



# Alma Bridge Road Newt Passage



# Project Overview



**Figure 12. Newt Mortality Density Map**  
 Alma Bridge Road Newt Mortality Study (4301-02)  
 November 2021

Since 2017, approximately **34,000** newts have been killed along Alma Bridge Road. At an estimated road mortality rate of 39.2%, this local population is under the threat of extirpation.

Project partners are working to provide safe passage for California newts and other semiaquatic herpetofauna species across Alma Bridge Road in Santa Clara County, California

- California newt (*Taricha torosa*)
- Rough-skinned newt (*Taricha granulosa*)



# Newt Project History

- 2017- High mortality first observed
- 2018- community science begins
  - Midpen notifies partners
  - Peninsula Open Space Trust (POST) works with H.T. Harvey to analyze community science data
- 2019-2020- H.T. Harvey recommends additional study to better understand the issue
  - Midpen and POST award funds to H.T. Harvey for additional study
- 2020-2021- H.T. Harvey Road Related Newt Mortality Study
  - Identifies population level impact to newts
- 2022- Midpen and Santa Clara County Roads sign Cooperative Agreement
  - Begin Phase I (Feasibility and Alternatives Analysis)



# 2021 HT Harvey Study Findings

- 98% California newt and 2% rough skinned newts
- 9 other species, 104 individuals
- ~13,786 newts tried to cross during study
- 39.2% road-based mortality
- Movement highest during and after rain events
- Peak movement in February and March (toward reservoir)
- Without intervention, local extirpation in ~57 years
- Data used to inform future project and grant requests
- Repeatable pre and post implementation to determine efficacy
- Resulted in collective support from partner agencies to act



# Alma Bridge Road Newt Passage Project (Phase I)



## Alma Bridge Road Newt Passage Project

WILDLIFE CONNECTIVITY IMPROVEMENTS

- Phase I - Feasibility, Alternatives Evaluation/Basis of Design
- Partnering with County
- Multi agency consultant selection
- Cost \$392,961



# Project Goals

- **Reduce roadkill and promote habitat connectivity to support local newt population**
- Correctly scaled- can be designed, environmentally cleared, permitted, and implemented
- Cost effective
- Maintainable (primarily within the right-of-way)
- Does not impede road safety, hydrology, or public access
- Selected alternative facilitates existing and future use of Alma Bridge Road and surrounding areas and facilities
- Supported by stakeholders





# Project Team

## Partners:

Midpen and Santa Clara County  
Roads and Airports

## Agency Stakeholders:

County Parks, Valley Water, San  
Jose Water, CDFW

## Public Stakeholders

Advocacy groups, Recreation  
groups, Neighbors

## Consultant Team:

### AECOM

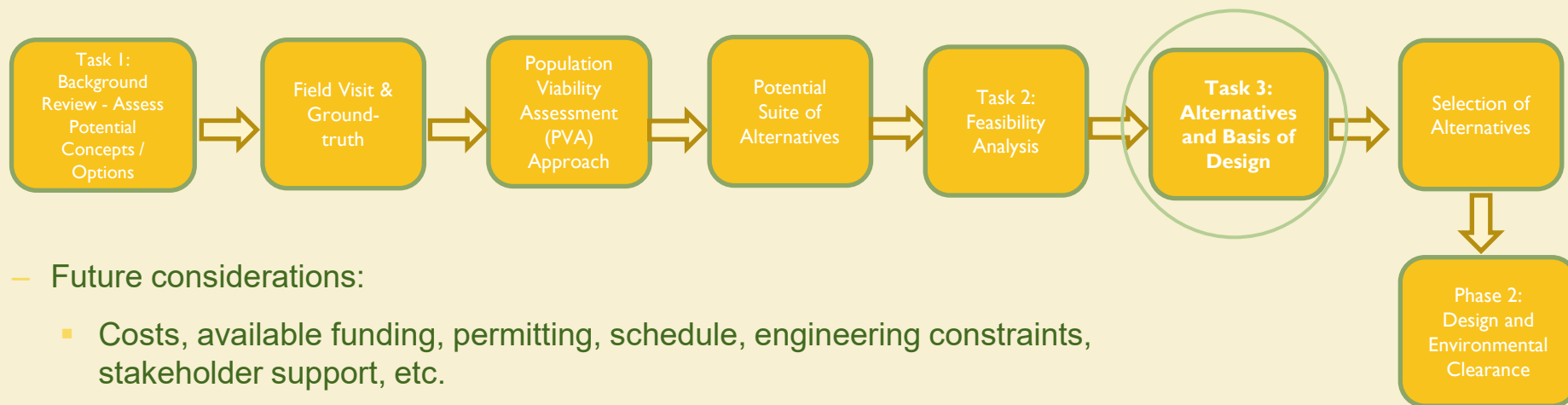
- HDR
- USGS led by Cheryl Brehme
- Merav Vonshak, Newt Patrol
- Anthony Clevenger
- Tom Langton
- HT Harvey led by Jeff Wilkinson





