

A Tour of Some Prehistoric Hanging Canal Images

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Some recent rediscoveries in the **bajadas** of the **Pinaleno Mountains** of Arizona's **Safford Basin** have identified a stunning group of uniquely world class prehistoric mountain stream derived domestic irrigation canals believed to date from the 1350's. At present, **some twenty nine canals have been located having a total length approaching sixty miles.**

These canals are uniquely characterized by portions of them being literally "hung" on the very edges of steep side mesas, sometimes hundreds of feet above their adjacent drainages. Credible reasons for this unusual posturing seem to be that **the canal slopes could be defined largely independent of their surrounding terrain.** And that highly energy efficient construction could largely be carried out **across**, rather than along, the canal route. Thus minimizing costly cuts and fills.

These structures and their trading patterns show influence from the **Hohokam** master canal builders of the Phoenix area. Implied is the collaboration and the collective action of smaller groups, rather than a more complex social structure. Estimations of the construction time vary from fifty man years upward. While no survey instruments are known to survive, it is possible that pilot extensions of the canals themselves acted as static **water levels.**

In addition to **stratigraphy** and **association**, other evidence of age includes: Being run over by roads, **SCS** dams, and even cemeteries roughshod without accomodation; uniform patina, lichens, and caliche; mature trees, cacti, and shrubs mid-channel; extreme purposefullness and well directed energy efficiency; and a lack of any apparent use of pioneer or **CCC** tools.

A summary hanging canal paper can be found **here**, a detailed tutorial **here**, a lecture sequence **here**, and a collection of additional resources **here**. The latest canal developments can be found **here**, and info on tours and personal research opportunities **here**.

These cataloged images are shown here at modest resolution to keep the file size and download times manageable. Clicking on any image or its URL should access its full resolution parent picture.

ALLEN CANAL #1

Allen Canal Just Beyond Spring Canyon Takein Point.

<http://www.tinaja.com/canal/images/allen0.jpg>

N 32.78240 W 109.83475



The spring in Spring Canyon appears to immediately source several canals, while any remaining unfettered water travels a distance down Spring Canyon to this Allen Canal takein point. At this location, the canal begins a sudden northerly turn heading to historically developed Hawk Hollow Tank.

The view is to the north.

ALLEN CANAL #2

Allen Canal Between modern Dam and the Culebra Cut.

<http://www.tinaja.com/canal/images/allen1.jpg>

N 32.83553 W 109.79789



Well defined Allen portion shares an otherwise atypical white caliche-like aeolian fill with the Mud Springs canal. Canal is trending westward and about to enter the major Culebra cut.

The view is to the south.

ALLEN CANAL #3

Allen Canal Culebra Cut with Dr. Jim Neely.

<http://www.tinaja.com/canal/images/culebra1.jpg>

N 32.83567 W 109.79806



This portion of the Allen Canal below the dam is the widest and deepest known, although both the HS canal counterflow and the Marijilda Aqueduct involved much more excavation. The Culebra area shows no apparent historic use or rework, so this construct appears genuine.

Shown is Dr. James Neely. View is to the west.

ALLEN CANAL #4

Deepest Allen Canal Cut Below Dam.

<http://www.tinaja.com/canal/images/culebra2.jpg>

N 32.83564 W 109.79788



The Culebra Cut on the Allen Canal appears to be the widest and deepest known in the region. There is no evidence of any historic rework. Uniform patina also attests to its prehistoric age.

The view is to the west.

DEADMAN CANAL #1

Possible Three Way Switch on Deadman Mesa Knife Edge.

<http://www.tinaja.com/canal/images/threeswitch.jpg>

N 32.76086 W 109.78109



There are several instances of "knife edging" in which a canal apparently gets purposely routed along an extremely narrow and highly critical mesa edge. At this point, a three way switching appears possible between Porter Springs tank, Upper Deadman tank, and Lower Deadman tank. Attributing this positioning solely to coincidence appears highly unlikely. Suggested is a profound understanding of both topography and hydraulic fundamentals.

