10. Walker Ridge Grant Application

Project ranking criteria for (Project Title):_____

1. Does proposed project include one or more stream crossings and corrective grading within and close to a stream channel?

   ☐ Yes ☐ No

   If yes: Number of stream crossings:_____

   Corrective grading within and close to a stream channel:_____

2. Are improvements to roads in priority sub watersheds?

   ☐ Yes ☐ No

   If yes: Which priority sub watershed:_____

   ☐ Refuge sub watershed ☐ Critical sub watershed

3. Is the proposed project maintained by a Road Maintenance Association?

   ☐ Yes ☐ No

   If yes: Name of Road Maintenance Association:_____

   Is the proposed project a cultivation sites approved under the 2016 Commercial Medical Marijuana Land Use Ordinance (CMMLUO) AND will the improvements bring the road into compliance with the standards?

   ☐ Yes ☐ No

   If yes: What are the required standards/Conditions of Approval: _____

4. Is the proposed project located in an area of highly erodible soils, steep slopes, proximity to a watercourse(s), and have the presence of impacted fisheries?

   ☐ Yes ☐ No

   If yes, check all that apply:

   ☐ Highly erodible soils ☐ Steep slopes
   ☐ Proximity to a watercourse ☐ Presence of impacted fisheries

   Provide additional notes, if needed, based on boxes checked above:_____

   _____

   _____

After evaluating the above, provide the following points (not to exceed one hundred total) based on the proposed project's:

• Project Design and Expected Outcomes – up to a total of 80 Points, based upon the project's alignment with the Program requirements and criteria set forth in these Guidelines.

Total score:_____

• Project Budget – up to a total of 10 Points, based on the applicant's ability to perform the work necessary to implement the project in a cost-efficient manner.

Total score:_____

• Experience and Capacity – up to 10 Points, based on the applicant's experience and capacity to perform the work necessary to implement the project.

Total score:_____

Total Final Ranking Score (out of 100 points):_____

APPLICATION PACKET CHECKLIST

Please check below to ensure you have a complete application. Once complete, email the following documents, in pdf format with the text "Application for Remediation Grant Program Funding" in the subject line to mrichardson@co.humboldt.ca.us.

- X Signed Application Submission Form
- X Project Description – Summary of the Project, up to 2 pages.
- X Plot Plan
- X Plot Plan Checklist – Attached
- X Cross sections of proposed work including topographic elevations
- X Scope of Work – Detailed Description of Work
- X Schedule for Completion – Identify Milestones
- X Erosion Control Plan and Monitoring Plan
- X Budget – Be as specific as possible – sample attached
- X Project Maps and Figures
- ☐Letter(s) of Support (optional)

APPLICATION FORM - Commercial Cannabis Land Use Ordinance Mitigation and Remediation Fund Program

Project Title: Walker Ridge Road Improvements Date of Application: 10/31/2021

Applicant Name: Walker Ridge Family Farm, LLC Project APN: 216-073-006

Contact Person Name and Title: Wesley Stoft

Contact Phone: (707) 223-1424 Contact Email: susanandwesley@gmail.com

Contact Address: P.O. Box 368, Redway, CA 95560

Amount Requested: $67,486.00 Total Budget: $77,486.00

Project Timeline: Start Date: June 1, 2022 End Date: August 1, 2022

Signature of Applicant: _____

Walker Ridge Road Improvements
Wesley Stoft
APN: 216-073-006
Project Description

The project is located on Humboldt County APN 216-073-006 near Harris, California. The subject parcel is located off of Bellus Road in the Tom Long Creek Watershed. The property contains several unnamed Class III tributaries to Tom Long Creek.

The project proposes the upgrade of culverts at seven stream crossings and the installation of armored fill at one other stream crossing on the property as required by the applicant's Lake and Streambed Alteration Agreement with the California Department of Fish & Wildlife.

GIS indicates the parcel is in an area of high slope instability. It is not within a flood hazard zone, nor in an earthquake hazard zone. The parcel is surrounded by rural improved properties. No impact to these other parcels is expected.

This project would stormproof stream crossings and reduce road-related sediment delivery to the Tom Long Creek Watershed. All of the crossing upgrades will be constructed according to standards provided in the "Handbook for Forest, Ranch and Rural Roads" (Weaver, Weppner and Hagans, 2015), and the California Salmonid Stream Habitat Manual, Part X (Weaver, Hagans and Weppner, 2006). Permanent impacts to existing native channel bed, channel, watercourse banks, and associated riparian habitat will be negligible and avoided. Incidental destruction of small areas of riparian habitat growing on existing road fill or in disturbed channel areas is expected at the proposed sites during remediation.

These upgraded watercourse crossings will achieve 100-year flood requirements and reduce sediment deposits into the streams that are connected to Tom Long Creek and flow to the East Branch of the Southfork of the Eel River, protecting water quality and aquatic ecosystems and limiting impact on downstream resources.

Green Grove Family Farm
APN: 216-073-006
Plot Plan

- Stream crossing
- Ditch relief culvert
- Point of diversion
- Well
- Water tank
- Cannabis destruction zone
- Storage container

- Onsite wastewater treatment system
- House
- Garage/Shed/Barn
- Other location
- Parking
- Cultivation area
- 600ft buffer around cultivation area
- Streamside Management Area (SMA)

- Irrigation Line
- Stream
- Road
- Setback

Abbreviations:
SC - Stream crossing
DRC - Ditch relief culvert
CA - Cultivation area
POD - Point of diversion
OWTS - Onsite wastewater treatment system

0 100 200 400 Feet

Scale 1:2,400 1 inch = 200 feet
Contour interval: 10-m derived from USGS 10-m DEM
Parcel boundary data: 2015 Humboldt County GIS

N

Prepared September 2017 by:
Pacific Watershed Associates
www.pacificwatershed.com

17' WIDE DIRT ROAD
Bellus Rd
8% Slope
10% Slope
3% Slope
15' WIDE DIRT ROAD
Main Entrance/Exit -Access for property & premises
16% Slope
14.6' WIDE DIRT ROAD
13% Slope
13% Slope
+/- 2,400'
+/- 1,577'
+/- 1,435'
1,235'
1,093'
1,190'
282'
852'
248'
404'
282'
544'
659'
844'
20'
955'
340'
670'
386'
+/- 2,413'
850m
900m
750m
(1) 3,000 gal used for fire supp.
Est. prior to 2017
Well and Pump (40.0614,-123.6555)
Est. 1957 (irrigation)
One mobile shipping containers
Garage (20'x40')
Est. 2007
House (40'x60')
Est. 1996
Two mobile shipping containers (8'x20) ea
Garage (25'x40')
Est. 1998
SC #1 (18" dia.)
Ephemeral stream (50-ft buffer)
SC #3 (18" dia.)
SC #2 (12" dia.)
Cement water tank (10,000 gal - 40.0595, -123.6542)
Est. 1985
Ephemeral stream (50-ft buffer)
House (40'x40')
Est.1987
Four Poly Water Tanks (3,000 gal each)
Loc: (40.0596,-123.6558)
Est. 2011
OWTS
Workshop/ Kitchen (20'x30')
Est. 2009
Two mobile shipping containers (8x20 ea)
Garage/Shed Drying/Processing/ Packaging/Harvest Product Administrative Hold 20'x40'
Nursery 35' X10'
CA #3 Home Garden (5,774 ft2) To be relocated
Well (Irrigation) (40.06165,-123.6522)
Est.2020
House (37'x50')
Est. 1982
SC #5 (24" CMP)
SC #4 (36" dia.)
Intermittent stream (100-ft buffer)
SC #8 (12" dia.)
Intermittent stream (100-ft buffer)
SC #7 (Fill); MP #8
SC #6 (Fill)

Existing outdoor cultivation with total operations of 10,396 sq ft
CA#1 - 1,962 sq ft
CA#2 - 4,738 sq ft
CA#3 - 3,302 sq ft

Existing mixed-light cultivation with total opertations of 2,500 sq ft
CA#3 - 2,472 sq ft

Surface Water Runoff

Figure 2. Site map for WDID #1B161240CHUM, APN 216-073-006, Harris, Humboldt County, California.

P:\GIS\5314

216-083-003
Vacant,
Rural Residential

Improved Rural
Residential

750 FT

Assessor's Map Bk. 216, Pg. 07
County of Humboldt, CA.

SECS 4,5,6,7,8 & 9, T5S R5E, H.B.& M.

216–07

Subject parcel

Rural w/ timber infl.
Improve

1,651 FT

Rural w/ timber infl.
Improve

Portion TPZ
WWD,Improved

1"= 1200'

H.B.&M.

Wesley Stoft
Walker Ridge Road Improvement
Adjacent Parcels

RS, Bk. 14 of Surveys, Pg. 113
RS, Bk. 15 of Surveys, Pgs. 64–65
RS, Bk. 25 of Surveys, Pg. 60
RS, Bk. 29 of Surveys, Pg. 113
RS, Bk. 30 of Surveys, Pg. 35–37
PM1254, Bk. 11 of Parcel Maps, Pg. 31
PM1593, Bk. 14 of Parcel Maps, Pg. 7
PM1851, Bk. 16 of Parcel Maps, Pgs. 55–
PM2027, Bk. 18 of Parcel Maps, Pgs. 2–3
PM2356, Bk. 20 of Parcel Maps, Pgs. 143

PM3245, Bk. 30 of Parcel Maps, Pgs. 115

Apr 28, 20

ERIN CEARLE

ASSESSOR'S PARCEL

1. THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY
2. NO LIABILITY IS ASSUMED AS TO THE ACCURACY OF THE DATA
3. ASSESSOR'S PARCELS MAY NOT COMPLY WITH LOCAL LOT-SPLIT OR BUILDING SITE ORDINANCES

NOTE – Assessor's Block Numbers Shown in Ellipses
Assessor's Parcel Numbers Shown in Small Circles

300' 600' 1200'

PLOT PLAN AND TENTATIVE MAP CHECKLIST

The following information must be shown on your plot plan or tentative map. Please check ✓ the box to the left of the items shown on the plot plan or tentative map. If any item is not on your site to your knowledge, write "N/A" next to the box. Plot plans shall be drawn on a minimum size sheet of 8-1/2" x 11", and tentative subdivision maps on a minimum size sheet of 18" x 26". ***Note: This Checklist must be completed by the applicant and submitted with your application.***