# Phase I Tasks

## 🌿 Steps taken to-date / future steps:

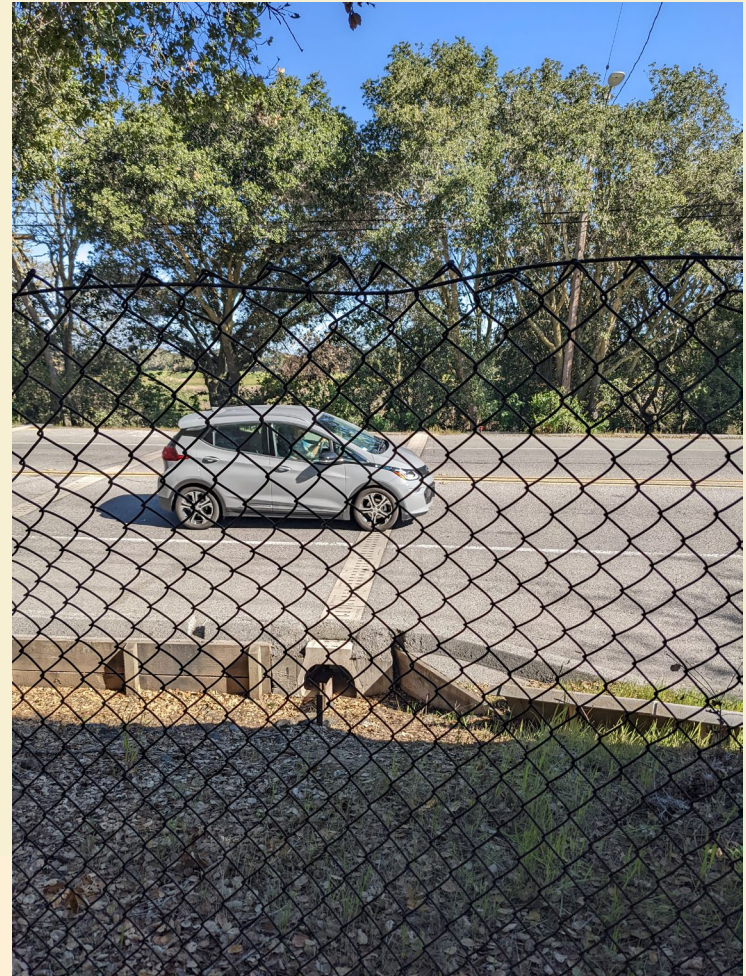


### — Future considerations:

- Costs, available funding, permitting, schedule, engineering constraints, stakeholder support, etc.
- Recommended Alternative(s) will be vetted by the project team and stakeholders and will be brought to Midpen Board to approve moving into Phase 2 (CEQA and 65% design)
- Ongoing opportunities for public input

# Schedule

- ‡ Phase I-
  - Background Review- Sept 2022
  - Feasibility Analysis- Feb 2023
  - Basis of Design- Oct 2023
- ‡ Next Phases:
  - Phase II CEQA, 65% Design and Permit Applications
  - Phase III 100% Design and Construction
  - Phase IV effectiveness monitoring
- ‡ Funding (ongoing)





# Explored Road Closure

## Alternative Action Opportunities

Permanent closure of Alma Bridge Road is not feasible  
California law sets forth limitations on permanently closing roads.  
Alma Bridge Road is under the jurisdiction of the County of Santa Clara, whereby:

*Streets & Highways Code (“SHC”) section 942.5 states that a county may only permanently close a county highway when the closing is necessary for protection of the public, protection of the highway during storms, or during construction/improvement/maintenance operations. Vehicle Code (“VC”) section 21101 only allows for permanent road closure when the road is no longer needed for vehicular traffic.*



