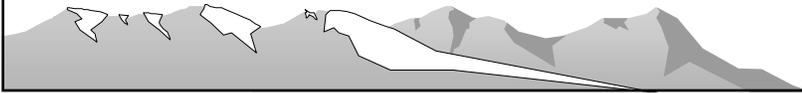




Oregon-California Trails Association

MAPPING EMIGRANT TRAILS

Dave Welch
Galva, KS
July 17-18, 2010



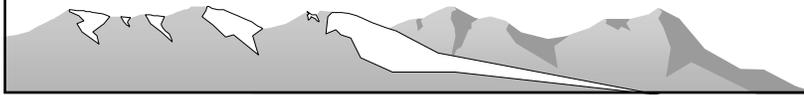
CONTENTS

- Overview
- Terminology
- Cardinal rules
- Evidence and Guidelines
- Techniques and Resources

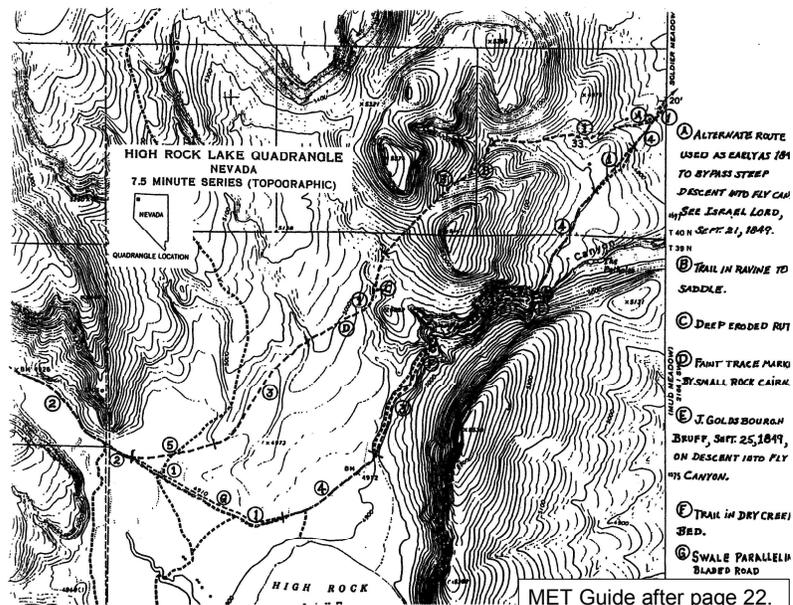


OVERVIEW

- Objective:
 - Prepare a map with sufficient detail and credibility to support interpretation and preservation of the trail.
- Requirements:
 - Locate the trail on a map at a scale of 1:24,000 (quad)
 - Assess the condition of the trail
- Approach:
 - Paper maps and manual plotting of information
 - GPS and mapping software (separate presentation)
- Condition:
 - Cooperation of the landowner (public or private)



MET MAPPING TECHNIQUES





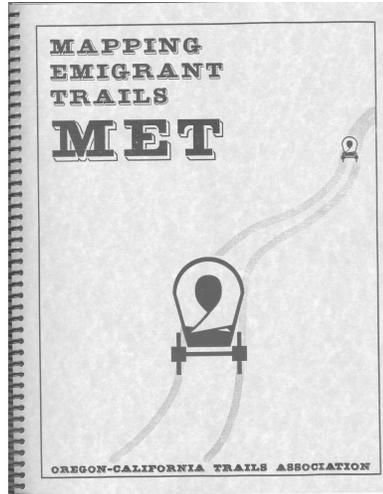
HOW DO WE MAP EMIGRANT TRAILS?