Aerial view is of north = up.

DRAGANFLY DRONE #1

Aerial Drone Potentially Usable for Canal Research.

<http://www.tinaja.com/canal/images/dragan.jpg>



The Draganfly is a camera sized aerial drone and video capture system that should be eminently suited to further hanging canal exploration. Especially for finding non-obvious continuances.

A grant for one or more of these would certainly be welcome.

FRYE MESA #1

Start of HS Canal and Robinson Canal on Lower Frye Mesa.

<http://www.tinaja.com/canal/images/frye2.jpg>

N 32.76014 W 109.81138



Spring Canyon water was apparently diverted along upper and lower Frye mesa to a ponding area. At that point, it appears to have been split into a source for the Robinson Canal and a spectacular HS Canal counterflow canal routing back upcanyon to apparently merge with Frye Creek proper. It is not yet proven whether this is in fact an upper source portion of the Golf Course Canal.

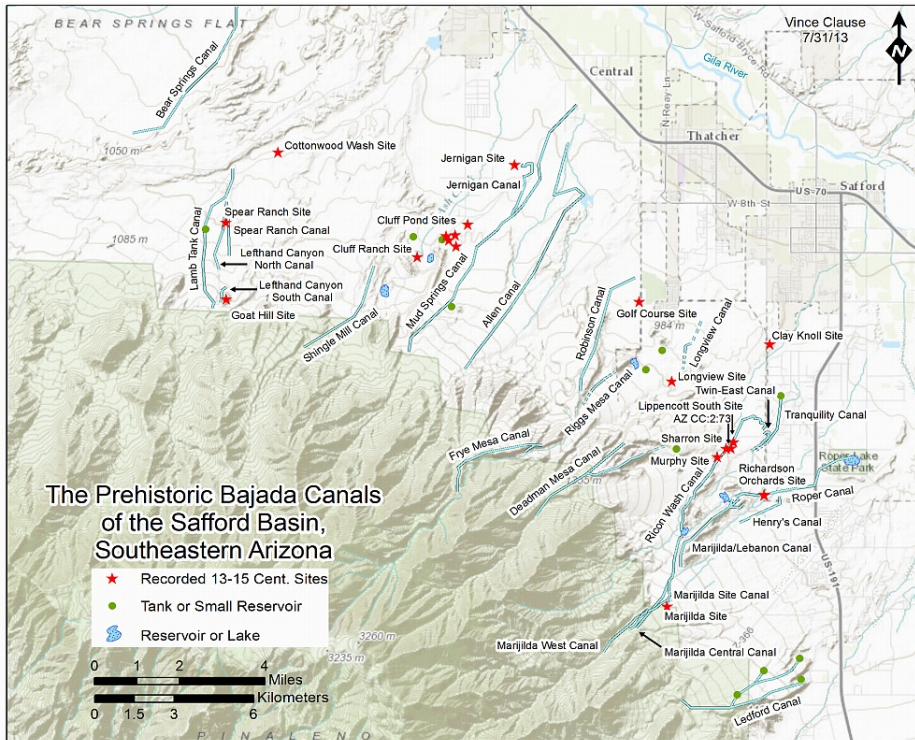
This is the only known example of a canal routing water back into a stream. The view is to the north.

GIS MAP #1

Present GIS Mapping of the Hanging Canal System.

<http://www.tinaja.com/canal/images/safcan1.jpg>

N 32.83372 W 109.70286



This mapping has yet to show the Golf Course canal or its relationship with Frye Creek and the HS Canal proper. Two mapping alternatives are currently being explored, a more conventional and temporarily better looking GIS format and the long term more promising and flyable KML format.

Aerial view is of north = up.

GOLF COURSE CANAL #1

Low Cut Near Northern End of the Golf Course Canal.

