

# Trinity River Watershed Council

September 10th, 2024 at 10:00am – 12:00pm

TCRCD Conference Room, #30 Horseshoe Lane, Weaverville

## **Our Mission:**

To protect, enhance, restore and revitalize the watershed through collaborative efforts that leverage external resources, work toward common goals, educate and engage community stakeholders, address natural resource issues, and support healthy ecosystems for future generations.

## **Agenda**

**10:00-10:10** Welcome and Introductions

**10:10-10:45** Guest Speakers Topic: Corral Gulch Meadow Restoration Project with Bridger Cohen of the Watershed Research and Training Center

**10:45-11:55** Partner Updates

a. USFS – Shasta Trinity National Forest

b. USFS- Six Rivers National Forest

c. Bureau of Land Management (BLM)

d. California Department of Fish and Wildlife (CDFW)

e. Natural Resources Conservation Service (NRCS)

f. Trinity River Restoration Program (TRRP)/  
Bureau of Reclamation (BOR)

g. Trinity County

h. Hoopa Tribal Fisheries

i. Yurok Tribal Fisheries

j. Tsnungwe Tribe

k. Nor Rel Muk Wintu Nation

l. Trinity County Resource Conservation District

m. The Watershed Research and Training Center

n. 5 Counties Salmonid Conservation Program/  
Northwest California Resource Conservation &  
Development Council

o. Trinity County Fish and Game Commission

p. Trinity County Agricultural Alliance

q. Flowra

r. New Attendees

**11:55-12:00** Close

**Next Meeting is December 10<sup>th</sup>, 2024 at 10am-12pm**

### **Virtual Meeting Information**

Zoom link: <https://us02web.zoom.us/j/89707228772?pwd=WUo1VW5hS2x0UC85ODE4dFViNEFYUT09>

Meeting ID: **897 0722 8772**

Passcode: **96093**

+16694449171,,89707228772#,,,,\*96093# US +16699009128,,89707228772#,,,,\*96093# US (San Jose)

### **Questions?**

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrd.net](mailto:ainterrante@tcrd.net)

# Trinity River Watershed Council – September 10<sup>th</sup>, 2024

## Attendance

### In person (2):

- Annyssa Interrante— Watershed Program Coordinator Trinity County Resource Conservation District (TCRCD)
- Bridger Cohan— Guest Speaker; Watershed Stewardship Program, Watershed Research and Training Center

### Online (19):

- Christine Mai – Watershed Program Manager, Shasta Trinity National Forest
- Bryan McFadin – North Coast Regional Water Quality Board
- Liam Gogan— Trinity County District 3 Supervisor
- Chris Cole – District Conservationist, Natural Resource Conservation Service
- Chris Losi – Flowra
- Cyndie Childress—Nor-Rel-Muk Wintu
- David Colbeck— Trinity County Natural Resources Division and Environmental Compliance
- Gregory Pasternack— UC Davis Professor and Trinity County Resident
- Monique Rea – Shasta Trinity National Forest, Forest Partnership Coordinator
- Sandra Perez – Yurok Tribe Fisheries
- Tiffany Perez – Soil Conservationist, Natural Resource Conservation Service
- Kelly Sheen— District Manager TCRCD
- Josh Smith – Watershed Research and Training Center, Watershed Stewardship Director
- Dyana Judnick – California Fish and Wildlife Department, Redding Office
- Kate Blanchard – California Fish and Wildlife Department, Redding Office
- Lesli Mounivong – Watershed Research and Training Center
- Tracy McFadin – Watershed Research and Training Center
- Kate Blanchard – California Department of Fish and Wildlife
- Cindy Buxton – Watershed Research and Training Center

Total Attendees: 22 people

Meeting Start 10:03am

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## Guest Speaker Topic: “Corral Gulch Meadow Restoration Project”

### Introduction

- Benefits to floodplains and meadows
  - o Attenuate winter and spring floods, through storage provide clear cold baseflows, very productive and diverse, natural firebreaks
  - o Well-functioning floodplains keep more water on the landscape for longer

### Indian Valley Creek and Corral Gulch

- o Corral Gulch is a tributary of Indian Valley Creek with problems relevant to both (greater scale in Indian Valley)
  - Incised channel, heavy stream power, active scouring, lack of wet meadow habitat (replaced by conifers), very little flows in summer
- Coral Gulch was once a meadow
  - o Stream evolution model goes from ill-defined small channels with low flow to deeply channelized stream with eroding banks, with Coral Gulch in the Degradation and Widening phase
    - Well-functioning floodplains have no meandering streams or shallow meandering streams
  - o Coral Gulch caused by the loss of vegetation due cattle in meadow, loss of vegetation upslope due to timber harvest, and increased water flow from road drainage
    - Considered Stage 4
  - o Identified as a problem area as far back as 1946 by the USFS
  - o Restoration project a test case to address similar issues throughout Indian Valley

### Meadow Restoration Strategy

- Attempt to bring Coral Gulch straight to Stage 0 without going through the entire stream evolution model
  - o Speeding up the process requires big earth moving equipment
  - o Some opportunities for “light touch” processed base restoration (channel stuffing, beaver dam analogs)
    - Focus in tributaries and upper reaches of gulch
    - Can address problems after heavy machinery is done
  - o Objectives
    - Restore stage 0 floodplain surface (focus on lower reach)
    - Raise road crossing to level of new floodplain and armor the crossing
      - Provides a block for scourings coming down stream
    - Place large wood through area to disperse the channel flow and create habitat
    - Use PBR techniques to retain sediment (mostly upstream)
    - Protect revegetation of new floodplain by constructing livestock exclusion fencing
    - Revegetate disturbed areas with native seed and native plugs and potted plants for long term and short term growth
      - Will catch sediment as well
    - Monitor surface hydrology, groundwater, vegetation, and physical character of floodplain to inform adaptive management

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## Design

- Upper reach restoration will use exclusively low tech PBR
- Lower reach restoration will use a mix of low tech PBR and heavy machinery
- Developed project with geomorphic grade line assessment to create a relative elevation model
  - o Estimates where valley bottom would be without channelization
- Bottom of project area has a bedrock grade control feature to prevent sediment from washing away downstream
- Areas relatively higher than the floodplain will be cut and used to fill the channelized areas lower than the floodplain
  - o Uses heavy machinery to push material into channel
- The designed floodplain surface is higher in elevation than the current thalweg except at the bedrock grade control feature, which will act as a tie in for the project area to the rest of the stream
  - o Goal is to mimic valley elevation before disturbance
    - Fine sediment will deposit instead of flowing downstream
    - Will go from deep channel to broad surface with downed trees and vegetation to prevent a channel from reforming through breaking up the stream flow

## Questions

- Question for Bridger Cohan from Annyssa Interrante
  - o Annyssa Interrante
    - For those cut areas do you have an erosion control plan or are you hoping that it drops sediment back in the Corral?
  - o Bridger Cohan
    - There's multiple answers to that, one is that most of those cut areas are actually going to be the new stage 0 floodplain so they're going to be a flat surface they're not going to be eroding very readily and we're going to be revegetating them pretty heavily. So there may be some erosion that happens especially in that first winter before the vegetation can fully establish, however because it's a flat surface and because we have all this roughness on there we don't expect there to be a lot of erosion that actually goes anywhere. It should just rack up on downed trees and other debris pretty immediately and so we do expect there to be some roughness that happens in that valley bottom but it shouldn't be exported out of the project area and then on the slopes thos we will be putting some mulch down, putting some seed down as well, we have a two to one slope maximum built into the design plan as well so we won't be creating anything that would be super steep either, and then if there is erosion that happens that sediment should mostly just rack up in that project area and not be exported downstream, and so we don't want a lot of erosion to happen on that slope but A. we have a plan for that and B. it's not the end of the world if it does
  - o Josh Smith
    - Just to reiterate that restoring the valley to what is was, it's currently transporting sediment out eroding the banks and being a sediment source and it shouldn't be if the stream can access its flood plain again and slow down it'll start to deposit the sediment, so overall the project should be a sediment sink it should be accumulating sediment over time and storing it in that reach
- Question from Chris Losi for Bridger Cohen in chat
  - o Chris Losi
    - I'm curious what process would raise the valley bottom would raise the valley bottom I suppose it's not raised it's just above the flood plain. Just curious that my thought process was right that it's not an accumulation or is it another process that's accumulating the sediment.

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- Bridger Cohan
  - Historically Corral Gulch would've been a sediment sink, and you can see layers of sediment in that profile area so it has been catching sediment for a long time just because of how the geology and morphology of that area is and right now it's not because we have this single channel opened up to we have this high stream power situation that is grabbing all this sediment and is pushing it downstream and what we're going to do is it won't be the exact same floodplain level as it was historically it will be lower because we have lost a lot of sediment but it's going to have the same impact on how sediment moves through the system. So as Josh mentioned, instead of there being like a lot of stream power and velocity that grabs sediment from this area, moves it downstream, it's going to be the force and volume of water is going to be spread out over a huge area. And so it's going to slow down a lot and all the sediment that's coming into the project area should drop out. And that will be the process that starts to raise the floodplain surface incrementally over time.
  
- Chris Losi
  - I followed a lot of these presentations about stage zero and I kind of assumed you had to drop everything down to the level of the thalweg almost. But in fact, it sounds like you're actually getting accumulation sediment portions of this riparian area. And you can use some of that accumulated sediment to fill in the creek. And that's cool because I didn't realize that, it makes it sound in a lot of ways less destructive, which obviously it's a restoration process, but there is something destructive about it. And so to know that some of the sediment is actually accumulated since the channelization occurred is kind of good to know. And thanks for that clarification.
  
- Bridger Cohan
  - So I don't want to disappoint you too much on that front, but it's kind of in the middle, I think of what you're talking about. So the deposits that we are going to take from and in those cut areas and use as fill are not for the most part areas of sediment accumulation since the channel has really formed. They are historical sediment deposits. So that's where we're kind of meeting in the middle. So you can imagine the channel through Corral Gulch is quite deep, up to six feet in some places, but it's pretty narrow. It's only maybe 10 yards wide at the widest. And so what we're going to do is take just a little bit of fill from the rest of the floodplain, usually just a foot, maybe even less, sometimes two feet and kind of scrape it and use that as our fill source for the channel. So we are lowering the existing floodplain by a little, but we're going to increase the minimum elevation where water can accumulate by a lot because it's such a smaller area that that channel takes up. And so ultimately the surfaces that we're going to take fill from, aren't, they were floodplain at some point for the most part, but there's like a road that we're going to take, an old road bed that we're going to take fill from and stuff like that. And those have kind of no impact, but for the most part, it was old floodplain, but it's not functioning as floodplain now. And we're going to take a little bit of that so that we can activate the entire floodplain. So it's not that there's no impact, but we feel pretty strongly that it's worthwhile and is going to kind of jumpstart this new floodplain sediment accumulation.
  
- Question from Greg Pasternak to Bridger Cohan in chat
  - Greg Pasternak
    - How much fill is needed to raise to the new grade line?
  - Bridger Cohan
    - So it's about 17,500 cubic yards. I don't want to be super precise on that number because there's going to be a little bit of field fitting that needs to happen. The LIDAR that we based all of

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its estimates on is from 2019, I think. And so there may be some differences that need to be accounted for if the summit sediment is accumulated or maybe some more has been exported from the channel, but roughly 17,500 cubic yards, so quite a bit.

