RECLAMATION
Managing Water in the West

Draft Environmental Assessment

Cold Creek Coho Salmon Passage and Screening Project

Siskiyou County, California
2018-EA-013

U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center
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Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Contents

Acronyms and Abbreviations

APE	Area of Potential Effects
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	Environmental Assessment
Grant Program	2016 Klamath River Coho Habitat Restoration Grant Program
ITA	Indian Trust Asset
NEPA	National Environmental Policy Act
NFWF	National Fish and Wildlife Foundation
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
OHWL	Ordinary high water line (per U.S. Army Corps of Engineers)
Klamath Project	Klamath Reclamation Project
Reclamation	Bureau of Reclamation
SHPO	State Historic Preservation Officer
TU	Trout Unlimited
USC	United States Code
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
2013 BiOp	*Biological Opinions on the Effects of Proposed Klamath Project Operations from May 31, 2013 through March 31, 2023, on Five Federally Listed Threatened and Endangered Species*

Chapter 1: Introduction and Background

1.1 Introduction

This Environmental Assessment (EA) has been prepared to examine the potential direct, indirect, and cumulative effects to the affected environment that may result from implementing the Cold Creek Coho Passage and Screening Project. This project is intended to improve passage and habitat for adult and juvenile coho salmon in Cold Creek in the Klamath River watershed. The project would be funded in the amount $116,054.77 by the Bureau of Reclamation (Reclamation) and administered through National Fish and Wildlife Foundation (NFWF) to Trout Unlimited (TU) as part of the 2016 Klamath River Coho Habitat Restoration Grant Program (Grant Program). The Grant Program was proposed by Reclamation as a conservation measure to address impacts from operation of the Klamath Project and was identified by the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) in the *Biological Opinions on the Effects of Proposed Klamath Project Operations from May 31, 2013 through March 31, 2023, on Five Federally Listed Threatened and Endangered Species* (2013 BiOp).

The EA was prepared in accordance with the National Environmental Policy Act (NEPA) (42 United States Code (USC) §4321 et seq.), the Council on Environmental Quality Regulations for implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) Parts 1500-1508), and the Department of the Interior regulations for the Implementation of the NEPA (43 CFR Part 46). If there are no significant environmental impacts identified as a result of the analysis in this EA, a Finding of No Significant Impacts can be signed to complete the NEPA compliance process.

1.2 Location

The project site is in the Klamath River watershed, approximately 22 miles east of the town of Yreka, in section 18 of township 47N, range 4W of the Mount Diablo Meridian in Siskiyou County, California (Appendix A). The project area is located entirely on private land and the landowner has approved site access (Cooperative Agreement between Bogus Creek Ranch and TU signed May 11, 2018).

Cold Creek enters Bogus Creek approximately 4 miles upstream from the Bogus Creek confluence with the Klamath River, and is the largest tributary to Bogus Creek. Bogus Creek enters the main stem Klamath River approximately 2,100 feet downstream of Iron Gate Dam (refer to Appendix A), and is used by coho salmon, Chinook salmon, and steelhead trout. Located about 1,400 feet upstream from the confluence with Bogus Creek is the Fitzgerald/Bailey diversion and push-up dam.

1.3 Background

Cold Creek enters Bogus Creek approximately 1.5 miles upstream from the confluence with the Klamath River, and is the largest tributary to Bogus Creek, providing a substantial cold water source to Bogus Creek. Summertime baseflows in Cold Creek are fed by springs that provide cold water to Bogus Creek yielding approximately 0.75 miles of suitable rearing habitat. However, during irrigation season, water users install a hand stacked rock dam (push-up dam) at the diversion to raise and divert water for irrigation. This push-up dam blocks fish passage to and from the upper reaches of Cold Creek. The timing of the installation and operation of the push-up dam (March 1 to November 1) coincides with upstream spawning migrations as well as coho smolts emigrating to summer rearing habitat and impedes their passage. Both access to spawning habitat and juvenile rearing habitat are identified as limiting factors for coho salmon and other cold water dependent species.

The proposed project meets all four of the high priority goals of Reclamation's Grant Program, including removing an existing fish passage barrier, improving connectivity to the cold spring fed waters of Cold Creek, upgrading a fish screen and reducing tailwater inputs to the stream

Funding from the NFWF Pacificorp Coho Enhancement fund has allowed the project team to begin work on the project. TU has worked with Cascade Stream Solutions and the water users to survey the diversion site, monitor the hydrology of Cold Creek and develop preliminary design. The team has also refined the project description and developed a final design that meets NMFS design criteria for implementation in 2017. Funding for this project comes from the Reclamation/NFWF Grant Program ($116,054.77) and will be used for completion of environmental compliance, permitting requirements and implementation of the project. Supplemental match funding comes the USFWS National Fish Passage Program ($55,000). The USFWS has already completed NEPA for their funding contribution.

1.4 Need for the Proposal

The purpose of this project is to eliminate the need for the push-up dam by installing a roughened channel at the diversion site. This channel will allow for irrigation deliveries while providing volitional streamwide passage for oversummering juveniles, outmigrating smolts and adults moving into the spawning grounds. The project will also replace the existing, non-compliant fish screen at the diversion with a screen that meets current California Department of Fish and Wildlife (CDFW) standards and install a siphon to transport irrigation return flows under Cold Creek to an adjacent pasture and pipe the main diversion ditch. The project is needed to improve passage and habitat for adult and juvenile coho salmon in Cold Creek in the Klamath River watershed.

1.5 Authority

Through its delegated authority under the Fish and Wildlife Coordination Act (16 USC 661 et seq.) as amended, Reclamation is authorized to provide funding assistance for the improvement of fish and wildlife habitat affected by Reclamation's water resource development.

Chapter 2: Alternatives

This EA considers two alternatives including the No Action Alternative and the Proposed Action. The No Action Alternative reflects conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment due to implementation of the Proposed Action.

2.1 Alternative 1 – No Action

Under the No Action Alternative, Reclamation would not provide $116,054.77 funding for NFWF to administer for the implementation of the project. Fish passage would remain impaired in the stream restricting access to 0.75 miles of spawning habitat and blocking access to summer rearing habitat for juvenile coho. Entrainment risks would remain elevated because the current fish screen is not up to current CDFW and National Oceanic and Atmospheric Administration standards. Water quality in Cold Creek would continue to be impacted by irrigation return flows from nearby farming operations.

2.2 Alternative 2 – Proposed Action

Under the Proposed Action, Reclamation would provide $116,054.77 of funds to NFWF to administer to TU to implement the project. TU would use this funding to eliminate the need for the push-up dam and allow year-round passage for juvenile and adult salmon. The project would also include replacement of the existing non-compliant fish screen with one that meets updated criteria; and install a siphon pipe under the streambed to rout warm tail water under the creek to an adjacent pasture. Engineered streambed material will be used to backfill the siphon pipe and will serve as a low water crossing upon completion.

2.2.1 Construction Activities

TU would supervise the construction to be completed by North Rivers Construction, a local contractor with extensive stream restoration experience. It is anticipated that the project would take no more than 3 weeks to complete. The following information details the actions that would be needed to implement the proposed project:

1. Install new diversion and fish screen approximately 200 feet upstream of existing diversion and fish screen.
    a. Remove existing diversion (push-up dam/passage barrier) and replace with a roughened channel that would allow year-round fish passage.
    b. Heavy equipment would be used to install large wood and boulders both in the channel and along both banks to provide erosion protection for the screen (north bank) and to augment grade control primarily provided by a natural bedrock ledge (see Sheet 6 Appendix B). Less than 20 cubic yards of imported boulder and cobble fill material along with large wood would be placed in the streambed.
    c. Install new diversion and fish screen approximately 200 feet upstream that meets CDFW and NMFS standards to reduce entrainment.

i. Temporary construction access would be constructed to branch off the lower part of the existing access road to accommodate equipment needed for construction and access. Minimal tree and shrub removal would be required and the access route would be mechanically roughened and reseeded after construction ceases.
ii. Temporary construction activities include earth work, concrete pouring and finish grading. A combination of equipment (concrete pump truck, tracked excavator) and hand labor would be used to form and pour the concrete screen box and install the vertical panel screens and mechanical equipment in the screen box.
iii. The new irrigation diversion and fish screen would be housed in a 26-foot by 8-foot concrete foundation along the banks of Cold Creek (Appendix B Sheet 9 Siphon Plan and Profile).
iv. Board up existing fish screen.

2. Install Piping and Siphon
    a. A tracked excavator would dig a ditch and install irrigation piping that connects the new diversion point to an existing diversion ditch (Sheets 5, 6, 7, and 8 Appendix B) on the north side of the stream to divert flows past the construction area (see Sheet 4 Appendix B). The remaining 1,150 feet of 15-18-inch pipe would be installed in the upper area north of Cold Creek (see Sheet 7) to eliminate or minimize ditch water loss and would be installed in or adjacent to the existing ditch and backfilled in both a new irrigation ditch section and parts of the existing irrigation ditch system (Appendix B Sheets 5, 6, 7, 8).
    b. Install a polyvinylchloride siphon pipe 8 inches by 40 feet under Cold Creek from bank to bank to route warm tail water under the creek to an adjacent pasture and help keep irrigation return flows from impacting water quality in Cold Creek (Sheet 12 Appendix B).
        i. A tracked excavator would be used to excavate a trench for the 300 foot siphon pipe which would reroute irrigation return flows from the south bank across Cold Creek 100 feet downstream of the new diversion location at an existing low water vehicle crossing to the new irrigation ditch on the north bank. Engineered Streambed Material would be used to backfill the siphon pipe and would serve as a low water crossing upon completion (see Appendix B sheet 12).
        ii. The siphon pipe laid in the trench would be backfilled with excavated and imported material at minimum 30 inches below grade except at the stream crossing where depths would be 3-4 feet to avoid scour impacts.
        iii. A tracked excavator would also excavate and install a 4-foot-wide by 5-foot-long by 4-foot-high precast concrete return flow collection box on the south bank of the creek. Most of the siphon pipe, trench and collection box would be outside of the riparian area and above the ordinary high water line (OHWL) of Cold Creek. Where the pipe crosses Cold Creek there would be some work below the OHWL and in the riparian area (Appendix B Sheet 12).
3. Temporary coffer dams.

a. The excavator would access the bed of the creek to install temporary coffer dams for dewatering, excavation for the siphon pipe and removal of the temporary works. All removed materials would be replaced as backfill or cover for the fish screen or pipeline. All fill material placed below the OHWL would be less than 1/10 acre and all work would be in accordance with Nationwide Permit 27 conditions.
b. Temporary coffer dams, piping, pumps and fish screening would be used to dewater the construction site, reduce turbid discharge and sediment inputs to downstream reaches, and avoid harming fish during construction. Project team would coordinate with USFWS and CDFW to relocate any resident fish if necessary. Temporary works would be removed after project completion.

4. Excavation for the fish screen, diversion, and pipelines would temporarily remove approximately 50 cubic yards of sediments from the banks and bed of Cold Creek. Most work would be completed along the north banks of Cold Creek.

2.2.2 Mitigation Measures and Integrated Best Management Practices

Consistent with the 2013 BiOp, instream project work would be restricted to low flow periods between June 15 and November 1 to minimize impacts to fish and riparian habitats. Depending on contractor scheduling, stream flow levels, and permit approval, project work may begin as early as September 2018 and would cease by November 1st or when anadromous fish return to the system for spawning.

Best management practices as well as all permit conditions would be followed to avoid or minimize impacts to the riparian area and aquatic environment (see Best Management Practices below and Environmental Commitments in Chapter 4).

Contractors and equipment would use existing roads to access the general work site. Temporary construction access would be constructed to branch off the lower part of the existing access road to accommodate equipment needed for construction and access. (see sheet 5). Equipment, materials and supplies would be staged in upland areas a minimum of 150 feet from the stream and riparian areas.

Upon project completion, temporarily disturbed areas would be mechanically roughened, scattered with small woody debris and hand seeded with a native seed mix to promote vegetation recovery and reduce erosion to the stream.

Integrated Best Management Practices and Mitigation Measures

1. All mechanized equipment would be inspected for leaks and cleaned before entering and leaving the project site to prevent leaks and ensure that no noxious plants/organisms are vectored.
2. All fueling, servicing, and overnight parking of mechanized equipment occur at least 150 feet from any wetted channel.
3. Mechanized equipment access to the channel/ditch prisms would be implemented to minimal extent possible.
4. All removed materials would be stockpiled in uplands and existing vegetation buffers would isolate material from the stream to minimize sediment inputs to the channel. If rainy weather is encountered prior to completion, silt fences would be added ensure isolation from the stream.

5. Any grasses, shrubs or sods removed during excavation would be stockpiled and watered, then replaced and watered to promote vegetation regrowth.
6. All project activities would be implemented between June 15 and November 1, to minimize impact to fish and riparian habitat adjacent to the active channel of Bogus Creek spawning/nesting habitats.
7. All conditions and stipulations from any associated federal, state, and local permits be followed.
8. All newly disturbed areas would be mechanically roughened, scattered with small woody debris or mulch and hand seeded with a native grass mixture.
9. All instream work would be isolated and dewatered to avoid sediment inputs and impacts to resident fish, USFWS would conduct any fish removal/transplant that is deemed necessary.
10. Instream project work would be limited to low flow periods between June 15 and November 1, consistent with the 2013 BiOp, to minimize impacts to fish and riparian habitats.
11. In cases where the contractor specifications (sheet specifications) differ from these Environmental Commitments, the more stringent one would apply.

Chapter 3: Affected Environment & Environmental Consequences

This chapter describes the affected environment and evaluates the environmental consequences that could result from the No Action and Proposed Action Alternatives. The No Action Alternative describes the conditions most likely to occur if the Proposed Action were not implemented and provides the basis for comparison to describe the environmental consequences of implementing the action alternative.

3.1 Resources Not Analyzed in Detail

Impacts to the following resources were considered and found to be absent, immeasurable, or insignificant. Brief explanations for their elimination from further consideration are provided below.

3.1.1 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in assets that are held in trust by the United States for federally recognized Indian tribes or individuals. There are no Indian reservations, Rancherias or allotments in the project area. As shown in Appendix C, the nearest ITA is the Karuk Tribe about 20.06 miles to the southwest of the nearest project site. On December 19, 2017, the ITA coordinator stated: “Based on the nature of the planned work, it does not appear to be in an area that will impact Indian hunting or fishing resources or water rights, nor are the proposed activities on actual Indian lands. [Therefore,] it is reasonable to assume that the Proposed Action will not have any impact on ITAs.”

3.1.2 Indian Sacred Sites

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as “any specific, discrete,

narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." No Indian sacred sites have been identified in the project area. The Proposed Action would not affect and/or prohibit access to and ceremonial use of Indian sacred sites.

3.1.3 Cultural Resources

Cultural Resources are prehistoric and historic-era districts, sites, buildings, structures, and objects, as well as properties of religious or cultural importance to Native Americans or other traditional communities. The National Historic Preservation Act (NHPA) is the primary legislation outlining the Federal Government's responsibilities related to cultural resources. Title 54 USC 306108, commonly known as Section 106 of the NHPA, requires Federal agencies to take into account the effects of their undertakings on significant cultural resources, which are known as historic properties. The regulatory process for complying with Section 106 of the NHPA is described at 36 CFR Part 800. As outlined at 36 CFR § 800.2(a)(2), if more than one Federal agency is involved in an undertaking, a lead Federal agency may be designated, by some or all of the agencies involved, to fulfill their collective responsibilities under Section 106. For the current undertaking, Reclamation designated FWS as lead Federal agency for Section 106 compliance (see Appendix D). Based on research, land use history, and survey results, FWS evaluated the potential impacts of the proposed project on cultural resources and concluded affects or impacts to cultural resources are unlikely. In the event that cultural resources are discovered during project implementation, any ground disturbing activity would be discontinued and the FWS Regional Archaeologist notified.

3.1.4 Environmental Justice Sites

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its programs, policies, and activities on minority populations and low-income populations. Reclamation has not identified adverse human health or environmental effects on any population as a result of implementing the Proposed Action. Since there would be no long term impact to any populations, there would be no adverse human health or environmental effects to minority or low-income populations as a result of the Proposed Action.

3.1.5 Air Quality

The Proposed Action would not conflict with or obstruct the implementation of the air quality management plan of Siskiyou County, CA. Emissions would be associated with construction but would be relatively minor, temporary, and localized. Standards set by the California Air Resources Board and Federal agencies relating to the Proposed Action would be required and incorporated at applicable design and approval stages; this may include, but may not be limited to, the application of water as necessary on and around construction sites to reduce fugitive emissions associated with construction activities.

3.1.6 Recreation

The entire project lies on private lands and is not subject to any recreation use.

3.1.7 Noise

The proposed project area is typically impacted by traffic noise as it is approximately 300 feet away from the Ager-Beswick Road; thus, the additional noise associated with the Proposed Action's related construction is expected to have only a temporary and minor impacts. Noise impacts created by the use of heavy motorized equipment would be minimized by limiting construction activities to 7:00 a.m. to 7:00 p.m. Work hours outside this period would need approval in advance by Reclamation, and, upon approval, TU would be required to contact adjacent landowners, if applicable, prior to work commencing. There would not be long-term increases to the ambient noise levels from the implementation of the Proposed Action.

3.1.8 Socioeconomics

The Proposed Action would create a relatively minor and short-term demand for construction related products and services and was determined to be insignificant with respect to this assessment. The services of North Rivers Construction which is a local contractor from Fort Jones, California, would be employed. The economic impacts associated with this relatively small-scale project would be temporary and insignificant as only a total of 3 weeks of work is estimated.

3.2 Resources Analyzed in Detail

This EA analyzes the affected environment of the Proposed Action and No Action Alternative in order to determine the potential impacts and cumulative effects to the following environmental resources

3.2.1 Water Resources

3.2.1.1 Affected Environment

The water resources potentially affected would be surface waters within and adjacent to the proposed project area which include Cold Creek and its immediate riparian area. Cold Creek is located on the east side of the Shasta Valley and flows west from headwater springs in the Cascade Mountains. Spring fed base flows are augmented by rainfall in the winter and snowmelt in the spring. Cold Creek is a tributary to Bogus Creek which eventually flows into the Klamath River just downstream of the Iron Gate Dam. Cold Creek is a steep gravel bed/step pool creek. A small riparian buffer borders the creek and the adjacent floodplain has been developed for agricultural use.

3.2.1.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not provide funding and NFWF would not administer $116,054.77 to TU for the purpose of improving fish screening and passage on Cold Creek to benefit federally listed coho salmon. As a result, the fish passage and screening improvements would not occur. However, TU could still seek other financial partners or fund the Proposed Action themselves, which is outside the scope of this EA.

Proposed Action

The analysis of effects on water resources associated with the Proposed Action was based on

potential impacts to surface water quality and quantity. Under the Proposed Action Alternative, project activities that would occur within the surface water and riparian area resources of Cold Creek would be expected to result in minor effects.

Excavation for the fish screen and pipelines will temporarily remove and then backfill approximately 50 cubic yards of sediments from the banks and bed of Cold Creek. During construction and removal of the temporary works there would be a short-term increase in downstream turbidity. Turbidity plumes would be expected to be localized as materials would quickly settle out or be diluted by the consistent spring fed baseflows. Temporary coffer dams and bypass piping would isolate the work site to keep turbid flows from entering the stream during construction.

Less than 20 cubic yards of imported boulder and cobble streambed fill material would be used along with large wood for the roughened channel. Other fill to Cold Creek includes the 26-foot by 8-foot concrete screen box and associated mechanical equipment resulting in a maximum of 100 feet of 15- to 18-inch Polyvinylchloride irrigation pipe to be buried in the irrigation ditch in the river impacting the north riparian area; and a 8 inch by 40 foot length of Polyvinylchloride siphon pipe would be buried underneath Cold Creek as it crosses from south bank to north bank. This would result in a disturbance of less than 1/10th of an acre of riparian habitat. Site restoration and other best management practices would minimize this disturbance and result in only a temporary impact.

The temporary disturbance area to the stream below the OHWL is estimated from the plans (Sheets 6 and 9) to be approximately 70 linear feet with a width of 40 feet (to encompass the stream width and banks on both sides), for a total area of 0.07 acres. This temporary disturbance area includes excavation at the screen box site (approx. 26 feet of bank length and 2-3 feet of depth in the bank), installation of the rip rap and large wood for grade control and bank/structure protection, siphon pipe excavation (10-feet-wide by 40-feet-long), temporary dewatering measures (coffer dams, temp fish screens) and room for equipment access and operation. The near stream work area is heavily vegetated and some riparian vegetation would need to be trimmed or removed to complete the work, however most of the large woody vegetation would remain intact as the root systems provide valuable natural bank stabilization.

The temporary riparian disturbance area is estimated from the plans to be approximately 130 linear feet by 10 feet, for a total of 0.02 acres and a depth of 50 inches (see pipe trench detail Sheet 5). This temporary disturbance area is for installation will be the 100 feet of the irrigation pipeline and 30 feet of the siphon pipe and a 10-foot width for equipment access and operation along the pipeline layout within the riparian area. Once past the 130-foot length both pipelines would be outside of the riparian area for the remainder of its length. All excavated earth for the ditch/pipeline would be returned as fill to bury the pipe at the specified depths and to return the site to pre-construction contours.

Temporary coffer dams, piping, pumps and fish screening will be used to dewater the construction site, reduce turbid discharge and sediment inputs to downstream reaches, and avoid harming fish during construction. Project team will coordinate with USFWS and CDFW to relocate any resident fish if necessary. Temporary works will be removed after project completion.

