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**Swift, C., "Summary of the recent reconnaissance survey work conducted to detect freshwater snail presence in selected aquatic habitat locations on Newhall Ranch" (2009)**

**To:** Matt Carpenter  
The Newhall Land and Farming Company  
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**From:** Camm Swift, Ph.D.

**Re:** Preliminary Results of Focused Freshwater Snail Reconnaissance

**Date:** April 7, 2009

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## Introduction

The purpose of this memorandum is provide a summary of the recent reconnaissance survey work conducted to detect freshwater snail presence in selected aquatic habitat locations on Newhall Ranch. On February 20, 2009, Camm Swift (ENTRIX) and Matt Carpenter (Newhall Land) conducted focused field sampling for freshwater snails in the lower Middle Canyon drainage, the Middle Canyon Spring outlet streams, lower Potrero Canyon, and associated wetland areas within the Santa Clara River floodplain (**Figure 1**). Of principal interest was whether the currently undescribed Middle Canyon spring snail (*Pyrgulopsis sp*) was present in other aquatic habitat areas within Newhall Ranch. The Middle Canyon Spring snail (*Pyrgulopsis n. sp*) has been known to occur within the Middle Canyon Spring Complex (the predominant slope seep area and outlet channels) since roughly 2006. In 2007, an unverified observation of the *Pyrgulopsis n. sp.* (or possibly the more common freshwater snail *Physa sp*) was made in the lower Middle Canyon drainage in agricultural tailwater flows. Agricultural tailwater flow is no longer present, however recent rains supported intermittent flow at the time of the survey. On February 26, 2009, Matt Carpenter also surveyed the lower Ayers Canyon drainage in proximity to the existing agricultural road, just upstream of the Santa Clara River confluence.

The results of this survey will assist in assessing potential impacts to *Pyrgulopsis n. sp* to proposed RMDP Project activities. The remainder of this memorandum summarizes the results of the presence/absence reconnaissance survey work conducted for the February 20 and 26, 2009 survey work.

## Methods

The reconnaissance survey involved using dipnets of various sizes (12 inch D-ring and smaller aquarium nets) to detect small snails and other aquatic organisms. Sampling was conducted at random over a 100-300 foot length of stream, skimming the stream bottom in the main channel and slackwater areas along the stream margins. In addition, dipnetting was conducted along marginal aquatic vegetation and associated root masses. Generally, the habitat sampled represented a good cross-section of microhabitats present. Prior to performing the survey, the sampling team studied the diagnostic characteristics of the *Pyrgulopsis* n. sp. to determine its presence when compared to other freshwater snail species. It has a distinct conical shell while the more common *Physa* sp is helical. Generally, *Physa* are rather large (approximately >6 mm) when compared to *Pyrgulopsis* n. sp (<2 mm) based on previous field data and consultation with Dr. Robert Hershler of the Smithsonian Institution, who has been evaluating the taxonomic status of the *Pyrgulopsis* n. sp found at the Middle Canyon Spring complex on Newhall Ranch. Sample material was then inspected in a white enamel pan or tray or shallow bucket to detect snails and other aquatic organisms if present. In addition, each area sampled was recorded to document water temperature, vegetation and substrate, GPS coordinates, and other pertinent notes. Site photographs are provided in **Appendix A** of this report.

## Results

### **Lower Potrero Canyon Creek (LPC)**

Stream habitat in the flat and open reach of lower Potrero Creek, just upstream of the large headcut, were sampled for the presence of freshwater snails. A few larger snails were observed during the survey and were characteristic of the *Physa* sp. known to be relatively common in aquatic habitat in and along the Santa Clara River and other drainages in southern California. A few aquatic insects were present during the survey as well (Appx A-1 – LPC1 site photograph).

Stream habitat in the incised reach of lower Potrero Creek downstream of the headcut (LPC2), were also examined for aquatic organisms. Over 50 *Physa* sp. snails were observed in this location, visible skimming along the stream bottom where silty fine sediment had been recently deposited. Generally, these *Physa* were common and relatively abundant throughout the reach examined (Appx A-2 – LPC2 site photograph).

### **Lower Potrero Canyon Wetland**

Flows emerging immediately upstream of (LPW1) and at the headcut (LPW2) in the lower Potrero wetland (mesic meadow) were also examined for aquatic organisms. Only one *Physa* sp. snail was observed in this location, along with numerous aquatic insects and amphipods (Appx A-3 & A4 – LPW1 and LPW2 site photographs).

