount of soil moisture available to plants thereby reducing irrigation needs.

IRRIGATION DESIGN REQUIREMENTS AND GUIDELINES

The irrigation system is designed to comply with the prescriptive compliance option of WELO:

1. Install an automatic irrigation controller that does not lose programming data after a power failure, non-volatile memory and utilize a programmed irrigation on soil moisture requirements.
2. Install a rain sensor.
3. System is designed to reduce water use to the minimum amount to sustain healthy plant growth. All irrigation is scheduled to be in place as close as possible to the point of connection.
4. Pressure regulation is provided to ensure the dynamic pressure of the system is within the manufacturer’s recommended pressure rating for the irrigation components.
5. All irrigation emission devices must be rated to the ANSI standard.
6. Irrigation zones must be based on similar water needs as defined by the state water use classifications of landscape species IV for plants 5’ below grade.
7. Rainwater and stormwater elements should be reviewed with site design team and general contractor prior to site grading.
8. EWPRD PAVING and STORMWATER elements should be reviewed with site design team and general contractor.
9. EWPRD PAVING and STORMWATER elements should be reviewed with site design team and general contractor.

ADDITIONAL GUIDELINES FOR THE IRRIGATION SYSTEMS:

A. FIRE WATER PLANTINGS are indicated on plant lists and used within 2% of homes.
B. Complete fire safe landscape cover sheet prior to planting.
C. Trees are located for shade on garden areas and to provide solar access for solar panels on roofs. Trees are located away from building structures so that branches do not contact building.
D. Plants are placed in appropriate microclimates by evaluating the direction the front yard is facing and north-south are indicated on plans.
E. Plants are grouped in irrigation zones (hydrozoned) based on similar water needs as defined by the state water use classifications of landscape species IV for plants 5’ below grade.
F. Irrigation design requirements are designed to comply with the prescriptive compliance option of the locally adopted WELO:

   1. Mandatory Elements of WELO must be documented on landscape plans.
   2. Plans are designed to demonstrate fire safe landscaping approaches with low, less woody plants close to buildings, and trees positioned to allow maintenance of branches 10’ away from building.
   3. Low impact development (LID) elements such as permeable paving, and downsputs disconnected from storm sewers and draining to raingardens or landscape strips, are provided to help manage stormwater runoff on site. Increase groundwater recharge by lowering the amount of soil moisture available to plants thereby reducing irrigation needs.

SOIL MANAGEMENT REQUIREMENTS

SOIL is managed to comply with the prescriptive compliance option of WELO:

1. Incorporate compost at a rate of at least 4 cubic yards per 1,000 square feet to a depth of 6 inches into the landscape area.
2. After planting, a minimum three inches layer of mulch shall be applied on all exposed soil surfaces of planting areas.
3. Mulch can be used for native grass and/or welckerin areas.

SYMBOLS & DEFINITIONS

1. CLIMATE ADAPTED: Non-native plants which are adapted to local microclimates.
2. IRWIN PLANTS California Water Foundation Council (CWFC) designates invasive plants as: plants that are not native to an environment and once introduced, they establish, quickly reproduce and spread, and cause harm to the environment, economy, or human health.
3. MICROCLIMATE: A local or small area climate.
4. MULCH: A loose layer of organic material that is spread on the soil surface to conserve moisture, prevent weed growth, provide a buffer, and simulate a natural soil surface.
5. TURF: A surface cover of non-natural grasses (conventional lawn).
CONCRETE
FILL IN PLANT WATER USE TABLE.
REFER TO PLANTING DETAILS ON SHEET L3.2.
SF
PLANTING DESIGN FOR FULL COVER WITHIN 3 YEARS.
ADD ANY EXISTING TREES IN RED ON THE PLAN. ADJUST TREE LOCATIONS IF NEEDED TO FIT YOUR SITE.
SF
REVIEW IRRIGATION SHEETS AND INSTALL SLEEVES UNDER PAVING SURFACES IN THEIR CORRECT LOCATION.
INDICATE ANY SUBSTITUTIONS TO THE PLANTINGS BY CROSSING OUT THE LISTED PLANTS AND WRITING THE SUBSTITUTION BELOW IN RED INK. MAKE SURE ADJUST ORIENTATION OF NORTH ARROW TO SITE CONDITION.