<http://www.tinaja.com/canal/images/gc1.jpg>

N 32.79901 W 109.77736



The Golf Course Canal becomes difficult to trace before vanishing entirely in the region of the southwesternmost duck pond. Only a pair of somewhat deeper cuts are readily identifiable, with vague or missing portions elsewhere along the route.

The view is to the west.

GOLF COURSE CANAL #2

Typical Northern Golf Course Canal Cut.

<http://www.tinaja.com/canal/images/gc2.jpg>

N 32.79903 W 109.77760



A second cut near the northeastern end of the Golf Course Canal. Major portions of this canal are still largely unknown and unexplored, although it appears to be one of the more significant constructs. Sheet flooding has apparently made exploration difficult.

The view is to the west.

GOLF COURSE CANAL #3

Tour Members View Golf Course Canal Eastern Turn.

<http://www.tinaja.com/canal/images/golf3.jpg>

N 32.79990 W 109.78019



The "climb" of the Golf Course Canal "up" out of a north-south trending wash involved major construction effort and is easily traced. At this point, the general canal direction changes from northerly to easterly at a 4WD track.

Present are Don Lancaster, John McIntosh, and Marie Freestone. The view is to the northwest.

HENRY'S CANAL #1

Middle Easily Traced Portion of Henry's Canal.

<http://www.tinaja.com/canal/images/henry1.jpg>

N 32.73739 W 109.74150



This canal may have been superseded or replaced by the high Marijilda hanging route that appears to bypass it. The destination is either the Roper Canal or a possible field just south of the Roper Canal. The initial diversion from the upper Marijilda Canal has not been located yet, except for several tantalizing hints.

Present is Phyllis Farenga. The view is to the east.

JERNIGAN CANAL #1

Western Jernigan Canal End has Well Defined Use Field.

<http://www.tinaja.com/canal/images/jern1.jpg>

N 32.84179 W 109.81605



Actual delivery destinations for most of the canals have yet to be determined. One exception is the Jernigan Canal that clearly routes into a major field area. There are also occupational structures nearby. Several portions of the Jernigan Canal remain unknown and unexplored.

The view is to the east.

KML MAP #1

.JPG of Preliminary .KML "flyable" Site Map Under Development.

<http://www.tinaja.com/canal/images/map2.jpg>

N 32.81911 W 109.80627



Two approaches to mapping the hanging canal systems are being independently pursued. At present, the GIS method is further developed and is still more visually attractive. Shown here is a **.KML** version using **Google Earth**. The actual **.KML** implementation is "flyable" and shows terrain more optimally.

This .JPG image of its .KML original is shown north = up.

MARIJILDA CANAL #1

Spectacular High Marijilda Hanging Canal Reach.

<http://www.tinaja.com/canal/images/hangcan1.jpg>

N 32.73369 W 109.75521



Early view of one of the more impressive constructs in the entire canal system. In the process of "climbing" up the mesa, the hanging canal routes a hundred feet or more above its adjacent drainage. Similar major "climb" illusions can be found in Deadman Canyon and Robinson Mesa.

The view is to the northeast.

MARIJILDA CANAL #2

High Marijilda Canal Includes Spectacular Hanging Portion.

<http://www.tinaja.com/canal/images/mary2.jpg>

N 32.73675 W 109.75298



Access to this spectacular hanging canal reach involves some rather rough 4WD roads. The canal flows from right to left as it routes "up" the mesa. Canals were apparently used for remote delivery only. There do not seem to be any sites or artifacts on the mesa tops along the routes. The Whitlock Mountains are shown in the background.

The view is to the northeast.

MUD SPRINGS CANAL #1

Center Reach of Mud Springs Canal Below SCS Dam.