Applicant's Name _____ APN _____ - _____

FOR ALL PROJECTS

☐	1.		Name of applicant(s)
☐	2.		Location or vicinity map (on or attached to the plot plan)
☐	3.		The subject parcel (show entire parcel with dimensions)
☐	4.		Date, north arrow and scale
☐	5.		Name, County road numbers, and width of all existing and proposed access roadways adjacent to or within the subject parcel (indicate width of traveled way, grade (in % slope), and surface)
☐	6.		Existing and proposed improvements (label as "existing" and "proposed" with dimensions and distance to nearest two (2) property lines)
	☐	a.	Structures and buildings (include floor area, height and proposed use)
☐	☐	b.	Driveways and turnaround areas (indicate width, grade (in % slope) and surface)
	☐	c.	Utility lines (electric, gas, telephone, sewer, water, and cable TV)
☐	☐	d.	Septic tanks and leachfields (label primary/reserve areas and test holes)
	☐	e.	Wells
☐	☐	f.	Parking and loading areas (show individual parking spaces, including handicapped parking and ramps)
☐	☐	g.	Storm drains, curbs and gutters
	☐	h.	Emergency water storage tanks and fire hydrants
☐	☐	i.	Landscaped areas (include proposed exterior lighting)
☐	☐	j.	Major vegetation (identify mature trees (12" dbh or larger) to be removed)
☐	☐	k.	Diked areas
	☐	l.	Proposed grading and fill (estimate volume)
☐	☐	m.	Signs (indicate size, illuminated, and design (e.g., monument, pylon, etc.))
☐	☐	n.	Other - specify _____
☐	7.		Direction of surface water runoff
☐	8.		Location and width of all existing and proposed easements of record
☐	9.		Hazardous areas (indicate on map if on the project site or within 400 feet of the project site):
☐	☐	a.	Areas subject to inundation or flooding
	☐	b.	Steep or unstable slopes
☐	☐	c.	Expansive (clay) soils
☐	☐	d.	Earthquake faults
☐	☐	e.	Hazardous waste or substance sites
☐	☐	f.	Other - specify _____
☐	10.		Sensitive habitat areas (indicate on map if on project site or within 400 feet of the project site):
	☐	a.	Creeks, rivers, sloughs and other drainage courses
☐	☐	b.	Lakes, ponds, marshes, or "wet" meadows
☐	☐	c.	Beaches
☐	☐	d.	Sand dunes
☐	☐	e.	Other - specify _____
☐	11.		Historical buildings or known archaeological or paleontological resources
☐	12.		Land use and buildings on adjacent parcels, and approximate distances to closest property lines

FOR LOT LINE ADJUSTMENT PLOT PLANS ONLY

☐	13.	Proposed new lines and lines to be eliminated (show lines to be eliminated as dashed)
☐	14.	Areas (in square footage or acreage) of the initial and resulting parcels

FOR TENTATIVE SUBDIVISION MAPS ONLY

☐	16.	Approximate dimensions and areas of all proposed lots
☐	17.	A statement that "All easements of record are shown on the tentative map and will appear on the recorded subdivision map"
☐	18.	Contour lines (at _____ intervals)
☐	19.	For major subdivisions (5 or more parcels): proposed drainage improvements, details of any grading to be performed, approximate radii of all roadway curves, areas for public use, and typical sections of all streets, highways, ways and alleys
☐	20.	Names and assessor's parcel numbers of all contiguous ownerships

NOTE: THE SUBMITTAL OF INCOMPLETE OR ILLEGIBLE PLOT PLANS OR TENTATIVE MAPS WILL CAUSE DELAYS IN THE PROCESSING OF YOUR APPLICATION

Walker Ridge Road Improvements
Applicant: Wesley Stoft
APN: 216-073-006
Mitigation and Remediation Fund
Scope of Work

The work will be completed by MS Excavation.

Crossing #1 - removal and replacement of an 18-inch culvert with a 50 foot, 24-inch culvert on a near origin Class III watercourse. The culvert was installed high and short in the fill, causing ponding at the inlet and a 3 foot plunge at the outlet. The crossing has a functional critical dip on the left hingeline and an insloped right road approach, which conveys road runoff to the culvert inlet through the inboard ditch.

The stream crossing will be replaced with a 24-inch diameter by 50 foot long culvert set at the base of the fill and in line with the natural channel. The lower ¾ of the outboard fillslope will be armored with 15 cubic yards of .5-1.5 foot diameter riprap to minimize erosion of the road fill. The crossing will be rebuilt with a critical dip on the left hingeline, to prevent diversion in the event the culvert plugs or its capacity is exceeded.

Crossing #2 - removal and replacement of a 12-inch diameter culvert with a 24-inch diameter culvert on a near origin Class III watercourse. The culvert is installed short and high in the fill, with diversion potential down the left road.

The stream crossing will be replaced with a 24-inch diameter by 50 foot long culvert set at the base of fill and in line with the natural channel. The road prism will need to be raised 1.5 feet with approximately 15 cubic yards of locally generated fill to accommodate the new, larger pipe. The crossing will be rebuilt with a critical dip on the left hingeline, to prevent diversion in the event the culvert plugs or its capacity is exceeded.

Crossing #2b - a near origin, Class III watercourse with no formal drainage structure. This road alignment is located upstream of Stream Crossing #2 (approximately 50') and is a seasonally used quad trail. There is diversion potential down the right road at this site.

An armored fill will be installed at this location to route flow across the roadbed in a way that prevents the diversion of streamflow out of the stream channel and protects the road fill from erosion by creating a broad dip through the road prism and excavating a small keyway in the outboard fill. Dimensions for the keyway will be approximately 10 feet wide at the top, 4 feet wide at the base, 1 foot deep, and 15 feet long. The keyway will be armored with 10 cubic yards of .5-1.5 diameter riprap to accommodate for seasonal stream flow.

Crossing #3 - an undersized, 18-inch diameter culvert on a Class III watercourse. The culvert was installed high and short in the fill and diversion potential exists down the left road.

The stream crossing will be replaced with a 36-inch diameter by 30 foot long culvert set at the base of fill and in line with the natural channel. The entire inboard and outboard fillslopes will be armored with 5 and 15 cubic yards of .5-1.5 foot diameter riprap, respectively. To prevent diversion potential, the crossing will have a critical dip installed on the left hingeline.

Crossing #5 - A 24-inch diameter plastic culvert on a Class III watercourse, installed at the base of fill, and in-line with the natural channel. The culvert is slightly undersized for the 100 year peak streamflow and associated debris.

The stream crossing will be replaced with a 30-inch diameter by 40 foot long culvert set at the base of fill and in line with the natural channel. The lower ¼ of the inboard and outboard fillslopes will be armored with 2 and 5 cubic yards of .5-1.5 foot diameter riprap, respectively, to protect the road fill from erosion.

Crossing #7 - a Class III watercourse crossing with no formal drainage structure. This crossing is just within the landowner's property boundary, as delineated by the recent parcel boundary survey flags, and is only used seasonally by the neighbors on the adjacent parcel.

The stream crossing will be replaced with a 30-inch diameter by 40 foot long culvert set at the base of fill and in line with the natural channel. The lower ¼ of the inboard and outboard fillslopes will be armored with 2 and 5 cubic yards of .5-1.5 foot diameter riprap, respectively, to protect the road fill from erosion.

Crossing #8 - a partially plugged, 12-inch diameter culvert on a Class III watercourse. The culvert was installed high and short in the fill.

The stream crossing will be replaced with a 24-inch diameter by 20 foot long culvert set at the base of the fill and in line with the natural channel. The lower ¾ of the outboard fillslope will be armored with 5 cubic yards of .5-1.0 foot diameter riprap to protect the road fill from erosion.

Crossing #9 - A 36-inch diameter plastic culvert on a Class III watercourse. The culvert is slightly undersized for the 100 year peak streamflow and associated debris, is installed at the base of fill, and in-line with the natural channel.

The stream crossing will be replaced with a 48-inch diameter by 50 foot long culvert set at the base of fill and in line with the natural channel.The lower ¾ of the inboard and outboard fillslopes will be armored with 10 and 15 cubic yards of .5-2 foot diameter riprap, respectively.

During the project, care will be taken not to unnecessarily disturb the native channel outside of the identified areas. Fill to be permanently removed will be stored in designated locations with no risk of sediment delivery. All disturbed areas where sediment delivery from surface erosion processes is feasible will be seeded and mulched to reduce surface erosion and transport processes.

The proposed crossing upgrades will occur on in-use roads. All disturbance associated with this project will be limited to the road and immediately adjacent channel reaches as necessary to improve road drainage, stormproof the crossings, and prevent sediment delivery to watercourses. All stream crossings will be dry at time of construction. Work will only occur during the period of June 15 through October 15 (or first significant rainfall) to limit and avoid impacts to aquatic habitat and salmonids. Vegetation will only be removed from sites where it is growing on anthropogenically placed fill material, where erosion is likely to deliver to active watercourses, or where necessary for the implementation of effective storm-proofing treatments.

Walker Ridge Road Improvements
Applicant: Wesley Stoft
APN: 216-073-006
Mitigation and Remediation Fund
Schedule for Completion

Milestone	Start Date	End Date
Detailed Project Scoping	March 1, 2022	March 30, 2022
Bidding and Contracting	March 1, 2022	March 30, 2022
Project Ground-Breaking	June 1, 2022	
Project Completion		August 1, 2022
Monitoring	June 1, 2022	Ongoing

Five-Year Erosion Control Plan

Project Management

Before and during the project best practices will be applied to ensure minimal disturbance to the waterway and local habitat.

- Work will be completed prior to the start of any rain that causes overland flow across or along the disturbed surface.
- Within 100 feet of a watercourse or lake, the traveled surface of roads will be treated to prevent waterborne transport of sediment and concentration of runoff that results from operations.
- The treatment for disturbed areas within 100 feet of a watercourse including (1) areas exceeding 100 contiguous square feet where operations have exposed bare soil, (2) road cut banks and fills, and (3) any other area of disturbed soil that threatens to discharge sediment into waters in amounts that will negatively affect the quality and beneficial uses of water, shall be grass seeded and mulched with straw.
    - Grass seed shall be applied at a rate exceeding 100 pounds per acre.
    - Straw mulch shall be applied in amounts sufficient to provide at least 2-4 inch depth of straw with minimum 90% coverage.
    - Slash may be substituted for straw mulch provided the depth, texture, and ground contact are equivalent to at least 2-4 inches of straw mulch.
    - Any treated area that has been subject to reuse or has less than 90% surface cover shall be treated again prior to the end of operations.
- Care will be taken not to unnecessarily disturb the native channel outside of the identified areas.
- Fill to be permanently removed will be stored in designated locations with no risk of sediment delivery.
- All disturbed areas where sediment delivery from surface erosion processes is feasible will be seeded and mulched to reduce surface erosion and transport processes.
- All disturbance associated with this project will be limited to the road and immediately adjacent channel reaches as necessary to improve road drainage, stormproof the crossings, and prevent sediment delivery to watercourses.
- Any spoils generated during construction will be used for road treatments, such as shaping, or stored in a stable location and mulched to prevent surface erosion.
- The stream crossing will be treated according to standards provided in the “Handbook for Forest, Ranch and Rural Roads” (Weaver, Weppener and Hagans, 2015) and the California Salmonid Stream Habitat Manual, Part X (Weaver, Hagans and Weppner, 2006).

