

TECHNICAL MEMORANDUM

Date:	May 24, 2025
To:	Laura Baker, Friends of the Gualala River
From:	Greg Kamman, PG, CHG
Project:	24-1013 Technical Assistance to FOGR
Subject:	Conceptual BMP Recommendations to Caltrans Streetscape Project

1 INTRODUCTION AND PURPOSE

The Caltrans Streetscape Enhancement Project (Project) of State Route 1 in Gualala proposes road realignment and widening to improve traffic flow and pedestrian travel between Old State Highway and Ocean Drive. There are limited stormwater runoff water quality pollution prevention and design measures proposed in the project (County of Mendocino, 2025). Recent (2024-25) water quality sampling of urban runoff within the Project area by the CA Urban Streams Alliance – The Stream Team (The Stream Team) has identified concentrations of 6PPD-q that exceed action level concentrations¹ in the Water Quality Control Plan for the North Coast Region (Basin Plan) and California North Coast Ocean Plan (Hamill, 2025). The compound 6PPD-q, found in tire grit, is highly toxic to coho salmon and steelhead (Ibid). Given the elevated concentrations of 6PPD-q in Project stormwater runoff to the Gualala River Estuary, which is important salmonid habitat, the Friends of Gualala River retained cbec to investigate opportunities to integrate or compliment water quality treatment Best Management Practices (BMPs) associated with the Project.

2 PROJECT HYDROLOGIC SETTING

Figures 1a and **1b** present the existing storm drain system for the Project. The majority of runoff from the south-central portion of the Project (**Figure 1a**) flows through underground pipes that direct runoff from the eastern upslope area and State Route 1 via drop inlets to the southern outfall to the estuary adjacent to the Surf Market. This system includes several underground pipes that direct runoff from the east side of State Route 1 to the west side with piped runoff converging at the southern outfall to the estuary. Runoff from the northern portion of the Project (**Figure 1b**) includes surface runoff that collects in a roadside swale, which is piped underground to the northern outfall to the estuary behind Trinks Café. There is no underground storm drain system south of the Surf Market (**Figure 1a**). In this area, runoff from State Route 1 and adjacent properties appears to flow both southward and westward along and across State Route 1 as sheet flow to the bluffs above the estuary.

¹ The Basin Plan Action Level for 6PPD-q is 95 ng/L and the Ocean Plan Action Level is 95 ng/L for adult coho and 40 ng/L for juvenile coho.

cbec completed a GIS analysis to delineate the watershed areas upslope of the Project that contribute flow to the northern and southern outfalls to the estuary. The watershed areas (red lines) and main surface drainage courses (blue lines) are presented on **Figures 2a** and **2b**. The background image on Figure 1a is an aerial photograph while the background on Figure 2b is a shaded relief map, with higher elevations in green and lower elevations in blue. The North Watershed (91.1 acres) delineates the drainage area contributing rainfall runoff to the northern outfall to the estuary while the Central Watershed (10.1 acres) delineates the area contributing runoff to the southern outfall to the estuary. The South Watershed (7.4 acres) delineates the area that drains to the estuary via surface sheet flow as there is no underground Project storm drain system associated with this drainage area.

cbec also estimated peak runoff estimates generated during storms having a 1-, 2-, 5-, 10-, 50-, and 100-year recurrence interval. Drainage areas and peak runoff estimates for each watershed are presented on the inset tables on **Figures 2a** and **2b**.

3 WATER QUALITY OF PROJECT STORMWATER RUNOFF

On January 24, 2024, The Stream Team initiated a water quality sample program at four locations within the Project area (see **Figure 3**). The purpose of this monitoring effort is to determine if 6PPD-q and other constituents are present at elevated concentrations² in urban runoff entering the Gualala River estuary to inform recommendations for runoff mitigation measures to reduce pollutant loads to the estuary.

A total of 6 sampling events were completed between January of 2024 and January of 2025. The general water quality parameters of dissolved oxygen, total dissolved solids, conductivity, turbidity, temperature and pH were measured at each location during the time of sampling. In addition, water samples were collected and delivered to analytical laboratories for 6PPD-q, zinc, and oil and grease analyses. A copy of The Stream Team's monitoring report (Hamill, 2025) including methods and full results is attached to this Technical Memorandum.