<http://www.tinaja.com/canal/images/mud1.jpg>

N 32.77606 W 109.79645



The SCS dam dating from the 1930's in the background literally runs over the canal without any accommodation whatsoever. The Mud Springs canal begins in the Ash Creek drainage some three miles above this image. Most of the route is quite well defined except for some still unexplored gaps.

The view is to the southwest.

MUD SPRINGS CANAL #2

Northern Known Limit of Mud Springs Canal With Wildflowers.

<http://www.tinaja.com/canal/images/mud2.jpg>

N 32.84778 W 109.81099



Despite numerous visits, no destination fields are known for this canal, which appears to simply stop at this northernmost explored portion. While a linking to nearby northern lowland riverine canals would seem possible, the time and effort of construction would hardly seem to justify the amount of deliverable water.

The view is to the southwest.

MUD SPRINGS CANAL #3

Mud Springs Canal Present Northernmost Known Limit.

<http://www.tinaja.com/canal/images/mud3.jpg>

N 32.84794 W 109.81105



Tours often start at this point as it is the easiest reachable of the known canal alignments. While several gaps still exist in the route including its actual Ash Creek takein point and a "mystery mile" above Mud Springs themselves, the general path of this six mile canal is unambiguous and well established.

Present are Marie Freestone and Don Lancaster. The view is to the southeast.

MUD SPRINGS CANAL #4

Mud Springs Canal Northernmost Hanging Portion.

<http://www.tinaja.com/canal/images/mud4.jpg>

N 32.84262 W 109.81054



Portion of the Mud Springs canal just east of West Layton Road exhibits typical minor hanging characteristics. While the white caliche-like aeolian fill is shared with the Allen Canal below the dam, it is otherwise uncharacteristic.

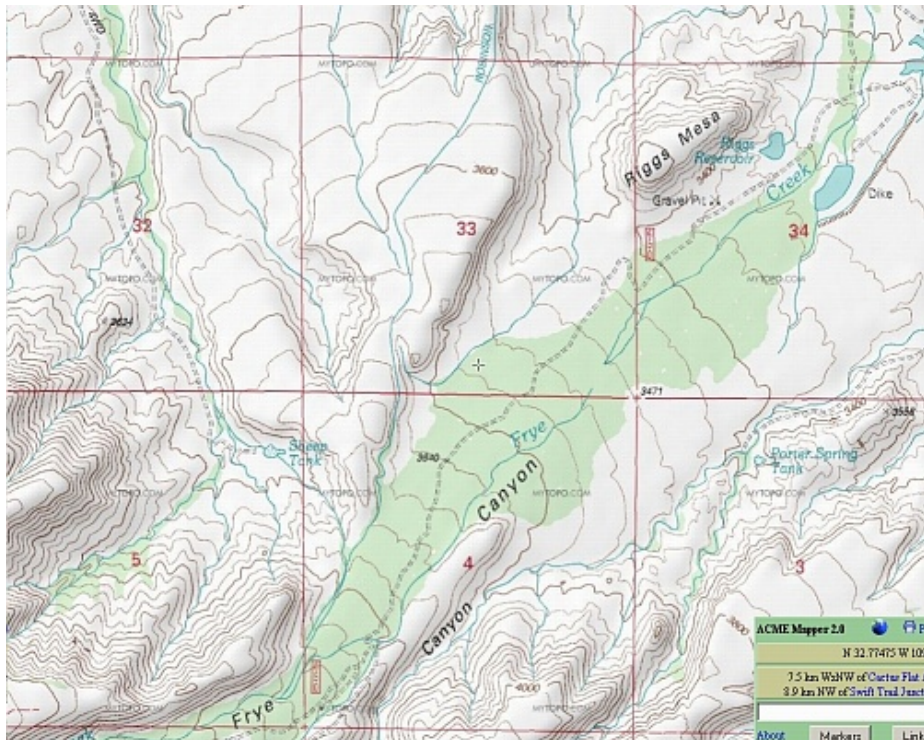
Present are Marie Freestone and Don Lancaster. The view is to the north.