- Search
 - Library and archives
 - On the ground
- Verify
 - Field evidence
 - Archaeological research
 - Contemporary documentation
- Document
 - Maps and data
 - Narrative

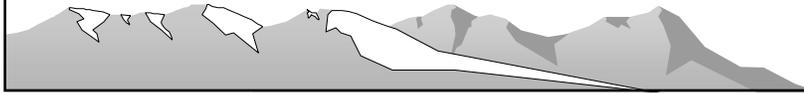


MAPPING AS A PROCESS

- Mapping is an iterative process the goal of which is to maximize the probability that an historic trail has been found.
- Begins with research
 - Old maps
 - Diaries
 - Other research
- Preliminary field studies
 - What is on the ground?
 - How does it relate to the research
 - Preliminary mapping of all possibilities
- Re-evaluation of research
- Detailed mapping and classification
- Marking



Don Buck
Andy Hammond
David Johnson
Tom Hunt
John Maloney



TRAIL TERMINOLOGY

Trace	General term for any original trail remnant.
Depression	Shallow dip in the surface, often very faint and difficult to see. 
Swale	A depression, but of deeper dimensions and with sloping sides. 
Rut	Deep depression, without a center mound and having steep sides. 

MET Guide page 16.



TRAIL TERMINOLOGY

Erosion Feature A trace of any sort that has been deepened and altered by subsequent wind and/or water action. Sides and bottom often irregular.



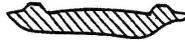
Track Visible trace caused by compacting of surface or discoloration due to salt evaporation on alkali flats. Little or no depression. Often seen as streaks across an alkali flat.

Scarring Irregularly wide flat surface, devoid of vegetation, that no longer shows any wagon depressions or swales. Often seen trailing through sagebrush flats in an uneven pattern.

Two-track Parallel wheel tracks separated by center mound. Typically an unimproved ranch road used by motor vehicles.



Improved Road or Secondary Road Bladed, graded, crowned, gravelled, oiled, or blacktop roads usually having side berms, curbs or gutters.



MET Guide page 16.



OREGON, CALIFORNIA AND MORMON PIONEER NATIONAL HISTORIC TRAILS





TWO-TRACK IN WYOMING

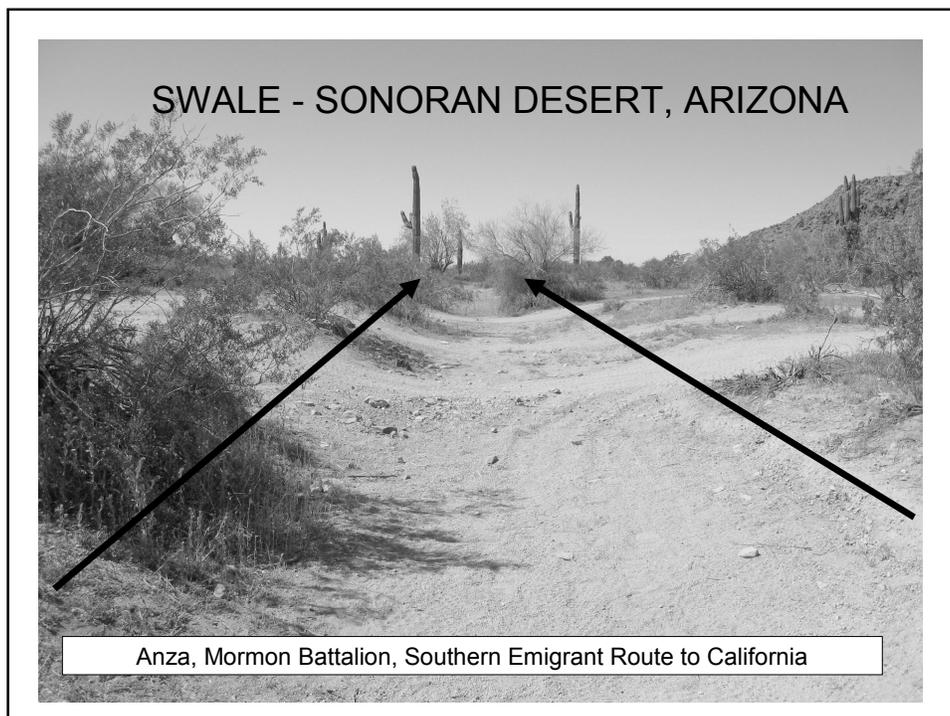


Photo by Randy Wagner



TWO-TRACK AT SOUTH PASS, WY





GENERAL PRINCIPLES OF TRAIL LOCATION & VERIFICATION

- Maximize Probability
 - Rarely are trails determined with absolute certainty
 - Maximize the likelihood of being right by using as many sources as possible
- Analogy
 - What is found should be consistent with what is already known



CARDINAL RULES OF TRAIL VERIFICATION

- Coherence
- Corroboration
- Collateral
- Correlation

MET Guide page 5.



