HUMBOLDT COUNTY DEPARTMENT OF PUBLIC WORKS
ROAD EVALUATION REPORT

PART A: *Part A may be completed by the applicant*

Applicant Name: Nathan Monschke and Lisa Melin-Monschke APN: 221-081-004

Planning & Building Department Case/File No.: 10653

Road Name: Thomas Road (Segment 2) *(complete a separate form for each road)*

From Road (Cross street): Salmon Creek Road

To Road (Cross street): Mile 4.1 (end of county-maintained segment)

Length of road segment: 4.1 miles Date Inspected: 10/3/2017

Road is maintained by: ☑ County ☐ Other _____
(State, Forest Service, National Park, State Park, BLM, Private, Tribal, etc)

Check one of the following:

Box 1 ☐ The entire road segment is developed to Category 4 road standards (20 feet wide) or better. If checked, then the road is adequate for the proposed use without further review by the applicant.

Box 2 ☐ The entire road segment is developed to the equivalent of a road category 4 standard. If checked, then the road is adequate for the proposed use without further review by the applicant.

An equivalent road category 4 standard is defined as a roadway that is generally 20 feet in width, but has pinch points which narrow the road. Pinch points include, but are not limited to, one-lane bridges, trees, large rock outcroppings, culverts, etc. Pinch points must provide visibility where a driver can see oncoming vehicles through the pinch point which allows the oncoming vehicle to stop and wait in a 20 foot wide section of the road for the other vehicle to pass.

Box 3 ☑ The entire road segment is not developed to the equivalent of road category 4 or better. The road may or may not be able to accommodate the proposed use and further evaluation is necessary. Part B is to be completed by a Civil Engineer licensed by the State of California.

The statements in PART A are true and correct and have been made by me after personally inspecting and measuring the road.

Joel Monschke — 10/12/17

Signature — Date

Joel Monschke

Name Printed

Important: Read the instructions before using this form. If you have questions, please call the Dept. of Public Works Land Use Division at 707.445.7205.

PART B: Only complete Part B if Box 3 is checked in Part A. *Part B is to be completed by a Civil Engineer licensed by the State of California. Complete a separate form for each road.*

Road Name: Thomas Road (Segment 2) Date Inspected: 10/3/17 APN: 221-081-004

From Road: Salmon Creek Road (Post Mile N/A)

To Road: Mile 4.1 (end of county-maintained segment) (Post Mile N/A)

Planning & Building Department Case/File No.:

1. What is the Average Daily Traffic (ADT) of the road (including other known cannabis projects)?

   Number of other known cannabis projects included in ADT calculations:
   (Contact the Planning & Building Department for information on other nearby projects.) 79

   ADT: 494 Date(s) measured: See explanation in Technical Memorandum Section 2.3

   Method used to measure ADT: ☐ Counters ☐ Estimated using ITE *Trip Generation* Book

   Is the ADT of the road less than 400? ☐ Yes ☑ No

   If **YES**, then the road is considered very low volume and shall comply with the design standards outlined in the American Association of State Highway and Transportation Officials (AASHTO) *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤400). Complete sections 2 and 3 below.*

   If **NO**, then the road shall be reviewed per the applicable policies for the design of local roads and streets presented in AASHTO *A Policy on Geometric Design of Highways and Streets*, commonly known as the "Green Book". Complete section 3 below.

2. Identify site specific safety problems with the road that include, but are not limited to: (Refer to Chapter 3 in AASHTO *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤400)* for guidance.)

   A. Pattern of curve related crashes.
   Check one: ☐ No. ☐ Yes, see attached sheet for Post Mile (PM) locations.

   B. Physical evidence of curve problems such as skid marks, scarred trees, or scarred utility poles
   Check one: ☐ No. ☐ Yes, see attached sheet for PM locations.

   C. Substantial edge rutting or encroachment.
   Check one: ☐ No. ☐ Yes, see attached sheet for PM locations.

   D. History of complaints from residents or law enforcement.
   Check one: ☐ No. ☐ Yes (☐ check if written documentation is attached)

   E. Measured or known speed substantially higher than the design speed of the road (20+ MPH higher)
   Check one: ☐ No. ☐ Yes.

   F. Need for turn-outs.
   Check one: ☐ No. ☐ Yes, see attached sheet for PM locations.

3. Conclusions/Recommendations per AASHTO. Check one:

   ☐ The roadway can accommodate the cumulative increased traffic from this project and all known cannabis projects identified above.

   ☑ The roadway can accommodate the cumulative increased traffic from this project and all known cannabis projects identified above, if the recommendations on the attached report are done. (☐ check if a *Neighborhood Traffic Management Plan* is also required and is attached.)

   ☐ The roadway cannot accommodate increased traffic from the proposed use. It is not possible to address increased traffic.

A map showing the location and limits of the road being evaluated in PART B is attached. The statements in PART B are true and correct and have been made by me after personally evaluating the road.

Signature of Civil Engineer 10/12/17 Date

Important: Read the instructions before using this form. If you have questions, please call the Dept. of Public Works Land Use Division at 707.445.7205.

Stillwater Sciences

850 G Street, Suite K, Arcata, CA 95521
phone 707.822.9607 fax 707.822.9608

TECHNICAL MEMORANDUM

DATE: 13 October 2017

TO: Humboldt County Department of Public Works

FROM: Joel Monschke, Stillwater Sciences

SUBJECT: Road Evaluation for APN 221-081-004 (Blido Property): **Segment 2** -4.1 miles of County-maintained Thomas Road from Salmon Creek Road junction to end of County-maintained segment.