NOTE:

1. MEASURE ENTIRE FRONT YARD AREA. SUBTRACT HORTICULTURAL AREAS TO GET THE TOTAL SQUARE FEET OF PLANTED AND BRIDGEDITED AREA. ENTER THIS NUMBER IN THE PLANT WATER USE TABLE ON THIS SHEET.

2. IF NEEDED USE A RED PEN TO ADJUST THE LAYOUT OF DRIVEWAY, PATHS AND PLANTING AREAS TO FIT YOUR YARD.

3. ADJUST ORIENTATION OF NORTH ARROW TO SITE CONDITION.

4. COMPLETE PLANT WATER USE TABLE. ADJUST TREE LOCATIONS IF NEEDED TO FIT YOUR SITE.

5. FILL IN PLANT WATER USE TABLE.

6. RIVERSIDE CATCHMENTS ARE MEDIUM WATER USE PLANTING.

7. IN THE LEGEND, CIRCLE THE HORTICULTURAL MATERIALS. Enter USING THE DETAIL SHEETS. Enter USING THE DETAIL SHEETS. Enter USING THE DETAIL SHEETS. Enter USING THE DETAIL SHEETS. Enter USING THE DETAIL SHEETS.

8. ENTER ANY SUBSTITUTIONS TO THE PLANTINGS BY CROSSING OUT THE LISTED PLANTS AND WRITING THE SUBSTITUTION BELOW IN RED INK. MAKE SURE THE PLANTS USED HAVE MATCHING WATER USE AND ARE ROUGHLY THE SAME SIZE (SEE SONOMA-MARIN SAVING WATER PARTNERSHIP FOR SUBSTITUTIONS).

9. MOVE TO THE IRRIGATION PLAN AND FILL IN THE AREAS INDICATED ON THAT SHEET.

NOTE:

1. PLANTING DESIGN FOR FULL COVER WITHIN 3 YEARS.

2. THE GARDEN IS DESIGNED TO CAPTURE AND INFILTRATE SOME STORM WATER ON SITE. WHEN THE FLOW IS DIRECTED TO A SLOPE OR RAIN GARDEN, IT NEEDS A DRAIN OUTLET THAT WONT ERODE. OPTIONS ARE PROVIDED ON THE DETAIL SHEETS. SPLASH BLOCKS AND DRAIN TILES IN PLANTING BEDS ARE MEANT TO SPREAD THE FLOW TO SHEETFLOW OVER PLANTING AREAS AND NO OVERFLOW DEVICE IS NEEDED.

3. REVIEW IRRIGATION SHEETS AND INSTALL SLEEVES UNDER PAVING SURFACES IN THEIR CORRECT LOCATION.

APPLICANT INSTRUCTIONS:

NUMBER IN THE PLANT WATER USE TABLE ON THIS SHEET.

MEANT TO SPREAD THE FLOW TO SHEETFLOW OVER PLANTING AREAS AND NO OVERFLOW DEVICE IS NEEDED.

THE PLANTS USED HAVE MATCHING WATER USE AND ARE ROUGHLY THE SAME SIZE (SEE SONOMA-MARIN SAVING WATER PARTNERSHIP FOR SUBSTITUTIONS).
IRRIGATION NOTES

1. INSTALLATION TO BE BY CONTRACTOR WITH A VALID CURRENT CALIFORNIA C-27 LICENSED CRANE HOMEOWNER WITH RELEVANT KNOWLEDGE, SKILLS & EXPERIENCE.

2. THE IRRIGATION PLAN IS DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE COMPLETED. IRRIGATION EQUIPMENT OR PIPING MAY BE SHOWN IN PLANNED AREAS FOR GRADING AND LANDSCAPING ONLY. OWNER'S PRESERVATION.

3. VERIFY LOCATION OF SUBSURFACE UTILITIES, PIPE, AND STRUCTURES. NOTIFY OWNER'S REPRESENTATIVE IF UTILITIES OR OTHER WORK NOT SHOWN ON THE PLANS ARE FOUND DURING EXCAVATIONS.

4. CAREFULLY INVESTIGATE EXISTING FIELD CONDITIONS AND NOTIFY OWNER'S REPRESENTATIVE OF ANY POTENTIAL CONFLICT WITH DESIGN.