The footprint disturbance area below the OHWL is estimated from the plans to be approximately

35 linear feet and a width of 30 feet to encompass the stream bed and banks on both sides, for a total area of 0.02 acres. The footprint will include the screen box, siphon pipe, large wood and rip rap.

The riparian disturbance area is estimated as the 130-foot pipe length by the 18-inch diameter of the pipe for a total of 0.04 acres.

Contractors and equipment will use existing roads to access the general work site. Temporary construction access would be constructed to branch off the lower part of the existing access road to accommodate equipment needed for construction and access. Minimal tree and shrub removal would be required and the access route would be mechanically roughened and reseeded after construction ceases (see Sheet 5). Equipment, materials and supplies will be staged in upland areas a minimum of 1500 feet from the stream and riparian areas.

All mechanized equipment (tracked excavator, bobcat/skid steer, 10-yard dump truck, concrete truck, and concrete pump truck) would be inspected and cleaned before entering and leaving the project site to ensure that no leaks or transport of noxious weeds/seeds would discharge in the work site. All fueling, servicing, and overnight parking of mechanized equipment would occur at least 1500 feet from any wetted channel. All equipment would be inspected daily to identify and fix any leaks that may arise during construction.

Upon project completion, temporarily disturbed areas would be mechanically roughened, scattered with small woody debris and hand seeded with a native seed mix to promote vegetation recovery and reduce erosion to the stream.

Pursuant to Section 404 of the Clean Water Act (CWA), the proposed project activities qualify for the U.S. Army Corps of Engineers' (USACE) – Nationwide Permit Number 27 for "Aquatic Habitat Restoration, Establishment, and Enhancement Activities" (77 Fed. Reg. 10184, February 21, 2012). TU will furnish the USACE a copy of a signed landowner agreement. All permit conditions and stipulations as outlined in the Nationwide Permit 27 would be met by TU and its Contractors, during all phases of the proposed project. All work below the OHWL is covered by the USACE Nationwide 27 permit. The Nationwide Permit was obtained by USFWS under their match funding for the proposed project (see Appendix E). No work in a Water of the U.S. will be conducted until all required permits and water quality certification are obtained.

A State of California 401 Water Quality Certification and a CDFW 1600 permit will be obtained prior to implementation of the project. TU has begun coordinating with the California North Coast Regional Water Quality Control Board and has submitted a Notice of Intent. The consultation and issuance of a Notice of Applicability is expected in September 2018. TU will follow the conditions and requirements listed in the Notice of Applicability and be in receipt of the certification prior to implementation of any in-water work related project activities.

Any other required water resource related permits would be obtained by the TU prior to implementation of project activities.

There are no long-term water quality impacts expected. The water user will continue to divert only that amount legally allowed by the State of California, however with the new irrigation piping reducing ditch loss, they may be able to reduce diversions and leave more baseflows in the stream.

Overall, potential water quality impacts including temporary in water work and increases in turbidity and contribution of sediment instream would be negligible, localized, temporary in nature, and only persist during construction activities. Furthermore, several project design features described in Chapter 2.2 have been incorporated into the proposed action to reduce instream work and water quality impacts. The activities associated with the proposed project are not expected to have an effect on the quantity of the surface water resource and could result in increased baseflows.

3.2.2 Biological Resources

3.2.2.1 Affected Environment

The Endangered Species Act lists threatened and endangered species that may occur within or near the proposed project area. The list in Appendix F was generated by querying the USFWS database for endangered, threatened, or candidate species that are located in Siskiyou County (USFWS, 2018). This proposed restoration activity and other similar projects funded under this Grant Program and the Klamath River Restoration Program were considered by the NMFS and analyzed in 2013 BiOp. Consistent with the 2013 BiOp, restoration activities that require instream activities would be implemented during low flow periods between June 15 and November 1.

3.2.2.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not provide funding and NFWF would not administer $116,054.77 to TU for the purpose of improving fish screening and passage on Cold Creek to benefit federally listed coho salmon. As a result, the fish passage and screening improvements would not occur. However, TU could still seek other financial partners or fund the Proposed Action themselves, which is outside the scope of this EA. There would be no change to the proposed site environment, and, consequently, there would be no change or potential benefits experienced related to biological resources from current conditions under the No Action Alternative.

Proposed Action

This proposed restoration activity and other similar projects funded under this Grant Program and the Klamath River Restoration Program were considered by the NMFS and also analyzed in the 2013 BiOp. Consistent with the 2013 BiOp, restoration activities that require instream activities would be implemented during low flow periods between June 15 and November 1.

As outlined in the 2013 BiOp, TU would report immediately to Reclamation the total number of coho salmon captured, relocated, injured, or killed during any stage of the Proposed Action activities. All coho salmon mortalities must be retained, placed in an appropriately sized whirl-pak or zip-lock bag, labeled with the date and time of collection, fork length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by Reclamation as coordinated with NMFS.

Fish Relocation Activities

Should fish relocation activities be required for the proposed project, USFWS or CDFW personnel (or their designated agents) would capture and relocate fish (and amphibians) away from the restoration project work site to minimize adverse effects to listed salmonids. Fish in

the immediate project area would be captured by seine, dip net and/or by electrofishing, and would then be transported and released to a suitable instream location.

Increased Mobilization of Sediment within the Stream Channel
The proposed project includes ground disturbance in or adjacent to Cold Creek and may temporarily increase turbidity and suspended sediment levels within the project work site and downstream areas. Therefore, fish screen construction may result in increased mobilization of sediment into streams. Although riparian restoration may involve ground disturbance adjacent to streams, the magnitude and intensity of this ground disturbance is expected to be small and isolated to the riparian area.

Beneficial Effects to Coho Salmon
The proposed project would be designed and implemented consistent with the techniques and minimization measures presented in the CDFW's Restoration Manual (Flosi et al. 2010) to maximize the benefits of the project while minimizing effects to salmonids. This restoration project is for the purpose of restoring degraded salmonid habitat and is intended to improve access to additional habitat for coho salmon previously blocked by the push-up dam. The new fish screen would reduce or eliminate entrainment or impingement of juvenile coho at the diversion site. The siphon pipe would eliminate irrigation return which currently degrades water quality for juvenile coho by inputting hot, turbid and nutrient loaded water to Cold Creek. This project is anticipated to contribute to the restoration of coho salmon habitat over the long-term.

Noise, Motion, and Vibration Disturbance from Heavy Equipment Operation
Noise, motion, and vibration produced by heavy equipment operation is expected as part of the proposed project. However, the use of equipment, which would largely occur outside the active channel is expected to result in insignificant effects to listed fishes. Listed salmonids not already relocated from the isolated project site, would be able to avoid interaction with instream machinery by temporarily relocating either upstream or downstream into suitable habitat adjacent to the worksite.

Stream Bank Stabilization
A small portion of stream bank stabilization around the newly installed fish screen is a component of the proposed project. This stabilization would reduce sediment delivery from the disturbed area to the stream and is likely to reduce erosion impacts at the project site. This should reduce impacts to coho salmon embryo and alevin survival in spawning gravels and reduce injury to juvenile coho salmon from high concentrations of suspended sediment.

Overall, the duration and magnitude of short-term effects to coho salmon critical habitat and other potentially present species associated with implementation of individual restoration projects would be minimized due to the multiple proposed avoidance and minimization measures integrated in to the Proposed Action and as outlined in Chapter 4 of this EA. The overall project is expected to be beneficial to coho salmon in the long-term.

Impacts to migratory birds and their nesting
The project will be implemented September through October, which is outside the migratory bird nesting period. Any trees proposed for removal shall be visually inspected by a USFWS biologist to ensure no bald eagle nests are present. Should a bald eagle nest be present,

further coordination with the Yreka USFWS field office would be necessary. Therefore, no impacts to species protected under the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act are expected as a result of implementation of the proposed project.

3.3 Cumulative Effects

A cumulative impact is defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

When evaluating the Proposed Action no individual adverse effect was identified for any of the resources that were either analyzed or not analyzed in detail that would incrementally contribute to any cumulative effect on a particular resources within the human environment when combined with any past, present, and reasonably foreseeable future actions. The project is designed to improve passage and habitat for coho salmon and may contribute to long-term beneficial effects for the salmon.

Chapter 4 Environmental Commitments

In addition to the best management practices and the mitigation measures integrated in to the Proposed Action detailed in Chapter 2.2.2, the following environmental commitments and permitting conditions would be implemented before, during, and after construction.

- **Environmental Permitting –** TU would be responsible for complying with all environmental requirements associated with applicable Federal, State, and local permits or approvals related to the Proposed Action. These permits and approvals may include, but are not limited to: USACE, CWA Section 404 permit and State Water Resources Control Board's CWA Section 401 certification, CDFW 1600 Streambed alterations permit, and Reclamation's 2013 BiOp.

- **Noise -** Construction would be conducted between 7:00 am to 7:00 pm.

- **Water Resources**
  - No mechanized equipment would operate within the wetted channel with the exception of the excavator bucket to excavate the banks to install the siphon pipe, install the new fish screen and improve fish passage.
  - All mechanized equipment fueling, servicing, and overnight parked would occur at least 150 feet from any wetted channel, riparian area, or delineated wetland.
  - All mechanized equipment (tracked excavator, bobcat/skid steer, 10-yard dump truck, concrete truck, and concrete pump truck) would be inspected and cleaned before entering and leaving the project site to ensure that no leaks or transport of

noxious weeds/seeds would be spread.
    - All equipment would be inspected daily to identify and fix any leaks that may arise during construction.
    - All permit conditions and stipulations identified in Nationwide Permit 27 and CWA 401 certification would be followed.
    - In cases where the contractor specifications (sheet specifications) differ from these Environmental Commitments, the more stringent one will apply.

- **Biological Resources -** As outlined in the 2013 BiOp, TU would report immediately to Reclamation the total number of coho salmon captured, relocated, injured, or killed during any stage of the Proposed Action activities. All coho salmon mortalities must be retained, placed in an appropriately sized whirl-pak or zip-lock bag, labeled with the date and time of collection, fork length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by Reclamation as coordinated with NMFS.
    - Any Fish Relocation activities would be conducted by CDFW in coordination with NMFS and Reclamation.
    - Visual inspections of project sites would occur prior to construction activities (including mobilization of construction equipment). If bald or gold eagles or other migratory birds or their nests are present in areas where tree removal or other activities that may disrupt nesting, further coordination with the Yreka USFWS office would occur.

- **Cultural Resources -** In the case that any cultural resources, either surface or subsurface, are inadvertently discovered during construction, construction in the area of the inadvertent discovery will cease, and a USFWS archaeologist would be notified. USFWS's archaeologist would make an assessment of the resource and conduct additional consultations as required. Any person who knows or has reason to know that he/she has inadvertently discovered possible human remains on Federal land, must immediately provide telephone notification of the discovery to a Reclamation official and to Reclamation's Mid-Pacific Regional archaeologist. If applicable, Reclamation would consult under the Native American Graves Protection and Repatriation Act for a discovery of Native American human remains or applicable objects. Work will not resume at that location until notified by Reclamation to proceed.

- **Incorporation of Mitigation Measures and Best Management Practices** – Identified in Chapter 2.

Chapter 5 Consultation and Coordination

This section presents the agencies and parties that were coordinated or consulted with during development of the document.

5.1 Public Involvement

Reclamation will provide a one week public review and comment period for this EA; the comment period will be accompanied by a news release. The EA will be available online at https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=34841 and in hardcopy at the following location.

Bureau of Reclamation
Klamath Basin Area Office
6600 Washburn Way
Klamath Falls, Oregon 97603

5.2 Persons or Agencies Consulted During Development of EA

- Tony LaGreca, Restoration Project Coordinator; TU
- Private landowner granting access for project implementation – Name remitted for privacy purposes
- California State Water Quality Control Board for Water Quality Certification. Applied July 2018, expected approval September 2018. No in-water work will be conducted before the Water Quality Certification is obtained. A copy will be provided to Reclamation once received.
- CDFW for 1600 Streambed Alteration Permit Applied August 2018, expected approval September 2018. No in-water work will be performed until the streambed alteration permit is obtained. A copy will be provided to Reclamation once received.
- Reclamation's Cultural Resources Compliance, Division of Environmental Affairs, Cultural Resources Branch (MP-153) reviewed the project and issued memo of compliance Tracking Number 17-KBAO-216.

Chapter 6 References

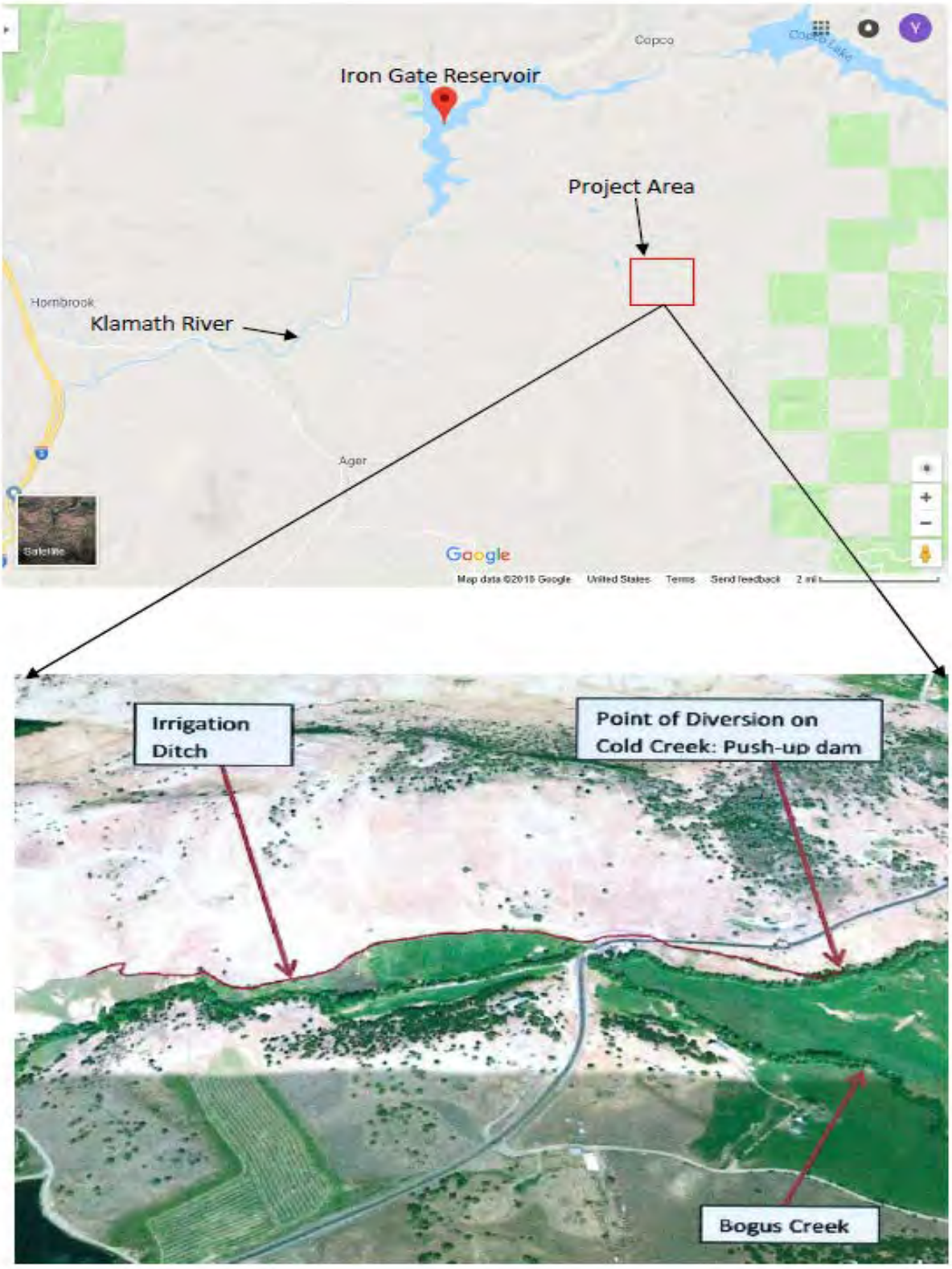
CDFW. 2013. Recovery Strategy for California Coho Salmon Progress Report 2004-2012. Prepared for California Fish and Game Commission by California Department of Fish and Wildlife. Sacramento, California.

NMFS and USFWS. 2013. Biological Opinions on the Effects of Proposed Klamath Project Operations from May 31, 2013 through March 31, 2013, on Five Federally Listed Threatened and Endangered Species.

USFWS. 2018. Information Resources: Listed, proposed, and Candidate Species Lists. (Siskiyou County, California). Website: https://ecos.fws.gov/ipac/location/index

Appendices

Appendix A: Maps and Aerial Photos of Project Location



Vicinity map of project

Project footprint, including staging area

Appendix B: Engineering Design/Planning Drawings

PRELIMINARY PLANS FOR

Cold Creek
Fish Screen and Barrier Removal Project

May 2018

Approved by:

Trout Unlimited: _____ Date

SHEET INDEX

GENERAL NOTES

1. TOPOGRAPHY IS BASED ON CASCADE STREAM SOLUTIONS SURVEY CONDUCTED IN 2015. SIGNIFICANT CHANGES ARE NOT ANTICIPATED BETWEEN THE SURVEY DATE, 2015 AND 2017 CONSTRUCTION DATE. CONTRACTOR NOTIFY CASCADE IF CONTRACTOR NOTES DISCREPANCIES BETWEEN THE PLANS AND THE STREAM BANK.

2. CONTRACTOR SHALL NOTIFY USA NORTH AT 811 OR 1-800-227-2600 OR WWW.USANORTH.ORG TO REQUEST IDENTIFICATION AND LOCATION OF EXISTING UNDERGROUND UTILITIES. CONTRACTOR SHALL CONTACT USA NORTH 2 TO 14 DAYS BEFORE PLANNED EXCAVATION DATE.

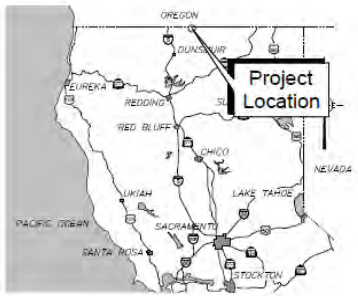
3. THIS PROJECT IS SUBJECT TO REQUIREMENTS OF PERMITS ISSUED BY VARIOUS REGULATORY AGENCIES. THE CONTRACTOR IS RESPONSIBLE TO UNDERSTAND AND PERFORM ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE PERMITS. PRIOR TO COMMENCING WORK THE CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE TO VERIFY THE MOST RECENT COPY OF ALL APPLICABLE PERMITS ARE INCORPORATED IN TO THE PROJECT CONSTRUCTION DOCUMENTS.

4. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AN EROSION CONTROL AND POLLUTION PREVENTION PLAN FOR CONSTRUCTION ACTIVITIES. THIS PLAN MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION ACTIVITIES COMMENCING FOR THIS PROJECT.

5. WHEN CONDITIONS IN THE FIELD DO NOT CONFORM WITH INFORMATION IN THESE PLANS AND/OR WHEN UNUSUAL CIRCUMSTANCES ARISE DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE OWNER'S REPRESENTATIVE.

6. IN THE EVENT THAT ANY ARCHEOLOGICAL ARTIFACTS ARE UNCOVERED DURING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL STOP ALL WORK IMMEDIATELY IN THE AREA AND CONTACT THE OWNER'S REPRESENTATIVE. WORK IN THE AREA SHALL NOT RESUME UNTIL APPROVED BY THE OWNER'S REPRESENTATIVE.

Leonard Joey Howard — May 10, 2018
CALIFORNIA REGISTERED PROFESSIONAL ENGINEER NO. # 53319
Cascade Stream Solutions, LLC



Trout Unlimited
700 Main St #202, Klamath Falls, OR 97601
(541) 273-2189

Cascade Stream Solutions
295 East Main, Suite 11
Ashland, Oregon 97520
Phone: (541) 864-0492

Drawing Information	
Date	9 May 2018
Status	Preliminary
Designer	jh
Drafter	
Checked	
File Name	Final Civil Plans
Plotted Scale	0 1/2 1

Revisions		
No.	Date	Description

Cold Creek Fish Screen & Barrier Removal Project

Title Sheet

Job Number 2015-112

Sheet Number 1

Sheet 1 of 4

CLEARING AND GRUBBING

1 SUMMARY
1.1 THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS FOR ALL WORK REQUIRED TO CLEAR AND GRUB TREES, PLANTS, BUSHES, WOOD, ORGANIC MATERIAL, AND OTHER MATERIALS NOT TO BE INCORPORATED IN THE WORK FROM THE AREA OF GRADING AS SHOWN ON THE PLANS.

2 CONDITIONS AND REQUIREMENTS
2.1 CLEARING AND GRUBBING OPERATIONS ARE TO BE CONDUCTED IN SENSITIVE AREAS NEAR THE CREEK AND DAMAGE TO EXISTING VEGETATION SHALL BE MINIMIZED. CLEARING AND GRUBBING OPERATIONS ARE SUBJECT TO THE REQUIREMENTS OF THE APPLICABLE PROVISIONS OF PROJECT PERMITS.
2.2 LOGS, BRANCHES, ROOTS, PLANTS, ORGANIC MATERIAL, REFUSE, AND OTHER MATERIAL REMOVED SHALL BE DISPOSED OF OFF THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING THE DISPOSAL SITE AND OBTAINING PERMISSION FOR DISPOSAL, FOR COMPLYING WITH APPLICABLE LAWS AND REGULATIONS FOR TRANSPORT OF MATERIALS TO BE DISPOSED, AND FOR APPROPRIATE DISPOSAL OF MATERIALS.