Of the 4 sampling locations, the At Trinks (GROAT) is in the Northern Watershed, while the remaining sampling locations are in the Central Watershed. Water quality sampling results indicate that there were no elevated concentrations of analytes detected in the GROAT samples. In the Central Watershed, 6PPD-q was detected at concentration above the 95 ng/L Action Level (110-170 ng/L) in the three samples collected at the GROFB (foot bridge) in the south outfall to the estuary. In addition, 6PPD-q was detected at 71 ng/L in a sample from GROBG (below Chevron gas station).

These sampling results indicate that runoff from the Northern Watershed does not appear to require water quality BMPs to reduce pollutant loads, but storm runoff from the Central Watershed does. These findings aren't surprising as there is a higher density of roads, parking lots, and gas stations within the Central Watershed than in the Northern Watershed. There is also a higher volume and percentage of non-urban runoff from upslope areas in the Northern Watershed, which likely dilutes any contaminants originating from the Project corridor, if any. There were no water quality samples collected from the South Watershed. Thus it is unknown if there are pollutant loads originating from the roads and parking lots within this drainage area.

² Elevated concentrations are defined as constituent concentrations detected above action limits specified in the Basin Plan and Ocean Plan.

4 PROPOSED WATER QUALITY TREATMENT BMP MEASURES

Figure 4 is a map focused on the Central and South Watershed drainage areas and pathways. It also indicates the proposed location of the Caltrans bioswale behind the Gualala Country Inn at the south end of the Project, which is intended to reduce pollutant loads from the Project. An important finding from this study is that the bioswale would only receive and treat runoff from only the South Watershed. However, as presented above, the elevated concentrations of 6PPD-q identified by The Stream Teams water quality monitoring program are sourced from the Central Watershed. There are no BMPs proposed in the Streetscape Project to treat runoff from the Central Watershed.

Based on these findings, cbec has identified conceptual BMP measures that could be incorporated or complement the Streetscape Project to reduce pollutant loadings to the estuary from the Central Watershed (see **Figure 5**). The assumptions and strategies behind these BMP measures follow.

Given Project right of way width constraints, the largest area that can accommodate additional or expanded BMPs is located within and beyond the proposed bioswale between the Gualala Country Inn and Old State Highway (**Figure 5**). This area would outfall into China Gulch Creek. The BMPs that could be incorporated into this area include an infiltration basin, bioretention basin, and/or bioswale (hereafter referred to as Type B BMPs).

The main goal of this conceptual BMP plan is to treat runoff from the Central Watershed. There probably isn't enough room to install an infiltration- or retention-basin in the southern outfall to the estuary (behind the Surf Market) that can handle/treat all the runoff from the Central Watershed. Thus, the existing Project underground storm drain system could be modified to reduce the amount of water directed from east to west across State Route 1 and into the southern outfall. This could be done by segregating flows and directing them through a series of linear BMPs along the east side of State Route 1 down to the Type B BMPs at the China Gulch Creek outfall. Examples of linear BMPs (referred to as Type A BMPs on **Figure 5**) that could be constructed along the east side of State Route 1 include: Design Pollution Prevention Infiltration Areas (DPPIA); infiltration basins; infiltration trenches; biofiltration strips/swales; and media filters (Caltrans, 2023). In addition, by reducing the amount of runoff directed to the southern outfall above the estuary, there may be sufficient room to install Type B BMPs at this location.

5 RECOMMENDED NEXT STEPS

Because the Project schedule is advancing quickly, we recommend that the Friends of the Gualala River convene a meeting with Caltrans and cbec to discuss the findings and conceptual BMP recommendations presented herein. Given The Stream Team's water quality monitoring expertise and experience in pollutant reduction BMP design, we also suggest they participate in this meeting. The main objective of this meeting would be to work collaboratively with Caltrans to determine the feasibility of integrating additional BMPs into the Project design to best protect the water quality and ecological resources of the Gualala River Estuary.

6 REFERENCES

Caltrans. 2023. Project Planning and Design Guide. June.

