Appendix I: Drainage Memorandum - Alternative 2

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TECHNICAL MEMORANDUM

Date: October 13, 2021 **BKF Job Number:** 20120066-10
Deliver To: Greg Jamison
From: Dale Leda, PE
BKF Engineers

Subject: **Wetland Stormwater Approach at Proposed Hyatt Place**
1191 Main Street, Half Moon Bay

Introduction
Our stormwater approach at the Hyatt Place in Half Moon Bay is focused on preservation and enhancement of the existing wetlands which are near the project site, in addition to downstream channels. Our strategy for accomplishing this can be divided into (5) primary objectives:

1. **Buffer Zone Enhancement:** Provide a large contiguous buffer zone to be planted with wetland compatible vegetation which is to be preserved and maintained through the life of the project.
2. **Match Existing Drainage Pattern:** Design the onsite stormwater system to ensure the wetlands receive a controlled amount of stormwater run-off which matches the pre-development flow.
3. **Source Control / Hardscape Prioritization:** Selective site grading so that run-off directed back to wetlands does not come from vehicular pavement. Only hardscape from pedestrian paths and roof area will go to wetlands.
4. **C.3 Stormwater Treatment:** Incorporate stormwater bioretention areas into the drainage design to remove potential pollutants prior to discharge to wetlands.
5. **Bypass Flow Treatment & Hydromodification:** Route additional stormwater to by-pass the wetlands and treat with bioretention areas, which are also oversized to provide stormwater detention / hydromodification for the overall site.

Buffer Zone Enhancement:
The buffer zone between the hotel development and the existing wetlands will be enhanced with light grading and new landscaping that is more supportive of the coastal prairie wetland habitat. Plant selection and layout onsite will be refined working very closely with our project biologist whom specializes in wetland restoration projects. The proposed landscaping within the buffer zone will support the wetlands and also serve as a transition to conventional landscaping closer to the hotel which is homogenous with the Main Street Gateway planting palette.

Match Existing Drainage Patterns:
An important factor in the grading and drainage design is making sure that the development does not deprive the wetlands of the volume of water they receive today. Equally important is ensuring they are not over-inundated, which can also be detrimental. Under existing, pre-development conditions, the wetlands receive runoff from approximately 2.62 acres of vegetated land and 0.0 acres of hardscape from the project site area. By applying weighted co-efficients of run-off, we can determine the quantity of run-off they receive for any design storm event.

In the post-development condition, the vegetated area draining to the wetlands will be reduced to 1.78 acres. To compensate, the area of hardscape acreage draining to them will be increased to 0.28 acres to precisely match the existing weighted coefficient. A lesser area of hardscape is needed to make up for the reduction in vegetated land in order to generate comparable runoff volumes. The composite weighted coefficient can be used to calculate run-off generated during a design storm in terms of both peak flows and total volume accumulated. This approach will ensure that the wetlands receive the same pattern of flow in the post-development condition as they do today for most storm events.

	Vegetated Area, acres A_v	Vegetated Coefficient C_v	Hardscape Area, acres A_h	Hardscape Coefficient C_h	Weighted Coefficient $(A_v*C_v)+(A_h*C_h)$
Pre-Develop. Condition	**2.62**	**0.30**	**0.00**	**0.90**	**0.79**
Post-Develop. Condition	**1.78**	**0.30**	**0.28**	**0.90**	**0.79**

Wetland Tributary Areas

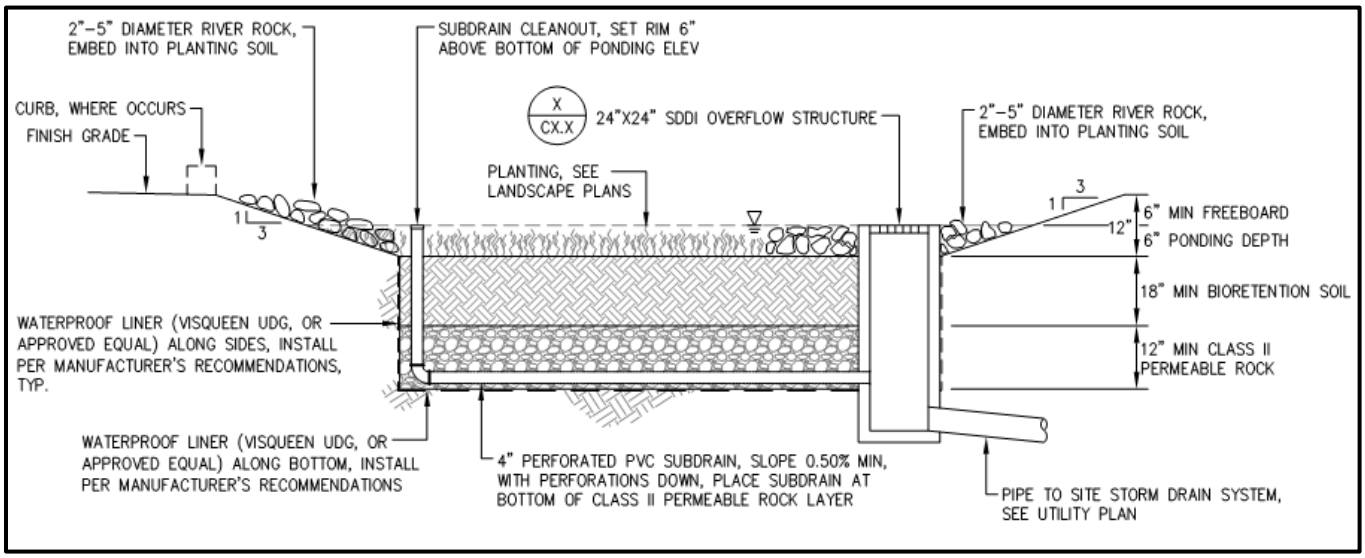
Source Control / Hardscape Prioritization

