

VI. INDIAN TRAIL OVER GRAVE CREEK HILLS INTERPRETATIONS

The concern started with the question: “*Why is there not an Indian trail depicted on the GLO plat over the Grave Creek Hills?*” The simple answer was because the Indian Trail over GCHills was first in time on the ground; it was under the depicted wagon road (sections I.B; II.D; V.B.2). With this opinion other questions followed.

“*Why the Oxbow of the Applegate Trail?*”
“*Why the Oxbow of the Indian trail over Grave Creek Hills?*”

A. Early Analysis

The early analysis by the HETC in 2002, 2005, and 2007 focused on describing the Takelma Indians and the Indian trail over the GCHills.

1. Takelma Indians: 2002 Hugo’s first citizens or peoples were the Takelma Indians. Native inhabitants can presently be dated back as far as 10,000 years ago in the Hugo area. They lived in semi-permanent villages during the winter and then broke up into smaller bands during fall, spring and summer to hunt, fish and gather in the neighboring foothills.¹

Footnote VI-1. Hugo Neighborhood Association & Historical Society and Josephine County Historical Society. June 15, 2005, Updated August 18, 2011. *Takelma Indians: An Essay on Native Americans in the Rogue River Area*. Brochure NA-2 Of Hugo’s Native American Brochure Series. Hugo, OR.
OR.http://www.hugoneighborhood.org/BROCHURE_NA2%20Native%20Americans%20In%20Rogue%20Valley%20081811.pdf

During their time away from their village, they lived in temporary camps in brush houses. It is believed that the Hugo area was the site of one of these temporary camps. It is alive with the preferred black acorn trees and close to both Mt. Sexton and Red Mountain where upland game is and was abundant. Also, numerous creeks are present here as sources of water. Not named then, but Bummer and Quartz creeks are two major perennial creeks in the Hugo area. The 1856 GLO plat depicts an Indian trail in the Hugo area.²

There were two main groups of Indians in the Rogue River area, the original Takelma Indians speaking Penatian and the Athapascan speaking Da-ku-be-tede and Tal-tuc-tun-te-de. The Athapascans migrated from Alaska and Canada about a thousand years ago. They moved into the areas not already inhabited by the Takelmas mainly along the Applegate River and Galice Creek.²

The Rogue River Wars of the 1850’s, reduced these people from 9,500 to 2,000 in six years before they were removed from their homeland in 1856 to the reservations in the north. Local Euro-American immigrants joined in groups known as “volunteers” with the sole purpose of exterminating the native Indians. David Sexton, longtime pioneer in the Hugo area was a leader of one of these groups of “volunteers.” By 1856, the Taylor and Jumpoff Joe Creek band was comprised of 14 men, 27 women and 19 children.²

Footnote VI-2. Rose, Karen. May 25, 2002. *Takelma Indians: An Essay on Native Americans in the Rogue River Area*. Hugo Neighborhood Association & Historical Society. Hugo, OR. http://www.hugoneighborhood.org/Essay_on_Takelma_Indians_05252002.pdf

2. 1856 GLO Plat: 2005 - 2007 The 1856 GLO Plat depicts an E-W Indian trail along Leland Creek or Grave Creek which is today known as Grave Creek. The GLO plats also documents an Indian trail with a course southwest from the *Trail* in the north to Jump-off Joe Creek in the south ([Map 9](#); [Map 10](#)).³ This trail connects with the Rogue River and a main Indian trail at the confluence of Jump-off Joe Creek with the river.

Footnote VI-3. Hugo Emigrant Trails Committee Hugo Neighborhood Association & Historical Society. October 29, 2005. *Hugo's Indian Trail*. Brochure I-8 Of Hugo's Native American Brochure Series & Brochure 4B Of Hugo's Trails Brochure Series. Hugo. OR. http://www.hugoneighborhood.org/BROCHURE_NA50%20Hugo%20Indian%20Trail_102905.pdf

Hugo's original Indian trail of interest was located from Mt. Sexton Pass down Maple Creek near its confluence with Bummer Creek (IT-4B; [Map A1](#)), and down Bummer Creek to its confluence with Quartz Creek (near IT-8; [Map 10](#)) to a location about a mile south of IT-8 and 3/4 mile W of Quartz Creek (at IT-10). IT-10 is some distance to the W of Quartz Creek because the Takelma's course objective was W down Jumpoff Joe, and Quartz Creek's axis here is N-S (i.e., trail is traversing a N-S ridge between Quartz Creek and Jumpoff Joe Creek). There are 10 professional GLO *Trail* surveys for "Hugo's Indian Trail" within Hugo's route of interest. They are numbered IT-1 through IT-10 ([Map 10](#)).⁴ An Indian village was located in this area.

Footnote VI-4. Hugo Neighborhood Association & Historical Society. November 28, 2007. *Hugo's Primary Indian Trail*. Brochure NA-51 Of Hugo's Native American Brochure Series & Brochure 3 Of Hugo's Trails Brochure Series. Hugo. OR. http://www.hugoneighborhood.org/BROCHURE_NA51%20Primary%20Indian%20Trail%20122807.pdf

The GLO surveyed Indian Trail numbers IT-1, IT-2, and IT-3 are the same as the three GLO surveyed Jacksonville Road of the *Trail* sites (JA-15, JA-14, and JA-13). They can be written with both their designations (i.e., IT-3/JA-13, IT-2/JA-14, and IT-1/JA-15). The Indian Trail sites are also abbreviated as T-1, T-2, and T-3.

In summary, the early analysis by the HETC in 2002, 2005, and 2007 focused on describing the Takelma Indians and the Indian trail over the GCHills.

The 1856 GLO Plat depicts an Indian trail with a E-W axis along Grave Creek. Several GLO plats document an Indian trail with a SW course from the *Trail* in the N to Jump-off Joe Creek in the S. This trail connects with the Rogue River and a main Indian trail at the confluence of Jump-off Joe Creek with the river.

The approximately 4.5 mile Indian trail in the Bummer Creek drainage from the Grave Creek Hills Pass (i.e., Mt. Sexton Pass) to Indian Trail site IT-7 is relatively straight on a SW-NW course. The trail is N of Maple Creek and Bummer Creek. The next section S from IT-7 to IT-10 is approximately 2 miles long on generally a N-S course. The total length of the Hugo Indian trail is approximately 6.5 miles long. The two specific primary sources for the Indian trail are the 1855 GLO survey notes and Frances Johnson, Takelma Indian (Section VI.B).

B. Frances Johnson, Takelma Indian

Much less is known about the Takelma Indians than about their neighbors in other parts of Oregon and northern California. Their homeland was settled by Euro-Americans late in the history of the American frontier. The discovery of gold spurred the white settlement of the region in 1852. Settlers and natives lived in the region together for less than four years before the Takelma (surviving two wars with the whites) were sent to reservations out of the area in 1856.

When studies of the Takelma people are referenced it usually means by a linguist, anthropologist-linguist, or ethnologist. The early principals studying the Takelma were Edward Sapir and John Peabody Harrington. In 1933 one of the last living Takelmas from 1856 was Frances Johnson. She was Sapir and Harrington's Lowland Takelma Indian informant for the Hugo region.

Edward Sapir (1884–1939) was a German-born American anthropologist-linguist and a leader in American structural linguistics. His linguistic interests proved to be much broader. Some of his studies were of the Wishram and Takelma languages of Native Americans in southwestern Oregon. In 1906 he noted that few regions in this country are so slightly known, both ethnologically and linguistically, as the section of Washington and Oregon lying east of the strip of coast land. He further observed that in this large area, the position occupied by the Takelma Indians, generally rather loosely referred to as Rogue or Upper Rogue River Indians, had hitherto remained quite undefined. He identified his notes on the Takelma as scattered and scanty, but offered them as a contribution toward helping understand the Takelma.

In 1906 Sapir acknowledged that the number of individuals that can be said to have anything like a fluent speaking knowledge of the Takelma language was quite inconsiderable, barely more than a handful in fact. He complemented Frances Johnson (Indian name Gwisgwashan), a full-blood Takelma woman past the prime of life, as the sole informant for his work on the Takelma. He wrote, "It is largely to her patience and intelligence that whatever merit this volume may be thought to have is due." Sapir's Takelma Indian research included the following three principal publications.⁵⁻⁷

1. 1907. *Notes on the Takelma Indians of Southwestern Oregon*
2. 1907. *The Religious Ideas of the Takelma Indians of Southwestern Oregon*
3. 1909. *Takelma Texts*

Footnote VI-5. Hugo Neighborhood Association & Historical Society and Josephine County Historical Society. September 8, 2011. *Edward Sapir, American Anthropologist-Linguistics*. Brochure NA-18B Of Hugo's Native American Brochure Series. Hugo, OR. http://www.hugoneighborhood.org/BROCHURE_NA18B%20Sapir%20Bio%20090811.pdf.

Footnote VI-6. Hugo Neighborhood Association & Historical Society and Josephine County Historical Society. September 10, 2011. *Sapir's Notes on the Takelma Indians of Southwestern Oregon*. Brochure NA-18C Of Hugo's Native American Brochure Series. Hugo, OR. http://www.hugoneighborhood.org/BROCHURE_NA18C%20Sapir%20Takelma%20Notes%20091011.pdf.

Footnote VI-7. Hugo Neighborhood Association & Historical Society and Josephine County Historical Society. September 11, 2011. *Sapir's The Religious Ideas of the Takelma Indians of Southwestern Oregon*. Brochure NA-18D Of Hugo's Native American Brochure Series. Hugo, OR. http://www.hugoneighborhood.org/BROCHURE_NA18D%20Sapir%20Takelma%20Religious%20Ideas%20090811.pdf.

John Peabody Harrington (1884–1961) was a linguist and ethnologist and a specialist in the native peoples of California, including Southern Oregon. Harrington is noted for the massive volume of his documentary output, most of which has remained unpublished: the shelf space in the Library of Congress dedicated to his work spans nearly seven hundred feet. Certain themes frequently appear in his field work, including annotated vocabularies concerning flora and fauna and their use, topography, history and biography, kinship, cosmology (including tribal astronomy), religion and philosophy, names and observations concerning neighboring tribes, sex and age division, material culture, legends, and songs.

Harrington's papers relate to numerous native people, including Southwest Oregon Athapascan (Chasta Costa, Chetco, Upper Coquille, "Gold Beach", Smith River, Tolowa, Tutini, Upper Umpqua), Galice/Applegate; and Takelma. His Takelma work was conducted in the 1930s.¹²

Footnote VI-8. Hugo Neighborhood Association & Historical Society and Josephine County Historical Society. September 9, 2011. *John Peabody Harrington, Linguist and Ethnologist*. Brochure NA-18F Of Hugo's Native American Brochure Series. Hugo, OR http://www.hugoneighborhood.org/BROCHURE_NA18F%20Harrington%20Bio%20090911.pdf

Harrington, John Peabody. 1981 *The Papers of John Peabody Harrington in the National Anthropological Archives of the Smithsonian Institution 1907-1957*. Reel number 28. Kraus International Publications. Millwood, New York.

Frances Johnson was Harrington's Lowland Takelma Indian informant for the Hugo region.¹³ Mrs. Johnson's native village was located somewhere north of the Rogue River. The HNAT believes it was in the Hugo area in the Bummer Creek drainage. Sapir gives the name of Dak'ts!asin in the neighborhood of Jumpoff Joe Creek, and near a local Medicine Rock (dan-moloqol) as her native village.⁹ The rock was at the Mt. Sexton Summit. In Harrington's notes Johnson is quoted as saying she was born at Rib Creek (i.e. Grave Creek), a place just the other side of Medicine Rock, or maybe at the falls of the Rogue River.⁹⁻¹⁰ She stated that she was a young girl at the time of the Rogue River Wars during the 1850s. The following three maps were produced by Harrington from Johnson's information on Mt. Sexton Summit.¹²

Map H4. Harrington Map 560 Medicine Rock¹³

Map H5. Harrington Map 583 Medicine Rock¹³

Map H6. Harrington Map 876 Medicine Rock¹³

Footnote VI-9. Hugo Neighborhood Association & Historical Society and Josephine County Historical Society. September 25, 2011. *Takelma Village: Daktsasin or Daldani*. Brochure NA-22B Of Hugo's Native American Brochure Series. Hugo, OR. http://www.hugoneighborhood.org/BROCHURE_NA22B%20Daldani%20Village%20091411.pdf.

Footnote VI-10. Hugo Neighborhood Association & Historical Society and Josephine County Historical Society. September 7, 2011. *Gray's Dan-moloqol or Medicine Rock*. Brochure NA-18AB Of Hugo's Native American Brochure Series. Brochure NA-22B Of Hugo's Native American Brochure Series. Hugo, OR. http://www.hugoneighborhood.org/BROCHURE_NA18AB%20Grays%20Medicine%20Rock%20090711.pdf.

Footnote VI-11. Hugo Neighborhood Association & Historical Society and Josephine County Historical Society. September 9, 2011. *Sapir's Old Rock Woman: Takelma Texts*. Brochure NA-18E Of Hugo's Native American Brochure Series. Hugo, OR. http://www.hugoneighborhood.org/BROCHURE_NA18E%20Sapir%20Takelma%20Texts%20090911.pdf.

In 1933 Harrington brought Johnson to the Rogue River region on a short automobile trip to assist in place name identification. During that trip, Frances reported that the 1,060' segment of the Applegate Trail/Road at Sexton Mountain Pass was originally the location of the old Indian Trail/old emigrant road, and that Rock Old Woman (Medicine Rock) had been located at Mt. Sexton Pass.^{12 & 14}

Map H4 is unique in that it was the only sketch map that located the old Indian trail and old emigrant road as being the same pathway. All three maps are web published from Harrington's 1933 Takelma Indian field notes.¹²

“Summit of grass; Maple Tree Rock; Red barn; med. rock.”