County of Mendocino. 2025. Coastal Development Perm Application for Caltrans to implement the Gualala Downtown Streetscape Enhancement Project (CDP_2024-0040). April 4.

Hamill, T. 2025. Stormwater Monitoring 6PPD-q. CA Urban Streams Alliance – The Stream Team. May 14.





FIGURE 1b: Approximate alignment and flow paths for Streetscape storm drain runoff – northern portion of Project.

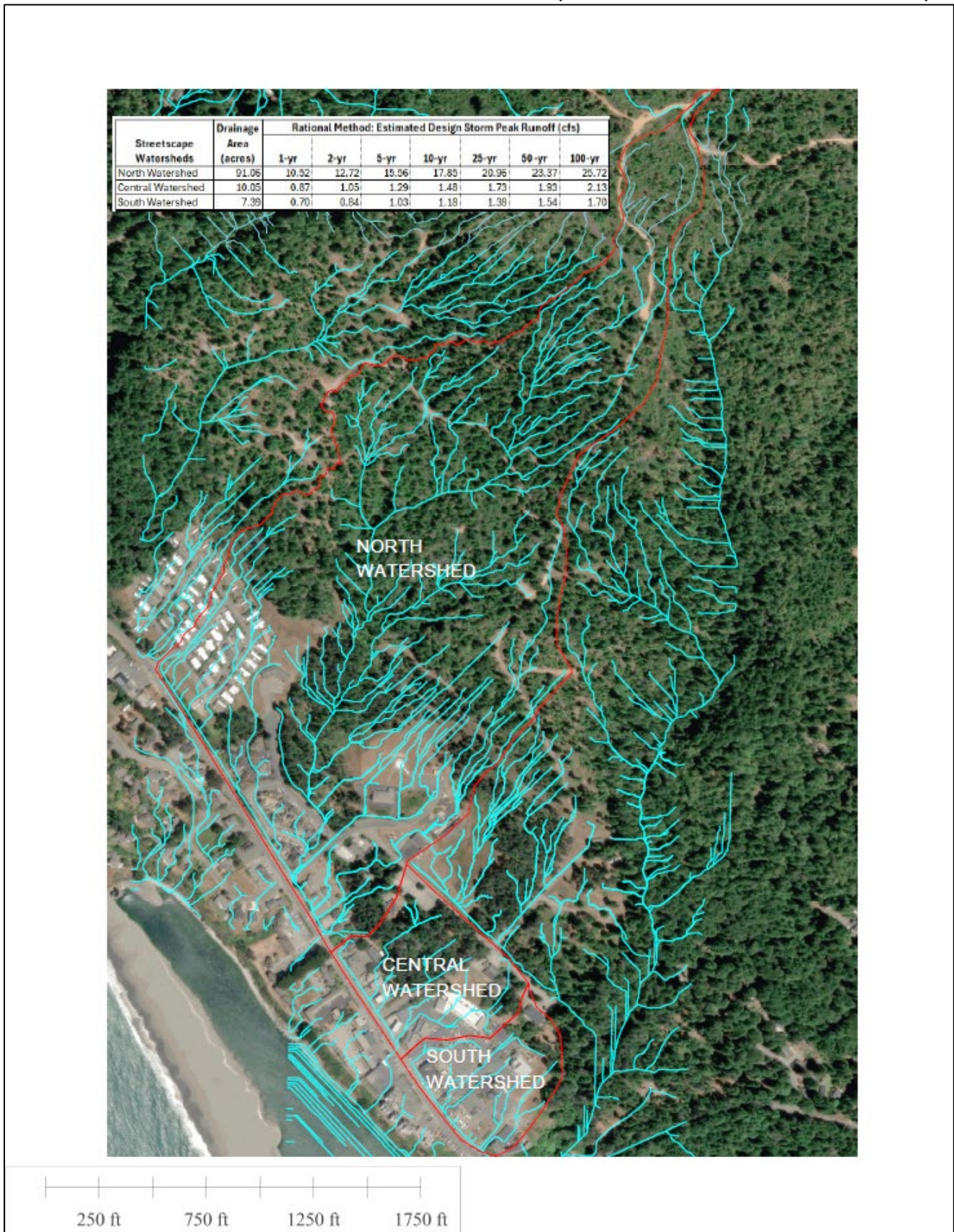


FIGURE 2a: Subwatershed areas draining to the Streetscape Project – aerial image background.