When assessing the run-off which would drain toward the wetlands, we have some control via site grading over which areas would contribute. Vehicular pavement is known to be a larger source of stormwater pollutants than non-vehicular hardscape. The proposed plan is intended to minimize run-off from vehicular pavement, and maximize run-off from pedestrian hardscape and roof areas. Although all hardscape draining to the wetlands is to be treated via bioretention areas first, targeting run-off from pedestrian and rooftop sources will ensure the wetlands are receiving the highest quality stormwater from the project site. Onsite vehicular pavement will drain to separate bioretention areas which bypass the wetlands.

C.3 Stormwater Treatment

All run-off draining to the wetlands will be treated in accordance with County and City of Half Moon Bay C.3 measures. Rainfall which lands within the landscape buffer is considered to be self-treating and does not require additional pollutant removal. Run-off from hardscape directed to the wetlands will be routed to bioretention areas adjacent the hotel which will provide filtration through the biotreatment soil mix. Drought-tolerant native planting within the bioretention areas prolongs the life of the soil and allows for pollutant removal through root uptake. Bioretention areas are strategically located so water passing through them will drain via gravity bubble up boxes which are set at a lower elevation, closer to the wetlands. The quantity and spacing of bubble up boxes is designed to spread the flow evenly across the wetland areas, similar to the existing sheet flow drainage patterns.

Certain exceptions exist within regional stormwater regulations for multi-use pathways such as this proposed Class I Multi-Use Path that would become a part of the City of Half Moon Bay east parallel trail system adjacent Highway 1. The Municipal Regional Stormwater Permit identifies road right-of-way parallel trails/pathways that are 10 ft in width or less as very low potential sources of pollutants, and a under regional C.3 regulations, can be considered exempt from stormwater treatment.



Typical Bioretention Area Detail

Bypass Flow Treatment & Hydromodification

The largest quantity of run-off generated from development will be collected from the eastern half of the south building roof, the entire north building roof, the parking lot and eastern hardscape. This run-off will be collected via hard-piped downspouts and area drains and directed north and west to large bioretention areas located in the northwest corner of the site. Additional runoff from hardscape at the existing car dealership will also be treated by its own strip of bioretention area. These planters are downstream of the wetlands and will not affect the wetland drainage patterns described above. Similar to other bioretention areas onsite, they will utilize a biotreatment soil mix and native, drought-tolerant planting for pollutant removal.

