

Beaver Slough Drainage District

China Camp Creek Project - Fish Passage Exception Request

March 5, 2015

Project Location:

The China Camp Creek Project (C3P) is in the Beaver Slough Drainage District (District) located in T27S, R13W, Sections 21, 22, 27, 28, 29, 32, 33, 34 and T28S, R13W, Sections 2 & 3, at river mile 20 to 22, West of Coquille, Oregon, North of the Coquille River, and South of Highway 42N, in the area known locally as Winter lake. (See attached location map, figure 1.0)

Coordinates for the proposed culvert / tide gate structure are 43°11'44"N, 124°15'35"W.

Contact:

Fred R. Messerle, Chairman
60196 Old Wagon Road
Coos Bay, Oregon 97420

Cell: 541-404-6105
Email: bsdd.bos@gmail.com

Project Background:

The District is responsible for the culvert / tide gate structures, dikes, canals, and berms that protect over 1,700 acres of land from daily high tides and facilitate drainage of individual landowner parcels. The existing culvert / tide gate infrastructure consists of four 96" CMP culverts with top hinged wood tide gates. The metal culverts were installed in 1995 and are at the end of life. The two culverts in the North Canal were lined with 84" X 60' CMP liners and new head walls in 2014 to maintain function and preserve the associated protective dike. (Please see the referenced BSDD North Canal Culverts – Repair Plan – June 2, 2014 and the North Canal Repair Project – Summary Report January 31, 2015 for additional information available for download at <http://www.coquilleworkinglandscapes.com/>)

The C3P is the District's proposal to build new culvert / tide gate infrastructure that will enable landowners within the District to meet their management objectives. The new culvert / tide gate infrastructure design allows for independent control of water levels in three separate management units. (See attached BSDD Unit Map, Figure 2.0) The proposed Winter Lake Restoration project (WLRP) encompasses the entire Unit 2, which will be primarily managed for over winter Coho salmon habitat as well as other fish and wildlife values. Units 1 and 3 are privately owned and managed for agricultural production, primarily grazing.

Objectives for the C3P include:

- ❖ Maintain agricultural production and enhance ecological function
- ❖ Improve and provide OCH (off channel rearing habitat) for juvenile Coho and Chinook Salmon
- ❖ Improve fish passage for adult salmon returning to China Camp Creek
- ❖ Control water levels to allow landowners to meet their individual management objectives
- ❖ Flushing to reduce sediment in the drainage system and improve water quality
- ❖ Improve capacity and connectivity to the Coquille River for China Camp Creek and the drainage system
- ❖ Provide substantially improved access to and from the Coquille River for fish particularly the endangered Coho salmon during winter and high water events
- ❖ Encourage habitat suitable for wildlife and migratory waterfowl
- ❖ Facilitate sediment retention and soil build up

Replacement of the culvert / tide gate infrastructure is a “trigger event” as per OAR 635 Division 412 requiring fish passage approval from the Oregon Department of Fish & Wildlife for construction and operation.

Project Description:

The C3P proposal is to construct three adjacent steel reinforced concrete box culvert structures with a total of seven 8’X10’X60’ culvert openings with associated wing walls. Unit 1 would have two openings; Unit 2 would have four openings, and Unit 3 one opening. Culvert invert would be -2.0 (NAVD88). (See attached structure plan drawing, figure 3.0, and refer to the 30% structure design plans available to download from the China Camp Creek Project section at the <http://www.coquilleworkinglandscapes.com/> website for more detailed information.) These structures would be located within the foot print of the existing protective berm between the North and East Canals which has the equivalent of twenty years of preloading. The support foundation would be a geo-fabric reinforced compacted aggregate mat pad. The existing culverts, piling and wood bulkheads would be removed and the main protective berm for the Coquille River would be reconstructed with appropriate access roads.

The tide gates would be standard Nehalem Marine **NSRG 10X8 RK** side hinged gates mounted on a sliding frame that would move vertically on the face of the culvert. The mechanical lift system for the slide gate frame would be powered by hydraulic cylinders that would receive their moving force from energy harvested from the Muted Tidal Regulator (MTR) float system on the upstream end of the culvert structure. The side hinged gates would open and the frames would rise on an outgoing tide with the side hinged gates closing and the slide gate frame dropping when a predetermined adjustable set point, based on the inside water level, triggers the MTR mechanism. Auxiliary power would be used to adjust the slide gate frames to achieve desired set points for winter operations and storm events.

