

# FEASIBILITY STUDY REPORT

Wildlife Vehicle Collision Reduction On US 395 Near Mammoth Lakes



# Background

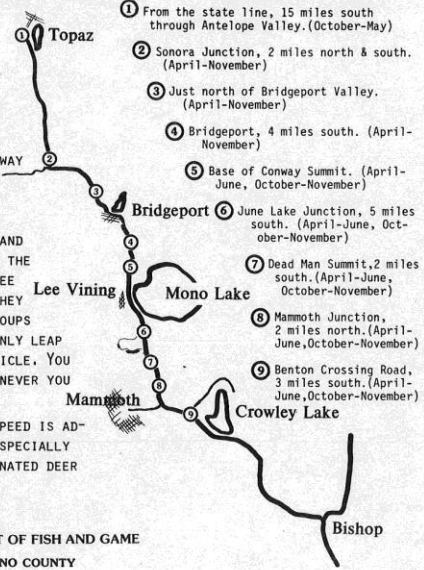


**CAUTION!!!  
DEER HAZARD**

YOU ARE ENTERING MONO COUNTY, CA. WHERE 10,000 OR MORE MULE DEER LIVE AND MIGRATE. EACH YEAR OVER 300 ARE KILLED BY MOTORISTS ON HIGHWAY 395 & THE THREAT TO HUMAN SAFETY IS **VERY REAL**. THE MAP SHOWS MAJOR PROBLEM AREAS AND TIMES DEER MAY BE ON THE ROADWAY. WHEN YOU SEE DEER, REALIZE THAT THEY USUALLY TRAVEL IN GROUPS AND OTHERS MAY SUDDENLY LEAP IN FRONT OF YOUR VEHICLE. YOU SHOULD SLOW DOWN WHENEVER YOU SEE DEER.

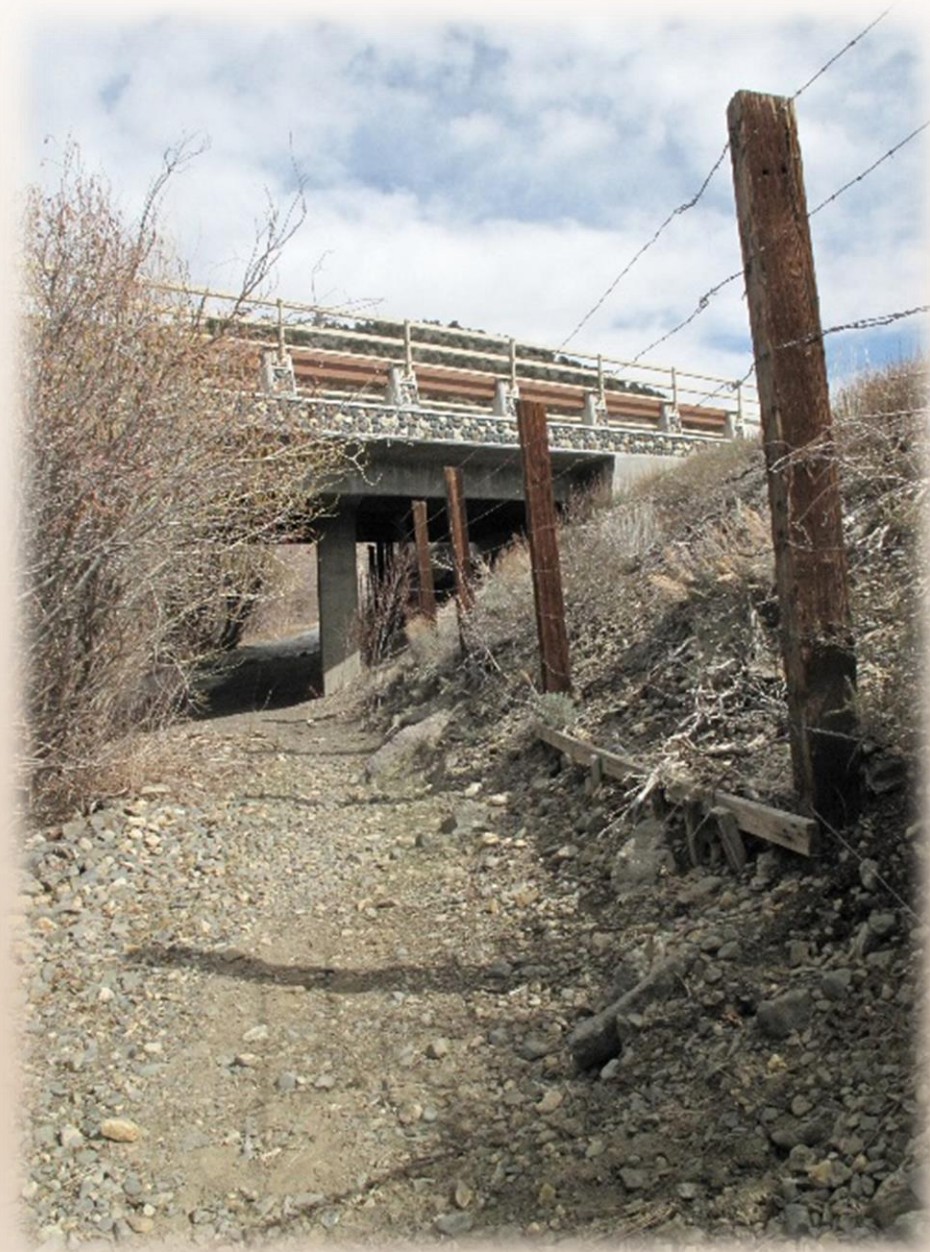
REDUCED SPEED IS ADVISABLE FOR SAFETY ESPECIALLY THROUGHOUT THE DESIGNATED DEER CROSSING AREAS.

**DEPARTMENT OF FISH AND GAME  
& MONO COUNTY**



- ① From the state line, 15 miles south through Antelope Valley. (October-May)
- ② Sonora Junction, 2 miles north & south. (April-November)
- ③ Just north of Bridgeport Valley. (April-November)
- ④ Bridgeport, 4 miles south. (April-November)
- ⑤ Base of Conway Summit. (April-June, October-November)
- ⑥ June Lake Junction, 5 miles south. (April-June, October-November)
- ⑦ Dead Man Summit, 2 miles south. (April-June, October-November)
- ⑧ Mammoth Junction, 2 miles north. (April-June, October-November)
- ⑨ Benton Crossing Road, 3 miles south. (April-June, October-November)

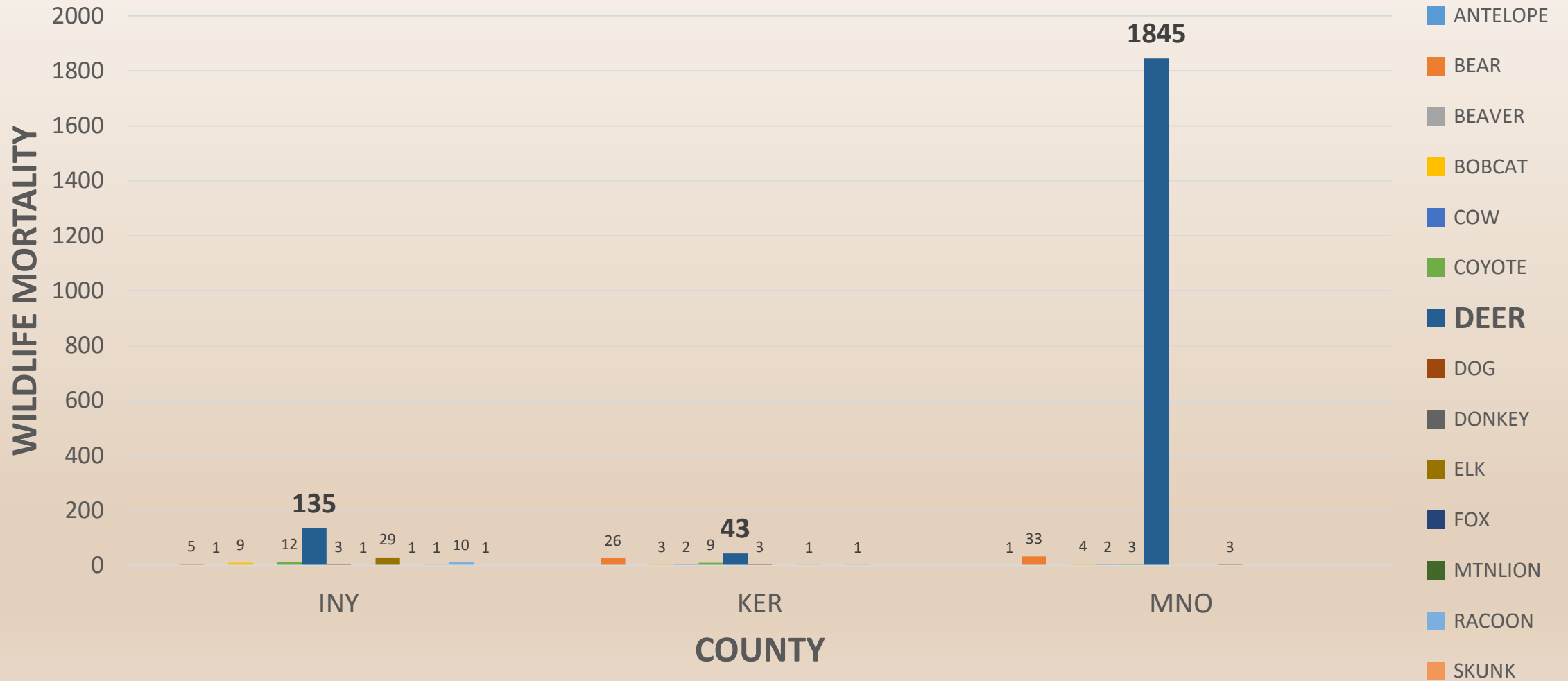
Map labels: Topaz, Bridgeport, Lee Vining, Mono Lake, Mammoth, Crowley Lake, Bishop