Roads

- Sidecast or fill material extending more than 20 feet in slope distance from the outside edge of a roadbed, which has access to a watercourse or lake, shall be treated with slope stabilization measures.

- All roads shall have drainage and/or drainage collection and storage facilities installed as soon as practical following operations and prior to either (1) the start of any rain which causes overland flow across or along the disturbed surface within 100 feet of a watercourse, or (2) any day with a National Weather Service forecast of a chance of rain of 30 percent or more, a flash flood warning or a flash flood watch.

Streamside Management Area

- Within 100 feet of a watercourse, where the undisturbed natural ground cover cannot effectively protect beneficial uses of water from sediment introduction, the ground shall be treated with slope stabilization measures and timed as above.
- Except for culvert repairs and maintenance, no driving or operating of vehicles or equipment will occur within the riparian setbacks or within waters of the state unless authorized.

Maintenance

- Work will only occur during the period of June 15 through October 15 (or first significant rainfall) to limit and avoid impacts to aquatic habitat and salmonids.
- Vegetation will only be removed from sites where it is growing on anthropogenically placed fill material, where erosion is likely to deliver to active watercourses, or where necessary for the implementation of effective storm-proofing treatments.
- All disturbed areas capable of delivering sediment to a watercourse will be seeded with barley or wheat based erosion control seed not containing Annual or Perennial Ryegrass and mulched with weed free straw at a rate no less than 50 lb/acre of seed and 4,000 lb/acre of straw.

Monitoring

To avoid risk of future stream diversions and erosion, monitoring will be implemented to reduce the risk of stream crossing failures caused by excessive flow, culvert plugging, overtopping, washout and stream diversion.

- Regular, periodic, and storm inspections and maintenance, including removal of debris.
- Ongoing monitoring for proper drainage during the rainy season.
- Installation of debris barriers.
- Monitor culverts for rusting, leaking, separated or other signs of impending failure.
- Look for evidence of plugging and overtopping, such as depositional terraces or a delta of sediment upstream of the pipe inlet.
- Look for ponding, damage to inlets, including crushed or ripped inlets.
- Monitor crossing for slope failure from one or both sides of the channel.

Walker Ridge Road Improvements
Applicant: Wesley Stoft
APN 216-073-006
Project Budget

Budget Item	**Grant**	**Other Funds**
Permit Fees		
401 Certification	$2,066.00	
Consultant and Professional Fees	$11,500.00	
Materials	$ 30,100.00	
Equipment	$ 26,320.00	
Labor	$ 7,500.00	
Total	$77,486.00	Trellis Equity $10,000.00
Total Requested	$67,486.00	

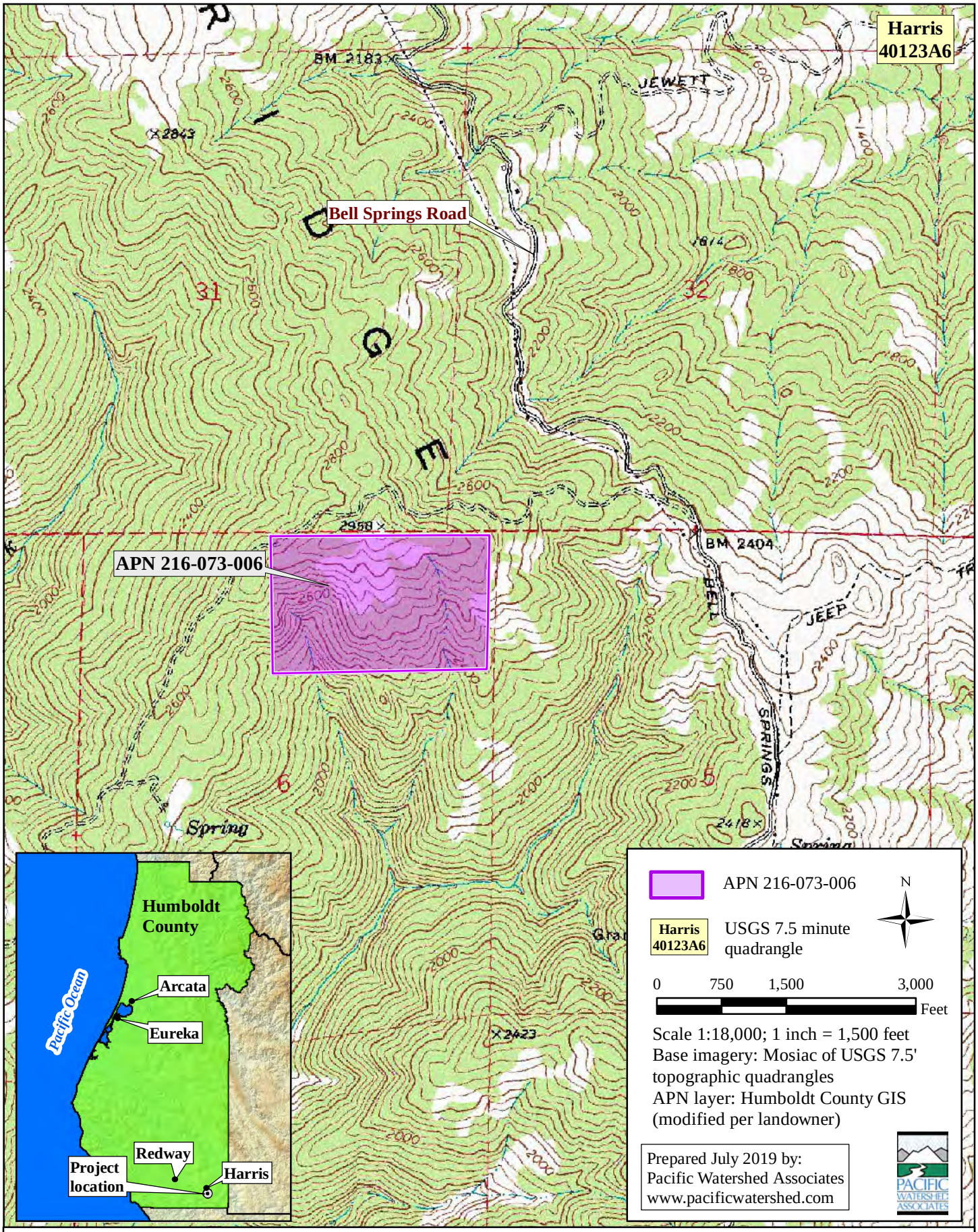


Figure 1. Location map for W. Stoft Lake or Streambed Alteration Agreement, APN 216-073-006, Harris, Humboldt County, California.

P:\GIS\5314

Figure 1 - Vicinity Map

Stoft Topo Map

Humboldt County Planning and Building Department

Printed: October 11, 2021 Web AppBuilder 2.0 for ArcGIS

Map Disclaimer:
While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force & effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.

Highways and Roads
- Principal Arterials
- Minor Arterials
- Major Collectors
- Minor Collectors
- Local Roads
- Private or Unclassified
- Major River or Stream

Blue Line Streams
- Perennial 1-3
- Perennial >4
- Intermittent
- Subsurface
- City Boundary
- Counties
- Parcels (no APN labels)

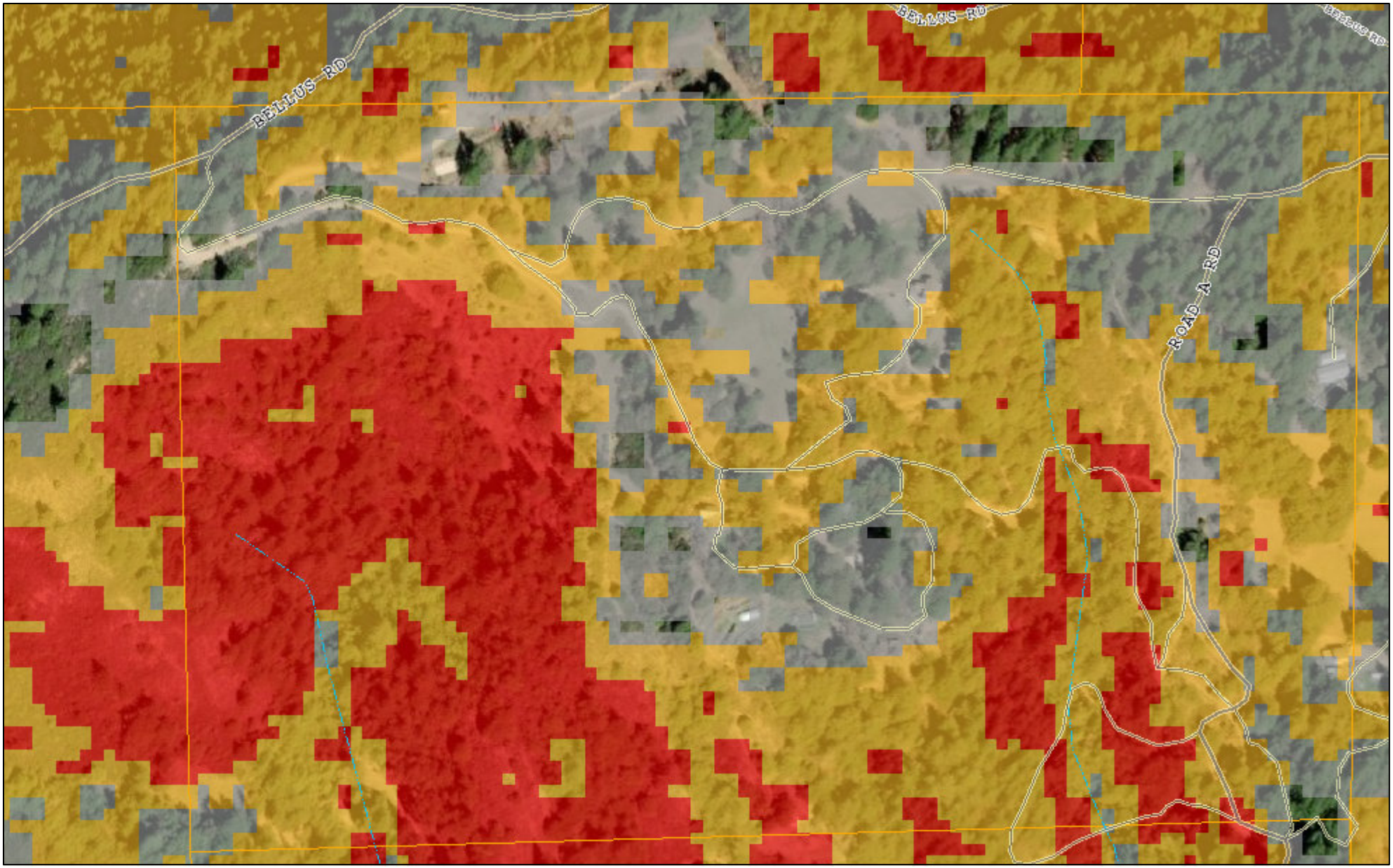
Topographic Contours 40ft
- Minor Interval
- Major Interval

0 180 360 720 Feet
0 0.0325 0.065 0.13 Miles
RF= 1:4,514 1 in = 376 ft

N W E S

Sources: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Humboldt County GIS
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
FRAP, FEMA, USGS, ESA, CGS

Figure 2 - Topographic Map



Stoft Slope Map

Humboldt County Planning and Building Department

Printed: October 11, 2021 Web AppBuilder 2.0 for ArcGIS

Map Disclaimer:
While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force & effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.