CARDINAL RULES

Coherence – Systematic Connection

There must be a linear uniformity so that trail segments form a continuous sequence; i.e., the trail segment under investigation has to link coherently with the trail segments that precede and follow it.

MET Guide page 4.



CARDINAL RULES

Corroborate – To support with evidence or authority

There must be confirming documentary evidence of the trail; i.e., the trail segment under investigation has to have valid written or cartographic evidence to support its authenticity.

MET Guide page 4.



CARDINAL RULES

Collateral – Accompanying as second or subordinate; serving to support

There must be accompanying physical and/or topographical evidence of a trail; i.e., the trail segment under investigation has to have some geomorphic or artifact evidence to support it as an authentic emigrant trail.

MET Guide page 4.



CARDINAL RULES

Correlate – To establish a mutual or reciprocal relation

There must be overall agreement between all types of evidence; i.e., the evidence resulting from the first three cardinal rules have to be mutually supporting (not contradicting one another) in order to verify the location of a trait segment.

MET Guide page 4.



CARDINAL RULES OF TRAIL VERIFICATION

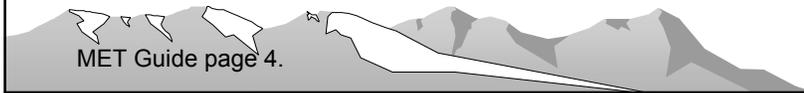
- Coherence – linear consistency
- Corroboration – supporting documentary evidence
- Collateral – other physical and/or topological evidence
- Correlation – overall agreement of all sources

MET Guide page 5.



LIMITS OF THE CARDINAL RULES

- No set of standards, however well thought out, can cover all cases with equal uniformity.
- Ultimately, the trail mapper bears the responsibility of reaching a decision on where the trail is located. Others may disagree.



RELIABILITY OF EVIDENCE

Generally, the closer in time the evidence is to the event, the more reliable it is.

- Written eyewitness accounts, if specific
- Remaining physical evidence
- General Land Office (GLO) cadastral surveys (earliest)
- Topographic limitations
- Reports and railroad surveys
- Early maps
- Recent documentation

MET Guide pages 4 through 7.



GUIDELINES FOR LOCATING TRAILS

- Trails often follow ridgelines, not ravines or gullies
- Direct ascent of hills with resultant high erosion
- Multiple crossing of gullies and washes
- Trails avoided rocky terrain
- Spread out (parallel tracks) in alkali areas
- Swales and ruts more indicative of wagon trails than two tracks
- Artifacts may be concentrated at difficult points
- Rocks moved out of the trail path; broken rocks within trail corridor
- Varied vegetation growth
- Rust marks on granite; grooves on other stone
- Tree blazes and rub marks
- OCTA, BLM, NPS and other markers ☺