- Question from Chris Cole to Bridger Cohan in chat
  - Chris Cole
    - Why speed up what sounds like a natural process?
  - Bridger Cohan
    - So you can use process-based restoration techniques like those beaver dam analogs, post-assisted log structure, stuff like that, to achieve that stage zero surface. It just takes a lot of time. There's a couple of particular reasons why we wanted to use stage zero in this context. So probably the most pressing is that there's not a lot of sediment that seems like it's being transported into the project reach. There's sediment movement within the project reach, but it seems to be pretty kind of an equilibrium, if not sort of actively exporting sediment where you have like a bank sluff off and then you'll have a log that falls in to capture some of that sediment. But it's not really like building up the floodplain in any concerted way. So if we saw, and like, you'll see this sometimes in areas, especially that have like a lot of decomposed granite in the headwaters where you stick a log in there and it's just going to like build up three or four feet of sediment in a year. And that doesn't seem to be happening in this. I mean, we have reports from the 40s that are saying erosion is a big issue and like, it's still a big issue. It's not like the system's really repairing itself on a scale that's going to get us the results we need, you know, in our lifetimes, it seems like. So it's not that it couldn't happen. It just is really slow here. And then another potential issue is that once you have this really deep incised channel, it becomes hard to use those process-based restoration techniques where you're just using, you know, natural wood and stuff like that because they tend to blow out during big floods. Again, it's not impossible. And Corral Gulch is not such a huge system that you couldn't do it at all probably, but it does make it a lot harder. And you have to be pretty careful about how you place things so that they don't just disappear as soon as you get a lot of flood power because of how degraded it is, it concentrates all that flow into one channel. And then the last reason is, you know, it's not the reason that we chose to do it this way, but I do think it's kind of a benefit is that Indian Valley is even more degraded than Corral Gulch is. I mean, some of the incision there is probably 10 or 12 feet, it's crazy and really wide areas. And so that's going to be even harder to do that process-based restoration in on a meaningful scale and accumulate sediment in a meaningful timeframe. And so by doing it in Corral Gulch, this more heavy equipment-based approach, we hope to see really good results really fast. And that might be something that gives us the information that we need to move forward with a larger project in Indian Valley at some point.
- Question from Bryan McFadin to Bridger Cohan
  - Bryan McFadin
    - I was wondering if you've done any estimates of streamflow benefits that might come from this or changes in subsurface groundwater storage. And then could you say more about the monitoring?
  - Bridger Cohan
    - Yeah, so we probably have not done as much work on this as we could. I actually put together, if I can go through. I did make a slide that kind of addresses this. So this is really back of the napkin type of stuff. I do not want to put too much emphasis on this, but if you just look at the difference between the design surface and the current surface. So this was just a LIDAR

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calculation. The 19,000 cubic yards is different from the 17,500 number that I gave to Greg because this is like, if you just compared the stage zero surface to the current surface, there are a couple areas that we're not going to do that on because they're just not different enough and we're not going to cut and fill those. So that's where that difference comes from, just FYI. But we expect those areas to kind of fill in overtime with that accumulated sediment. So I think this number still probably holds and even if it doesn't, it's pretty close. Anyways, so 19,000 cubic yards of fill to achieve sort of a true stage zero. If we assume that we have about 50% porosity in that soil, that's about 2 million gallons of water that we can store on the floodplain. In reality, I think this is a really significant underestimate for a couple of reasons. One is that this doesn't have any recognition of the PBR work that we're going to be doing upslope and upstream, which is going to store additional water and also by building up the groundwater levels upstream, that's going to extend outwards. It's not just the floodplain that we're storing water in. It's going to be pushing it upslope and upstream as well and building up those groundwater table levels. There's also the fact that right now the floodplain just doesn't activate, unless there's a crazy flood because that channel is so downcut. And so by pushing those spring and winter high flows up onto the floodplain, we can reasonably anticipate that a lot more of that water is going to end up as groundwater and not just flow off the site really quickly, which seems to be what happens now. So I don't have numbers for that, but I think it's a reasonable expectation that we're going to end up using a lot more of the potential capacity of the site than is used now as far as groundwater storage. And then lastly, we're going to remove hundreds of conifers from the site, which end up evapotranspiration a pretty good chunk of water from the project area. And so we hope to have a lot of vegetation there eventually, but it's not going to be as much evapotranspiration as we see it from the forest right now. And that should help keep water on the site longer and allow for more export downstream. So again, really back of the napkin type of stuff, but I think there's a pretty significant amount of base flow increase that we can achieve through this project

- So for monitoring right now, we have, let's see, two groundwater monitoring wells that are on Corral Gulch. And then we have a reference condition one that's upstream of the confluence of Corral Gulch and Indian Valley Creek on Indian Valley Creek. So this project shouldn't influence that at all. And that's just going to be kind of our control for what happens with groundwater levels. I don't have any graphs worked up right now of what we've seen in our current data on Corral Gulch, but I can tell you that, you know, we put the wells down as basically as far as we could. They go down maybe, I want to say like seven to 10 feet roughly. And the water table subs out of those. We lose the ability to measure it at a certain point because it just drops below that in the summer and not even particularly late in the summer, like late July, early August. And so the groundwater table does not stick around there very well. And that is borne out in the fact that the creek itself goes dry, even though those really in size sections, it's not like you see groundwater flowing into those late in the summer. There's one or two pools that tend to keep water, but they're mostly on bedrock. So it just can't go anywhere at those places. So that's our groundwater monitoring. And we're going to keep those intact during the stage zero process. We're not going to take those out and reinstall them. And we'll keep monitoring to see if there's a difference. And then flow monitoring, again, because Corral Gulch goes dry, we can't really have a continuous flow monitoring there, but we do have a station in Indian Valley Creek below the confluence. We've done a bunch of flow monitoring there previously. We hope to continue that, and that may capture some of the impacts from that increased base flow. And then honestly, some of it's just going to be kind of visual, qualitative stuff where if we see flowing water in the beginning of September in Corral Gulch, I think that's a pretty good indication that the project has had some impact on that, because I don't think that's happened in quite some

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years, even this year and last year, we're fairly wet by recent standards, and we still don't see that. So especially if we see flowing water in a drier year, I think we can be pretty assured that we've had a good impact.

- Bryan McFadin
  - Is this in DG geology? Or what's the geology there?
- Bridger Cohan
  - Geology in Trinity County is all over the place, in particular in this area. It's got a mix. There's definitely some metamorphic rock. There is some serpentine outcrops. They're not everywhere in the project area, and the sediment that we see in the project area is not all serpentine-related, but there's some of that. I don't think there's a lot of DG. Josh, if you want to speak more on this, you probably have a better sense.
- Josh Smith
  - Yeah, there's no DG in this area. It's mostly serpentine and metasedimentary rocks. And it's pretty strong bedrock that is kind of the base of this whole thing. And then there are kind of like successive, like the sediment that we're dealing with are like successive, like you can tell some of them are flood-related. Some of them are kind of, you know, maybe bigger event-related deposits of sediment where that large amount of accumulation happened all at once. But it's pretty, it's like, I've got a lot of kind of gravel-sized particles that are a little bit rounded, but kind of angular still. And then it's got a lot of kind of really nice soil matrix in it, which is a bit of a surprise to me, but it holds water pretty well.
- Bryan McFadin
  - And then one last thing, you might consider doing wet-dry mapping, which is just mapping the extent of surface water at different times of year. That's what they do down here in some of these intermittent streams in the Russian.
- Question from Greg Pasternak to Bridger Cohan in chat
  - Greg Pasternak
    - Is there rule of thumb as to what diameter of tree to use for gully staffing compared to the width of the gully?
  - Bridger Cohan
    - I do not know the answer to that. Perhaps other folks here do.
  - Annyssa Interrante
    - I don't think I've ever seen an actual DBH. It's more kind of what's feasible for you to maneuver into the gully. And then obviously putting the larger DBH logs on top to kind of hold all of your stuffing onto the ground surface.
  - Bridger Cohan
    - Yeah, a lot of times you're just limited by what you have on site too. I mean, PBR, you're not trying to use heavy equipment to bring logs in from elsewhere. So, you know, if you don't have any really big diameter trees nearby, you might need to use smaller stuff more creatively.
- Question from Sandra Perez to Bridger Cohan
  - Sandra Perez
    - It looked like you'll have a lot of excess spoils at the end, if that's correct. What is the plan for those?
  - Bridger Cohan
    - No, so that's the nice thing about this project is that there will be no spoils at the end. And all of the cut material that we are taking is going to be used as fill. So I should have clarified that on this map here, these orange areas, so there's 25,000 cubic yards. This is a pretty rough estimate

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and a pretty conservative estimate for various reasons of fill that we think is available, but we only need 17,500 cubic yards of fill to actually do what we want with the channel. And so there are some areas where we definitely want to take all the fill that's available in the spots that we want to make into stage zero floodplain. But once you get further up the hill, we're like, that's not really feasible floodplain anyways. We might take some fill from those areas if we need it, but anything that we don't need is just going to be left onsite in its current condition. Maybe we'll regrade it to that two to one slope if we need to, but there won't be any fill that we take that is just piled anywhere.

- Josh Smith
  - We just tried to maximize the amount of available area that we're allowed to go cut in so that we can be flexible and be efficient, try to be as quick as possible with the equipment time.

### Partner Updates

- California Fish and Wildlife Department
  - Kate Blanchard: We've just been working on permitting, normal permitting stuff. So I don't have anything unique to this group to update you guys on.
- Natural Resources Conservation Service
  - Chris Cole: We don't really have any major updates. We are going out this week to meet with the Watershed Center for some potential, maybe some BDAs or something like that. And so that's just a reminder that it is an option, at least on private land. And so it's something NRCS can help kind of facilitate some cost share stuff. If, you know, if the landowner's interested in that and enters a contract with us and all the strings attached. We're excited to go look at some stuff and hopefully work a little more closely with the Watershed Center and some of their projects they got going on that take place on private land.
  - Tiffany Perez: We're going to be meeting with somebody who's a resource conservationist, which is a catch all term for whatever specialization they have. But this person's part of NRCS wetland restoration easement team and they have used BDAs in the past. So we're hoping to just get more intel about what would be required for landowners to do BDAs on our end and more information about rates and stuff like that to help bring forward to the group later in the future. And that we're going to be accepting applications again for EQIP funding sometime in November. So that could be also for projects that include road work and restoration, replacing culverts and things like that as far as watershed related projects. So keep that in mind in case you personally or know of others that would want to do that on their private property. And then I'm personally seeking in for more information about funding opportunities for wetland restoration or pond restoration for the purposes of aquatic and wildlife habitat. Sometimes we're limited as far as pond restoration goes because it's more specific for livestock or folks that are in ranching business. I'm sure CDFW and maybe even Fish and Wildlife have some of those grants and I was starting to look at their website but we have a landowner that is interested in doing some kind of pond meadow restoration and we might be more limited.
- Yurok Tribal Fisheries
  - Sandra Perez: So we are in Trinity County or Trinity River Watershed working on the Upper Conner Creek Project for the Trinity River Restoration Program. And that's, I don't know, probably a few people on this call who were able to visit the site at their science symposium. Earlier this spring. And that is an in-stream restoration project, very similar to Create Habitat. Our technical staff has been out there to support the Yurok Tribe Construction Corporation who's doing the construction on that. And they

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anticipate being done in another month or so. That's what's going on the main stem. And then we have a couple of watershed tributary level projects that we're working on so that we recreate Habitat Restoration Project is the 90% design is largely done, but it's being revised right now to reflect some updates that we had based on field visits with the Nor Rel Muk Wintu and project partners. And so that will be proceeding to final environmental compliance levels this month and next month. And we do hope to put on a presentation as part of the Weaverville Community Forest Public Meeting at the end of October, if anybody's interested in learning more about that and some of the changes that have occurred since the 60% design. We are seeking implementation funds to allow us to construct those treatments ideally next summer, late summer. The other watershed level project that we're working on is the Indian Creek Project. So there's the phase one that was already completed back in 2020 that Bridger featured one photo from in his presentation. So that phase one, we're looking to reoccupy some groundwater piezometer wells in that reach. And we're looking to finish up actually some construction work because in the original 2020 construction, a private party asserted a mining claim over the very upstream portion of that area, which precluded the tribe from going in and fully doing the stage zero treatments in that reach. And so that private party has abandoned that mining claim. We've secured some supplemental funds to be able to go in and do that work. And we're getting our environmental clearances in place to be able to do that. We're hoping to pull it off by early to mid next month. If that doesn't happen, it would happen potentially a year later, like late summer, early fall of 2025. We are also starting up the design process for the phase two reach. And so I should clarify phase one starts at the county bridge over Indian Creek and goes up from there. Phase two starts at the county bridge and goes downstream to about Spring Gulch. And so we are going to be doing a planning design project for that to develop 90% designs to restore the creek. It could be a stage zero, it could be other treatments. It's too early to tell. We'll be collecting some geospatial information, working with BLM and private landowner in the area on that. And the funding is just getting into place for that. So those efforts are just starting and we're hoping to have more information to share on that at a meeting for this group next year.

