EIP

Planning and Resource Management for Our Communities and the Environment

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Richard Floch
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Subject: **Preliminary Draft**
Technical Memorandum Number 9 –Fall 2001 and Spring 2002 Wildlife Crossings Monitoring Results

Dear Dr. Shewbridge and Mr. Floch:

As part of the relicencing of the El Dorado Irrigation District FERC Project #184, and at the request of the U.S. Forest Service (USFS) and the California Department of Fish and Game (CDFG), biologists from EIP Associates monitored the use of four wildlife crossings maintained by the El Dorado Irrigation District. These wildlife crossings are located along the El Corado Canal that parallels the South Fork American River. The study included a fall monitoring period (27 September to 27 December 2001) and a spring monitoring period (10 April to 5 June 2002). The monitoring was conducted using Trailmaster 1500 active infrared trail monitors (Trailmasters) placed on each of the selected four bridges. This is a preliminary draft. The primary prepares of Technical Memorandum Number 9 are listed below:

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Should you have any questions or wish to discuss this report please contact me.

Sincerely,

Roy Leidy

Roy Leidy
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EL DORADO IRRIGATION DISTRICT
FEDERAL ENERGY REGULATORY COMMISSION
PROJECT NUMBER 184

FALL 2001 AND SPRING 2002 WILDLIFE CROSSINGS MONITORING RESULTS

INTRODUCTION

As part of the relicensing of the El Dorado Irrigation District's (EID) El Dorado Hydroelectric Project (FERC Project No. 184), and at the request of the U.S. Forest Service (USFS) and the California Department of Fish and Game (CDFG), biologists from EIP Associates (EIP) monitored the use of four wildlife crossings (Bridges) located along the El Dorado Canal. The 22.3 mile long canal begins at the El Dorado Diversion Dam, located on the South Fork American River approximately 1.5 miles downstream of the community of Kyburz, and terminates at the El Dorado Forebay, located to the north of Pollock Pines. Sections of the canal consist of open concrete lined ditches, pre-cast concrete flumes, wooden flumes, siphons and tunnels. These canal structures may be a barrier to the movement of migrating wildlife because the canal is too wide for many of the animals to jump across (~15-20 ft wide). The wildlife crossings function to allow animals to move across the canal safely.

PURPOSE

The purpose of this monitoring study was to determine what terrestrial wildlife species were utilizing the crossings, and the approximate frequency of use by the wildlife during the fall and spring seasons. The study included a fall monitoring period (27 September to 27 December 2001) and a spring monitoring period (10 April to 5 June 2002). The monitoring was conducted using Trailmaster 1500 active infrared trail monitors placed on each of four bridges. The Trailmasters record the time and date of an occurrence when an object passes in front of the unit, breaking the infrared beam between the transmitter and receiver/recorder. A still picture is also simultaneously taken when the beam is broken.

METHODS

With the approval of the USFS and CDFG, the Trailmasters were installed on 27 September 2001 at bridge locations #1, #2, #3, and #4 (Figure 1). Unfortunately, the Trailmasters were stolen at bridges #3 and #4 during the third week of monitoring. Two new bridges (Bridges #5 and #6), at more secure locations were selected, and the monitoring program continued (Figure 1). Trailmasters were installed at bridges #5 and #6 during the fourth week of monitoring on 24 October 2001.

All Trailmasters were programmed to operate 24 hours per day. Each site was checked once a week to make sure equipment was functioning properly, and to replace batteries or film that needed to be changed. The Trailmaster units were mounted on fence posts at each bridge, and their cameras were mounted on fence posts aimed towards the location of the Trailmaster transmitter and receiver units. During both the fall 2001 and spring 2002 monitoring periods, the infrared beam for each Trailmaster was mounted at approximately twenty-five inches above the ramp floor of each bridge. The Trailmasters were programmed to record an occurrence and simultaneously take a picture when the infrared beam was broken. A two minute delay function was set on the Trailmasters in order to prevent using an entire roll of film on a single animal, which could trigger several occurrences by walking back and forth through the infrared beam. Occurrence data is collected and stored by the Trailmaster during the delay period.

Although the fall 2001 surveys focused mainly on the use of the crossings by mule deer, it was evident from the animal tracks found on and around the crossings that other wildlife species were utilizing the crossings as well. Therefore, during the spring 2002 monitoring, additional Trailmasters and cameras also were mounted at each location, at a height of approximately ten inches above the ground. This was done in order to monitor species, which were not being detected by the original Trailmasters mounted at twenty-five inches. Occasionally, larger animals such as black bears and mule deer would trigger both the top and bottom units to take a picture, resulting in multiple pictures of the same animal.

Extreme weather events (i.e., wind, rain, and heavy snowfall) occurred several times during the monitoring program, causing the Trailmasters to record an occurrence and take a picture when no wildlife was on a bridge. Weather conditions during the fall monitoring period were generally sunny and calm. November continued to have sunny and calm weather until the end of the month when wind and snowstorms occurred. December was a wet month with heavy rain and windstorm activity. The weather during the spring monitoring period varied dramatically. Snow and several heavy storms occurred during the first few weeks of the monitoring period, while sunny skies and warmer temperatures prevailed as the season progressed.