3 PRODUCTS
3.1 TREE WOUND PAINT SHALL BE BITUMINOUS BASED PAINT OF STANDARD MANUFACTURE SPECIFICALLY DESIGNATED FOR USE ON TREE WOUNDS AND CUTS.

4 EXECUTION
4.1 UTILITIES SHALL BE LOCATED BY UNDERGROUND SERVICE ALERT (USA) PRIOR TO COMMENCING CLEARING AND GRUBBING OPERATIONS AND UTILITIES TO REMAIN SHALL BE PROTECTED.
4.2 THE ENGINEER WILL MARK THE TREES TO BE REMOVED IN THE FIELD. TREES TO BE REMOVED SHALL BE FELLED AND CUT FOR TRANSPORT. STUMPS AND ROOTS SHALL BE GRUBBED IN AREAS TO BE GRADED. GRUBBING SHALL REMOVE ROOTS LARGER THAN 3 INCHES IN DIAMETER TO A DEPTH OF AT LEAST 18 INCHES BELOW THE GROUND SURFACE. DEPRESSIONS FORMED BY GRUBBING SHALL BE REGRADED AS PART OF THE WORK OR FILLED WITH NATIVE MATERIAL TO BE FLUSH WITH THE ADJACENT GROUND SURFACE.
4.3 TREES AND VEGETATION TO REMAIN AND SHALL BE PROTECTED. NO GRADING SHALL OCCUR WITHIN 5 FEET OF TREES INDICATED ON THE PLANS AS PROTECTED. MINOR ADJUSTMENTS IN SLOPE STEEPNESS OR LIMITS OF EXCAVATION AND FILL MAY BE REQUIRED TO AVOID GRADING WITHIN 5 FEET OF THESE TREES. TREES INDICATED BY A "P" ON THE PLANS ARE TO BE PROTECTED, ALTHOUGH GRADING MAY OCCUR VERY CLOSE TO, OR AROUND, THE TRUNKS. EXCAVATION AND FILL IN THE VICINITY OF TREES SO INDICATED SHALL BE PERFORMED BY HAND, TO THE EXTENT NECESSARY TO AVOID DAMAGE TO THE TREES.
4.4 TREES LOCATED NEAR ACCESS ROUTES OR WITH BRANCHES THAT INTERFERE WITH THE WORK SHALL BE PRUNED TO PREVENT DAMAGE BY EQUIPMENT. BRANCHES SHALL BE CUT NEAR THE BOLE OF THE TREE OR ADJACENT BRANCH. CUTS SHALL BE NEATLY MADE, WITHOUT SPLINTERING OR TEARING THE BRANCH. CUTS ON BRANCHES LARGER THAN 1 ½ INCHES SHALL BE PAINTED WITH AN APPROVED TREE WOUND PAINT.

CONCRETE FORMWORK

1 GENERAL
1.1 CONTRACT CONDITIONS
A. NONE SPECIFIED
1.2 DESCRIPTION
A. WORK INCLUDED: FORMS FOR ALL CAST-IN-PLACE CONCRETE INDICATED ON THE DRAWINGS AND SUBSEQUENT REMOVAL OF ALL SUCH FORMS.
1.3 REFERENCES
A. GUIDE TO FORMWORK OF CONCRETE, ACI 347, AMERICAN CONCRETE INSTITUTE CURRENT EDITION.
B. FORMWORK FOR CONCRETE, SP-4, AMERICAN CONCRETE INSTITUTE, CURRENT EDITION.
1.4 SUBMITTALS
A. NONE REQUIRED UNLESS SPECIFICALLY REQUESTED BY PROJECT ENGINEER.
1.5 PRODUCT DELIVERY, STORAGE AND HANDLING
A. USE ALL MEANS NECESSARY TO PROTECT FORMWORK MATERIALS BEFORE, DURING AND AFTER INSTALLATION AND PROTECT THE INSTALLED WORK AND 2 PRODUCTS NECESSARY TO THE APPROVAL OF THE PROJECT ENGINEER AND AT NO ADDITIONAL COST TO THE LAND OWNER.

2 PRODUCTS
2.1 MATERIALS
A. PLYWOOD FORMS: 5/8" MEDIUM DENSITY OVERLAY FOR ALL EXPOSED CONCRETE. PLYWOOD TO BE NEW FOR THIS PROJECT. BURIED OR PERMANENTLY CONCEALED CONCRETE MAY BE FORMED WITH BB FORMPLY, OR EQUAL, OR LUMBER.
B. ROUND COLUMN FORMS: SONOTUBE OR STEEL FORM.
C. KEY, JOINTS AND CHAMFERS: DOUGLAS FIR MATERIAL MOLDING OR APPROVED, CONFORMING TO SHAPE AND DIMENSIONS SPECIFIED OR DETAILED.
D. TIES: METAL TIES, NO METAL WITHIN 1" OF SURFACE AFTER TIE REMOVAL. ALIGN TIE HOLES WHERE FINISH IS EXPOSED.
E. FORM OIL: SEI QCC-100 FOR WATER-BASED, OR APPROVED BY PROJECT ENGINEER. FORM OIL FOR CONCRETE TO BE PAINTED OR LEFT IN NATURAL FINISH CONTACT PROJECT ENGINEER FOR INFORMATION.
F. SCREED JOINT: BURKE KEYED KOLD JOINT OR APPROVED BY PROJECT ENGINEER.
G. EXPANSION JOINTS: BURKE COMPANY FIBER EXPANSION JOINT, OR APPROVED BY PROJECT ENGINEER.
H. CONTROL JOINTS: ZIP STRIP OR APPROVED BY PROJECT ENGINEER.

3 EXECUTION
3.1 FORMWORK DESIGN
A. COMPLY WITH ALL PERTINENT RECOMMENDATIONS CONTAINED IN AMERICAN CONCRETE INSTITUTE PUBLICATIONS SP-4 AND ACI-347, CURRENT EDITIONS.
3.2 FORMWORK ERECTION
A. VERIFY LINES, LEVELS AND MEASUREMENT BEFORE PROCEEDING WITH FORMWORK.
B. ALIGN FORM JOINTS: SYMMETRICALLY ALIGN EXPOSED FORM TIE HOLES. MINIMIZE FORM JOINTS.
C. DO NOT APPLY FORM RELEASE AGENT WHERE CONCRETE SURFACES RECEIVE SPECIAL FINISHES OR APPLIED COATINGS WHICH MAY BE AFFECTED BY AGENT.
D. COORDINATE WORK OF OTHER TRADES IN FORMING AND SETTING OPENINGS, SLOTS, RECESSES, CHASE, SLEEVES, BOLTS, FILLETS, ANCHORS AND OTHER INSERTS. CAP ENDS OF FUTURE USE SLEEVES WITH DUCT TAPE.
E. PROVIDE 3/4" CHAMFER STRIPS ONLY WHERE INDICATED ON PLANS.
F. BRACE ALL FORMWORK TO MAINTAIN DESIGNED POSITION, DIMENSIONS AND CONTOURS.
G. MAKE FORMS TIGHT TO PREVENT CONCRETE LEAKAGE.
H. REMOVE ALL FOREIGN MATTER FROM FORMS BEFORE PLACING CONCRETE.
3.3 ANCHORAGE ITEMS: INSTALL DOWELS, ANCHOR BOLTS, ANCHOR PLATES, ANGLES, INSERTS AND ALL OTHER EMBEDDED ITEMS SHOWN ON DRAWINGS OR AS SPECIFIED.
3.4 MINIMUM CURE TIME PRIOR TO FORM REMOVAL
A. SLAB ON GRADE EDGE FORMS: 12 HOURS.
B. SIDE FORMS FOR WALLS, BEAMS AND COLUMNS: 72 HOURS.
C. BEAM SOFFITS AND ELEVATED SLABS: 7 DAYS AND 100% OF DESIGN STRENGTH.

LAP SPLICE LENGTHS (Ld), TABLE ACI 318 CLASS B SPLICES

	CONCRETE STRENGTH (f'c)							
	3000 psi		3500 psi		4000 psi		4500 psi	
Bar Size	Top [2], in	Other [3], in	Top [2], in	Other [3], in	Top [2], in	Other [3], in	Top [2], in	Other [3], in
#3	28	22	26	20	24	19	23	18
#4	37	29	35	27	32	25	31	24
#5	47	36	40	33	40	31	38	29
#6	56	43	52	40	48	37	46	35
#7	81	63	75	58	70	54	66	51
#8	93	72	86	66	81	62	76	59
#9	105	81	97	75	91	70	86	66
#10	118	91	109	84	102	79	96	74
#11	131	101	121	93	113	87	107	82

1. Space spliced bars with at least 2-bar diameters clear between adjacent splices.
2. "Top" bars are horizontal bars with more than 12" of fresh concrete below the splice.
3. "Other" bars are vertical and bars with less than 12" of fresh concrete below the splice.

DEVELOPMENT LENGTH (Ld) TABLE

	CONCRETE STRENGTH (f'c)			
	3000 psi		4000 psi	
Bar Size [1]	Top [2], in	Other [3], in	Top [2], in	Other [3], in
#3	22	17	19	15
#4	29	23	25	19
#5	36	28	31	24
#6	43	33	37	29
#7	63	48	54	42
#8	72	55	62	48
#9	81	62	70	54
#10	91	70	79	61
#11	101	78	87	67

LD TABLE NOTES:
1. SPACE BARS AT LEAST 2-BAR DIAMETERS CLEAR (3-BAR DIAM C TO C)
2. "TOP" BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF FRESH CONCRETE BELOW THE SPLICE.
3. "OTHER" BARS ARE VERTICAL BARS AND BARS WITH LESS THAN 12" OF FRESH CONCRETE BELOW SPLICE.

REINFORCING PROTECTION (COVER):
A. CONCRETE DEPOSITED AGAINST EARTH: 3 INCHES
B. CONCRETE FORMED SURFACES EXPOSED TO GROUND OR WEATHER
#5 AND SMALLER BAR 1-1/2 INCHES
#6 AND LARGER BAR 2 INCHES
C. CONCRETE SURFACES NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND
SLABS, WALLS, JOISTS (#11 AND SMALLER) 3/4 INCHES
BEAMS, COLUMNS 1-1/2 INCHES

CONCRETE REINFORCEMENT

1 GENERAL
1.1 CONTRACT CONDITIONS
A. NONE SPECIFIED
1.2 DESCRIPTION
A. WORK INCLUDED: FURNISH AND INSTALL ALL REINFORCEMENT AND ASSOCIATED ITEMS REQUIRED AND/OR INDICATED ON THE DRAWINGS FOR ALL CAST-IN-PLACE CONCRETE.
1.3 REFERENCES
A. CALIFORNIA BUILDING CODE (CURRENT EDITION) BASED ON THE INTERNATIONAL BUILDING CODE (IBC)
1. CHAPTER 19
B. AMERICAN CONCRETE INSTITUTE (ACI)
1. BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 318 LATEST EDITION
2. ACI DETAILING MANUAL, SP-66 LATEST EDITION
3. STANDARD TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS
C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
1. REINFORCING BARS: ASTM A615 STANDARD SPECIFICATION FOR DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT.
2. WELDED WIRE FABRIC: ASTM A185, STANDARD SPECIFICATION FOR WELDED STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT
D. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
1. MANUAL OF STANDARD PRACTICE
2. PLACING REINFORCING BARS
1.4 SUBMITTALS
A. SUBMIT SHOP DRAWINGS SHOWING SIZES AND DIMENSIONS FOR FABRICATION AND PLACING OF REINFORCING STEEL AND BAR SUPPORTS.
B. INDICATE BAR SCHEDULES, STIRRUP SPACING AND DIAGRAMS OF BENT BARS. IDENTIFY BAR FUNCTION ON MATERIAL LIST AND SHOP DRAWINGS (TRANSVERSE, LONGITUDINAL, DOWELS, STIRRUPS, TIES, ETC.)
C. DO NOT BEGIN FABRICATION PRIOR TO RECEIVING REVIEWED COPIES OF THE SUBMITTALS FROM THE PROJECT ENGINEER.
1.5 QUALITY ASSURANCE
A. ACCEPTABLE MANUFACTURERS: REGULARLY ENGAGED IN MANUFACTURE OF STEEL BAR AND WELDED WIRE FABRIC REINFORCING.
B. SUBMIT MILL TEST CERTIFICATES IDENTIFYING CHEMICAL AND PHYSICAL ANALYSIS OF EACH LOAD AND REINFORCING STEEL DELIVERED.
C. NOTIFY PROJECT ENGINEER IN AMPLE TIME FOR ONSITE OBSERVATION OF REINFORCING STEEL PLACEMENT BEFORE POURING CONCRETE. MINIMUM 72 HOURS.
1.6 PRODUCT DELIVERY, STORAGE AND HANDLING
A. DELIVER REINFORCEMENT TO PROJECT SITE IN BUNDLES MARKED WITH METAL TAGS INDICATING BAR SIZE AND LENGTH.
B. HANDLE AND STORE MATERIALS TO PREVENT CONTAMINATION.

2 PRODUCTS
2.1 CODE REQUIREMENTS
A. COMPLY WITH ALL REQUIREMENTS OF ACI 318 CHAPTER 3 FOR MATERIALS.
B. COMPLY WITH ALL REQUIREMENTS OF ACI 318 CHAPTER 7 FOR FABRICATION OF REINFORCING STEEL.
2.2 MATERIALS
A. BARS: ASTM A615 GRADE 60.
NOTE: WHEN WELDING REBAR THE ONLY REBAR THAT IS READY TO WELD IS W-GRADE (LOW ALLOY-A706).
B. WELDED WIRE FABRIC: ASTM A185 3 EXECUTION
3.1 INSTALLATION
A. COMPLY WITH ALL REQUIREMENTS OF ACI 318 CHAPTER 7 FOR FABRICATION AND PLACING OF REINFORCING STEEL.
B. INSPECTION
1. PRIOR TO INSTALLATION OF THE WORK OF THIS SECTION, CAREFULLY INSPECT THE INSTALLED WORK OF ALL OTHER TRADES AND VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.
2. VERIFY THAT CONCRETE REINFORCEMENT IS INSTALLED IN STRICT ACCORDANCE WITH ALL PERTINENT CODES AND REGULATIONS, THE APPROVED SHOP DRAWINGS AND THE ORIGINAL DESIGN.
C. BENDING
1. BENDING AND CUTTING SHALL CONFORM TO ACI 315 AND APPLICABLE PROVISIONS OF ACI 318. ALL HOOKS SHOWN ON THE DRAWINGS ARE TO BE STANDARD HOOKS EXCEPT WHERE DESIGNATED OTHERWISE.
D. SPLICING
1. REINFORCING BARS SHALL BE FURNISHED IN FULL LENGTHS WHERE POSSIBLE.
2. WHERE SPLICING IS REQUIRED FOR RECOMMENDED, THE LENGTH OF THE SPLICE SHALL BE PER LAP SPLICE (Ls) SCHEDULE.
3. SPLICE DETAILS ARE SUBJECT TO ALL APPLICABLE PROVISIONS OF ACI 318.
4. SPLICES SHALL BE LOCATED AT POINTS OF LOW TENSILE STRESS WHERE POSSIBLE, OTHERWISE DISTRIBUTED TO AVOID A CONCENTRATION OF SPLICES AT A PARTICULAR LINE OR LEVEL.
5. IN ALL CASES SPLICES AT LOCATIONS NOT SHOWN ON THE DRAWINGS ARE SUBJECT TO THE PROJECT ENGINEER'S APPROVAL.
6. NO SPLICES SHALL BE MADE IN CONCRETE REINFORCEMENT WHERE THE SECTION IS NOT SUFFICIENT TO PROVIDE A MINIMUM OF 2 BAR DIAMETERS CLEAR COVER AND A MINIMUM CLEARANCE OF 3 BAR DIAMETERS BETWEEN SPLICED BARS AND ADJACENT BARS.
7. BARS SHALL BE RIGIDLY WIRED AT SPLICES.
E. DISCREPANCIES: IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE PROJECT ENGINEER. DO NOT PROCEED WITH INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.
F. PLACING
1. PLACEMENT OF ALL REINFORCEMENT SHALL CONFORM TO ACI 318. MINIMUM CLEAR DISTANCE BETWEEN BARS 1" OR 1 BAR DIAMETER WHICHEVER IS GREATER.
2. WIRE ALL INTERSECTIONS WITH 16 GAUGE BLACK ANNEALED WIRE. SUPPORT ADEQUATELY BY CHAIRS AND SPACERS; FOOTING REINFORCEMENT MAY BE SUPPORTED ON CONCRETE BLOCKS. MAINTAIN MINIMUM 3 INCH CLEARANCE TO GROUND.
3. BEFORE PLACING CONCRETE, CLEAN REINFORCEMENT OF BOND INHIBITING COATINGS.
4. PLACE, SUPPORT, AND SECURE REINFORCEMENT AGAINST DISPLACEMENT.
5. PROVIDE 2 - #4 X 4'-0" LONG DIAGONALLY AT ALL SLAB-ON-GRADE RE-ENTRANT CORNERS.
6. PROVIDE .0018 TIMES CONCRETE CROSS SECTIONAL AREA REINFORCING STEEL EACH WAY FOR ALL CONCRETE UNLESS OTHERWISE NOTED.
7. ALL LAP SPLICES TO BE PER LAP SPLICE SCHEDULE UNLESS OTHERWISE NOTED.
8. WHERE CONCRETE IS TO BE DRILLED LATER FOR ANCHOR BOLTS, EXPANSION SHELLS, EXPANSION BOLTS, ETC., AS REQUIRED IN THE DRAWINGS, SPECIAL CARE SHALL BE TAKEN TO COORDINATE EXACT LOCATION OF REINFORCEMENT SUCH THAT IT WILL NOT INTERFERE WITH SUCH DRILLING.