AECOM



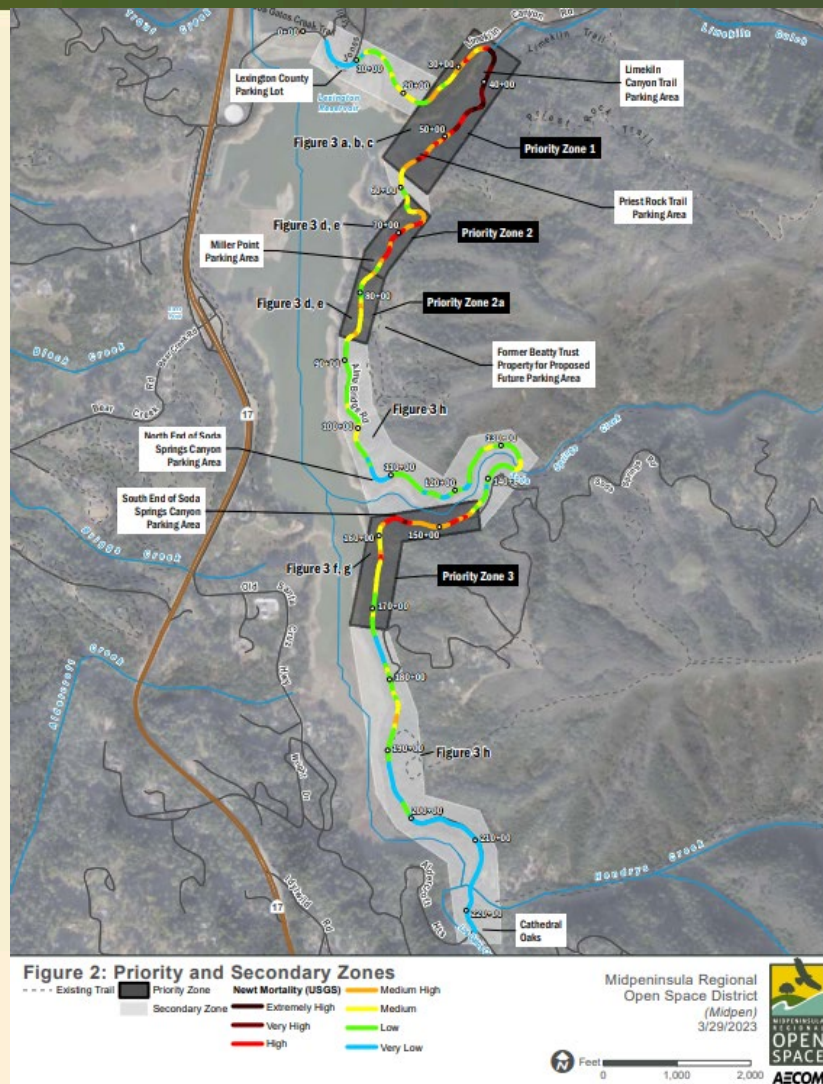
# Wildlife Crossing Conceptual Design

## – Naming Conventions

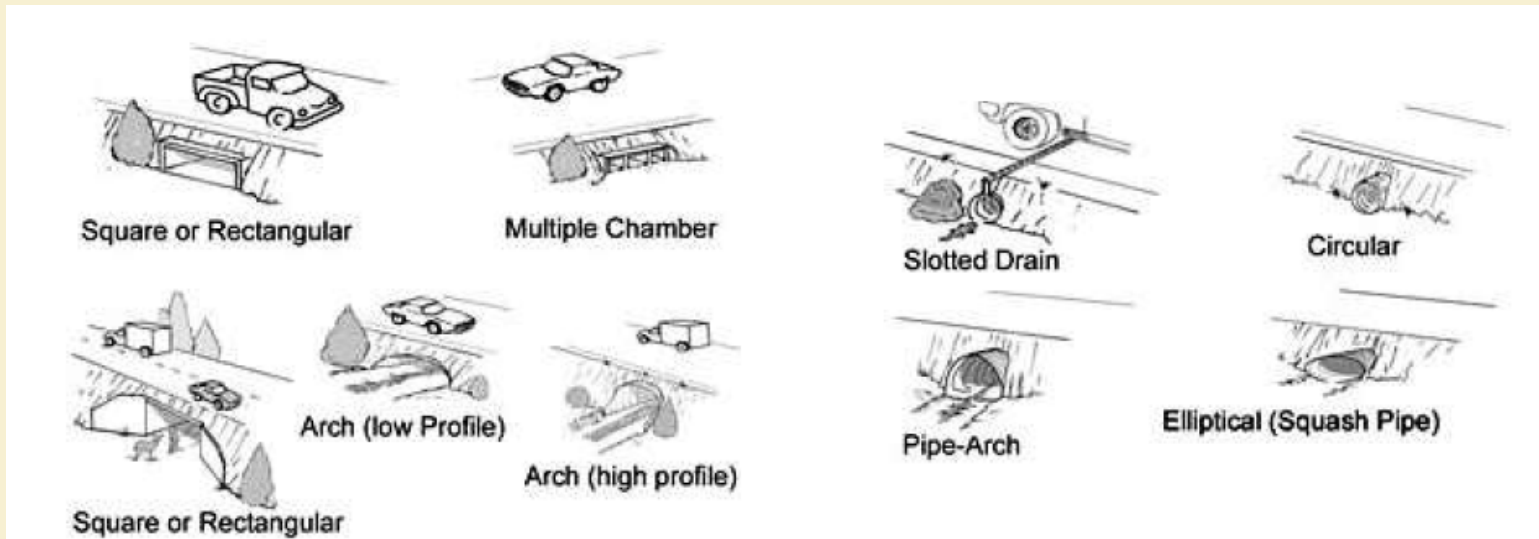
- **Segment:** Discrete 65-foot-long sections along ABR.
- **Priority Zone (Zone):** Discrete, Consultant-designated areas that encompass a heightened area of newt mortality: Zones 1, 2, 2a, and 3).
- **Corrective Action:** A single wildlife crossing structure or traffic calming solution to reduce newt mortality.
- **Option:** A single, or combination of, Corrective Action types, assigned to all, or a part of, a Priority Zone to reduce mortality.
- **Scenarios:** A combination of Options across one or several Zones selected for analysis purposes to evaluate their effect.
- **Alternatives:** One, or a combination of multiple, Scenarios evaluated to determine their modeled effects in reducing California newt mortality across the entire Project Footprint.

