Sonoma County Co-Permittee Annual Training Kessing Ranch Subdivision Cotati
KESSING RANCH SUBDIVISION
SITE IMPROVEMENT PLANS
100 VALPARAISO AVENUE
Cotati, California
Preliminary Standard Urban Stormwater Mitigation Plan (SUSMP)
for
Kessing Ranch Subdivision
100 Valparaiso Avenue, Cotati, California
APN: 144-450-002

Final Storm Water Low Impact Development Submittal
For The
Kessing Ranch Subdivision
100 Valparaiso Avenue, Cotati, California
APN 144-450-002

JN 13134
July 27, 2016

JN 13134
June 6, 2018
Final Storm Water Low Impact Development Submittal
For The
Kessing Ranch Subdivision

1. Project Description

Located on 9.8 acres of largely undeveloped land, Kessing Ranch Subdivision is a proposed
residential development project in a mostly developed residential area with the City of Cotati,
California. The project site is located at the southwest corner or Old Redwood Highway and
Valparaiso Avenue. There are 45 residential lots that are proposed for this development
ranging in size from 4,212 sq. ft. to 12,882 sq. ft. with an average impervious coverage of
37.6%.

Natural slopes on the site range from 2 to 15 percent, with the slope generally falling from
the southwest to the northeast. Soil types present on the site include CDF (Cotati fine sandy loam,
Type D soil) and HaB (faire fine sandy loam, Type C soil). The site currently has five
dilapidated barn type structures, only one of which will remain after development on Parcel B.

This project triggers the Hydromodification Requirement of 100% volume capture by creating
over 10,000 sq. ft. of new impervious surface and disturbing more than 1.0 acre.

2. Pollution Prevention Measures and BMP Selection

This project has been broken into two drainage areas where runoff will be collected in separate
storm drain networks and ultimately outfall into two separate Priority-1 rain gardens. The rain
gardens will be designed with 12-inches of amended soil and 6-inches of drain rock.

Area DA1

All runoff from the roof downsputs, driveway, and the new pavement in Pecador Lane and
parts of Jagle Street will be collected and directed to Rain Garden-1 at Point of Concentration
1 (POC-1). The required storage volume to achieve the Hydromodification Requirement
of 100% Capture is 3,530 ft³, see attached Storm Water Calculator for more information.
The proposed rain garden retention is sized to capture 3,573 ft³ or 101.2% of the requirement. For
details on the rain garden retention see Fact Sheet – Rain Garden details in Appendix C.

Area DA2

All runoff from the roof downsputs, driveway, and the new pavement in Jagle Street, parts of
Dorfman Drive and Honor Place will be collected and directed to Rain Garden-2 at POC-2.
The required storage volume to achieve the Hydromodification Requirement of 100% Capture
is 4,809 ft³, see attached Storm Water Calculator for more information. The proposed rain
garden retention is sized to capture 5,935 ft³ or 103.2% of the requirement. For details on the
rain garden retention see Fact Sheet – Rain Garden details in Appendix C.

Additional pollution prevention measures are listed below:
- Design landscaping to prevent sediment entering the storm drain system.
- Design landscaping to meet vector control requirements (draw down less than 72 hours)
- Incorporate Integrated Pest Management (IPM) principles and techniques for design and
  maintenance.
- Select plant materials that may be properly maintained with minimal water use
- Design and maintain landscaping to prevent runoff from contacting bare earth and conveying
  sediment to the storm drain system.
- Collect litter and trash so that it is not dispersed by the wind or runoff during waste removal.

3. Treatment and Volume Capture

The site drainage design goal is to provide sufficient retention volume to achieve the
Hydromodification Requirement of 100% Volume Capture. The total runoff volume generated
by a storm that produces one inch of rain over a 24-hour period will be directed to the two rain
gardens. Treatment will be provided in the vegetation and amended soil section of the rain
gardens. See Appendix B for the Final SWLIDS Exhibits and calculations for volume capture
following the City of Santa Rosa LID manual.