Highways and Roads
- Principal Arterials
- Minor Arterials
- Major Collectors
- Minor Collectors
- Local Roads
- Private or Unclassified
- Major River or Stream

Blue Line Streams
- Perennial 1-3
- Perennial >4
- Intermittent
- Subsurface
- City Boundary
- Counties
- Parcels (no APN labels)

0 180 360 720 Feet
0 0.0325 0.065 0.13 Miles
RF= 1:4,514 1 in = 376 ft

N W E S

Sources: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Humboldt County GIS
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
FRAP, FEMA, USGS, ESA, CGS

Figure 3 - Slope Map

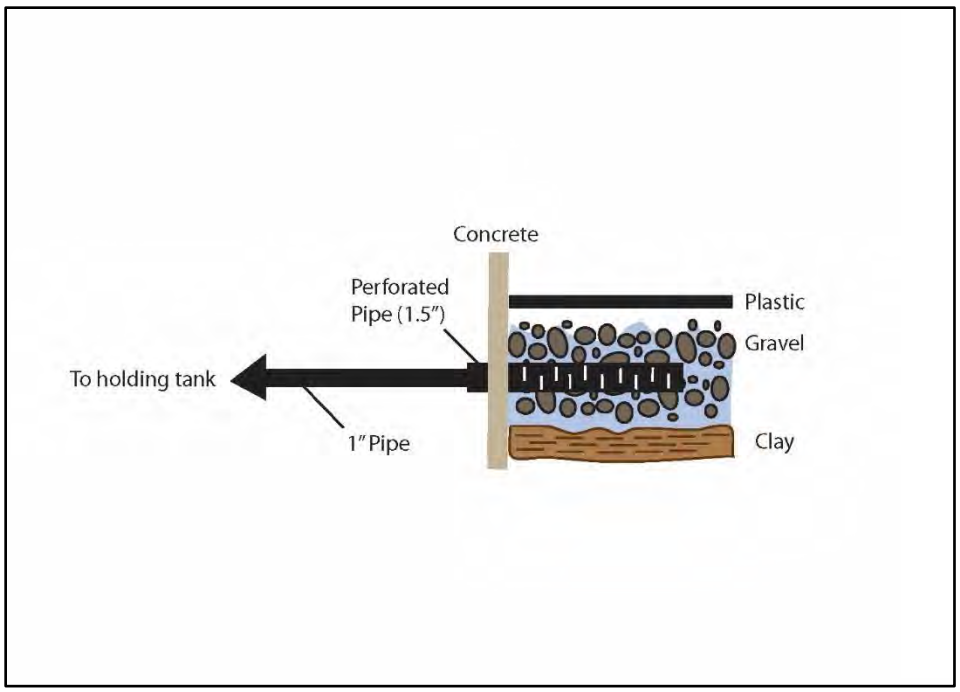


Photo 3 – Project #1, description of the POD #1 domestic diversion structure.

Stream Crossings

Photo 4 – Project #2, View of Stream Crossing (SC) #1 looking downstream towards the culvert inlet.

Photo 5 – Project #2, View of SC #1 from the right road approach. Note the culvert outlet (arrow) set high in the outboard fill face.

Photo 6 – Project #3, View of the inlet of SC #2 from the right road inboard ditch, which is actively delivering fine sediment to the crossing.

Photo 7 – Project #3, View looking upstream from the outlet of SC #2.

Photo 8 – Project #4, View of the fill crossing, SC #2B from the right road. Note the flow direction depicted by the arrow. This crossing is on a quad trail used seasonally by the applicant to get to House #2 from House #1.

Photo 9 – Project #5, View looking downstream at SC #3 culvert inlet.

Photo 10 – Project #5, View from the right road looking at the SC #3 culvert outlet set high and short in the fill.

Photo 11 – Project #6, View looking upstream of SC #5 culvert inlet (arrow).

Photo 12 – Project #6, View from right road looking at SC #5 (lower arrow) culvert outlet, set at the base of fill. Note the upper arrow shows disclosure point SC #4 culvert outlet, also set at the base of fill.

Photo 13 – Project #7, View from the right road looking at SC #7. Note the flow direction depicted by the arrow, and the pink property boundary flag in the foreground.

Photo 14 – Project #7, View from the base of fill at SC #7 looking upslope at the outboard fill face.

Photo 15 – Project #8, View looking downstream at SC #8 plugged culvert inlet.

Photo 16 – Project #8, View looking downstream at SC #8 culvert outlet.

Photo 17 – Project #9, View looking downstream at SC #9 culvert inlet.

Photo 18 – Project #9, View looking upstream at SC #9 culvert outlet, set at the base of fill.

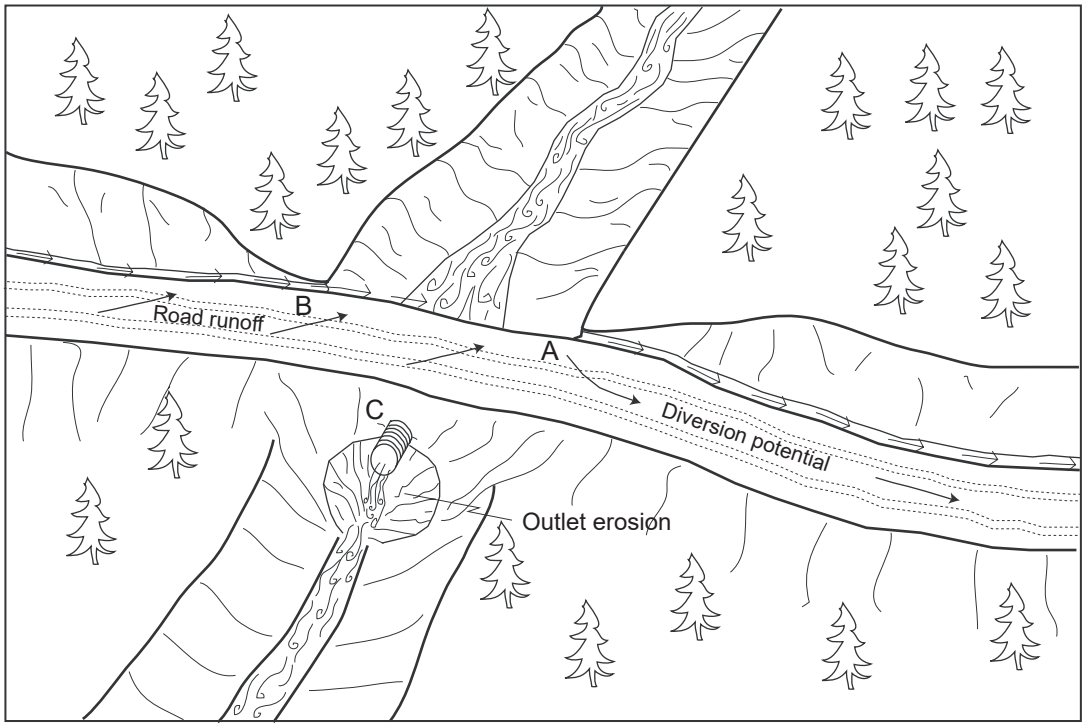
Typical Problems and Applied Treatments for a Non-fish Bearing Upgraded Stream Crossing

Problem condition (before)

A - Diversion potential

B - Road surface and ditch drain to strea□

C - □ndersi□ed culvert high in fill □ith outlet erosion

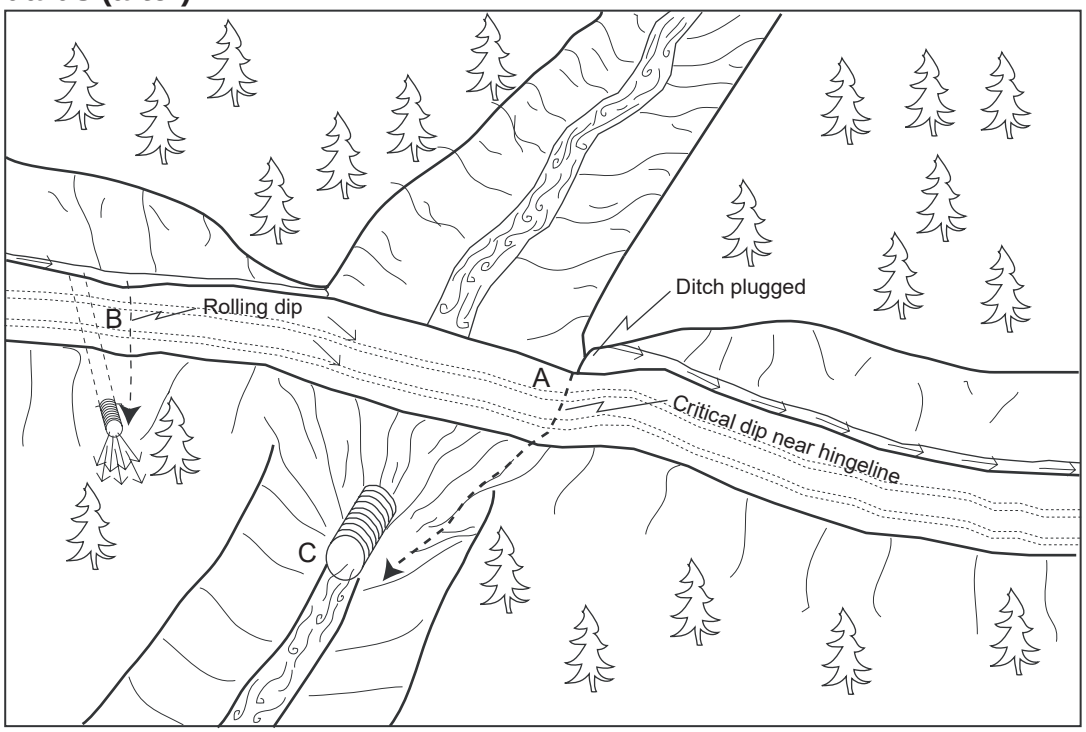


Treatment standards (after)