## – Priority Zones

- Zones 1, 2, 2a, and 3
- Secondary Zone



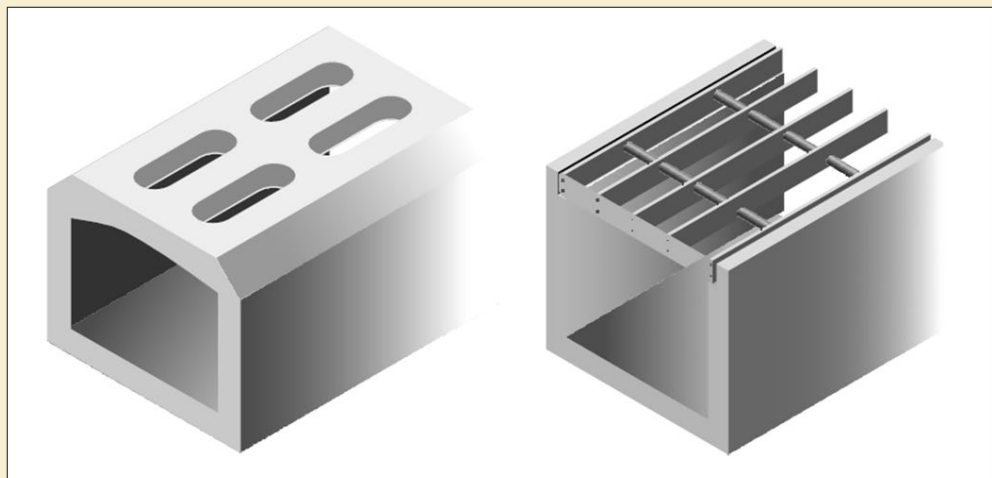
# Type 4 Purpose-Built Passage Structure



Source: <https://www.fs.usda.gov/wildlifecrossings/glossary/common-types2.php>

- Purpose-built passage structures
- Integrated with sections of elevated road segments
- Designed with built-in guide walls and climbing barriers
- Paired with modified cattle grates at either end

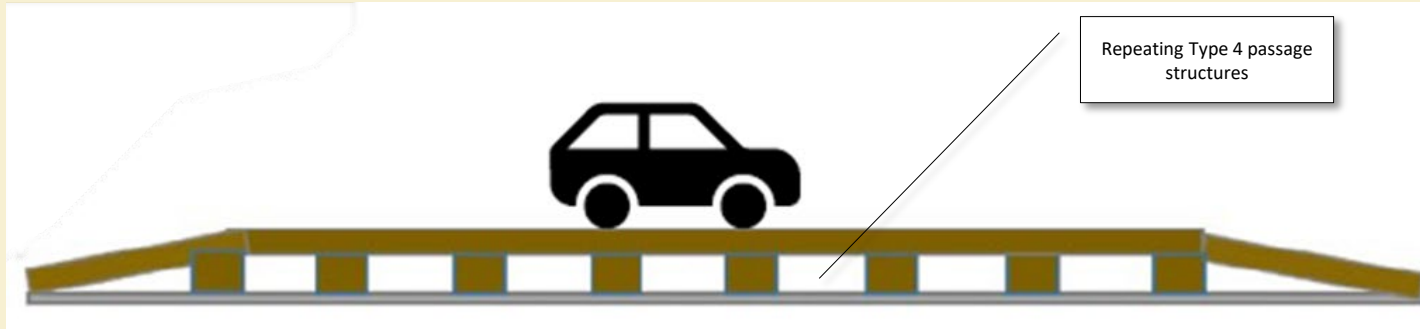
# Type 5 Micro-Passage



Type 5 Micro-Passages (Langton and Clevenger 2021)

Purpose-built wildlife micro-passage  
Paired with directional fencing  
Not effective on their own

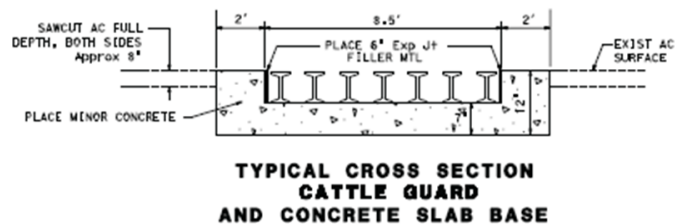
# Type 6 Elevated Road Segment (ERS)



Example of a Type 6 Elevated Road Segment (Brehme et al. 2022)

- Integrated with Type 4 purpose-built passage structure
- Designed with built-in guide walls and climbing barriers
- Paired with modified cattle grates at either end.