5. CONFIRM MINIMUM SYSTEM PRESSURE AT THE POINT OF CONNECTION PRIOR TO START OF WORK.

6. INSTALL BACKFLOW PREVENTION AS REQUIRED. IF NOT PROVIDED BY ANTI-SIPHON (ANTI-SIPHON VALVES)

7. NOTIFY OWNERS REPRESENTATIVE IF STATIC PRESSURE IS LOWER THAN REQUIRED. IF STATIC PRESSURE IS HIGHER THAN 75 PSI, INSTALL A WILKINS #600 PRESSURE REGULATOR DOWNSTREAM OF BACKFLOW PREVENTER, ADJUST OUTLET PRESSURE TO 55 PSI.

8. MAKE IRRIGATION PORT OF CONNECTION AS INDICATED ON PLAN AND COORDINATE WITH OTHER WORK AS REQUIRED. EXACT LOCATION TO BE APPROVED BY OWNERS REPRESENTATIVE PRIOR TO INSTALLATION.

9. INSTALL IRRIGATION CONTROLLERS IN LOCATION APPROVED BY OWNERS REPRESENTATIVE. ENSURE 120 VOLT A.C. ELECTRICAL SUPPLY IS PROVIDED FOR IN IMMEDIATE VICINITY. INSTALL AS DETAINED AND PER MANUFACTURER'S INSTRUCTIONS.

10. MOUNT WEATHER Sensor ON EXTERNAL WALL OR GUTTER WHERE IT WILL BE EXPOSED TO UNSTRUCTURED EMULSIFIED INSTALLS AND MANUFACTURER'S INSTRUCTIONS.

11. BACKFLOW PREVENTION IS REQUIRED. IF NOT PROVIDED BY ANTI-SIPHON (ANTI-SIPHON VALVES)

12. INSTALLATION OF VACUUM IS REQUIRED. IF NOT PROVIDED BY ANTI-SIPHON (ANTI-SIPHON VALVES)

13. ENSURE THAT ALL COMPONENTS ARE CONNECTED AND OPERATIONAL.

14. PROVIDE PVC SCH 40 SLEEVES FOR ALL PIPING AND WIRE UNDER PAVEMENT.

15. INSTALL PIPE COVER AS INDICATED ON PLAN AND COORDINATE WITH OTHER WORK AS REQUIRED. EXACT LOCATION TO BE APPROVED BY OWNERS REPRESENTATIVE PRIOR TO INSTALLATION.

16. ENSURE THAT SLEEVES ARE SIZED ADEQUATELY TO CONTAIN PIPES BEING SLEEVED.

17. INSTALL PRESSURE TEST PRIOR TO BACKFILLING, PROVIDE RESULTS TO OWNER'S REPRESENTATIVE AFTER INSTALLING RISERS AND BEFORE INSTALLING OR MODIFYING DRAINAGE SYSTEM.

18. INSTALL DRIP TUBING AS SHOWN IN DETAIL AND PER MANUFACTURER'S INSTRUCTIONS. GROUND CONTROLLER AND CONFORM TO LOCAL CODES.

19. PROVIDE VALVE BOXES FOR: ISOLATION VALVE, DRIP TRANSITION AND MAINTAIN A 3" MIN. DEPTH OF MULCH COVER OVER DRIP TUBING.

20. VALVE BOXES: SET PARALLEL TO EACH OTHER AND PERPENDICULAR TO ADJACENT EDGE. SET WITH SUFFICIENT CLEARANCE ABOVE GRADE SO THAT FINAL MULCH GRADE IS flush WITH EDGES OF BOXES.

21. INSTALL ALL DRIP TUBING AS SHOWN IN DETAIL AND PER MANUFACTURER'S INSTRUCTIONS. GROUND CONTROLLER AND CONFORM TO LOCAL CODES.

22. USE COPPER WIRE WITH U.L. APPROVAL FOR DIRECT BURIAL IN GROUND. USE INSULATING JACKET OF COLOR OTHER THAN WHITE FOR CONTROL WIRE. TAPE AND BUNDLE WIRING AT 10 FOOT INTERVALS.