“Thompson's fence; old Ind. Trail & [or] old road; Pac - Hw.”

Some might find the memories of a young girl (ca., 10 years old?) suspect. However, she was born at Grave Creek (Sunny Valley?) or Ranie Falls on the Rogue River. Her village was probably in Hugo and she would have personally traveled over the Mt. Sexton Pass along the Indian trail by Medicine Rock.

Map H5 is unique in that it identified the old emigrant road as the Takelma Indian trail location over Mt. Sexton Pass in 1856 when Francis Johnson and the remaining Takelma Indians were moved out of the Rogue River to the Slitz Reservation after the Indian War of 1855 - 1856.¹³ Map 5, Map 4, and Map 6 all identify the summit of Mt. Sexton Pass, the Smith barn at the summit of Sexton Mountain Pass, the old road on the north side of Sexton Mountain Pass, and the new 1920 - 1921 paved Pacific Highway.¹²

Maps H4 - H6 (sketches)¹² are not to scale, but they are extremely important in providing geographic relationships. This is because the HNAT also has a nine foot 1940 engineered map of the Mt. Sexton Pass at 1" = 100' that shows all the geographic features that maps 4 - 6 identify (*Right of Way Map, Sexton Mt. Section. Pacific Highway, Josephine County*).¹³

The three Harrington maps¹² and the 1940 Oregon highway map are definitive proof that the 1,060' segment of the *Trail* identified as “*Applegate Trail I North Sexton Pass I-5 East*” is the old emigrant Applegate Trail as it evolved into a wagon road on top of the original Indian Trail (http://www.hugoneighborhood.org/NORTH_SEXTON_PASS_PAPER_I_013012.pdf).¹³

Footnote VI-12. Hugo Native American Team for Hugo Neighborhood Association & Historical Society & Josephine County Historical Society. August 2012. *John Peabody Harrington's Takelma Indian Field Notes: Outline*. Hugo, OR. http://www.hugoneighborhood.org/Harrington_Papers_Outline_082312.pdf

Footnote VI-13. Oregon State Highway Department. August 1940. *Right of Way Map, Sexton Mt. Section. Pacific Highway, Josephine County*. Scale 1" = 100'. Part 1 of 2, Drg. No. 5B-28-11. Oregon Water Resources Department, Grants Pass Office. 1939. October 20, 1939 Aerial Photo CIZ 26-92).

Frances had many personal memories of the Rogue River, her village, Rainie Falls, the medicine rock, and Grave Creek. If she was 10 years old in 1856 when she and some of her tribe walked to the Siletz reservation, she was 87 years old in 1933 when she was interviewed by Harrington. Of critical importance was that Francis Johnson was accepted as a credible informant on the Lowland Takelma Indians by two professional ethnographers/linguists: in 1906 by Edward Sapir and in 1933 by John Peabody Harrington and; as well as Historian and Anthropologist Stephen Dow Beckham, and Archaeologist Dennis Gray.¹⁴

Footnote VI-14. Hugo Native American Team For Hugo Neighborhood Association & Historical Society & Josephine County Historical Society. August 2012; Updated September 2012. *Lowland Takelma Indian Trail & Rock Old Woman At Sexton Mountain Pass*. From John Peabody Harrington's Takelma Indian Field Notes. Hugo, OR.

http://www.hugoneighborhood.org/Harrington_Papers_Sexton_Pass_Indian_Trail_Sept_2012.pdf.

In summary, less is known about the Takelma Indians than about their neighbors in other parts of Oregon and northern California. Their homeland was settled by Euro-Americans late in the history of the American frontier.

One of the last Takelmas from 1856 was Frances Johnson. She was Sapir's and Harrington's (professional ethnographers/linguists) Lowland Takelma Indian informant for the Hugo region. Harrington developed several maps from Johnson's information for the Mt. Sexton area (i.e., Grave Creek Hills). Of critical importance was that Francis Johnson was accepted as a credible informant on the Lowland Takelma Indians in 1906 by Edward Sapir and in 1933 by John Peabody Harrington; as well as Historian and Anthropologist Stephen Dow Beckham, and Archaeologist Dennis Gray.

Harrington's maps, along with the 1940 Oregon highway map, are definitive proof that the *Trail* at Mt. Sexton Mountain Pass is the old emigrant *Trail* as it evolved into a wagon road on top of the original Grave Creek Hills Indian Trail.

C. Takelma Indians Without Horses

The development of the Takelma culture was focused on human power without the benefit of the draft animals. For at least 10,000 years prior to arrival of the white man, the Takelma Indians did not have horses and their trails were made by being used, by walking - "the beaten path."

Peter Skene Ogden was a fur trader and explorer for the Hudson Bay Company. His party's 1826 - 1827 expedition made the first documented exploration through the terrain that would be southern Oregon, including Hugo. On March 1-3, 1827 he was at an Indian village in present day Gold Hill. His men in the village noted a sickle and two China bowls. Ogden described the country as wild and the rivers too rushing and rocky to have good beaver hunting.¹⁵

On March 15, 1827 Ogden describes the difficulty of moving over the GCHills without a horse track on an Indian guided trip from the Jumpoff Joe Creek area to Cow Creek.¹⁵ The Indian guide had no experience with uses and limitations of horses when moving through mountainous

forested terrain. Evidently the guide felt like the path he traveled was also good for horses.

“ . . . we did not start until the arrival of our Trappers in the rear who made their appearance at 10 a.m. . . . at 11 a.m. we started and soon after commenced ascending which continued for an hour when we again descended . . . it was almost two [too] steep for our loaded Horses . . . our Guide has no idea of a Horse track and supposes where he can pass it will answer for Horses. . . . ”

Footnote VI-15. Hugo Emigrant Trails Committee, Hugo Neighborhood Association & Historical Society. May 24, 2008. *Hudson Bay Company Trappers: 1820s, I of VI*. Brochure 3A in Trapper's Trail Series. Hugo, OR. http://www.hugoneighborhood.org/BROCHURE_3A_Hudson_Bay_Company_052408.pdf

Ogden led five trapping expeditions between 1824 and 1829 to the "Snake River Country" (the upper reaches of the Columbia River) with the aim of discouraging American trappers from coming into the area. One of those five expeditions was the 1826 - 1827 trip. This expedition traveled through the Klamath country, a part of Oregon unknown to white men at the time, including the Rogue River valley.¹⁶

Footnote VI-16. Hugo Emigrant Trails Committee, Hugo Neighborhood Association & Historical Society. May 24, 2008. *Hudson Bay Company Trappers: Peter Skene Ogden, VI of VI*. Brochure 3F in Trapper's Trail Series. Hugo, OR. http://www.hugoneighborhood.org/BROCHURE_3F_Hudson_Bay_Company_Ogden_052408.pdf

Southern Oregon's mountainous terrain limited early transportation to walking, horseback, and pack animals. In 1826 - 1827, while following loosely connected Indian trails, Ogden made the first documented exploration through northern Josephine County and the Rogue River (Sasty River).¹⁸

Footnote VI-17. Hugo Emigrant Trails Committee, Hugo Neighborhood Association & Historical Society. May 24, 2008. *Ogden's 1827 Journey Through Northern Josephine County*. Brochure 4 in Trapper's Trail Series. Hugo, OR. http://www.hugoneighborhood.org/BROCHURE_4_Peter%20Ogden%201826_052408.pdf

It is likely that the very first horses in southern Oregon, a very few animals owned by the Klamath Indians in the 1820s, were taken from the herds of Nez Perce or other Snake River groups and then traded southwestward into the Klamath Basin. However, harsh climate and lack of winter feed took a deadly toll on these early animals. The first white explorer in the region, fur trapper Ogden, visited the Klamath Indians in December 1826. He wrote that the Klamaths' last surviving horse had perished from starvation that winter.¹⁸

To the west of the Cascades, in the Rogue River Valley, Ogden noted that the Shasta and Takelma Indians apparently had never seen horses before; they stared with amazement at the creatures. By the 1830s, however, Indian groups living on either side of the Cascades owned small herds of horses. Fur trappers had to be on guard when traveling through the region because stealthy native horsemen sometimes rode off with the trappers' mounts.¹⁸

Footnote 18. Rogue River-Siskiyou National Forest. July 30, 2006. *Horses And The Sky Lakes Wilderness*. Medford, OR. http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5351286.pdf

In summary, the development of the Takelma culture was focused on human power without the

benefit of the draft animals. For at least 10,000 years prior to arrival of the white man, the Takelma Indians did not have horses and their trails were beaten paths. Peter Skene Ogden was a fur trader and explorer for the Hudson Bay Company. In 1827 Ogden describes the difficulty of moving over the GCHills without a horse track on an Indian guided trip from the Jumpoff Joe Creek area to Cow Creek. The Indian guide had no experience with uses and limitations of horses when moving through mountainous forested terrain. Evidently the guide felt like the path he traveled was also good for horses. The authors have no information supporting the Takelma's use of horses in the Hugo region except for a few they might have stolen from fur trappers and emigrants or purchased from early settlers.

D. Evolution Of The Oxbow Of Indian Trail

The Grave Creek Hills Indian Trail was a walking trail without horses for at least 10,000 years until the 1820s. The Hudson Bay Company's trappers made the change from a walking trail into a walking and pack animal trail for the area they used in the 1820s which later in 1846 became the emigrant wagon trail. The Trappers also created the full oxbow of the trail by using the original Indian Trail (i.e., North Oxbow and West Oxbow segments), at which point they diverged from the NE-SW course of the Bummer Creek Indian Trail to the new SE pack trail route ([Map A1](#)).

1. Walking Trail: 10,000 Years - 1820s²⁰ The Takelma lived in semi-permanent villages during the winter and then broke up into smaller bands during fall, spring and summer to hunt, fish and gather food in the neighboring foothills.¹⁻² Their destination routes are like all human paths without technology – around the world they have proven to be the easiest routes to walk from place to place for very long distances. One of the villages was in the Bummer Creek drainage along the Bummer Creek Indian Trail ([Map 10](#)).

Indian trails and water courses set the routes of trails in the early part of white people's history in America. For a transportation route without bridge technology to be practicable, it must avoid the worst of the stream and river crossings, and utilize good ford sites where crossings are unavoidable. This is exactly how Takelma walking trails were located crossing the Rogue River in Josephine County, Oregon (e.g., Pearce Riffle Ford, Fort Vannoy Ford, etc.).

Indian trails often followed earlier trails created by deer and other animals. **They typically followed easy grades, wound around hills and other obstructions, and crossed rivers and streams at shallow crossings.** When possible, these trails followed streams and rivers, which provided escape routes and drinking water. In open areas, the trails offered views of the surrounding areas so that animals could see if enemies were near. Indians followed these animal routes for the same reasons, and European settlers would soon do the same. As the trails became worn from human use, they were marked by Indians for future travelers. A broken twig served as a pointing finger; a stroke of the axe or blaze on a tree served as a signal to turn in that direction; a sapling bent across the trail was a warning signal; a stick in the mud meant that there was no bottom; and a feather on a bush or located along the side of the trail meant that there were friends ahead or nearby.²⁰

The importance of the aboriginal trails of Ohio to the settlement and development of the state, hardly can be overestimated. In many instances they determined the location of the early white settlements as well as the

first forts and military roads, many of them later becoming permanent highways. They ranged in width from a mere trail threading the wilderness to paths of a few feet wide in the more open country and generally **followed the high ground between the water courses or hills and ridges adjacent to the streams.**²²

What these first inhabitants did use were wooded trails. Pennsylvania's moderate rainfall and light underbrush created the perfect environment for efficient and dry footpaths. Therefore, long before bridle paths, wagon roads, or motor highways were created, Native Americans were marking trails through the woods. These trails enhanced trade, promoted cultural diffusion, and created revenues for battle.²³

Then came the white man with his European ways and the paths at some places were too narrow for a horse so they made them wider and they became the pack trails.²⁴

The Takelma followed certain routes for trade, raiding, warfare, social interaction and contact, and maintaining kin relationships, but mostly for the annual seasons of following the food, especially the anadromous salmon.¹⁻² Topography and the natural resources had a great influence on the locations of the many primary ancient footpaths. These routes or trails were primarily made by walking. They were all season routes, and where possible the walking trails were located on lines of least resistance (e.g., level ground, ridges, saddles, etc.) that satisfied destination goals.

Indian paths have been characterized as being dry, level and direct.²¹ They avoided muddy winter wetlands where possible.

Footnote VI-19. Hugo Emigrant Trails Committee, Hugo Neighborhood Association & Historical Society. May 2005. *Mapping Action Plan for Applegate Trail Program, Appendix H - Ox Bow of Applegate Trail*. Hugo, OR.

Footnote VI-20. Wisconsin Historical Society. *Indian Trails and Wagon Roads*.

http://www.wisconsinhistory.org/archstories/early_roads/indian_trails.asp

Footnote VI-21. Conway, Emmett A. Sr., The Olde Forester. *Ancient Footpaths, Native American Indian Trails*.

<http://www.oldeforester.com/trails.htm>. Wallace, Dr. Paul A. W. 1965. *Indian Paths of Pennsylvania*. The Pennsylvania Historical and Museum Commission.

Footnote VI-22. Archeological Atlas of Ohio 1914. *Indian Trails And Towns In Ohio*.

<http://www.railsandtrails.com/Maps/OhioArch1914/trails.htm>

Footnote VI-23. The Bucknell Environmental Center Bucknell University *Sunbury: A History*. Lewisburg, PA.

http://www.departments.bucknell.edu/environmental_center/sunbury/website/HistoryofIndianTrails.shtml

Footnote VI-24. *The Main Indian Paths And Migration Trails In Pennsylvania*

<http://noel.mcn.org/Westmoreland/MigrationTrails.htm>

In summary, The Takelma lived in semi-permanent villages during the winter and then broke up into smaller bands during fall, spring and summer to hunt, fish and gather food in the neighboring foothills.