Extensive hydraulic modeling has been done to predict the effects of the proposed infrastructure for the C3P both within the District and the Coquille River. Please refer to the Phase 3 Hydraulic Analysis of China Camp Creek Restoration Project and the BSDD_Hydrology Discussion Summary Report – 2014, both available for download at <http://www.coquilleworkinglandscapes.com/>.

Given the size of the C3P and the associated water volumes as well as the physical constraints and cost factors involved, achieving 100% compliance with fish passage velocity and time open criteria will not be possible, thus the need to request an exception. However, consideration must be given to the fact there are two incoming and outgoing tides each day with a change in flow direction for each change in tide. Periods of minimum velocity at high and low slack water provide more benefit and opportunity for fish passage than a standard upland culvert that would experience continuous flow in one direction. Additionally the amount of ecological function to be restored as well as the sheer size involved (1,700+ acres) make a compelling argument for the C3P to be considered self-mitigating and worthy of an exception. Please refer to the USACE/DSL, November 2014, Joint Permit Application and the USFWS National Coastal Wetland Conservation Grant, June 2014, Application, available at <http://www.coquilleworkinglandscapes.com/>, for more discussion as to the biological benefits as well as the details of the restoration of ecological function.

The current tide gate infrastructure is default closed and provides no fish passage during an incoming tide or a rising river flood event with limited fish passage opportunity on an outgoing tide. The proposed structure design will extend the time the tide gates are open to allow fish passage as well as reduce the flow velocity, particularly in the critical area around the tide gate itself.

In working water level mode the slide gate frame controlled by the MTR mechanism would function similar to any other MTR controlled tide gate, closing at a predetermined set point, allowing for longer time in an open position and thus more fish passage opportunity.

In winter, there are multiple options available to enhance the goals of increased access for juvenile COHO Salmon, silt retention, and system equalization. The slide gate frames could be open to provide a flow that would not exceed the desired set point on

each tide cycle. This size of the opening could be increased during a rising river in anticipation of a high water out of system event to achieve additional fish access opportunities as well as silt retention and equalization. The ability to adjust the slide gate frames to match actual conditions on the ground is a huge advantage over the present default closed infrastructure.

Project Operation:

The District will operate and maintain the infrastructure for the benefit of landowners and stakeholders within the parameters of the District Water Management Plan and the permits authorizing the project. (See the District Water Management Plan (DWMP), available to download at <http://www.coquilleworkinglandscapes.com/>.)

Programmatic Approval:

As provided for in OAR 635-412-0020 (3) (b) the District requests a programmatic approval for culverts and tide gates associated with berms within the District that qualify under OAR 635-412-0035 (5) (a) in areas above which no stream is present. Requirements for the programmatic structure would be a minimum 48" diameter culvert, with 4" depth and width of water, a side hinged tide gate and an invert of -1.0 (NAVD88).

Supplemental Information:

Available for download at: <http://www.coquilleworkinglandscapes.com/>

- Phase 3 Hydraulic Analysis of China Camp Creek Restoration Project (NHC 2013)
- BSDD_Hydrology Discussion Summary Report – 2014
- BSDD_Fish Passage Exception Request
- District Water Management Plan (DWMP)
- USACE/DSL, November 2014, Joint Permit Application
- USFWS National Coastal Wetland Conservation Grant, June 2014, Application
- BSDD_C3P Culvert/Tide Gate 30% Design Plans
- Geotechnical Investigation Report (PBS 2013)
- WLRP 30% Design Presentation
- WLRP 60% Design presentation
- WLRP 90% Design presentation
- WLRP 90% Design Plans
- BSDD North Canal Culverts – Repair Plan – June 2, 2014
- North Canal Repair Project – Summary Report January 31, 2015