# DISTRICT 9 TOTAL WILDLIFE MORTALITY BY COUNTY

2002-2015

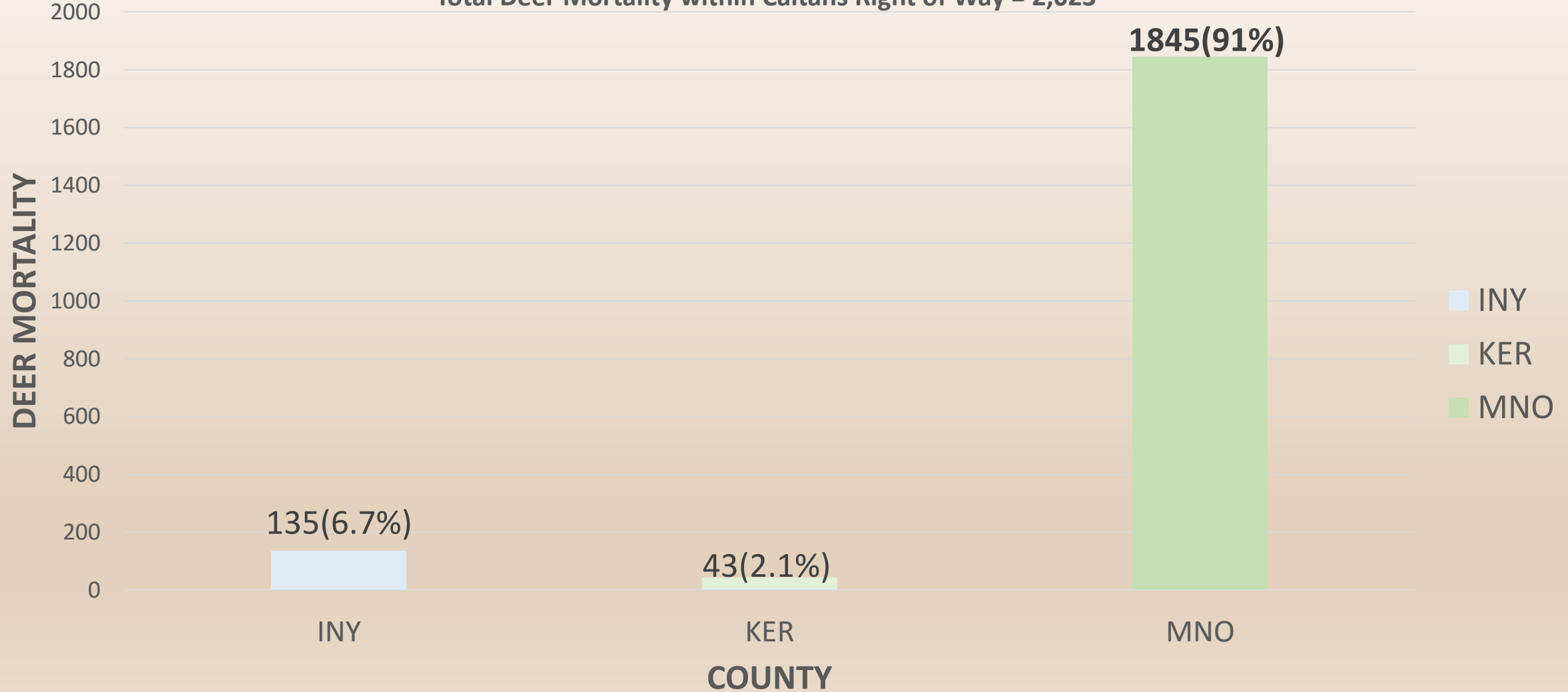
Total Wildlife Mortality = 2,187



# DISTRICT 9 TOTAL DEER MORTALITY BY COUNTY

2002-2015

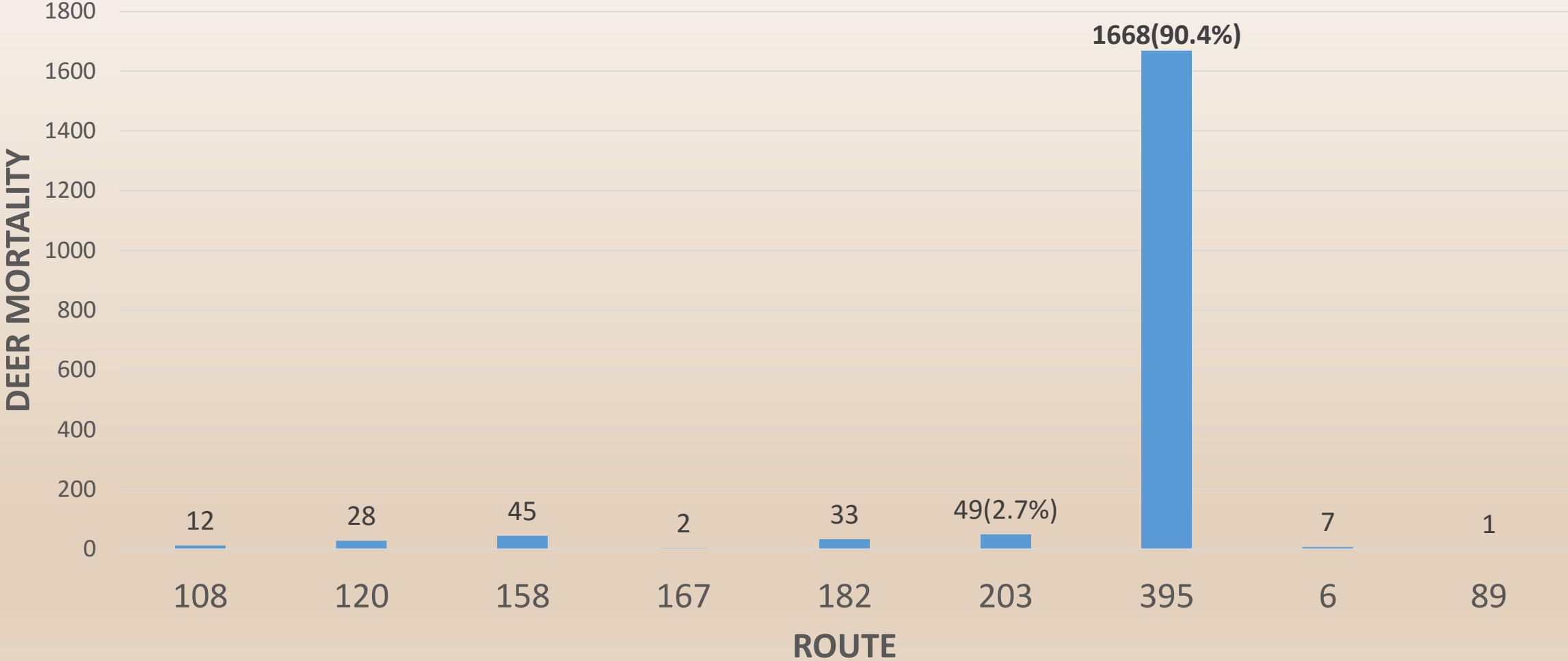
Total Deer Mortality within Caltrans Right of Way = 2,023