CAST-IN-PLACE CONCRETE

1 GENERAL
1.1 DESCRIPTION
A. WORK INCLUDED: ALL CAST-IN-PLACE CONCRETE INCLUDING FOOTINGS, SLABS, COLUMNS, BEAMS, SIDEWALKS AND CURBS AND ALL EQUIPMENT TO INSTALL INDICATED ITEMS.
1.2 REFERENCES
A. CALIFORNIA BUILDING CODE (CURRENT EDITION) BASED ON THE INTERNATIONAL BUILDING CODE (IBC), CHAPTER 19
B. AMERICAN CONCRETE INSTITUTE - ACI 318
C. ACI 211 - STANDARD RECOMMENDED PRACTICE FOR SELECTING PROPORTIONS OF CONCRETE
D. AMERICAN CONCRETE INSTITUTE, HOT WEATHER CONCRETING (ACI 305)
E. AMERICAN CONCRETE INSTITUTE, COLD WEATHER CONCRETING (ACI 306)
1.3 SUBMITTALS
A. SUBMIT MIX DESIGNS TO THE PROJECT ENGINEER AT LEAST 14 DAYS PRIOR TO FIRST SCHEDULED CONCRETE PLACEMENT.
B. SUBMIT SEPARATE MIX DESIGN FOR EACH TYPE OF CONCRETE TO BE USED ON THE PROJECT.
C. MIX DESIGNS MUST INCLUDE THE FOLLOWING:
1. BATCH WEIGHTS PER CUBIC YARD FOR CEMENT, AGGREGATES AND WATER.
2. MANUFACTURER, PRODUCT AND AMOUNT PER CUBIC YARD FOR EACH ADMIXTURE.
3. MAXIMUM WATER/CEMENT RATIO.
4. MANUFACTURER, PRODUCT AND WEIGHT PER CUBIC YARD FOR FIBROUS REINFORCEMENT, WHERE USED.
5. SUPPLIER'S MIX NUMBER.
6. RECORD OF 30 PAST CYLINDER BREAKS FOR THE MIX BEING USED INDICATING PAST SUCCESSFUL STRENGTH PERFORMANCE IN ACCORDANCE WITH ACI CHAPTER 5. REQUIRED AVERAGE STRENGTH MUST EXCEED THE DESIGN STRENGTH BY THE AMOUNTS GIVEN IN ACI CHAPTER 5.
D. SUBMIT DELIVERY TICKET IN ACCORDANCE WITH ASTM C94 SECTION 16. ALL INFORMATION LISTED IN C94 SUBSECTION 16.1, 16.2.7, AND 16.2.8, AND QUANTITY OF WATER ADDED BY THE TRUCK OPERATOR FROM THE MIXING TANK, SHALL BE FURNISHED ON THE DELIVERY TICKET.
1.4 QUALITY ASSURANCE
A. CONCRETE PROPORTIONS: CONCRETE SHALL BE STONE CONCRETE COMPOSED OF CEMENT, FINE AGGREGATE, COARSE AGGREGATE AND WATER.
B. DESIGN: PREPARE THE DESIGNS OF MIXES FOR EACH CLASS OF CONCRETE SPECIFIED TO BE USED. DESIGN CONCRETE MIXES IN ACCORDANCE WITH IBC STANDARD 19-3 TO PRODUCE THE STRENGTH FOR EACH TYPE OF CONCRETE WITH THE SLUMPS AND MAXIMUM SIZES OF COURSE AGGREGATE SPECIFIED. COMPRESSIVE STRENGTH, MAXIMUM WATER CONTENT AND MAXIMUM SLUMP SHALL BE AS FOLLOWS:
1. CONCRETE UNLESS OTHERWISE SPECIFIED:
(A). COMPRESSIVE STRENGTH AT 28 DAYS: 4,500 PSI
(B). MAXIMUM WATER/CEMENT RATIO (W/C): 0.48
(C). MAXIMUM SLUMP: 4 INCH AT POINT OF DISCHARGE. CONTRACTOR MAY USE APPROVED ADD-MIXTURES TO INCREASE WORKABILITY AT HIS OWN EXPENSE.
2. AIR ENTRAINMENT
(A). FOR ALL EXPOSED CONCRETE: 4% TO 7%
(B). MAXIMUM WATER IS 270 LB PER CUBIC YARD. MAXIMUM FLYASH IS 10% OF TOTAL CEMENTIOUS WEIGHT.
C. TESTING
1. TESTING AND ANALYSIS OF CONCRETE WILL BE PERFORMED BY A QUALIFIED TESTING COMPANY HIRED BY THE OWNER/AGENCY.
2. CONCRETE TESTING IS REQUIRED EVEN WHEN SPECIAL INSPECTION IS NOT REQUIRED.
3. PERFORM THE FOLLOWING TESTS WHENEVER TESTING IS REQUIRED:
(A). SLUMP TEST PER ASTM C143
(B). CAST FOUR CONCRETE CYLINDERS
(C). AIR ENTRAINMENT TEST, WHERE AIR ENTRAINED CONCRETE IS REQUIRED
4. FREQUENCY OF TESTS
(A). NOT LESS THAN ONCE PER DAY
(B). NOT LESS THAN ONCE PER 150 CUBIC YARDS OF CONCRETE IN A GIVEN DAY
(C). NOT LESS THAN ONCE PER 5000 SQUARE FEET OF SLAB OR WALL AREA
5. LAB CURE ALL SAMPLES. PROTECT SAMPLES FROM ADVERSE WEATHER CONDITIONS.
6. TEST CYLINDERS AT THE FOLLOWING DATES:
(A). ONE BREAK AT 7 DAYS
(B). TWO BREAKS AT 28 DAYS
(C). HOLD ONE CYLINDER IN CASE OF PROBLEMS WITH 28 DAY BREAK
7. SEND COPIES OF REPORT TO THE LAND OWNER, THE CONTRACTOR AND THE PROJECT ENGINEER.
D. WEATHER REQUIREMENTS:
1. COLD WEATHER: CONFORM TO ACI 306. PROCEDURES FOR PLACING AND PROTECTING CONCRETE WORK DURING FREEZING WEATHER BY PROJECT ENGINEER'S APPROVAL ONLY. ASSUME ALL RISKS FOR CONCRETE WORK DURING FREEZING WEATHER. REMOVE AND REPLACE FROZEN CONCRETE AT CONTRACTOR'S EXPENSE. KEEP ABOVE FREEZING POINT UNTIL THOROUGHLY SET. USE NO ADMIXTURES TO PREVENT FREEZING WITHOUT PRIOR APPROVAL.
2. HOT WEATHER: CONFORM TO ACI 305. TEMPORARILY DISCONTINUE PLACEMENT WHEN, IN THE OPINION OF PROJECT ENGINEER, CLIMATIC CONDITIONS OF SUN, HEAT, WIND, OR HUMIDITY PREVENT PROPER PLACEMENT, CONSOLIDATION OR FINISHING. USE OF APPROVED RETARDANT ADMIXTURE SHALL BE PROVIDED AT NO ADDITIONAL CHARGE TO THE LAND OWNER IF, IN THE OPINION OF THE PROJECT ENGINEER, CLIMATIC CONDITIONS SO INDICATE.
E. FIBER REINFORCED CONCRETE
1. WHERE FIBER REINFORCED CONCRETE IS USED ON THE PROJECT A DELIVERY TICKET, SIGNED BY THE WEIGHMASTER, SHALL BE AVAILABLE TO THE PROJECT ENGINEER UPON REQUEST.
2. THE DELIVERY TICKET SHALL INCLUDE, IN ADDITION TO THE ITEMS NOTED IN SECTION OF ASTM C94, THE TYPE AND AMOUNT OF FIBERS ADDED TO THE CONCRETE MIX. 2 PRODUCTS
2.1 MATERIALS
A. PORTLAND CEMENT: TYPE I OR II LOW ALKALI POC THAT CONFORMS TO ASTM C-150
B. CONCRETE AGGREGATES: CONFORM TO ASTM C-33. 1/4" MAXIMUM SIZE FOR EXPOSED CONCRETE. 1-1/2" MAXIMUM SIZE FOR FOOTINGS.
C. WATER: CLEAN AND FREE OF SUBSTANCES HARMFUL TO CONCRETE.
D. GROUTING: NON-SHRINK, PRE-MIXED GROUT. MASTER BUILDERS, SONNEBORN, FOSROC OR EQUAL. CONFORM TO ASTM C-1107.
E. WATER REDUCING ADMIXTURE
1. MID-RANGE WATER REDUCING ADMIXTURE
2. NO CALCIUM CHLORIDE

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Cold Creek Fish Screen & Barrier Removal Project
Notes

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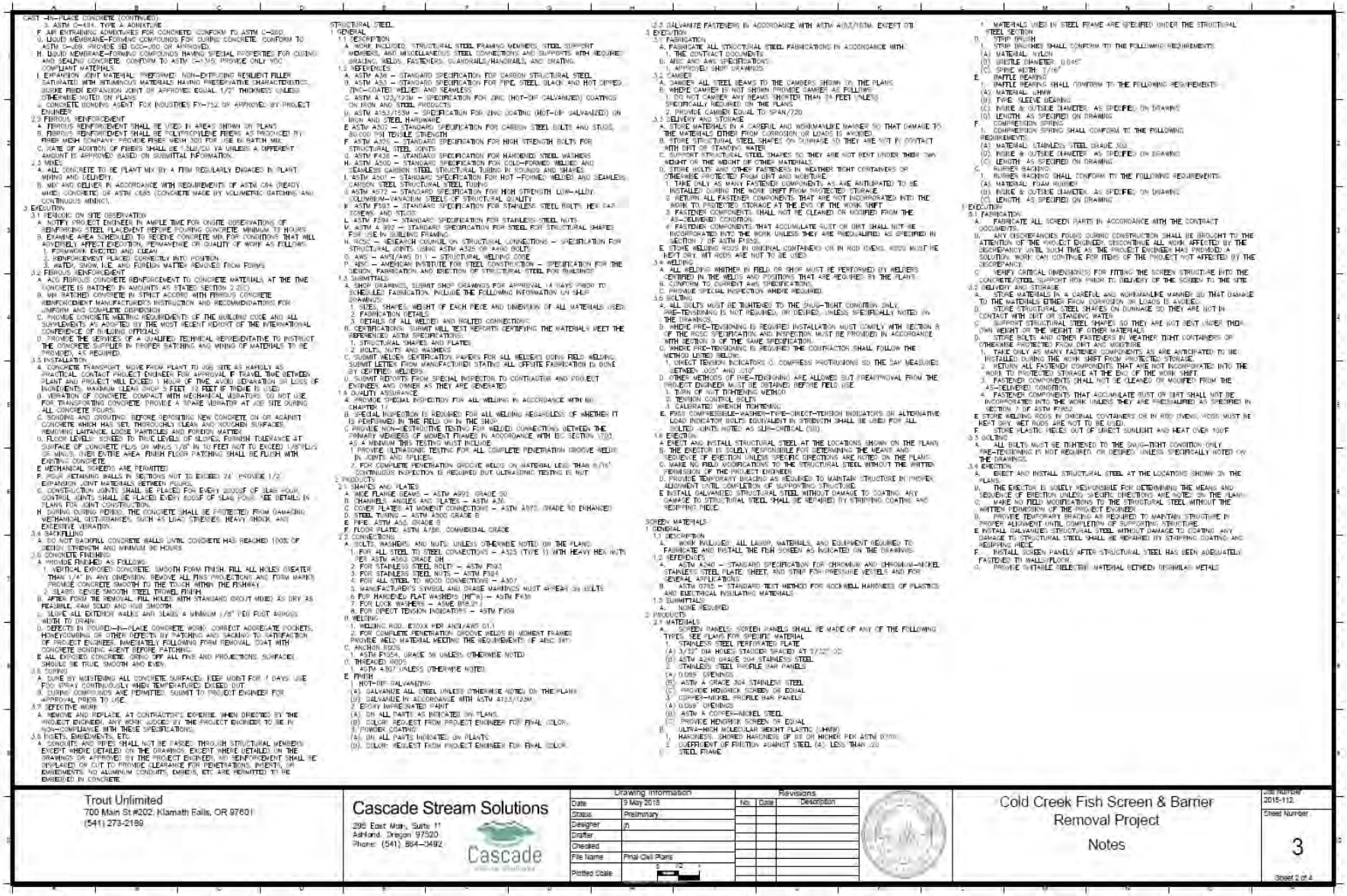

CAST-IN-PLACE CONCRETE (CONTINUED)
3. ASTM C-494, TYPE A ADMIXTURE
F. AIR ENTRAINING ADMIXTURES FOR CONCRETE: CONFORM TO ASTM C-260
G. LIQUID MEMBRANE-FORMING COMPOUNDS FOR CURING CONCRETE: CONFORM TO ASTM C-309. PROVIDE SB GCC-100 OR APPROVED.
H. LIQUID MEMBRANE-FORMING COMPOUNDS HAVING SPECIAL PROPERTIES FOR CURING AND SEALING CONCRETE: CONFORM TO ASTM C-1315. PROVIDE ONLY VOC COMPLIANT MATERIALS.
I. EXPANSION JOINT MATERIAL: PREFORMED NON-EXTRUDING RESILIENT FILLER SATURATED WITH BITUMINOUS MATERIALS HAVING PRESERVATIVE CHARACTERISTICS. BURKE RIGID EXPANSION JOINT OR APPROVED EQUAL 1/2" THICKNESS UNLESS OTHERWISE NOTED ON PLANS.
J. CONCRETE BONDING AGENT: FOX INDUSTRIES FX-752 OR APPROVED BY PROJECT ENGINEER
2.2 FIBROUS REINFORCEMENT
A. FERROUS REINFORCEMENT SHALL BE USED IN AREAS SHOWN ON PLANS
B. FIBROUS REINFORCEMENT SHALL BE POLYPROPYLENE FIBERS AS PRODUCED BY FIBER MESH COMPANY. PROVIDE FIBER MESH 300 FOR USE IN BATCH MIX.
C. RATE OF ADDITION OF FIBERS SHALL BE 1.5LB/CU YA UNLESS A DIFFERENT AMOUNT IS APPROVED BASED ON SUBMITTAL INFORMATION.
2.3 MIXES
A. ALL CONCRETE TO BE PLANT MIX BY A FIRM REGULARLY ENGAGED IN PLANT MIXING AND DELIVERY.
B. MIX AND DELIVER IN ACCORDANCE WITH REQUIREMENTS OF ASTM C94 (READY MIXED CONCRETE) OR ASTM C685 (CONCRETE MADE BY VOLUMETRIC BATCHING AND CONTINUOUS MIXING).
3 EXECUTION
3.1 PERIODIC ON SITE OBSERVATION
A. NOTIFY PROJECT ENGINEER IN AMPLE TIME FOR ONSITE OBSERVATIONS OF REINFORCING STEEL PLACEMENT BEFORE POURING CONCRETE. MINIMUM 72 HOURS.
B. EXAMINE AREA SCHEDULED TO RECEIVE CONCRETE MIX FOR CONDITIONS THAT WILL ADVERSELY AFFECT EXECUTION, PERMANENCE OR QUALITY OF WORK AS FOLLOWS:
1. FORMWORK ERECTED AND CLEAN
2. REINFORCEMENT PLACED CORRECTLY INTO POSITION
3. WATER, SNOW, ICE, AND FOREIGN MATTER REMOVED FROM FORMS
3.2 FIBROUS REINFORCEMENT
A. ADD FIBROUS CONCRETE REINFORCEMENT TO CONCRETE MATERIALS AT THE TIME CONCRETE IS BATCHED IN AMOUNTS AS STATED (SECTION 2.2(C)).
B. MIX BATCHED CONCRETE IN STRICT ACCORD WITH FIBROUS CONCRETE REINFORCEMENT MANUFACTURER'S INSTRUCTION AND RECOMMENDATIONS FOR UNIFORM AND COMPLETE DISPERSION.
C. PROVIDE CONCRETE MEETING REQUIREMENTS OF THE BUILDING CODE AND ALL SUPPLEMENTS AS ADOPTED BY THE MOST RECENT REPORT OF THE INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS.
D. PROVIDE THE SERVICES OF A QUALIFIED TECHNICAL REPRESENTATIVE TO INSTRUCT THE CONCRETE SUPPLIER IN PROPER BATCHING AND MIXING OF MATERIALS TO BE PROVIDED, AS REQUIRED.
3.3 INSTALLATION
A. CONCRETE TRANSPORT: MOVE FROM PLANT TO JOB SITE AS RAPIDLY AS PRACTICAL. CONTACT PROJECT ENGINEER FOR APPROVAL IF TRAVEL TIME BETWEEN PLANT AND PROJECT WILL EXCEED 1 HOUR OF TIME. AVOID SEPARATION OR LOSS OF INGREDIENTS. MAXIMUM CLEAR DROP 5 FEET. 12 FEET IF TREMIE IS USED.
B. VIBRATION OF CONCRETE: COMPACT WITH MECHANICAL VIBRATORS. DO NOT USE FOR TRANSPORTING CONCRETE. PROVIDE A STAND VIBRATOR AT JOB SITE DURING ALL CONCRETE POURS.
C. BONDING AND GROUTING: BEFORE DEPOSITING NEW CONCRETE ON OR AGAINST CONCRETE WHICH HAS SET, THOROUGHLY CLEAN AND MOISTEN SURFACES, REMOVING LAITANCE, LOOSE PARTICLES AND FOREIGN MATTER.
D. FLOOR LEVELS: SCREED TO TRUE LEVELS OF SLOPES. FURNISH TOLERANCE AT SURFACE OF CONCRETE PLUS OR MINUS 1/8" IN 10 FEET NOT TO EXCEED 1/4" PLUS OR MINUS, OVER ENTIRE AREA. FINISH FLOOR PATCHING SHALL BE FLUSH WITH EXISTING CONCRETE.
E. MECHANICAL SCREEDS ARE PERMITTED
F. WHERE RETAINING WALLS IN SECTIONS NOT TO EXCEED 24' PROVIDE 1/2" EXPANSION JOINT MATERIALS BETWEEN POURS.
G. CONSTRUCTION JOINTS: SHALL BE PLACED FOR EVERY 600SF OF SLAB POUR. CONTROL JOINTS SHALL BE PLACED EVERY 600SF OF SLAB POUR. SEE DETAILS IN PLANS FOR JOINT CONSTRUCTION.
H. CURING DURING PERIOD: THE CONCRETE SHALL BE PROTECTED FROM DAMAGING MECHANICAL DISTURBANCES, SUCH AS LOAD STRESSES, HEAVY SHOCK, AND EXCESSIVE VIBRATION.
3.4 BACKFILLING
A. DO NOT BACKFILL CONCRETE WALLS UNTIL CONCRETE HAS REACHED 100% OF DESIGN STRENGTH AND MINIMUM 90 HOURS.
3.5 CONCRETE FINISHING
A. PROVIDE FINISHES AS FOLLOWS:
1. VERTICAL EXPOSED CONCRETE: SMOOTH FORM FINISH. FILL ALL HOLES GREATER THAN 1/4" IN ANY DIMENSION. REMOVE ALL FINS PROJECTIONS, AND FORM MARKS. PROVIDE CONCRETE SMOOTH TO THE TOUCH WITHIN THE FAIRWAY.
2. SLABS: REMOVE SMOOTH STEEL TROWEL FINISH.
B. AFTER FORM THE REMOVAL, FILL HOLES WITH STANDARD GROUT MIXED AS DRY AS PRACTICABLE. RAM SOLID AND RUB SMOOTH.
C. SLOPE ALL EXTERIOR WALKS AND SLABS A MINIMUM 1/8" PER FOOT AWAYS WIDTH TO DRAIN.
D. DEFECTS IN POURED-IN-PLACE CONCRETE WORK: CORRECT AGGREGATE POCKETS, HONEYCOMBING OR OTHER DEFECTS BY PATCHING AND SACKING TO SATISFACTION OF PROJECT ENGINEER, IMMEDIATELY FOLLOWING FORM REMOVAL. COAT WITH CONCRETE BONDING AGENT BEFORE PATCHING.
E. ALL EXPOSED CONCRETE: GRIND OFF ALL FINS AND PROJECTIONS. SURFACES SHOULD BE TRUE, SMOOTH AND EVEN.
3.6 CURING
A. CURE BY MOISTENING ALL CONCRETE SURFACES. KEEP MOIST FOR 7 DAYS. USE FOG SPRAY CONTINUOUSLY WHEN TEMPERATURES EXCEED 80F.
B. CURING COMPOUNDS ARE PERMITTED. SUBMIT TO PROJECT ENGINEER FOR APPROVAL PRIOR TO USE.
3.7 DEFECTIVE WORK
A. REMOVE AND REPLACE, AT CONTRACTOR'S EXPENSE, WHEN DIRECTED BY THE PROJECT ENGINEER, ANY WORK JUDGED BY THE PROJECT ENGINEER TO BE IN NON-COMPLIANCE WITH THESE SPECIFICATIONS.
3.8 INSERTS, EMBEDMENTS, ETC.
A. CONDUITS AND PIPES SHALL NOT BE PASSED THROUGH STRUCTURAL MEMBERS EXCEPT WHERE DETAILED ON THE DRAWINGS, EXCEPT WHERE DETAILED ON THE DRAWINGS OR APPROVED BY THE PROJECT ENGINEER. NO REINFORCEMENT SHALL BE DISPLACED OR CUT TO PROVIDE CLEARANCE FOR PENETRATIONS, INSERTS, OR EMBEDMENTS. NO ALUMINUM CONDUITS, EMBEDS, ETC ARE PERMITTED TO BE EMBEDDED IN CONCRETE.