### **Santa Clara River Floodplain near Potrero Canyon (PC-SCR)**

Potrero Canyon flows into the southern portion of the Santa Clara River floodplain within a terrace of the riparian corridor that includes inundated portions of dense cottonwood–willow riparian bottomlands, as well as small pools and wetlands dominated by emergent vegetation types. The dense bottomlands had very few aquatic insects where fresh silt had been recently deposited. Standing water was receding in this area, indicating that it is probably intermittent. In contrast, the small pools and wetlands north of the bottomlands and closer to the Santa Clara River on the terrace had numerous aquatic insects, crayfish, and mosquitofish, and *Physa* sp. snails were relatively common throughout. None of the floodplain wetlands had a discernable confluence (channel connection) with the main thread of the Santa Clara River (Appx A-5 & A6 – PC-SCR1 and PC-SCR2 site photographs).

### **Lower Middle Canyon Drainage (LMC)**

Lower Middle Canyon is typically intermittent, but was flowing in the extreme lower-most reach from recent rains. Fresh fine sediment layered the channel bottom throughout, including the reach that did not support flow at the time of the survey. No aquatic insects or aquatic animals, other than a few oligochaete worms were observed in the two locations sampled in the lower Middle Canyon reach (Appx A-7 – LMC1 site photograph).

### **Middle Canyon Spring Complex (MCS)**

Both outlet channels within the Middle Canyon Spring complex were examined for the presence of freshwater snails. In September 2008, Dr. Hershler collected *Pyrgulopsis* n. sp specimens for taxonomic evaluation. It has been known to occur in the Middle Canyon Spring complex at the slope seep, as well as within the outlet channels. In the eastern channel near the temporary measurement station, *Pyrgulopsis* n. sp were common but not abundant. They were also found in the western outlet channel (less than 50 feet east of the eastern channel) but were less common. One *Physa* sp specimen was also collected in the western channel. Caddisfly larvae and amphipods were common in both channels (Appx A-8 & A-9 – MCS1 and MCS2 site photographs).

### **Santa Clara River Floodplain near Middle Canyon (MC-SCR)**

Flows from the Middle Canyon Spring complex outlet channels shallowly flood a densely vegetated area within the Santa Clara River floodplain along its southern terrace. No confluence with the main thread of the Santa Clara River was evident and it appears that those flows percolate to groundwater before ever reaching the main thread several hundred feet to the north. The area is thick with willows and bunches of mulefat and *Arundo*. Watercress and other herbaceous vegetation are scattered throughout the shallow flooded area where fine silty substrate predominates. Crayfish, amphipods, and *Physa* sp. snails were common throughout but generally not abundant (Appx A-10 – MC-SCR1 site photograph).