- Nor-Rel-Muk Wintu
  - Cyndie Childress: I'll just reiterate a little bit of what Sandra was saying. We are working with the Yuroks on Connor Creek, the early stages of that and the Sawmill Rehabilitation Gravel is still in its early infancy as well. And that's pretty much our restoration right now.
- Trinity County RCD
  - Annyssa Interrante: We will be flying a watershed program manager in the next week or so. So that will be available and I will send that out to the group if anyone is interested or knows anyone that is interested. We just hired an environmental compliance program manager, Dylan Kirkley, and he wasn't able to make it to this meeting but we're hoping to have him in the next meeting and he will be helping us with our CEQA and NEPA compliance. Our watershed program is wrapping up the US Forest Service field work and temperature probe monitoring that we have been doing collaboratively with the Watershed Research and Training Center this summer. It's been a really good summer and a lot of things got accomplished. We are still doing discharge monitoring on five sites in the North Lake region and on West Weaver. And we are working on site prioritization for the North Lake region with watershed center for meadow and BDA restoration. Bridger and I hope to present on that at the December meeting. And that was part of the whole Upper Trinity Headwaters Project. And then we are still working on site prioritization for the Weaverville Community Forest BDA implementation.
- Watershed Research and Training Center
  - Lesli Mounivong: Right now we are currently underway in I think our third or fourth year of forbearance.

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We've got 322 and 500,000 gallons of water that's being saved. I'm planning on installing two more systems this year. So another 60,000 gallons. NEPA hasn't been done for those, but hopefully it'll be done by the end of September and we can begin then and finish up middle of October. I'm hoping soon there's going to be a newspaper article on this project. So you guys will be able to read about it in the Trinity Journal. Let's see, the next one is our West Thule Fish Migration Project. I recently got word of funding to do the implementation on it. So we're hoping we're going to take out the small concrete dam next year. Another big thing is I'm working with David Colbeck and the RCD. We're doing a bigger like CEQA document for meadow restoration. So it's going to cover the entire Trinity River watershed in Trinity County. So hopefully that will be done in like two months or three months when Jake gets back, Jake from the water board.

- Bridger Cohan: Mostly we've been doing a good amount of meadow inventory and assessment this year as kind of a warmup for doing restoration projects and also just to get a good background on what meadows are in the county and what their state is. So we've been doing that in cooperation with the RCD and with the Forest Service and BLM and some other folks. And yeah, there are a lot of cool meadows in Trinity County, even at lower elevations outside of the Alps. I guess a quick pitch, a lot of those meadows are on private land. And if you happen to be a private landowner or no one who might want us to come out and take a look, then we would love to hear from you.
- Cindy Buxton: We have been continuing our stream flow monitoring in the South Fork Trinity River watershed and on Browns Creek. I haven't finished processing the data for the season yet, but observations on Browns Creek and Thule Creek, two areas where we have had storage and forbearance projects, flow is looking really, really good for these late season flows. To answer Bryan McFadin's question, we have been doing some spot monitoring on Corral Gulch and Indian Valley Creek. However, super low flows and poor conditions as in cross-section conditions have made it difficult to set up long-term monitoring stations. And we're still teasing that out each year and haven't solidified that yet. As Annyssa mentioned, we have been working in coordination with the RCD and the Forest Service to implement the temperature monitoring across the Shasta Trinity National Forest. And we've been successful in implementing five SCI stream condition inventory projects. And so we're working on our sixth one and it's been a great year of monitoring.
- Josh Smith: We have Zach Blanchard is out working on some road upgrades at the moment. We've got him working on the Sims project area outside of High and Palm, kind of finalizing the last bit of funding associated with that zone. And then also in the McFarland footprint, we have contractors going out to do upgrade work for sediment reduction work. And then I did want to kind of say one more thing about that programmatic NEPA coverage that Leslie mentioned. So it's pretty exciting. It's hard to kind of explain how big a deal this is if it actually comes to fruition. The Water Board, Jake Shannon and team are working on this with Leslie and David and a number of other people, but getting programmatic coverage for watershed for metal restoration work on private lands is what the kind of the main effort on that side is. And the TRP has been funding and working on a programmatic NEPA coverage for some of the same activities. So we're really hoping that it'll be really streamlined once we start identifying projects in the near future, we should have a bunch of coverage and we'll just need to kind of hone in the permits as appropriate, but it should streamline, make things quicker, easier, less expensive and more effective.

- Trinity County Natural Resources Division

- David Colbeck: I wanted the RCD and Watershed Center to speak to it first, but what Josh and Leslie both just mentioned and be clear, it's not NEPA coverage, but coverage for wetlands or meadow projects and all of Trinity County under the Water Board Statewide Restoration General Order. So we're trying to create this pathway that allows these projects to be permitted by anybody or implemented by anybody in this group or otherwise, but it helps build some momentum and we're trying to design it and stretch it

### Questions?

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as far as we can really to capture the whole breadth of projects, but a lot of it will be focused on low-tech process-based restoration. So hopefully we'll have a better update in the next meeting here with the Watershed Council to see where that's landing. Another brief update, the Water Board CIA process, which I believe many of you are familiar with, it is Caltrans funding that is administered by the Water Board to be applied to TMDL listed basins. The county was able to apply for funding to help with some of the road disaster relief that's gone back for years now to treat road problems that are delivering sediment. And principally we were focusing on South County for that application. So while the current process or the current round is complete and there'll be another one next year, we're happy to be, I think, one of nine project proponents that were able to get in the door there and waiting to see how Caltrans will be able to fund any of those project proposals based on availability. [The general plan update has] gone out to public comment. I don't know when that closes. You may be aware that there was a small hiccup that they released the wrong version, I think. So they had to reset the public comment period. I'm not quite sure when that closes again, but after that, I, again, I'm not, well, I don't really know what the overall timeline would be. There have been a number of follow-up meetings, I think, for the housing element and I'm sure the zoning ordinance is in full swing. So please provide public comments based on any particular elements of interest.

- Flowra
  - Chris Losi: I just wanted to share that Flowra has recently signed an MOU with NCRP, a North Coast Resource Partnership. So we're now an approved consultant with the NCRP. Also, and planning to work on some fuels work, we're about to sign an agreement to do some fuel reduction planning in the post-mountain area. Certainly considering water along that same route, same set of projects, because we're also working on a roads sediment reduction planning project in post-mountain. We completed our initial surveys of the ground, of the roads out there, and we're using the wet model to calculate over surface erosion rates.
- Shasta Trinity National Forest
  - Christine Mai: We have been awarded some funding from our regional office with the Watershed Center and trying to figure out how to get it put to use in existing agreements, but that might be a barrier for us. So we might have to wait a year, and I don't want to surprise Watershed Center with that news, but that's the way that it's looking at the moment.
- North Coast Regional Water Quality Control Board
  - Bryan McFadin: We do have a new federal lands permit, that's notable. But one thing I want to talk about that I think will be interesting to most everyone on the call here is that the State Water Board is moving forward with developing a hydrologic model of the South Fork Trinity for their supply and demand assessment program, and I'll put a link in the chat there. And so they've got a contract with an outfit called Paradigm Environmental, who I have some experience with, and they're really good at this work. And so the goal is to develop a water supply model of the South Fork Trinity. It's one of, I can't remember the number, something like 10 watersheds in the north part of the state that they're doing this with. And this is to help them with the implementation of their water rights program and estimate the amount of water that's available so that they can compare that to the amount of water that's in demand and implement their water rights priority system. So they've done this a little bit in the Russian in the past drought. And so this, I think they've had some lessons learned about how unprepared they are for drought, and this is a big push to get better prepared. And I've had some recent conversations with them to help them sort of get oriented. I know that they're going to be contacting some folks in the watershed and some of you on the call. And they're looking for flow information, but also want to begin a sort of public outreach component of the project and so that they can get the public involved and

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answer questions and that sort of thing. So I would say expect, some of you can expect to hear directly from the State Water Board in the near future. They've been doing this in the Navarro Watershed down here in Mendocino County and are a little further ahead there. And their first public meeting there is in October. So I think that's sort of the model they're going with is to develop some preliminary information, have some public meetings and further their product, which is the model, but also get the public aware of what's going on. So that's one thing I wanted to mention. And then I don't know if you are all aware that the Department of Water Resources has a grant available right now for the California Streamflow Improvement Program, I think is what it's called, where they are providing funds for organizations that are interested in establishing or reestablishing stream gauges. And so it's a big push of money to get the gauges established and do a little bit of the maintenance and monitoring work, but the grants are, they come with a requirement that the gauge be maintained for a certain amount of time beyond the term of the grant. So it is a pretty unusual opportunity, I would say, for anybody who's interested in getting some gauges established and buying some better equipment than just some onset pressure transducers. I think they're accepting applications through December and the deadlines are on their page that I'll share. But I think both of those things are pretty interesting pieces of news for water management on the North Coast. But if you got a question or would like me to forward your information to the state board people I'm working with for them to follow up with you, send me your email or put it in the chat and I could do that. With the hydrologic model they're developing, the intention is for it to be open source when they're done and be an available tool for watershed practitioners to use moving forward. And so, that's exciting in itself, just that there will be this watershed model that's got some calibration and some really good people working on developing it that they'll leave behind for use for people like you on the call. It's on a pretty quick timeframe because of the contracting requirements of the state. But I also know that Paradigm is pretty good at making these things happen quickly. The thing that'll take the most time is gathering up the information to calibrate it. And of course, the efforts that I've been involved with Josh and Cindy and others will help with that, but I know that there's a lot of other flow monitoring that's continued and other stuff that I've not been involved with. And so, that data will really help with the development of the model. But I think South Fork Trinity is actually unusual in that there is a fair amount of data on flows for them to calibrate with. But to answer your question, I don't know exactly what the timeframe is, probably a year or something. I don't know that it's gonna have hill slope storage built into the model that Paradigm's building, but they do incorporate a remarkable amount of data like vegetation and do watershed-wide estimates of evapotranspiration and do the water balance at the hill slope level.