STRUCTURAL STEEL
1 GENERAL
1.1 DESCRIPTION
A. WORK INCLUDED: STRUCTURAL STEEL FRAMING MEMBERS, STEEL SUPPORT MEMBERS, AND MISCELLANEOUS STEEL CONNECTIONS AND SUPPORTS WITH REQUIRED BRACING, WELDS, FASTENERS, GUARDRAILS/HANDRAILS, AND GRATING.
1.2 REFERENCES
A. ASTM A36 – STANDARD SPECIFICATION FOR CARBON STRUCTURAL STEEL
B. ASTM A53 – STANDARD SPECIFICATION FOR PIPE, STEEL, BLACK AND HOT DIPPED, ZINC-COATED WELDED AND SEAMLESS
C. ASTM A 123/123M – SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS
D. ASTM A153/153M – SPECIFICATION FOR ZINC COATING (HOT-DIP GALVANIZED) ON IRON AND STEEL HARDWARE
E. ASTM A307 – STANDARD SPECIFICATION FOR CARBON STEEL BOLTS AND STUDS, 60,000 PSI TENSILE STRENGTH
F. ASTM A325 – STANDARD SPECIFICATION FOR HIGH STRENGTH BOLTS FOR STRUCTURAL STEEL JOINTS
G. ASTM F436 – STANDARD SPECIFICATION FOR HARDENED STEEL WASHERS
H. ASTM A500 – STANDARD SPECIFICATION FOR COLD-FORMED WELDED AND SEAMLESS CARBON STEEL STRUCTURAL TUBING IN ROUNDS AND SHAPES
I. ASTM A501 – STANDARD SPECIFICATION FOR HOT-FORMED, WELDED AND SEAMLESS CARBON STEEL STRUCTURAL STEEL TUBING
J. ASTM A572 – STANDARD SPECIFICATION FOR HIGH-STRENGTH LOW-ALLOY COLUMBIUM-VANADIUM STEEL OF STRUCTURAL QUALITY
K. ASTM F593 – STANDARD SPECIFICATION FOR STAINLESS STEEL BOLTS, HEX CAP, SCREWS, AND STUDS
L. ASTM F594 – STANDARD SPECIFICATION FOR STAINLESS-STEEL NUTS
M. ASTM A 992 – STANDARD SPECIFICATION FOR STEEL FOR STRUCTURAL SHAPES FOR USE IN BUILDING FRAMING
N. RCSC – RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS – SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
O. AWS – AMS/AWS D1.1 – STRUCTURAL WELDING CODE
P. AISC – AMERICAN INSTITUTE FOR STEEL CONSTRUCTION – SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS
1.3 SUBMITTALS
A. SHOP DRAWINGS: SUBMIT SHOP DRAWINGS FOR APPROVAL 14 DAYS PRIOR TO SCHEDULED FABRICATION. INCLUDE THE FOLLOWING INFORMATION ON SHOP DRAWINGS:
1. SIZES, SHAPES, WEIGHT OF EACH PIECE AND DIMENSION OF ALL MATERIALS USED
2. FABRICATION DETAILS
3. DETAILS OF ALL WELDED AND BOLTED CONNECTIONS
B. CERTIFICATIONS: SUBMIT MILL TEST REPORTS CERTIFYING THE MATERIALS MEET THE REFERENCED ASTM SPECIFICATIONS:
1. STRUCTURAL SHAPES AND PLATES
2. BOLTS, NUTS AND WASHERS
C. SUBMIT WELDER CERTIFICATION PAPERS FOR ALL WELDERS DOING FIELD WELDING. SUBMIT LETTER FROM MANUFACTURER STATING ALL OFFSITE FABRICATION IS DONE BY CERTIFIED WELDERS.
D. SUBMIT REPORTS FROM SPECIAL INSPECTOR TO CONTRACTOR AND PROJECT ENGINEER AND OWNER AS THEY ARE GENERATED
1.4 QUALITY ASSURANCE
A. PROVIDE SPECIAL INSPECTION FOR ALL WELDING IN ACCORDANCE WITH IBC CHAPTER 17
B. SPECIAL INSPECTION IS REQUIRED FOR ALL WELDING REGARDLESS OF WHETHER IT IS PERFORMED IN THE FIELD OR IN THE SHOP.
C. PROVIDE NON-DESTRUCTIVE TESTING FOR WELDED CONNECTIONS BETWEEN THE PRIMARY MEMBERS OF MOMENT FRAMES IN ACCORDANCE WITH IBC SECTION 1705. AS A MINIMUM THIS TESTING MUST INCLUDE:
1. PROVIDE ULTRASONIC TESTING FOR ALL COMPLETE PENETRATION GROOVE WELDS IN JOINT PLATES.
2. FOR COMPLETE PENETRATION GROOVE WELDS ON MATERIAL LESS THAN 5/16" CONTINUOUS INSPECTION IS REQUIRED BUT ULTRASONIC TESTING IS NOT.
2 PRODUCTS
2.1 SHAPES AND PLATES
A. WIDE FLANGE BEAMS – ASTM A992, GRADE 50
B. CHANNELS, ANGLES AND PLATES – ASTM A36
C. COVER PLATES AT MOMENT CONNECTIONS – ASTM A572, GRADE 50 ENHANCED
D. STEEL TUBING – ASTM A500 GRADE B
E. PIPE: ASTM A53, GRADE B
F. FLOOR PLATE: ASTM A786, COMMERCIAL GRADE
2.2 CONNECTIONS
A. BOLTS, WASHERS AND NUTS: UNLESS OTHERWISE NOTED ON THE PLANS:
1. FOR ALL STEEL TO STEEL CONNECTIONS – A325 (TYPE 1) WITH HEAVY HEX NUTS PER ASTM A563 GRADE DH
2. FOR STAINLESS STEEL BOLTS – ASTM F593
3. FOR STAINLESS STEEL NUTS – ASTM F594
4. FOR ALL STEEL TO WOOD CONNECTIONS – A307
5. MANUFACTURER'S SYMBOL AND GRADE MARKINGS MUST APPEAR ON BOLTS
6. FOR HARDENED FLAT WASHERS (HF'N) – ASTM F436
7. FOR LOCK WASHERS – ASME B18.21.1
8. FOR DIRECT TENSION INDICATORS – ASTM F959
B. WELDING:
1. WELDING ROD: E70XX PER ANSI/AWS D1.1
2. FOR COMPLETE PENETRATION GROOVE WELDS IN MOMENT FRAMES PROVIDE WELD MATERIAL MEETING THE REQUIREMENTS OF AISC 341
C. ANCHOR RODS
1. ASTM F1554, GRADE 36 UNLESS OTHERWISE NOTED
D. THREADED RODS
1. ASTM A307 UNLESS OTHERWISE NOTED
E. FINISH
1. HOT-DIP GALVANIZING:
(A). GALVANIZE ALL STEEL UNLESS OTHERWISE NOTED ON THE PLANS
(B). GALVANIZE IN ACCORDANCE WITH ASTM A123/123M
2. EPOXY IMPREGNATED PAINT
(A). ON ALL PARTS AS INDICATED ON PLANS
(B). COLOR: REQUEST FROM PROJECT ENGINEER FOR FINAL COLOR.
3. POWDER COATING
(A). ON ALL PARTS INDICATED ON PLANS
(B). COLOR: REQUEST FROM PROJECT ENGINEER FOR FINAL COLOR.
2.3 GALVANIZE FASTENERS IN ACCORDANCE WITH ASTM A153/153M, EXCEPT DX
3 EXECUTION
3.1 FABRICATION
A. FABRICATE ALL STRUCTURAL STEEL FABRICATIONS IN ACCORDANCE WITH:
1. THE CONTRACT DOCUMENTS
B. AISC AND AWS SPECIFICATIONS
1. APPROVED SHOP DRAWINGS
3.2 CAMBER
A. CAMBER ALL STEEL BEAMS TO THE CAMBERS SHOWN ON THE PLANS
B. WHERE CAMBER IS NOT SHOWN PROVIDE CAMBER AS FOLLOWS:
1. DO NOT CAMBER ANY BEAMS SHORTER THAN 24 FEET UNLESS SPECIFICALLY REQUIRED ON THE PLANS
2. PROVIDE CAMBER EQUAL TO SPAN/720
3.3 DELIVERY AND STORAGE
A. STORE MATERIALS IN A CAREFUL AND WORKMANLIKE MANNER SO THAT DAMAGE TO THE MATERIALS EITHER FROM CORROSION OR LOADS IS AVOIDED.
B. STORE STRUCTURAL STEEL SHAPES ON DUNNAGE SO THEY ARE NOT IN CONTACT WITH DIRT OR STANDING WATER
C. SUPPORT STRUCTURAL STEEL SHAPES SO THEY ARE NOT BENT UNDER THEIR OWN WEIGHT OR THE WEIGHT OF OTHER MATERIALS.
D. STORE BOLTS AND OTHER FASTENERS IN WEATHER TIGHT CONTAINERS OR OTHERWISE PROTECTED FROM DIRT AND MOISTURE.
1. TAKE ONLY AS MANY FASTENER COMPONENTS AS ARE ANTICIPATED TO BE INSTALLED DURING THE WORK SHIFT FROM PROTECTED STORAGE.
2. RETURN ALL FASTENER COMPONENTS THAT ARE NOT INCORPORATED INTO THE WORK TO PROTECTED STORAGE AT THE END OF THE WORK SHIFT.
3. FASTENER COMPONENTS SHALL NOT BE CLEANED OR MODIFIED FROM THE AS-DELIVERED CONDITION.
4. FASTENER COMPONENTS THAT ACCUMULATE RUST OR DIRT SHALL NOT BE INCORPORATED INTO THE WORK UNLESS THEY ARE REQUALIFIED AS SPECIFIED IN SECTION 7 OF ASTM F1852.
E. STORE WELDING RODS IN ORIGINAL CONTAINERS OR IN ROD OVENS. RODS MUST BE KEPT DRY. WET RODS ARE NOT TO BE USED.
3.4 WELDING
A. ALL WELDING WHETHER IN FIELD OR SHOP MUST BE PERFORMED BY WELDERS CERTIFIED IN THE WELDS AND POSITIONS THAT ARE REQUIRED BY THE PLANS.
B. CONFORM TO CURRENT AWS SPECIFICATIONS.
C. PROVIDE SPECIAL INSPECTION WHERE REQUIRED.
3.5 BOLTING
A. ALL BOLTS MUST BE TIGHTENED TO THE SNUG-TIGHT CONDITION ONLY. PRE-TENSIONING IS NOT REQUIRED, OR DESIRED, UNLESS SPECIFICALLY NOTED ON THE DRAWINGS.
B. WHERE PRE-TENSIONING IS REQUIRED INSTALLATION MUST COMPLY WITH SECTION 8 OF THE RCSC SPECIFICATION AND INSPECTION MUST BE PROVIDED IN ACCORDANCE WITH SECTION 9 OF THE SAME SPECIFICATION.
C. WHERE PRE-TENSIONING IS REQUIRED THE CONTRACTOR SHALL FOLLOW THE METHOD LISTED BELOW:
1. DIRECT TENSION INDICATORS (I. COMPRESS PROTRUSIONS SO THE GAP MEASURES BETWEEN .005" AND .015"
D. OTHER METHODS OF PRE-TENSIONING ARE ALLOWED BUT PRIOR APPROVAL FROM THE PROJECT ENGINEER MUST BE OBTAINED BEFORE FIELD USE.
1. TURN OF NUT TENSIONING METHOD
2. TENSION CONTROL BOLTS
3. CALIBRATED WRENCH TIGHTENING
E. FOR COMPRESSIBLE-WASHER-TYPE-DIRECT-TENSION INDICATORS OR ALTERNATIVE LOAD INDICATOR BOLTS EQUIVALENT IN STRENGTH SHALL BE USED FOR ALL BOLTED JOINTS NOTED AS SLIP-CRITICAL (SC).
3.6 ERECTION
A ERECT AND INSTALL STRUCTURAL STEEL AT THE LOCATIONS SHOWN ON THE PLANS
B. THE ERECTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE MEANS AND SEQUENCE OF ERECTION UNLESS SPECIFIC DIRECTIONS ARE NOTED ON THE PLANS.
C. MAKE NO FIELD MODIFICATIONS TO THE STRUCTURAL STEEL WITHOUT THE WRITTEN PERMISSION OF THE PROJECT ENGINEER.
D. PROVIDE TEMPORARY BRACING AS REQUIRED TO MAINTAIN STRUCTURE IN PROPER ALIGNMENT UNTIL COMPLETION OF SUPPORTING STRUCTURE.
E INSTALL GALVANIZED STRUCTURAL STEEL WITHOUT DAMAGE TO COATING. ANY DAMAGE TO STRUCTURAL STEEL SHALL BE REPAIRED BY STRIPPING COATING AND RECIPPING PRIDE.

SCREEN MATERIALS
1 GENERAL
1.1 DESCRIPTION
A. WORK INCLUDED: ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO FABRICATE AND INSTALL THE FISH SCREEN AS INDICATED ON THE DRAWINGS.
1.2 REFERENCES
A. ASTM A240 – STANDARD SPECIFICATION FOR CHROMIUM AND CHROMIUM-NICKEL STAINLESS STEEL PLATE, SHEET, AND STRIP FOR PRESSURE VESSELS AND FOR GENERAL APPLICATIONS
B. ASTM D792 – STANDARD TEST METHOD FOR ROCKWELL HARDNESS OF PLASTICS AND ELECTRICAL INSULATING MATERIALS
1.3 SUBMITTALS
A. NONE REQUIRED
2 PRODUCTS
2.1 MATERIALS
A. SCREEN PANELS: SCREEN PANELS SHALL BE MADE OF ANY OF THE FOLLOWING TYPES. SEE PLANS FOR SPECIFIC MATERIAL
1. STAINLESS STEEL PERFORATED PLATE
(A) 3/32" DIA HOLES STAGGER SPACED AT 7/32" OC
(D) ASTM A240 GRADE 304 STAINLESS STEEL
2. STAINLESS STEEL PROFILE BAR PANELS
(A) 0.089" OPENINGS
(B) ASTM A GRADE 304 STAINLESS STEEL
(C) PROVIDE HENDRICK SCREEN, OR EQUAL
3. COPPER-NICKEL PROFILE BAR PANELS
(A) 0.089" OPENINGS
(B) ASTM A COPPER-NICKEL STEEL
(C) PROVIDE HENDRICK SCREEN OR EQUAL
B. ULTRA-HIGH MOLECULAR WEIGHT PLASTIC (UHMW)
1. HARDNESS: SHORED HARDNESS OF 80 OR HIGHER PER ASTM D2240
2. COEFFICIENT OF FRICTION AGAINST STEEL (A): LESS THAN .20
C. STEEL FRAME
1. MATERIALS USED IN STEEL FRAME ARE SPECIFIED UNDER THE STRUCTURAL STEEL SECTION
D. STRIP BRUSH
1. STRIP BRUSHES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
(A) MATERIAL: NYLON
(D) BRISTLE DIAMETER: 0.046"
(C) SPINE WIDTH: 7/16"
E. BAFFLE BEARING
1. BAFFLE BEARING SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
(A) MATERIAL: UHMW
(B) TYPE: SLEEVE BEARING
(C) INSIDE & OUTSIDE DIAMETER: AS SPECIFIED ON DRAWING
(D) LENGTH: AS SPECIFIED ON DRAWING
F. COMPRESSION SPRING
1. COMPRESSION SPRING SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
(A) MATERIAL: STAINLESS STEEL GRADE 302
(D) INSIDE & OUTSIDE DIAMETER: AS SPECIFIED ON DRAWING
(C) LENGTH: AS SPECIFIED ON DRAWING
G. RUBBER BACKING
1. RUBBER BACKING SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
(A) MATERIAL: FOAM RUBBER
(B) INSIDE & OUTSIDE DIAMETER: AS SPECIFIED ON DRAWING
(C) LENGTH: AS SPECIFIED ON DRAWING
3 EXECUTION
3.1 FABRICATION
A. FABRICATE ALL SCREEN PARTS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
B. ANY DISCREPANCIES FOUND DURING CONSTRUCTION SHALL BE BROUGHT TO THE ATTENTION OF THE WORKSITE ENGINEER. DISCONTINUE ALL WORK AFFECTED BY THE DISCREPANCY UNTIL SUCH TIME AS THE PROJECT ENGINEER HAS PROVIDED A SOLUTION. WORK CAN CONTINUE FOR ITEMS OF THE PROJECT NOT AFFECTED BY THE DISCREPANCY.
C. VERIFY CRITICAL DIMENSION(S) FOR FITTING THE SCREEN STRUCTURE INTO THE CONCRETE/STEEL SUPPORT IRON PRIOR TO DELIVERY OF THE SCREEN TO THE SITE
3.2 DELIVERY AND STORAGE
A. STORE MATERIALS IN A CAREFUL AND WORKMANLIKE MANNER SO THAT DAMAGE TO THE MATERIALS EITHER FROM CORROSION OR LOADS IS AVOIDED.
B. STORE STRUCTURAL STEEL SHAPES ON DUNNAGE SO THEY ARE NOT IN CONTACT WITH DIRT OR STANDING WATER
C. SUPPORT STRUCTURAL STEEL SHAPES SO THEY ARE NOT BENT UNDER THEIR OWN WEIGHT OR THE WEIGHT OF OTHER MATERIALS.
D. STORE BOLTS AND OTHER FASTENERS IN WEATHER TIGHT CONTAINERS OR OTHERWISE PROTECTED FROM DIRT AND MOISTURE.
1. TAKE ONLY AS MANY FASTENER COMPONENTS AS ARE ANTICIPATED TO BE INSTALLED DURING THE WORK SHIFT FROM PROTECTED STORAGE.
2. RETURN ALL FASTENER COMPONENTS THAT ARE NOT INCORPORATED INTO THE WORK TO PROTECTED STORAGE AT THE END OF THE WORK SHIFT.
3. FASTENER COMPONENTS SHALL NOT BE CLEANED OR MODIFIED FROM THE AS-DELIVERED CONDITION.
4. FASTENER COMPONENTS THAT ACCUMULATE RUST OR DIRT SHALL NOT BE INCORPORATED INTO THE WORK UNLESS THEY ARE REQUALIFIED AS SPECIFIED IN SECTION 7 OF ASTM F1852.
E STORE WELDING RODS IN ORIGINAL CONTAINERS OR IN ROD OVENS. RODS MUST BE KEPT DRY. WET RODS ARE NOT TO BE USED.
F. STORE PLASTIC PIECES OUT OF DIRECT SUNLIGHT AND HEAT OVER 100F
3.3 BOLTING
A. ALL BOLTS MUST BE TIGHTENED TO THE SNUG-TIGHT CONDITION ONLY. PRE-TENSIONING IS NOT REQUIRED, OR DESIRED, UNLESS SPECIFICALLY NOTED ON THE DRAWINGS.
3.4 ERECTION
A. ERECT AND INSTALL STRUCTURAL STEEL AT THE LOCATIONS SHOWN ON THE PLANS
B. THE ERECTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE MEANS AND SEQUENCE OF ERECTION UNLESS SPECIFIC DIRECTIONS ARE NOTED ON THE PLANS.
C. MAKE NO FIELD MODIFICATIONS TO THE STRUCTURAL STEEL WITHOUT THE WRITTEN PERMISSION OF THE PROJECT ENGINEER.
D. PROVIDE TEMPORARY BRACING AS REQUIRED TO MAINTAIN STRUCTURE IN PROPER ALIGNMENT UNTIL COMPLETION OF SUPPORTING STRUCTURE.
E INSTALL GALVANIZED STRUCTURAL STEEL WITHOUT DAMAGE TO COATING. ANY DAMAGE TO STRUCTURAL STEEL SHALL BE REPAIRED BY STRIPPING COATING AND RECIPPING PRIDE.
F. INSTALL SCREEN PANELS AFTER STRUCTURAL STEEL HAS BEEN ADEQUATELY FASTENED TO WALLS/FLOOR.
G. PROVIDE SUITABLE DIELECTRIC MATERIAL BETWEEN DISSIMILAR METALS

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Drawing Information	
Date	9 May 2018
Status	Preliminary
Designer	jh
Drafter	
Checked	
File Name	Final Civil Plans
Plotted Scale	0 1/2 1

Revisions		
No.	Date	Description

Cold Creek Fish Screen & Barrier Removal Project

Notes

Job Number 2015-112
Sheet Number 3
Sheet 2 of 4

POWER TRANSMISSION

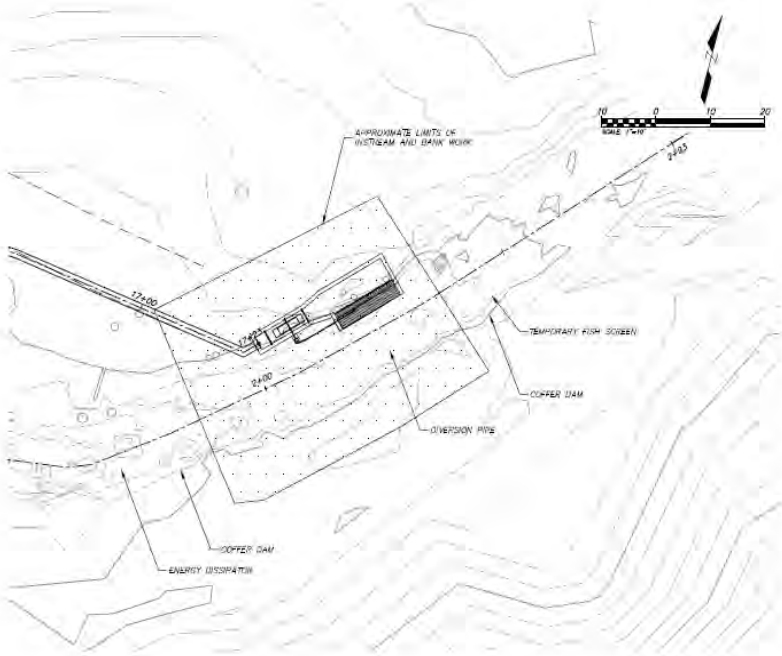
1 GENERAL
1.1 DESCRIPTION
A. WORK INCLUDED: ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO FABRICATE AND INSTALL THE POWER TRANSMISSION SYSTEM TO RUN THE FISH SCREEN CLEANING MECHANISM
1.2 SUBMITTALS
A. NONE REQUIRED
2 PRODUCTS
2.1 MATERIALS
A SPROCKETS
1. DRIVE SPROCKETS
(A). MATERIAL: CARBON STEEL
(B). PROVIDE MCMASTER-CARR PARTS OR EQUAL
(C). PROVIDES SIZES AS REQUIRED PER DRAWING
2. IDLER SPROCKETS
(A). MATERIAL: CARBON STEEL
(B). PROVIDE MCMASTER-CARR PARTS OR EQUAL
(C). PROVIDE SIZES AS REQUIRED PER DRAWING
B. ROLLER CHAIN
1. MATERIAL: STAINLESS STEEL GRADE 304
2. PROVIDE SIZE AS REQUIRED PER DRAWING
C. TYPE U UNIVERSAL JOINT
1. MATERIAL: STAINLESS STEEL GRADE 303
2. PROVIDE SIZE AS REQUIRED PER DRAWING
D. GEAR BOXES
1. 90 DEGREE TURN
(A). SPEED RATIO: 1 TO 1
(B). OUTPUT TORQUE CAPACITY: 75 IN-LB
2. INLINE REDUCTION: NONE REQUIRED
E. STEEL SUPPORT FRAME
STEEL MATERIALS ARE SPECIFIED IN THE STRUCTURAL STEEL SECTION
3 EXECUTION
3.1 FABRICATION
A. FABRICATE ALL POWER TRANSMISSION PARTS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
B. ANY DISCREPANCIES FOUND DURING CONSTRUCTION SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER. DISCONTINUE ALL WORK AFFECTED BY THE DISCREPANCY UNTIL SUCH TIME AS THE PROJECT ENGINEER HAS PROVIDED A SOLUTION. WORK CAN CONTINUE FOR ITEMS OF THE PROJECT NOT AFFECTED BY THE DISCREPANCY.
C. VERIFY CRITICAL DIMENSION(S) FOR FITTING THE POWER TRANSMISSION PARTS TOGETHER AND PLACEMENT OF THE POWER TRANSMISSION ASSEMBLY ONTO THE CONCRETE/STEEL SUPPORT BOX PRIOR TO DELIVERY OF THE SCREEN TO THE SITE
3.2 DELIVERY AND STORAGE
A. STORE MATERIALS IN A CAREFUL AND WORKMANLIKE MANNER SO THAT DAMAGE TO THE MATERIALS EITHER FROM CORROSION OR LOADS IS AVOIDED.
B. STOW STRUCTURAL STEEL SHAPES ON DUNNAGE SO THEY ARE NOT IN CONTACT WITH DIRT OR STANDING WATER.
C. SUPPORT STRUCTURAL STEEL SHAPES SO THEY ARE NOT BENT UNDER THEIR OWN WEIGHT OR THE WEIGHT OF OTHER MATERIALS.
D. STORE BOLTS AND OTHER FASTENERS IN WEATHER TIGHT CONTAINERS OR OTHERWISE PROTECTED FROM DIRT AND MOISTURE.
1. TAKE ONLY AS MANY FASTENER COMPONENTS AS ARE ANTICIPATED TO BE INSTALLED DURING THE WORK SHIFT FROM PROTECTED STORAGE.
2. RETURN ALL FASTENER COMPONENTS THAT ARE NOT INCORPORATED INTO THE WORK TO PROTECTED STORAGE AT THE END OF THE WORK SHIFT.
3. FASTENER COMPONENTS SHALL NOT BE CLEANED OR MODIFIED FROM THE AS-DELIVERED CONDITION.
4. FASTENER COMPONENTS THAT ACCUMULATE RUST OR DIRT SHALL NOT BE INCORPORATED INTO THE WORK UNLESS THEY ARE REQUALIFIED AS SPECIFIED IN SECTION 7 OF ASTM F1852.
E STORE WELDING RODS IN ORIGINAL CONTAINERS OR IN ROD OVENS. RODS MUST BE KEPT DRY. WET RODS ARE NOT TO BE USED.
F. STORE PLASTIC PIECES OUT OF DIRECT SUNLIGHT AND HEAT OVER 100F
3.3 BOLTING
A. ALL BOLTS MUST BE TIGHTENED TO THE SNUG-TIGHT CONDITION ONLY. PRE-TENSIONING IS NOT REQUIRED, OR DESIRED, UNLESS SPECIFICALLY NOTED ON THE DRAWINGS.
3.4 ERECTION
A. ERECT AND INSTALL STRUCTURAL SUPPORT STEEL AT THE LOCATIONS SHOWN ON THE PLANS.
B. THE ERECTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE MEANS AND SEQUENCE OF ERECTION UNLESS SPECIFIC DIRECTIONS ARE NOTED ON THE PLANS.
C MAKE NO FIELD MODIFICATIONS TO THE STRUCTURAL STEEL WITHOUT THE WRITTEN PERMISSION OF THE PROJECT ENGINEER.
D. PROVIDE TEMPORARY BRACING AS REQUIRED TO MAINTAIN STRUCTURE IN PROPER ALIGNMENT UNTIL COMPLETION OF SUPPORTING STRUCTURE.
E. INSTALL POWER TRANSMISSION ASSEMBLY AFTER STRUCTURAL SUPPORT STEEL HAS BEEN ADEQUATELY FASTENED TO WALLS/FLOOR