23. MAXIMUM LENGTH OF DRIP TUBING IS 200' IN ANY DIRECTION FROM WATER SOURCE.

24. ENSURE THAT ALL EQUIPMENT IS SIZED CORRECTLY BASED ON EXISTING SITE CONDITIONS AND HYDRAULICS.

25. VERIFY SOIL TYPE AND USE APPROPRIATE EMITTER SIZE AND SPACING.

26. INSTALL DRIP TUBING AS SHOWN IN DETAIL AND PER MANUFACTURER'S INSTRUCTIONS.

27. DO NOT USE SMALL DIAMETER DISTRIBUTION TUBING.

28. DO NOT INSTALL PORT MANUFACTURED BUTTON EMITTERS INTO IN-LINE TUBING.

29. INSTALL Drip layout WITH OWNERS REPRESENTATIVE PRIOR TO COVERING GROUND.

30. STAKE DRIP TUBING IN PLACE @ 2 FT O.C. MAX.

31. MAINTAIN A 3" MIN. DEPTH OF MULCH Cover OVER DRIP TUBING.

32. MAXIMUM LENGTH OF DRIP TUBING IS 300' IN ANY DIRECTION FROM WATER SOURCE.

33. OPEN LINE ENDS AND FLOOD THOROUGHLY BEFORE INSTALLATION OF END FLUSH CAPS.

34. PROVIDE TOOLS AFTER INSTALLING RISERS AND PRIOR TO INSTALLING OR RECONNECTING TO VALVES.

35. INSTALL DRIP TUBING AS SHOWN IN DETAIL AND PER MANUFACTURER'S INSTRUCTIONS.

36. PRESSURE TEST PRIOR TO BACKFILLING, PROVIDE RESULTS TO OWNERS REPRESENTATIVE AFTER INSTALLING RISERS AND BEFORE INSTALLING OR MODIFYING DRAINAGE SYSTEM.

37. FILL ALL EXCAVATIONS WITH COMPACTED BACKFILL IN TWO MECHANICALLY OPERATED TRENCHES.

38. PERFORM CONSIDERED TEST AS REQUIRED TO PROVIDE FULL DRAINAGE AND PRESSURE TESTING.

39. AFTER COMPLETION PROVIDE AS-BUILT PLANS.

40. PROVIDE CONTROLLER SCHEDULE.

41. SCHEDULE THE TREE ZONES TO RUN AT A LOW FREQUENCY AND LONG DURATION TO PROMOTE DEEP WATERING FOR THE TREES. ADJUST SCHEDULE AS REQUIRED.

42. SCHEDULE THE SHADY ZONES TO RUN AT A HIGH FREQUENCY AND SHORT DURATION TO ESTABLISH THE NEW SHRUBS. ADJUST THE SCHEDULE AS THE SHRUBS BECOME ESTABLISHED AND PER WEATHER AND SEASON.

43. THE DESIGN INTENT IS TO PROVIDE THE MINIMUM AMOUNT OF WATER TO SUSTAIN HEALTHY PLANT GROWTH AND TO AVOID RUN-OFF. LOW HEAD PRESSURE AND OVERWATERING ARE NOT DESIRABLE.

44. INSTALL IRIGATION EQUIPMENT OR PIPING MAY BE SHOWN IN PAVED AREAS.

45. RUN SYSTEM TO CHECK FOR LEAKS AND REPAIR THEM SEASONALLY AT A MINIMUM.
2. Driveaway engineering by others to insure proper foundation, edging and subgrade. Note: Consult with Geotech and Civil Engineer for subgrade depth.

4. This paving is semi-pervious and should have positive drainage towards plantings at 1.5%.

5. Performance in clay soils and need for subdrains. Review with Geotech. & Civil Engineer, note: Consult with geotechnical & civil engineer for aggregate depth, note: Consult with geotechnical & civil engineer for aggregate depth.