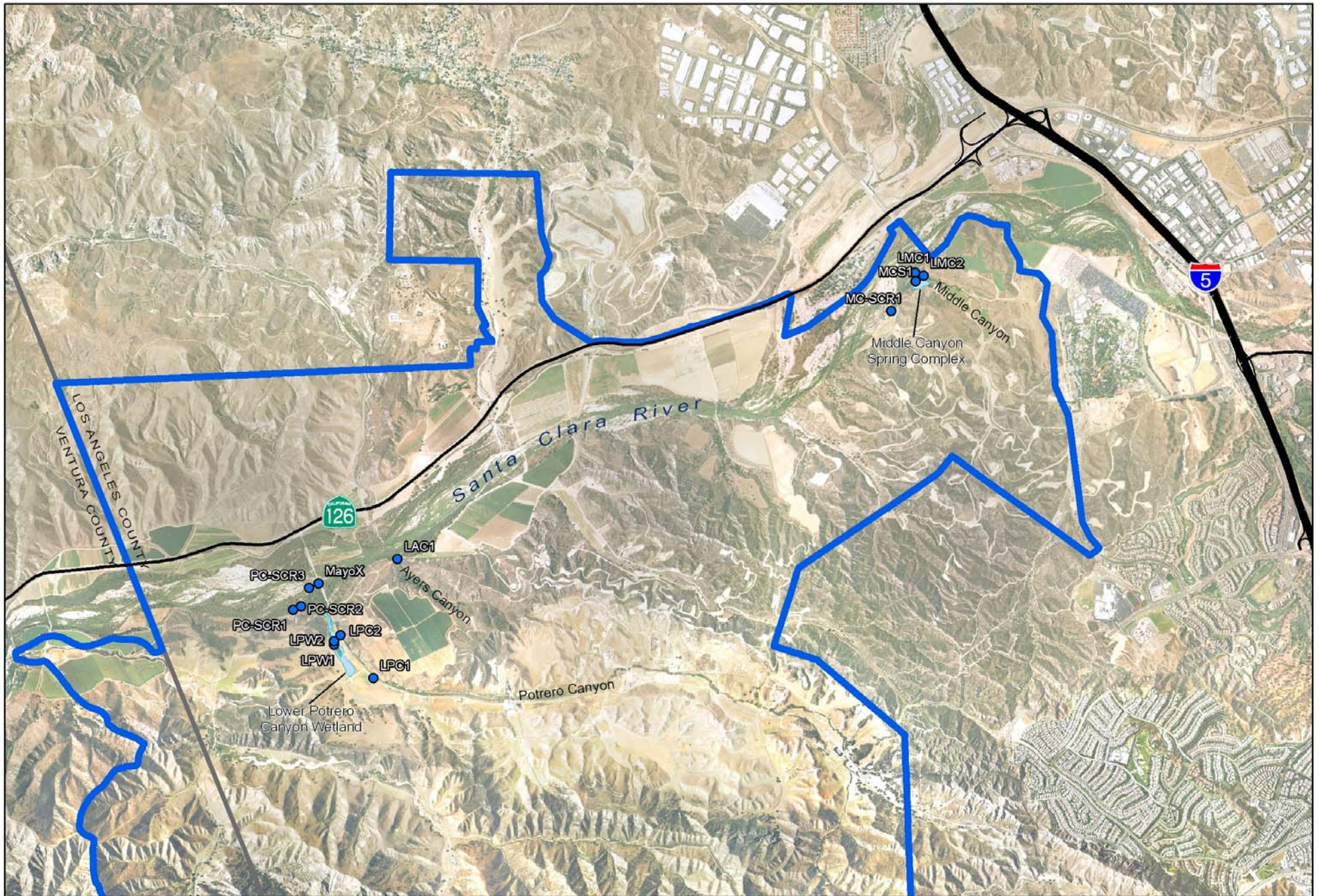
### **Lower Ayers Canyon (LAC)**

On February 26, 2009, Matt Carpenter performed a supplemental reconnaissance to determine if *Pyrgulopsis* n. sp or *Physa* snails were present in the lower Ayers Canyon drainage where perennial flows are present. The stream bed immediately upstream and downstream of the existing agricultural road crossing was visually examined for snails and other aquatic organisms. A few larval insects and earthworms were present in shallow flows and margins of herbaceous aquatic vegetation. No snails were observed upstream or downstream of the road crossing. Ayers Canyon upstream and downstream of the agricultural road is densely vegetated by willows and poison oak thickets that restricted access for further evaluation.

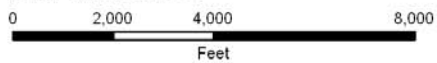
## **Discussion**

Focused surveys of selected aquatic habitats within the Newhall Ranch project area were examined for the presence of freshwater snails, principally the currently undescribed *Pyrgulopsis* n. sp known to occur in the Middle Canyon Spring complex. The reconnaissance of other aquatic habitat areas in lower Middle Canyon, lower Potrero Canyon, and the Santa Clara River floodplain near their respective confluences, and lowers Ayers Canyon provided a snapshot of freshwater snail presence within the Project area. Based on the February 20 and 26, 2009 field surveys, it appears that *Pyrgulopsis* n. sp is restricted to the Middle Canyon Spring complex, and that the more common *Physa* sp. is relatively common in all of the

other areas examined, except for Ayers Canyon. Other areas within the Project area that were not surveyed, such as upper Ayers Canyon, Via Canyon, and Salt Creek, may also have appropriate springsnail habitat because spring-fed areas are present in those areas. These areas were not surveyed because they fall within proposed conservation areas, while the sites selected for this survey fall within or near RMDP Project impact areas. Although this reconnaissance was not a comprehensive, site-wide effort, it indicates that *Pyrgulopsis* n. sp is likely restricted to the Middle Canyon Spring complex and will not be subject to impacts elsewhere within the Project area.



Aerial: 2007 AirPhotoUSA  
 Data: ENTRIX 2009



- Reconnaissance GPS Point
- RMDP Boundary

Freshwater Snail Reconnaissance  
 ENTRIX February 2009

FIGURE  
 1

**Appendix A**  
**Newhall Ranch Focused Snail Reconnaissance**  
**Survey Site Photographs**



**Appx A-1 Lower Potrero Canyon Creek (LPC1)**



**Appx A-2 Lower Potrero Canyon Creek (LPC2)**





**Appx A-3 Lower Potrero Canyon Wetland (LPW1)**



**Appx A-4 Lower Potrero Canyon Wetland (LPW2)**



**Appx A-5 Santa Clara River Floodplain near Potrero Canyon (PC-SCR1)**



**Appx A-6 Santa Clara River Floodplain near Potrero Canyon (PC-SCR2)**



**Appx A-7 Lower Middle Canyon Drainage (LMC2)**



**Appx A-8 Middle Canyon Spring Complex- E Outlet Channel (MCS1)**



**Appx A-9 Middle Canyon Spring Complex – W Outlet (MCS2)**



**Appx A-10 Santa Clara River Floodplain near Middle Canyon (MC-SCR1)**

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