WATER CONTROL NOTES:

1. TROUT UNLIMITED, CASCADE, AND NORTH RIVERS CONSTRUCTION SHALL COORDINATE WITH CDFW TO MINIMIZE IMPACT TO WATER QUALITY. THE WATER CONTROL PLAN SHALL BYPASS STREAM FLOWS AROUND THE WORK AREA, PROTECT AQUATIC ORGANISMS AT INLETS AND OUTLETS, DEWATER THE WORK AREA, AND DISSIPATE EROSIVE FORCES AT THE OUTLETS, AND NOT INCREASE TURBIDITY LEVELS MORE THAN 20 PERCENT ABOVE UPSTREAM LEVELS. CONTRACTOR SHALL MAINTAIN ALL ELEMENTS OF THE OPERATION IN ORDER TO DEWATER WORK AREA, FACILITATE CONSTRUCTION, PREVENT HARM TO AQUATIC ORGANISMS, AND PREVENT SEDIMENT AND TURBIDITY FROM ENTERING THE STREAM. THE WORK CONDITIONS SHALL BE MAINTAINED FREE OF FISH. THE CONTRACTOR SHALL KEEP THE AREA FREE OF STANDING WATER IN THE WORK AREA. CREEK FLOWS SHALL BE DIVERTED PAST THE WORK SITE AT THE UPSTREAM END OF THE PROJECT AND PAST THE PROJECT. COFFER DAMS SHALL BE CONSTRUCTED AT THE UP AND DOWNSTREAM END OF THE PROJECTS TO PREVENT WATER AND FISH FROM ENTERING THE PROJECT SITE. PUMPING SHALL BE REQUIRED TO PREVENT OVER-SATURATION OF THE ENGINEERED STREAMBED MATERIAL.
2. CASCADE ESTIMATES COLD CREEK FLOWS DURING CONSTRUCTION ARE LIKELY TO BE LESS THAN 3 CFS. CASCADE ESTIMATES A 15 INCH DIAMETER SMOOTH-WALLED PIPE IS ADEQUATE TO CONVEY FLOWS PAST CONSTRUCTION AREA. NORTH RIVERS SHALL INSTALL A DIVERSION PIPE THAT ADEQUATELY CONVEYS DIVERSION FLOWS PAST THE SITE.
3. PUMPING MAY BE REQUIRED TO DEWATER THE CONSTRUCTION SITE TO CONSTRUCT SCREEN.
4. PUMPS AND STATIONARY EQUIPMENT WITHIN 150 FEET OF THE STREAM SHALL BE CLEAN AND FREE OF LEAKS AND SHALL BE PLACED IN A CONTAINMENT KIT. LEAKS SHALL BE FIXED IMMEDIATELY. THE CONTRACTOR SHALL REPORT LEAKS TO CASCADE WITH 1 DAY.
5. CONTRACTOR SHALL MAINTAIN A 55 GALLON SPILL KIT ONSITE.
6. SCREENS ON INTAKES OPERATED IN AREAS WHERE FISH MAY BE PRESENT SHALL MEET CDFW FISH SCREEN CRITERIA.
7. PUMPS (PREFERABLY ELECTRIC) SHALL REMAIN IN OPERATION DOWNSTREAM OF THE BYPASS DAM IF THE DAM DOES NOT SEAL THOROUGHLY. A PUMP SHALL BE MAINTAINED RUNNING 24 HOURS A DAY IN THE DOWNSTREAM SEDIMENT RETENTION DAM TO DIVERT WATER CONTAINING SEDIMENT TO THE FOREST FLOOR WHERE IT WILL BE FILTERED BEFORE ENTERING BACK INTO THE STREAM. PUMPS SHALL REMAIN IN POSITION ON SITE EVEN IF WATER DISCHARGE DROPS CONSIDERABLY, TO BE PREPARED FOR STORM FLOWS.
8. ENERGY DISSIPATORS ARE REQUIRED AT DIVERSION PIPE OUTLETS TO PREVENT EROSION AND TURBIDITY INCREASING MORE THAN 20 PERCENT ABOVE LEVELS UPSTREAM OF THE WORK AREA.

EROSION CONTROL NOTES:

1. CONTRACTOR SHALL TAKE CARE TO MINIMIZE IMPACT TO VEGETATION AND PASTURE. VEGETATION REMOVAL WILL BE COORDINATED WITH TROUT UNLIMITED.
2. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PREVENT SEDIMENT AND TURBIDITY FROM LEAVING THE CONSTRUCTION SITE AND PREVENT HAZARDOUS MATERIALS FROM ENTERING THE CONTAMINATING THE ENVIRONMENT.
3. EQUIPMENT SHALL NOT BE REFUELED WITHIN 150 FEET OF THE STREAM.
4. CONTRACTOR SHALL PREPARE AND MAINTAIN ON-SITE A SPILL CONTAINMENT AND CONTROL PLAN. THE PLAN SHALL INCLUDE NOTIFICATION PROCEDURES, SPECIFIC CLEANUP AND DISPOSAL INSTRUCTIONS FOR ALL PRODUCTS USED ON-SITE. CONTRACTOR SHALL INCLUDE 24-HOUR CONTACT PHONE NUMBER(S) OF CONTRACTOR'S RESPONSIBLE PARTY.
5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND OPERATING EROSION CONTROL MEASURES AS NECESSARY TO PREVENT EROSION AND SITE CONTAMINATION.
6. CONTRACTOR SHALL SEED MIX APPROVED BY TROUT UNLIMITED FOLLOWING CLEANUP.



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Drawing Information	
Date	9 May 2016
Status	Preliminary
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Drafter	
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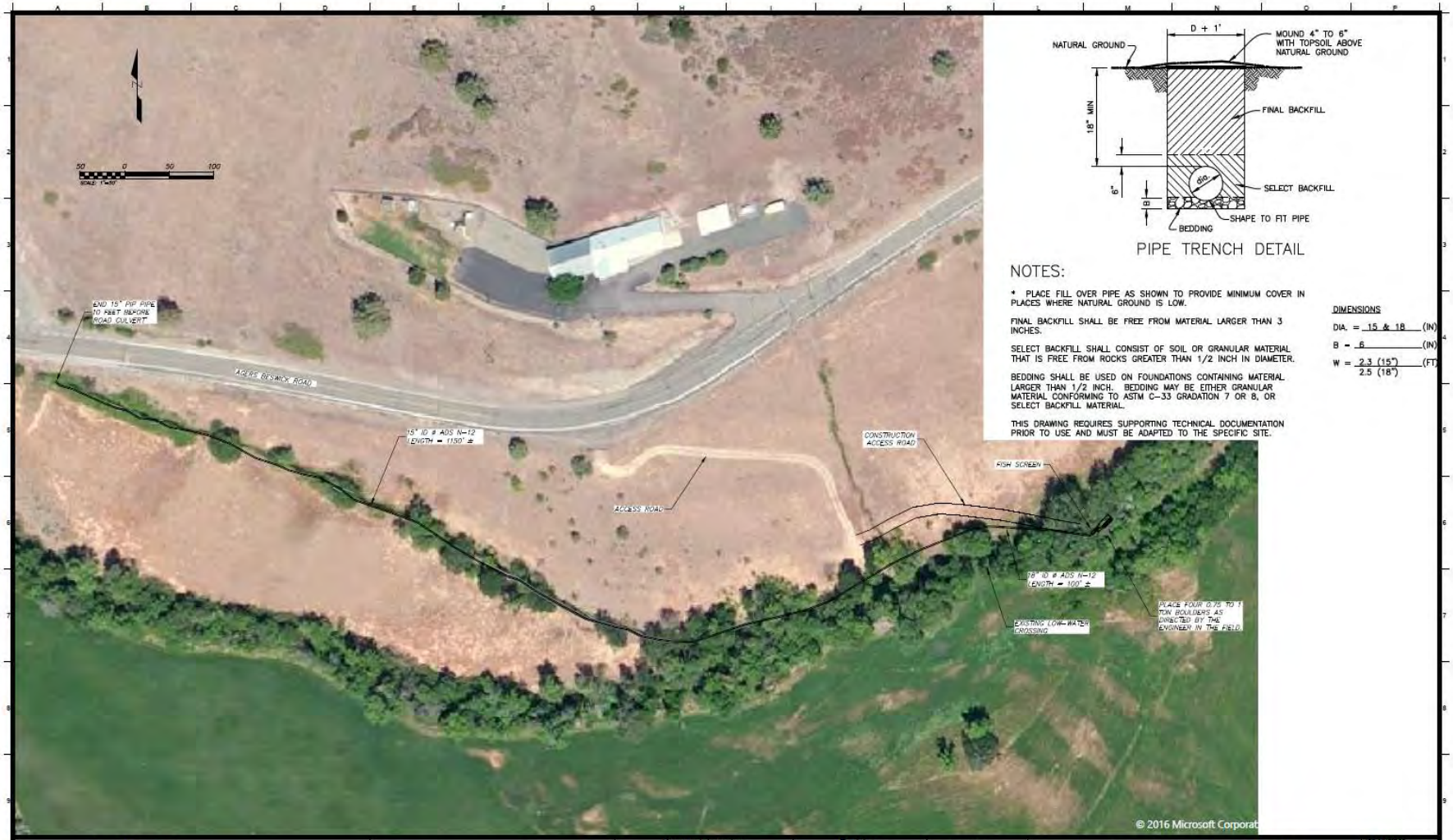
Revisions		
No.	Date	Description

Cold Creek Fish Screen & Barrier Removal Project

Notes and Water Control Plan

Job Number 2015-112
Sheet Number 4
Sheet 4 of



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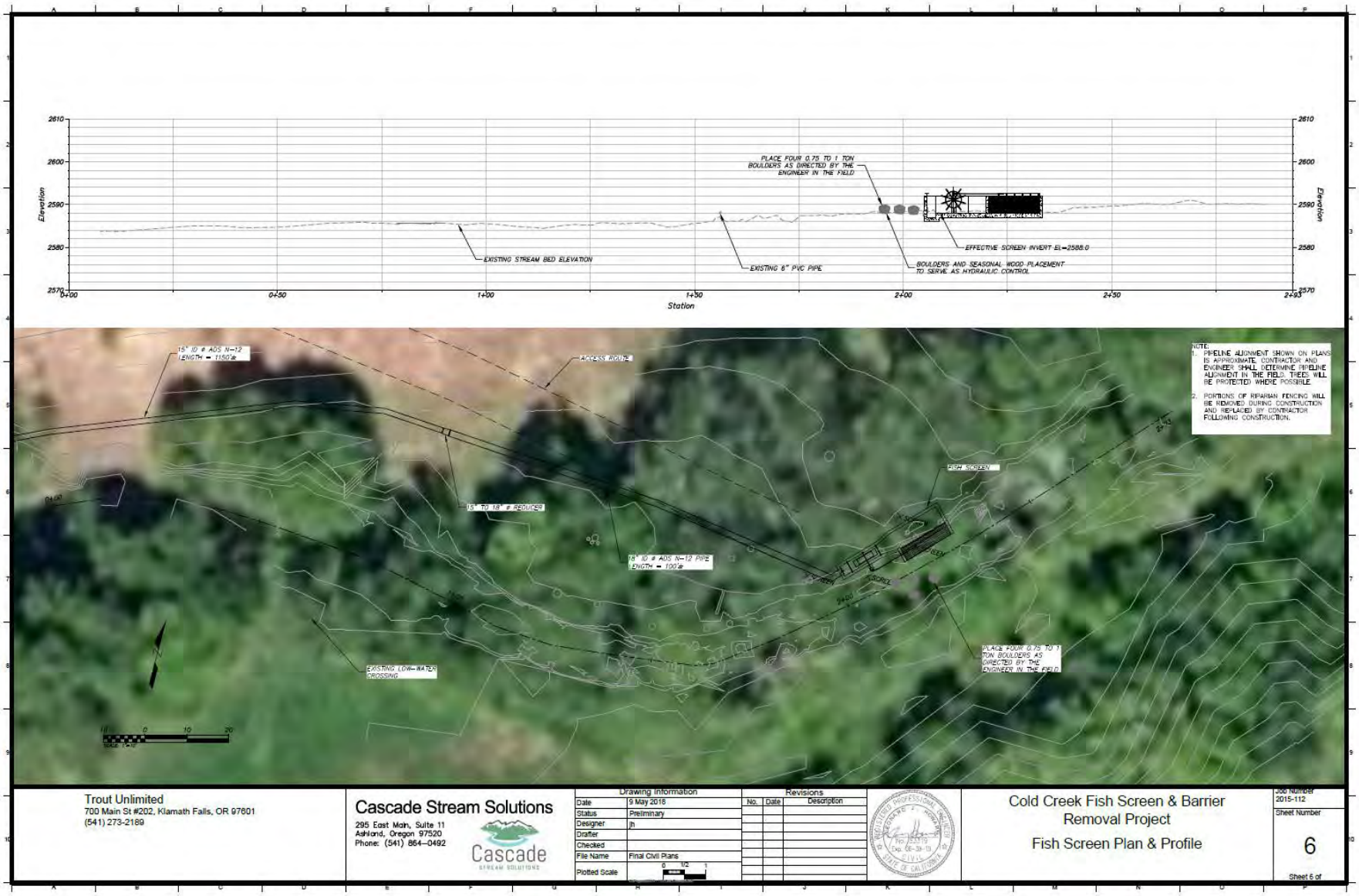
File Name	Final Civil Plans
Plotted Scale	0 1/2 1

Revisions		
No.	Date	Description

Cold Creek Fish Screen & Barrier Removal Project
Pipe and Fish Screen Plan

Job Number 2015-112
Sheet Number 5
Sheet 5 of


Elevation
Station
EXISTING STREAM BED ELEVATION
EXISTING 6" PVC PIPE
PLACE FOUR 0.75 TO 1 TON BOULDERS AS DIRECTED BY THE ENGINEER IN THE FIELD
BOULDERS AND SEASONAL WOOD PLACEMENT TO SERVE AS HYDRAULIC CONTROL
EFFECTIVE SCREEN INVERT EL=2588.0
15" ID # ADS N-12 LENGTH = 1150±
ACCESS ROUTE
15" TO 18" # REDUCER
15" ID # ADS N-12 PIPE LENGTH = 100±
FISH SCREEN
EXISTING LOW-WATER CROSSING
PLACE FOUR 0.75 TO 1 TON BOULDERS AS DIRECTED BY THE ENGINEER IN THE FIELD
NOTE:
1. PIPELINE ALIGNMENT SHOWN ON PLANS IS APPROXIMATE. CONTRACTOR AND ENGINEER SHALL DETERMINE PIPELINE ALIGNMENT IN THE FIELD. TREES WILL BE PROTECTED WHERE POSSIBLE.
2. PORTIONS OF RIPARIAN FENCING WILL BE REMOVED DURING CONSTRUCTION AND REPLACED BY CONTRACTOR FOLLOWING CONSTRUCTION.
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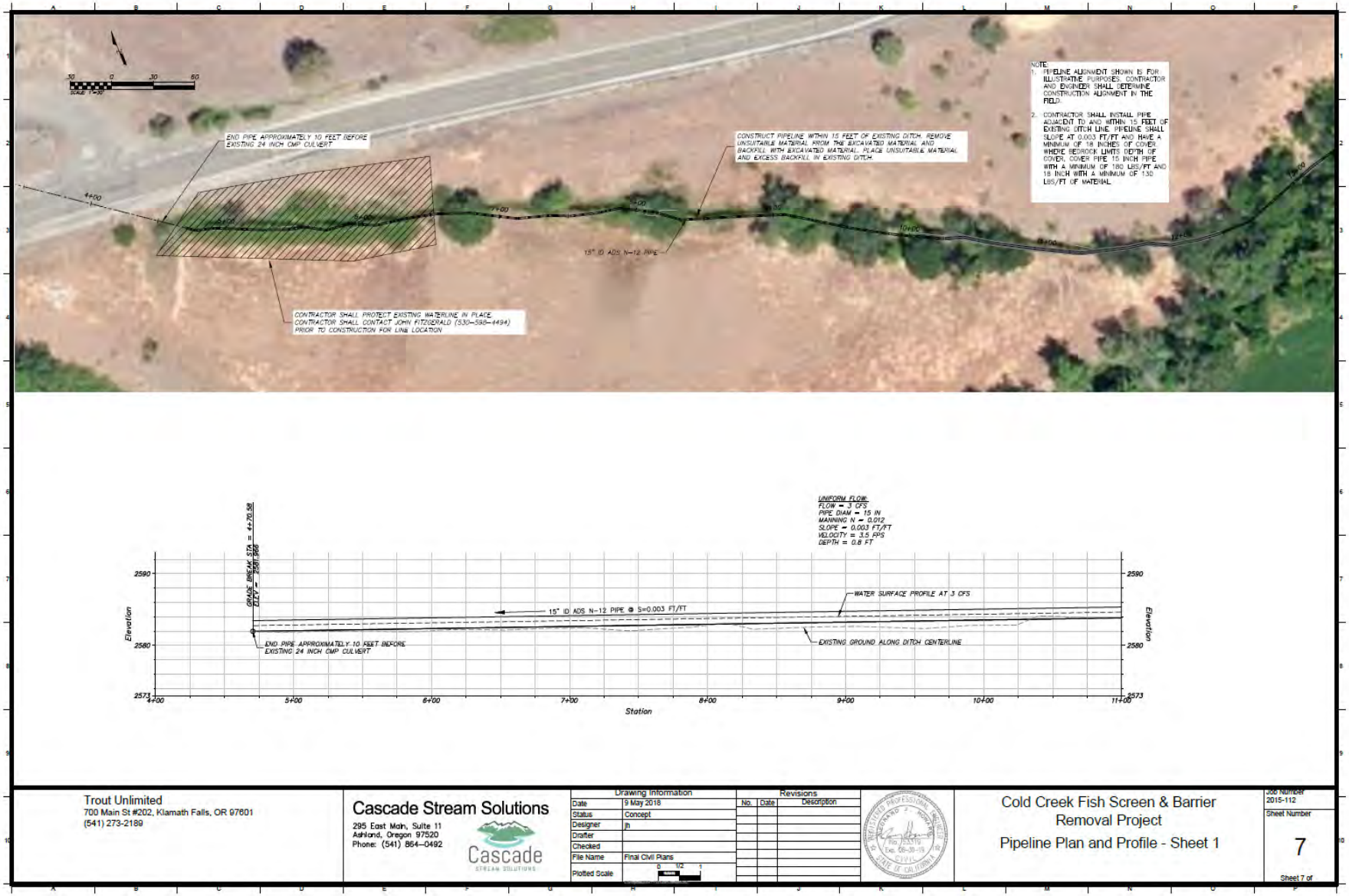
Drawing Information
Date 9 May 2018
Status Preliminary
Designer jh
Drafter
Checked
File Name Final Civil Plans
Plotted Scale
Revisions
No. Date Description
Cold Creek Fish Screen & Barrier Removal Project
Fish Screen Plan & Profile
Job Number 2015-112
Sheet Number 6
Sheet 6 of



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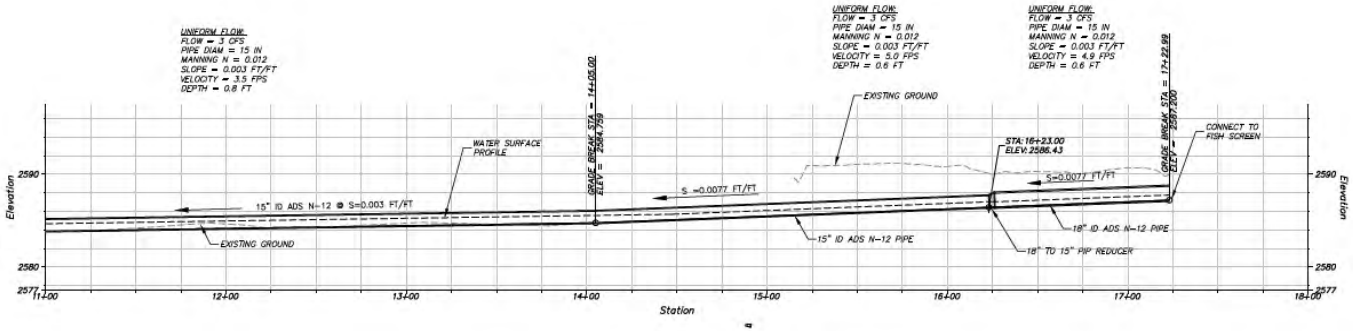
Drawing Information	
Date	9 May 2018
Status	Concept
Designer	jh
Drafter	
Checked	
File Name	Final Civil Plans
Plotted Scale	