Indian trails often followed earlier trails created by deer and other animals. They typically followed easy grades, wound around hills and other obstructions, and crossed rivers and streams at shallow crossings. The trails ranged in width from a mere trail threading the wilderness to paths of a few feet wide in the more open country and generally followed the high ground between the water courses or hills and ridges adjacent to the streams.

The Takelma followed certain routes for trade, raiding, warfare, social interaction and contact,

and maintaining kin relationships, but mostly for the annual seasons of following the food, especially the anadromous salmon. Topography and the natural resources had a great influence on the locations of their many primary ancient footpaths. These routes or trails were primarily made by walking. They were used year around, and where possible, the walking trails were located on lines of least resistance (e.g., level ground, ridges, saddles, etc.) that satisfied destination goals.

The Grave Creek Hills Indian Trail was a walking trail without horses for at least 10,000 years until the 1820s. It was developed by walking and located along lines of least resistance. It is characterized as being dry, level, and direct within the confines of the mountain topography (e.g., following and crossing ridges, saddles, etc.). If at all possible, its location avoided winter wet areas.

Indian trails and water courses set the routes of trails in the early part of white people's history in America. The white man with his European ways, found the paths at some places were too narrow for a horse and soon they were made wider and became the pack trails.

a) Ridges Of North Oxbow The working hypothesis was that the Takelma, where possible and like the Euro-Americans over the long term, were going to use year around trails that avoided winter wet lands and they generally traveled drier ridges where possible. This hypothesis was adopted from interpretations of the OCTA *MET Manual's* guidelines for locating wagon trails in mountainous and forested terrain.^{21 - 22}

1. In hilly or mountainous terrain, emigrant wagons generally followed ridges or higher elevations rather than gullies, ravines, or canyons. Evidence of trails is likely to be found on ridges rather than down or up narrow canyons or ravines.
2. Staying high would usually avoid seasonal muddy ground that could trap them. Staying high also mostly avoided the deeper sections of gullies which when crossing required that the sides be dug out and the bottoms filled in to allow the passage of the wagons. This strenuous labor usually kept the wagons higher uphill where the cuts were more shallow.
4. When encountering hills on steep ascents or descents, wagons normally traveled directly up or down to avoid sideling or side hilling on steep slopes. Trails traversing along the sides of slopes will usually not be emigrant wagon trails. Exceptions might be where there was either no alternative to a steep slope or the slope angle was not steep enough to make wagons unstable.
5. Generally, wagons ascended and descended on the spine of a ridge rather than up or down gullies. Therefore, an unnatural drainage on the spine of a hill may indicate a one-time wagon trail.

The ridge analysis relies on field work and USGS topographic maps. The detail and scale are good for the 1901 - 1902 USGS map and excellent for the 1954, and 1998 maps, especially the 1998 map ([Map A4](#); [Map A5](#); [Map A6](#)).

Map A4.	Hugo's Ridges & Passes: 1901 - 1902
Map A5.	Hugo's Ridges, Passes, & Creeks: 1954
Map A6.	Topographic Features & Roads North Of Garbers Pass: 1998

The E-W Indian trail through the ridges of the North Oxbow was dry and above the lower

wetlands (Map A3). At its western end it was along the NW-SW axis of Penny Ridge (Map A5; Map A6). It also side-hilled four N-S ridges on the North Oxbow versus traveling uphill or downhill (Map A6).

R#1	Penny Ridge
R#2	Wooden Culvert Ridge
R#3	Open Field Ridge
R#4	Knob Ridge

The west half of the North Oxbow could have been easily described as hilly by the Takelma. However, it is doubted that they thought of it as rough, even with its sharp dips, as this segment of the trail was overall fairly level following the saddles through the ridges maintaining an estimated elevation of approximately 1,600' - 1,650' (Map A6).

The Takelmas burned their lowlands and a short route along a seasonal stream or lowlands associated with a ridge could not be ruled out (i.e., area south of Penny Ridge split). The alternate routes of the 1855 Indian trail “IT-4 Bummer Creek Prairie” site to Indian trail “IT-3/JA-13 Penney Ridge” site are exclusively ridge travel or ridge travel with some bottom land travel (Map A2).²⁵⁻²⁶

Alternative Route 1.	Ridge Route: 1855 GLO Indian Trail to 1856 GLO Plat Applegate Trail Route
Alternative Route 2.	Ridge Route to 1856 Applegate Trail
Alternative Route 3.	Stream and Ridge Route to 1855 Applegate Trail Site IT3/JA-13
Alternative Route 4.	Lowland and Ridge Route to 1855 Applegate Trail Site IT3/JA-13

All four alternative routes are consistent with the Indian Trail in the Bummer Creek drainage from IT-1 at Grave Creek Hills Pass (i.e., Mt. Sexton Pass) to Indian Trail site IT-7 as a relatively straight SW-NW course (Map 10). They are also consistent with the GLO map as the surveys were only conducted along sections lines and interior depictions were professional art work. Walking the ridge line north of the “IT-3/JA-13 Penney Ridge” site (i.e., west Oxbow) increases in elevation along Penny Ridge until reaching the foot of the GCHills where the North Oxbow is mostly above the winter wet lands.

Penny Ridge is the western ridge of the four ridges of the North Oxbow. Both ends of the North Oxbow are found on the ground: 1. West end is Penny Ridge, and 2. East end is White’s approximate .18 mile E-W pasture road (Map A3; Map A6).

Footnote VI-25. Public Outreach & Educational Brochure Committee for Hugo’s Emigrant Trails, Hugo Neighborhood Association & Historical Society. July 27, 2005. *Guidelines For Locating Wagon Trails: Mountainous & Forested Terrain*. Brochure 12 in Emigrant Trails Series. Hugo, OR.

http://www.hugoneighborhood.org/BROCHURE_12_Locating_Wagon_Trails_072705.pdf

Footnote VI-26. Office of National Trails Preservation & Oregon-California Trails Association. July 2002, 4th edition. *Mapping Emigrants Trails MET Field Manual*. Independence, MO.

In summary, the working hypothesis was that the Native Americans, where possible, were going to use year around trails that avoided winter wet lands and generally traveled drier ridges where

possible. The trail through the ridges of the North Oxbow were dry and above the lower wetlands while using NE-SW Penny Ridge in the west and four north-south ridges versus traveling up or down them. The west half of the North Oxbow could have been easily described as hilly by the Takelma. However, it is doubted that they thought of it as rough, even with its sharp dips, as this segment of the trail was overall fairly level following the saddles through the ridges.

The Takelmas burned their lowlands and a short route along a seasonal stream or lowlands associated with a ridge could not be ruled out (i.e., area south of Penny Ridge). There are several possible routes of the 1855 Lowland Takelma Indian Trail from the IT-4 site to the Indian Trail "IT-3/JA-13 site. Even with the slight course change up Penny Ridge and the eastern route through the ridges, all alternative routes are consistent with the general SW-NW course of Indian trail in the Bummer Creek drainage.

Penny Ridge is the western ridge of the four ridges of the North Oxbow and the western end of the North Oxbow.

b) Soils Of Maple Creek Wetlands The main soil for most of the route of the North Oxbow is the 42D–Holland sandy loam, cool soil with 12 to 20 percent slopes between 1,600' and 1,800' elevation ([Map A3](#)).^{27 - 28} This soil is well drained and steep. It is located on the fans and hills of GCHills.

Just beyond the eastern end of the North Oxbow was the GCHills Pass at an elevation of approximately 2,100 feet along the *Trail*. Traveling west, the elevation rapidly dropped to between 1,600' and 1,800'. For better year around capability, it was desirable for a trail to be at a higher elevation away from winter wetlands.

The Maple Creek Winter Wetlands' 38C Foehlin gravelly loam soil has 3 to 12 percent slopes (pps 54-55).²⁷ This deep, well drained soil is on alluvial fans and low stream terraces. It formed in alluvium derived dominantly from metamorphic, granitic, and ultramafic rock. Typically, the surface layer is very dark grayish brown gravelly loam about 13" thick. The upper 35" of the subsoil is dark brown gravelly clay loam. The lower 12 inches is brown clay loam. The substratum to a depth of 66 inches or more is brown gravelly clay loam. The average annual precipitation is about 30 to 60 inches.²⁷

Permeability of this Foehlin soil is moderately slow. Available water capacity is moderate to high at about 7.5" to 11".²³ A high available water capacity is better understood with the definition of a very high available water capacity which is the largest capacity category at more than 12" (p 161). Water supplying capacity is 17" to 19". Soils with smaller particles (silt and clay) have a larger surface area than those with larger sand particles and a large surface area allows a soil to hold more water. In other words, a soil with a high percentage of silt and clay particles, which describes fine soil, has a higher water-holding capacity. Effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is slight.²⁷

This soil unit is well suited to irrigated hay and pasture. Buildings and roads should be designed to offset the limited ability of the soil to support a load. If this unit is used for homesite development, the main limitations are the potential for shrinking and swelling of the soil and moderately slow permeability. Shrinking and swelling can damage roads, dams, building foundations and other structures (p 165).²⁷ If this unit is used for homes the Foehlin soils are limited by moderately slow permeability, low soil strength, and shrinking and swelling of the subsoil (p 8).²⁷ The possibility of settlement can be minimized by compacting the building site before construction is begun. Septic tank absorption fields may not function properly during the rainy periods because of moderately slow permeability.²⁷

Footnote VI-27. United States Department of Agriculture. Soil Conservation Service. December 1983. *Soil Survey of Josephine County, Oregon*. (OR033) (Now Natural Resources Conservation Service (NRCS)).

Footnote VI-28. U.S. Geological Survey, U.S. Department of the Interior. 1998. *Merlin Quadrangle, Oregon-Josephine Co., 7.5-Minute Series (Topographic)*. Scale 1:24,000, and contour interval 40 feet. Denver, CO.

Permeability refers to the ability of water to move downward through the soil profile. With this in mind, there could be standing water problems with any soil types that do not allow the water to infiltrate fast enough. Any soil with a permeability of moderately slow to very slow may puddle.^{28B}

Footnote VI-28B Mohr, Jesse & Melton, James. June 2001. *Inventory, Assessment and Recommendations for the TESC Trail System*. 6.1-Development of Soils Field, p. 13. Evergreen State College. Olympia, WA.
http://www.evergreen.edu/committee/cluc/docs/trail_report.pdf

The above identified soil characteristics were from a Soil Conservation Service (SCS) soil survey designed to address the soil opportunities and limitations for development based on modern human technology. The following assumptions interpret the soil information in the context of the Takelma Indians which did not have horses and their trails were made by being used, by walking and creating “the beaten path.”

- The North Oxbow was mainly located in 42D–Holland sandy loam soil with 12% - 20% slopes.
- If 38C soil was used for semi-permanent village structures or trails, the main limitations are the potential for shrinking and swelling of the soil and moderately slow permeability.
- Shrinking and swelling can damage Indian trails located in 38C soil.
- The 38C soil with a permeability of moderately slow can puddle during the raining season causing localized mud spots along a trail.
- Semi-permanent village structures are limited by moderately slow permeability, low soil strength, and shrinking and swelling of the 38C soil.
- The possibility of sinking can be minimized by compacting the semi-permanent village structures sites before construction is begun.

The HNAT’s overall opinion is that the Takelma’s semi-permanent village structures and Indian trails were not designed to offset the limited ability of the 38C soil to support a load, its moderately slow permeability, nor for its shrink swell characteristics. These developments were located to avoid the limitations of the 38C soil by avoiding the locations of this soil.

What is obvious is that the 1856 GLO plat’s depiction of the North Oxbow’s location is mainly in 42D soils; except for a short distance where it was not located on the lower elevation Maple

Creek Winter Wetlands' soil - 38C (Map A3).^{27 - 28} This location fits the MET guidelines for locating wagon trails in mountainous and forested terrain.^{21 - 22}

1. In hilly or mountainous terrain, emigrant wagons generally followed ridges or higher elevations rather than gullies, ravines, or canyons.
2. Staying high would usually avoid seasonal muddy ground that could trap them.
5. Generally, wagons ascended and descended on the spine of a ridge rather than up or down gullies.

The north half of the West Oxbow is along Penny Ridge. The east half of the North Oxbow avoids seasonal muddy ground that could trap immigrant wagons. Both ends of the North Oxbow are found on the ground: 1. West end is Penny Ridge, and 2. East end is White's approximate .18 mile E-W pasture road (Map A3; Map A6).

There is an apparent conflict with the slope of the west half of the North Oxbow and the sideling criteria in the first part of guideline No 4. until one reads the second part on exceptions.

4. When encountering hills on steep ascents or descents, wagons normally traveled directly up or down to avoid sideling or side hilling on steep slopes. Trails traversing along the sides of slopes usually will not be emigrant wagon trails. Exceptions might be where there was either no alternative to a steep slope or the slope angle was not steep enough to make wagons unstable.

The main soil for most of the route of the North Oxbow is the 42D–Holland sandy loam, cool soil with 12 to 20 percent slopes. The HNAT's hypothesis is that an approximate 20% slope is the limit for a sliding slope that can not be traversed by the average emigrant wagon on this leg of the Applegate Trail without holding ropes or some other assistance. It believes the validity of this hypothesis was that the four ridges and the 12 to 20 percent 42D slopes on the west half of the North Oxbow were identified as bad roads (i.e., rough, hilly and sidling) by emigrant diaries, but the bad roads were not identified as requiring a significant amount of time to overcome with additional work such as using ropes.

In summary, the Foehlin soil 38C has moderate permeability, low soil strength, and shrinking and swelling of the subsoil. These reasons are valid for the location of the North Oxbow which avoids this winter wetland soil where possible.

The SCS soil characteristics found in its soil survey were designed to address the soil opportunities and limitations for development based on modern human technology. The limitations were interpreted in the context of the Takelma Indians' relatively modest technology without horses. For example, their trails were made by being used, by walking and creating "the beaten path."