I hereby state that all work described in the attached Technical Memorandum follows accepted engineering practice and was completed under my direction. This Technical Memorandum summarizes results from an evaluation conducted on the access road leading to APN 221-081-004 per guidance from the Humboldt County Department of Public Works. The Blido property is located approximately 8 miles from US-101 and approximately 2 miles from mile 4.1 of Thomas Road where the county-maintained road ends. Based on physical characteristics of the access road, the 7.8-mile access road to the Blido property has been divided into 4 segments as follows:

- **Segment 1** – 1.7 miles of County-maintained road (Salmon Creek Road) from Maple Hills Road junction to the Thomas Road junction.
- **Segment 2 (Subject of this Technical Memorandum)** – 4.1 miles of county-maintained Thomas Road, from Salmon Creek Road junction to end of County-maintained segment.
- **Segment 3** – 1.6 miles of private community-maintained road (Thomas Road) from Mile 4.1 of Thomas Road to Salmon Creek School.
- **Segment 4** – 0.4 miles of private community-maintained road from Thomas Road to Blido property.

Joel Monschke, P.E.
Civil Engineer
Stillwater Sciences

1 INTRODUCTION

Stillwater Sciences has been contracted to conduct road evaluation the proposed cannabis project on APN 221-081-004. On 3 October 2017, the field evaluation was conducted by Stillwater Sciences engineer (Joel Monschke). Information in this Technical Memorandum pertains to Segment 2 (See Figure 1) covering 4.1 miles of county-maintained Thomas Road from the Salmon Creek Road junction to mile 4.1 where Thomas Road becomes community-maintained.

2 EXPECTED INCREASE IN USE DUE TO CANNABIS PROJECT

2.1 Cannabis Project on APN 221-081-004

The cannabis project proposed on APN 221-081-004 has the potential to increase traffic on the roads evaluated herein because cultivation covers ~40,000 SF. However, the applicant strives to reduce impacts to all access roads by reusing soil, storing all water onsite (no water deliveries), and utilizing an onsite gravel quarry to maintain the roads on the property.

2.2 Other Cannabis Projects in the Vicinity

Areas accessed by Salmon Creek Road were delineated into eight sub-areas so that projected use could be estimated along the various road segments evaluated in this project. Humboldt County Department of Public Works provided Stillwater with a list of cannabis permit applications in the vicinity. The number of cannabis applicants and number of parcels were tallied by sub-area and are shown in Table 1.

Table 1. Access road area users.

Sub-area	Description of sub-area	Cannabis permit applications	Parcels
Lower Salmon Creek Road	Salmon Creek Road from Maple Hills Road to Thomas Road/Salmon Creek Road split	4	29
Upper Salmon Creek Road	Salmon Creek Road from Thomas Road/Salmon Creek Road split to terminus	9	44
Thomas Trunk Road	Thomas Road from Thomas Road/Salmon Creek Road split to Main/Upper Thomas Road split	14	49
Lower Thomas Road	Main Thomas Road from Main/Upper Thomas Road split to Salmon Creek School	16	41
Upper Thomas Road	Lower Thomas Road from Main/Lower Thomas Road split to terminus	17	36
Main Thomas Road	Upper Thomas Road from Main/Upper Thomas Road split to terminus	7	14
Lower Samuels Ranch Loop	Lower Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	12	52
Upper Samuels Ranch Loop	Upper Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	13	55

Six of these sub-areas (Thomas Trunk Road, Lower Thomas Road, Upper Thomas Road, Main Thomas Road, Lower Samuels Ranch Loop and Upper Samuels Ranch Loop) are accessed by the road (Segment 2) evaluated in this Technical Memorandum. Therefore, 79 cannabis permit applications and 247 parcels contribute to use of Segment 1. Most of the cannabis applications involve permitting existing cultivation, so the traffic is not likely to significantly increase from those projects compared to the last several years. However, it is expected that the cumulative impacts of all these projects will result in incremental increases in road use considering that there are multiple new permit applications and that as farmers come into compliance they often significantly upgrade their operations.

2.3 Average Daily Traffic (ADT) Estimate

Stillwater Sciences' engineer estimated average daily trips based on traffic observations during the road evaluation, number of properties utilizing the access road, and engineering judgement. There are approximately 247 parcels that utilize Segment 2. If each parcel accounts for two trips per day, that equates to approximately 494 total trips per day (~40 trips per hour during a typical 12-hour day (8 am to 8 pm). This is generally consistent with the observations made during the road evaluation. While there are likely busier times of day, and busier periods of the year, we believe that this is a reasonably accurate estimate for this road evaluation.