RESULTS

During the fall monitoring period, mule deer were recorded crossing at all four bridge locations (#1, #2, #5, and #6). Table 1 summarizes the mule deer photographs obtained at each bridge. The results of the monitoring showed that bridges #5 and #6 were most frequently used by mule deer during this period. No other wildlife species were photographed during the fall monitoring period. The film from bridges #3 and #4 were not removed from the cameras before the units were stolen, so it was not known whether mule deer were utilizing these bridges.

During the spring monitoring period, photographs were taken of several wildlife species not previously recorded during the fall survey. Pictures were taken of gray foxes (*Urocyon cinereoargenteus*), black bears (*Ursus americanus*), bobcats (*Felis rufus*), striped skunks (*Mephitis mephitis*), raccoons (*Procyon lotor*), and western gray squirrels (*Sciurus griseus*). Table 2 summarizes the number of photographs of each species taken per week of the monitoring survey. Photos 1-6 are representative examples of the pictures obtained from the Trailmaster cameras during the spring monitoring survey.

Wildlife species use all the bridges that were monitored, but at different frequencies. Frequencies ranged from once every few weeks to several times per week. As occurred during

the fall monitoring period, Trailmasters at bridges #5 and #6 took a majority of the pictures of wildlife during the spring monitoring period, i.e., 30 and 65 respectively.

Occurrence data indicated that bridges #5 and #6 had a greater volume of mule deer traffic during the spring period compared to the fall period. Spring and fall comparisons for the other species were not possible because no data were obtained for these smaller animals during the fall monitoring survey. The pictures obtained from this monitoring study shows that all the crossings that were monitored are utilized by a variety of terrestrial wildlife species.

TABLE 1

FALL 2001 WILDLIFE CROSSINGS MONITORING RESULTS

Week of Survey	Bridge #1	Bridge #2	Bridge #5	Bridge #6
Week 1				
Week 2				
Week 3				
Week 4				
Week 5			4-mule deer	3-mule deer
Week 6			2-mule deer	9-mule deer
Week 7				3-mule deer
Week 8				2-mule deer
Week 9				1-mule deer
Week 10			1-mule deer	3-mule deer
Week 11	1-mule deer			
Week 12			2-mule deer	
Week 13	1-mule deer	2-mule deer		

TABLE 2

SPRING 2002 WILDLIFE CROSSINGS MONITORING RESULTS

Week of Survey	Bridge #1		Bridge #2		Bridge #5		Bridge #6	
	Top Unit	Bottom Unit	Top Unit	Bottom Unit	Top Unit	Bottom Unit	Top Unit	Bottom Unit
Week 1		1-gray fox		1-bobcat				1-bobcat 1-gray squirrel
Week 2				1-mule deer 1-gray fox 1-bobcat	2-mule deer 1-black bear	2-bobcat	6-mule deer	2-mule deer 1-bobcat
Week 3		1-domestic dog 1-bobcat			2-mule deer 1-black bear	1-black bear	6-mule deer	4-gray squirrel 2-bobcat 1-mule deer
Week 4		2-gray fox	3-mule deer	2-mule deer	2-mule deer	3-bobcat 1-raccoon	2-mule deer 1-black bear	1-gray squirrel 1-black bear
Week 5	1-mule deer	1-mule deer 1-gray fox 1-striped skunk		1-gray fox		1-bobcat	7-mule deer	3-mule deer
Week 6		2-gray fox	2-mule deer	1-bobcat	4-mule deer 1-black bear	1-bobcat 1-black bear	7-mule deer	1-striped skunk 2-gray squirrel 2-mule deer
Week 7	1-black bear	1-black bear 1-gray fox		1-gray fox	3-mule deer		7- mule deer	2-gray squirrel 2-mule deer 1-Steller's jay
Week 8		1-striped skunk	1- mule deer	1-striped skunk	1-mule deer	1-mule deer 1-striped skunk	2-mule deer	

Bridge #5 **Mule Deer** Date: 10/27/02
(Odocoileus hemionus)

Bridge #5 **Black Bear** Date: 5/18/02
(Ursus americanus)

El Dorado Irrigation District **FERC Proj. # 184** El Dorado County, CA	EIP ASSOCIATES	**Fall 2001 and Spring 2002** **Trailmaster Photographs** **Photos - 1 and 2** project number: 0640.04

Bridge #1 **Gray Fox** *(Urocyon cinereoargenteus)* Date: 5/3/02

Bridge #5 **Bobcat** *(Lynx rufus)* Date: 5/1/02

El Dorado Irrigation District
FERC Proj. # 184

El Dorado County, CA

EIP ASSOCIATES

Fall 2001 and Spring 2002
Trailmaster Photographs
Photos - 3 and 4

project number : 10540-01

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Bridge #5 **Racoon** Date: 5/7/02

(Procyon lotor)

Bridge #5 **Striped Skunk** Date: 6/4/02

(Mephitis mephitis)

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