- The North Oxbow was located in 42D soil with 12% - 20% slopes.
- If 38C soil was used for trails, the main limitations are the potential for shrinking and swelling of the soil and moderately slow permeability.
- Shrinking and swelling can damage Indian trails located in 38C soil.

- The 38C soil with a permeability of moderately slow can puddle during the raining season causing localized mud spots along a trail.

The HNAT's overall opinion is that the Takelma's semi-permanent village structures and Indian trails were not designed to offset the limited ability of the 38C soil to support a load, its moderately slow permeability, nor for its shrink swell characteristics. These developments were located to avoid the limitations of the 38C soil by avoiding the locations of this soil.

The HNAT's hypothesis is that an approximate 20% slope is the limit for a sliding slope that can not be traversed by the average emigrant wagon on this leg of the Applegate Trail without holding ropes or some other assistance. It believes the validity of this hypothesis was that the four ridges and the 12 to 20 percent 42D slopes on the west half of the North Oxbow were identified as bad roads (i.e., rough, hilly and sidling) by emigrant diaries, but the bad roads were not identified as requiring a significant amount of time to overcome with additional work such as using ropes.

The physical facts are that both ends of the North Oxbow are found on the ground: 1. West end is Penny Ridge logging road, and 2. East end is White's approximate .18 mile E-W pasture road ([Map A3](#); [Map A6](#)).

What is obvious is the North Oxbow's avoidance of most of the 38C's soils. This avoidance location fits the MET guidelines for locating wagon trails in mountainous and forested terrain.

2. Walking and Pack Animal Trail: 1820s - 1846²⁹ While the land known as Oregon was under a provincial government from 1841 to 1849, trails followed the lines of least resistance. For example, early fur traders, missionaries, and explorers made extensive use of the established network of Indian trails.

In the mid-1820s the Hudson Bay Company's trappers made the change from a walking trail into a walking and pack animal trail for the Indian trails they used. They also created the full oxbow of the trail by using the original Indian Trail (i.e., North Oxbow and West Oxbow segments), at which point they diverged from the NE-SW course of the Bummer Creek Indian Trail to the new NW-SE Oxbow pack trail soon traversing over Garbers Ridge and south to the Sacramento beavers ([Map A1](#)).

Southern Oregon's mountainous terrain limited early transportation to walking, horseback and pack animals. The walking and pack trail took off after 1825 with the Hudson Bay Company trappers under Thomas McKay and Finan McDonald, when they followed Indian trails through the Rogue River valley. Other expeditions by the company continued into the 1840s. The Grave Creek Hills Indian Trail walking trail was blazed wider to accommodate horse and mule pack trains. The trappers utilized the Indian trail's North Oxbow above the seasonal muddy low land in Maple Creek to the West Oxbow to a point where the Indian Trail did not proceed south, and where the trappers needed to travel NW-SE.

Besides the Hudson Bay expeditions, the sparsely used Trapper's Trail, as it would be called, witnessed three livestock drives beginning in 1834. In 1841 Lt. Emmons, an officer of the Exploring Squadron of Charles Wilkes, led an expedition through the Rogue Valley enroute to Yerba Buena (San Francisco). By 1844 California settlers, led by Stephen Meeks, followed the Hudson Bay Company's trail north to the Willamette Valley.

Before the Hudson Bay trappers and their pack trains, the Indian trail over GCHills was a walking trail. After that it became a mixed walking and pack animal trail (i.e., mules and horses). After the Rogue River Indian War of 1855 - 1856 when most of the natives were removed from the valley, it slowly became predominately a wagon trail.

- Hugo's Indian Trail: 10,000 Years
- Hudson Bay Company Trappers: 1820s - 1840s
- Peter Ogden's 1826 Journey Through Northern Josephine County
- Livestock Drives North to Willamette Valley: 1830s
- United States Exploring Expedition: 1841
- Col. Fremont: 1843
- Meeks Settlers North to Willamette Valley: 1844

Footnote VI-29. Hugo Emigrant Trails Committee, Hugo Neighborhood Association & Historical Society. May 24, 2008. *Trapper's Trail Brochure Program*. Brochure 1 in Trapper's Trail Series. Hugo, OR.

In summary, all trails follow lines of least resistance. For example, early fur traders, missionaries, and explorers made extensive use of the established network of Indian trails. The Hudson Bay Company's trappers made the change from a walking Indian trail into a walking and pack animal trail for the area they used which later became the emigrant wagon road. The trappers also created the full oxbow of the trail by using the original Indian trail (i.e., North Oxbow and West Oxbow segments), at which point they diverged from the NE-SW course of the Bummer Creek Indian Trail to the SE.

Southern Oregon's mountainous terrain limited early transportation to walking, horseback, and pack animals. The walking and pack trail took off after 1825 with the Hudson Bay Company trappers under Thomas McKay and Finan McDonald when they followed Indian trails through the Rogue River valley. Other expeditions by the company continued into the 1840s. The Grave Creek Hills Indian Trail walking trail was blazed wider to accommodate horse and mule pack trains. The trappers utilized the Indian Trail above the seasonal muddy low land in Maple Creek to the middle of the West Oxbow where the Indian trail did not proceed south to the Sacramento, California area, the trappers' ultimate destination.

During the time of the Hudson Bay Trapper the Indian trail had become a mixed walking and pack animal trail (i.e., mules and horses) until the first emigrants along the new Applegate Trail in 1846.

3. Walking, Pack Animal, and Wagon Trail: 1846 - 1883 The Indian trail was marginally improved and with a few detours eventually became the Applegate Trail in 1846. Peter Burnett's ragged regiment with 150 men passed through the valley enroute to the California gold fields in 1848. In 1853 further improvements were made to the *Trail* in the GCHills by Major B. Alvord.

In 1846 little to no wagon work had been done on the Indian trail, widened to a horse trail, over the unnamed GCHills Pass. An old Indian trail over the mountain which was periodically used by travelers, especially trappers, was used by the South Road Expedition until its course went southwest down Maple, Bummer, Quartz, and Jumpoff Joe creeks to the Rogue River while the South Road Expedition wanted to travel south. Except for Jumpoff Joe Creek and Louse Creek, the creeks in the Hugo area were not named in 1846. In 1856 the Indian trails in the Hugo and Grave Creek areas were documented on the GLO 1856 plat with a general E-W orientation up and down creeks to the Rogue River.

- Applegate Trail North to Willamette Valley: First Year 1846
- Burnette's Ragged Regiment South to California Gold Fields: 1848
- Donation Land Claimers: 1850 - 1855
- 1853 Military Road
- Rogue River Indian War: 1855 - 1856
- Pacific Railroad Survey: 1855

Diaries, journals, letters, and reminiscences about the Indian Trail over GCHills (i.e., Jacksonville Road) are considered sparse by some and enlightening by others.^{30, 31, & 32}

Footnote VI-30. Diaries, Journals, Letters & Reminiscences. Hugo Neighborhood Association & Historical Society. <http://www.hugoneighborhood.org/diaries.htm>

Footnote VI-31. Rose, Karen. 2002? portion of *Yellow Book*. Hugo Neighborhood Association & Historical Society. Hugo, OR. <http://www.hugoneighborhood.org/COMPOSITE.pdf>

Footnote VI-32 Boling, Rarey, Rose, & Walker. February 22, 2012. *Telegraph Lines and Applegate Trail at Smith Hill Pass*. For Hugo Neighborhood Association & Historical Society & Josephine County Historical Society. Hugo, OR. http://www.hugoneighborhood.org/miscellaneous_research_papers_and_documents.htm

Under the territorial government, 1849 - 1859, landowners built local ways adjacent to their holdings — in the main, farm-to-market roads established to give farmers access by horse and wagon to trading centers and rail points. Some of those trails carried a light surface of gravel or rock. But most were earth roads and were generally impassable during the winter months. Both ends of the North Oxbow are found on the ground: 1. West end is Penny Ridge, and 2. East end is White's approximate .18 mile E-W pasture road ([Map A3](#); [Map A6](#)).

The 1846 and 1847 diary evidence from pioneers along the *Trail* do not provide much information on the Lowland Takelma Indian trails. Of special interest are quotes from emigrants Virgil Pringle and Lester Hulin. 1846 Pioneer Virgil Pringle recorded a good camp at Jumpoff Joe Creek (i.e., Pleasant Valley) and a bad road later. The "bad road" was probably the North Oxbow ridges over the GCHills.

There is valid written documentation (i.e., diaries & reminiscences) to support the authenticity of the *Trail*. Diaries and reminiscences from the 1846 and 1847 emigrant wagon trains clearly identify the terrain on both sides of the GCHills' narrow pass (i.e., later identified as Smith Hill

Pass: presently named Mt. Sexton Pass) as the route of the *Trail* (Diary Evidence from *Telegraph Lines and Applegate Trail at Smith Hill Pass* (pages 23 - 25).³²

By early August 1846, the South Road Expedition had traveled east to Fort Hall and on August 9, 1846 a large group of wagons set out west from Fort Hall to use the Applegate Trail to the Willamette Valley. By mid-October 1846, the emigrants were traveling from the south toward the rugged mountainous terrain on the Trappers' Trail toward the unnamed Grave Creek Hills (i.e., Mt. Sexton Pass). The following quotes, in relevant part, are from "*The Applegate Trail of 1846*" by William Emerson.

"The wagon company traveled north about eight miles and crossed Jump Off Joe Creek. . . ."

"From here the emigrants had to cross Sexton Mountain. The road builders traveling before them had done little to cut a road for the wagons. The wagons could not go any further without doing more to provide a road. Virgil Pringle, Levi Scott and others had to take their axes and cut through the undergrowth to clear a way for the wagons to cross. In some places, the emigrants had to take down the wagon bows to get through. They edged their way along in single file as Levi Scott and others cleared a path for the wagons to follow. They worked through the day and into the night. Sometime after dark they stopped having managed to make a total of about six miles through Sexton Mountain and beyond."

1846 Pioneer Virgil Pringle recorded a good camp at Jumpoff Joe Creek (i.e., Pleasant Valley). The "bad road" was probably the North Oxbow's ridges and *Trail* route over the mountain pass.

"Saturday, October 17 – Travel 8 miles, road good and a good camp which is not common, the country being mostly burnt. 8 – 2,218 miles.

Sunday, October 18 – Have some bad road that takes till after dark to go 6 miles. 6 miles.

Monday, October 19 – Move one mile to a camp, having none last night, and spent the day burying Mr. Crowley's daughter, who died yesterday evening, age about 14 years. 1 mile."

1846 Pioneer Quinn Thornton's reminiscences recorded a horse trail too rough for wagons.

"After crossing the Rogue River, the emigrants came to a stretch of country before reaching Louse Creek, where the road-workers had done nothing so were brought to a halt. The horse trail being too rough for wagons. Levi Scott went ahead and eventually found a place that by cutting through thick brush for about 200 yards they could pass the wagons. The same situation also faced the emigrants reaching Jump Off Joe Creek and after pass over Sexton Mount to descend to Rat Creek."

1846. Pioneer Levi Scott's reminiscences provide more details of a horse trail too rough for wagons (i.e., they had to cut out the line through the woods at Louse Creek, again compelled to stop at Jumpoff Joe Creek and cut through to open ground beyond, and finally through heavy timber and thick bushes on the north side of Mt. Sexton the train was frequently compelled to stop and remove the obstacles, thick bushes by the roadside so narrow that if a wagon stopped, those behind could not pass).³³

“We traveled down Rogue River about forty or fifty miles, and crossed it at a place where the ford was rather deep and rough. It is a swift, turbulent, and rapid stream, and there are not many places where it can be forded with safety, even late in the fall when it is at its lowest.”

“The second day after we crossed Rogue River, we came to a place where the road cutters had done nothing, and it was impossible for us to pass with the wagons. So the train was brought to a halt. I went forward, and after searching for a long time I found a place where we could pass by cutting through the thick bushes for about a furlong. The place where the horse trail passed was too rough, and could not easily be made passable for wagons. We went to work on the line I had blazed out, and cut our way through the woods, which brought us out near the Tetalum, or Louse Creek, as it is now called, by the realistic and unpoetical people who live along its banks.”

“. . . after pass this place, we reached the Jump-off-Jo [Footnote 30], where the road cutters had again done nothing, and we were compelled to stop and cut our way through to the open ground beyond, which occupied us for several hours, working all the available force of the company.”

“. . . from here we struck the head of a small branch running [Rat Creek] into Grave Creek which we followed to its junction, through heavy timber and thick bushes. The road had been so poorly opened that the train was frequently compelled to stop and remove the obstacles that ought to have been cleared away by the party in advance of us.”

“As we came down this branch Miss Leland Crowley died. The wagon in which the sick girl lay stopped while she was dying, and those behind could not pass. This made a breach in the train, as those in front still continued to advance without noticing that those in the rear were delayed.”

“This circumstance, perhaps, caused the Indians who were constantly skulking in the woods near us to become more bold and to venture upon us more closely. They shot one of the oxen of Virgil K. Pringle as it stood in the team with an arrow, wounding it so that the animal soon died. Yet the savage who aimed the arrow from the thick bushes by the roadside was so completely concealed that he was not seen at all, for it was late in the twilight of the evening.”

“The next morning we moved up a little, and crossed the main creek, where we stopped to bury the dead girl. Mrs. Tabitha Brown, a generous and noble-hearted widow lady, who afterwards founded the College at Forest Grove in the Tualatan Plains, gave the upper side-boards of her wagon to make a coffin.”

Footnote VI-33. Collins, James Layton, Editor. July 1967. *Capt. Levi Scott*. Not published. Sitka, AK.