Meeting End 11:26 am

### Questions?

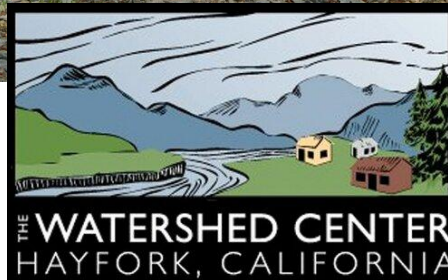
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# Corral Gulch Restoration Project



**Yurok Tribal  
Fisheries Program**

**USFS**



**California Department  
of Fish and Wildlife**



# Floodplains & Meadows



- Floodplain meadow benefits:
  - ◆ Flood attenuation
  - ◆ Clear, cold summer baseflows
  - ◆ Productive and diverse habitats
  - ◆ Natural firebreaks
- **Activated floodplains keep more water on the landscape, for longer!**



# Indian Valley and Corral Gulch

- Incised channel with high stream power.
- Minimal wet meadow habitat – replaced by conifers.
- No flows by late summer and low water table.



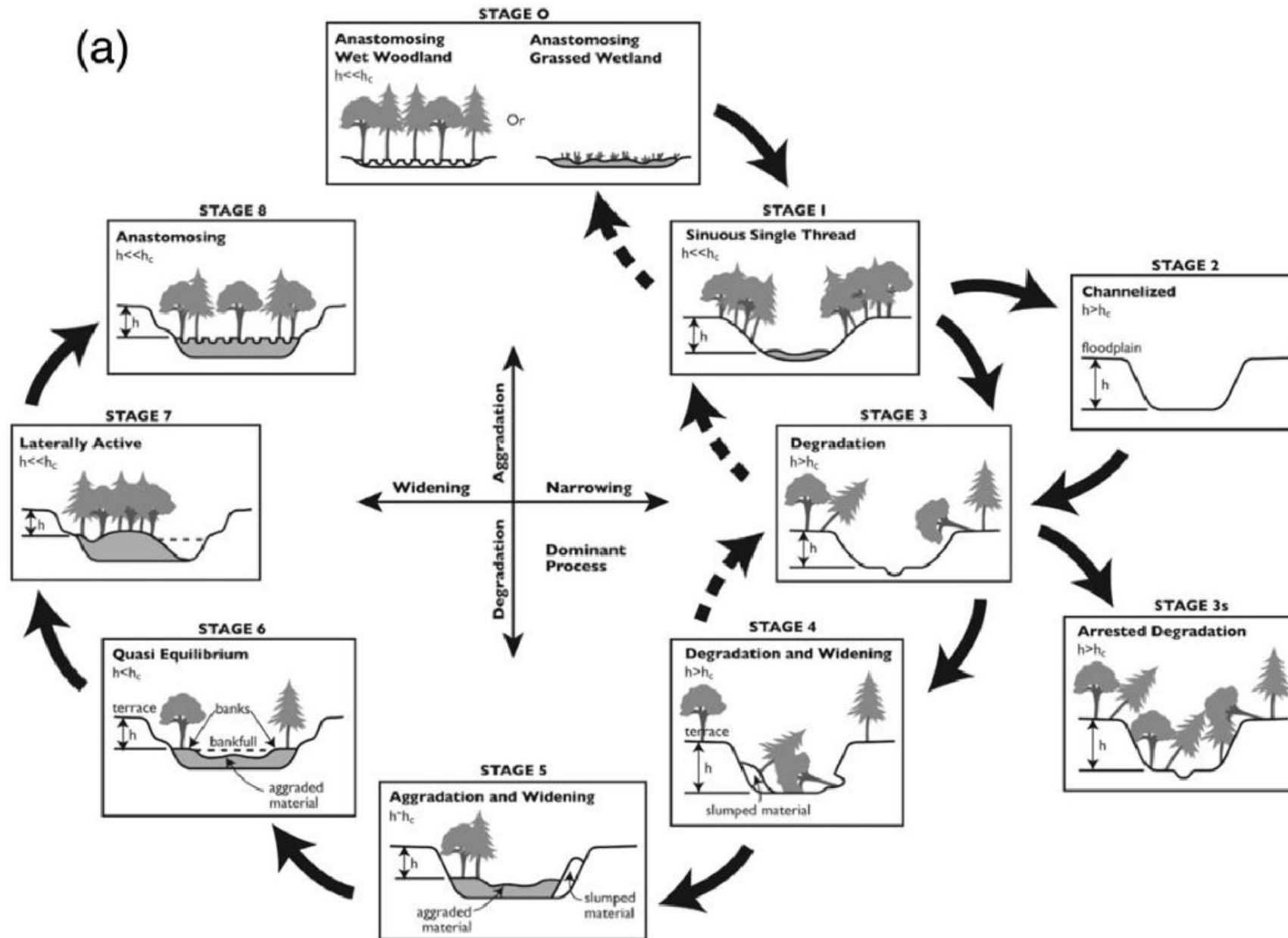


# How did this happen?

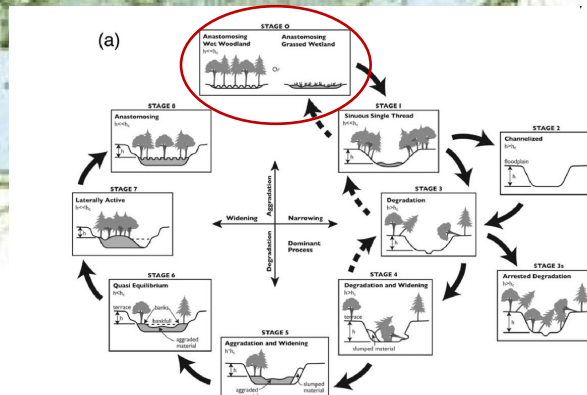
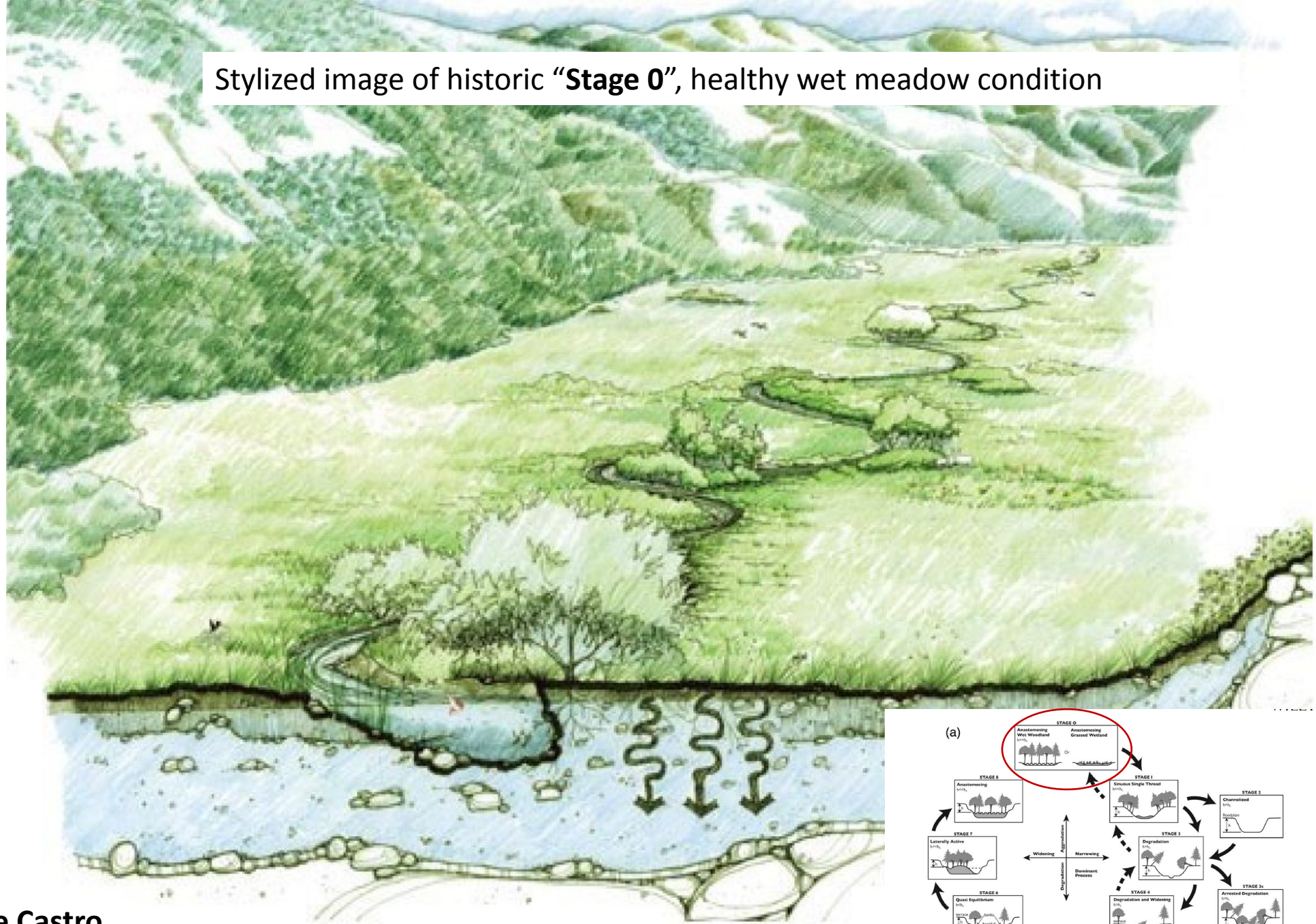