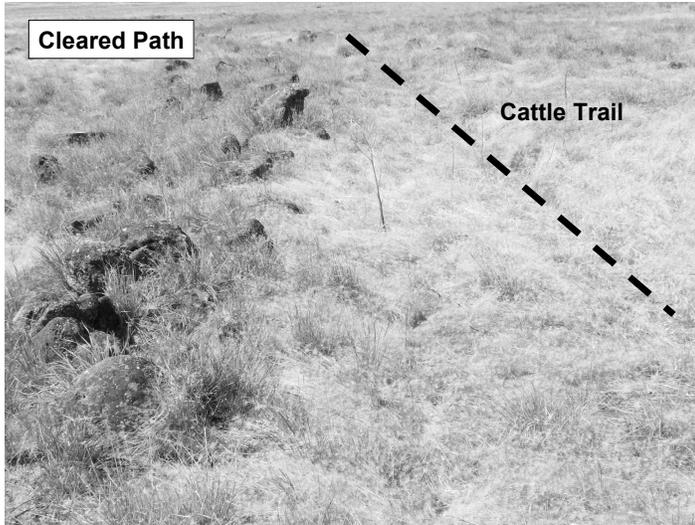
MET Guide pages 7 through 10



Note: Other evidence is consistent with these grooves being from wagon wheels.



Rust

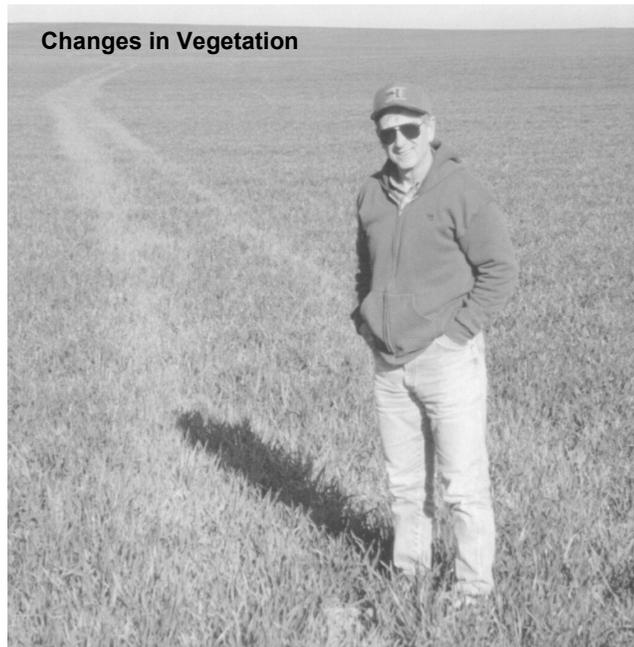


Cleared Path

Cattle Trail



Gully Crossing



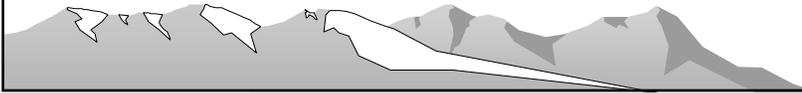
Changes in Vegetation



SUMMARY: APPLICATION OF CARDINAL RULES

- Individually, the previous examples would not suffice to prove the presence of an historic trail.
- Collectively they provide strong evidence of a wagon road.
- What was the wagon road?
 - Emigrant trail
 - Stage road
 - Freighting road
 - Early highway