Footnote VI-34. Hugo Neighborhood Association & Historical Society. September 10, 2009, Updated October 15, 2010. *JR Ford No. 6: Jumpoff Joe Creek Ford*. Brochure 7 of Applegate Trail Fords Brochure Series. Hugo, OR.

The following quote, in relevant part, is from Lester G. Hulin, 1847 emigrant.

“W 19th. Upon leaving camp soon came to a fine creek [Jump Off Joe Creek], then bad roads entered (rough, hilly and sidling), but by night we were in a valley with good camping ground at hand [On Grave Creek in Sunny Valley]; distance 8 miles.”

The ridges ([Map A6](#)) of the North Oxbow are rough, hilly, and would have necessitated side hilling or sidling. However, it is not positively known whether the ridges of the North Oxbow are the bad roads identified by the 1846 emigrant Pringle, and the bad roads (rough, hilly and sidling) identified by 1847 emigrant Hulin. Another candidate for possible sidling is down the east side of Rat Creek. At this date the HNAT has not developed a ridge analysis similar to its work for the North Oxbow (Section IV.D.1.a)).

What is known as a fact is that the ridges segment of the North Oxbow along the Applegate Trail over the GCHills is unique and not repeated in Rat Creek. The ridges section of the North Oxbow fits the emigrants' descriptions perfectly (Section V.D.1.a)).

The oxbow of the walking and pack trail was a result of the Hudson Bay Company's trappers making the change from a walking trail into a walking and pack animal trail for the area they used (i.e., North Oxbow and West Oxbow segments), and creating a new pack trail south from the NE-SW course of the Bummer Creek Indian Trail soon traversing over Garbers Ridge and pass ([Map A4](#); [Map A6](#)).

Later emigrants blazed wider an existing walking and pack trail which satisfied their inclination to avoid seasonal muddy ground (e.g., Maple Creek Wetlands) that could hinder them and side hilling that could tip wagons. In 1846 an effort was expended in energy and time to widen the Trapper's Trail at the unnamed Sexton Mountain Pass and north along unnamed Rat Creek to Grave Creek, but not as much as if the emigrants had hacked a brand new trail in the brush and trees. No work was done to widen the trail if a wagon had to stop anywhere in the train; all wagons also halted after the stopped wagon.

In summary, in 1846 little to no wagon work had been done on the Indian trail, widened to a horse trail, over the unnamed GCHills Pass. The walking Indian trail and Hudson Bay pack trail was marginally improved by widening it for wagon passage. This was one way traffic through hostile Indian country and the settlers were not improving the trail for future all season use. Peter Burnett's ragged regiment with 150 men passed through the valley enroute to the California gold fields in 1848. The regiment had to at least provide a minimum one way wagon passage in the other direction – to the south. In 1853 Major B. Alvord made the first improvements to the *Trail* for future emigrant and military traffic near the pass of the GCHills. The Indian trails in the Hugo and Grave Creek areas were depicted on the GLO 1856 plat with a general E-W orientation up and down creeks to the Rogue River. The emigrant road over GCHills was also depicted.

Diaries and reminiscences from the 1846 and 1847 emigrant wagon trains identify the terrain on both sides of the GCHills (i.e., Grave Creek Hills Indian Trail and *Trail*) and pass (i.e., later Smith Hill Pass and finally Sexton Mountain Pass) as the route of the *Trail*. The ridges topography of the North Oxbow fits the emigrants' descriptions of a *bad, rough, hilly, and sidling road* perfectly.

The 1846 and 1847 diary evidence from pioneer emigrants Virgil Pringle and Lester Hulin is important. In 1846 pioneer emigrant Virgil Pringle recorded a good camp at Jumpoff Joe Creek (i.e., Pleasant Valley) and a bad road later. The "bad road" was probably the North Oxbow ridges over the GCHills. A 1847 pioneer emigrant Lester G. Hulin identified the bad roads as rough, hilly and sidling. There is valid written documentation (i.e., diaries & reminiscences) to support the authenticity of the *Trail*.

Both ends of the North Oxbow are found on the ground: 1. West end is Penny Ridge, and 2. East end is White's pasture road. The ridges of the North Oxbow are rough, hilly, and would have necessitated side hilling or sidling. However, it is not positively known whether the ridges of the North Oxbow are the bad roads identified by Pringle and Hulin. Another candidate for possible sidling is down the east side of Rat Creek which, to date, does not have a ridge analysis.

What is known as a fact is that the ridges segment of the North Oxbow along the *Trail* over the GCHills is unique and not repeated in Rat Creek. The ridges section of the North Oxbow fits the emigrants' descriptions perfectly.

E. Trail Interpretations

The HNAT considered known and unknowns for the Takelma Indian trails based on principles in OCTA's MET Manual that it adopted for Indian trails.

*"Emigrant trails often defy modern reasoning on the route these trails should have taken."*²² This statement is even more applicable to Indian trails based on manual labor of a Native culture without draft animals when evaluated by a Euro-American culture of expansionist ambitions encouraged by the doctrine of Manifest Destiny, a belief that the American conquest of the Western frontier was divinely ordained, including today's technological reasoning culture.

*Though it may not apply in all situations, as a general rule the closer in time the evidence is in relation to the trail under investigation, the more reliable that evidence becomes.*²² The 1855 GLO survey notes and the 1856 GLO plat are the best and only professional location information for a time period when the Indian trails were actually being used by the Takelmas.

Was there an Indian trail over the GC Hills? Was there an oxbow of the Indian trail over the GC Hills? Why the oxbow turn in sections 22 and 27 of Hugo's portion of the *Trail*? Why didn't the emigrants travel straight up the draw in the location of today's Hasis Drive? We speak of the 180 degree switchback curve as an oxbow because in later years (ca., 1874 - 1913) the wagon road was shortened by going straight up the mountain close to Maple Creek and, at that time, the switchback section was not the only route for through traffic. The HNAT's interpretations of the analysis and answers to the questions are four.

1. Grave Creek Hills Indian Trail Existed.
2. Oxbow In Indian Walking Trail Did Not Exist.
3. Oxbow Developed By Hudson Bay Trappers' Pack Trail.
4. Oxbow Pack Trail Used And Widened By Emigrants In Wagons.

1. Grave Creek Hills Indian Trail Existed What is seemingly unknown from the 1856 GLO Plat for T.34S., R.6W., WM (Section III; [Map 9](#))² was whether there was an Indian trail over the GCHills. It was the question about the Indian Trail not being depicted on the plat.

"Why is there not an Indian Trail depicted on the 1856 GLO Plat over the Grave Creek Hills?"

The working hypothesis was that the 1855 GLO township survey for T.34S., R.6W., W.M. and the 1856 GLO Plat (along section lines), are correct for Indian trails and Applegate Trail surveyed points: An Indian trail over the GCHills existed (Section II.C). The simple answer was because the Indian Trail over GCHills was first in time on the ground (Section I.B). The original Indian Trail over GCHills was under the more modern Jacksonville wagon road depicted on the 1856 GLO Plat. The termination of the Bummer Creek Indian Trail in Section 27 at the Jacksonville wagon road, meant that from that point north, the Grave Creek Hills Indian Trail to the Grave Creek Indian Trail, was in the same location as the wagon road that obliterated it (Section V.C).

The most important corroboration for the credibility of the 1856 GLO Plat interpretation that there was an Indian trail over the GCHills was Frances Johnson (Section VI.B). She had been a Takelma Indian living at the time the Indian trail was in use, and told professionals of the Indian trail. In 1933, she was one of the last Takelmas from 1856. Frances was Sapir and Harrington's Lowland Takelma Indian informant for the Hugo region. She had many personal memories of the Rogue River, her village, Rainie Falls, the medicine rock, and Grave Creek.

As background the development of the Takelma culture was focused on human power without the benefit of the draft animals. For at least 10,000 years prior to arrival of the white man, the Takelma Indians did not have horses and their trails were made by being used (i.e., by walking). In 1827 Peter Skene Ogden, a fur trader and explorer for the Hudson Bay Company, described the fact that the Takelma had no horses. Therefore, the Grave Creek Hills Indian Trail was a walking trail without horses until the 1820s. It was developed by walking and located along lines of least resistance. The Indian trail is characterized as being dry, level and direct, within the confines of the mountain topography (e.g., following and crossing ridges, saddles, etc.).

The Takelma used year around trails that avoided winter wet lands and generally traveled drier ridges where possible. What is obvious, is the North Oxbow's avoidance of most of the 38C wetland soil. The trail through the ridges of the North Oxbow while dry and above the lower wetlands traveled north-south while using Penny Ridge in the west, but then traversed four more north-south ridges on east-west directions versus traveling up or down them. The west half of the North Oxbow could have been easily described as hilly by the Takelma. However, it is doubted that they thought of it as a rough walking trail, even with its sharp dips, as this segment of the trail was overall fairly level following the saddles through the ridges.

In summary, the HNAT's working hypothesis that the 1855 GLO township survey for T.34S., R.6W., W.M., and the 1856 GLO Plat is correct for its Indian trail and Applegate Trail surveyed points, including IT- 4, IT-3/JA-13, and IT-2/JA-14, and that it existed over the GCHills, but incorrect in that there was no oxbow in the Grave Creek Hills Indian Trail. There was an oxbow in Hudson Bay Trappers' pack trail and there was an oxbow in the *Trail* in 1855.

2. Oxbow In Indian Walking Trail Did Not Exist With the statement of fact that there was an Indian trail over GCHills, the other question about the Indian trail followed.

“Why the Oxbow of the Indian Trail over Grave Creek Hills?”

It turns out that there was no oxbow in the Indian trail over GCHills. The working hypothesis that the 1855 GLO township survey for T.34S., R.6W., W.M., and the 1856 GLO Plat (along section lines) were correct for Indian trails and Applegate Trail surveyed points, including the Indian trail, but it was incorrect per the hypothesis: An Oxbow of the Indian trail over GCHills existed (Section II.C).

The 1856 GLO Plat depicts an Indian trail in the Bummer Creek drainage with a course SW from the *Trail* in the north to Jump-off Joe Creek in the south (Section III). This approximately 4.5 mile Indian Trail in the Bummer Creek drainage from the Grave Creek Hills Pass (i.e., Mt. Sexton Pass) to Indian Trail site IT-7, is relatively straight on a SW-NW course. This portion of the trail in sections 22 and 27 of the 1856 GLO Map depicts an oxbow.

However, there was no real oxbow in the Indian Trail over GCHills. The ridge analysis documents (Section V.D.1.a) a plausible and reasonable route connecting the 1855 Lowland Takelma Indian Trail “IT-4 Bummer Creek Prairie” Site to the Indian Trail and Applegate Trail Penney Ridge “IT-3/JA-13” Site. This route minimizes to eliminates the west Oxbow of the trail ([Map A2](#)). The North Oxbow of the Indian trail is also smoothed out a little by the on-the-ground field work for a walking path through the ridge saddles, that with sidling, were suitable for emigrant wagons ([Map A3](#)).²²

MET Field Manual guidelines for locating wagon trails in mountainous and forested terrain.^{21 - 22}

Guideline #4. When encountering hills on steep ascents or descents, wagons normally traveled directly up or down to avoid sideling or side hilling on steep slopes. Trails traversing along the sides of slopes usually will not be emigrant wagon trails. Exceptions might be where there was either no alternative to a steep slope or the slope angle was not steep enough to make wagons unstable.

The Grave Creek Hills Indian Trail was almost exclusively a walking trail until the 1820s. It was developed mostly by walking and located along lines of least resistance. It is characterized as being dry and direct within the confines of the mountains, except where a shortcut crossed a ridge. If at all possible, it avoided wet areas.

In summary, the Oxbow of the Indian Trail did not exist. What did exist was the approximately 6.5 mile Grave Creek Hills Indian Trail.²⁻³ The approximately 4.5 mile Bummer Indian Trail in the Bummer Creek drainage as identified on the 1856 GLO Plat is north of Maple Creek and Bummer Creek.²⁻³ The part of the trail identified as the South Oxbow as depicted on the 1856 GLO Plat ([Map A1](#); [Map A7](#)) was not part of the Indian trail.

3. Oxbow Developed By Hudson Bay Trappers' Pack Trail The working hypothesis that the 1855 GLO township survey for T.34S., R.6W., W.M., and the 1856 GLO Plat (along section lines) was correct for Indian trails and Applegate Trail surveyed points: Oxbow Developed By Hudson Bay Trappers' Pack Trail. This hypothesis was correct.

All trails follow the line of least resistance. For example, early fur traders, missionaries and explorers, made extensive use of the available network of Indian trails.

Southern Oregon's mountainous terrain limited early transportation to walking, horseback, and pack animals. The walking and pack trail took off after 1825 with the Hudson Bay Company trappers, under Thomas McKay and Finan McDonald, when they followed Indian trails through the Rogue River valley. Other expeditions by the company continued into the 1840s. The Grave Creek Hills Indian Trail walking trail was blazed wider to accommodate horse and mule pack trains.

The Hudson Bay Company's trappers made the change from a walking trail over the GCHills into a walking and pack animal trail for the area they used, which later became the emigrant wagon trail. They also created the full oxbow of the trail by using the original Indian Trail (i.e., North Oxbow and part of the West Oxbow), at which point they diverged from the NE-SW course of the Bummer Creek Indian trail to the SE.

The trappers utilized the Indian Trail above the seasonal muddy low land in Maple Creek to the middle of the West Oxbow where the Indian Trail did not proceed south to Sacramento, California area, the trappers' ultimate destination.

In summary, during the time of the Hudson Bay trapper, the Indian trail had become a mixed walking and pack animal trail (i.e., mules and horses) until the first emigrants arrived along the new Applegate Trail in 1846.

The later oxbow of the walking and pack trail was a result of the Hudson Bay Company's trappers making the change from a walking trail into a walking and pack animal trail for the area they used (i.e., North Oxbow and West Oxbow segments). This created a new pack trail south from the NE-SW course of the Maple Creek Indian Trail which was soon traversing over Garbers Ridge ([Map A7](#)).