A - □o diversion potential □ith critical dip installed near hingeline

B - Road surface and ditch disconnected fro□ strea□ □y rolling dip and ditch relief culvert

C - 1□□-year culvert set at □ase of fill



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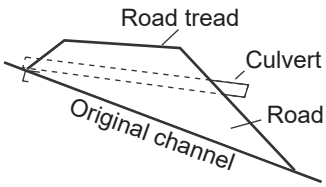
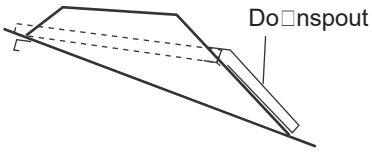
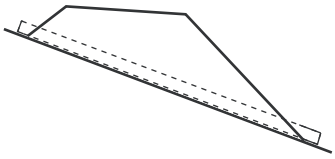
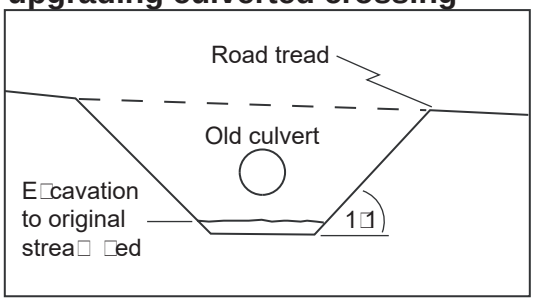
PWA Typical Drawing #1a

Figure 5A - Culvert Specifications

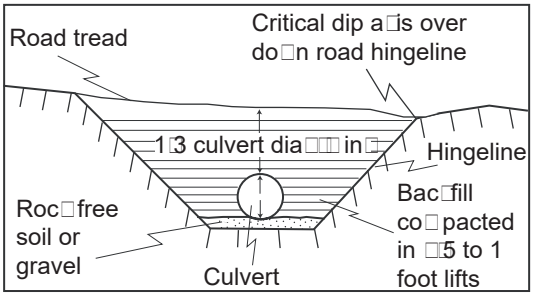
Typical Design of a Non-fish Bearing Culverted Stream Crossing

Existing	Upgraded	Upgraded (preferred)
		
1□Culvert not placed at channel grade□ 2□culvert does not e□tend past □ase of fill□	1□Culvert not placed at channel grade□ 2□Do□nspout added to e□tend outlet past road fill□	1□Culvert placed at channel grade□ 2□Culvert inlet and outlet rest on, or partially in, the originial strea□ □ed□

Excavation in preparation for upgrading culverted crossing



Upgraded stream crossing culvert installation



□ote□

Road upgrading tas□s typically include upgrading strea□ crossings □y installing larger culverts and inlet protection □trash □arriers□to prevent plugging□Culvert si□ing for the 1□□-year pea□ stor□ flo□ should □e deter□ined □y □oth field o□servation and calulations using a procedure such as the Rational For□ula□

Stream crossing culvert Installation

1□Culverts shall □e aligned □ith natural strea□ channels to ensure proper function, and prevent □an□erosion and plugging □y de□ris□
2□Culverts shall □e placed at the □ase of the fill and the grade of the original strea□ □ed, or do□nspouted past the □ase of the fill□
3□Culverts shall □e set slightly □elo□ the original strea□ grade so that the □ater drops several inches as it enters the pipe□
5□To allo□ for sagging after □urial, a ca□ □er shall □e □et□een 1□5 to 3 incher per 1□ feet culvert pipe length□
□□Bac□fill □aterial shall □e free of roc□s, li□ □s or other de□ris that could dent or puncture the pipe or allo□ □ater to seep around pipe□
□□First one end then the other end of the culvert shall □e covered and secured□The center is covered last□
□□Bac□fill □aterial shall □e ta□ped and co□pacted throughout the entire process□
- Base and side □all □aterial □ill □e co□pacted □efore the pipe is placed in its □ed□
- Bac□fill co□pacting □ill □e done in □5 - 1 foot lifts until 1□3 of the dia□eter of the culvert has □een covered□A gas po□ered ta□per can □e used for this □or□□

□□Inlets and outlets shall □e ar□ored □ith roc□or □ulched and seeded □ith grass as needed□
1□□Trash protectors shall □e installed □ust upstrea□ fro□ the culvert □here there is a ha□ard of floating de□ris plugging the culvert□
11□Layers of fill □ill □e pushed over the crossing until the final designed road grade is achieved, at a □ini□u□ of 1□3 to 1□2 the culvert dia□eter□

Erosion control measures for culvert replacement

Both □echanical and vegetative □easures □ill □e e□ployed to □ini□i□e accelerated erosion fro□ strea□ crossing and ditch relief culvert upgrading□Erosion control □easures i□ple□ented □ill □e evaluated on a site □y site □asis□Erosion control □easures include □ut are not li□ited to□

1□Mini□i□ing soil e□posure □y li□iting e□cavation areas and heavy e□uip□ent distru□ance□
2□Installing filter □indro□s of slash at the □ase of the road fill to □ini□i□e the □ove□ent of eroded soil to do□nslope areas and strea□ channels□
3□Retaining rooted trees and shru□s at the □ase of the fill as □anchor□for the fill and filter □indro□s□
4□Bare slopes created □y construction operations □ill □e protected until vegetation can sta□li□e the surface□Surface erosion on e□posed cuts and fills □ill □e □ini□i□ed □y □ulching, seeding, planting, co□pacting, ar□oring, and□or □enching prior to the first rains□
5□E□cess or unusa□le soil □ill □e stored in long ter□ spoil disposal locations that are not li□ited □y factors such as e□cessive □oisture, steep slopes greater than 1□□ , archeology potential, or pro□i□ity to a □atercourse□
□□On running strea□s, □ater □ill □e pu□ped or diverted past the crossing and into the do□nstrea□ channel during the construction process□
□□Stra□ □ales and□or silt fencing □ill □e e□ployed □here necessary to control runoff □ithin the construction □one□

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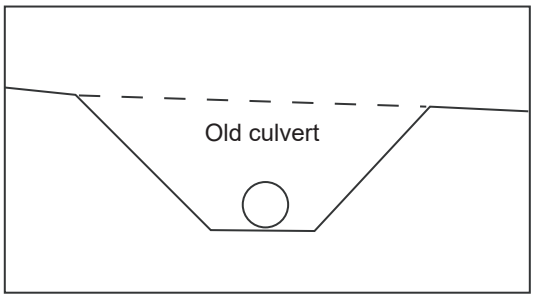
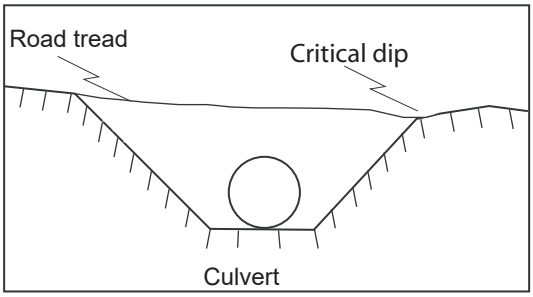
Typical Drawing #2

Figure 5B - Culvert Specifications

Typical Design of Upgraded Stream Crossings





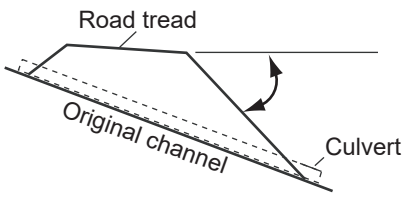
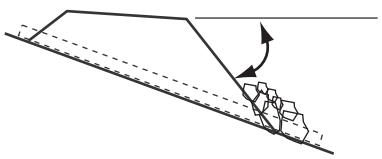
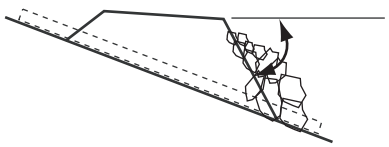
Stream crossing culvert Installation

1. Culverts shall be aligned with natural stream channels to ensure proper function, and prevent bank erosion and plugging by debris.
2. Culverts shall be placed at the base of the fill and the grade of the original stream bed or downspouted past the base of the fill.
3. Culverts shall be set slightly below the original stream grade so that the water drops several inches as it enters the pipe.
5. To allow for sagging after burial, a camber shall be between 1.5 to 3 inches per 10 feet culvert pipe length.
   Backfill material shall be free of rocks, limbs or other debris that could dent or puncture the pipe or allow water to seep around pipe.
   First one end and then the other end of the culvert shall be covered and secured. The center is covered last.
   Backfill material shall be tamped and compacted throughout the entire process.
   - Base and side wall material will be compacted before the pipe is placed in its bed.
   - Backfill compacting will be done in 0.5 - 1 foot lifts until 1/3 of the diameter of the culvert has been covered. A gas powered tamper can be used for this work.

   Inlets and outlets shall be armored with rock or mulched and seeded with grass as needed.
10. Trash protectors shall be installed just upstream from the culvert where there is a hazard of floating debris plugging the culvert.
11. Layers of fill will be pushed over the crossing until the final designed road grade is achieved, at a minimum of 1/3 to 1/2 the culvert diameter.

Note:
Road upgrading tasks typically include upgrading stream crossings by installing larger culverts and inlet protection (trash barriers) to prevent plugging. Culvert sizing for the 100-year peak storm flow should be determined by both field observation and calculations using a procedure such as the Rational Formula.