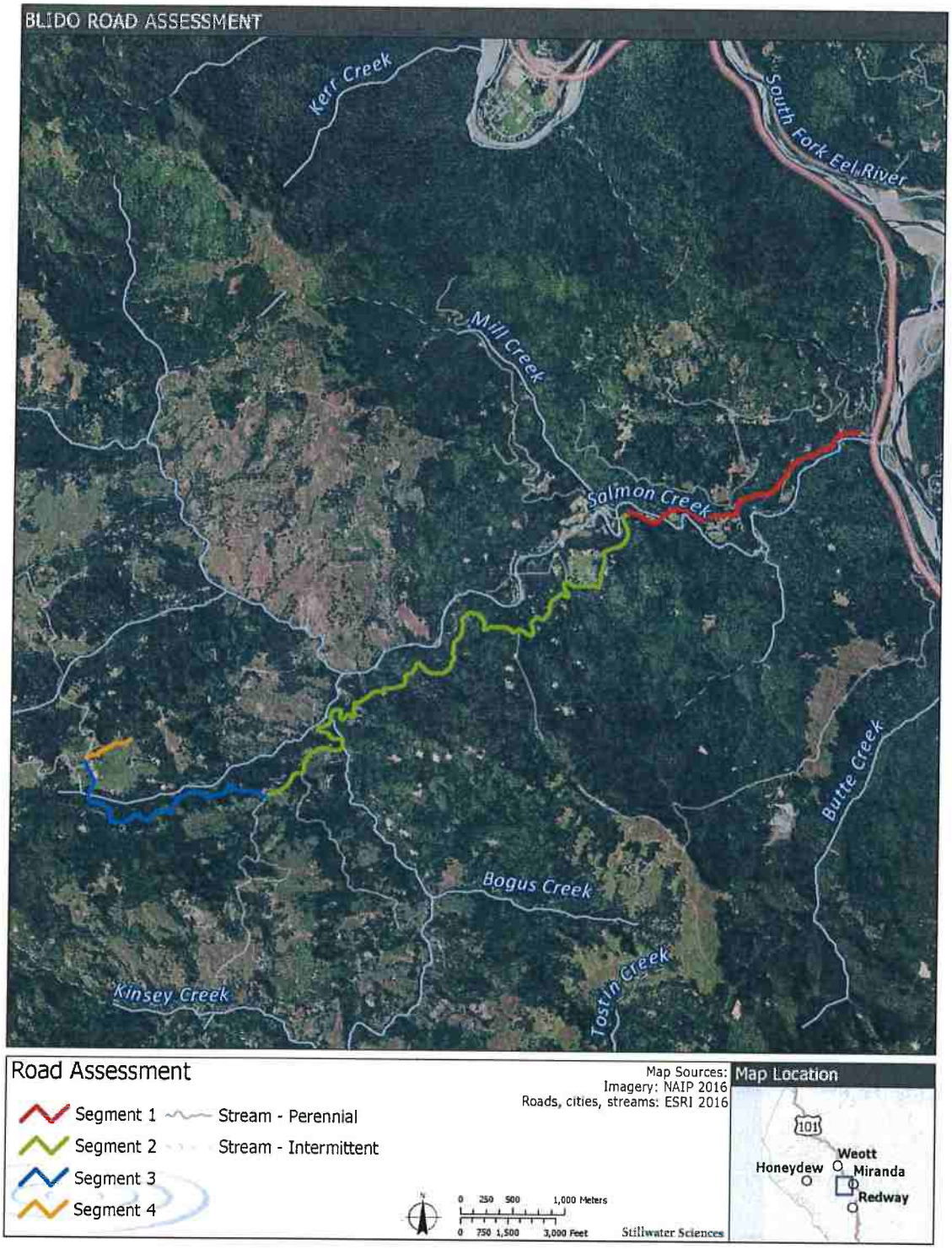

Figure 1. Road evaluation overview map.

3 FIELD OBSERVATIONS

3.1 General Observations

Overall, the 4.1 miles of paved county-maintained road is in relatively good condition and appears to be accommodating the current traffic load. There was no evidence of skid marks or scarred trees. This segment of road is ranges in width from 15' to 20' wide except for several narrower pinch points as shown in the photos in Appendix A and described in Section 3.2 below.

3.2 Description of Specific Road Segments

The following measurements were taken along this road segment at 0.1 mile intervals as shown on Figure 2:

- Mile 0.1: Pinch point at tree; 15-ft road width with 1-ft shoulders. The visibility is fair.
- Mile 0.2: 18-ft road width with 1-ft shoulder.
- Mile 0.3: 18-ft road width with 1-ft shoulder.
- Mile 0.4: 18-ft road width with 1-ft shoulder.
- Mile 0.45: Pinch point at tree; 16-ft road width with decent visibility.
- Mile 0.5: 18-ft road width with 1-ft shoulder.
- Mile 0.6: 24-ft road width with 2-ft shoulder.
- Mile 0.7: 20-ft road width with 2-ft shoulder.
- Mile 0.8: 30-ft road width with 1-ft shoulder.
- Mile 0.9: 24-ft road width with 2-ft shoulder.
- Mile 1.0: 15-ft-wide pinch point with 1-ft shoulder caused by tree at blind corner.
- Mile 1.1: 20-ft road width with 1-ft shoulder.
- Mile 1.2: 20-ft road width with 1-ft shoulder.
- Mile 1.3: 22-ft road width with 2-ft shoulder.
- Mile 1.4: 22-ft road width with 1-ft shoulder.
- Mile 1.5: 20-ft road width with 1-ft shoulder.
- Mile 1.6: 20-ft road width with 2-ft shoulder.
- Mile 1.7: 20-ft road width with 1-ft shoulder.
- Mile 1.8: 20-ft road width with 2-ft shoulder.
- Mile 1.9: 18-ft road width with 1-ft shoulder.
- Mile 2.0: 15-ft road width with 1-ft shoulder.
- Mile 2.1: 18-ft road width with 1-ft shoulder.
- Mile 2.15: 15-ft-wide pinch point with 1-ft shoulder.
- Mile 2.2: 20-ft road width with 1-ft shoulder.
- Mile 2.3: 20-ft road width with 2-ft shoulder.
- Mile 2.35: ~15-ft-wide pinch point at partial road failure
- Mile 2.4: 16-ft road width with 1-ft shoulder. Dangerous blind corner.
- Mile 2.5: 18-ft road width with 2-ft shoulder.