Figure 1.0 - Location Map

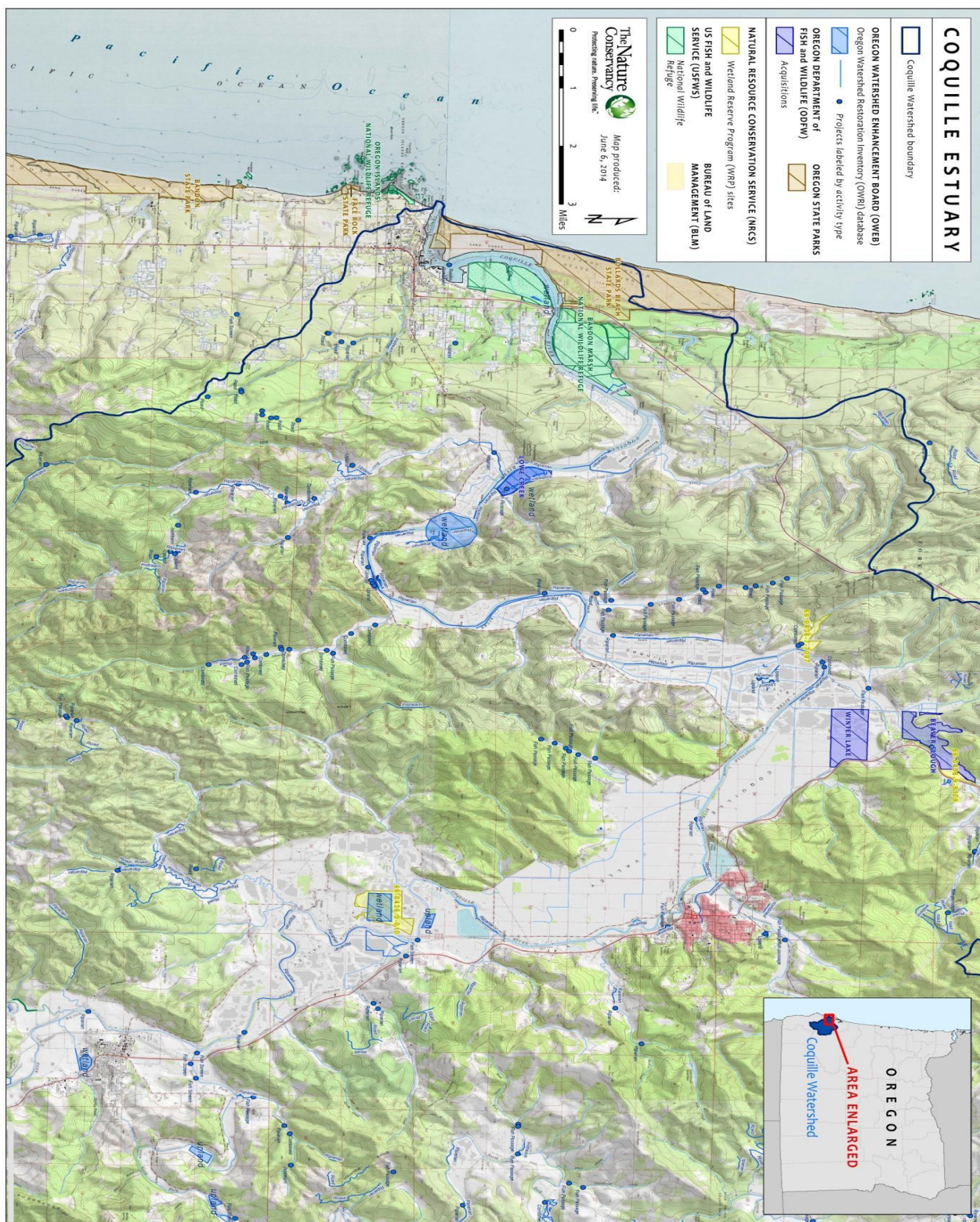
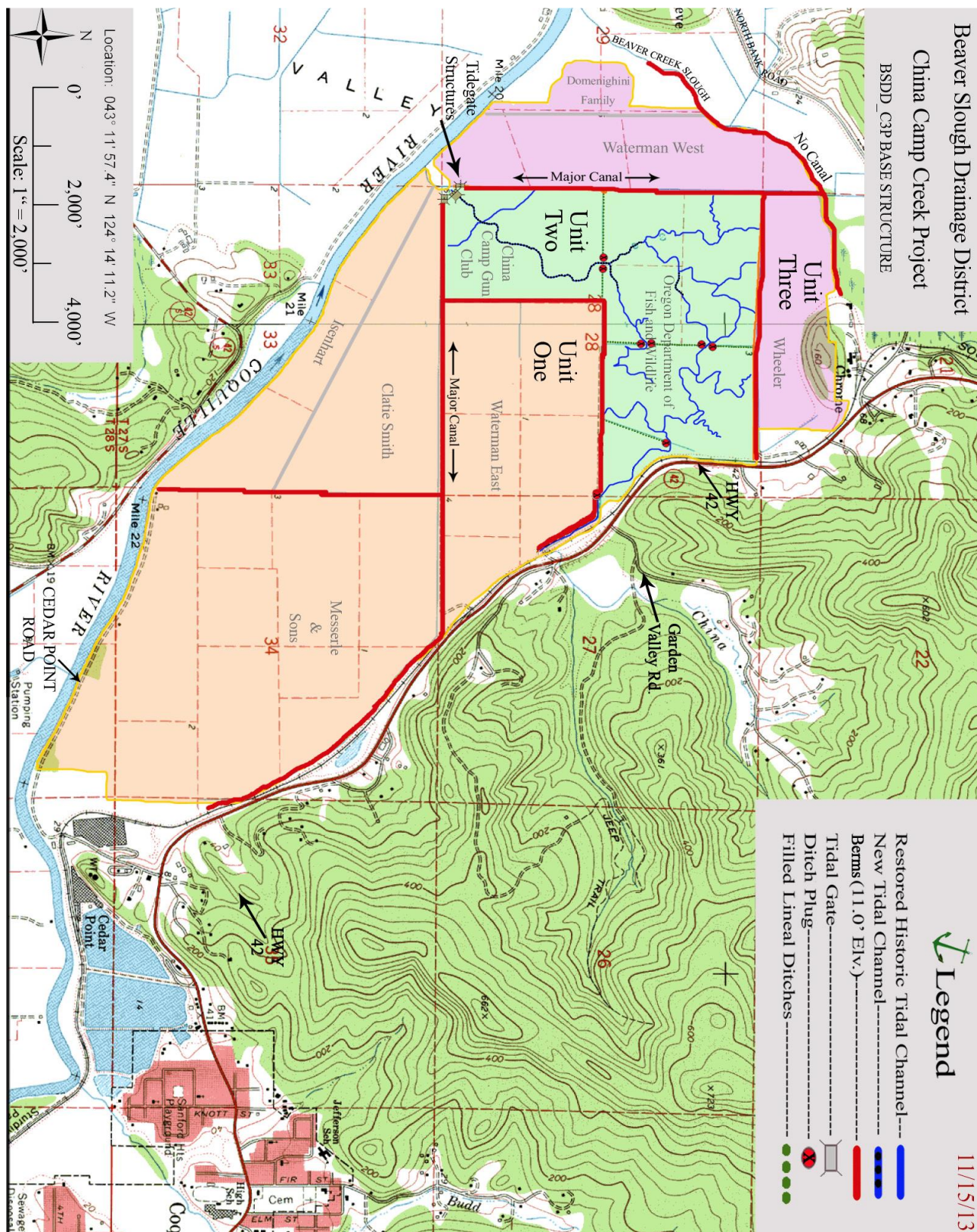


