

## Culvert Replacement

The watershed problem this project seeks to address is removing and replacing a highly deteriorated, rusted, and undersized culvert (5' diameter by 20' length) located on main-stem Adams Creek, which enters South Tenmile Lake at Shuttlers Arm. This specific project area is on privately owned agricultural land that is seasonally grazed (May-October) by a herd of 11-40 cows. During the winter rainy season, the pastures are almost entirely inundated and cattle are moved off location typically from October/November through the following spring. The main Adams Creek stream channel runs centrally down the length of the pasture, with the left and right forks branching out to flow in channelized "ditches" along the north and south perimeter of the pasture. A stream crossing on the main (middle) Adams Creek channel provides farm and livestock access for crossing from the south side of the pasture to the north side. The crossing had a severely undersized and partially collapsed culvert, which was causing a pinch point in the channel, as well as being in danger of washing out and destroying the stream crossing entirely. Coos SWCD worked with the Tenmile Lakes Basin Partnership to replace the culvert with an active-channel width concrete slab bridge. This project was funded by an OWEB small grant for \$15,000.





## Riparian Enhancement

This small farm property is 17.04 total acres with approximately four acres of pasture, and is currently utilized for limited livestock grazing. The operation has, depending on season and time of year, anywhere from 16-48 goats and 2 horses utilizing the pasture. The pastures are equipped with an off-channel watering trough system and so the animals do not need to water directly from the river and can therefore be completely excluded from the channel. The primary resource concern we were able to help the landowner with here was the lack of sufficient established riparian vegetation to provide shade and stream bank stability along the approximate 700 feet of riverbank of the North Fork Coquille River. With funds from an OWEB small grant, the landowner constructed the barbed wire fence you see in the photos (right) and Coos SWCD crew members and partners were able to plant approximately 400 native trees.