- Mile 2.6: The culvert at this location was recently repaired. The short segment over the culvert is gravel and 18-ft wide with 2-ft shoulder.
- Mile 2.7: 20-ft road width and 2-ft shoulder.
- Mile 2.8: 18-ft road width with 1-ft shoulder.
- Mile 2.9: 18-ft road width with 1-ft shoulder.
- Mile 3.0: 15-ft road width with 1-ft shoulder.
- Mile 3.1: 20-ft road width with 1-ft shoulder.
- Mile 3.15: Dangerous pinch point at blind corner. The road is 15-ft wide with 1-ft shoulder.
- Mile 3.2: 20-ft road width with 2-ft shoulder.
- Mile 3.3: 16-ft-wide bridge with no shoulder. Limited visibility at western edge of bridge due to vegetation.
- Mile 3.4: 16-ft road width with 1-ft shoulder. Pinch point at downgradient at downgradient extent of blind corner.
- Mile 3.5: 18-ft road width with 1-ft shoulder. Very steep, sharp corner where large trucks often get stuck.
- Mile 3.6: 12-ft road width with 2-ft shoulder. Pinch point but decent visibility with turnouts.
- Mile 3.65: 12-ft road width with 1-ft shoulder. Blind corner.
- Mile 3.7:12-ft road width with 10ft shoulder. Partially blind corner with deep ditch.
- Mile 3.8: 18-ft road width with 1-ft shoulder.
- Mile 3.9: 15-ft road width with 2-ft shoulder, broken pavement edges make segment more treacherous.
- Mile 4.0: 15-ft road width with 2-ft shoulder, broken pavement edges make segment more treacherous.
- Mile 4.1: 20-ft road width with 2-ft shoulders at intersection with Upper Thomas Road. End of County-maintained road (and end of segment 2).

4 RECOMMENDATIONS

4.1 Specific Recommendations for this Road Segment

- Mile 0.1: Cut vegetation to improve visibility, upgrade pavement to allow for minimal 18' wide driving surface width where feasible
- Mile 1.0: We recommend widening the roadway including removal of a Douglas Fir tree to improve the road width and visibility at the blind corner.
- Mile 1.9 to mile 2.2: There are some pinch points along this segment, but the segment traverses steep terrain so widening would be difficult and have potentially significant environmental impacts. Recommend signage reminding drivers to slow down and stay on their side of the road.
- Mile 2.4: We recommend widening the corner on the inside to improve width and visibility at the blind corner. Also nearby at mile 2.35, need to repair slumping outboard edge of road.

- Mile 3.15: We recommend widening corner on inside to improve road width and visibility on dangerous blind corner. This is probably the most dangerous corner on the road.
- Mile 3.3: We recommend removing vegetation on western extent of bridge to improve visibility.
- Mile 3.4: We recommend widening corner on inside to improve width and visibility at blind corner.
- Mile 3.5: Although the width and visibility on this corner is adequate, it is very steep and dangerous because large trucks frequently get stuck. We recommend re-engineering the corner to reduce grade and lengthen radius of curve. This work could potentially utilize the cut material from the other road widening sites.
- Mile 3.65 to mile 3.7: Potential locations to widen several corners on inside to improve road width and visibility at blind curves.
- Mile 3.7: Potential location to widen corner on inside to improve road width and visibility at partially blind curve.

It is unrealistic to expect one or several cannabis cultivators to make the road improvements recommended herein. Therefore, we suggest developing a public-private partnership between Humboldt County and residents/cultivators within the Salmon Creek community to work together to improve the County-maintained access road. As necessary, cultivator contribution could be calculated based on a sliding scale that takes into consideration the square footage of cultivation area and length of County-maintained road utilized.