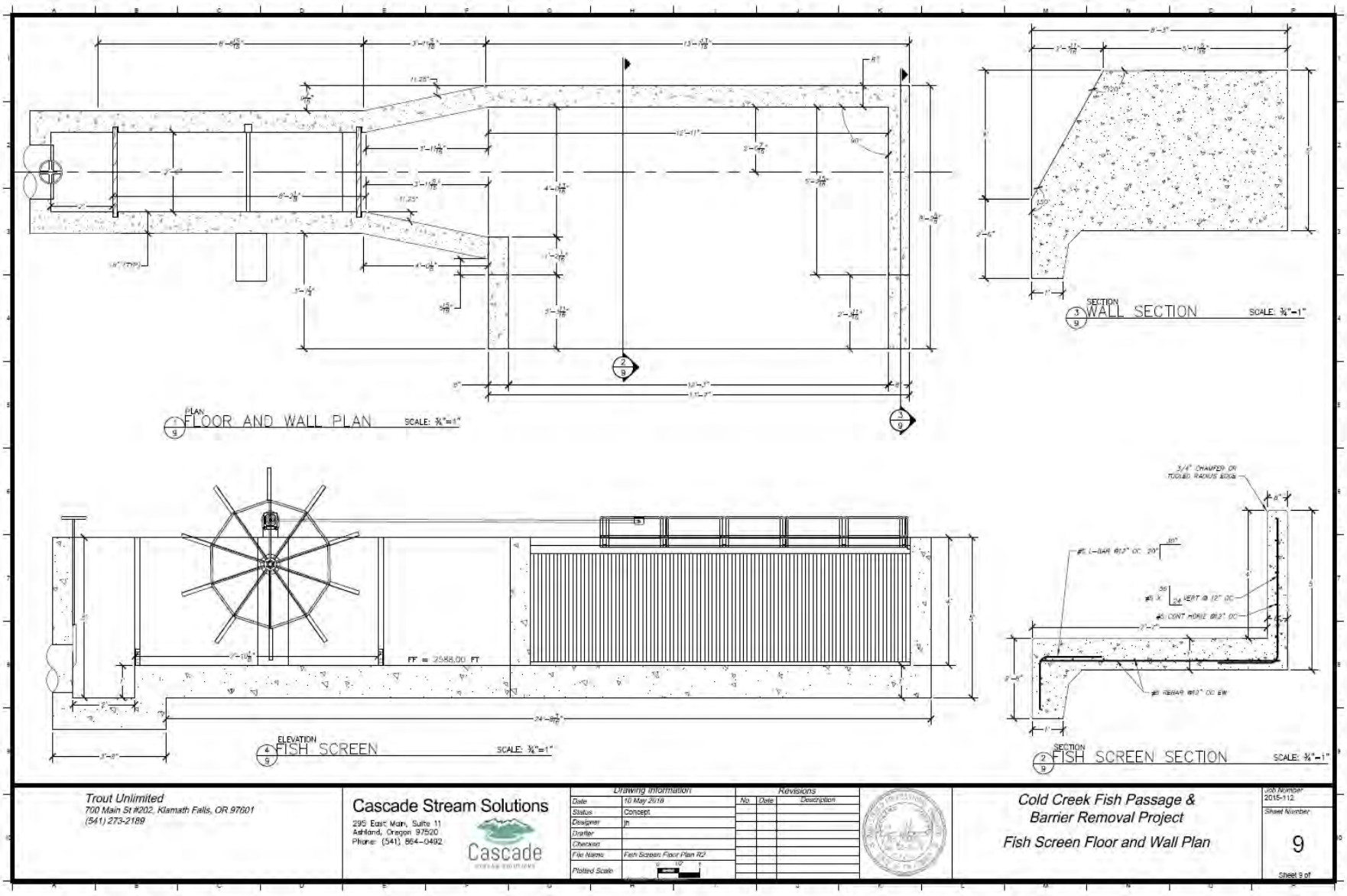
Revisions		
No.	Date	Description

Cold Creek Fish Screen & Barrier Removal Project
Pipeline Plan and Profile - Sheet 1

Job Number 2015-112
Sheet Number 7
Sheet 7 of



Trout Unlimited 700 Main St #202, Klamath Falls, OR 97601 (541) 273-2189	Cascade Stream Solutions 295 East Main, Suite 11 Ashland, Oregon 97520 Phone: (541) 864-0492	Drawing Information Date: 9 May 2018 Status: Concept Designer: jh Drafter: Checked: File Name: Final Civil Plans Plotted Scale: 0 1/2 1	Revisions No. / Date / Description	Cold Creek Fish Screen & Barrier Removal Project Pipeline Plan and Profile - Sheet 2	Job Number 2015-112 Sheet Number 8 Sheet 8 of


PLAN
FLOOR AND WALL PLAN
SCALE: ¾"=1"
SECTION
WALL SECTION
SCALE: ¾"=1"
ELEVATION
FISH SCREEN
SCALE: ¾"=1"
SECTION
FISH SCREEN SECTION
SCALE: ¾"=1"
FF = 2588.00 FT
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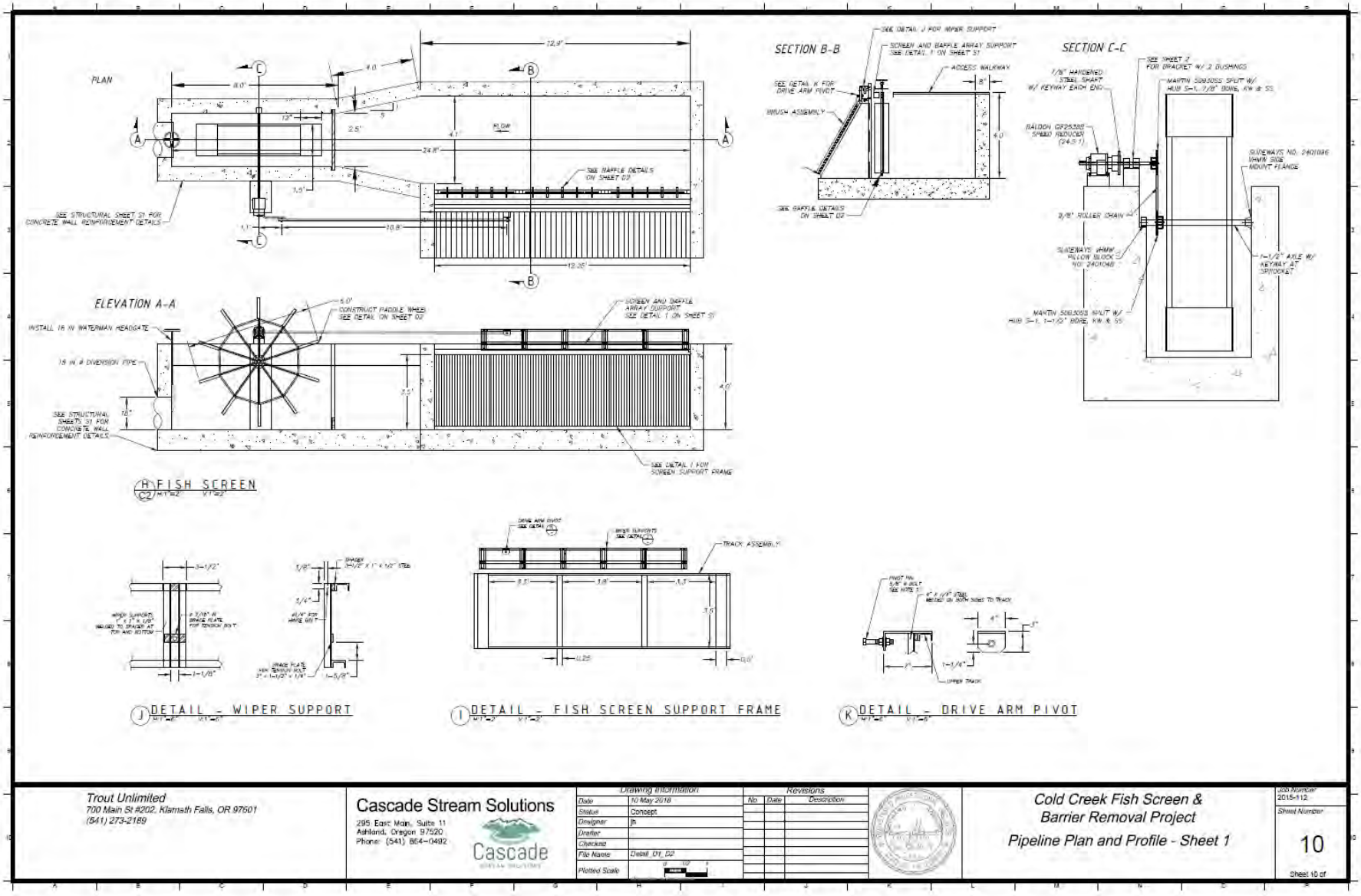
Phone: (541) 864-0492
Drawing Information
Date 10 May 2018
Status Concept
Designer jh
Drafter
Checker
File Name Fish Screen Floor Plan R2
Plotted Scale
Revisions
No. Date Description
Cold Creek Fish Passage &
Barrier Removal Project
Fish Screen Floor and Wall Plan
Job Number 2015-112
Sheet Number 9
Sheet 9 of


PLAN
SECTION B-B
SECTION C-C
ELEVATION A-A
A FISH SCREEN
J DETAIL - WIPER SUPPORT
I DETAIL - FISH SCREEN SUPPORT FRAME
K DETAIL - DRIVE ARM PIVOT
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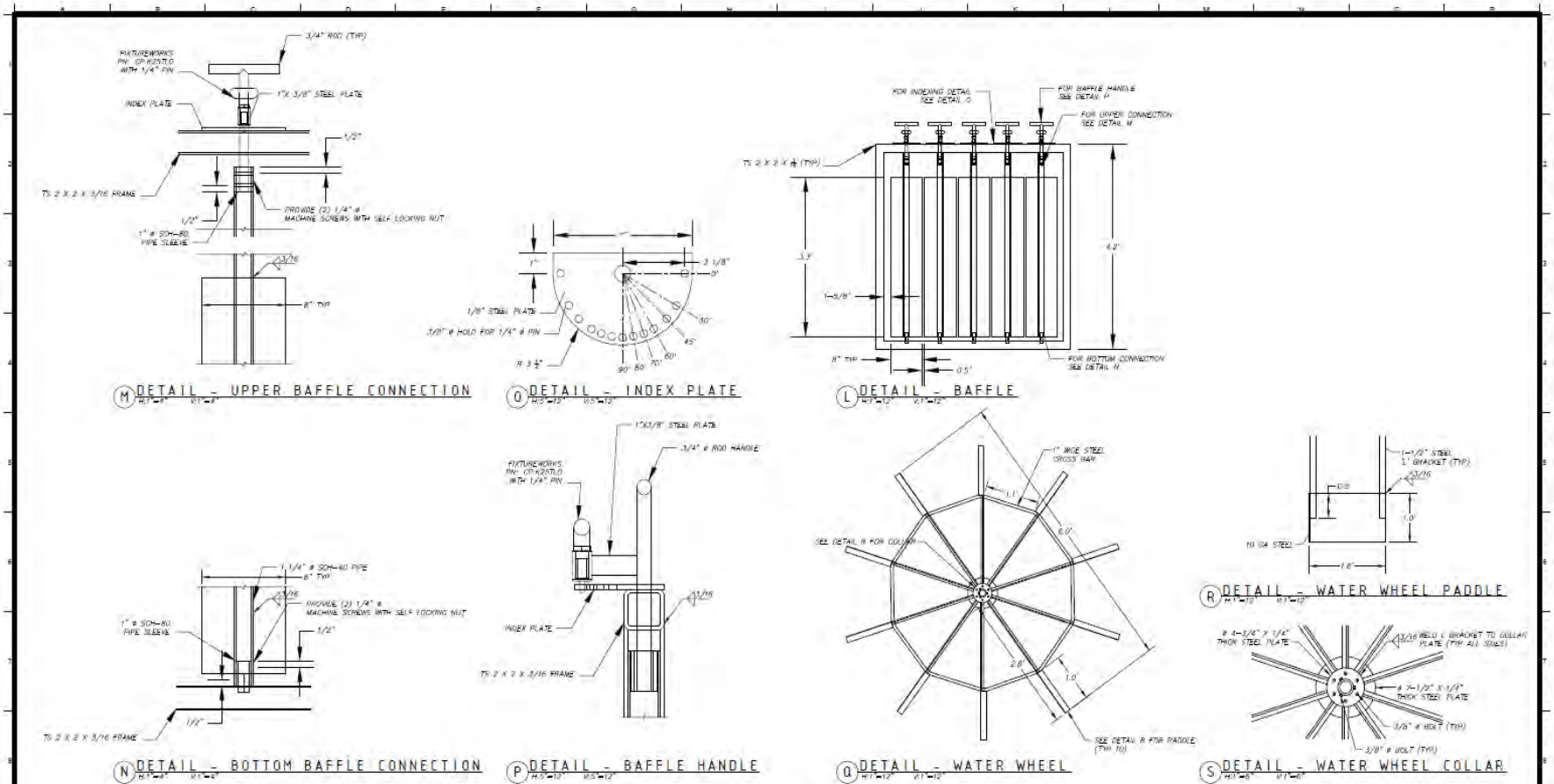
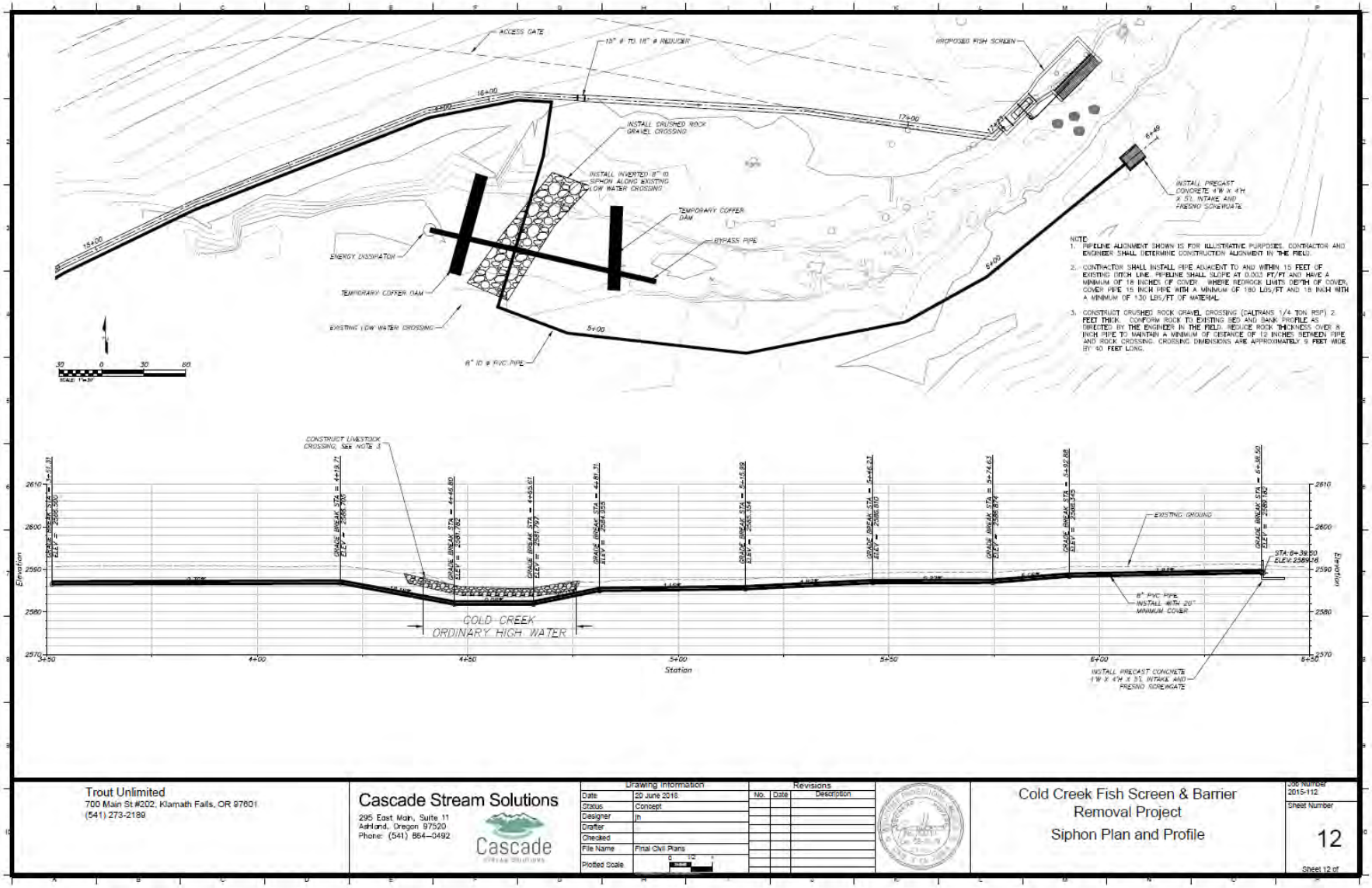
Phone: (541) 864-0492
Drawing Information
Date 10 May 2018
Status Concept
Designer jh
Drafter
Checkmt
File Name Detail_01, 02
Plotted Scale
Revisions
No. Date Description
Cold Creek Fish Screen &
Barrier Removal Project
Pipeline Plan and Profile - Sheet 1
Job Number 2015-112
Sheet Number 10
Sheet 10 of



Trout Unlimited 700 Main St #202, Klamath Falls, OR 97601 (541) 273-2189	Cascade Stream Solutions 295 East Main, Suite 11 Ashland, Oregon 97520 Phone: (541) 864-0492	Drawing Information Date: 10 May 2018 Status: Concept Designer: jh Drafter: Checked: File Name: Detail_01_02 Plotted Scale: 0 1/2" 1"	Revisions No. Date Description		Cold Creek Fish Screen & Barrier Removal Project Pipeline Plan and Profile - Sheet 2	Job Number: 2015-112 Sheet Number: 11 Sheet 11 of


ACCESS GATE
15" Ø TO 18" Ø REDUCER
PROPOSED FISH SCREEN
INSTALL CRUSHED ROCK GRAVEL CROSSING
INSTALL INVERTED 8" ID SIPHON ALONG EXISTING LOW WATER CROSSING
TEMPORARY COFFER DAM
BYPASS PIPE
ENERGY DISSIPATOR
TEMPORARY COFFER DAM
EXISTING LOW WATER CROSSING
8" ID Ø PVC PIPE
INSTALL PRECAST CONCRETE 4'W X 4'H X 5'L INTAKE AND FRESNO SCREENGATE
NOTE:
1. PIPELINE ALIGNMENT SHOWN IS FOR ILLUSTRATIVE PURPOSES. CONTRACTOR AND ENGINEER SHALL DETERMINE CONSTRUCTION ALIGNMENT IN THE FIELD.
2. CONTRACTOR SHALL INSTALL PIPE ADJACENT TO AND WITHIN 15 FEET OF EXISTING DITCH LINE. PIPELINE SHALL SLOPE AT 0.003 FT/FT AND HAVE A MINIMUM OF 18 INCHES OF COVER. WHERE BEDROCK LIMITS DEPTH OF COVER, COVER PIPE 15 INCH PIPE WITH A MINIMUM OF 180 LBS/FT AND 18 INCH WITH A MINIMUM OF 130 LBS/FT OF MATERIAL.
3. CONSTRUCT CRUSHED ROCK GRAVEL CROSSING (CALTRANS 1/4 TON RSP) 2 FEET THICK. CONFORM ROCK TO EXISTING BED AND BANK PROFILE AS DIRECTED BY THE ENGINEER IN THE FIELD. REDUCE ROCK THICKNESS OVER 8 INCH PIPE TO MAINTAIN A MINIMUM OF DISTANCE OF 12 INCHES BETWEEN PIPE AND ROCK CROSSING. CROSSING DIMENSIONS ARE APPROXIMATELY 9 FEET WIDE BY 40 FEET LONG.
CONSTRUCT LIVESTOCK CROSSING, SEE NOTE 3
EXISTING GROUND
8" PVC PIPE INSTALL WITH 20" MINIMUM COVER
COLD CREEK ORDINARY HIGH WATER
INSTALL PRECAST CONCRETE 4'W X 4'H X 5'L INTAKE AND FRESNO SCREENGATE
Elevation
Station
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Phone: (541) 864-0492
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Date 20 June 2018
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File Name Final Civil Plans
Plotted Scale
Revisions
No. Date Description
Cold Creek Fish Screen & Barrier Removal Project
Siphon Plan and Profile
Job Number 2015-112
Sheet Number 12
Sheet 12 of

Appendix C: Indian Trust Asset Coordination and Consultation

Indian Trust Assets Request Form (MP Region)

Submit your request to your office's ITA designee or to MP-400, attention Deputy Regional Resources Manager.