# Stream Evolution Model (Cluer and Thorne) "Stage 0 – Stage 8"



Stylized image of historic “Stage 0”, healthy wet meadow condition



Credit: Janine Castro

From: NPS.gov



Sugarloaf Meadow, Kings Cyn. NP

Slide Credit: Evan Wolf



Cattle grazing in Sequoia-Kings Canyon National Park, 1941



Slide Credit: Evan Wolf



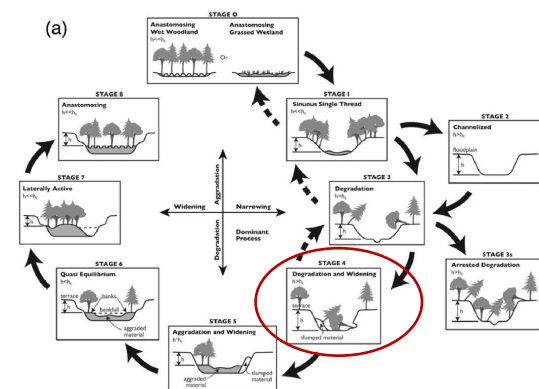
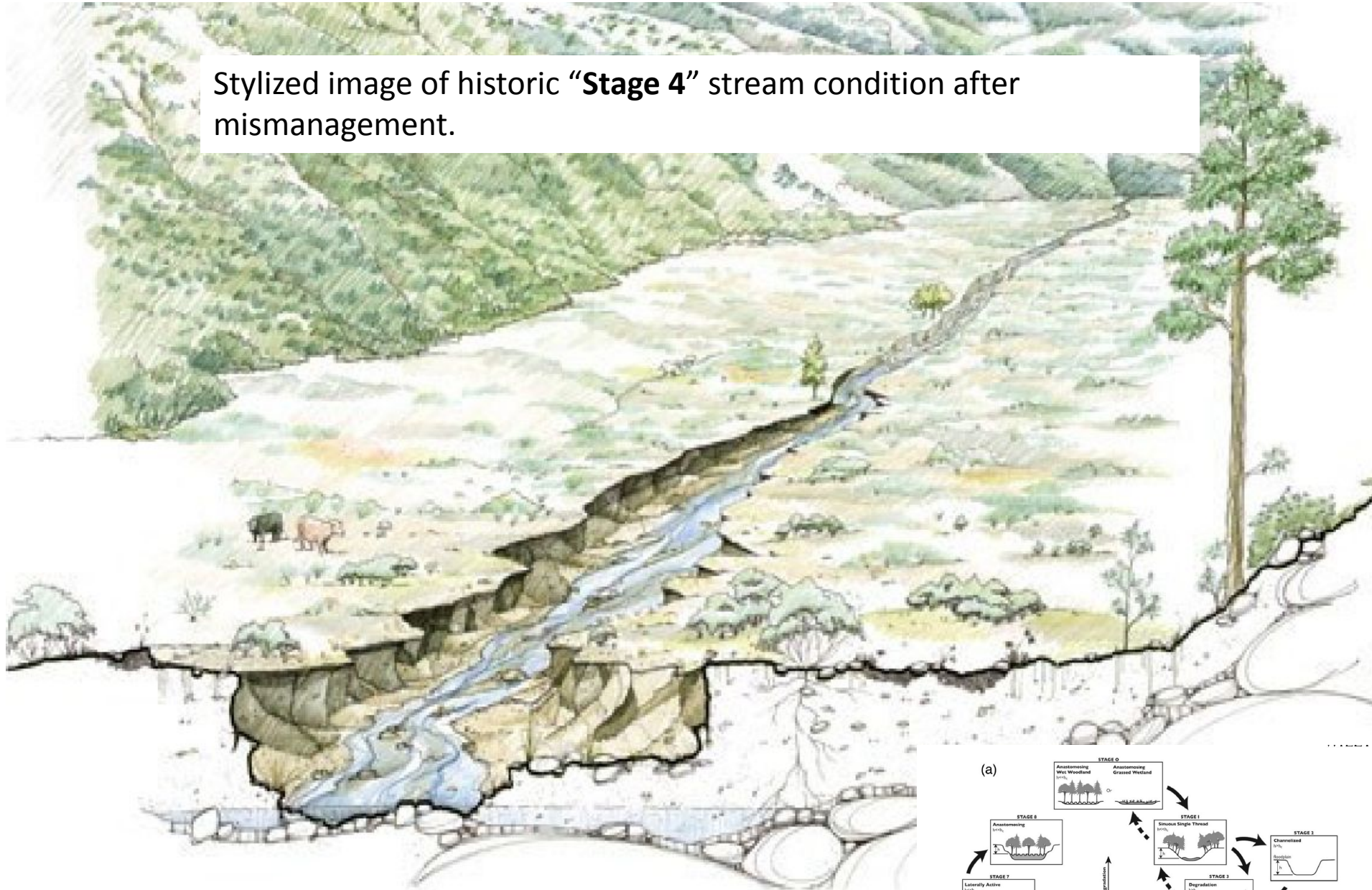
Sugarloaf Meadow, Kings Cyn. NP



Cattle grazing in Sequoia-Kings Canyon National Park, 1941



Stylized image of historic “**Stage 4**” stream condition after mismanagement.



Credit: Janine Castro

From 1946 USFS  
"Erosion Survey Problem Area and Water Management  
Inventory"

PROBLEM AREAS

Meadows and Grasslands:

The Hayfork Ranger District, largest on the Trinity (359,047 acres gross), appears to have the least wide spread erosion problem, but the most severe. Indian Valley is the central problem of first priority upon the Forest. Within the past 10 years the drainage way through this area has cut a gully almost 3 miles long varying in width from a foot or two at the head to from 30 to 50 feet at the lower end, near the Indian Valley Guard Station. Depths range