# MONO CO TOTAL DEER MORTALITY BY ROUTE

2002-2015

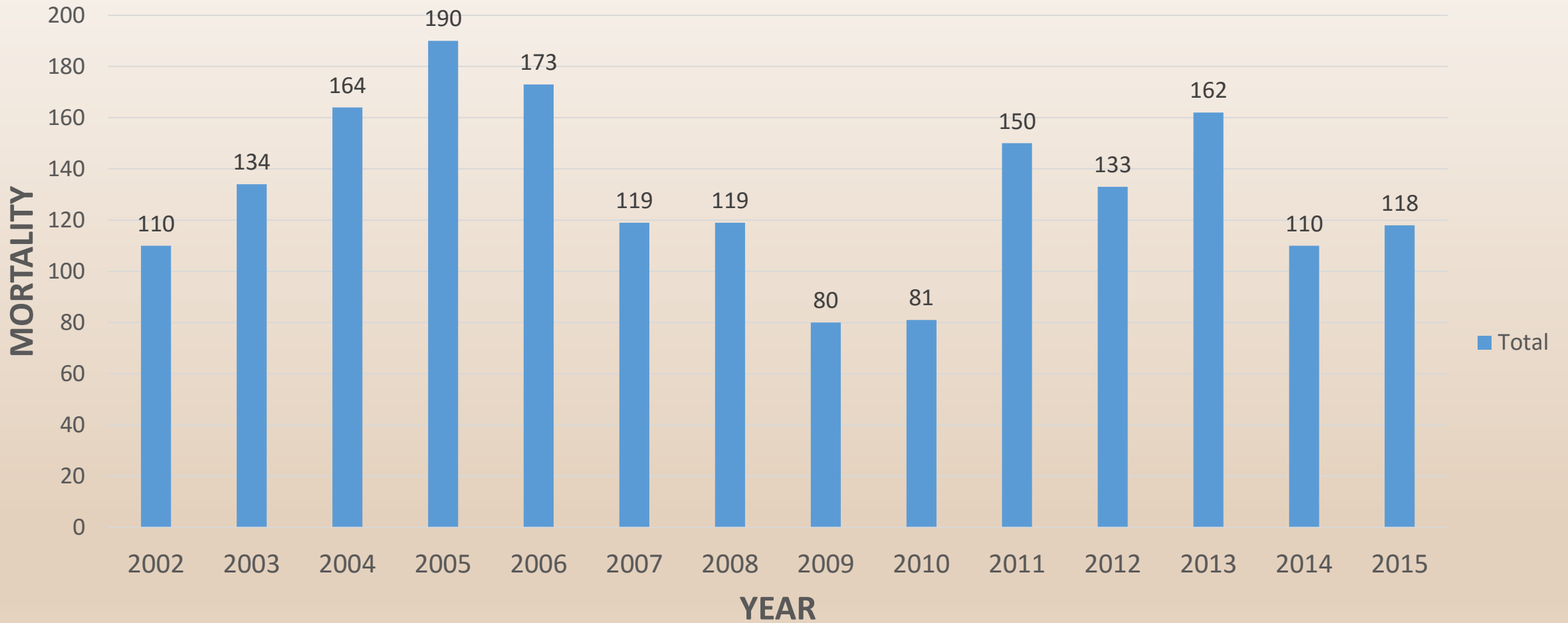
Total Deer Mortality= 1,845



# **US 395 MONO CO TOTAL DEER MORTALITY By YEAR**

**2002-2015**

**Total = 1668**

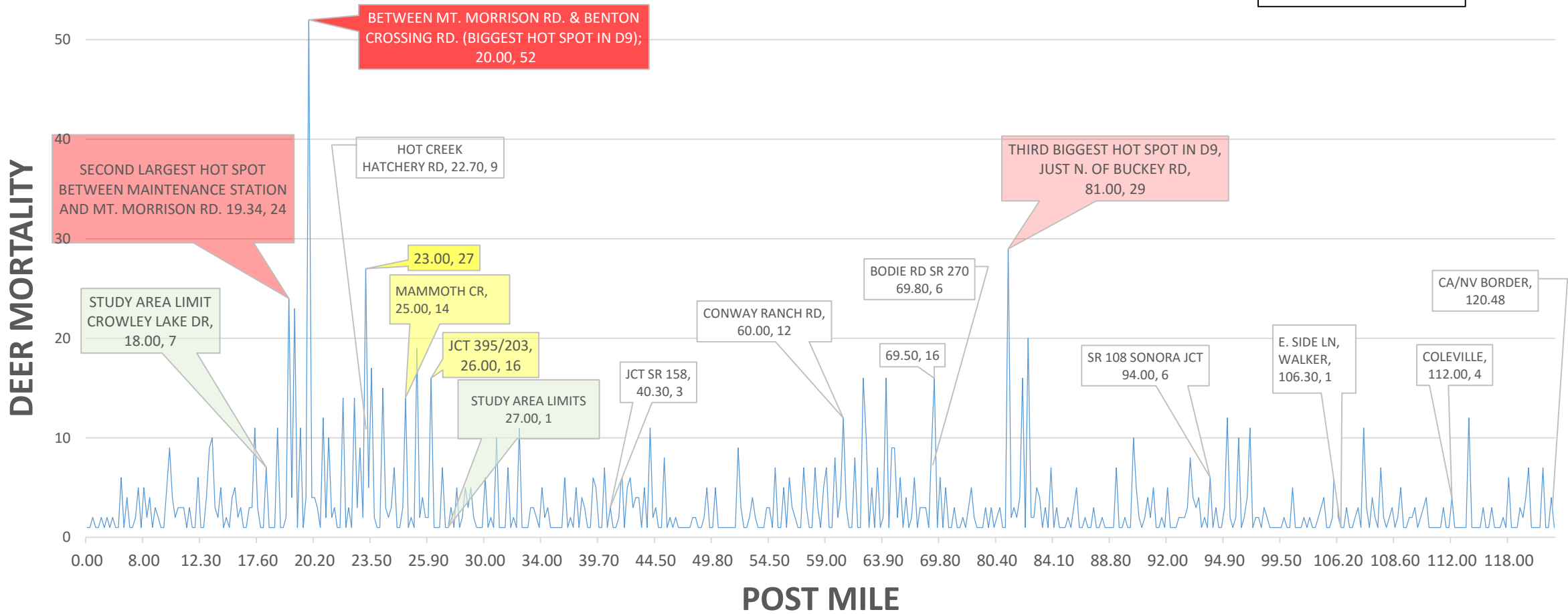