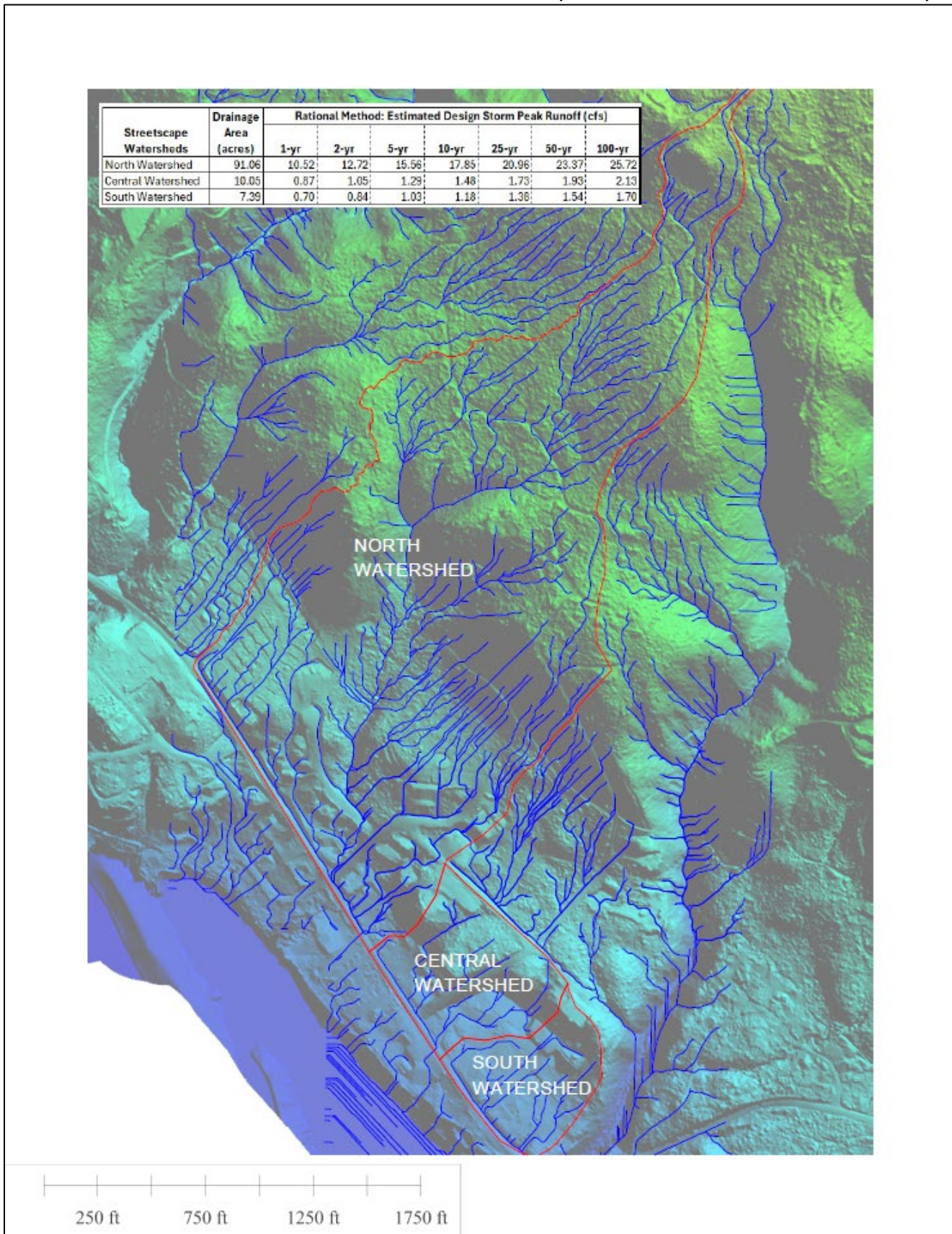


FIGURE 2b: Subwatershed areas draining to the Streetscape Project – shaded relief background.