# Continued incision and degradation in Indian Valley



Photo: Dejulio

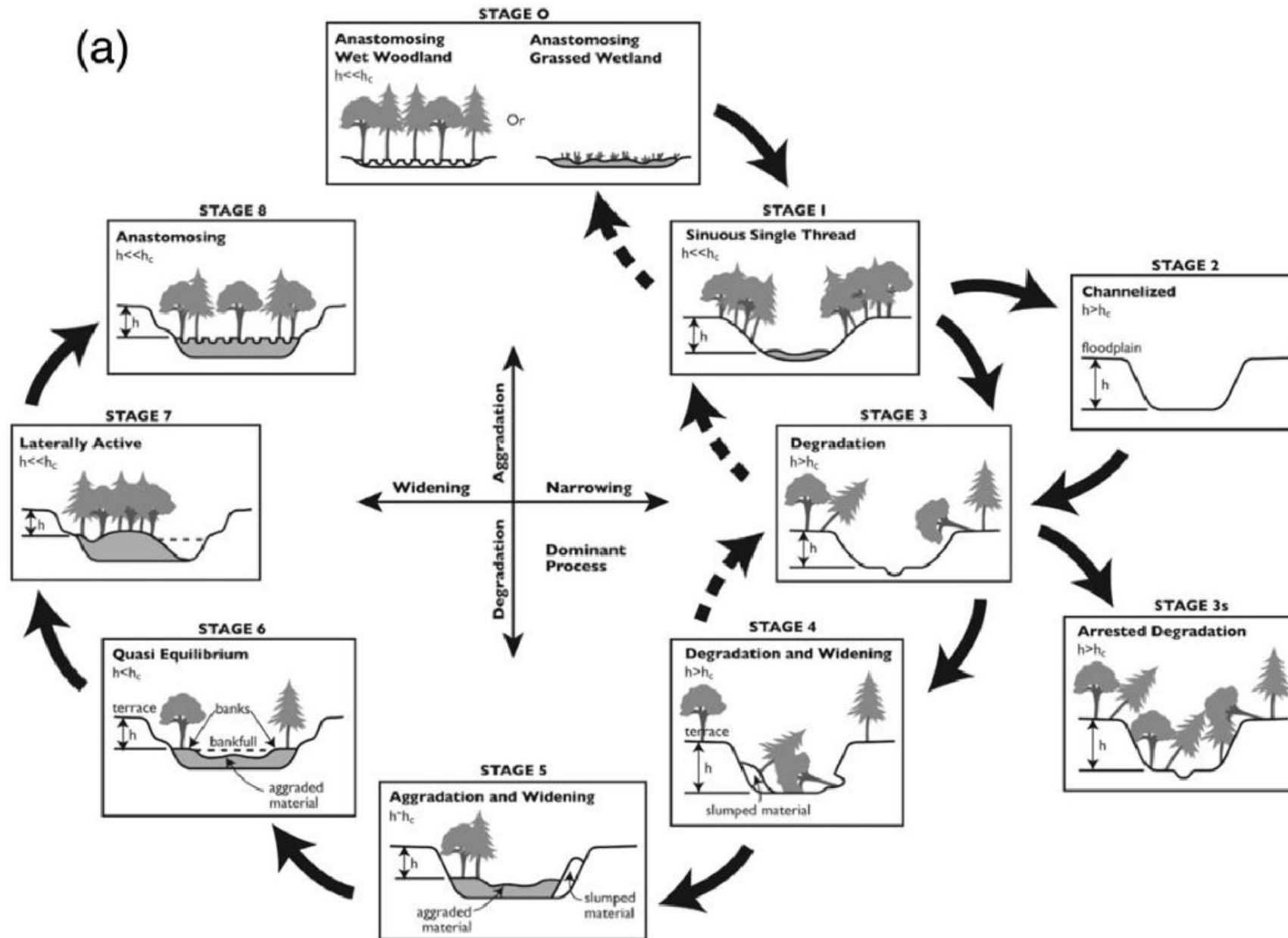


# Can we reverse the damage?

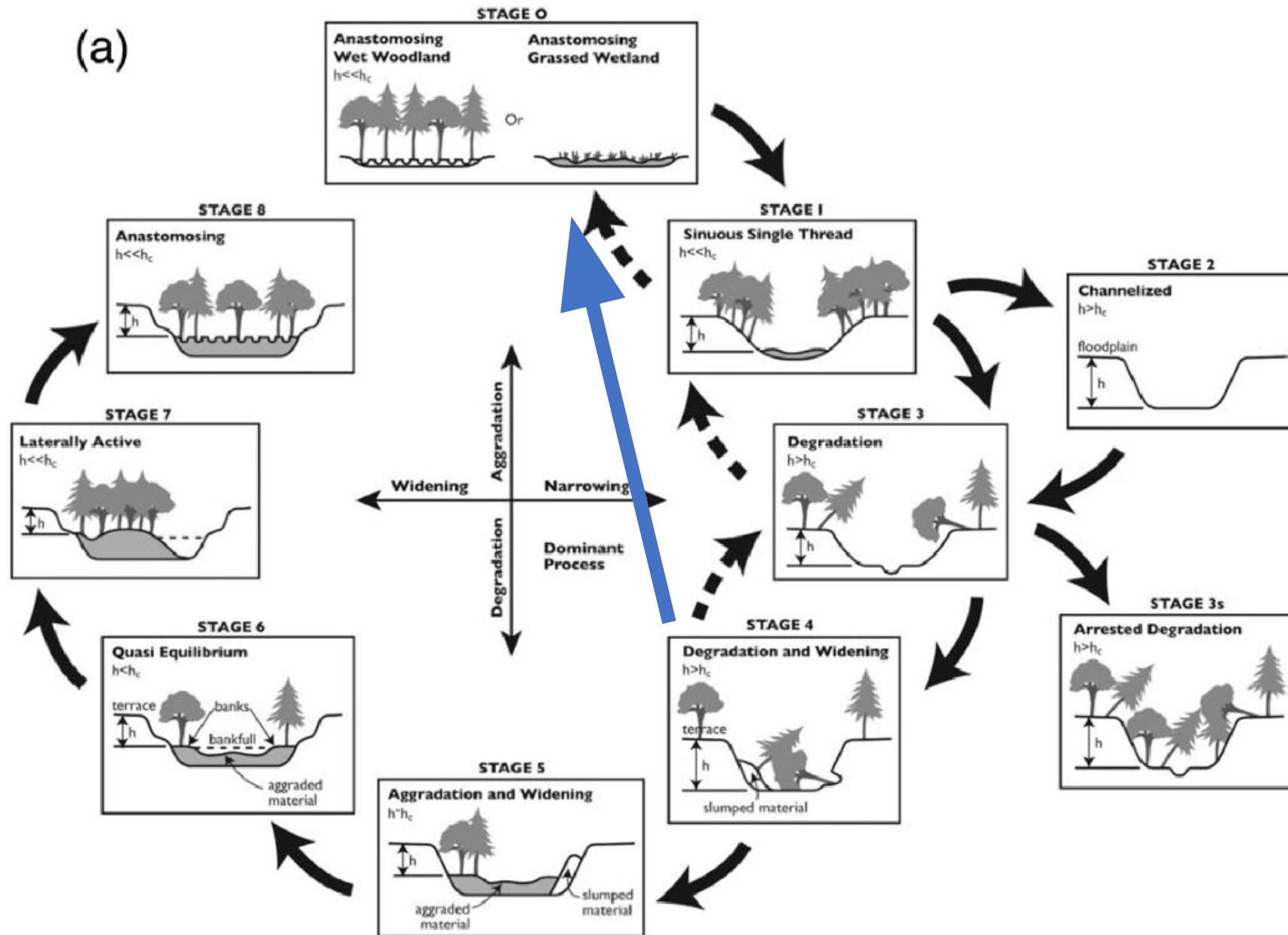




# Stream Evolution Model (Cluer and Thorne) "Stage 0 – Stage 8"



# Stream Evolution Model (Cluer and Thorne) "Stage 0 – Stage 8"





**Repairing large-scale degradation might require some diesel...**



**Photo: Dejulio**



**But smaller problems can benefit from a lighter touch.**



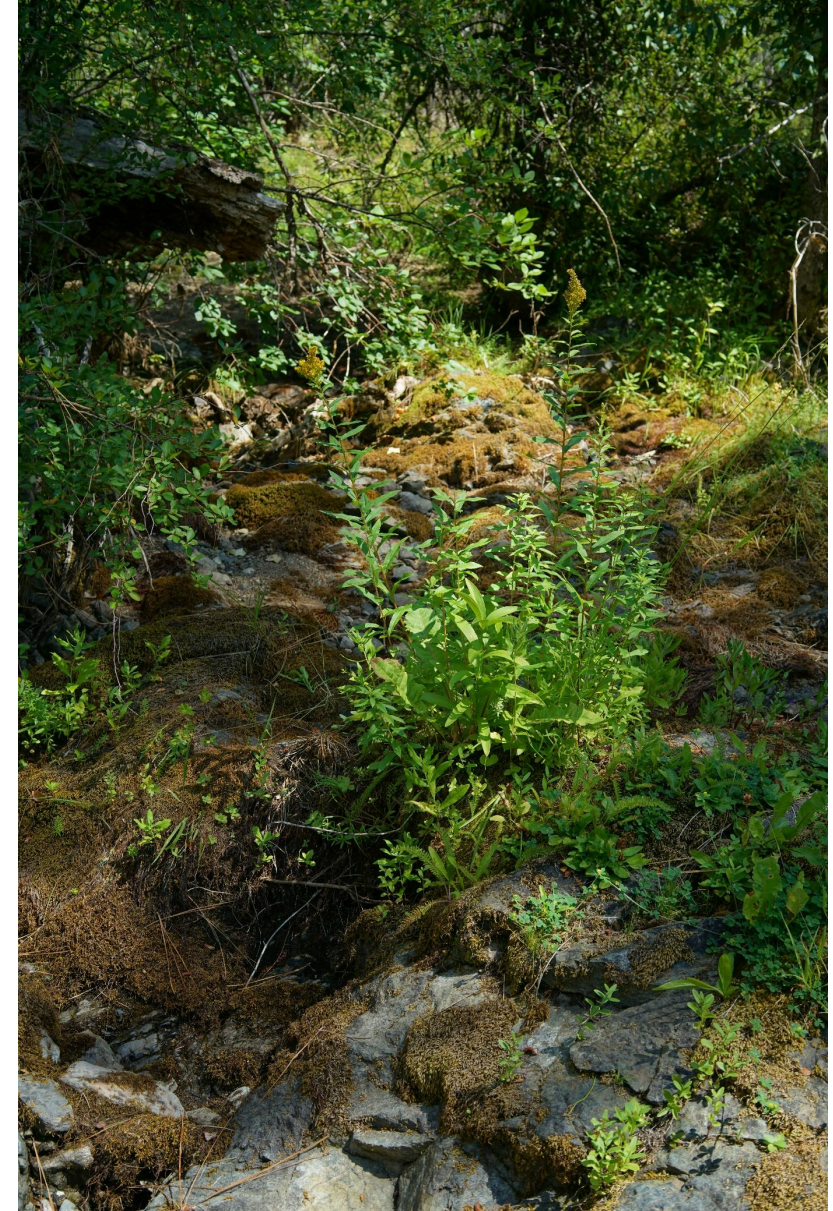
**PBR work by Symbiotic  
Restoration**





# Corral Gulch Restoration Project

- Restore level Stage 0 floodplain surface in the lower reach.
- Raise a road crossing to match the new Stage 0 floodplain surface.
- Place large wood throughout the project area.
- Use PBR techniques to retain sediment and adaptively manage the project area.
- Construct livestock exclusion fencing to protect the new floodplain surface.
- Revegetate disturbed areas.
- Monitor surface hydrology, groundwater, and vegetation.







T02N, R07E. Sec. 23

T02N, R07E. Sec. 24

### Project APE and Overview





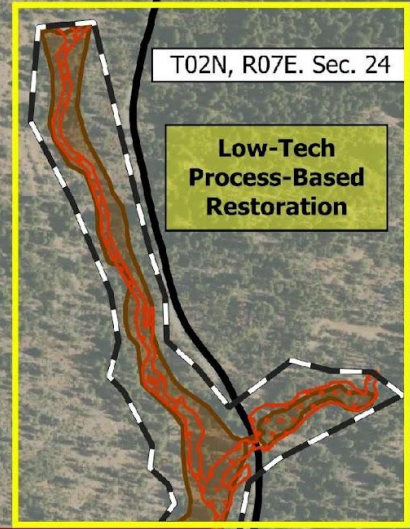
-  Area of Potential Effect (59.42 acres)
-  Estimated Disturbance Area (34.32 acres)
-  Restored Floodplain Estimate (23.77 acres)
-  Upper Reach Process-Based Restoration (2.1 acres)

Figure 2. Overview of the Corral Gulch Restoration Project, showing the Area of Potential Effect and zones of heavy equipment and process-based work. The Estimated Disturbance Area includes all design cut and fill surfaces, anticipated transport routes within the site, and an additional buffer. Process-Based Restoration may occur throughout the APE but is specifically delineated for the upper reach, following the incised channel. The Restored Floodplain Estimate is the area that the project is expected to restore to hydrologic conditions which more closely match historic patterns; exact times, locations, and degrees of inundation will vary depending on conditions.



**Stage 0 Cut-Fill Heavy Equipment Work + Low-Tech Process-Based Restoration**

T02N, R07E. Sec. 26

T02N, R07E. Sec. 25

USFS Road 2N18

USFS Road 2N10

0

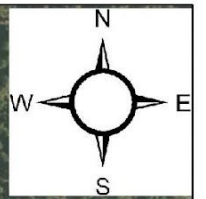
0.5

1 mi





# Geomorphic Grade Line – Relative Elevation Modeling

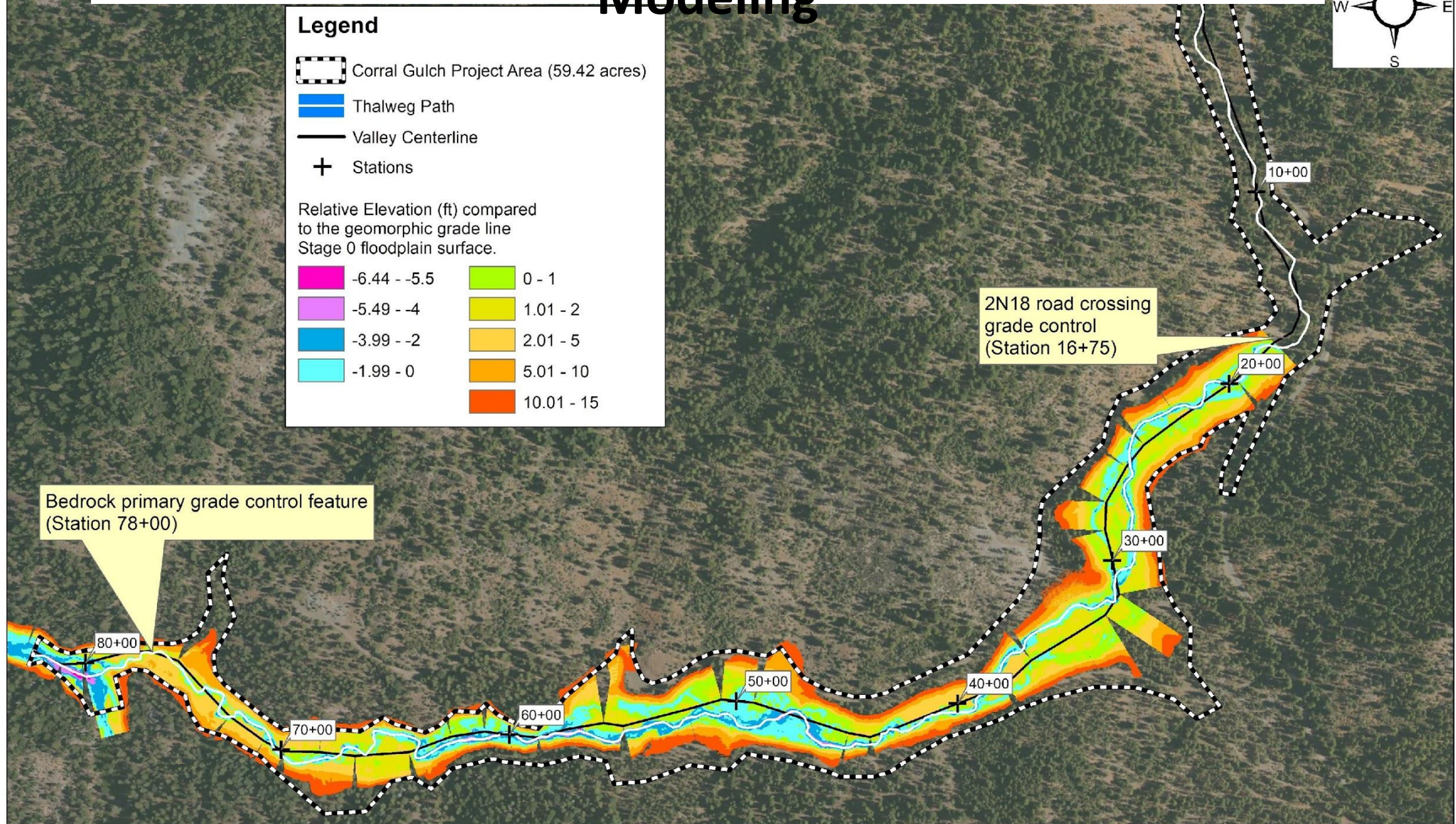


**Legend**

- Corral Gulch Project Area (59.42 acres)
- Thalweg Path
- Valley Centerline
- Stations

Relative Elevation (ft) compared to the geomorphic grade line Stage 0 floodplain surface.