# US 395 MONO CO TOTAL DEER MORTALITY By POST MILE

2002-2015

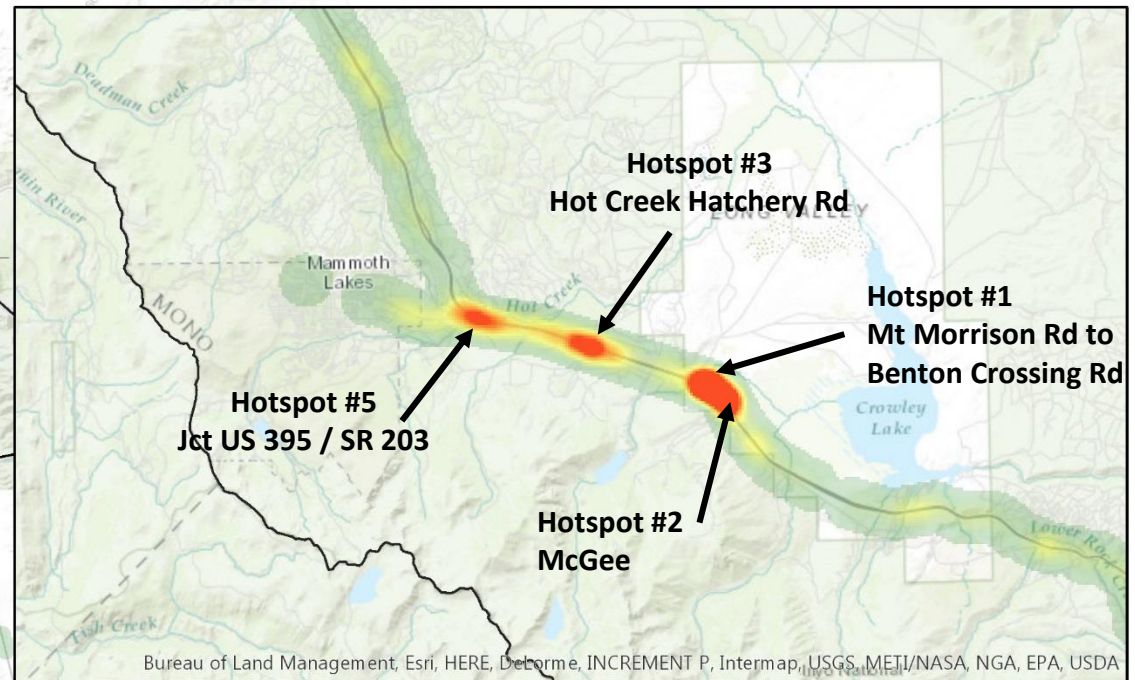
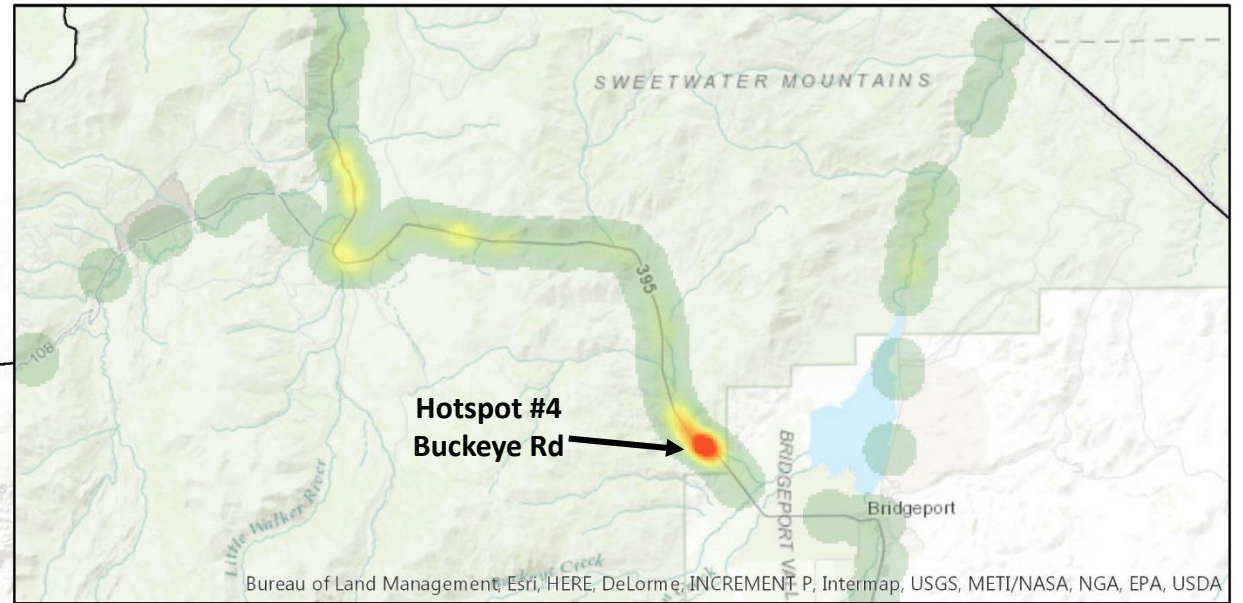
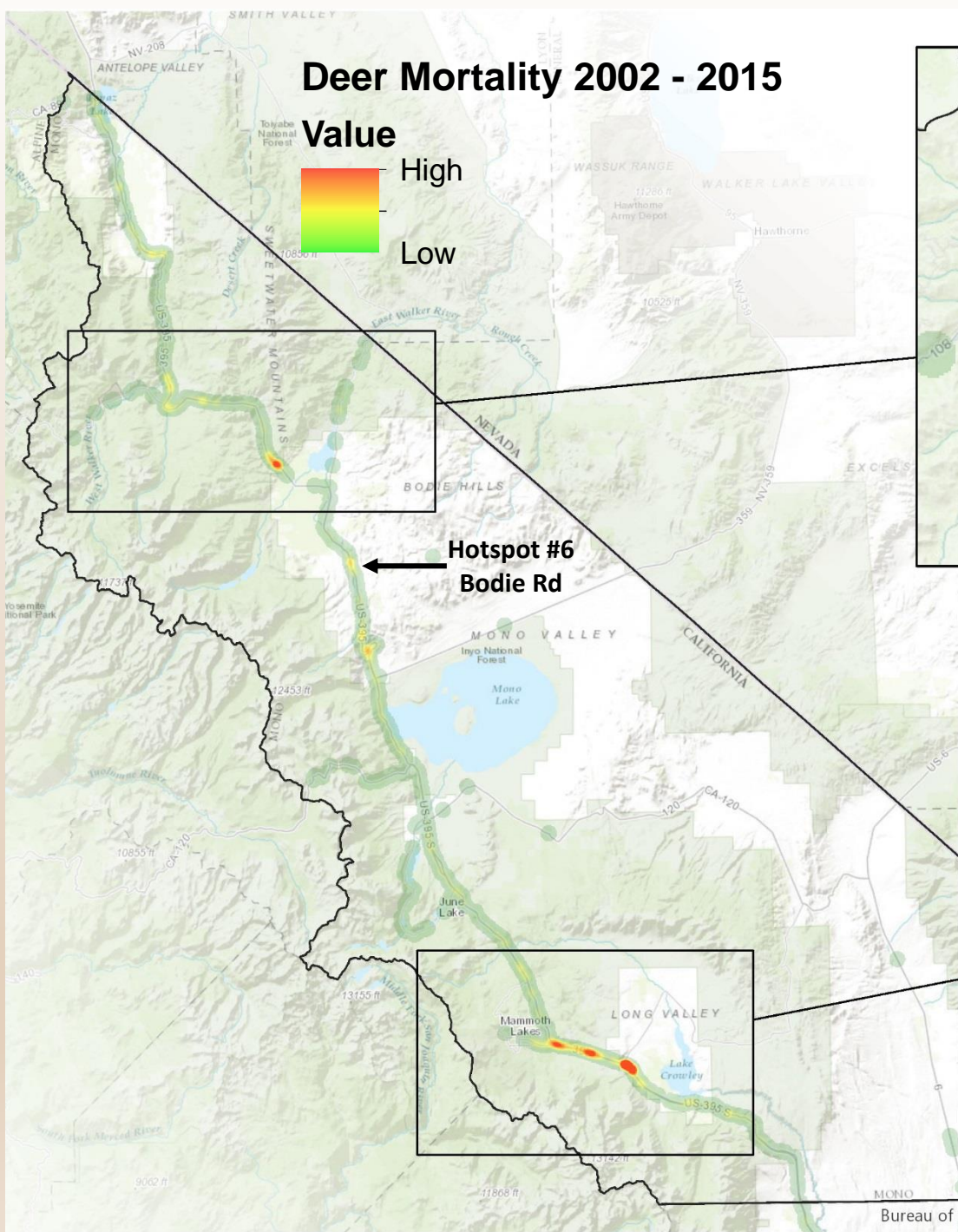
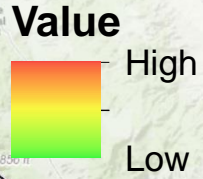
Total Deer Mortality= 1668