Figure 2.0 – BSDD Management Unit Map



CHINA CAMP CREEK RESTORATION PROJECT
SITE PLAN STRUCTURE

Unit 1 - A, B
Unit 2 - A, B, C, D
Unit 3 - A

Invert of New Middle Channel Structure, Elevation: -2.0

Invert of New Tide Gate Structure To East Canal, Canal Station 1+58.76, Invert Elevation: -2

Centerline of Rerouted East Channel Reroute Existing Canal to New Tide Gate Structure

Unit Two Access Road

Unit Two Access Road

16.00'

22.00'

49.50'

62.00'

64.75'

66.50'

68.75'

74.50'

76.75'

78.75'

80.75'

82.00'

84.00'

86.00'

88.00'

90.00'

92.00'

94.00'

96.00'

98.00'

100.00'

102.00'

104.00'

106.00'

108.00'

110.00'

112.00'

114.00'

116.00'

118.00'

120.00'

122.00'

124.00'

126.00'

128.00'

130.00'

132.00'

134.00'

136.00'

138.00'

140.00'

142.00'

144.00'

146.00'

148.00'

150.00'

152.00'

154.00'

156.00'

158.00'

160.00'

162.00'

164.00'

166.00'

168.00'

170.00'

172.00'

174.00'

176.00'

178.00'

180.00'

182.00'

184.00'

186.00'

188.00'

190.00'

192.00'

194.00'

196.00'

198.00'

200.00'

R20.00'

R40.00'

R60.00'

R80.00'

R100.00'

R120.00'

R140.00'

R160.00'

R180.00'

R200.00'