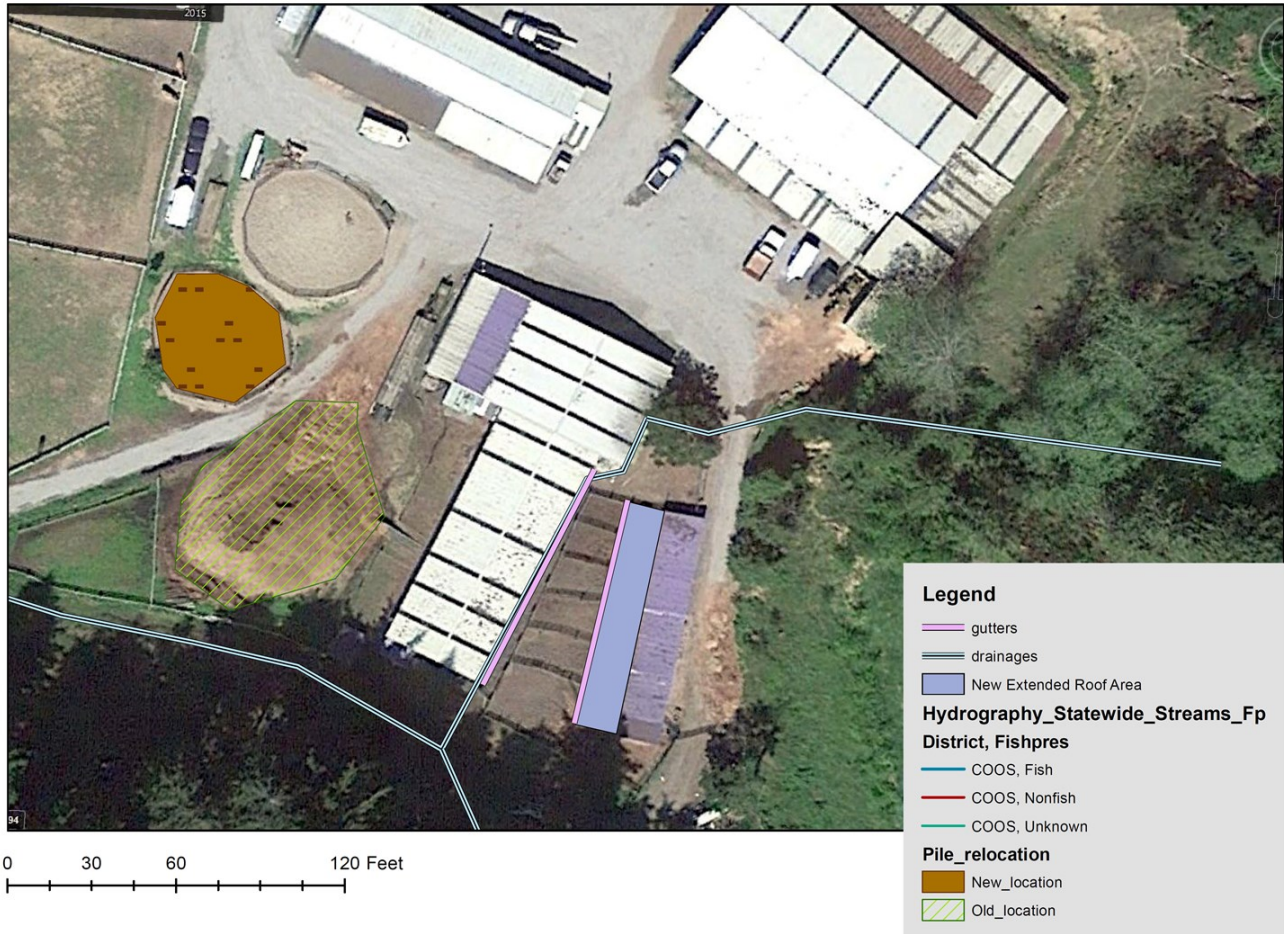




# Larry and Cindy Johnson

## Trillium Stables Agricultural Water Quality Project

### Trillium Stables Agricultural Drainage Management Plan



### **Background:**

Trillium stables is a small family farm and horse boarding facility housing anywhere between 20-30 horses throughout the year. In addition, the farm is home to numerous ponies, donkeys, turkeys, peacocks, ducks, and chickens as well as several cats and dogs. The property slopes westwards towards lowland (wetland) seasonal pasture through which numerous channelized tributaries of Isthmus Slough join and flow together out into the main Isthmus Slough channel. Several small, unnamed perennial streams drain down from the upper slope (east and southeast sides of property) and run alongside the barn and paddock areas, ultimately draining into the channels which run through the pastures, and out into Isthmus Slough. These streams for the most part flow directly through the barnyard and therefore were running through areas which are heavily concentrated with animal wastes and, during rainy months, mud. There was especially high potential for contaminated runoff from the barnyard area due to the high concentration of animals, lack of groundcover, and large amounts of water draining through this area and directly into Isthmus Slough tributaries in the rainy winter season. The site also lacked sufficient ground cover and vegetation in some areas to help provide shade, bank stability, and filtration of runoff. Sediments and farm wastes contribute to impaired ecological function in stream networks, which reduces water quality for beneficial uses, and the productive potential for salmonid species.



## Trillium Stables Agricultural Water Quality Project cont.

### *Solutions:*

Larry and Cindy were a pleasure to work with and over a 2 year period they employed a number of creative manure and run-off strategies. With OWEB small grant funds, over 130 ft. of rain gutters were installed on the barn and covered paddock area. The covered paddock area and the rain gutters helps to reduce the amount of mud and manure runoff from the paddocks. Larry also relocated the manure storage pile to reduce potential runoff and spread it over his pastures in the summer for fertilizer. Grass seed was spread on the newly created buffer area between the paddocks and the barn to grow a filter strip, which would help clean water as it drains into the streams and into Isthmus Slough. However the numerous fowl on the property tended to eat the grass seeds and the landowner could not get any grass to grow. The alternative solution was to install a culvert underground for that segment of stream which runs through the paddock area along the barn. Larry also utilized electric fencing in several areas to create setbacks on the streambanks, to allow vegetation to reestablish. These project activities together will effectively provide a direct reduction in the potential for animal wastes and sediments generated by agricultural activities to be entered into the two small streams that move through the barnyard and feeding area, out into the wetland segments of the stream network where there is potential for juvenile coho to rear during winter months.

*(Below) Initial site visit, December 2015 shows original condition of the small hillside pasture which was being used as an exercise area, and tributary stream.*



*(Above) Follow-up site visit, October 3<sup>rd</sup> 2017 shows improved condition of the small hillside pasture (now retired) which was being used as an exercise area, and vegetation beginning to grow up along tributary stream.*

*(Right) follow-up site visit, April 25th 2018 shows improved condition of the small hillside pasture (now retired) which was being used as an exercise area, and vegetation grown up along tributary stream.*





# Trillium Stables Agricultural Water Quality Project cont.

BEFORE



Paddocks between barn and stables. BEFORE: Highly concentrated mud/manure runoff area (6- 14-2017)

AFTER



Paddocks between barn and stables. AFTER: Paddocks have been reduced and covered with roofing. Sparsely grassed area in the center is to be used as a buffer. Vegetation has been slow to grow due to compaction and poultry eating the grass seeds (8-8-2018).



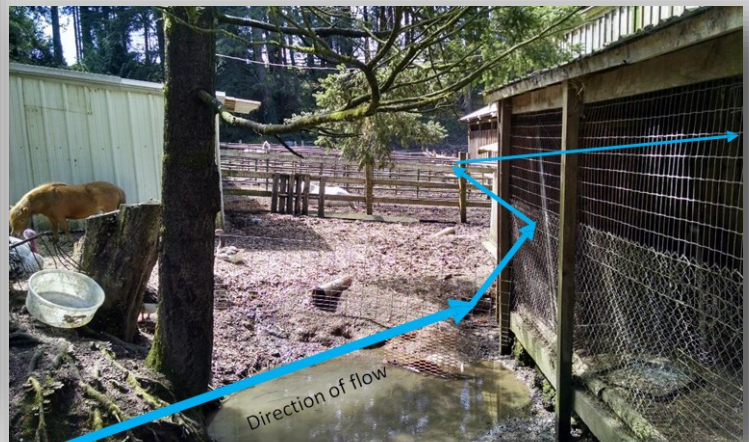
Main Barn, adjacent drainage: BEFORE (6-14-2017)



Main Barn, adjacent drainage: AFTER (8-8-2018)



Main Barn, adjacent drainage (facing south). AFTER: Culvert has been installed so that there is no longer any above-ground flow through the stable yard; tree removed and vegetable garden planted (7-3-2018).



BEFORE water flows directly through the stable yard and alongside main barn (6-14-2017)



# Trillium Stables Agricultural Water Quality Project cont.

BEFORE



Initial site visit, December 2015. Original location of manure pile.

AFTER



Final site visit, August 2018. Original location of manure pile (now an exercise area)



Initial site visit, December 2015. Original location of manure pile.



FINAL site visit, August 2018. New location of winter-storage manure pile, on a hardened gravel surface overlaid with rubber stall mats, and with telephone pole curbs to further prevent any runoff in direction of stream.



Initial site visit, December 2015 shows highly concentrated manure- runoff flowing directly into the tributary stream



FINAL site visit, August 8<sup>th</sup> 2018 shows improved condition of the corral area; the pile has been relocated; gutters and roofing have been constructed on the west side of the barn to prevent runoff from the stalls on that side. A vegetative buffer has been established along the tributary stream.