Armoring fill faces

Fill angles ≤ 2:1	Fill angles (between 2:1 & 1.5:1)	Fill angles steeper than 1.5:1
		
No rock armor needed	Armor 1/4 up fill face	Armor 3/4 way up fill face

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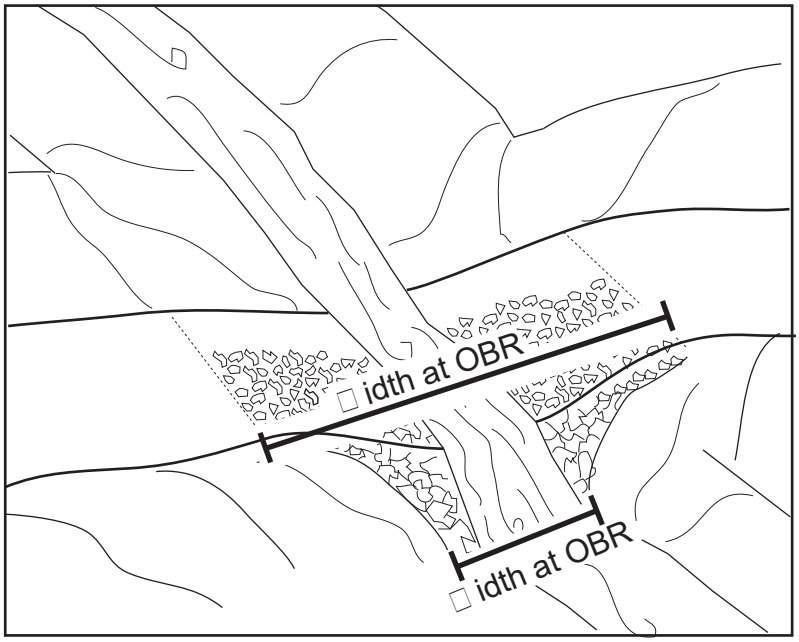
PWA Typical Drawing #4

Figure 5C - Culvert Specifications

Typical Dimensions Refered to for Armored Fill Crossings

Widths in oblique view



OBR - Out□oard edge of road

Lengths in profile view

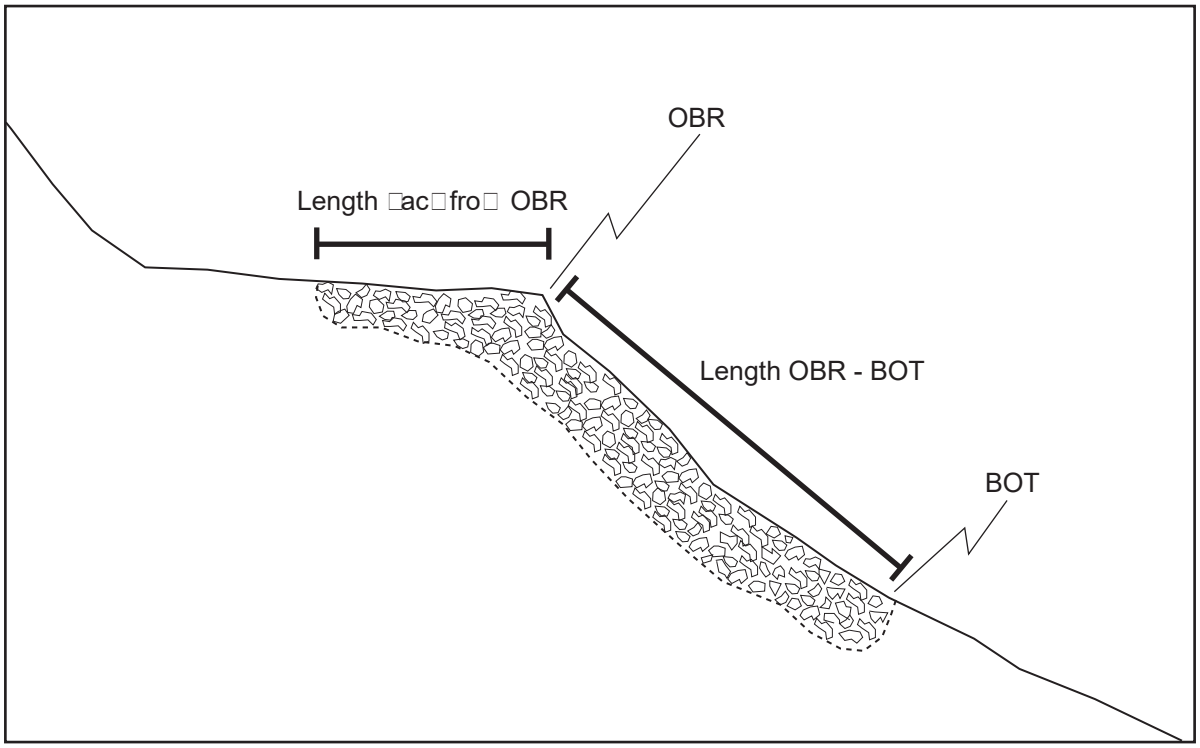


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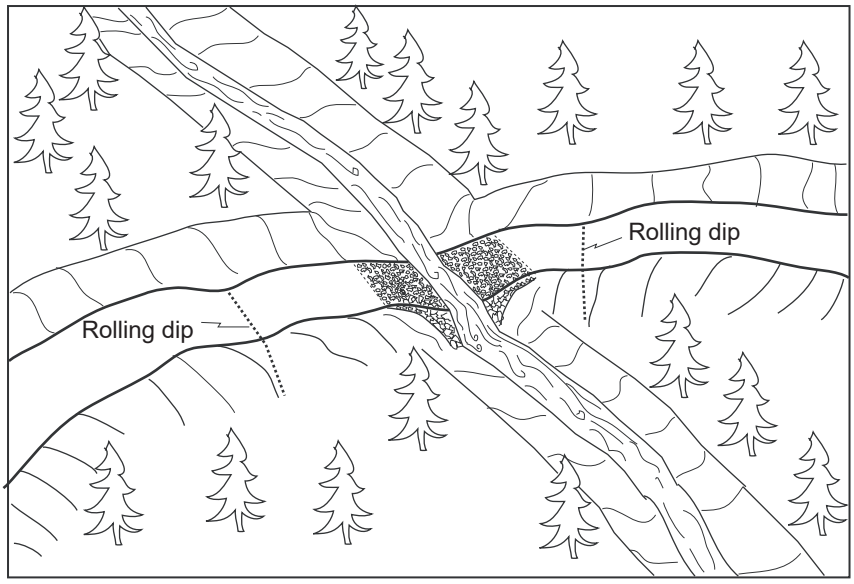
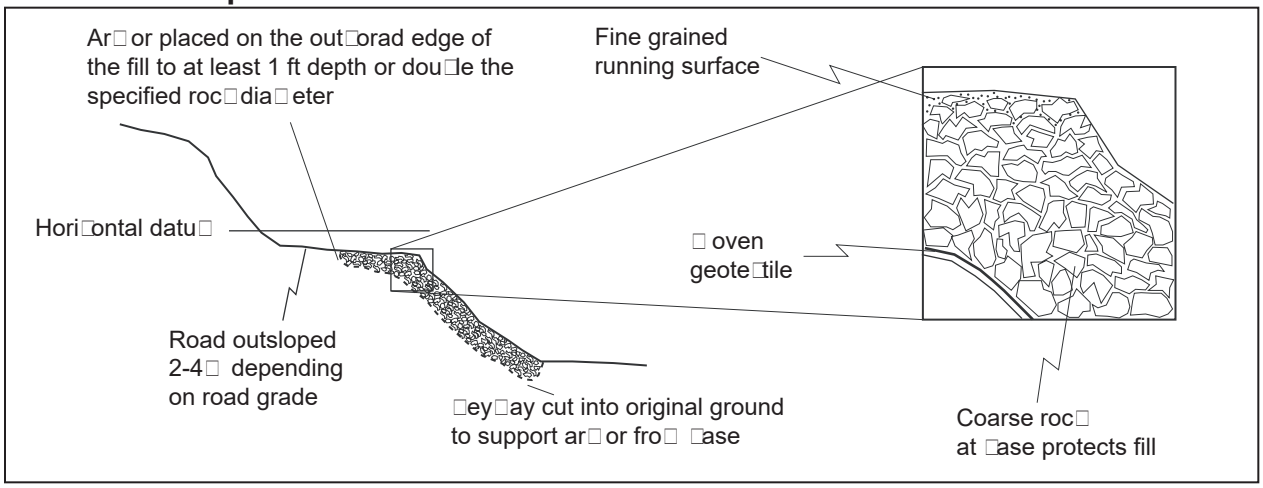
Figure 5D - Culvert Specifications

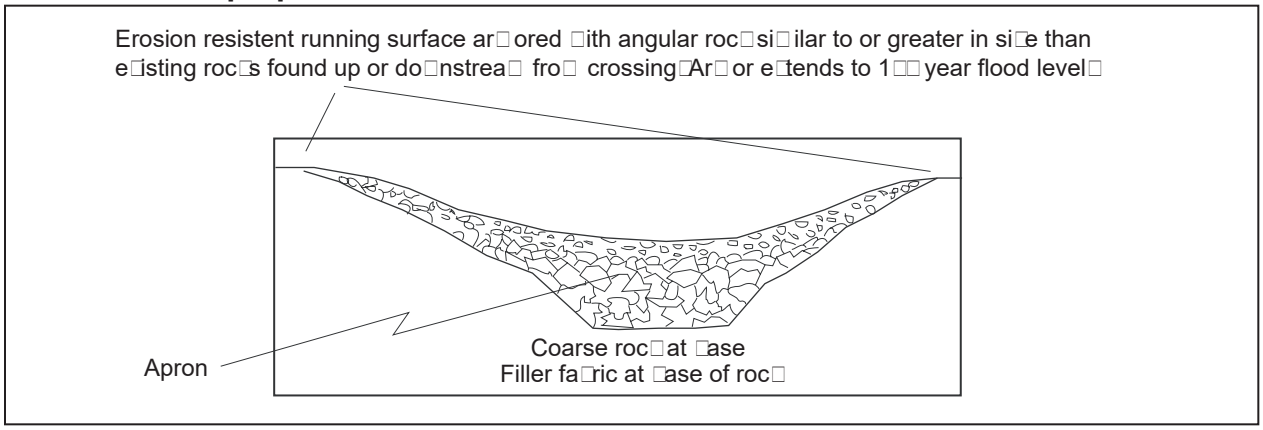
Typical Armored Fill Crossing Installation