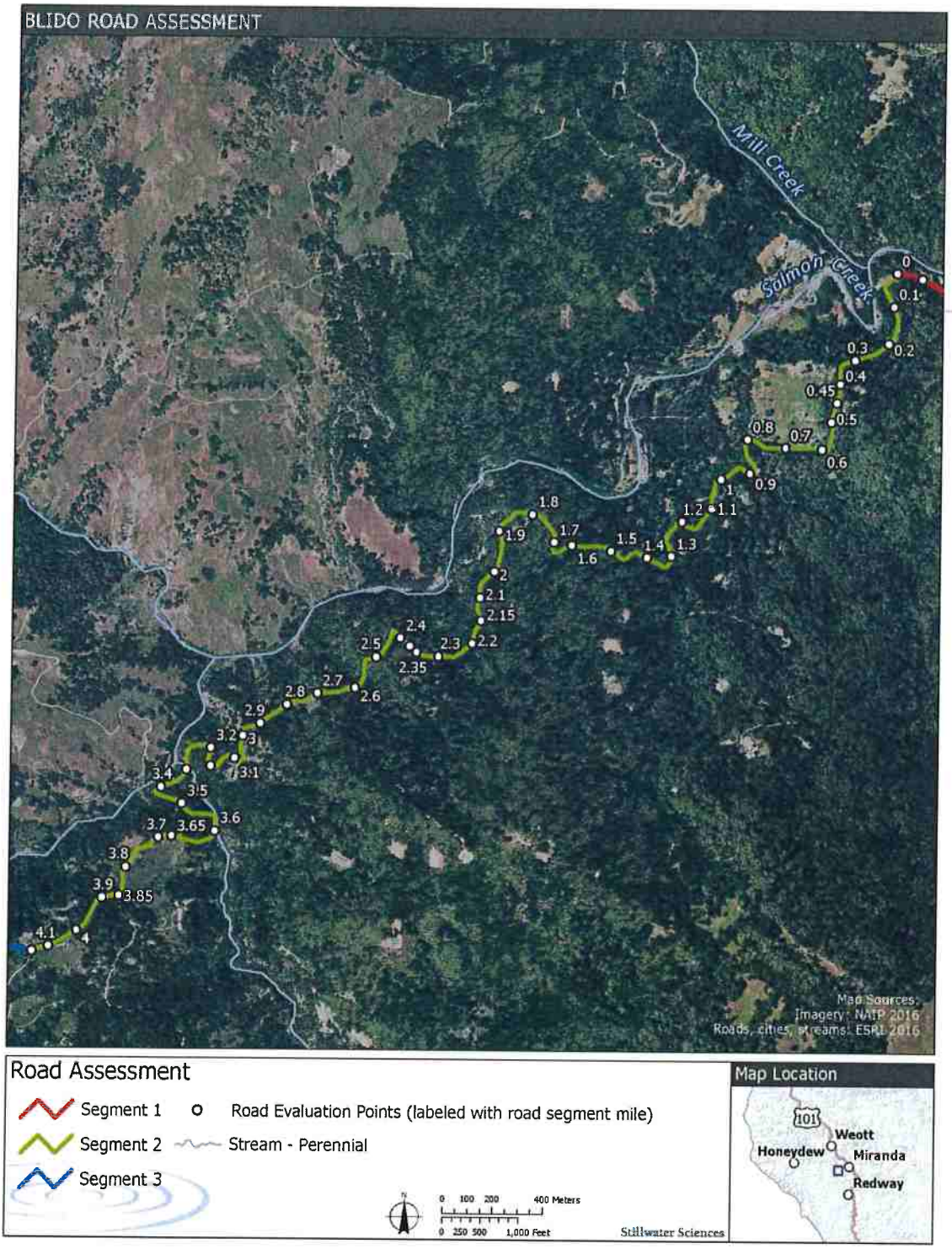

Figure 2. Road Segment 2map.

Appendix A

Photos

Photo 1. Mile 0.1: Pinch point at tree: 15-ft road width with 1-ft shoulders, decent visibility.

Photo 2. Mile 0.2: 18-ft road width with 1-ft shoulders.

Photo 3. Mile 0.3: 18-ft road width with 1-ft shoulders.

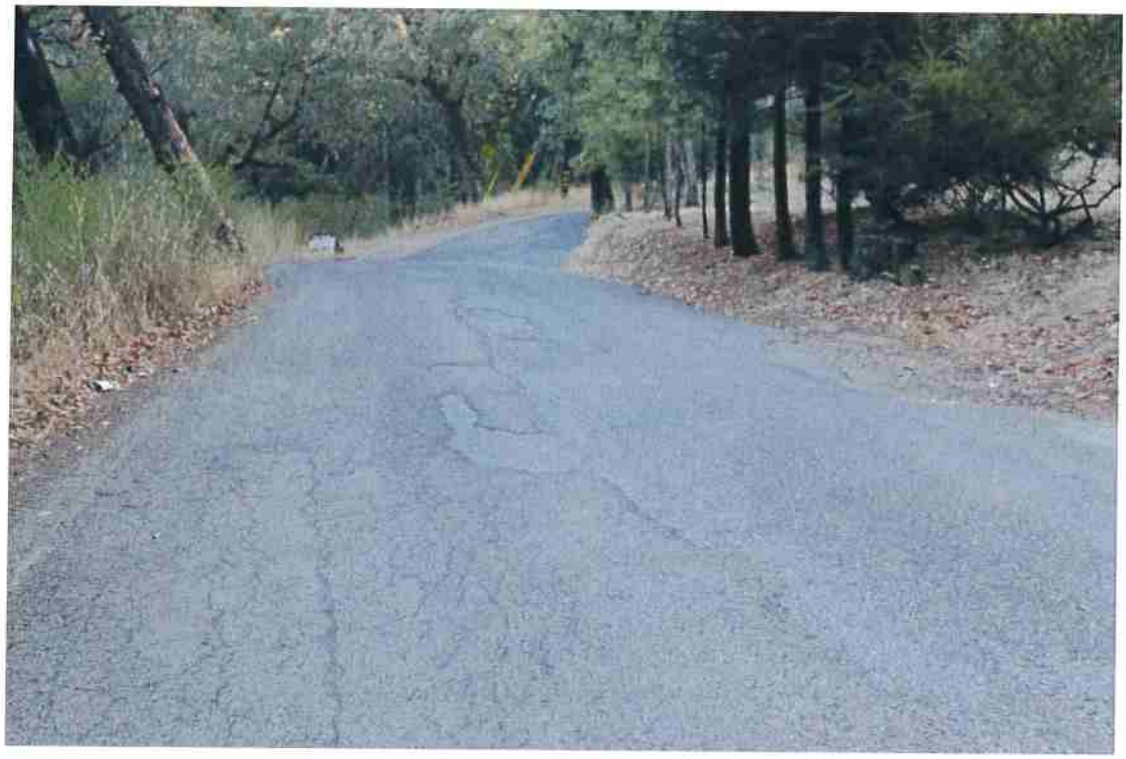

Photo 4. Mile 0.4: 18-ft road width with 1-ft shoulders.