-6.44 - -5.5	0 - 1
-5.49 - -4	1.01 - 2
-3.99 - -2	2.01 - 5
-1.99 - 0	5.01 - 10
	10.01 - 15



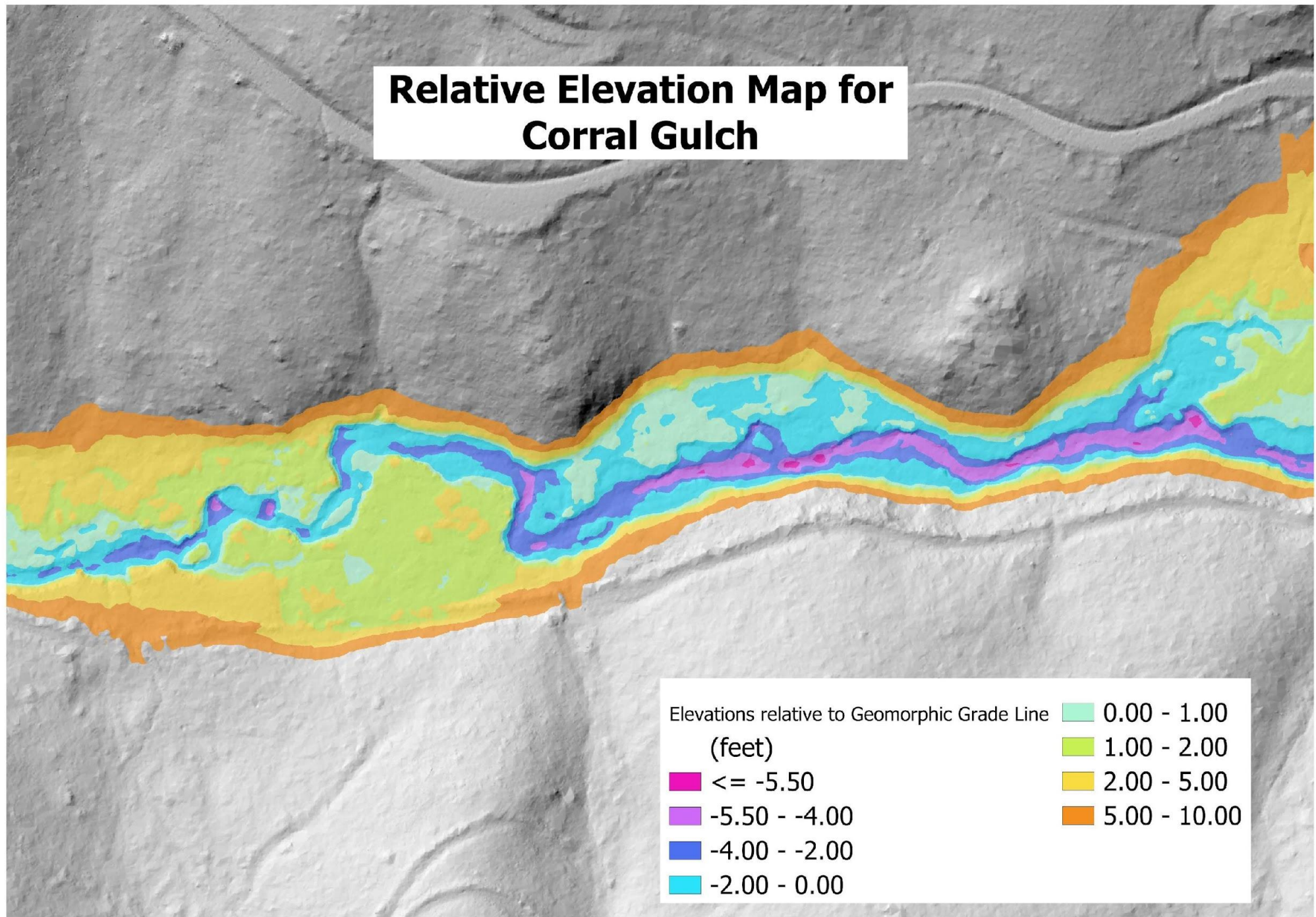
Bedrock primary grade control feature (Station 78+00)

2N18 road crossing grade control (Station 16+75)

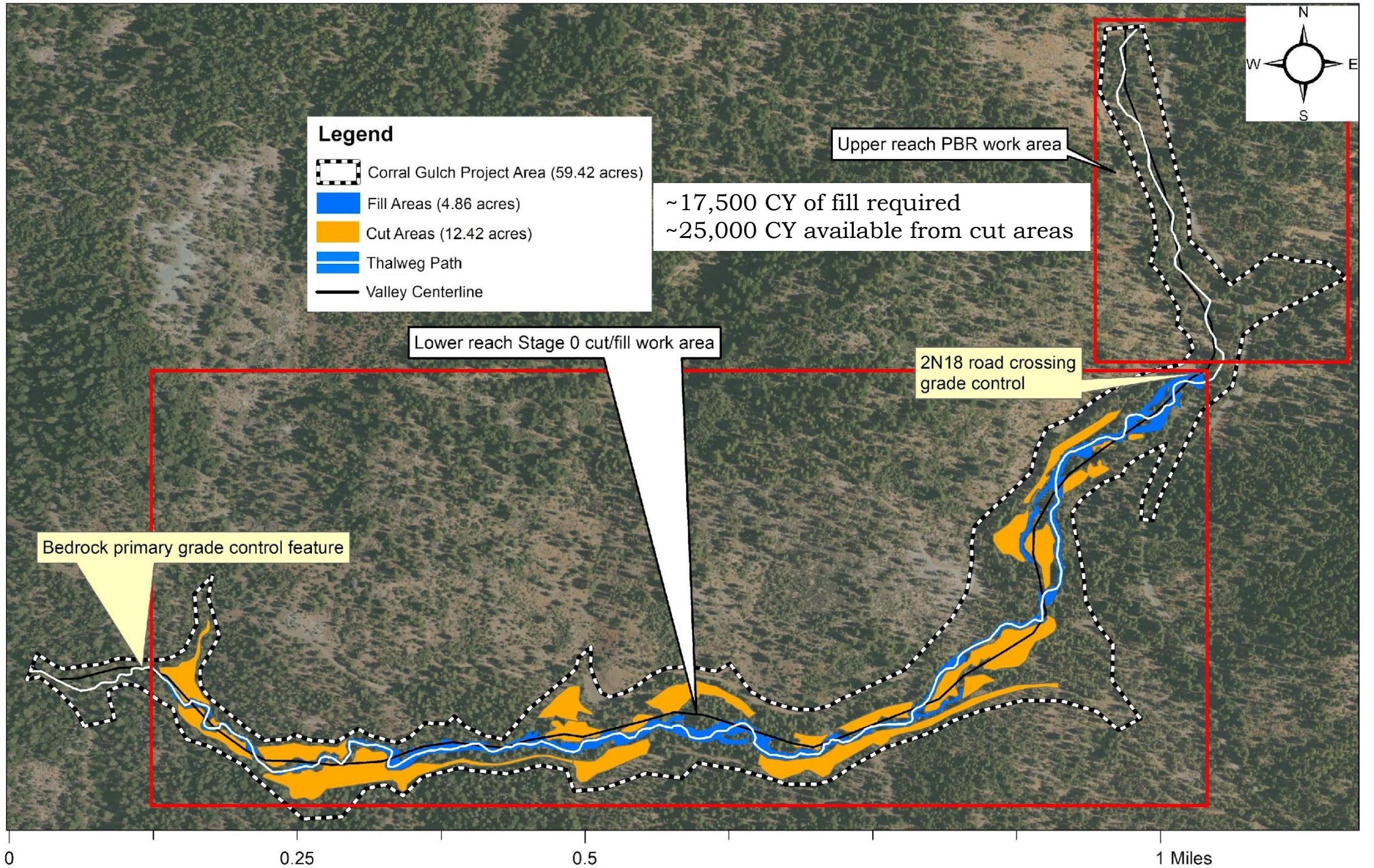
0 0.25 0.5 1 Miles



# Relative Elevation Map for Corral Gulch

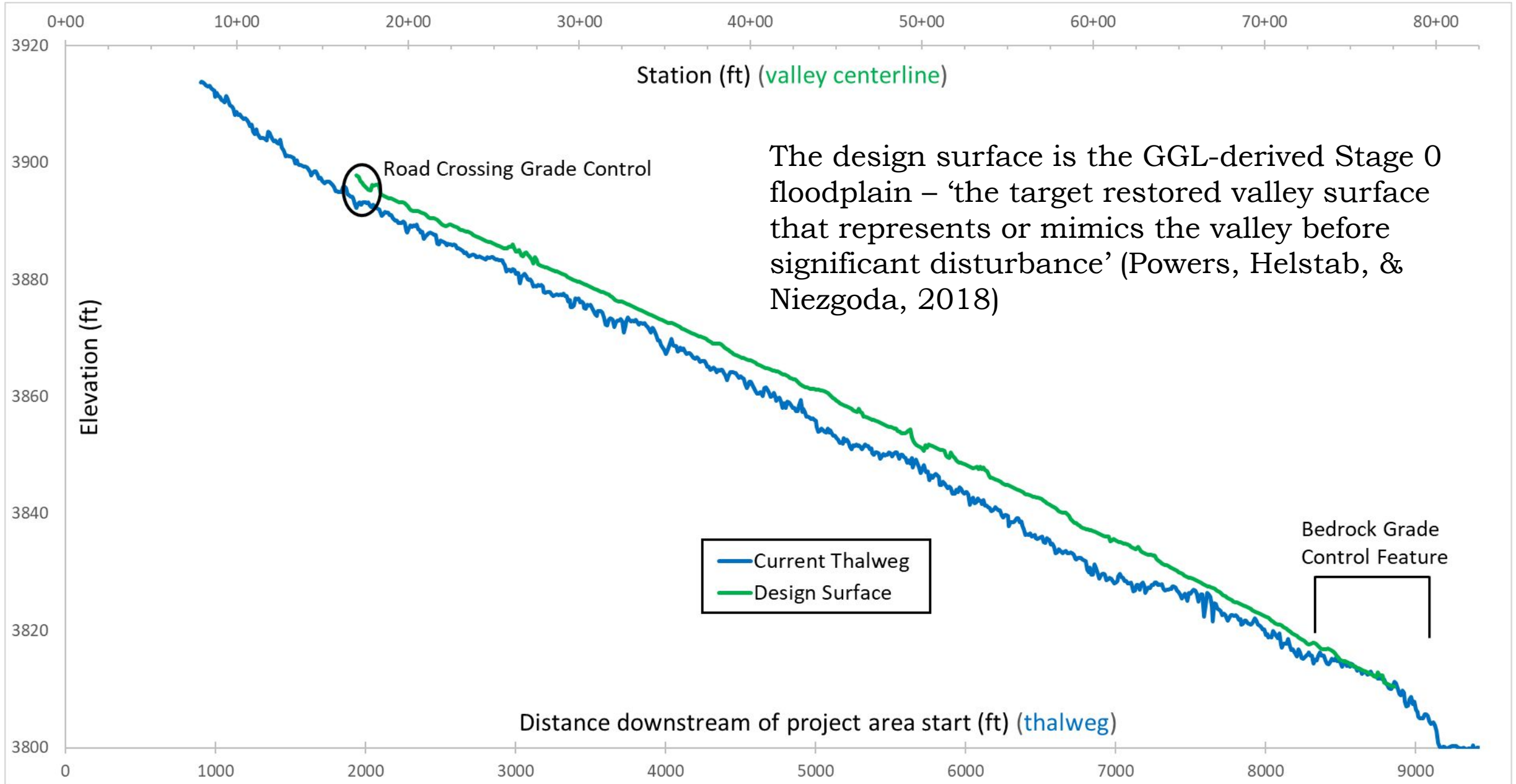








# Geomorphic Grade-Line Derived Stage-0 Surface



Pre-restoration design surface for the Corral Gulch Meadow Restoration Project.