Date: 12/19/17

Requested by (office/program)	Amanda Babcock, Natural Resource Student Trainee, Klamath Basin Area Office
Fund	17XR0680A3
WBS	RX.001261ME.3000000
Fund Cost Center	25320000
Region # (if other than MP)	
Project Name	Cold Creek Coho Passage and Screening Project
CEC or EA Number	2017-EA-014
Project Description	The goal of this project is to improve passage and habitat for adult and juvenile coho salmon in Cold Creek in the Klamath River watershed. The project would achieve its goals by removing a passage barrier at a diversion, replacing the existing fish screen with a new screen that meets updated criteria, and installing a siphon to route warm tail water under the creek to an adjacent pasture. The primary objective of the proposal would be to eliminate the need for the push-up dam by reprofiling the diversion site with a roughened channel that would allow for irrigation deliveries and provide year round volitional passage for rearing juveniles, out-migrating smolts, and adult salmon moving into the spawning grounds provided in Cold Creek. The project would also replace the existing, non-compliant fish screen at the diversion with a new screen which meets current California Department of Fish and Wildlife (CDFW)/National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NMFS) screening criteria. Both the fish passage and screening activities are identified in Appendix 3 of the NMFS and U.S. Fish and Wildlife Service 2013 Biological Opinion on operation of the Klamath Project and the 2004 CDFW Recovery Strategy for California coho Salmon.

***Project Location (Township, Range, Section, e.g., T12 R5E S10, or Lat/Long cords, DD-MM-SS or decimal degrees). Include map(s)**	**General:** Cold Creek, in Siskiyou County, California, enters Bogus Creek approximately 1.5 miles upstream from the confluence with the Klamath River. Bogus Creek enters the mainstem Klamath River approximately 2,100 feet downstream of Iron Gate Dam, and is utilized by coho, Chinook and steelhead. The entire project is located on private land. **PLSS:** Section 18 of T47N, R4W of the Mount Diablo Meridian in Siskiyou County, CA. **Latitude:** 41°55'36.75" N **Longitude:** 122°21'39.85" W *See maps in Exhibits A, B, and C. *XY coordinates are approximations.

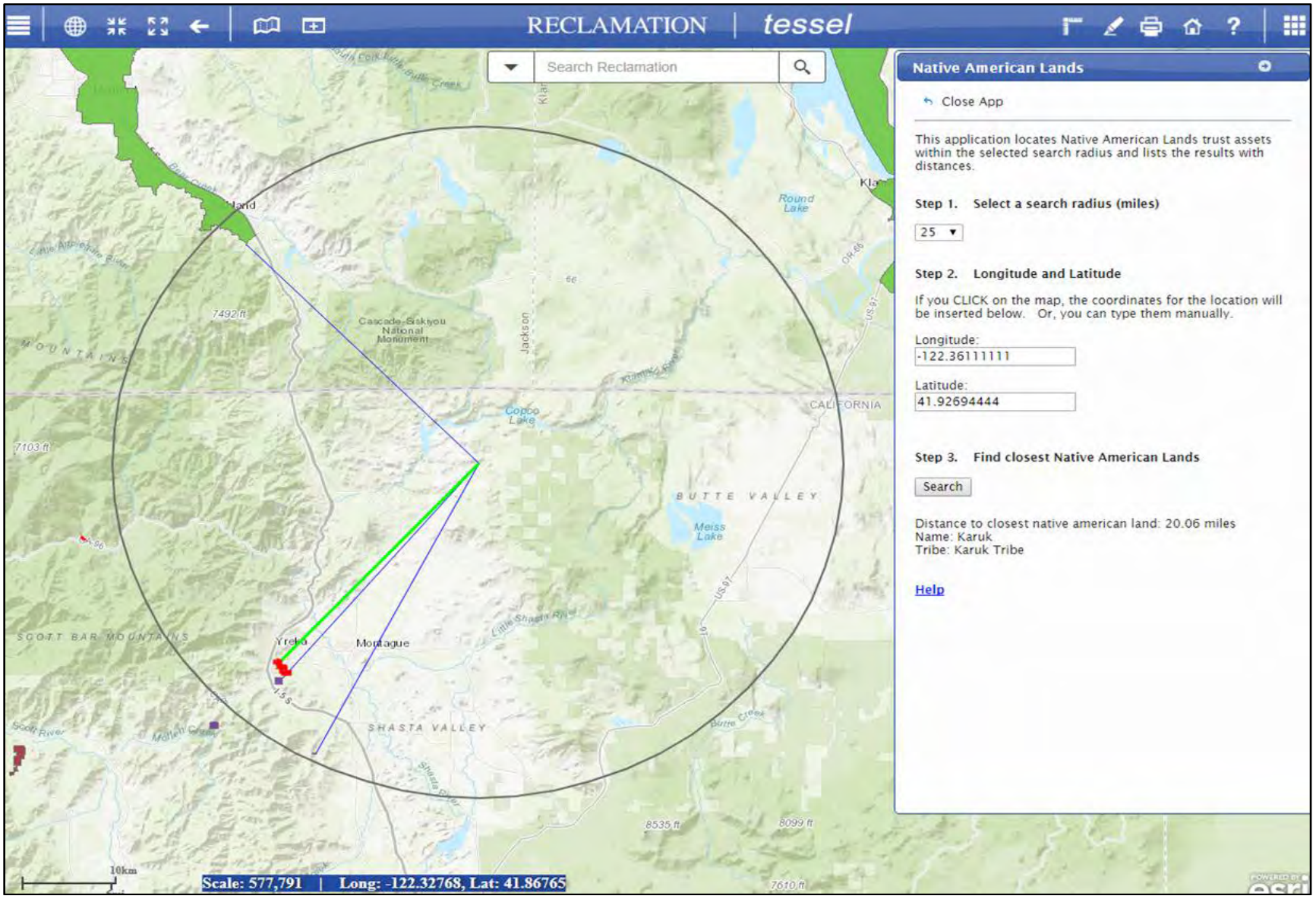
Amanda Babcock — Signature
Amanda Babcock — Printed name of preparer
12/19/17 — Date

ITA Determination:

The closest ITA to the proposed **Cold Creek Coho Passage and Screening** activity is the **Karuk Tribe** about **20.06** miles to the south-west of the nearest project site (see attached image in Exhibit A).

Based on the nature of the planned work, it **does not** appear to be in an area that will impact Indian hunting or fishing resources or water rights nor is the proposed activity on actual Indian lands. It is reasonable to assume that the proposed action **will not** have any impacts on ITAs.

Kristen L. Hiatt — Signature
Kristen L. Hiatt — Printed name of approver
12/19/17 — Date


RECLAMATION | tessel
Search Reclamation
Native American Lands
Close App
This application locates Native American Lands trust assets within the selected search radius and lists the results with distances.
Step 1. Select a search radius (miles)
25
Step 2. Longitude and Latitude
If you CLICK on the map, the coordinates for the location will be inserted below. Or, you can type them manually.
Longitude:
-122.36111111
Latitude:
41.92694444
Step 3. Find closest Native American Lands
Search
Distance to closest native american land: 20.06 miles
Name: Karuk
Tribe: Karuk Tribe
Help
Cascade-Siskiyou National Monument
Round Lake
Copco Lake
Meiss Lake
Yreka
Montague
SHASTA VALLEY
BUTTE VALLEY
SCOTT BAR MOUNTAINS
CALIFORNIA
Scale: 577,791 | Long: -122.32768, Lat: 41.86765

Appendix D: Cultural Resources Coordination

CULTURAL RESOURCES COMPLIANCE
Division of Environmental Affairs
Cultural Resources Branch (MP-153)

MP-153 Tracking Number: 17-KBAO-216

Project Name: Cold Creek Coho Passage and Screening Project

NEPA Document: TBD

NEPA Contact: Kirk Young, Natural Resources Specialist

MP-153 Cultural Resources Reviewer: Joanne Goodsell, Archaeologist

Date: March 6, 2018 JOANNE GOODSELL Digitally signed by JOANNE GOODSELL Date: 2018.03.06 13:35:24 -08'00'

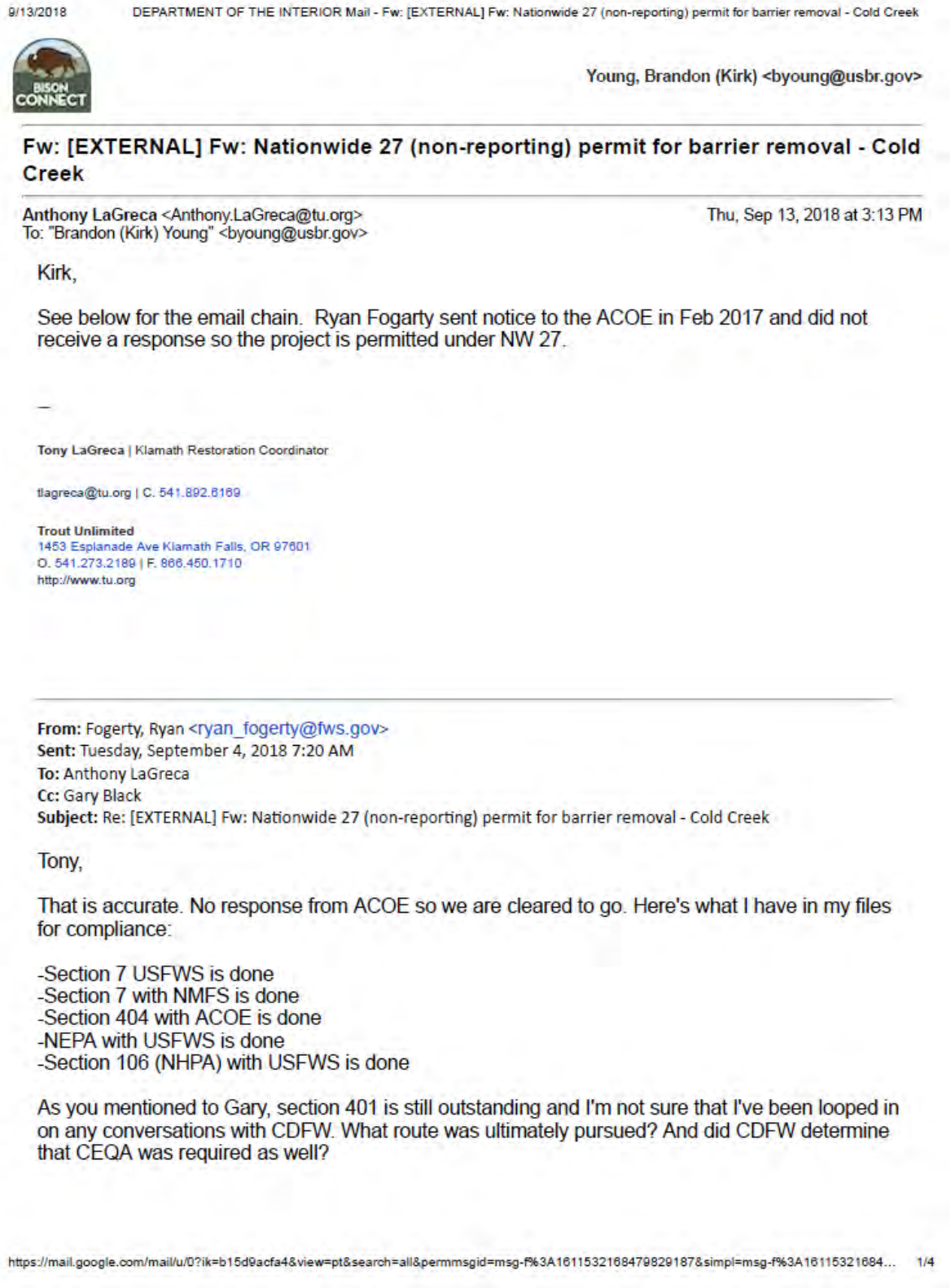
Reclamation proposes to provide grant funding, administered through the National Fish and Wildlife Foundation, to partially fund the implementation of a fish passage and habitat restoration project proposed by Trout Unlimited. The goal of this project is to improve passage and habitat for adult and juvenile Coho salmon in Cold Creek, located in the Klamath River watershed. The project would involve removing a passage barrier at an existing irrigation diversion, replacing an existing fish screen with a new screen that meets updated criteria, and installing a siphon to route warm tail water under the creek to an adjacent pasture. This project also will be funded through the U.S. Fish and Wildlife Service (FWS).

The use of Federal funding for this project constitutes an undertaking as defined at 36 CFR § 800.16(y), requiring compliance with 54 U.S.C. § 306108, commonly known as Section 106 of the National Historic Preservation Act (NHPA). Pursuant to 36 CFR § 800.2(a)(2), Reclamation has designated FWS as lead Federal agency to fulfill the collective responsibilities of both agencies under Section 106 of the NHPA.

In accordance with the terms of their programmatic agreement (PA) with the California State Historic Preservation Officer, FWS evaluated the potential impacts of the proposed project and does not anticipate any affects or impacts on cultural resources from the undertaking. In the event that any cultural resources are discovered during project construction, the FWS Regional Archaeologist will be notified to review the discovery pursuant to the terms of their PA.

This document conveys the completion Reclamation's cultural resources review and Section 106 compliance for this undertaking. Reclamation has no further obligations under Section 106 of the NHPA. Please retain a copy of this document with the administrative record for the proposed action.

Appendix E: USACE 404 Nationwide Permit 27 Coordination



9/13/2018 DEPARTMENT OF THE INTERIOR Mail - Fw: [EXTERNAL] Fw: Nationwide 27 (non-reporting) permit for barrier removal - Cold Creek

Young, Brandon (Kirk) <byoung@usbr.gov>

Fw: [EXTERNAL] Fw: Nationwide 27 (non-reporting) permit for barrier removal - Cold Creek

Anthony LaGreca <Anthony.LaGreca@tu.org> Thu, Sep 13, 2018 at 3:13 PM
To: "Brandon (Kirk) Young" <byoung@usbr.gov>

Kirk,

See below for the email chain. Ryan Fogarty sent notice to the ACOE in Feb 2017 and did not receive a response so the project is permitted under NW 27.

—

Tony LaGreca | Klamath Restoration Coordinator

tlagreca@tu.org | C. 541.892.6169

Trout Unlimited
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From: Fogerty, Ryan <ryan_fogerty@fws.gov>
Sent: Tuesday, September 4, 2018 7:20 AM
To: Anthony LaGreca
Cc: Gary Black
Subject: Re: [EXTERNAL] Fw: Nationwide 27 (non-reporting) permit for barrier removal - Cold Creek

Tony,

That is accurate. No response from ACOE so we are cleared to go. Here's what I have in my files for compliance:

-Section 7 USFWS is done
-Section 7 with NMFS is done
-Section 404 with ACOE is done
-NEPA with USFWS is done
-Section 106 (NHPA) with USFWS is done

As you mentioned to Gary, section 401 is still outstanding and I'm not sure that I've been looped in on any conversations with CDFW. What route was ultimately pursued? And did CDFW determine that CEQA was required as well?

https://mail.google.com/mail/u/0?ik=b15d9acfa4&view=pt&search=all&permmsgid=msg-f%3A1611532168479829187&simpl=msg-f%3A16115321684... 1/4

Ryan Fogerty - Supervisory Biologist
Habitat Restoration Branch Chief
Yreka Fish and Wildlife Office
Region 8 NFPP Co-coordinator

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On Fri, Aug 31, 2018 at 10:27 AM, Anthony LaGreca <Anthony.LaGreca@tu.org> wrote:

Gary,

Our partners at the USFWS notified the ACOE in Feb of 2017 that they believed this project qualified under a NW27 permit. Under the rules as I understand them the ACOE has 45 days to review and respond if they wish. The ACOE did not respond within the 45 day window and according to the rules as I understand them we are cleared for construction. To be on the safe side i asked Ryan to double check with the ACOE in June. Ryan reached out to them on June 4th and still received no response.

Here are the rules that I have found concerning this

http://www.spk.usace.army.mil/Missions/Regulatory/Permitting/Nationwide-Permits/

Commencement of Construction of Activities Under a NWP
If a PCN is required by the terms, GCs, or RCs of the NWP, the prospective permittee may not begin construction of an activity under a NWP until either: (1) he or she is notified in writing by the District that the activity may proceed under the NWP with any special conditions imposed; or (2) 45 calendar days have passed from the District's receipt of the complete PCN and the prospective permittee has not received written notice from the District.

So it is my understanding that we are cleared for construction.

Ryan please jump in if I am in error here.

Other notes and updates. The BOR has wrapped the EA for both Cold and Bogus Creek and should be putting them on their website for a 7 day notification either today or early next week. This means we should be getting the final go ahead from them in the week of the 10th or the 17th.

Have you heard from Jake on the 401?

I would like to get together and talk next week with all of the project partners to make sure we are go for instillation this fall. I will send out an email and make some calls to try and get things moving.

I will call you later

tony

—

Tony LaGreca | Klamath Restoration Coordinator

tlagreca@tu.org | C. 541.892.6169

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From: Fogerty, Ryan <ryan_fogerty@fws.gov>
Sent: Monday, June 4, 2018 12:31 PM
To: cameron.r.purchio
Cc: bryan.t.matsumoto@usace.army.mil; Anthony LaGreca
Subject: Re: Nationwide 27 (non-reporting) permit for barrier removal - Cold Creek

Hey Cameron,

I received an email from the cooperator (Trout Unlimited) the Service provided funding to for this project. He was asking about ACOE coverage and it reminded me that I hadn't heard back so I'm just double checking to make sure this project didn't slip through the cracks. Construction is slated to occur during CDFW's instream construction window.

Ryan Fogerty - Supervisory Biologist
Habitat Restoration Branch Chief
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On Tue, Feb 7, 2017 at 3:39 PM, Fogerty, Ryan <ryan_fogerty@fws.gov> wrote:

> Cameron,
>
> The U.S. Fish and Wildlife Service has funded an instream fish passage barrier removal (in conjunction with a fish screen replacement and pipe installation). The proposed project will take place on Cold Creek, a tributary to the Bogus Creek, which connects to the Klamath River at River Mile 109.21 (41.92700, -122.36086). The attached picture shows the barrier to be removed.
>
> The scope of the project has no actual access to Cold Creek by track vehicles. There will be work adjacent to the creek where the fish screen is. I've attached a pdf to give you a better idea. Heavy equipment will excavate the existing fish screen (Area of Potential Effect = .013 acres). There is currently an open ditch downstream of the fish

screen. A 15-18" pipe will be laid into the ditch (Area of Potential Effect = 0.57 acres) with excavation along approximately 350' of the ditch. After installation the ditch will be backfilled using on site material near the ditch (areas chosen which will have minimal impact to any riparian vegetation. The barrier is a hand-built coffer dam and will be removed by hand and the materials used to backfill the irrigation ditch after the pipe is installed.

Debris removal will occur by use of a compact excavator and will be used to back fill the ditch and cover/protect the pipe. Any remaining debris will remain onsite, but will be placed outside of the 100-yr floodplain (at a site agreed upon by the landowners). Stream banks will be graded and replanted. Any vegetation removal for the bridge or for access to the stream for barrier removal will be placed streamside, but not in the stream itself. Any felled trees would be soft-anchored to minimize the tree(s) during flood conditions.There is no anticipated disturbance to the stream banks as heavy equipment will have direct access to the project site without having to cross the stream.

As a precaution, during all phases of construction there will be silt fences above and below the Area of Potential Effect and will be moved Additionally, a dredge pump will be placed directly downstream of the barrier removal site to pump mobilized sediment 100 feet outside of the wetted channel to allow sediment to filter out onto the landscape and the water to re-infiltrate through the soil. All heavy equipment will access the site on existing roads. Construction will occur during late summer/early fall of 2017 so flows are at base levels. Staging, storage, and re-fueling of machinery and equipment will occur at least 100 feet from water. Any disturbed soil will be covered with straw. Once soils are moist enough for seeding, all disturbed areas will be seeded with native grass seeds. For these reasons, sediment discharge during and following construction with heavy equipment is expected to be negligible.

ESA (USFWS) and NEPA has been completed. ESA (NMFS section 7 coverage will be processed through NOAA RC's Programmatic Biological Opinion for Restoration Projects)

Cultural resource compliance, 401, 1600 permits have been submitted and are pending review.

Because the proposed project is expected to result in net increases in aquatic resource function I feel this project is consistent with and be covered by the Nationwide 27 permit for aquatic habitat restoration, establishment, and enhancement activities . Please advise if you feel that our conclusion is erroneous

Thank you for your time and please don't hesitate to contact me if I was unclear in my project description.

Ryan Fogerty - Supervisory Biologist
U.S. Fish and Wildlife Service
Habitat Restoration Branch Chief
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Appendix F: Federally Listed Species

Mammals		
Gray Wolf	*Canis lupus*	E
Birds		
Northern Spotted Owl	*Strix Occidentalis caurina*	T
Yellow-billed Cuckoo	*Coccyzus americanus*	T
Amphibians		
Oregon Spotted Frog	*Rana pretiosa*	T
Fishes		
Lost River Sucker	*Deltistes luxantus*	E
Shortnose Sucker	*Chasmistes brevirostris*	E
Crustaceans		
Conservancy Fairy Shrimp	*Branchinecta conservation*	E
Vernal Pool Fairy Shrimp	*Branchinecta lynchi*	T
Vernal Pool Tadpole Shrimp	*Lepidurus packardi*	E
Flowering Plants		
Applegate's Milk-vetch	*Astragalus aplegatei*	E
Gentner's Fritillary	*Fritillaria gentneri*	E
Hoover's Spurge	*Chamaesyce hooveri*	T
Slender Orcutt Grass	*Orcuttia tenuis*	T

Key: T = threatened under the ESA; E = endangered under the ESA
Source: https://ecos.fws.gov/ipac/location/index