Cross section parallel to watercourse



Cross section perpendicular to watercourse



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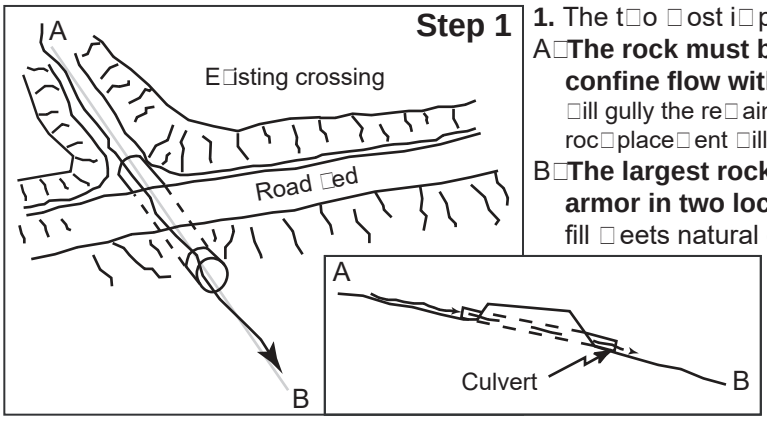
Typical Drawing #6

Figure 5E - Culvert Specifications

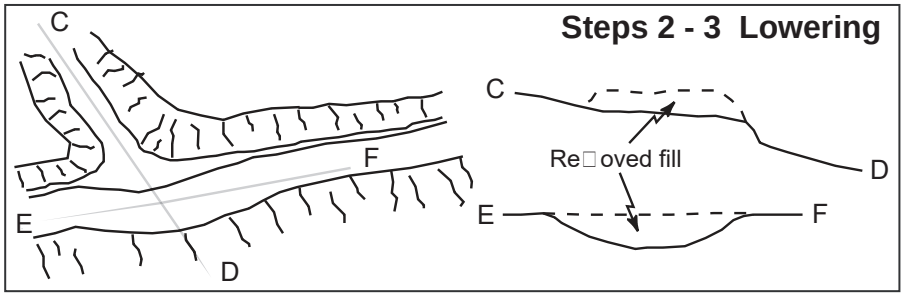
Ten Steps for Constructing a Typical Armored Fill Stream Crossing



1. The two most important points are:

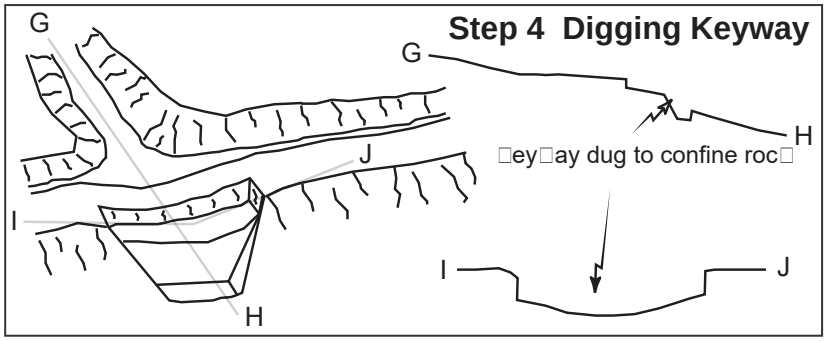
A. **The rock must be placed in a "U" shape across the channel to confine flow within the armored area.** Flow around the rock armor or will gully the remaining fill. Proper shape of surrounding road fill and good rock placement will reduce the likelihood of crossing failure.

B. **The largest rocks must be used to butress the rest of the armor in two locations:** i. The base of the armored fill where the fill meets natural channel. This will butress the armor placed on the outboard fill face and reduce the likelihood of it washing downslope. ii. The break in slope from the road tread to the outer fill face. This will butress the fill placed on the outer road tread and will determine the base level of the creek as it crosses the road surface.



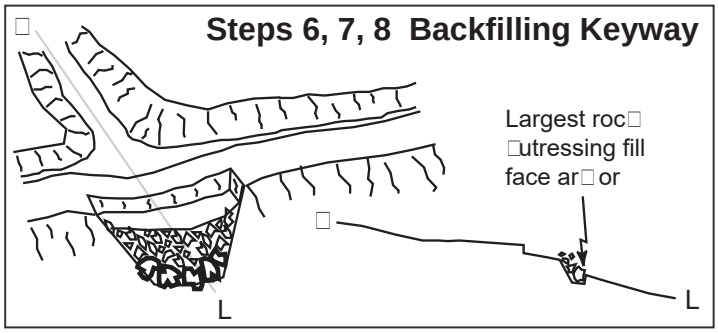
2. Remove any existing drainage structures including culverts and Humboldt logs.

3. Construct a dip centered at the crossing that is large enough to accomodate the 100-year flow event and prevent diversion (C-D, E-F).



4. Dig a keyway to place rock in that extends from the outer 1/3 of the road tread down the outboard road fill to the point where outboard fill meets natural channel (up to 3 feet into the channel bed depending on site specifics) (G-H, I-J).

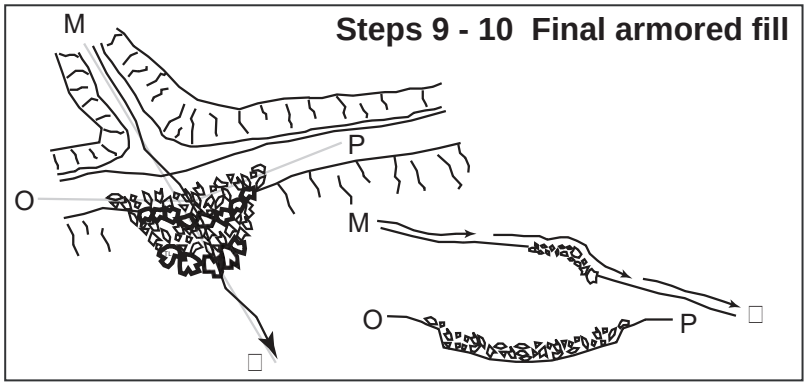
5. Install geofabric (optional) within keyway to support rock in wet ares and to prevent winnowing of the crossing at low flows.



6. Put aside the largest rock armoring to create 2 butresses in the next step.

7. Create a butress using the largest rock as described in the site treatments specifications at the base of fill. This should have a "U" shape to it and will define the outlet of the armored fill.

8. Backfill the fill face with remaining rock armor placing sure the final armored area has a "U" shape that will accomodate the largest expected flow (M-L).



9. Install a second butress at the break in slope between the outboard road and the outboard fill face. This should define the base level of the stream and determine how deep the stream will backfill after construction (M-O).

10. Back fill the rest of the keyway with the unsorted rock armor placing sure the final armored area has a "U" shape that will accomodate the largest expected flow (O-P).

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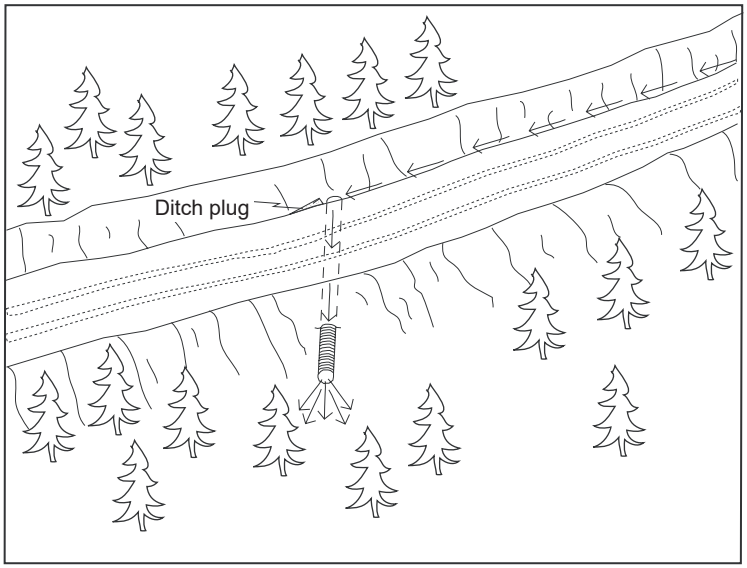
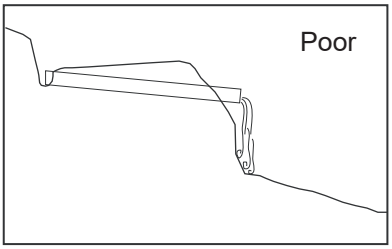
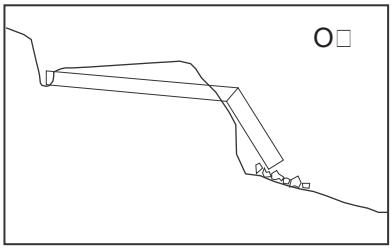
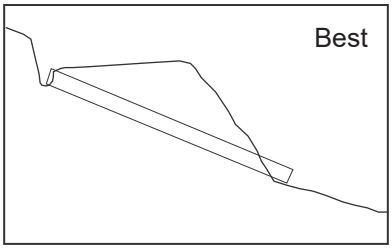
Figure 5F - Culvert Specifications

Typical Ditch Relief Culvert Installation









Ditch relief culvert installation

1□The sa□e □asic steps follo□ed for strea□ crossing installation shall □e e□ployed□

2□Culverts shall □e installed at a 3□ degree angle to the ditch to lessen the chance of inlet erosion and plugging□

3□Culverts shall □e seated on the natural slope or at a □ini□u□ depth of 5 feet at the outside edge of the road, □hichever is less□

4□At a □ini□u□, culverts shall □e installed at a slope of 2 to 4 percent steeper than the approaching ditch grade, or at least 5 inches every 1□ feet□

5□Bac□fill shall □e co□pacted fro□ the □ed to a depth of 1 foot or 1□3 of the culvert dia□eter, □hich ever is greater, over the top of the culvert□

□□Culvert outlets shall e□tend □eyond the □ase of the road fill □or a flu□e do□nspout □ill □e used□□ Culverts □ill □e seated on the natural slope or at a depth of 5 feet at the outside edge of the road, □hichever is less□