Photo 5. Mile 0.45: Pinch point at tree, 16-ft road width, decent visibility.

Photo 6. Mile 0.5: 18-ft road width with 1-ft shoulders.

Photo 7. Mile 0.6: 24-ft road width with 2-ft shoulders.

Photo 8. Mile 0.7: 20-ft road width with 2-ft shoulders.

Photo 9. Mile 0.8: 30-ft road width with 1-ft shoulders.

Photo 10. Mile 0.9: 24-ft road width with 2-ft shoulders.

Photo 11. Mile 1.0: Pinch point at tree on blind corner; 15-ft road width with 1-ft shoulder. Recommend widening.

Photo 12. Mile 1.1: 20-ft road width with 2-ft shoulders.

Photo 13. Mile 1.2: 20-ft road width with 1-ft shoulders.

Photo 14. Mile 1.3: 22-ft road width with 2-ft shoulders.

Photo 15. Mile 1.4: 22-ft road width with 1-ft shoulders.

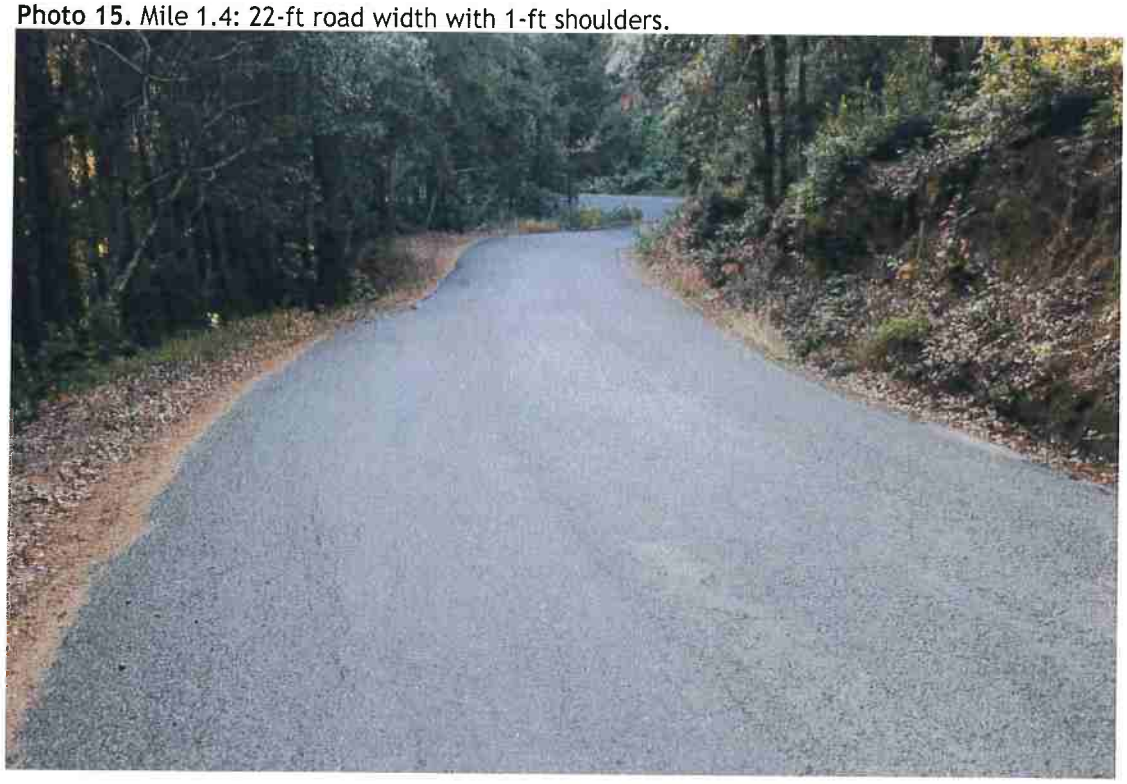

Photo 16. Mile 1.5: 20-ft road width with 1-ft shoulders.

Photo 17. Mile 1.6: 20-ft road width with 2-ft shoulders.