4. Oxbow Pack Trail Used And Widened By Emigrants In Wagons The hypothesis was that the Hudson Bay Trappers from the 1820s - 1840s, and the emigrants from 1846 - 1883, blazed wider an existing trail. The West Oxbow up Penny Ridge fit their needs for a dry level route ([Map A1](#); [Map A7](#)). The North Oxbow fit their inclination to avoid seasonal muddy ground in low land (e.g., Maple Creek Wetlands ([Map A3](#)) that could trap them and side hilling that could tip wagons (Section II.C: [Map A4](#); [Map A6](#)).

An effort was expended by the *Trail* emigrants in energy and time to widen the Trapper's Trail, but not as much as if the emigrants had hacked a brand new trail in the brush and trees. Also, the western part (Map A6) of the ox bow on the Trappers' trail suited the emigrants as in hilly or mountainous terrain, emigrant wagons generally followed ridges or higher elevations rather than gullies, ravines or canyons. Further, when encountering hills or steep ascents/descents, wagons normally traveled directly up or down to avoid sideling or side hilling on steep slopes.

The emigrants' normal practice of following ridges or higher elevations and traveling directly up or down grades to avoid side hilling on steep slopes fits the topography for the south and west portions of the ox bow. The northern portion of the ox bow does not perfectly fit these guidelines, but there was a need for a route to the mountain pass at an elevation higher than the Maple Creek Wetlands.

There is an apparent conflict with the slope of the west half of the North Oxbow and the sideling criteria in the first part of guideline No 4. until one reads the second part on exceptions.

4. When encountering hills on steep ascents or descents, wagons normally traveled directly up or down to avoid sideling or side hilling on steep slopes. Trails traversing along the sides of slopes usually will usually not be emigrant wagon trails. Exceptions might be where there was either no alternative to a steep slope or the slope angle was not steep enough to make wagons unstable.

The western half of the North Oxbow was a series of three north-south ridges (Map A4; Map A5). This created a rough road and potentially a sidling issue for the emigrants, but perfectly matched the 1846 and 1847 diaries (Section V.C.3).^{30, 31, 32, & 33}

Pioneer Virgil Pringle, 1846 emigrant

“Sunday, October 18 – Have some bad road that takes till after dark to go 6 miles. 6 miles.”

Lester G. Hulin, 1847 emigrant.

“W 19th. Upon leaving camp soon came to a fine creek [Jump Off Joe Creek], then bad roads entered (rough, hilly and sidling), but by night we were in a valley with good camping ground at hand [On Grave Creek in Sunny Valley]; distance 8 miles.”

Diaries and reminiscences from the 1846 and 1847 emigrant wagon trains identify the 1.8 miles of terrain on both sides of the GCHills (i.e., Grave Creek Hills Indian Trail) at narrow Grave Creek Hills Pass (i.e., later Smith Hill Pass and finally Sexton Mountain Pass), as the route of the *Trail*.

5. Alternatives The HNAT is considering many Applegate Trail route alternatives from the Niday Donation Land Claim and JA-12B to IT-4/JA-14 Maple Creek (Map A7). Its original concept of an oxbow of the Applegate Trail was not one route or one location of the *Trail*, but multiple successive routes. Eventually, ca., 1874, the emigrants did travel straight up the draw

in the location of today's Hasis Drive. It is estimated that over years there were at least three different routes up Maple Creek known locally as Pirzer Road (i.e., Peter Pirzer was an early orchardist), White's old driveway (i.e. present owner), and Garbers Road (i.e., Hugo Garbers was an old homesteader in the area for whom Hugo was named ([Map A7](#))).

The oxbow of the Applegate Trail had evolved into multiple trails by at least ca., 1874. By ca. 1913 the *Trail* had evolved beyond its original purpose as an Indian trail for foot traffic with a northeast-southwest orientation, to a pack trail with a north-south orientation, an emigrant wagon trail, and finally an automobile route with the different purposes overlapping for long periods of time.

JA-12C Garbers Pass Route Alternatives: 1855

- Alt. 1. Garbers Pass Route
- Alt. 2. 1855 GLO Summit Route
- Alt. 3. West Garbers Saddle Route

JA-13A Penny Ridge Route Alternatives: 1855

- Alt. 4. Penny Ridge Route (Map A2 & Alternative 4 from Indian Trail Site IT-4 to IT-3/JA-13 Penny Ridge).
- Alt. 5. 1855 GLO Route

Maple Creek Route Alternatives: ca., 1874

- Alt. 6. Pirzer Road Route
- Alt. 7. White's Old Driveway Route
- Alt. 8. Garbers Road Route

F. Summary Interpretations of Indian Trail Over GCHills

(VI.A, p. 2) The early analysis by the HETC in 2002, 2005, and 2007 focused on describing the Takelma Indians and the Indian trail over the GCHills. The 1856 GLO Plat depicts an Indian trail with a E-W axis along Grave Creek. The GLO plats also documents an Indian trail with a SW course from the *Trail* in the N to Jump-off Joe Creek in the S. This trail connects with the Rogue River and a main Indian trail at the confluence of Jump-off Joe Creek with the river. There is no depicted Indian trail over the GCHills.

(VI.B, p. 6) Less is known about the Takelma Indians than about their neighbors in other parts of Oregon and northern California. Their homeland was settled by Euro-Americans late in the history of the American frontier. The discovery of gold spurred the white settlement of the region in 1852. Settlers and natives lived in the region together for less than four years before the Takelma, surviving wars with the whites, were sent to reservations out of the area in 1856.

Almost everything we know about the Takelma in Hugo is from the works of ethnographers and linguists Sapir and Harrington. Sapir's and Harrington's Lowland Takelma Indian informant for the Hugo region from ca., 1847 - 1856 was Frances Johnson. Harrington developed several maps from Johnson's information for GCHills. These maps are definitive proof that the *Trail* at Mt. Sexton Mountain Pass is the old emigrant *Trail* as it evolved into a wagon road on top of the original GCHills Indian trail.

Frances had many personal memories of the Rogue River, her village, Rainie Falls, the medicine rock and Grave Creek. She was 87 years old in 1933 when she was interviewed by Harrington. Of critical importance was that Johnson was accepted as a credible informant on the Lowland Takelma Indians by two professional ethnographers/linguists: Sapir and Harrington, and later by Historian and Anthropologist Stephen Dow Beckham and Archaeologist Dennis Gray.

(VI.C, p. 7) The development of the Takelma culture was focused on human power without the benefit of draft animals. For at least 10,000 years prior to arrival of the white man, the Takelma Indians did not have horses and their trails were beaten paths. Peter Skene Ogden was a fur trader and explorer for the Hudson Bay Company. In 1827 Ogden describes the difficulty of moving over the GCHills without a horse track on an Indian guided trip from the Jumpoff Joe Creek area to Cow Creek. The Indian guide had no experience with uses and limitations of horses when moving through mountainous forested terrain. Evidently the guide felt like the path he traveled was also good for horses.

(VI.D, p. 8) Evolution Of The Oxbow Of Indian Trail The GCHills Indian Trail was a walking trail without horses for at least 10,000 years until the 1820s. The Hudson Bay Company's trappers made the change from a walking trail into a walking and pack animal trail for the area they used in the 1820s which later in 1846 became the emigrant wagon trail. The Trappers also created the full oxbow of the eventual *Trail*.

(VI.D.1, p. 10) The GCHills Indian trail was developed by walking and located along lines of least resistance. It is characterized as being dry, level and direct, within the confines of the mountain topography (e.g., following and crossing ridges, saddles, etc.). If at all possible, it avoided winter wet areas.

The Takelma followed certain walking routes for trade, raiding, warfare, social interaction and contact, and maintaining kin relationships, but mostly for the annual seasons of following the food, especially the anadromous salmon. Topography and the natural resources had a great influence on the locations of their many primary ancient footpaths. These routes or trails were primarily made by walking.

(VI.D.1.a), p. 12) The working hypothesis was that the Takelma, where possible, were going to use year around trails that avoided winter wet lands and generally traveled drier ridges. The trail through the ridges of the North Oxbow were dry and above the lower wetlands while using NE-SW Penny Ridge in the west and four north-south ridges versus traveling up or down them. The

west half of the North Oxbow could have been easily described as hilly by the Takelma. However, it is doubted that they thought of it as rough, even with its sharp dips, as this segment of the trail was overall fairly level following the saddles through the ridges. There are several possible routes of the 1855 Lowland Takelma Indian trail from the IT-4 site to the Indian trail "IT-3/JA-13 site.

(VI.D.1.b), p. 15) Maple Creek Wetlands. The Foehlin soil 38C has moderate permeability, low soil strength, and shrinking and swelling of the subsoil. These reasons are valid for the location of the North Oxbow which avoids this winter wetland soil where possible.

The HNAT's opinion is that the Takelma's semi-permanent village structures and Indian trails were not designed to offset the limited ability of the 38C soil to support a load, its moderately slow permeability, nor for its shrink swell characteristics. Their developments were located to avoid the limitations of the 38C soil by avoiding the locations of this soil.

The HNAT's hypothesis is that an approximate 20% slope is the limit for a sliding slope that can not be traversed by the average emigrant wagon on this leg of the Applegate Trail without holding ropes or some other assistance. It believes the validity of this hypothesis was that the four ridges and the 12 to 20 percent 42D soil slopes on the west half of the North Oxbow were identified as bad roads (i.e., rough, hilly and sidling) by emigrant diaries, but the bad roads were not identified in the diaries as requiring a significant amount of time to overcome with additional work, such as using ropes.

What is obvious is the North Oxbow' avoidance of most of the 38C's soils. This avoidance location fits the MET guidelines for locating wagon trails in mountainous and forested terrain.

(VI.D.2), p. 17) Walking and pack animal trails during the 1820s - 1846 follow lines of least resistance. For example, early fur traders, missionaries and explorers made extensive use of the established network of Indian trails. The Hudson Bay trappers created the full oxbow of the trail by using part of the original Indian trail and a new trail they created to the south. During the time of the Hudson Bay trapper, the Indian trail had become a mixed walking and pack animal trail (i.e., mules and horses) until the first wagon emigrants along the new Applegate Trail in 1846.

(VI.D.3), p. 21) In 1846 little to no wagon work had been done on the Indian trail, widened to a horse trail by the trappers, over the unnamed GCHills Pass. The walking Indian trail and trapper pack trail was marginally improved by the emigrants by widening it for wagon passage. This was one way traffic through hostile Indian country and the settlers were not improving the *Trail* for future all season use. The Indian trails in the Hugo and Grave Creek areas were depicted on the GLO 1856 plat with a general E-W orientation up and down creeks to the Rogue River. The emigrant road over GCHills was also depicted.

Today physical evidence of both ends of the North Oxbow can be found on the ground: 1. West end is Penny Ridge, and 2. East end is White's pasture road. The ridges of the North Oxbow are rough, hilly, and would have necessitated side hilling or sidling.

Diaries and reminiscences from the 1846 and 1847 emigrant wagon trains identify the terrain on both sides of the GCHills (i.e., Grave Creek Hills Indian trail and *Trail*) and pass (i.e., later Smith Hill Pass and finally Sexton Mountain Pass) as the route of the *Trail*. The ridges topography of the North Oxbow fits the emigrants' descriptions of a *bad, rough, hilly and sidling road* perfectly.

The 1846 and 1847 diary evidence from pioneer emigrants Virgil Pringle and Lester Hulin is important. In 1846 Pringle recorded a good camp at Jumpoff Joe Creek (i.e., Pleasant Valley) and a bad road later. The "bad road" was probably the North Oxbow ridges over the GCHills. In 1847 Hulin identified the bad roads as rough, hilly and sidling. There is valid written documentation (i.e., diaries & reminiscences) to support the authenticity of the *Trail*.

The ridges of the North Oxbow are rough, hilly, and would have necessitated sidling. However, it is not positively known whether the ridges of the North Oxbow are the bad roads identified by Pringle and Hulin. Another candidate for possible sidling is down the east side of Rat Creek which to date does not have a ridge analysis.

What is known as a fact is that the ridges segment of the North Oxbow along the *Trail* over the GCHills is unique and not obviously repeated in Rat Creek. The ridges section of the North Oxbow fits the emigrants' descriptions perfectly.

(VLE), p. 22) The HNAT considered known and unknowns for the Takelma Indian trails based on principles in OCTA's MET Manual that it adopted for Indian trails.

*"Emigrant trails often defy modern reasoning on the route these trails should have taken."*²² This statement is even more applicable to Indian trails based on manual labor of a Native culture without draft animals when evaluated by a Euro-American culture of expansionist ambitions encouraged by the doctrine of Manifest Destiny, a belief that the American conquest of the Western frontier was divinely ordained, including today's technological reasoning culture.

*Though it may not apply in all situations, as a general rule the closer in time the evidence is in relation to the trail under investigation, the more reliable that evidence becomes.*²² The 1855 GLO survey notes and the 1856 GLO plat are the best and only professional location information for a time period when the Indian trails were actually being used by the Takelmas.

Was there an Indian trail over the GC Hills? Was there an oxbow of the Indian trail over the GC Hills? Why the oxbow turn in sections 22 and 27 of Hugo's portion of the *Trail*? Why didn't the emigrants travel straight up the draw in the location of today's Hasis Drive? We speak of the 180 degree switchback curve as an oxbow because in later years (ca., 1874 - 1913) the wagon road was shortened by going straight up the mountain close to Maple Creek, and at that time the

switchback section was not the only route for through traffic. The HNAT's interpretations of the analysis and answers to the questions are four.

1. Grave Creek Hills Indian Trail Existed.
2. Oxbow In Indian Walking Trail Did Not Exist.
3. Oxbow Developed By Hudson Bay Trappers' Pack Trail.
4. Oxbow Pack Trail Used And Widened By Emigrants In Wagons.