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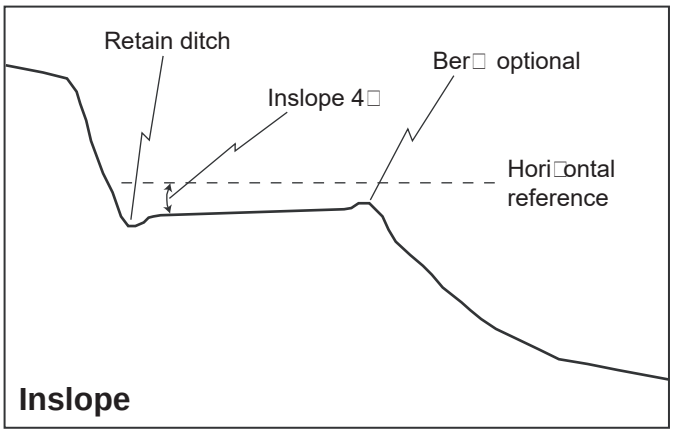
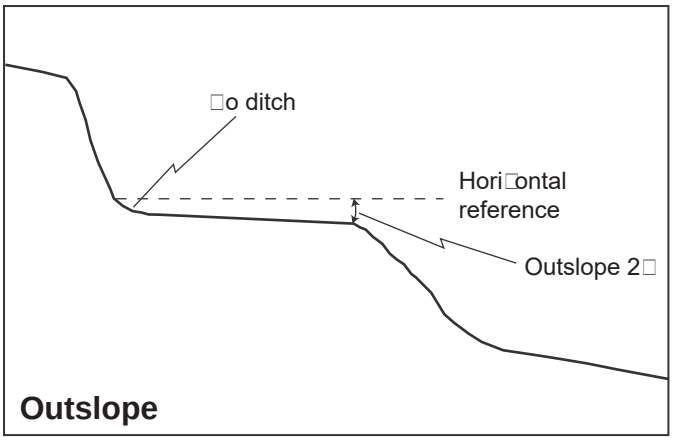
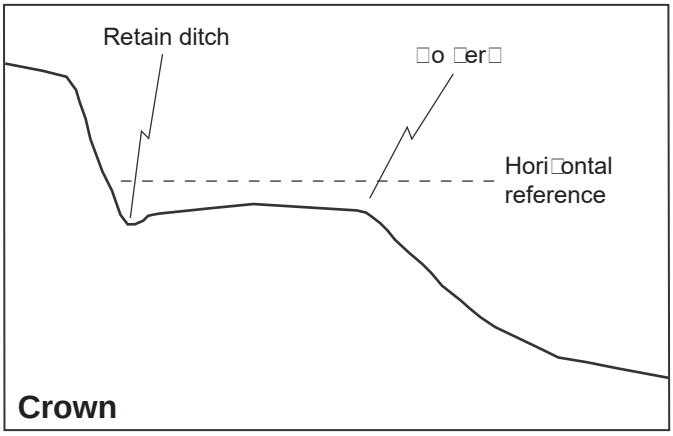
Typical Drawing #8

Figure 5G - Culvert Specifications

Typical Designs for Using Road Shape to Control Road Runoff







Outsloping Pitch for Roads Up to 8% Grade		
Road grade	**Unsurfaced roads**	**Surfaced roads**
4□ or less	3□□" per foot	1□2" per foot
5□	1□2" per foot	5□□" per foot
□□	5□□" per foot	3□4" per foot
□□	3□4" per foot	□□□" per foot
□□ or □ore	1" per foot	1 1□4" per foot

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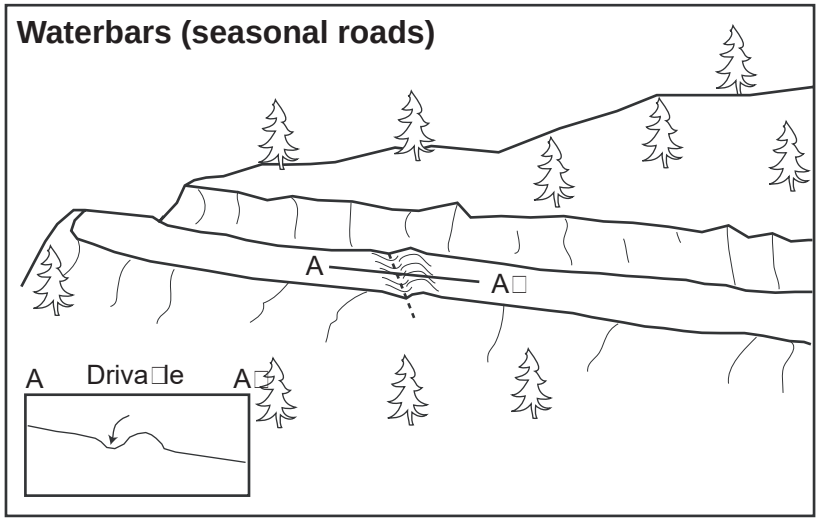
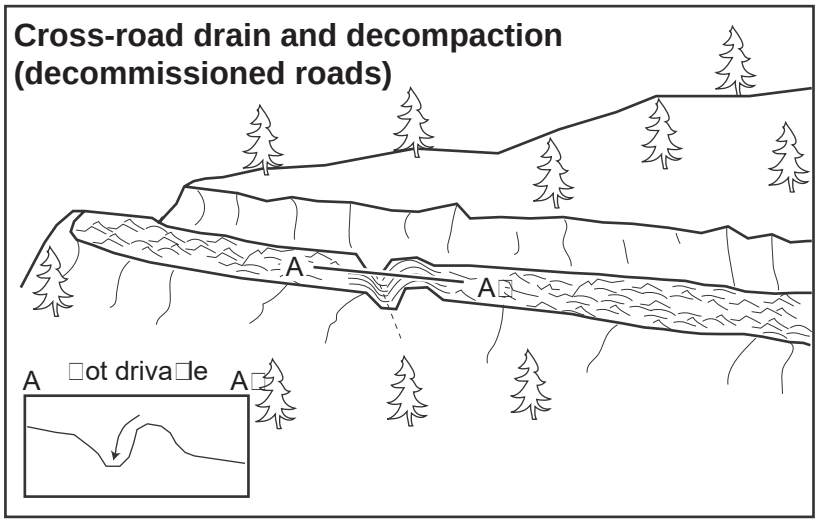
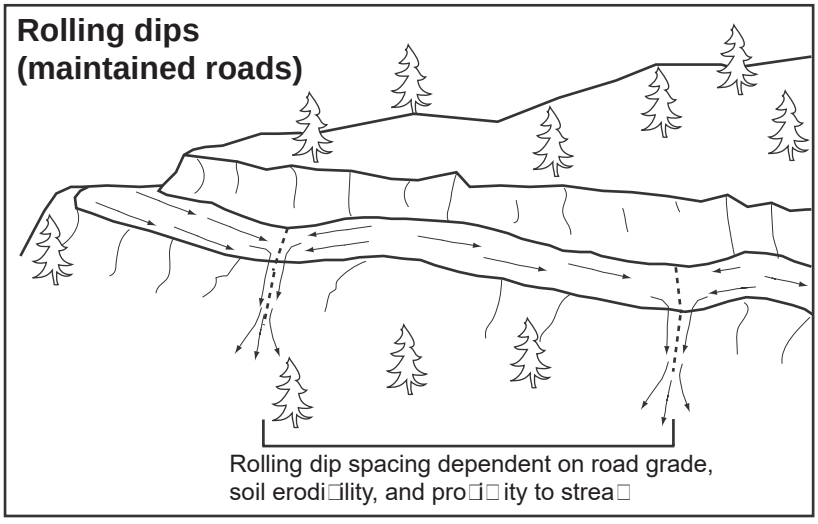
Typical Drawing #9

Figure 5H - Culvert Specifications

Typical Methods for Dispersing Road Surface Runoff with Waterbars, Cross-road Drains, and Rolling Dips







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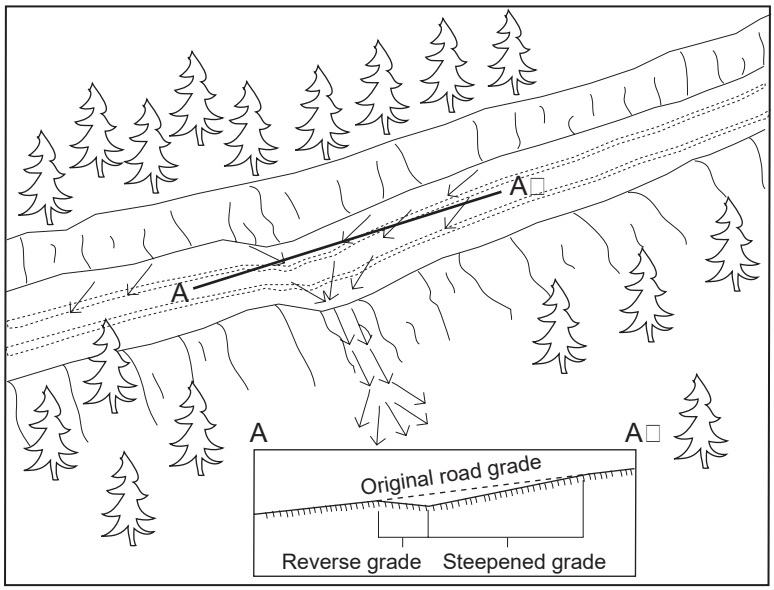
Typical Drawing #10

Typical Road Surface Drainage by Rolling Dips



Rolling dip installation:

1. Rolling dips ill e installed in the road ed as needed to drain the road surface
2. Rolling dips ill e sloped either into the ditch or to the outside of the road edge as re uired to properly drain the road
3. Rolling dips are usually uilt at 3 to 45 degree angles to the road align ent ith cross road grade of at least 1 greater than the grade of the road
4. E cavation for the dips ill e done ith a ediu -si e ulldo er or si ilar e uip ent
5. E cavation of the dips ill egin 5 to 1 feet up road fro here the a is of the dip is planned as per guidelines esta lished in the rolling dip di ensions ta le

Material ill e progressively e cavated fro the road ed, steepening the grade unitl the a is is reached

The depth of the dip ill e deter ined y the grade of the road see ta le elo

On the do n road side of the rolling dip a is, a grade change ill e installed to prevent the runoff fro continuing do n the road see figure a ove

The rise in the reverse grade ill e carried for a out 1 to 2 feet and then return to the original slope

1. The transition fro a is to otto , through rising grade to falling grade, ill e in a road distance of at least 15 to 3 feet

Table of rolling dip dimensions by road grade

Road grade	Upslope approach distance fro up road start to trough ft	Reverse grade distance fro trough to crest ft	Depth at trough outlet elo average road grade ft	Depth at trough inlet elo average road grade ft
	55	15 - 2		3
	5	15 - 2	1	2
1	5	15 - 2	1	1
12	5	2 - 25	1 2	1
12	1	2 - 25	1 3	1

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Typical Drawing #11

Figure 5J - Culvert Specifications

From:	Jessica
To:	Adler, Elanah; Richardson, Michael; Margro Advisors
Subject:	Wesley Stoft - Mitigation and Remediation Grant Fund Proposal
Date:	Friday, October 29, 2021 1:24:05 PM
Attachments:	Mitigation Fund Application - Walker Ridge_Stoft.pdf Stoft Grant Maps_Figures.pdf

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Dear Michael and Elanah,

I am pleased to present the attached grant proposal on behalf of Wesley Stoft, Walker Ridge Family Farm, LLC.

Please feel free to reach out to me with questions or comments.

Thank you,

Jessica

--
Jessica
Project Manager
Margro Advisors

1-707-500-2420