Legend:  
Post Mile, Deer Mortality





# Deer Mortality 2002 - 2015

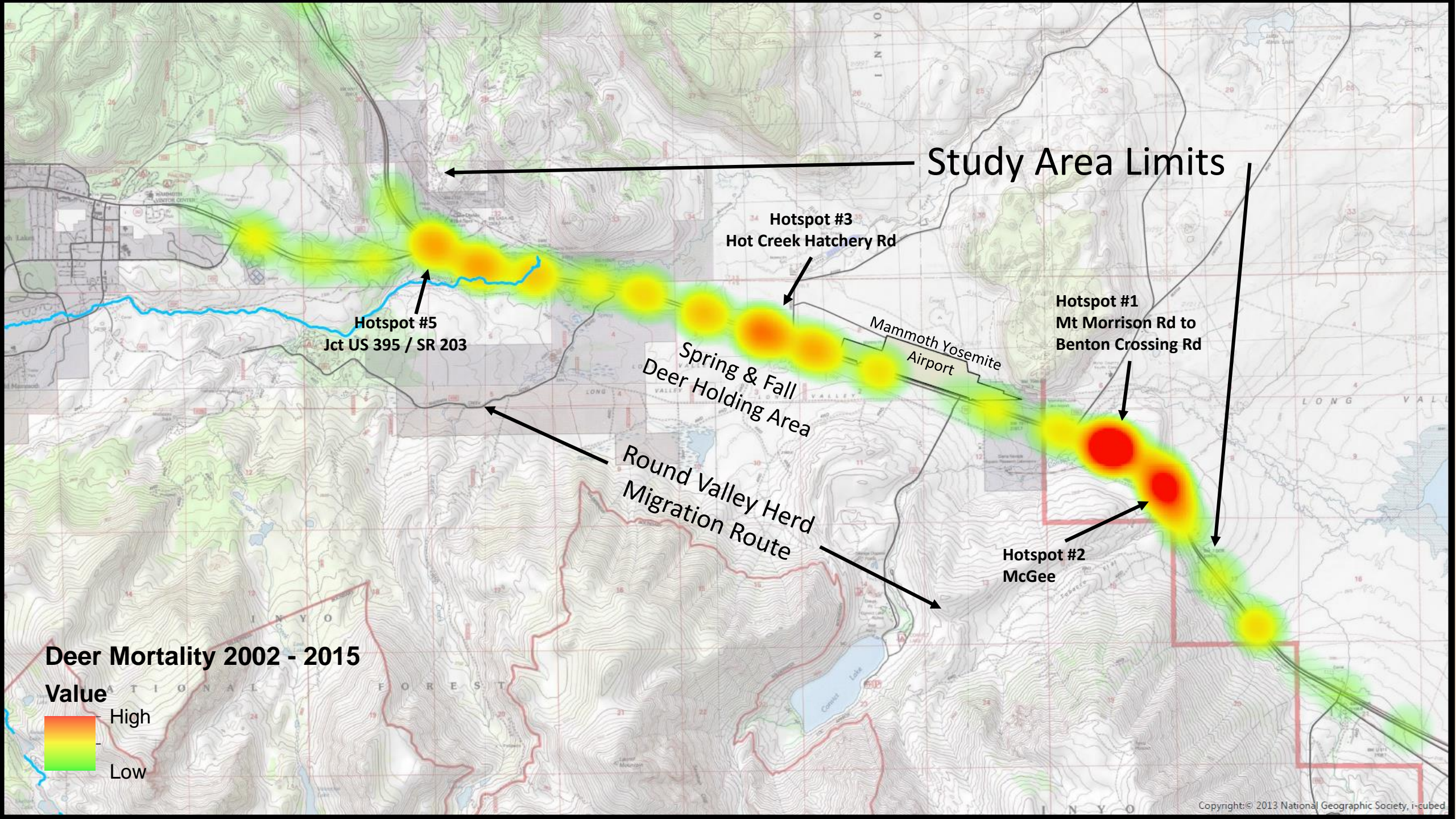




# Mono County Hotspots

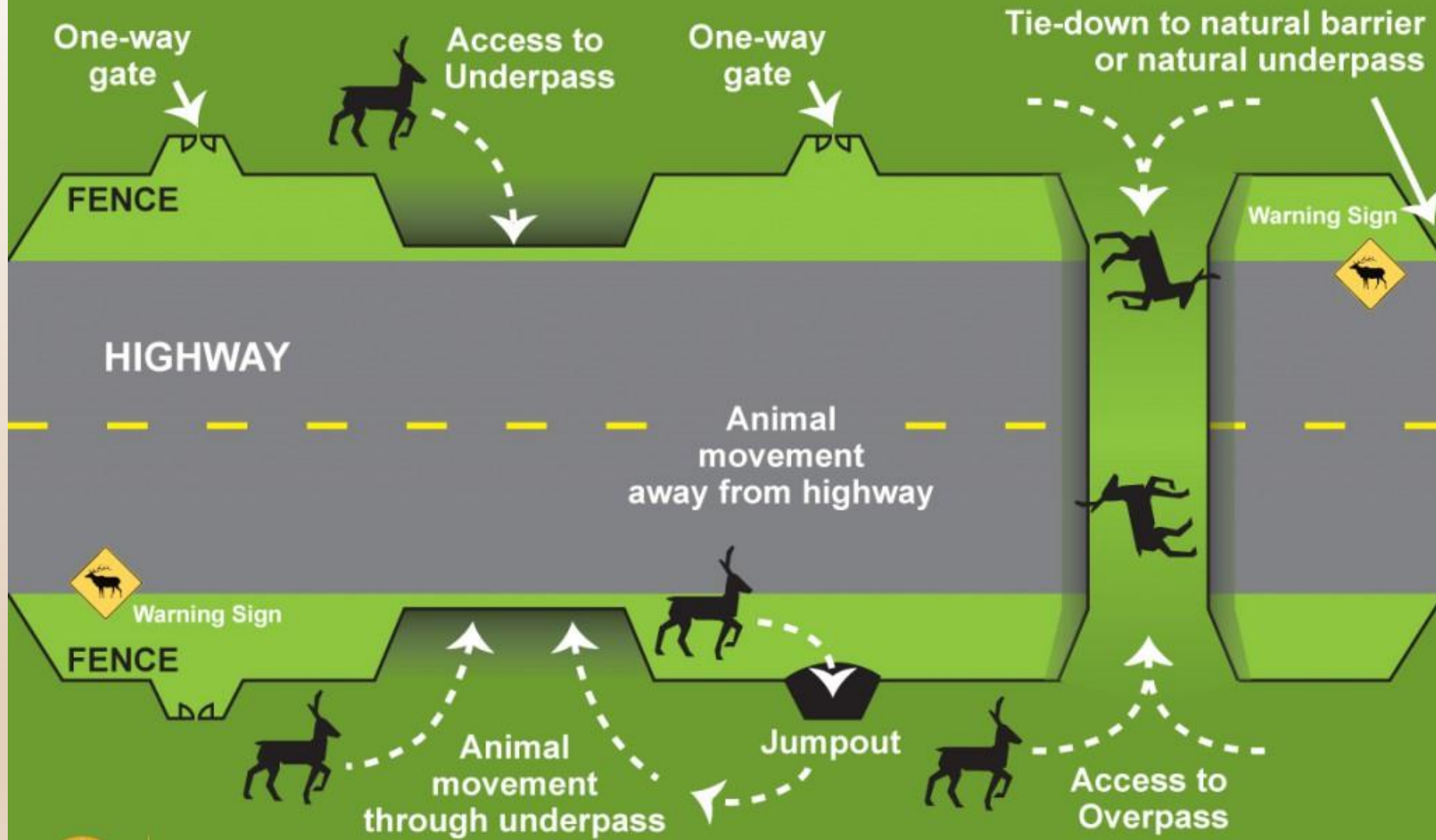
Hot Spot Ranking	Name	Length (miles)	Deer Mortality per year	Total Deer Mortality (14 years)	Deer Mortality per year per mile	Notes
1	Mt Morrison Rd to Benton Crossing Rd	0.47	6.1	80	12.93	Addressed in Study
2	McGee	0.43	4.2	56	9.84	Addressed in Study
3	Hot Creek Hatchery Rd.	0.41	2.6	34	6.38	Addressed in Study
4	Buckeye Rd.	0.74	4.5	60	6.03	
5	Jct 395 / SR 203	0.4	2.0	29	5	Addressed in Study
6	Bodie Rd.	0.44	2.0	31	4.5	







# WILDLIFE EXCLUSION SYSTEM (Full Encapsulation)







Wildlife Undercrossing At Bridge



Wildlife Fencing



Wildlife Overcrossing



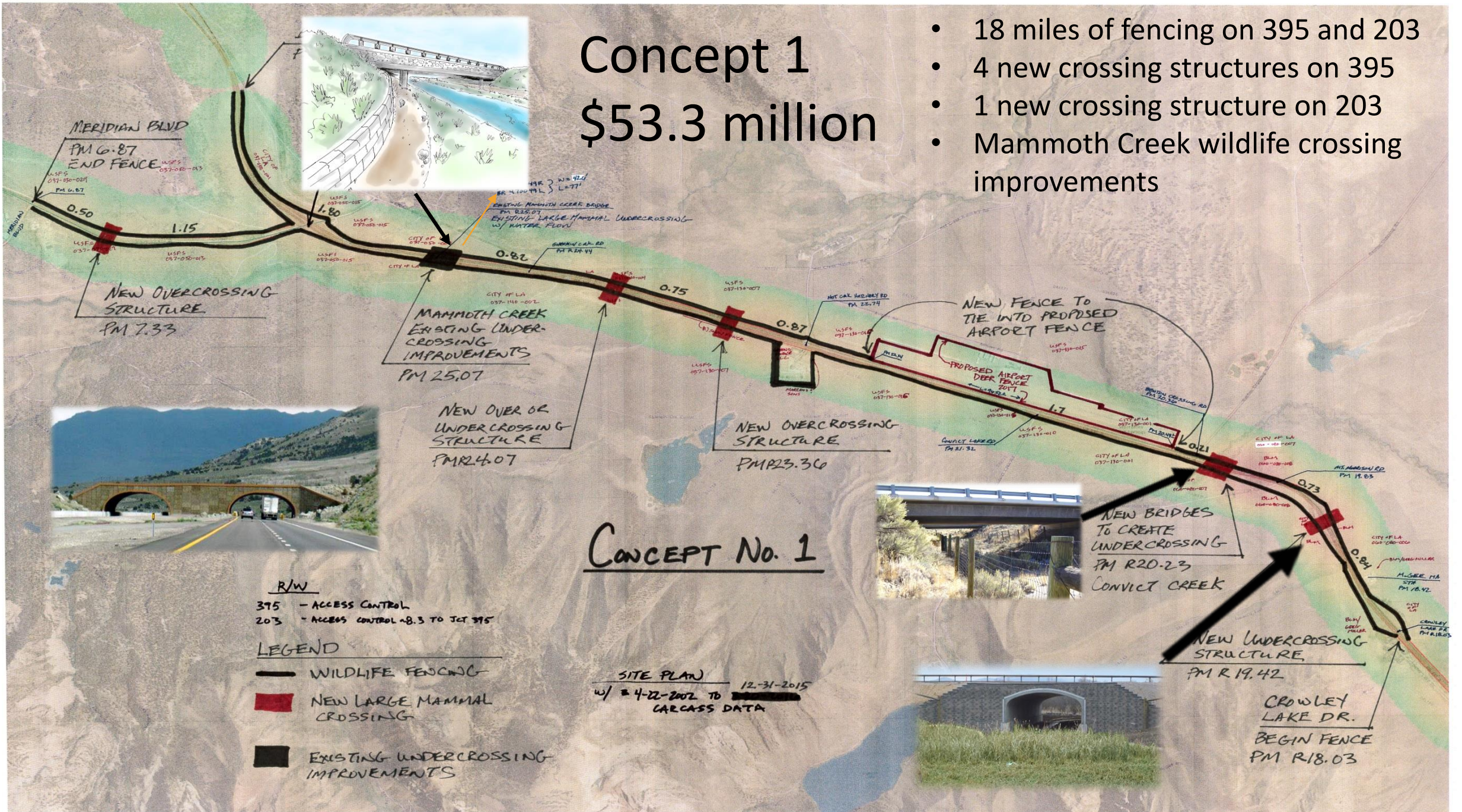
Wildlife Undercrossing



# Concept 1

## \$53.3 million

- 18 miles of fencing on 395 and 203
- 4 new crossing structures on 395
- 1 new crossing structure on 203
- Mammoth Creek wildlife crossing improvements