# Modified Cattle Grate



Example of a Modified Cattle Grate; from Caltrans SR-108 design (courtesy of Cheryl Brehme, USGS)

Placed at either end of elevated road segments

Integrated into the end-points of built-in guide walls and climbing barriers

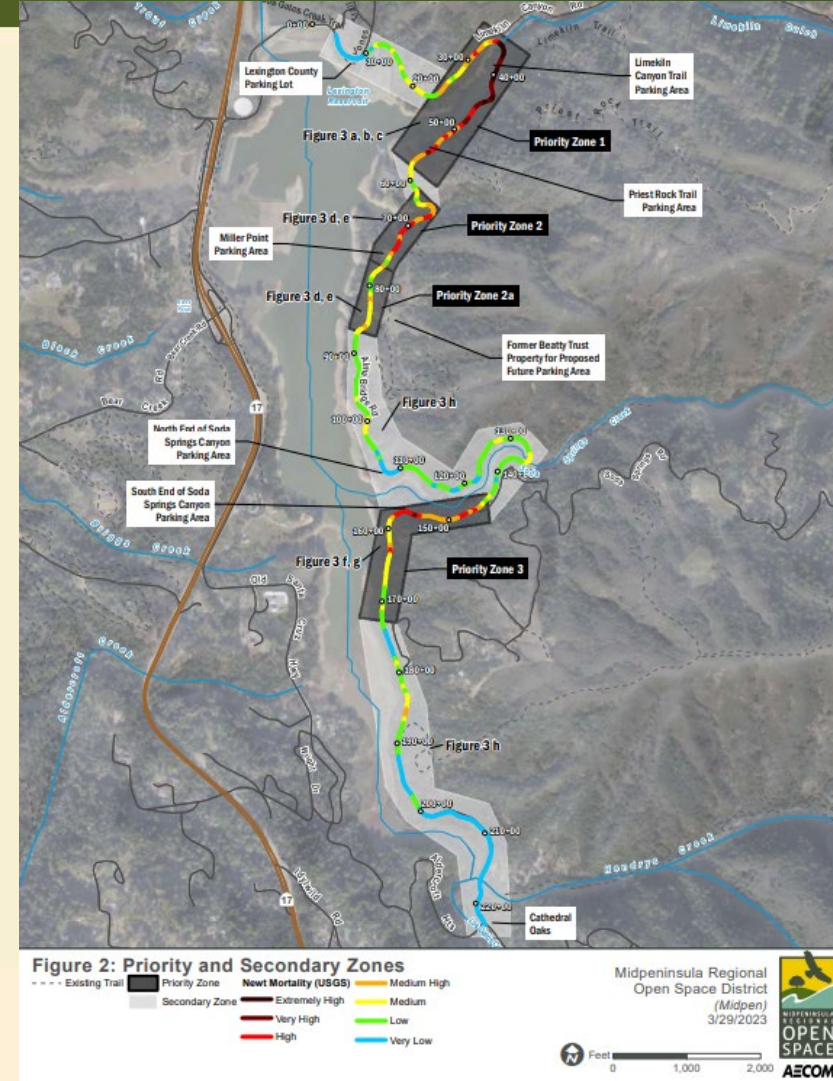
Serves the purpose of capturing wildlife moving along the roadway



Photo credit: Kris Bason @ Caltrans / <https://www.dohertywelding.com/>

# Effectiveness Modeling – Part I

- Considered various option permutations (Scenarios I through 9)
- Did not consider Secondary Zone
- Prioritized Zones for treatment:
  - Zone 1 (1<sup>st</sup>)
  - Zone 3 (2<sup>nd</sup>)
  - Zone 2 (3<sup>rd</sup>)
- Confirmed the effectiveness of decreased spacing (12.5 to 30 meter) over greater spacing (60 meters)
- Allowed for further refinement of the model