6. Handtight joints, sand swept from foundation, and provide subdrainage. Review with Geotech. & Civil Engineer.

7. This paving is semi-pervious and should have positive drainage towards plantings at 1.5%.

8. Performance in clay soils and need for subdrains. Review with Geotech. & Civil Engineer.
**PLANTING DETAILS**

1. **TREE PLANTING**
   - Not to scale
   - Tree: Central Leader
   - Synthetic Strapping, loop around central leader below first branch, one strap per stake, attach to stake with sheet metal screws
   - Wood stakes: 2 per tree, set plumb, outside of rootball, drill a 1/4" hole parallel to direction of prevailing wind, mark first branch, and attach synthetic straps
   - 6" stake height, 1 min. of setback from tree, swivel head clip from central leader
   - Crown of rootball, set 2" above finish grade
   - Planting pit: backfill, fill specs
   - Planting pit: scarify edges, insure root ball rests on firm soil, and will not sink over time
   - Watering basin
   - Mulch: per specs, 2" layer, keep 4" away from trunk
   - Sheet mulch: 2 layers cardboard, or 2 layers recycled newspaper, 2" of compost under paper
   - Direction of prevailing wind
   - Rootball, scarify outer 1" before planting

   **NOTES:**
   1. Make stews as short as possible, but high enough to hold the tree upright under calm conditions. The tree should return to vertical after the wind has bent the tree.
   2. Support the trunk at just one level, near the tops of the stews.
   3. Provide flexible movement at the point where strapping wraps loosely around the central leader of the tree.
   4. Take care not to cause rubbing or grinding injuries.
   5. Stakes are for protection of the tree for a period after planting. Remove stakes as soon as tree establishes its root system - within 18 months max.

2. **PLANTING - SHRUBS, PERENNIALS, GRASSES**
   - Not to scale
   - Planting pit & watering berm
   - 1. Plant plug straight up with garden soil, not mulch.
   - 2. Grass plug plantings do better with a layer of rice straw or 3/4" Less Woody Mulch.
   - 3. Soil: 2" for grass plugs. 4" for flowers, shrubs, and small woody stock.
   - 4. Wood mulch: 2" per plant.
   - 5. Sheet mulch: 2 layers cardboard, or 2 layers recycled newspaper, 2" of compost under paper
   - 6. PVC pipe: 1" diam. above the finished grade
   - 7. 2" dia. plastic tube, plant plugs 1" above the finished grade

3. **PLUG PLANTING**
   - Not to scale
   - Plug planting
   - 1. Plug plant straight up with garden soil, not mulch.
   - 2. Grass plug plantings do better with a layer of rice straw or 3/4" Less Woody Mulch.

4. **GROUNDCOVER PLANTING - TRI-SPACING**
   - Not to scale
   - Edge of planting area triangular: C.C. plant spacing
   - 1x1 spacing as indicated on plans

5. **SHEET MULCH**
   - Not to scale
   - Sheet mulch
   - 1. Plant plugs straight up with garden soil, not mulch.
   - 2. Grass plug plantings do better with a layer of rice straw or 3/4" less woody mulch.

6. **PLANT PIT AND WATERING BERM**
   - Not to scale
   - Plant pit & watering berm table

<table>
<thead>
<tr>
<th>Container Size</th>
<th>Plant Pit Diameter</th>
<th>Watering BERM Height</th>
<th>Watering BERM Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 gal can</td>
<td>18&quot; min</td>
<td>3&quot; min</td>
<td>18&quot; min</td>
</tr>
<tr>
<td>5 gal can</td>
<td>30&quot; min</td>
<td>4&quot; min</td>
<td>30&quot; min</td>
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<tr>
<td>15 gal can</td>
<td>3&quot; min</td>
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</tr>
<tr>
<td>24&quot; box</td>
<td>5&quot; min</td>
<td>6&quot; min</td>
<td>5&quot; min</td>
</tr>
</tbody>
</table>
**INSTALLATION & DESIGN CONSIDERATIONS:**

**LANDSCAPE TO LAUNDRY SYSTEM OVERVIEW:**

- Designed to irrigate uphill from the washing machine, the distance should be reduced to 30-50 feet.
- Direct and contain graywater within mulch basins (irrigation or disposal field) below the ground.
- Graywater diverted to landscape shall not contain hazardous chemicals.
- Minimize contact with humans and animals.
- Divert water to the sewer if it contains diapers, oil, other chemicals.
- Post operation and maintenance manual.
- Permit exemption does not grant installation that violates other code or laws.

**APPLICANT INFORMATION:**

- Your washing machine and pumps it out to the landscape through 1-inch tubing. The system does not apply water service line on-site domestic water service line.