### CONCEPT No. 1

R/W  
 395 - ACCESS CONTROL  
 203 - ACCESS CONTROL + 8.3 TO JCT 395

LEGEND

- WILDLIFE FENCING
- NEW LARGE MAMMAL CROSSING
- EXISTING UNDERCROSSING IMPROVEMENTS

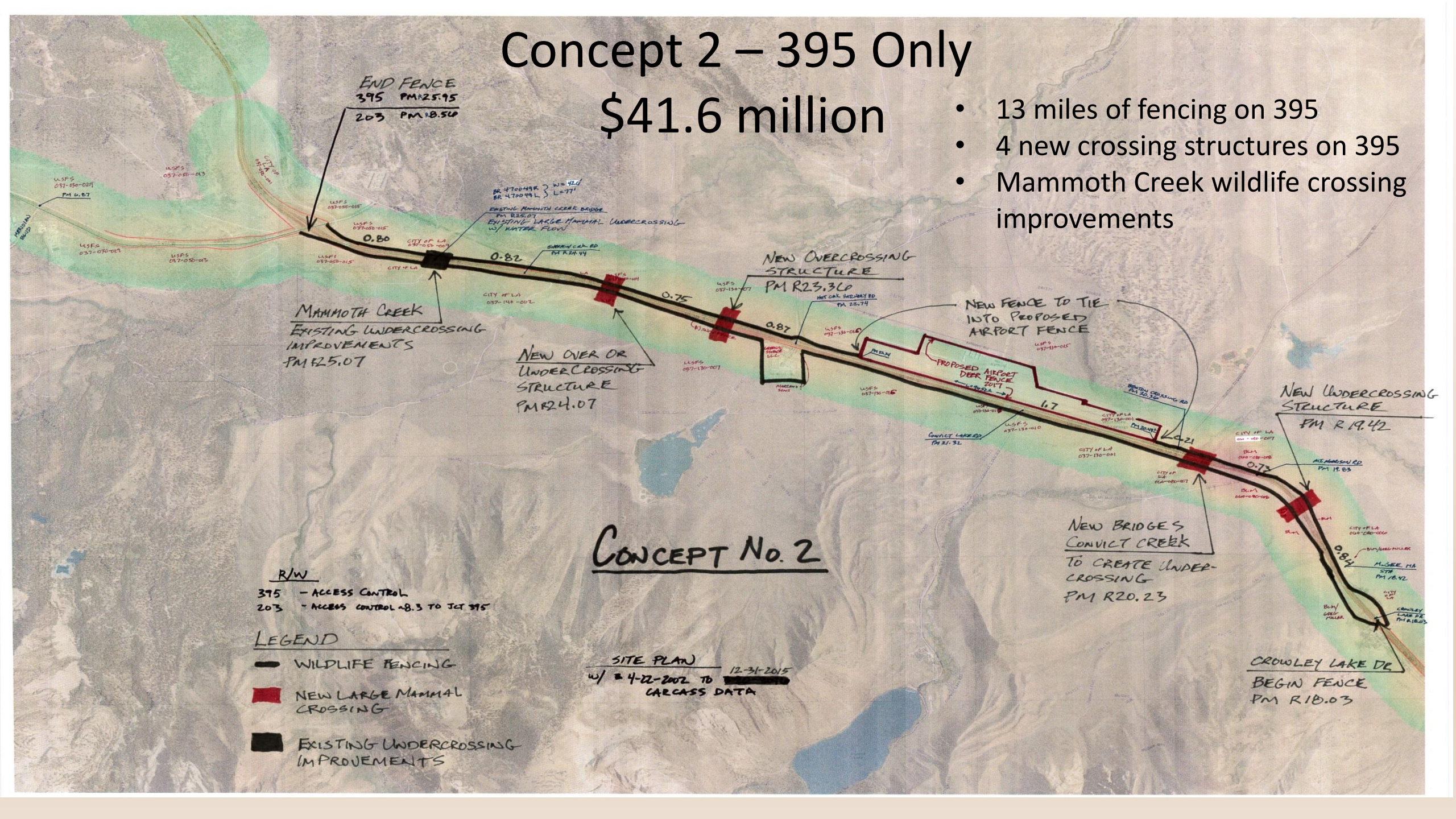
SITE PLAN  
 12-31-2015  
 w/ 4-22-2002 TO [redacted] CARCASS DATA



# Concept 2 – 395 Only

## \$41.6 million

- 13 miles of fencing on 395
- 4 new crossing structures on 395
- Mammoth Creek wildlife crossing improvements

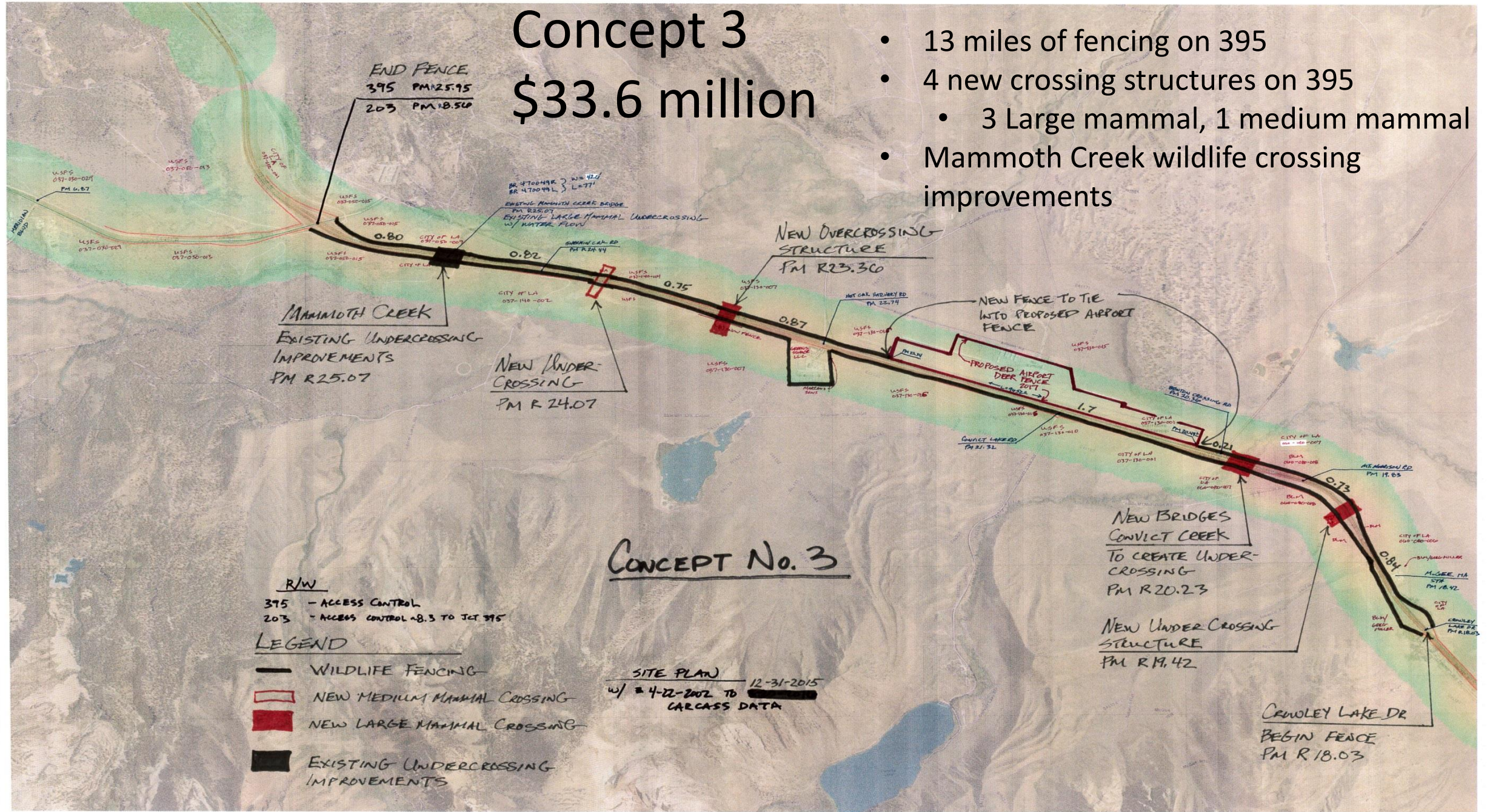




# Concept 3

## \$33.6 million

- 13 miles of fencing on 395
- 4 new crossing structures on 395
  - 3 Large mammal, 1 medium mammal
- Mammoth Creek wildlife crossing improvements



R/W  
 395 - ACCESS CONTROL  
 203 - ACCESS CONTROL #8.3 TO JCT 395

LEGEND

- WILDLIFE FENCING
- NEW MEDIUM MAMMAL CROSSING
- NEW LARGE MAMMAL CROSSING
- EXISTING UNDERCROSSING IMPROVEMENTS

### CONCEPT No. 3

SITE PLAN 12-31-2015  
 w/ 4-22-2002 TO [REDACTED]  
 CARCASS DATA

NEW BRIDGES CONVICT CREEK TO CREATE UNDERCROSSING  
 PM R20.23

NEW UNDER CROSSING STRUCTURE  
 PM R19.42

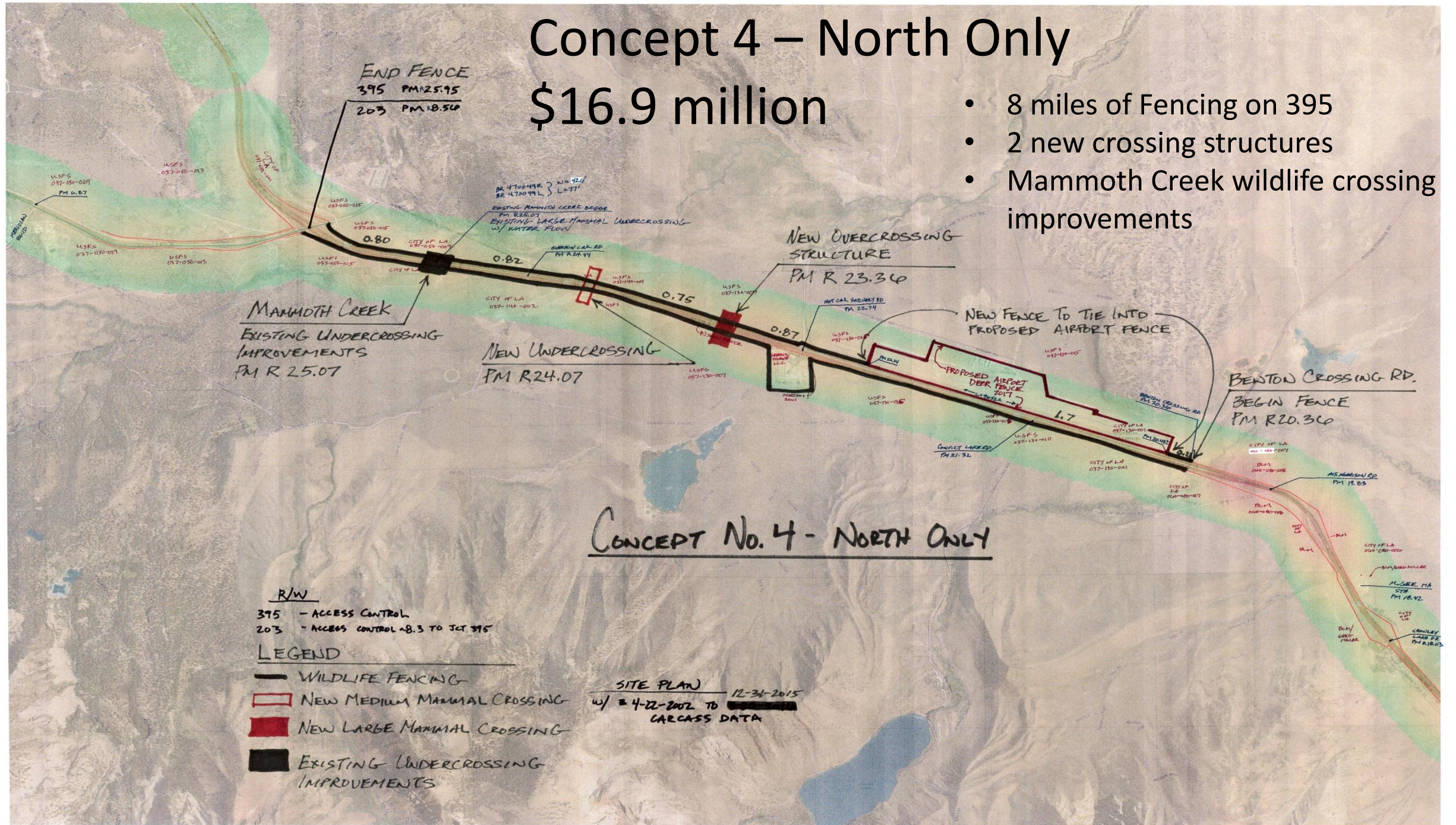
CRAWLEY LAKE DR BEGIN FENCE  
 PM R18.03