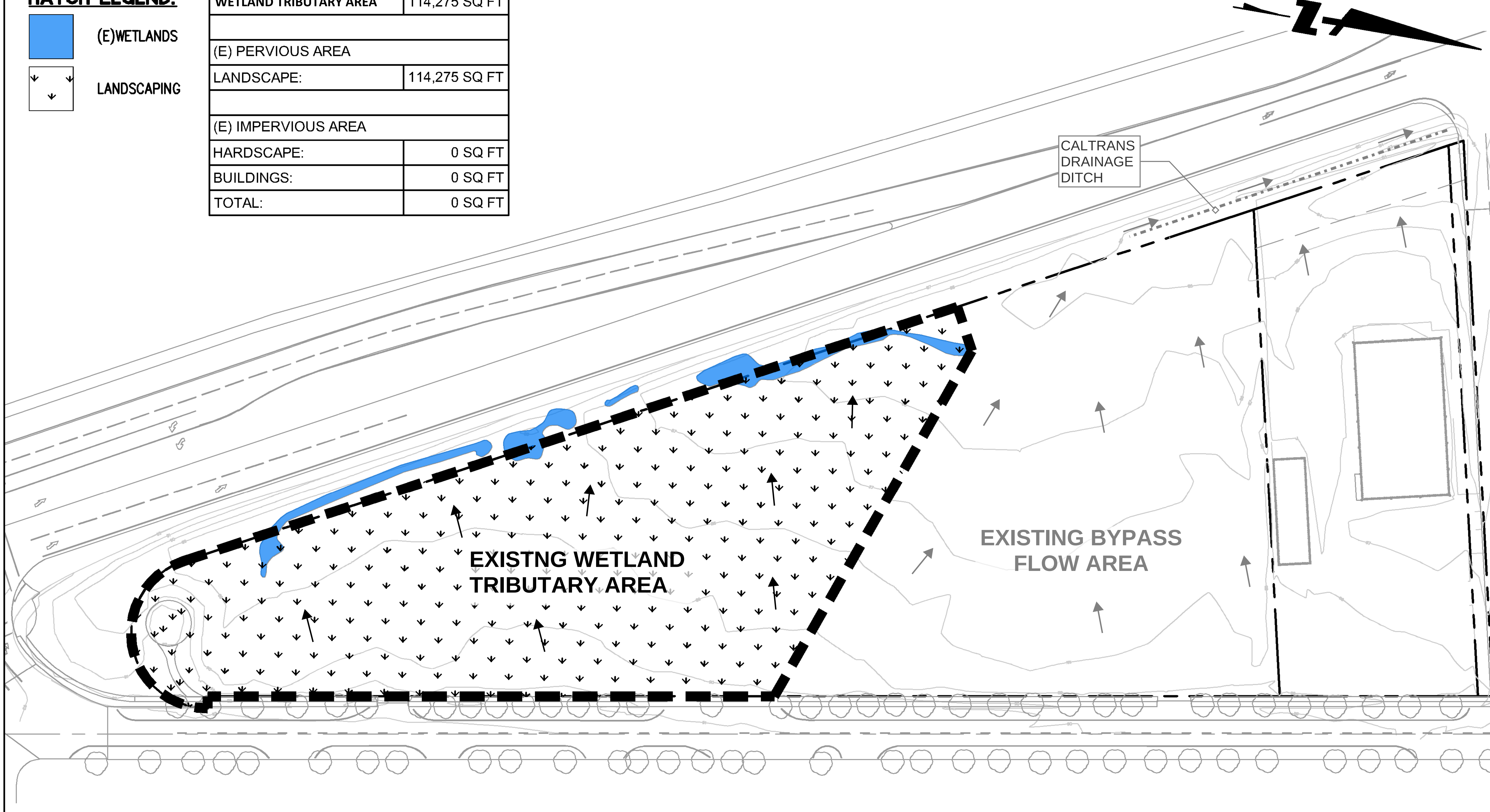
These areas also receive all of the excess run-off from the site that would impact downstream natural channels and cause concerns of flooding or erosion during peak storm conditions. To mitigate these effects, and consistent with regional stormwater regulations, these bioretention areas are designed using the Bay Area Hydrology Model (BAHM). BAHM modelling is used to design and demonstrate that development will not increase the peak flow of run off from the site for a range of storm events, from 10% of the 2-year storm event to the 10-year storm event, using most recently collected empirical rainfall data. Although the 10-year storm is the upper limit required under regional permits and the industry standard throughout the Bay Area, the proposed bioretention areas receiving the bypass flow for this project are designed using BAHM to match or reduce peak stormwater run-off up to and exceeding the 25 year storm event.

HATCH LEGEND:

(E)WETLANDS

LANDSCAPING

WETLAND TRIBUTARY AREA	114,275 SQ FT
(E) PERVIOUS AREA	
LANDSCAPE:	114,275 SQ FT
(E) IMPERVIOUS AREA	
HARDSCAPE:	0 SQ FT
BUILDINGS:	0 SQ FT
TOTAL:	0 SQ FT



BKF
255 SHORELINE DR
SUITE 200
REDWOOD CITY, CA 94065
650-482-6300
650-482-6399 (FAX)