4. Maintenance and Funding

Monitoring and maintenance of the project site BMPs shall be done by the project’s owner.
The proposed rain gardens are owned and maintained by the Kessing Ranch Home Owners
Association. The BMPs shall be inspected and maintained following the guidelines in
"Inspection and Maintenance Requirements" from the Santa Rosa LID Design Manual, see
Appendix E. A blank copy of the maintenance and monitoring agreement has been provided
in Appendix E, see Final SWLIDS Exhibit for the locations of the BMPs. The maintenance
agreement will be completed and recorded upon permit issuance. The opinion of probable cost
to maintain said BMPs will be approximately $2,000 to $3,000 annually.

Language regarding the responsibility for maintenance is included here in. Information
includes a maintenance plan, annual reporting, access to property, and remediation of problems
where:

a. Maintenance Plan. The project’s owner must prepare a maintenance plan, the
   implementation of which will keep the proposed source and treatment controls
   operating as originally designed and approved. At a minimum the Maintenance Plan
   shall include: the scope and frequency for inspection and scheduled maintenance,
   provisions for unscheduled maintenance, estimated design life, and costs associated
   with the design life including replacement.
DETERMINATION WORKSHEET

PURPOSE: Use this form to determine whether or not this project will need to incorporate permanent Storm Water Best Management Practices (BMP's) and submit a Standard Urban Storm Water Mitigation Plan (SUSMP).

Part 4: Project Triggers

Projects that Trigger Requirements:
Please answer the following questions to determine whether this project requires permanent Storm Water BMP’s and the submittal of a SUSMP.

1. Does this development or redevelopment project create or replace a combined total of 1.0 acres or more of impervious surface?  
   Yes ☑  No ☐
STORM WATER CALCULATOR

BMP Tributary Parameters

- BMP ID: DA1
- Project Name: 13134-Kassing Ranch Subdivision
- BMP Design Criteria: 100% Capture & Treatment
- Type of BMP Design: Priority 1: P-1.06 Swale with Bioretention
- BMP's Physical Tributary Area: 103,365.8 ft²
- Description/Notes:

Runoff Reduction Measures

- Resulting reduced Tributary Area used for BMP sizing = 132,364.7 ft²
- Total Runoff Reduction Measures = 31,323.4 ft²

Interceptor Trees

- Number of new Interceptor Evergreen Trees: 0
- Number of new Interceptor Deciduous Trees: 0
- Square footage of qualifying existing tree canopy: 0.0 ft²
- Total Number of New trees in BMP Tributary Area: 0

Disconnected Roof Drains

- Select disconnection condition:
- Disconnected Roof Drains Method 1
  - Roof area of disconnected downspouts: 9 ft²
- Disconnected Roof Drains Method 2
  - Percent of rooftop area: 100%
  - Select Density: 3.4 Units per Acre

Paved Area Disconnection

- Paved Area Type: Select paved area type
- Alternatively designated paved area: 6.0 ft²

Buffer Strips & Bovine Terraces

- Area draining to a Buffer Strip or Bovine Terrace: 6.0 ft²

Hydromodification Requirement: 100% Volume Capture; V_{HYDROMOD} = 3,529.6 ft³

- Post development hydrologic soil type within tributary area:
- Post development ground cover description:
- User Composite post development CN: 90.8

BMP Sizing Tool: Hydromodification Requirement

- BMP Volume Below Gravel:
  - Ponds:
    - Water Above Ground:
      - Depth: 0.50 ft
      - Width: 0.60 ft
      - Length: 2,945.00 ft²
  - Percent of Goal Achieved: 101.21%
<table>
<thead>
<tr>
<th>Feature</th>
<th>Elev shown</th>
<th>Req’d on Det</th>
<th>Req’d in Calc</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO Side outlet</td>
<td>120.5</td>
<td>0.5’</td>
<td></td>
</tr>
<tr>
<td>Contours</td>
<td>120.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>landscape</td>
<td></td>
<td>12”</td>
<td></td>
</tr>
<tr>
<td>Top of Rock</td>
<td>118.7</td>
<td>1.5’</td>
<td></td>
</tr>
<tr>
<td>Bottom of Rock</td>
<td>116.9</td>
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</tbody>
</table>
NOTES:
1. PLANTING MAY INCLUDE TREES. VEGETATION TO MEET SUSMP STANDARDS.
2. PLANTING SOILS SHALL HAVE MINIMUM INFILTRATION RATE 5”/HR.
3. SEE PLAN (SHEET C3.4 & C3.8) FOR DIMENSIONS, ELEVATIONS AND OUTLET STRUCTURE.
4. RAIN GARDEN IS MODIFIED FROM DETAIL FOUND IN CITY OF SANTA ROSA & SONOMA COUNTY UD TECHNICAL MANUAL.