ROBINSON CANAL #1

Map of mid Robinson Canal Area.

<http://www.tinaja.com/canal/images/frye1.jpg>

N 32.77558 W 109.79659



The Robinson Canal was historically adapted from its prehistoric origins to service a number of cattle tanks west of the Daley Estates area. Its marked similarities to others in the study attest to its earlier origins. The canal is renamed "Robinson Ditch" on modern topo maps.

North is up on this aerial map.

ROBINSON CANAL #2

Canal Beginning its "climb" up Robinson Mesa.

<http://www.tinaja.com/canal/images/rob1.jpg>

N 32.77601 W 109.79656



A second location where a canal is literally "hung" along the edges of a steep sided mesa well above its adjacent drainage. The "down" = "up" illusion seems particularly apparent. Dead parasitic trees would seem to date from the last of the historic canal uses.

The view is to the south. Deadman peak is conspicuous along the far horizon.

ROBINSON CANAL #3

Typical Hanging Portion of Robinson Canal. "Up" is "Down".

<http://www.tinaja.com/canal/images/rob2.jpg>

N 32.77385 W 109.79645



One of the major hanging areas of the canal system. This portion was reworked during historic times to serve cattle tanks in the Daley Estates area. But, curiously, very little modern technology seemed to have been used along the major portions of the route.

The view is to the north.

ROBINSON CANAL #4

Robinson Canal Routing along Flat Mesa Top.

<http://www.tinaja.com/canal/images/rob3.jpg>

N 32.78005 W 109.79624



Once on top of a mesa, the canals usually have little need for hanging portions or significant cuts and fills. The top of mesa slopes often seem optimum for canal routings. Most canals appear to be for long range water delivery. Typically, there are few artifacts or constructs on the mesas themselves.

The view is to the north.

SAFFORD GRIDS #1

Prehistoric Dry Farming Grids North of Gila River.

<http://www.tinaja.com/canal/images/bestgrid.jpg>

N 32.92893 W 109.80031



Other regional prehistoric ag features do include these dry farmed agave grids. There are many thousands of these north of the Gila River, and possibly a few hundred to the south. They seem to be largely independent of the hanging canals proper. Also present are aproned check dams, mulch rings, habitation sites, field houses, and various other rock alignments.

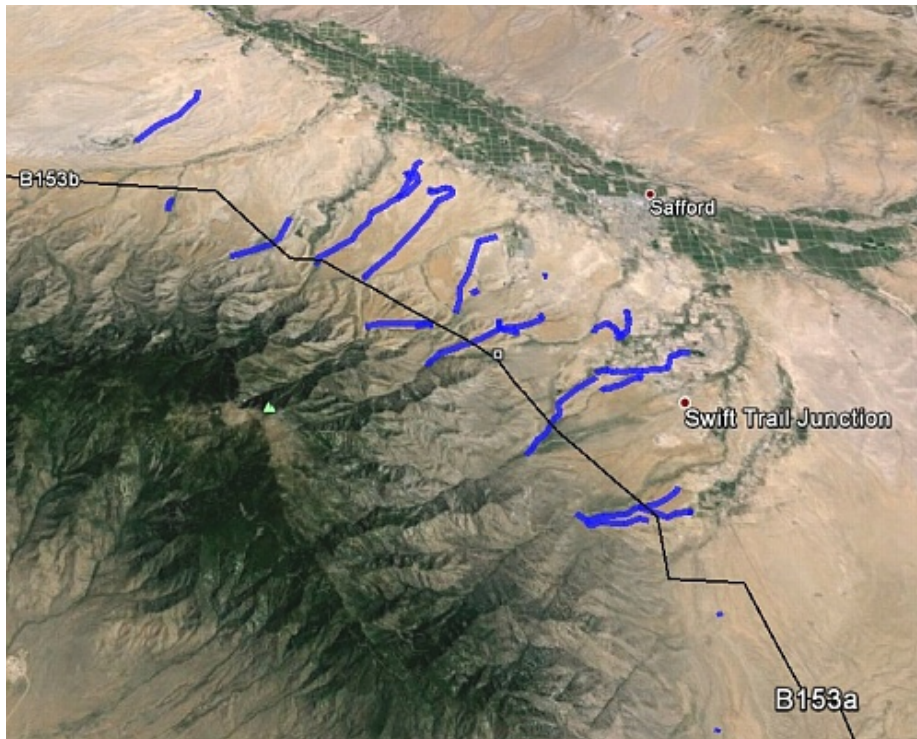
The view is to the north.