FIGURE 3: The Stream Team water quality sampling locations: GROAT – above Trinks; GROBG – below Chevron gas station; GROPL – Sundstrom Mall parking lot; and GROFB – footbridge at Southern Outfall to estuary. Note: the GROAT sampling location drains to the Northern Outfall to estuary while the rest drain to the Southern Outfall to estuary.

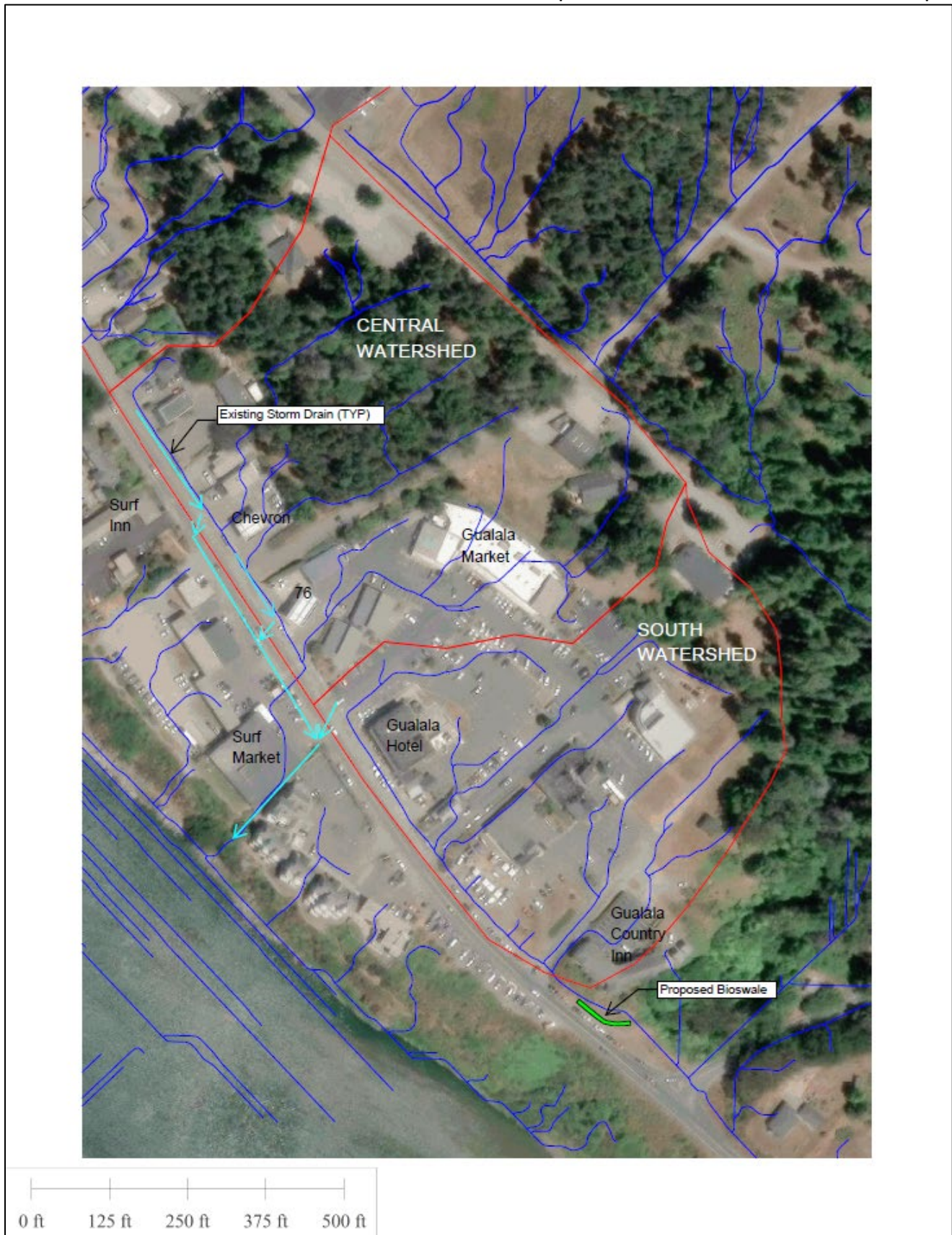


FIGURE 4: Existing drainage alignments associated with the southern portion of the Streetscape Project.