The hypothesis that the Indian walking trail and trappers pack trail was used and widened by emigrants in wagons follows from the MET Manual guidelines (p. 28) and the soils evidence.

- Guideline #1. In hilly or mountainous terrain, emigrant wagons generally followed ridges or higher elevations rather than gullies, ravines, or canyons. Evidence of trails is likely to be found on ridges rather than down or up narrow canyons or ravines.
- Guideline #2. Staying high would usually avoid seasonal muddy ground that could trap them. Staying high also mostly avoided the deeper sections of gullies which when crossing required that the sides be dug out and the bottoms filled in to allow the passage of the wagons. This strenuous labor usually kept the wagons higher uphill where the cuts were more shallow.
- Guideline #4. When encountering hills on steep ascents or descents, wagons normally traveled directly up or down to avoid sideling or side hilling on steep slopes. Trails traversing along the sides of slopes usually will not be emigrant wagon trails. Exceptions might be where there was either no alternative to a steep slope or the slope angle was not steep enough to make wagons unstable.
- Guideline #5. Generally, wagons ascended and descended on the spine of a ridge rather than up or down gullies. Therefore, an unnatural drainage on the spine of a hill may indicate a one-time wagon trail.

The 1856 GLO NW-SW depicted wagon road along Penny Ridge at the west end of the North Oxbow satisfies MET guidelines #1 and #5 ([Map A5](#); [Map A6](#)). The 1904 USGS topographic map identified this segment of the oxbow.

The North Oxbow was dry and above the lower Maple Creek wetlands which satisfies MET guidelines #2, #4, and #5 ([Map A3](#)). The approximate 1/8 mile White pasture road at the east end of the North Oxbow satisfies these guidelines. The Maple Creek alternate routes do not satisfy these criteria for the period from 1855 - ca., 1874.

The oxbow is also supported by the 1846 and 1847 diaries of a rough sidling road. The HNAT's hypothesis is that these diaries applied to the middle North Oxbow's four ridges between Penny Ridge north of the 1901 - 1902 Penny house and the White's pasture road.

A satisfactory on-the-ground sidling wagon route has been located for the North Oxbow by members of the HNAT.

Questions remaining for the HNAT follow.

1. Traces have been located, but satisfactory physical evidence has not been located yet for the west North Oxbow after Penny Ridge which does satisfy MET guidelines.
2. Artifacts have not been located for the west North Oxbow.

These questions are offset by the normal evidence interpretation procedures for the HNAT and the HETC which is the focus on the specific GLO surveyed sites, not on non-evidence along the GLO mapped route of the trail between surveyed sites at section lines.

1. For over 10 years artifacts have not been the main indicative feature for Indian trails and the *Trail*. Professional land surveys had been the primary evidence.
2. No metal detector tests have been conducted for the North Oxbow as no metal detector tests have not been conducted for any of the trails, except for a preliminary project at IV-6 and IV-7.

VII. DOCUMENT VERIFICATION & RELIABILITY OF EVIDENCE³¹

The HNAT, *Hugo Neighborhood*, believes that historical trail inventories must be systematically and comprehensively documented for verification and reliability of evidence. This approach will foster credibility and lead to public trust and acceptance, and just as important it will result in more accurate inventories.

For the HNAT, verifiability means other researchers and the public reading its educational brochures or other inventory documents can check where the information comes from and make their own determination if the references or sources are reliable. The HNAT's goal is not to try impose "the truth" on its readers, and does not ask that they trust something just because they read it in an HNAT document. It does not ask for their trust. Its goal is to empower other researchers and the public through educational materials that can be checked in order for them to find their own truth.

HNAT's articles are intended as intelligent summaries and reflections of current published information, as well as an overview and analysis of the relevant literature. Verifiability is related to another core content concept, neutral point of view, which holds that the HNAT include all significant views on a subject. Citing reliable sources for any material challenged or likely to be challenged gives readers the chance to check for themselves that the most appropriate sources have been used, and used as well as the applicable evidence available.

That HNAT has rules for the inclusion of material does not mean HNAT has no respect for truth and accuracy, just as a court's reliance on rules of evidence does not mean the court does not respect truth. HNAT values accuracy, but it *requires* verifiability.

Toward those transparent inventory goals, the HNAT combines ideas from HNA&HS's and OCTA's missions; the MET Manual (i.e, general principles governing trail location and verification, and ranking the reliability of evidence used to verify trail location); OCTA Mapping, Marking, and Monitoring (MMM) program; and its own ideas about adequate information.

The HNAT believes transparent inventories has to do with disclosure, discussion and documentation (DDD). At the first level transparency is providing information about an issue, event, project, policy, program, etc. and then providing a way for other researchers and the public to find and review that information.

At the second level the definition of transparency is defined as DDD in the sense of credibility and accountability. After all, these issues, projects, and programs all have to do with the public's interest, and potentially using public money or perhaps others' private money. For example, all trail inventories usually lead to a trail classification category and a recommended management regime that costs money. The HNAT's, HETC's and OCTA's classification categories for trails are designed to assess the condition of trails at the time of mapping and establish a basis on which to recommend levels of preservation and use for trails on public lands. The HNAT and

the HETC encourage private landowners to consider the recommended levels of preservation and use for trails.

The HNAT believes inventory information becomes more valuable as it is shared, and less valuable as it is hoarded. Adequate information is a goal the HNAT strives for all its published materials. It believes that any inventory opinion for purposes other than therapeutic subjective venting, should meet standards of adequacy to have any credibility. Any opinion purported to be based on analysis must meet standards of adequacy for an inventory decision to be credible. Any significant controversial inventory issue must meet stringent standards of adequacy for the final inventory decision to be credible and, therefore, its best opportunity to be accepted and supported by other researchers and the public.

An adequate trail inventory analysis has several elements, along with published documentation.¹

- Information Is Understood Or Not
- Supporting Arguments Are Made Or Not
- Standard(s) of Review Have Been Identified Or Not
- Applicable Evidence/Facts Are Available Or Not
- References and Sources of Information Were Identified Or Not
- Compliance With Adequacy Information Analysis Elements Or Not

Footnote VII-1. Walker, Mike. July 4, 2012. *Historical Trail Inventories Must Document Verification And Reliability Of Evidence* - Draft Proposal to Hugo Emigrant Trails Committee. Walker is the Education Chair, Hugo Neighborhood Association & Historical Society. Hugo, Oregon. Not web published.

In summary, the HNAT believes the document verification and reliability of evidence guidelines have been met for its analysis and documentation of an 1855 Indian trail over GCHills.

VIII. CONCLUSIONS

The HNAT assumed GLO surveys and notes were accurate.

The reliability of evidence is the credibility of written documents and their interpretation as well as physical evidence and artifacts and their interpretations. All else is of lesser value in developing scenarios.

The 1855 GLO survey notes for JA-3/JA-13 was by Hyde and Lake. U.S.D.S Butler Ives and George Hyde were at the top of their game in surveying compared to all other 1800 GLO surveyors in the Rogue Valley region. The credibility of questioning their work without evidence can be compared to alleging a major error in the 1998 USGS Merlin 7.5 minute quad - There is a rigorous quality control process controlling the investigation of alleged errors.

Include highlights or summaries by chapter? The issue is that there are already summaries of summaries in the chapters of the text. The redundancy question of year more summaries in the conclusions probably should not occur.

Therefore, the conclusions are the major highlights of the chapters rather than their summaries.

- I. BACKGROUND
- II. 1856 GLO PLAT OXBOW OF APPLGATE TRAIL CONCEPT
- III. 1856 GLO T.34S., R.6W., W.M. PLAT
 - E. Summary
- IV. RELEVANT MAPS
- V. 1856 GLO PLAT INDIAN TRAIL FEATURES OVER GRAVE CREEK HILLS
 - D. Summary
- VI. INDIAN TRAIL OVER GRAVE CREEK HILLS INTERPRETATIONS
 - E. Summary Interpretations
 - 1. Grave Creek Hills Indian Trail Existed
 - 2. Oxbow In Indian Walking Trail Did Not Exist
 - 3. Oxbow Developed By Hudson Bay Trappers' Pack Trail
 - 4. Oxbow Pack Trail Used And Widened By Emigrants In Wagons
- VII. DOCUMENT VERIFICATION & RELIABILITY OF EVIDENCE

The document is dated August 12, 2012 and updated April 12, 2014. The history is that the document, except for Chapter IX, was complete and ready for its first review and editing in August 2012. The first editing occurred in January 2014 during a time questions were also being asked about the Oxbow of the Applegate Trail (Chapter IX). The specific issue was the reliability of the 1855 GLO survey notes west on true line between sections 22 & 27, T.34S., R.6W., W.M.

IX. FUTURE INVESTIGATIONS: April 12, 2014

This future investigations section was not part of the original intent of this paper which was to address the Takelma Indian trail over Grave Creek Hills. However, even with the different focus, it was felt timely by the HNAT in light of the recent analysis and opinions of HETC members on the likelihood of the Oxbow of the Applegate Trail.

A. Analysis Of Section Line 22 & 27, 1855 GLO T.34S., R.6W., W.M. Survey Notes

A decade long on-going investigation by the HETC was refined by Malcolm Drake on December 7, 2013 with the publication of *OCTA Authentication Process for Penny Ridge JA-13 Applegate Trail Site*. That email was followed by several other emails and papers.

1. Malcolm Drake. December 7, 2013. *OCTA Authentication Process for Penny Ridge JA-13 Applegate Trail Site*. Email.
2. Bob Black. December 12, 2013. *Analysis of Point JA-13 Penny Ridge As A Possible Site on the 1846 Applegate Trail*. Paper.
3. Malcolm Drake and Kelly Rarey. December 21, 2013. *Investigation of Applegate Trail Oxbow*. Paper
4. Terry Nickerson. December 9, 2013 & January 7, 2014. *The Oxbow More than Likely as it Is Shown on Plat and Probably There Is No Oxbow In The Road*. Medford, OR. Emails.
5. Roger Roberts. January 20, 2014. *Questionable Oxbow*.
6. Roberts' February 14, 2014 Paper: 1846 Applegate Trail "Oxbow"

The following summaries of several analysis are just that, review the emails and papers for more information on each summary.

1. Drake Email Analysis: December 7, 2013¹

Years ago, Malcolm Drake drew all the survey points of the 1855 GLO Survey Notes West on true line between sections 22 & 27, T.34S., R.6W., W.M. onto a 1998 USGS 7.5' Quad map. He determined that there were some discrepancies between the descriptions written by the 1855 GLO surveyor, including the associated 1856 GLO Plat, and the actual topography, as shown on the Quad map. These discrepancies were in addition to the most obvious error, identifying Maple Creek as a "ridge". All but one survey point, as listed in the 1856 GLO notes, are, basically, backwards. Streams are identified as ridges; ridges are identified as streams.

For Drake there is, without doubt, something wrong with the survey done by the GLO in 1856. There is evidence both for and against the surveyor making a simple confusion of east and west. To him the East-West reversal seemed much more likely than the surveyor confusing four out of five ridges with streams. There is evidence that the survey notes are correct, as written. Perhaps, as stated in the OCTA trail location guidelines, the researchers should not expect to ever know with absolute certainty, but should make their most educated guesses as to what is really true, with all available evidence.

Drake is looking forward to gathering more data to clarify his hypothesis that the surveyor confused east and west.

Footnote IX-1. Drake, Malcolm. December 7, 2013 Email to Hugo Emigrant Trails Committee. *OCTA Authentication Process for Penny Ridge JA-13 Applegate Trail Site*. Email & Analysis Maps. Jumpoff Joe, OR.

2. Black Analysis Paper: December 12, 2013²

Black's analysis was based on the research principles, methods and guidelines noted in the OCTA MET MANUAL." For example, he summarized information on the several OCTA MET MANUAL primary research methods.

A "Multiple Hypotheses Method" could be applied to determine the authenticity of a trail segment by determining multiple hypotheses and then rigorously analyzing each one against the cardinal rules and available evidence. A hypothesis that remains durable under this testing has a high probability of being correct.

For an emigrant trail segment to be considered as verified, it must conform to the "Cardinal Rules." Where conditions exist that any of these four rules do not apply, the probability level is reduced.

Discussion of Evidence. The diary evidence for both Route A the oxbow and Route B Maple Creek are too vague to be helpful. There is no physical or artifact evidence of a trail on either route. Route A is shown on the GLO survey and Route B is shown on the 1874 County Road Survey. Route A has topographic features (steep sideslopes) that confine the trail route only up and down the ridge and not on a sidehill location. Route B is located on satisfactory topography for a trail. Later maps show the oxbow route but they were likely based on the 1856 GLO Survey Plat as there is no evidence that they were based on actual field surveys or observations. The 1874 field survey shows the trail to be located in the Hasis Dr. Route corridor (i.e., Route B, Maple Creek) as does the 1894 USGS Riddle Quadrangle topo map.

Field Checking the Hypotheses. The last step is go out in the field and put yourself into an emigrant's boots walking alongside a wagon to see whether or not a hypothetical trail segment makes trail sense. Look for "a fatal flaw" that would render a hypothesis highly unlikely to fit normal emigrant travel patterns. The field check of the Oxbow Rt – A – revealed three possible "fatal flaws." Any one of these "fatal flaws" would negate that hypothesis. These flaws were:

1. A route too sideling for wagons to traverse.
2. A significant obstacle – the oxbow – that would require time and energy to overcome and that was not accounted for in any diary description.
3. The absence of an obstacle in the way of direct travel – the Hasis Drive route – negates the hypothesis that had emigrants taking a circuitous route – the oxbow route.

No "fatal flaws" were found during the field check of the Hasis Dr. – Rt B.