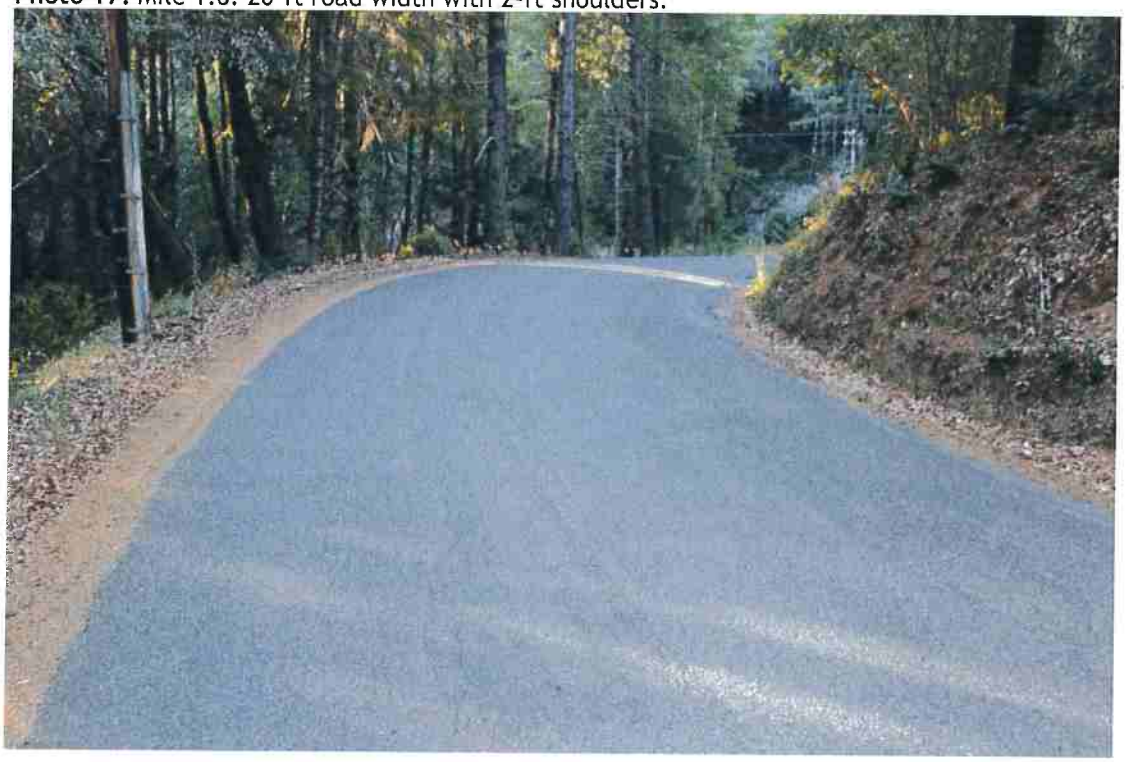

Photo 18. Mile 1.7: 20-ft road width with 1-ft shoulders.

Photo 19. Mile 1.8: 20-ft road width with 2-ft shoulders.

Photo 20. Mile 1.9: 18-ft road width with 2-ft shoulders.

Photo 21. Mile 2.0: 15-ft road width with 1-ft shoulders.

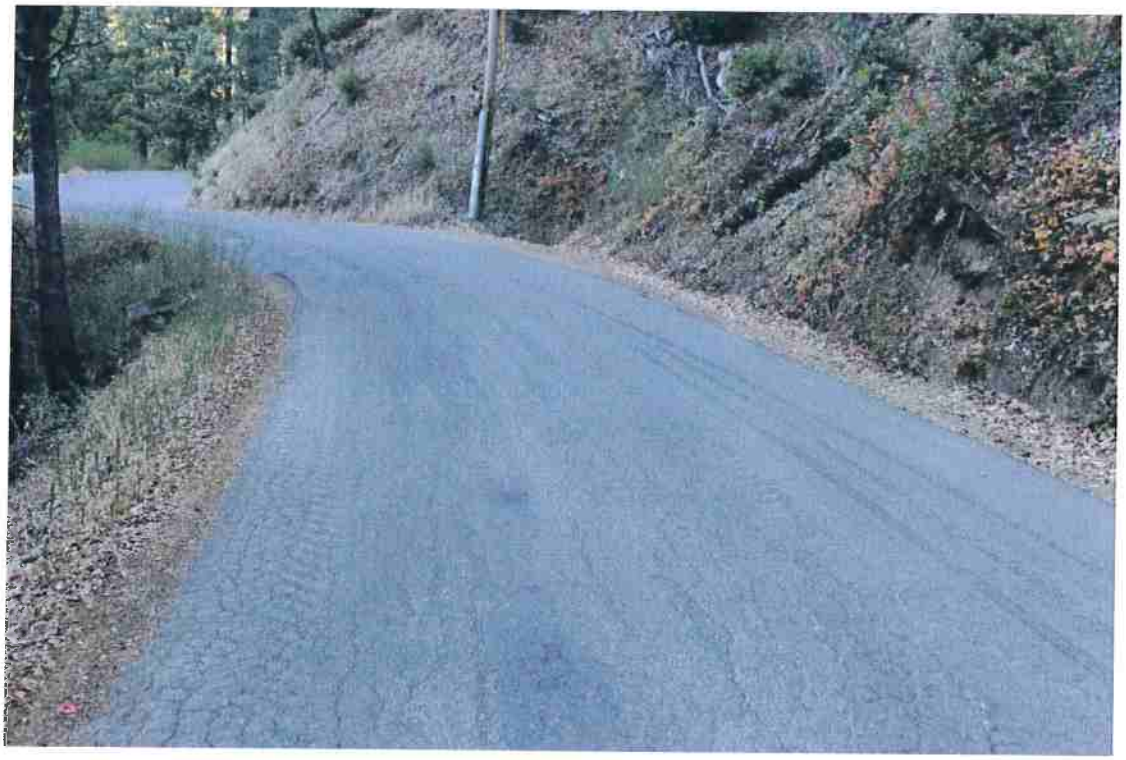

Photo 22. Mile 2.1: 18-ft road width with 1-ft shoulders.

Photo 23. Mile 2.15: Pinch point at tree, 15-ft road width, 1-ft shoulder.

Photo 24. Mile 2.2: 20-ft road width with 1-ft shoulders.

Photo 25. Mile 2.3: 20-ft road width with 2-ft shoulders.

Photo 26. Mile 2.35: ~15-ft road width pinch point at partial road failure.

Photo 27. Mile 2.37: ~15-ft road width pinch point past partial road failure.

Photo 28. Mile 2.4: 16-ft road width with 1-ft shoulders at blind corner. Potential spot to widen corner on the inside to improve width and visibility.