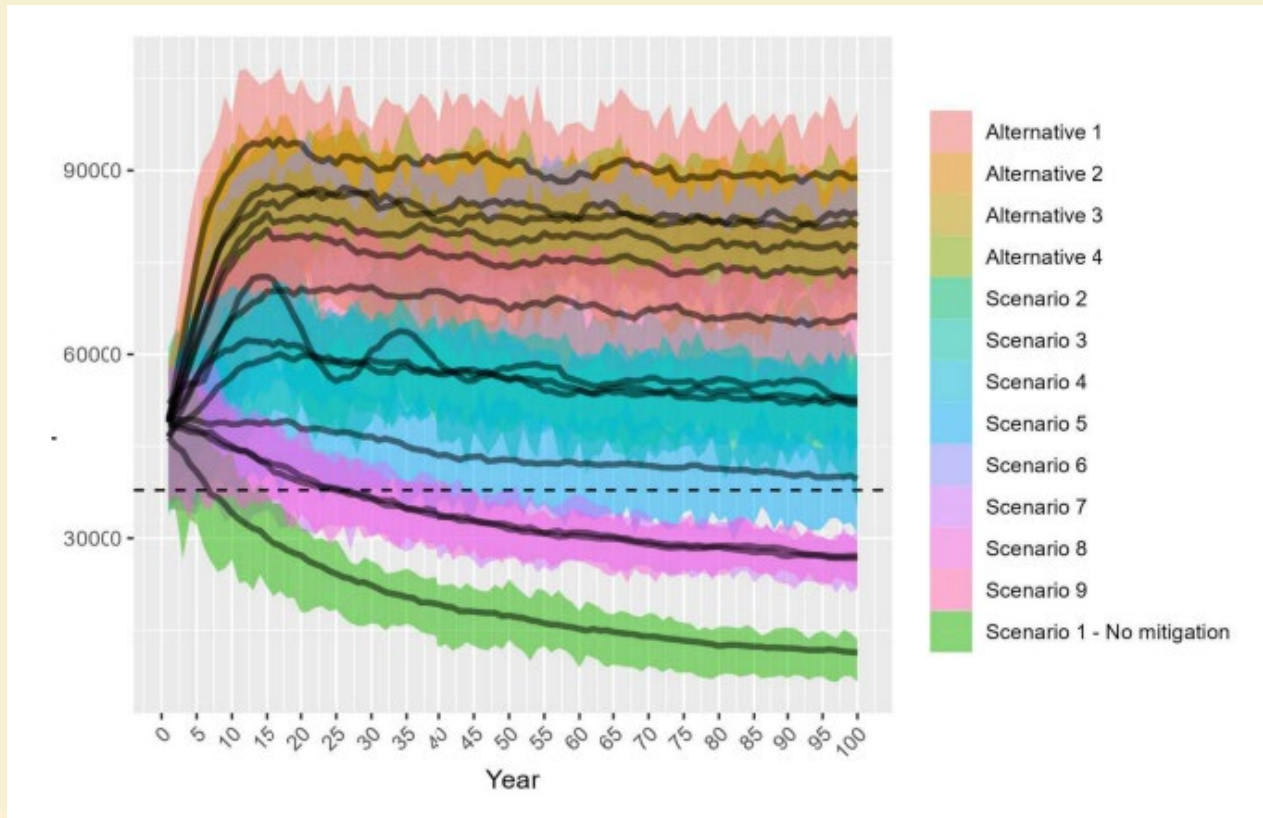
# Effectiveness Modeling



Scenario	Priority Zone Corrective Action Descriptions				Ranking
	Zone 1	Zone 2	Zone 2a	Zone 3	
Scenario 1	No-Build	No-Build	No-Build	No-Build	13th
Scenario 2*	Bridge (+ Partial Road Closure)	No-Build	No-Build	No-Build	6th
Scenario 3*	ERS [30m] + MP [30m] + CG	No-Build	No-Build	No-Build	9th
Scenario 4*	ERS [12.5m] + MP [12.5m] + CG	No-Build	No-Build	No-Build	8th
Scenario 5	ERS [60m] + MP [60m] + CG	No-Build	No-Build	No-Build	12th
Scenario 6*	ERS [30m] + MP [30m] + CG	ERS [30m]	No-Build	ERS [30m] + 2 MP + CG	4th
Scenario 7	No-Build	ERS [30m]	No-Build	No-Build	10th
Scenario 8	No-Build	No-Build	No-Build	ERS [30m] + 2 MP + CG	11th
Scenario 9*	ERS [30m] + MP [30m] + CG	No-Build	No-Build	ERS [30m] + 2 MP + CG	7th
Scenario 10 ** (Alt. 1)	Bridge (+ Partial Road Closure)	ERS [28m]	ERS [30m]	ERS [30m]	1st
Scenario 11 ** (Alt. 2)	ERS [30m] [“extended straightaway”]	ERS [28m]	ERS [30m]	ERS [30m]	2nd
Scenario 12 ** (Alt. 3)	ERS [30m] + MP [22m] + CG [“hairpin”]	ERS [28m]	3 MP	ERS [30m] + 2 MP + CG	5th
Scenario 13 ** (Alt. 4)	ERS [30m] + MP [22m] + CG [“hairpin”]	ERS [30m]	ERS [30m]	ERS [30m]	3rd
<b>ERS = Elevated Road Section      MP = Micro-passage      CG = Modified cattle grate</b> <b>*Preliminary Scenario resulting in no further newt population decline      ** Refined scenario resulting in no further newt population decline</b>					