# Concept 4 – North Only

## \$16.9 million

- 8 miles of Fencing on 395
- 2 new crossing structures
- Mammoth Creek wildlife crossing improvements



### CONCEPT No. 4 - NORTH ONLY

R/W  
 395 - ACCESS CONTROL  
 203 - ACCESS CONTROL + 8.3 TO JCT 395

- LEGEND
- WILDLIFE FENCING
  - NEW MEDIUM MAMMAL CROSSING
  - NEW LARGE MAMMAL CROSSING
  - EXISTING UNDERCROSSING IMPROVEMENTS

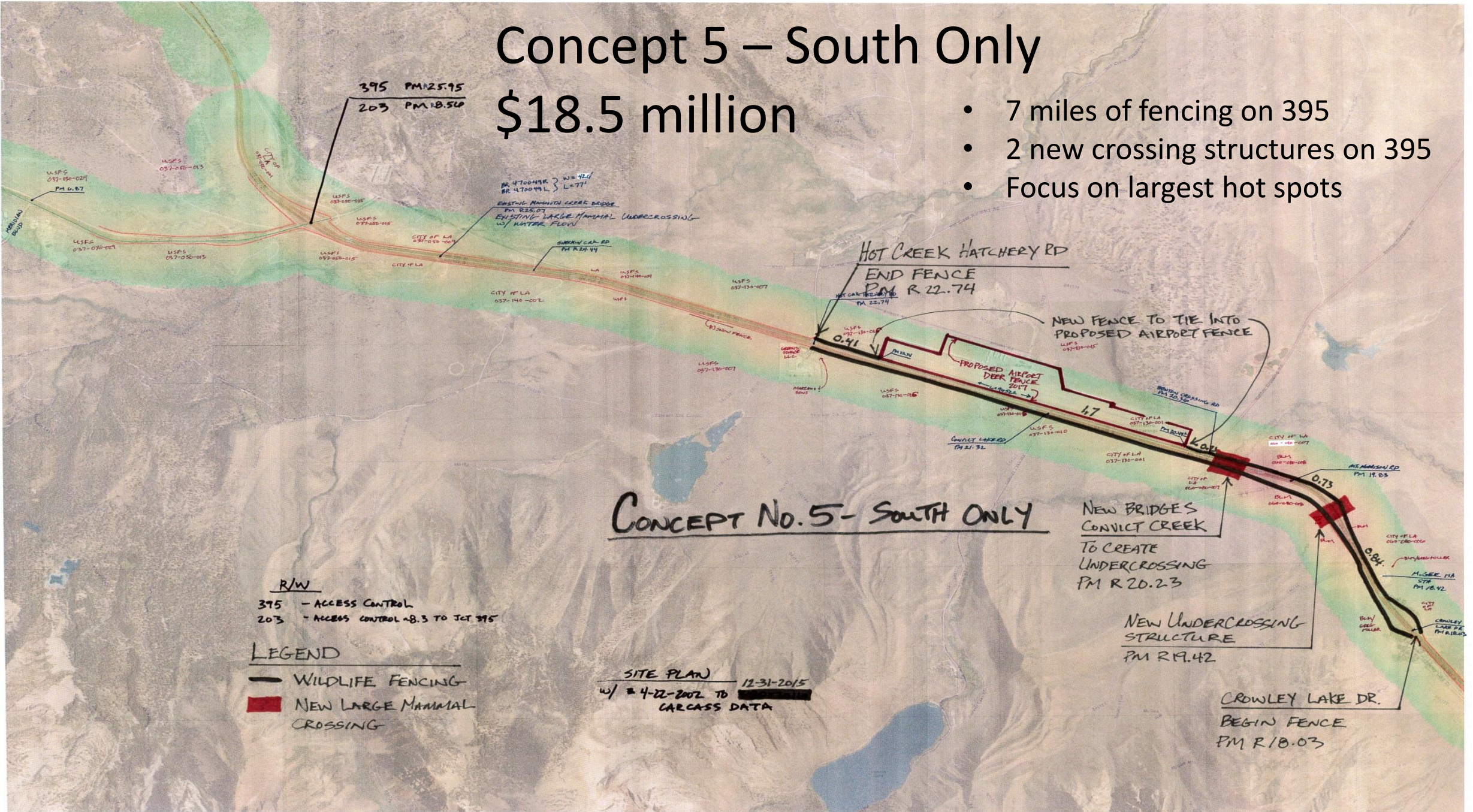
SITE PLAN  
 w/ 4-12-2002 TO 12-31-2015  
 CARCASS DATA



# Concept 5 – South Only

## \$18.5 million

- 7 miles of fencing on 395
- 2 new crossing structures on 395
- Focus on largest hot spots