COMPOSITE METHODOLOGY



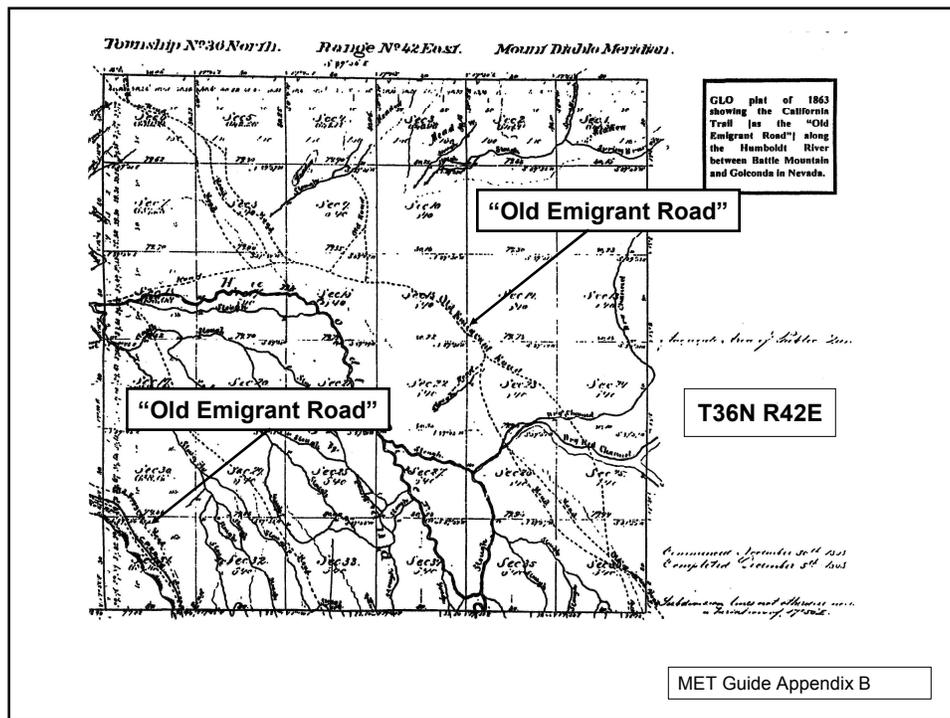
MAPPING TECHNIQUES AND RESOURCES

- General Land Office (GLO) maps
- USGS maps
- Trail documents
- USGS maps
- Aerial and satellite photographs
- Online maps and images (Google, etc.)
- Global Positioning System (GPS)
- Mapping software
- Metal detectors

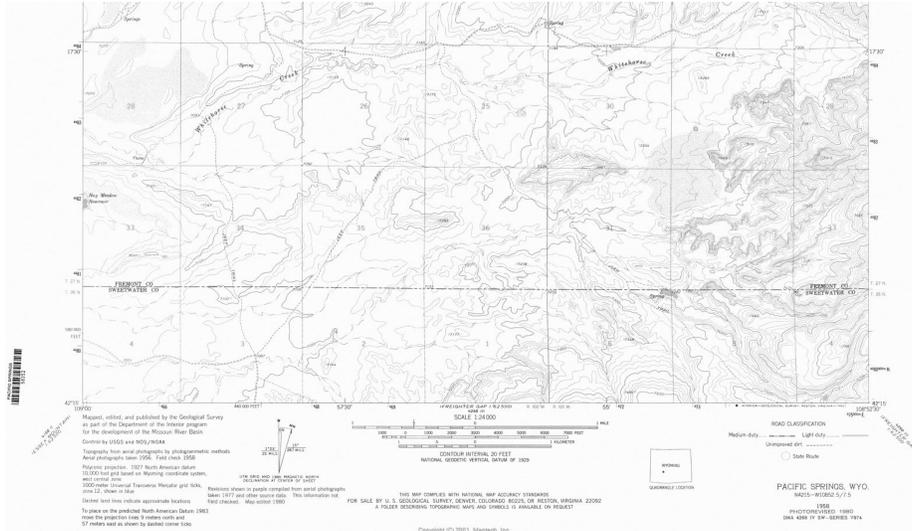


METAL DETECTORS

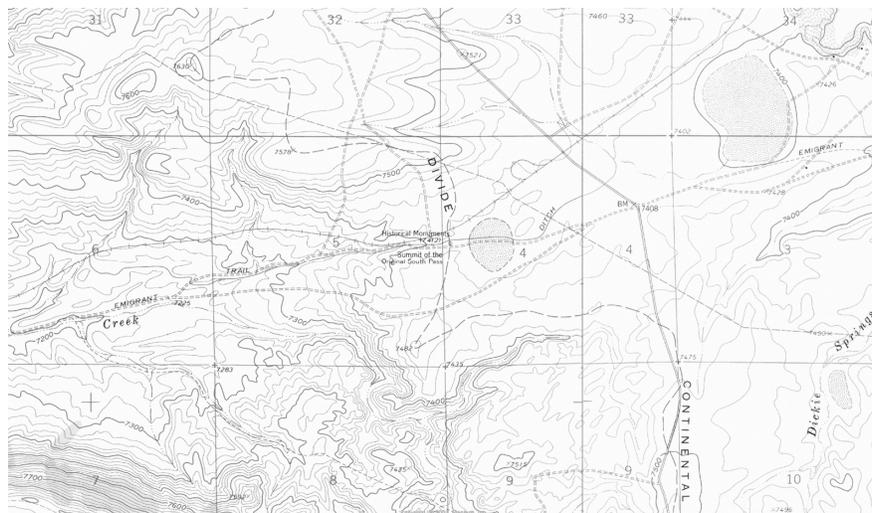
- Excavation of artifacts on public lands is illegal unless it is under the direction of a licensed archaeologist.
- Can be used with pin flags (no excavation) to outline possible trail route due to concentration of returns.