# Effectiveness Modeling Continued



# Feasibility Analysis – Example (Alternative IV)

- Constructability
  - Temporary road closures (reversible traffic)
  - Raise Alma Bridge Road  $\leq$  2 feet (slope, retaining wall, railing)
  - Unofficial parking area redesign (temporary closures)
  - Elevation transition @ Soda Springs / Alma Bridge Rd (reversible traffic)
- Facilities Impact
  - Redesign of Limekiln Trail trailhead + turnouts/shoulders
- Maintenance
  - Standard County road maintenance, crossing structures annual inspection
- Permits
  - CEQA: Statutory Exemption, Categorical Exemption, or Initial Study/Mitigated Negative Declaration
  - NEPA: TBD but likely Categorical Exclusion
  - Permits/Approvals: 404, 401, ITP, BO
- Schedule
  - Project schedule: 1 to 1.5 yrs (environmental clearance) + 6 to 12 months (from 65% design)
  - Construction schedule: 1-3 years
- Cost
  - Zone 1: estimated \$4M to \$10M
  - Zone 2/2a: estimated \$1M to \$3M
  - Zone 3: estimated \$1M to \$3M

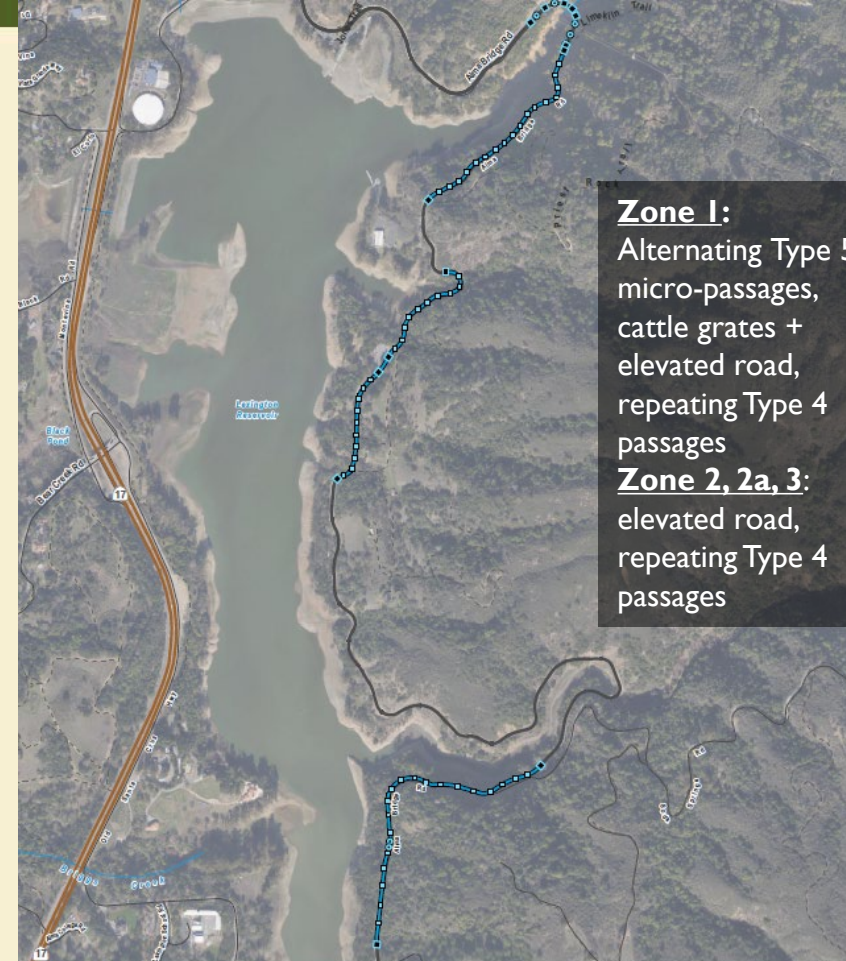


Figure 5d: Alternative 4 (Option 2 + 2a + 4 + 5 + 7)

- Alma Bridge Rd
- - - Existing Trail
- Alternative 4**
- Type 4 Purpose-Built Passage Structure
- Type 5 Micro-Passage
- Modified Cattle Grate
- ▬ Type 6 Elevated Road Segment

# Feasibility Analysis – Secondary Zones

- Improved signage at major intersections
  - Least cost path analysis
  - Review visibility/condition of existing signs
  - Evaluate alternative route signage
- Islands and Medians
  - Intersection of Alma Bridge Road and Soda Springs Road
  - Intersection of Alma Bridge Road and Aldercroft Heights Road
- Transverse rumble strips/perceptual treatments at the approach to elevated road segments
- Bay Area Ridge Trail reconfiguration
- Educational Signage and Brochures