SUNZIA CONFLICT #1

Potential Canal Conflicts with Alternate Sunzia Route

<http://www.tinaja.com/canal/sunzia.jpg>

N 32.82477 W 109.79709



A secondary alternative to a **major transmission line project** could well conflict with many of the hanging canals as shown here. There is also a planned but now deferred **ADOT** routing of alternate US 70 bypass that could introduce similar problems as well.

Aerial view is of north = up.

TRANQUILITY CANAL #1

Tranquility Canal Shows an Unusual "urban" Siting.

<http://www.tinaja.com/canal/images/tranq1.jpg>

N 32.76459 W 109.72954



The Tranquility Canal is somewhat atypical in that it is shorter, is apparently artesian sourced, and has obviously been historically reworked. Portions include a puddled and crude aggregate concrete lining, while other areas appear totally typical of prehistoric constructs.

The view is to the south.

TRANQUILITY CANAL #2

Reach of Tranquility Canal Having Obvious Historic Rework.

<http://www.tinaja.com/canal/images/tranq2.jpg>

N 32.76486 W 109.72953



Two parallel routings, one historic and one prehistoric are suggested in the vicinity of Anne's Ranch Road. While most reaches of most of the hanging canals route over federal or state land jurisdictions, the Tranquility Canal traverses many small private inholdings. Tranquility comes amazingly close to the Twin East canal, separated only by a significant cliff and elevation difference.

The view is to the north.

TB PONDING AREA #1

Twin Boobs Ponding Area Before the City of Safford Trashing.

<http://www.tinaja.com/canal/images/twinb1.jpg>

N 32.76621 W 109.73597



Earlier view of the Twin Boobs Ponding area before construction of the Safford Water access road. This project appeared to completely ignore major prehistoric and CCC constructs.

The aerial view is north = up.

TB PONDING AREA #2

Twin Boobs Ponding Area After Safford City Trashing.

<http://www.tinaja.com/canal/images/rinc1.jpg>

N 32.76604 W 109.73598



Unawareness of the significance of the hanging canals led to this paved access road being constructed directly across the ponding area. This region is unusual because it is far and away the most obvious on **acme mapper** and that it seems to have two independent feeder canals of Twin East and Twin West.

Arial view is of north = up.

TB PONDING AREA #3

Typical Single Wall of the Twin Boobs Ponding Area.

<http://www.tinaja.com/canal/images/rinc2.jpg>

N 32.76535 W 109.73410



Note the mature barrel cactus in the background, which would seem to exclude any CCC or more recent origins. There are numerous ag related constructs in the immediate area. Most of the actual canal delivery areas are largely devoid of any artifacts, structures, or alignments.

The view is to the southeast.

TROLL HOUSE #1

Unknown Use Mud Springs "Troll House" Seems Canal Related.

<http://www.tinaja.com/canal/images/troll1.jpg>

N 32.82539 W 109.82279



Very few structures or even artifacts are associated with most hanging canal routings, making this pithouse like structure extremely atypical. The structure is intimately associated with the Mud Springs canal and is literally level and within two feet of the canal proper. Curiously, there is no evidence of charcoal or other fire use, and the exact age and purpose remains undetermined.

The view is to the northwest.