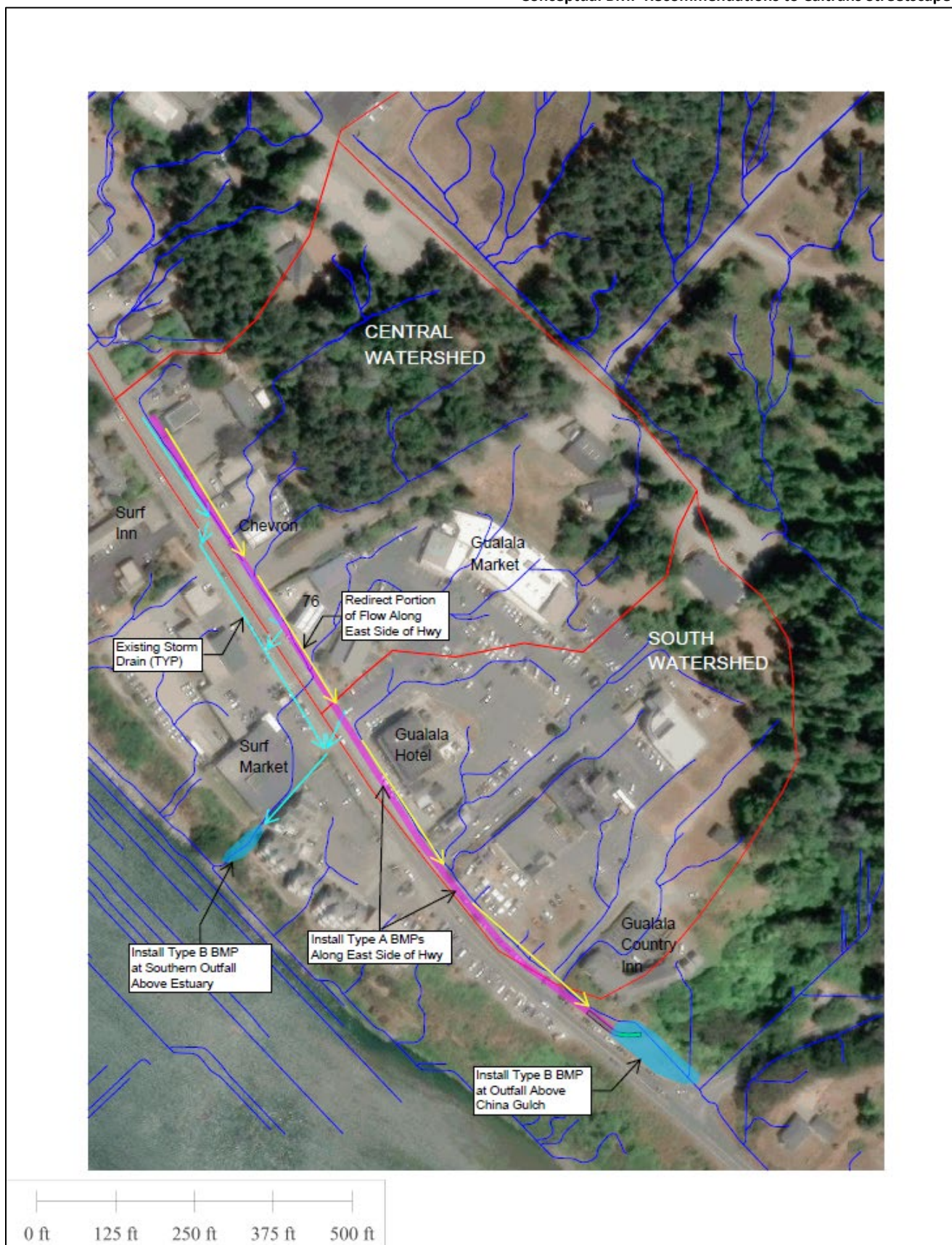


FIGURE 5: Conceptual BMP recommendations to the southern portion of the Streetscape Project.