**WATER SUPPLY WELLS:**

- Pressurized public water main.
- Sewage disposal field.
- Water supply wells.

**CALCULATIONS SECTION**

- Weekly water needs = (0.62 x Area x Eta x Pf) / 4 weeks = ___ *0.62 = (#of gal in 1" of water covering 1 ft)

**FIELD AND MULCH BASIN**

- OR = (Length x Width) for number of garden beds

**ADDITIONAL INFORMATION**

- Divert graywater from trees, bushes, shrubs, small perennial and larger annuals, but is prohibited on lawn, raised beds, root and leafy vegetables. Moderate water users such as fruit trees are also an ideal application. Graywater is sometimes flowed every 7 days and not recommended for plants that prefer acidic soils (low pH) like blueberries and rhododendrons. Soil type will determine both how quickly graywater is absorbed in your landscape and the size of the mulch basins needed to infiltrate the graywater.

- The key to proper irrigation with graywater is to know how much the chosen plants need given evapotranspiration needs, plant watering needs, and existing canopy.

**RECOMMENDED DETERGENTS:**

- To ensure plant survival, avoid soaps and detergents that contain boron, sodium and chlorine compounds. The following list of commercial detergents are recommended for use with laundry to landscape graywater systems.

**DIVERTED LAUNDRY DETERGENTS:**

- BiO PAC LAUNDRY LIQUID
- BIO LAUNDRY LIQUID
- ECOVER LAUNDRY WASH (SALT)
- LIQUID ECO / LIQUID DETERGENT
- LIFE TREE LAUNDRY LIQUID
- MOUNTAIN GREEN LAUNDRY DETERGENT
- VASKA HERBACENT

For additional information, please consult with a professional. The District does not accept any liability and responsibility for any direct, special, indirect or consequential loss or damage whatsoever arising out of your use of this map, plan or any other information contained herein.

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**Laundry to Landscape: Graywater System Example**

- Secure auto vents to wall
- Equip with vacuum breaker

Fruits and vegetable plants are safe to irrigate with graywater as long as the edible portion doesn’t touch the ground and/or mulch.

--- Reproduced with permission from the Santa Clara Valley Water District ---
LANDSCAPE VIA MULCH BASIN OUTLETS. PLUMBING FOR GRAYWATER SOURCES MUST BE BRANCHED DRAIN SYSTEM OVERVIEW:

PERENNIAL PLANTS. THIS IS A SIMPLE SYSTEM AND DOES NOT REQUIRE ELECTRICITY OR A PUMP.

PUMP OR ANY OTHER PUMP. AS THIS SYSTEM REQUIRES CUTTING INTO EXISTING SEWER PIPES SEPERATED PLUMBING IN PLAN SETS AND STUB OUT PIPING FOR EXTERIOR GRAYWATER SYSTEM COMPONENTS DURING BUILDING CONSTRUCTION.

BRANCHED DRAIN GRAYWATER REQUIREMENTS TO COMPLY WITH CALIFORNIA PLUMBING CODE (CPC) STANDARDS:

1. ESTIMATE GRAYWATER SUPPLY USING THE CALCULATION SECTION THIS SHEET.
2. ESTIMATE MULCH BASIN SIZES, AREA AND VOLUME USING TABLE 3.
3. DEVELOP A GRAYWATER SITE PLAN SHOWING ALL THE PLAN ELEMENTS LISTED IN #4 - GRAYWATER PLAN BELOW. REVIEW THE SAMPLE PLAN SHOWN IN DETAIL #1 THIS SHEET. SHOW TREE AND PLANT LOCATIONS TO BENEFIT FROM GREYWATER.
4. SUBMIT FOR BUILDING PERMIT EITHER WITH FULL SITE DRAWINGS OR AS A SEPARATE SUBMITTAL.
5. REVIEW PIPE AND VALVE LOCATIONS WITH ARCHITECT, ENGINEER AND CONTRACTOR TO INSURE THERE ARE NO CONFLICTS WITH OTHER SITE ELEMENTS. CONFIRM COMPONENTS TO BE INSTALLED AT TIME OF FOUNDATION SYSTEM CONSTRUCTION, INCLUDING PIPE STUB OUT FOR EXTERIOR GRAYWATER SYSTEM DEVELOPMENT.