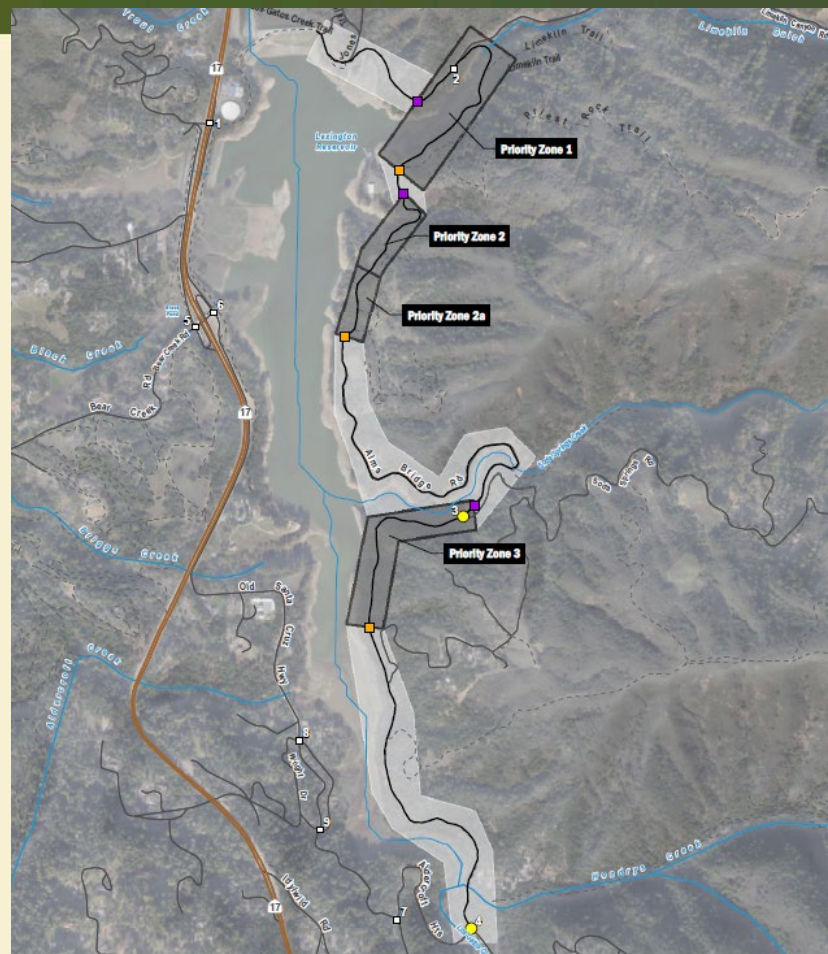


Figure 3h: Secondary Zone



# Alternatives Evaluation and Basis of Design

## Considerations:

- Cost estimates and cost effectiveness modeling
- Rationale (decision making process, constructability)
- Type(s) of structures
- Placement location(s)
- Extent (number/frequency)
- Dimensions
- Design criteria

Least Preferable Outcome

Equivalent or  
Indistinguishable Outcomes

Most Desirable Outcome





# Alternatives Evaluation and Basis of Design

- Identifies two alternatives for consideration
- Priority zones identified so construction can be phased
- Funding through 65% identified
- Additional \$30-36M needed for full built out
- Timing to construct (per zone)
  - Zone 1 - 7 months
  - Zone 2 - 4 months
  - Zone 2a - 1.5-6 months
  - Zone 3 - 6-11 months



## 🌿 Funding through 65% Design:

- Midpen
- County
- WCB (applied)

## 🌿 Potential future Phases

- County
- Midpen
- Grants
- Other?



# Next Steps

- ✿ Complete Phase I-
  - Stakeholder meeting (Sept)
  - Basis of Design to Midpen Board October 2023
- ✿ Begin Phase II
  - CEQA, 65% Design and Permit Applications
- ✿ Funding
  - Ongoing
- ✿ Phase III
  - 100% Design and Construction
- ✿ Phase IV
  - Effectiveness monitoring





# Lessons Learned (so far)

- ‡ Why study, do something!?? but...
  - Off the shelf crossings, some newts might be saved, but modeling indicates that alone this action would be insufficient or infeasible
- ‡ Stakeholder involvement
  - Bring in many user groups
  - Determine how you engage with tribes early
- ‡ Be creative with CEQA
  - Explore SERP
- ‡ Obvious solutions may not be effective
  - Topographical constraints
  - Replacing culverts alone not enough
  - Turnaround distance matters

# Questions?



<https://www.openspace.org/what-we-do/projects/newt-passage>



## Literature Cited

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