Conclusion. Ultimately, the trail mapper bears the responsibility of reaching a decision on where the trail is located; the rules alone cannot do that. Based on my analysis, I believe that the 1846

Route of the Applegate Trail followed the Hasis Drive Corridor—Route B and did not follow the Oxbow Route through Point JA-13 Penny Ridge.

Footnote IX-2. Black, Bob, Member HETC. December 12, 2013. *Analysis of Point JA-13 Penny Ridge As A Possible Site on the 1846 Applegate Trail*. For the Hugo Emigrant Trails Committee (HETC), HNA&HS. Grants Pass, OR.

3. Drake & Rarey Analysis Paper: December 21, 2013³

This investigation makes a case for a significant problem with the 1855 GLO survey notes for T.34S., R.6W., W.M., and specifically the GLO survey notes west on the true line between sections 22 & 27 for the Indian trail site IT-3/Jacksonville Road (JA)-13 Penny Ridge site (IT-3/JA-13). The probable consensus of the HETC supports the concept that the IT-3/JA-13 Penny Ridge site does not exist because of a flipped survey (i.e., administrative error in transcribing surveyor's notes).

The investigation also acknowledges other evidence that supports the oxbow mostly in the form of several later maps that depict the oxbow and interpretation documents that support the oxbow, or have unresolved questions (Chapter III; Chapter VI). It identifies two possible alternatives that address the seemingly conflict, and significantly it considers possible future investigations.

- Alt. 1. The oxbow does not exist; all maps subsequent to the 1856 GLO map that show the oxbow do so because they simply repeated a mistake, and nobody actually surveyed these later maps.
- Alt. 2. The oxbow does exist, even though the surveyor's flipped his survey notes East for West.

Possible future investigations for the HETC were identified by Drake and Rarey to further prove the existence or non existence of the “flipped” hypothesis, and also of the oxbow.

- Investigation 1 Hire a surveyor to demonstrate with extreme accuracy the topographic features of each survey point along the line between Section 22s and 27. This could more strongly demonstrate whether or not the surveyor “flipped” E and W on his notes.
- Investigation 2 Map the alleged route of the oxbow, as located on the 1856 GLO map and on the 1895 “Official” map, and search for traces of the trail along that route.
- Investigation 3 Perform an archaeological examination of either of the two alleged routes of the oxbow, whether it be judged to be on the original oxbow shown on the 1855 and 1895 maps, or on the currently favored route (closer to the 22/27 section line), seeking artifacts that could *only* indicate the Applegate Trail route, but not other possible uses, e.g. logging equipment, stage coaches, utility wagons, modern farm equipment, etc. This investigation could be aided by the use of metal detectors.

Drake and Rarey also identified possible conclusions.

- Conclusion 1. The HETC needs to decide, first, if the GLO surveyor wrote W instead of E on his field notes. If so, the survey was recorded backwards.
- Conclusion 2. If the survey was, in fact, recorded backwards, is this prima facie evidence that the oxbow does not, and never has, existed? Or is it somehow possible that the survey was backwards, yet the oxbow existed regardless of that finding?

Conclusion 3. If the HETC concludes that the oxbow existed regardless of the accuracy of the GLO survey, did it exist as “proved” by the 1895 map, or lower on the mountain, passing through the saddle, close to, and north of, the 22/27 section line, then continuing more or less on contour for about ¼ mile towards the east? There is evidence for both locations, but we can’t have it both ways. And, would a route that passes through the saddle just north of the South ¼ corner of section 22 still to be called an “oxbow”?

Footnote IX-3. Drake, Malcolm, and Rarey, Kelly. December 21, 2013. *Investigation of “Applegate Trail Oxbow”* Section 22, T34S, R6W, near Hugo, Oregon. For the Hugo Emigrant Trails Committee. Hugo, OR.

4. Nickerson Email Analysis: December 9, 2013 - January 7, 2014

The professionalism of the GLO surveyors Hyde and Lake had been documented (Section I.B; Section III.A). Terry Nickerson was the long-time (now retired) lead surveyor for the BLM, Medford District Office.

a) December 9, 2013 Email^{4A}

I [Terry Nickerson, Retired BLM Surveyor] have looked at the field notes and the plat for T.34S., R.6W., W.M., and in particular the line between sections 22 and 27. In general Wells Lake and George Hyde were very good surveyors for the period of time that they surveyed. Their work was very accurate considering the equipment they used. It is my opinion that the Applegate Trail (called the Jacksonville Road) is accurately depicted on the plat and the call in the field notes is more than likely correct. The "oxbow" more than likely as it is shown on the plat.

Footnote IX-4A. Nickerson, Terry. December 8, 2013 Email to Jim Ford. *Oxbow More Than Likely Existed As Shown On Plat*. Medford, OR.

b) January 7, 2014 Email^{4B}

Subject: Applegate Trail. After looking at the Quad Sheet and the field notes again I [Terry Nickerson, Retired BLM Surveyor] have the following opinion. The field notes should be reversed, and there probably is no Oxbow in the road.

Footnote IX-4B. Nickerson, Terry. December 9, 2013 & January 7, 2014 Email to Jim Ford. *Probably There Is No Oxbow In The Road*. Medford, OR.

5. Roberts’ February 14, 2014 Paper: 1846 Applegate Trail “Oxbow”

a) January 20, 2014 Email: Applegate Field Notes And/or Map Hold the Defining Answer to the Questionable Oxbow⁵ A pdf file⁶ of the maps drawn by a person unknown based on information from Jesse Applegate's 1853 military road survey (Section IX.A.5.c)) was provided by Roger Roberts. Roberts views follow.

I am sending images of six pages from a report concerning how topo calls were kept during the course of the early GLO surveys.

He notes that Jesse Applegate used a Burt Solar Compass, and the mileage chart shows distances in miles and chains. Perhaps Jesse's notes are in archives somewhere.

I have some reservations as to the accuracy of the mapping. You will see that the one sheet has the sections laid out in T33, 34 & 35 South, Range 6 West. These sections did not exist at the time of Jesse's survey. And because it shows a flattened oxbow in the vicinity of the south line of Section 22, I'm thinking that it may have been a rough sketch taken off of the GLO plat. I can't think of how else Jesse's survey could have been correlated with the later section lines. The Applegate field notes and/or map hold the defining answer to the questionable oxbow.

I will follow up later with a statement of my review of your data.

Footnote IX-5. Roberts, Roger. January 20, 2014 Email to Kelly Rarey. *Questionable Oxbow*. Medford, OR.

Footnote IX-6. A portable document format (pdf) is a file format used to present documents in a manner independent of application software, hardware, and operating systems. Each PDF file encapsulates a complete description of a fixed-layout flat document, including the text, fonts, graphics, and other information needed to display it. Adobe Systems made the PDF specification available free of charge in 1993.

b) Maps Drawn by a Person Unknown Based on Information from Jesse Applegate's 1853 Military Road Survey

Independent analysis was conducted by Jim Ford, Kelly Rarey, and Mike Walker (ongoing). The six pdf maps look like one map in six sections. The geographic area covered by the map was Jesse Applegate's 1853 survey area for Col. Alvord before there were section lines. The first publicly mapped section lines for this area were in 1856 based on an 1855 GLO survey.

There is no author or date on the map. Comments are by map in the order of the pdf file.

Footnote IX-7. Person Unknown. Date Unknown. Series of Historical Maps From *February 14, 2014 Email/Letter to Kelly Rarey, Hugo Emigrant Trails Committee* from Roger R. Roberts, Oregon Professional Land Surveyor. Central Point, OR.

c) Roberts' February 14, 2014 Paper⁸ Roberts' two page February 14, 2014 paper follows in its entirety.

*Roger R. Roberts, Oregon Professional Land Surveyor (Lic. No. 1656)
3365 Green Acres Drive Email: roger1656@gmail.com
Central Point, Oregon 97502 Office Ph. 541-664-5146 Cell 541-261-9891*

February 14, 2014

Kelly,

On January 15, 2014, I received an email from you concerning the questionable “oxbow” in the Applegate Trail as shown on the 1856 General Land Office map, along the south boundary of Section 22 in Township 34 South, Range 6 West. You provided a copy of the report that you and Malcolm Drake prepared dated December 13, 2013. You also included a copy of “*ANALYSIS OF POINT JA-13 PENNY RIDGE AS A POSSIBLE SITE ON THE 1846 APPLGATE TRAIL*” by Bob Black, dated December 12, 2013. You asked that, due to my familiarity with the GLO records, I review the information and provide any comments that I might have.

In your analysis of the GLO notes relative to the “oxbow” trail configuration on the plat, you have noticed that, as written, the topo calls do not conform to the existing terrain conditions along the south boundary of Section 22. However, when you take the same measurements and lay them out running from west to east, they conform to the actual terrain. Factoring in the noted changes in elevation along the line, in reverse order, resulted in a profile that also conforms to the terrain. It is therefore your opinion that the GLO notes for this particular mile appear to be in reverse order.

I am in agreement with you, for the following reasons:

- In running random line east, and then running back again to the west meant running the mile twice. I believe that sometimes the measurement calls along the east-west lines were taken when the random line was run easterly, eliminating the need to rerun the line west. In that situation, the topo measurements would have to be entered into the notes at a later time, making it necessary to enter them in reverse order. Occasionally they did not get reversed, resulting in the type of situation you have encountered.
- Sometimes, when retracing the original surveyor, the topo measurements are found to not fit well with the true line, but fit better when applied to the random line, indicating that the measurements may have been taken at the time of running the random line easterly.
- In the early GLO surveys, topo measurements were not written into a field book, but kept in memory by the chainmen. They would report their topo measurements, from memory, at a later time.
- The notes that were kept in the field “tablets” were later transcribed into a clean and orderly field book format, which is what was returned to the Surveyor General at the completion of the contract. Errors in transcribing have been found when comparing the final field notes with the measurements recorded in the field tablets.

I have consulted with Tom Newcomb, who spent his entire surveying career of over 40 years with BLM, USFS, Jackson and Josephine County Surveyors Office, and

private surveyors in retracing original GLO surveys. I told him of your “oxbow” situation. He confirmed that he has several times seen topo measurements reversed in the field notes.

I attended the annual Professional Land Surveyors of Oregon conference in Salem last month. The primary instructor for two of the 3 days of topic specific sessions was a nationally known land surveyor named Dennis Mouland. He has been in surveying since 1972, has worked for BLM and has his own survey consulting firm in Arizona. He is also a Surveying Instructor for the University of Wyoming and Oklahoma State University. I had a chance to sit and visit with him, and I brought up the possibility of east-west topo calls being erroneously written in reverse order. He is familiar with that, and has seen it many times during his career.

Here is a link to his resume': <http://www.witnesstreeconsulting.com/Who.html>

I am sending to you images of six pages from a report concerning how topo calls were kept during the course of the early GLO surveys.

Thank you for giving me a chance to present my opinion on this topic.

Footnote IX-8. Roberts, Roger. *February 14, 2014 Email/Letter to Kelly Rarey, Hugo Emigrant Trails Committee.* Roger R. Roberts, Oregon Professional Land Surveyor. Two pages. Central Point, OR.

d) Vote By Hugo Emigrant Trails Committee

Need to get minutes.

B. Alternate Jacksonville Road Routes Of Applegate Trail: 1855

The HNAT is considering many Applegate Trail route alternatives from the Niday Donation Land Claim to IT-4/JA-14 Maple Creek (Map A7). Its original concept of an oxbow of the Applegate Trail was not one route or one location of the *Trail*, but multiple successive routes.

The 1855 Oxbow of the *Trail* is depicted in the 1856 GLO Plat, sections 22 and 27, T. 34S., R. 6W., WM in the Maple Creek and Bummer Creek drainages (Map 9; Map 10). Even though this map depicts one oxbow, the concept of an oxbow trail is not one route or one location of the *Trail*, but multiple successive routes. It is the concept of the location of the trail evolving over time, just like the U-shaped bend in the course of a river being cutoff over time and forming an oxbow lake. The location of the *Trail* had evolved into at least two main emigrant wagon trails by at least 1874: 1. Oxbow via Penny Ridge, and 2. Cutoff up Maple Creek drainage, today's Hasis Drive area (Map A7).

The alternatives now being investigated by the HNAT have expanded beyond the idea of the oxbow trail's multiple successive routes over time to at least two main emigrant wagon trails by at least 1874. It also includes Drake's original idea that the oxbow does not exist. The following alternative names are those of the HNAT and will be changed as new evidence comes to light.

JA-12C Garbers Pass Route Alternatives: 1855

- Alt. 1. Garbers Pass Route
- Alt. 2. 1855 GLO Summit Route
- Alt. 3. West Garbers Saddle Route

JA-13A Penny Ridge Route Alternatives: 1855

- Alt. 4. Penny Ridge Route (Map A2 & Alternative 4 from Indian Trail Site IT-4 to IT-3/JA-13 Penny Ridge).
- Alt. 5. 1855 GLO Route

Maple Creek Route Alternatives: ca., 1874

- Alt. 6. Pirzer Road Route
- Alt. 7. White's Old Driveway Route
- Alt. 8. Garbers Road Route

C. Future Alternative Actions

It is noted that the accuracy of GLO surveys is case by case. For other surveyors besides Ives, Hyde and Lake (Appendix E), there are plenty of examples where problems have been discovered with fraud and non-fraud (e.g., typos, section line survey notes flipped, poor work, etc.). MET Manuel page 7; MET Manual Appendix B; Appendix D.

a) Future Work (ongoing)

- HETC members with surveying experience document what the 1874 map represents (i.e., a survey of an existing route and/or a combination survey of an existing trail and potential realignments for existing trail).
- To do - List from analysis and papers.

b) HNAT Position/Actions

c) HETC Position/Actions

d) HNA&HS Position/Actions

Send recommendation letter to BLM and/or USGS (appropriate agencies?) asking for a resurvey. Get other sponsors to this letter such as the JCHS and the NWOCTA.

e) NWOCTA Authenticator's Position/Actions