Photo 29. Mile 2.5: 18-ft road width with 2-ft shoulders.

Photo 30. Mile 12.6: Recent culver repair, short gravel segment. 18-ft road width with 2-ft shoulders.

Photo 31. Mile 2.7: 20-ft road width with 2-ft shoulders.

Photo 32. Mile 2.8: 18-ft road width with 1-ft shoulders.

Photo 33. Mile 2.9: 18-ft road width with 1-ft shoulders.

Photo 34. Mile 3.0: 15-ft road width with 1-ft shoulders.

Photo 35. Mile 3.1: 20-ft road width with 1-ft shoulders.

Photo 36. Mile 3.15: Dangerous pinch point at blind corner. 15-ft road width with 1-ft shoulders. Potential spot to widen corner on inside to improve width and visibility.

Photo 37. Mile 3.2: 20-ft road width with 2-ft shoulders.

Photo 38. Mile 3.3: 16-ft wide bridge, no shoulders. Recommend removing vegetation on west extent of bridge to improve visibility.

Photo 39. Mile 3.4: 16-ft road width with 1-ft shoulder. Pinch point at downgradient extent of blind corner. Potential spot to widen corner on inside to improve width and visibility.

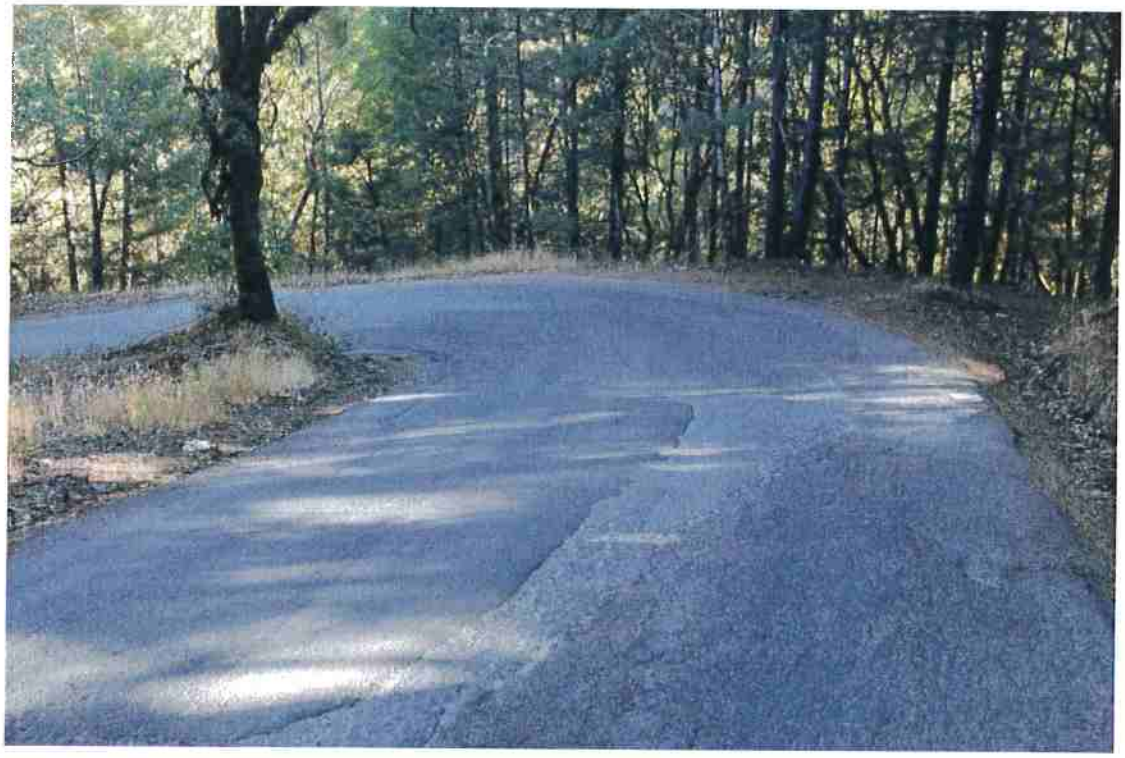

Photo 40. Mile 3.5: 18-ft road width with 1-ft shoulder. Very steep, sharp corner where trucks often get stuck. Consider re-engineering grade and curve radius.

Photo 41. Mile 3.6: 12-ft road width with 2-ft shoulders. Pinch point but decent visibility with turnouts.

Photo 42. Mile 3.65: Blind corner - 12-ft road width with 1-ft shoulders. Potential location to widen corner on inside to improve width and visibility.

Photo 43. Mile 3.7: 12-ft road width with 1-ft shoulder. Partially blind corner with deep ditch. Potential spot to widen corner on inside to improve width and visibility.

Photo 44. Mile 3.8: 18-ft road width with 1-ft shoulders.

Photo 45. Mile 3.85: Blind corner at intersection with Lower Thomas Road. 16-ft road width with 1-ft shoulders. Potential location to widen corner on inside to improve visibility.

Photo 46. Mile 3.9: 15-ft road width with 2-ft shoulders. Broken pavement edges make segment more treacherous.

Photo 47. Mile 4.0: 15-ft road width with 2-ft shoulders. Broken pavement edges make segment more treacherous.

Photo 48. Mile 4.1: 20-ft road width with 2-ft shoulders. Intersection with Upper Thomas Road and end of County-maintained road. End of Segment 2.