RAIN GARDEN/ DETENTION BASIN
Lessons:

When is right time to Record w County

Confirm FSWLID submittal w Plans

Coordinate w Landscape drawings, tree excavations,

Coordinate w Landscape construction; irrigation lines digging thru BMPs
Questions
# Storm Water Calculator

## BMP Tributary Parameters

- **BMP ID:** DA1
- **BMP Design Criteria:** 100% Capture & Treatment
- **Type of BMP Design:** Priority 1: P1-06 Swale with Bioretention
- **BMP's Physical Tributary Area:** 163,265.0 ft²
- **Description/Notes:**

## Hydromodification Requirement

- **Volume Capture:** $V_{HYDROMOD} = 4,357.54$ ft³

## BMP Sizing Tool: Hydromodification Requirement

<table>
<thead>
<tr>
<th>Porosity</th>
<th>Depth below perforated pipe</th>
<th>Width</th>
<th>Length</th>
<th>Area</th>
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<tbody>
<tr>
<td>0.40</td>
<td>2.25 ft</td>
<td>0.00 ft</td>
<td>0.00 ft</td>
<td>3.500.00 ft²</td>
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</tbody>
</table>

- **Ponded Water Above Ground**
  - **Depth:** 0.50 ft
  - **Width:** 0.00 ft
  - **Length:** 0.00 ft
  - **Area:** 2.945.00 ft²

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1.0 ft amended soil w/ P=0.30 equivalent to = $1.0 \times 0.3 / 0.4 = 0.75$ ft w/ P=0.40
### Worksheet 2: Runoff Curve Number and Runoff

**Project:** ELM-Kessing Ranch Subdivision  
**By:** ZR  
**Date:** 2/16/2018  
**Location:** DA1

--- POST-Construction Conditions ---

#### 1. Runoff Curve Number

<table>
<thead>
<tr>
<th>Soil Name and Hydrologic Group (Appendix A)</th>
<th>Cover Description (cover type, treatment and hydrologic condition; percent impervious; unconnected/connected impervious ratio)</th>
<th>TR-55 CN&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Area Acres</th>
<th>Product of CN x Area &lt;sup&gt;2&lt;/sup&gt;</th>
<th>Product of CN x M&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Coati Fine Sand Loam, Hydrologic Soil Group D</td>
<td>Open Space (Fair)</td>
<td>84</td>
<td>1.51</td>
<td>126.84</td>
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<tr>
<td>Coati Fine Sand Loam, Hydrologic Soil Group D</td>
<td>Proposed Impervious</td>
<td>98</td>
<td>1.49</td>
<td>146.31</td>
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<td>Haite Fine Sand Loam, Hydrologic Soil Group C</td>
<td>Open Space (Fair)</td>
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<td>0.38</td>
<td>29.63</td>
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<td>Haite Fine Sand Loam, Hydrologic Soil Group C</td>
<td>Proposed Impervious</td>
<td>98</td>
<td>0.57</td>
<td>34.26</td>
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*Use only one CN source per line

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<thead>
<tr>
<th>Totals</th>
<th>3.75</th>
<th>339.04</th>
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<tbody>
<tr>
<td>CN (weighted) =</td>
<td>Total Product =</td>
<td>Use CN</td>
</tr>
<tr>
<td></td>
<td>90.66</td>
<td>90</td>
</tr>
</tbody>
</table>

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**COTATI**

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