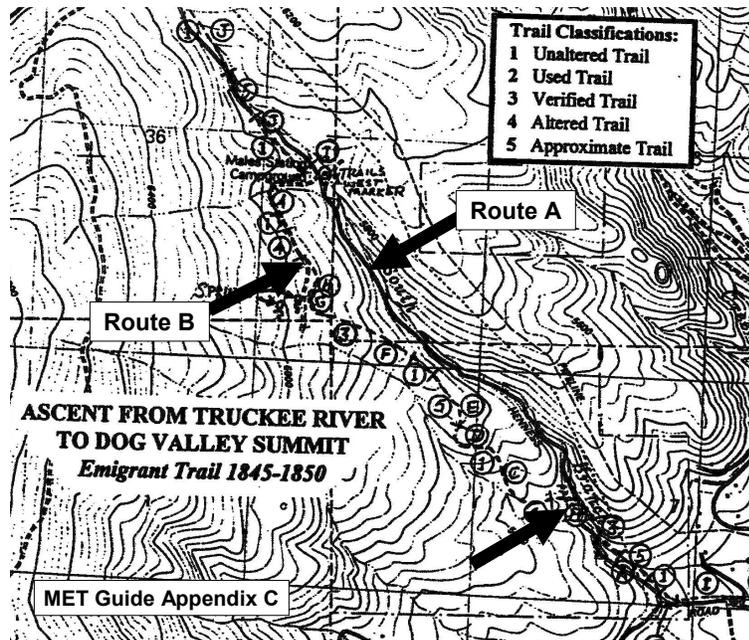
USGS TOPOGRAPHIC QUAD 1:24,000 PACIFIC SPRINGS, WY



USGS TOPOGRAPHIC QUAD 1:24,000 PACIFIC SPRINGS, WY



USE OF TRAIL DOCUMENTS – DOG VALLEY EXAMPLE



DOG VALLEY TRAIL DOCUMENTS

(See handout and MET guide for complete discussion)

Example 6 - Wakeman Bryarly: Aug. 20, 1849

We started at daybreak & crossed the river [*Truckee River*]. The road turned immediately to the right in a north direction & continued for one mile, when it went in a northwest, ascending a spur of mountain, one of the chain of the California mountains. We ascended this [*the ridge immediately on the west side of the South Branch canyon*], it being in some places very steep, & then again coming upon a little table of land upon which had been good grass, & upon one with a cool but small spring. After rolling there 5 miles, we opened upon a beautiful little valley with a very steep hill to descend to it [*Dog Valley*].

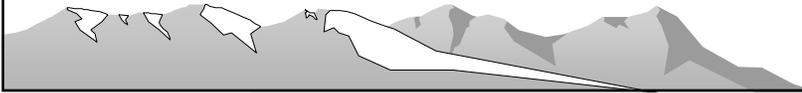
DJW: Consistent with use of Route B. The table land and spring were located in field work.





SUMMARY

- When mapping, we
 - Are attempting to maximize the probability our interpretation is correct.
 - Need to apply an iterative process open to different interpretations.
 - Need to begin with historical research.
 - Need to be aware of the subjective nature of the process.



REMINDERS

All field activities (like mapping) need to be conducted with the permission of the landowner. This applies to both private and public lands.

GPS-quality information on the location of cultural resources should not be placed in the public domain.