RECOMMENDED SOAPS: MORE SOAPS ARE COMING OUT ALL THE TIME, BUT IT IS ALWAYS IMPORTANT TO READ THE INGREDIENTS LIST BELOW. SOME THAT ARE KNOWN TO BE GRAYWATER COMPLIANT:
- OASIS - ALL-PURPOSE CLEANER FOR HAND-WASHING, BODY & SHAMPOO
- DR. BRONNER'S MAGIC SOAPS (LIQUID)
- AUBREY ORGANICS SHAMPOO

APPLICANT INSTRUCTIONS:
1. ESTIMATE YOUR GRAYWATER SUPPLY USING THE CALCULATION SECTION THIS SHEET.
2. ESTIMATE MULCH BASIN SIZES, AREA AND VOLUME USING TABLE 3.
3. DEVELOP A GRAYWATER SITE PLAN SHOWING ALL THE PLAN ELEMENTS LISTED IN #4 - GRAYWATER PLAN BELOW. REVIEW THE SAMPLE PLAN SHOWN IN DETAIL #1 THIS SHEET. SHOW TREE AND PLANT LOCATIONS TO BENEFIT FROM GREYWATER.
4. SUBMIT FOR BUILDING PERMIT EITHER WITH FULL SITE DRAWINGS OR AS A SEPARATE SUBMITTAL.
5. REVIEW PIPE AND VALVE LOCATIONS WITH ARCHITECT, ENGINEER AND CONTRACTOR TO INSURE THERE ARE NO CONFLICTS WITH OTHER SITE ELEMENTS. CONFIRM COMPONENTS TO BE INSTALLED AT TIME OF FOUNDATION SYSTEM CONSTRUCTION, INCLUDING PIPE STUB OUT FOR EXTERIOR GRAYWATER SYSTEM DEVELOPMENT.

INSTALLATION & DESIGN CONSIDERATIONS:
WITH A HIGHER POTENTIAL VOLUME OF WATER COMING FROM A SHOWER AND SINK, A BRANCHED DRAIN SYSTEM IS BEST SUITED FOR IRRIGATING TREES, BUSHES, SHRUBS, AND OTHER LARGER PERENNIAL PLANTS. THIS IS A SIMPLE SYSTEM AND DOES NOT REQUIRE ELECTRICITY OR A PUMP; HOWEVER, THE LANDSCAPE AREA MUST BE LOWER IN ELEVATION THAN THE GRAYWATER SOURCE, AND THE ENTIRE SYSTEM MUST HAVE A DOWNWARD SLOPE OF 2% (1/2 INCH PER FOOT) TO ENSURE EVEN DISTRIBUTION.

INSTALLATION DIFFICULTY DEPENDS ON THE EXISTING HOUSEHOLD PLUMBING, ACCESS TO PIPES HAS NO MOVING PARTS TO BREAK. HOMEOWNER, A PROFESSIONAL PLUMBER IS NEEDED FOR INSTALLATION OF 3-WAY DIVERTER VALVE ON THE SEWER LINE. THE HOMEOWNER HAS THE OPTION TO INSTALL AN ACTUATOR, WHICH ALLOWS EASY DIVERSION OF GREYWATER BETWEEN LANDSCAPE AND THE SEWER LINE.

SYSTEM COSTS & REBATES: THE COSTS CAN RANGE FROM A THOUSAND DOLLARS WHEN PRIMARILY INSTALLED BY A HOMEOWNER TO SEVERAL THOUSAND IF INSTALLED BY A PROFESSIONAL. WHILE MORE COSTLY TO CONSTRUCT THAN A LAUNDRY TO LANDSCAPE SYSTEM, A BRANCHED DRAIN SYSTEM REQUIRES LITTLE MAINTENANCE AND LASTS A LONG TIME, SINCE IT HAS NO MOVING PARTS TO BREAK.
**RAINWATER HARVESTING DETAIL**

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**1. A RAINWATER CATCHMENT SYSTEM MAY NOT REQUIRE A BUILDING PERMIT PROVIDED ALL OF THE FOLLOWING ARE MET (CALIFORNIA PLUMBING CODE 1601.3 (I):**