R/W  
 395 - ACCESS CONTROL  
 203 - ACCESS CONTROL + 8.3 TO JCT 395

LEGEND  
 — WILDLIFE FENCING  
 ■ NEW LARGE MAMMAL CROSSING

SITE PLAN  
 w/ 4-22-2002 TO 12-31-2015  
 CARCASS DATA

NEW BRIDGES CONVICT CREEK  
 TO CREATE UNDERCROSSING  
 PM R 20.23

NEW UNDERCROSSING STRUCTURE  
 PM R 19.42

CROWLEY LAKE DR.  
 BEGIN FENCE  
 PM R 18.03

### CONCEPT NO. 5 - SOUTH ONLY



# Concept 6 – Seasonal Signage

\$20,000 a year



## CONCEPT No. 6



- R/W
- 395 - ACCESS CONTROL
  - 203 - ACCESS CONTROL NB.3 TO JCT 395

- LEGEND
- PORTABLE CHANGEABLE MESSAGE SIGN
  - STATIONARY CHANGEABLE MESSAGE SIGN

SITE PLAN  
w/ 4-22-2002 TO 3-20-2010  
CARCASS DATA

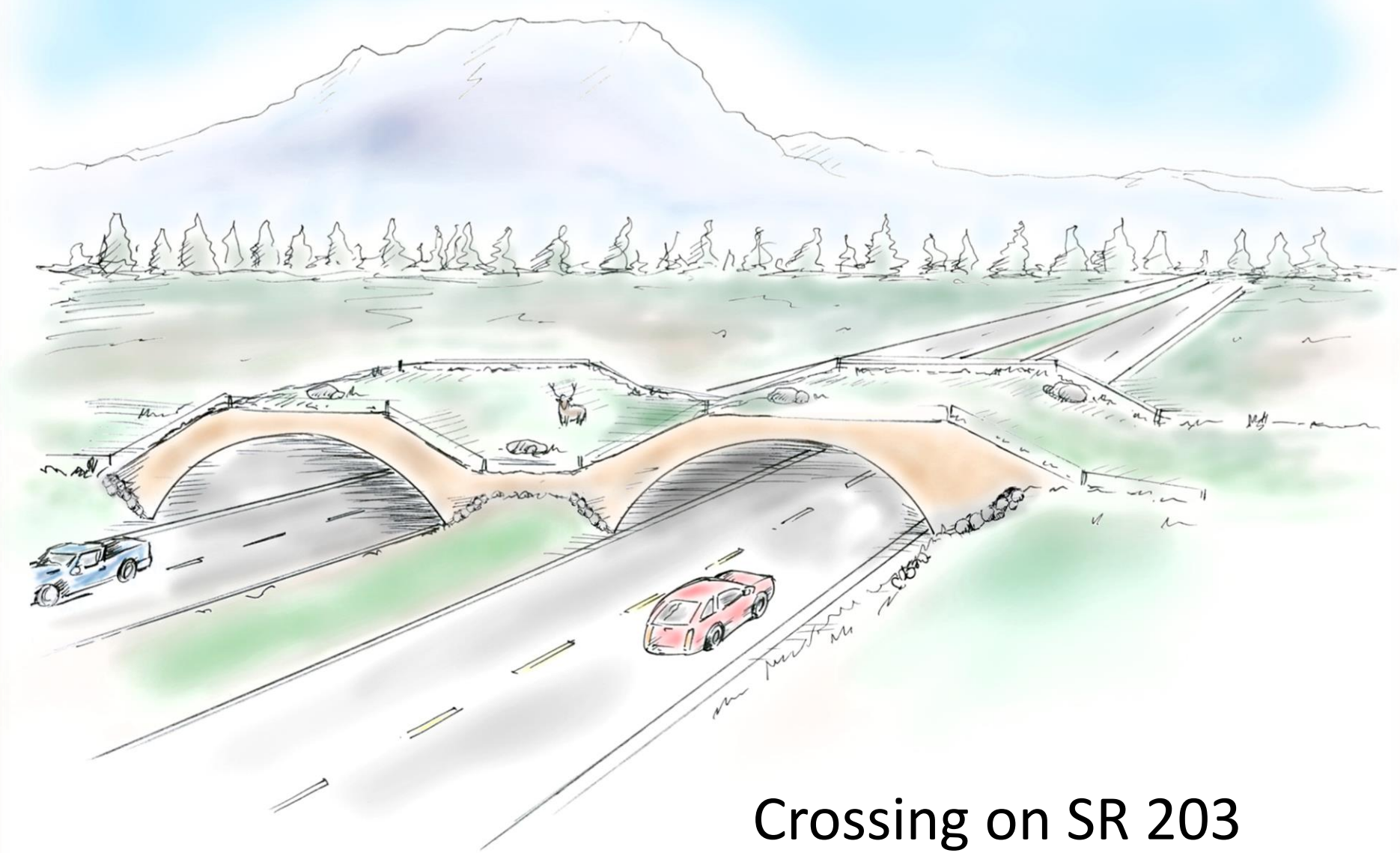


Concepts	Location	Primary Features	Cost (millions)	Remarks	Hotspots Addressed
1	US 395 and SR 203	4 New Large Mammal Crossings on 395 1 New Large Mammal Crossing on 203 Mammoth Creek Improvements 18 miles of wildlife fencing	53.3	Fully integrated system to reduce WVCs on SR 203 and 395	1, 2, 3, 5
2	395	4 New Large Mammal Crossings on 395 Mammoth Creek Improvements 13 miles of wildlife fencing	41.6	Same as Concept 1 but Excludes SR 203	1, 2, 3, 5
3	395	3 New Large Mammal Crossings on 395 1 New Medium Mammal Crossing on 395 Mammoth Creek Improvements 13 miles of wildlife fencing	33.6	Same as Concept 2 but utilizes Medium mammal crossing instead of large mammal between Mammoth Creek and overcrossing structure at PM 23.36	1, 2, 3, 5
4	395 - North Only (Benton Crossing Rd to SR 203)	1 New Large Mammal Crossing on 395 1 New Medium Mammal Crossing on 395 Mammoth Creek Improvements 8 miles of wildlife fencing	16.9	No crossing structures or fencing south of Benton Crossing Rd.	3, 5
5	395 – South Only (Crowley Lake Dr to Hot Creek Hatchery Rd)	2 New Large Mammal Crossings on 395 7 miles of wildlife fencing	18.5	No new crossings opportunities, fencing, or improvements north of Hot Creek Hatchery Rd.	1, 2
6	Seasonal Signage	Portable Changeable Message Sign during migration season and night time hours	.02/Year	Rental and maintenance	

# Concepts Considered But Not Chosen

1. Wildlife detection systems and active signage – Doppler and Infra-red
  - All documented case studies on 2 lane facilities (much narrower crossing lengths)
  - Reliability issues leads to drivers ignoring signage
  - costly
2. Electric fencing
  - Shorter fencing heights, but more costly system to maintain and purchase
  - If fence section becomes de-energized then deer can easily jump over
3. Reflectors/Mirrors
  - Was tried in the past but deemed inconclusive at scaring deer away
  - Was implemented on the deer fence in 1969 between SR 203 & Sherwin Creek Rd.

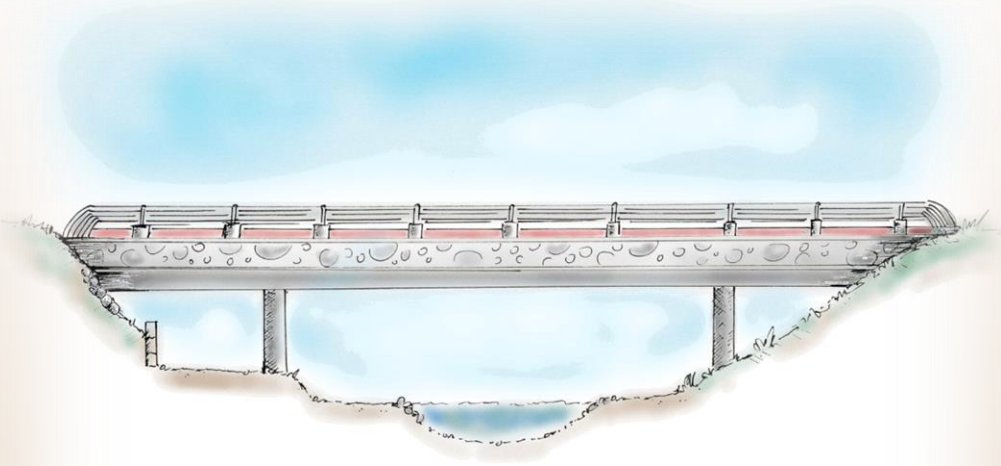




Crossing on SR 203



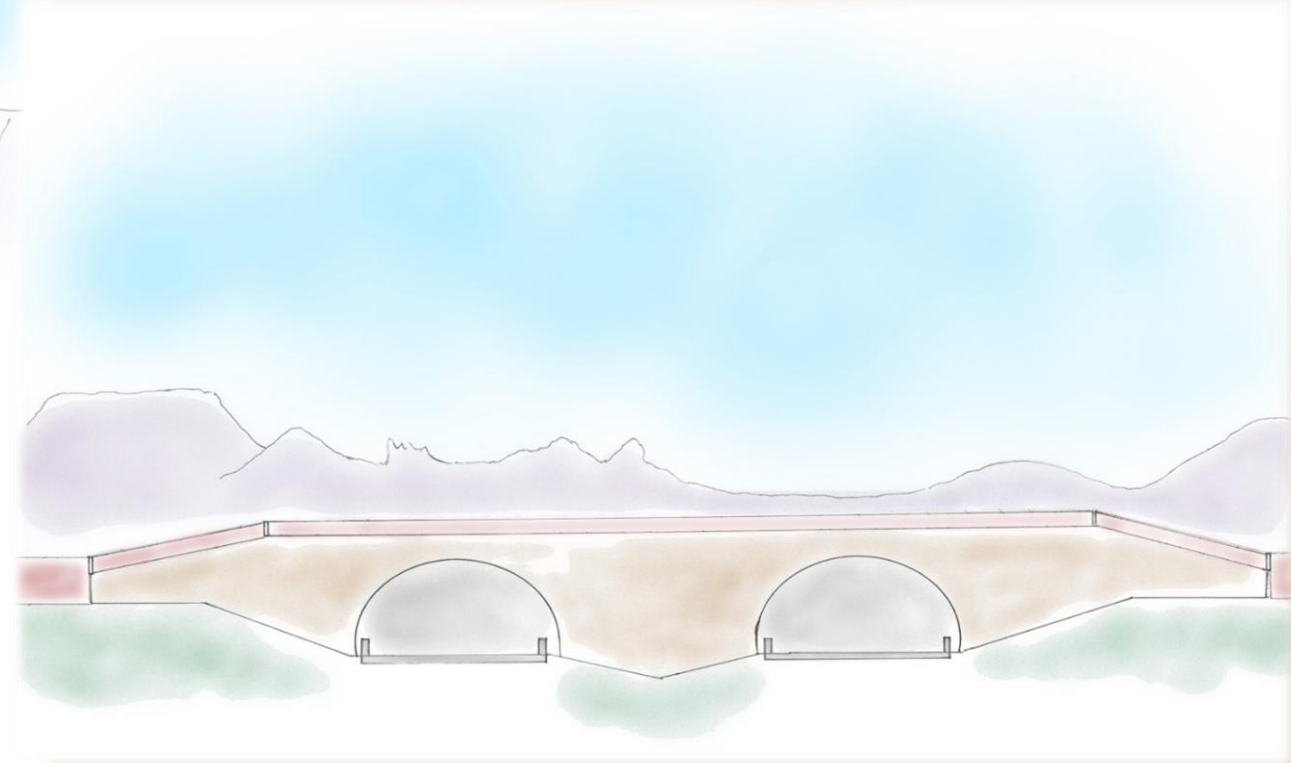
# Mammoth Creek



# Overcrossing by Hot Creek Hatchery Rd.



Typical Overcrossing Section



Elevation View

# How do we compare to other areas?

Caltrans Districts	Total Deer Mortality	Years of Collection	Deer Mortality per year
District 9	2023	14	144.5
District 10	3010	11	273.6

Other Study Areas	Description	Length (miles)	Deer Mortality per year	Deer Mortality per year per mile	Notes
Study Area	Crowley Lake Dr. to SR 203	7.14	27.6	3.86	14 years of data
District 3 Undercrossing Project	SR 89 -Kyburz Flat	1.1	4	2.59	7 years of data
District 4	I280 between San Jose and San Francisco	22	45	2.06	8 years of data
Reno to CA/NV border	I80	8	10.5	1.31	2 years of data
Southern Utah, east of Kanab	Highway 89	12	115	Unknown	Unknown



NEXT STEPS....



Questions?