EXISTING DMA TO WETLAND
HYATT HOUSE HOTEL
MAIN STREET

HALF MOON BAY
SAN MATEO COUNTY
CALIFORNIA

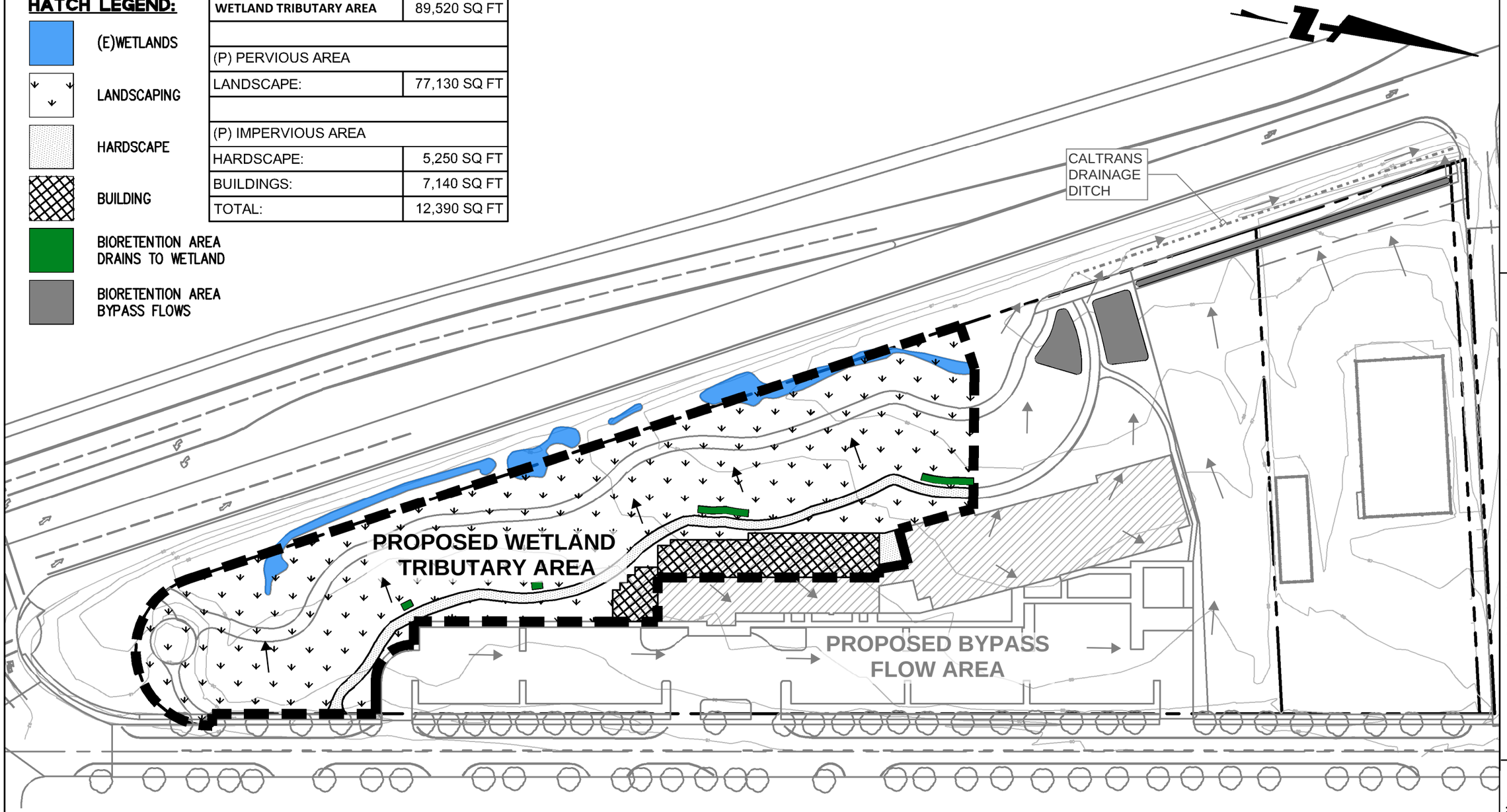
Drawing Number:
EX-3

DRAWING NAME
PLOT TIME 10-13-21
PLOTTED BY

HATCH LEGEND:

- (E)WETLANDS
- LANDSCAPING
- HARDSCAPE
- BUILDING
- BIORETENTION AREA DRAINS TO WETLAND
- BIORETENTION AREA BYPASS FLOWS

WETLAND TRIBUTARY AREA	89,520 SQ FT
(P) PERVIOUS AREA	
LANDSCAPE:	77,130 SQ FT
(P) IMPERVIOUS AREA	
HARDSCAPE:	5,250 SQ FT
BUILDINGS:	7,140 SQ FT
TOTAL:	12,390 SQ FT



0 80 160

GRAPHIC SCALE

255 SHORELINE DR
SUITE 200
REDWOOD CITY, CA 94065
650-482-6300
650-482-6399 (FAX)

BKF

PROPOSED DMA TO WETLAND
HYATT HOUSE HOTEL
MAIN STREET
HALF MOON BAY SAN MATEO COUNTY CALIFORNIA

No.	Revisions

Date: 06/30/2020
Scale: 1"=80'
Design: DJP
Drawn: DJP
Approved: D.K.
Job No: 20200000

Drawing Number:
EX-4
OF

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PLOT TIME: 10:15:21
PLOTTED BY: leda