1. Water shall be used for outdoor non-spray irrigation.
2. Pumps and pressure tanks likely require inexpensive, over-the-counter electrical permit.
3. If city water plumbed to tank for make-up using float valve or manually operated valve, then a permit is required and an air gap is required.
4. Does not require electrical power or make-up water supply connection (see note 2 and 3).
5. Ratio of height to diameter or width does not exceed 2 to 1.
6. Tank is supported directly upon grade.
7. The tank is made of non-metallic material or if metallic, it is protected from corrosion.
8. Overflow: 3 in. drainage pipe: sloped 2 percent for horizontal sections.
10. Tank is supported directly upon grade.
11. Does not require electrical power or makeup water supply connection (see note 2 and 3).
12. All other rainwater catchment systems must be submitted for building permit.
13. Pump and pressure tank used for make-up does not automatically operate value. This pump is required and an air gap is required.
14. Tank can only be drained using flexible pipe: only to reduce chance of leakage in earthquakes.
15. There are no required setbacks from buildings or adjacent property lines: though a conversation with your neighbor could be helpful.

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**NOTES:**

- Horizontal sections.
- Maximum storage capacity of 3,500 gallons.
- Tank is supported directly upon grade.
- Does not require electrical power or makeup water supply connection (see note 2 and 3).
- All other rainwater catchment systems must be submitted for building permit.
- Pump and pressure tank used for make-up does not automatically operate value. This pump is required and an air gap is required.
- Tank can only be drained using flexible pipe: only to reduce chance of leakage in earthquakes.
- There are no required setbacks from buildings or adjacent property lines: though a conversation with your neighbor could be helpful.

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**RAINWATER HARVESTING TANK**

- **A.** Preferred dry conveyance if tanks are next to downsputs.
- **B.** Overflow: 3 in. drainage pipe: sloped 2 percent for horizontal sections.
- **C.** 3,500 gallon Bushman Slimline rain harvesting tank or equivalent.
- **D.** Hose bib or optional connection to pump and pressure tank (see note 2).
- **E.** 4 inches compacted base rock with 3 inches of pea gravel on top.
- **F.** Overflow to rain garden: (shovel) rainwater policeman.
- **G.** 5 inches of decorative gravel with 2 inches of ponded water above.
- **H.** Undisturbed native soil.
- **I.** 12 inches amended soil: 1/2 compost: 1/2 native soil.
- **J.** Fire safety leaf guard.
- **K.** Gutter.
- **L.** Normal downspout.
- **M.** Optional Bushman leaf diverter (with 20X20 screen if using wet conveyance) (redundant with leaf guard on gutters).
- **N.** 3 in. PVC drainage tee.
- **O.** 4 in. to 3 in. PVC drainage reducer.
- **P.** 4 in. drainage pipe for the first flush (this removes the first, dirty water from a rainstorm).
- **Q.** Bushman float ball.
- **R.** Bushman first flush filter (to keep emitter from clogging).
- **S.** Bushman drip emitter to drain dirty water between storms.
- **T.** "Wet" conveyance: 3 in. drainage pipe (water stays in pipe between storms).
- **U.** Three separate 3/4 inch holes to drain water for mosquito control.
- **V.** Clean gravel to improve drainage from drilled holes.

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**ELEVATION VIEW 530 GAL RAINWATER HARVESTING TANK**

- **A.** Preferred dry conveyance if tanks are next to downsputs.
- **B.** Overflow: 3 in. drainage pipe: sloped 2 percent for horizontal sections.
- **C.** 3,500 gallon Bushman Slimline rain harvesting tank or equivalent.
- **D.** Hose bib or optional connection to pump and pressure tank (see note 2).
- **E.** 4 inches compacted base rock with 3 inches of pea gravel on top.
- **F.** Overflow to rain garden: (shovel) rainwater policeman.
- **G.** 5 inches of decorative gravel with 2 inches of ponded water above.
- **H.** Undisturbed native soil.
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- **S.** Bushman drip emitter to drain dirty water between storms.
- **T.** "Wet" conveyance: 3 in. drainage pipe (water stays in pipe between storms).
- **U.** Three separate 3/4 inch holes to drain water for mosquito control.
- **V.** Clean gravel to improve drainage from drilled holes.