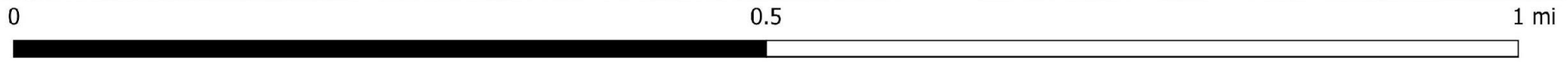
### Legend

-  Corral Gulch Restoration Project Area
- Design Surface Elevation (feet)
  -  3,987
  -  3,797
-  Paved Road
-  Gravel Road

Upstream Stage 0 boundary

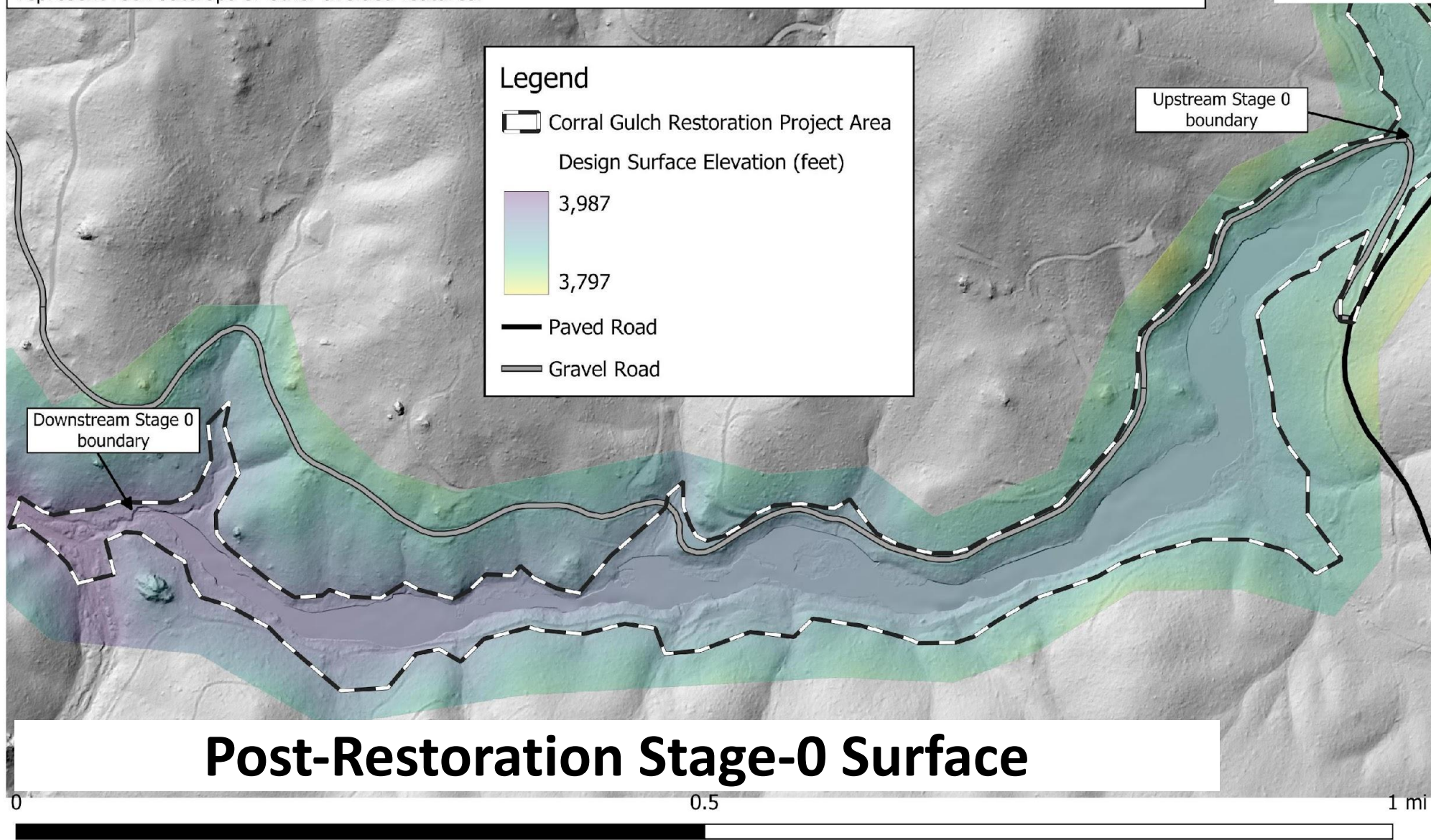
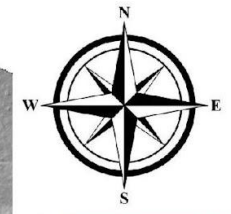
Downstream Stage 0 boundary

# Pre-Restoration Incised Channel





Post-restoration design surface for the Corral Gulch Meadow Restoration Project. Design surface raster is calculated based on GGL-derived relative elevations subtracted from the original DEM. The resulting raster was then clipped to the Cut and Fill design polygons, and remerged with the original DEM. This map representation shows occasional sharp elevation cut-offs in elevation between cut/fill areas and the surrounding terrain, but during actual implementation these areas will be graded at a maximum 50% slope. 'Islands' of original terrain features are typically within +/- 1' of the design surface elevation, or represent rock outcrops or other avoided features.





# Questions?



Whychus Creek

Slide Credit: Lauren Mork and Angie Huber

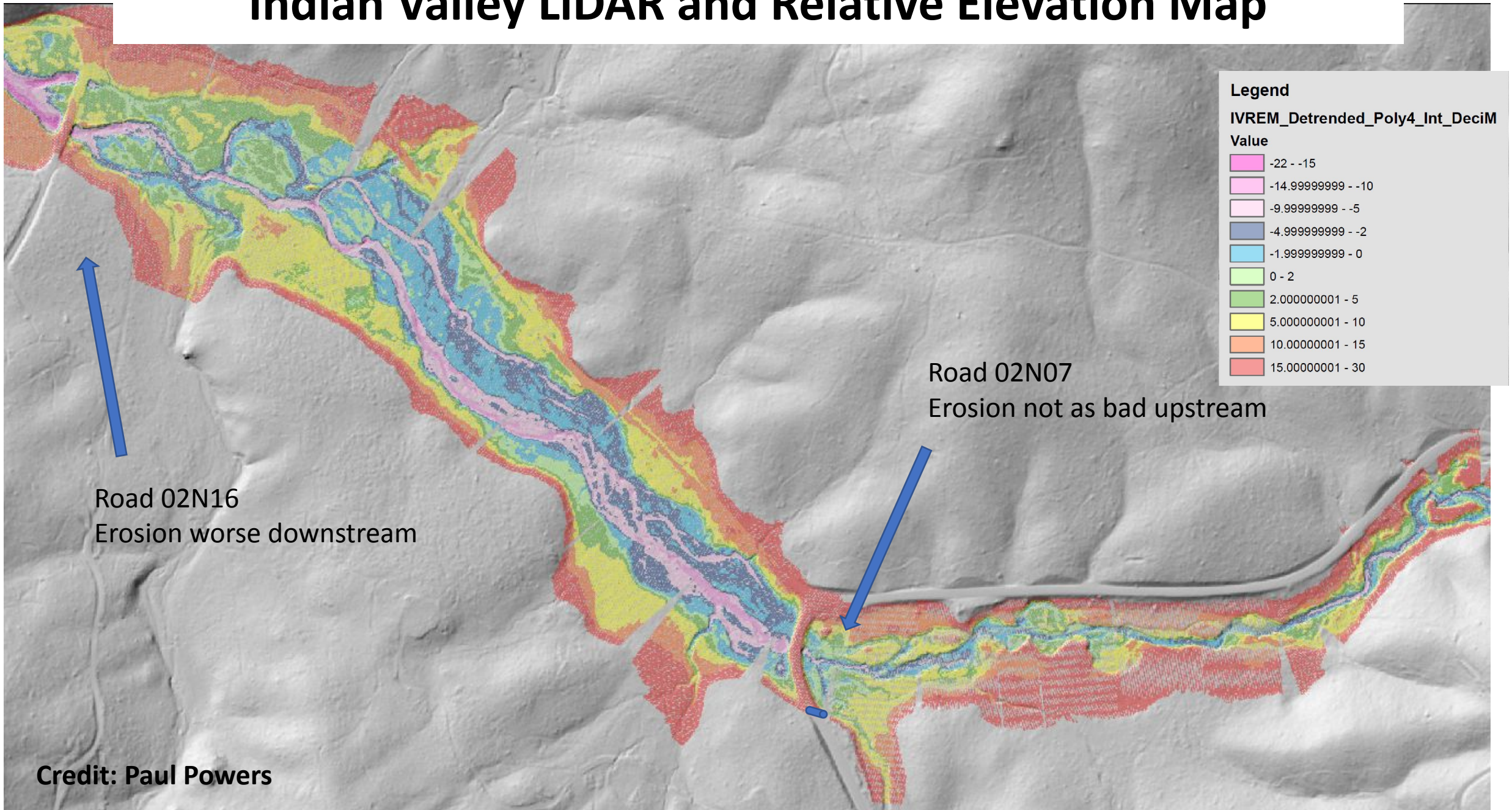


# Indian Valley and Corral Gulch





# Indian Valley LiDAR and Relative Elevation Map

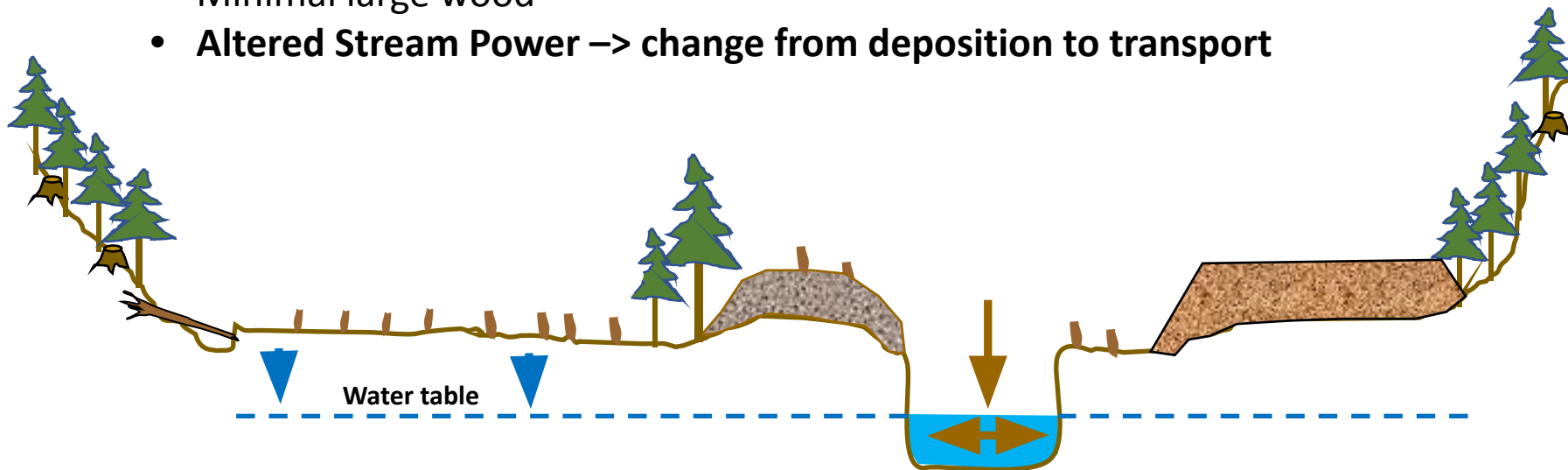


## Changed Condition in Depositional Environments – “Stage 4”

- Road building
- Conifer harvest
- Diking and channelization
- Blocking or filling side channels
- Grazing and farming
- Mining

### Leads to:

- Single incised channel
- Loss of water table/wetlands
- Altered vegetation types
- Minimal large wood
- **Altered Stream Power → change from deposition to transport**



# Geomorphic Grade-Line Derived Stage-0 Surface

