OREGON DEPARTMENT OF FISH AND WILDLIFE

Fish Passage EXEMPTION Application

- Use this form if a waiver has already been granted for the artificial obstruction for which an Exemption is being requested, fish passage mitigation has already been provided for the artificial obstruction, or if there would be no appreciable benefit for native migratory fish if passage were provided at the artificial obstruction.
- Use the "Fish Passage WAIVER Application" if providing fish passage at the artificial obstruction would benefit native migratory fish.
- If you unlock and re-lock this Form, information already entered may be lost in certain versions of MS Word.

APPLICANT INFORMATION
The Applicant must be the owner or operator of the artificial obstruction for which an Exemption is sought.

ORGANIZATION/APPLICANT: Josephine County
CONTACT: Chuck DeJanvier
ADDRESS: 201 River Heights Way
CITY: Grants Pass
PHONE: 541-474-5460
STATE: OR
ZIP: 97527
TITLE: County Engineer
E-MAIL ADDRESS: cdejanvier@co.josephine.or.us
SIGNATURE: [Signature] DATE: 6-25-2015

OWNER (if different than Applicant): NA
CONTACT: 
ADDRESS: 
CITY: 
PHONE: 
STATE: 
ZIP: 
TITLE: 
E-MAIL ADDRESS: 
SIGNATURE: [Signature] DATE: 

Signature indicates that you understand and do not dispute this request.

APPLICATION COMPLETED BY: Andy Burke
TITLE: Environmental Specialist
ORGANIZATION: OBEC Consulting Engineers
ADDRESS: 920 Country Club Rd. Suite 100B
CITY: Eugene
PHONE: 541-762-2116
STATE: OR
ZIP: 97401
TITLE: 
FAX: 541-683-6576
E-MAIL ADDRESS: aburke@obec.com
SIGNATURE: [Signature] DATE: 6-25-2015

To Be Completed by ODFW Fish Passage Coordinator

APPLICATION #: DATE RECEIVED:
FILE NAME:

APPROVED □ SIGNATURE: ___________________________ DATE: ___________________________
DENIED □ TITLE: ___________________________ DATE: ___________________________
**ARTIFICIAL OBSTRUCTION** (for which an Exemption is being requested)

1. **Type of Artificial Obstruction:**
   - [x] Dam
   - [ ] Culvert/Bridge
   - [ ] Tidegate
   - [ ] Other (describe): New
   - [x] Existing

2. **Please provide a background and description of the proposed action triggering the need to address fish passage:**

**Background**

The project proposes to replace the Lake Selmac Spillway (Lakeshore Drive) Bridge No. 33C25 in Josephine County, Oregon. This bridge is located at mile point 2.5 where Lakeshore Drive crosses the Lake Selmac (McMullin Creek) Dam spillway. The proposed project will trigger Oregon Fish Passage Law through the major replacement of over 50 percent of an existing bridge structure directly above an historic channel. The County proposes that construction of the bridge be granted an exemption to Oregon Fish Passage Law due to there being no appreciable benefit to providing fish passage.

Regulation of the dam is overseen by the Oregon Water Resources Department (OWRD). According to the OWRD, any reduction to the spillway’s hydraulic opening triggers the bridge design to pass the maximum possible flood event. This would greatly increase design and construction costs likely resulting in cancellation of the project. Therefore, this project proposes a minor increase in the width of the spillway opening solely for the purpose of facilitating construction. Coordination with OWRD has been initiated by the County in order to gain concurrence for the proposed bridge replacement design. Due to constraints on alterations to the spillway, providing fish passage as a component of this project is precluded. In addition, the project footprint only includes portions of the spillway beneath the existing bridge. The upstream segment of the spillway and dam gate lie outside of the project area and will not be reconstructed. Because the gate and the resulting hydraulics caused by its operation are a complete barrier to fish passage, no appreciable benefit exists to providing fish passage under the bridge.

Early coordination was initiated with ODFW to properly address Oregon Fish Passage Law. Based on email communication on March 25, 2015, with Dave Stewart, ODFW ODOT Liaison, and a subsequent phone conversation on April 7, 2015 with Dave Stewart and William Warncke, ODOT Fish Passage Program coordinator, it was determined that fish passage for this project would be addressed utilizing the exemption process.

**Existing Condition**

The existing bridge is a 35-foot-long single span bridge composed of six structural steel girders with a concrete deck. The bridge was originally constructed in 1961. The bridge is skewed at 45 degrees to the roadway and is approximately 31 feet wide. In June 2012, the bridge was load rated and it was determined that load limit posting is required. The spillway is experiencing scour which is undermining the downstream outlet, and the spillway channel walls upstream of the bridge are bulging. Currently, there are five steel struts between the channel walls to keep the walls from collapsing. There are diagonal cracks in the spillway walls that are actively leaking groundwater. According to the 2014 Bridge Inspection Report, the sufficiency rating of the bridge is 46.6. The overall structural condition of the bridge was rated 3 (serious condition).

**Proposed Structure**

The proposed bridge is a 48-foot-long single span bridge composed of ten 21-inch precast prestressed slabs. The typical section for the 40-foot-wide bridge consists of two 12-foot lanes, a 6-foot left shoulder, and a 7'-6" right shoulder. The superstructure will be founded on drilled and grouted HP 14 x 117 steel piling. The new bridge will be constructed with a 44 degree skew to fit the existing dam spillway. During the geotechnical exploration, it was determined that there are significant voids in the vicinity of the bridge.
and retaining walls. These voids will be drilled and backfilled with geofoam to better stabilize the area around the bridge and retaining walls.

The mainline alignment for this project has been moved approximately 6 feet to the east at the point where it crosses the spillway. This horizontal adjustment was necessary to allow for staged construction, and to accommodate the wider roadway section. Embankment slopes will be constructed with stone to accommodate roadway widening, and new retaining walls will be constructed on the downstream (east) side of the bridge to accommodate roadway fills. Acquisition of a 20- to 45-foot wide permanent easement on the property to the east approximately 340 feet in length will be required to accommodate a proposed water quality swale, roadway slope fill, a retaining wall, and restoration plantings. Several trees on the east side of the roadway will need to be removed due to the permanent widening and to improve sight distance and safety along the roadway.

Behind the existing spillway walls, new tied-back soldier pile walls will be constructed using "top-down" construction. The steel soldier piles will be drilled and grouted in place. The existing spillway walls will be removed in horizontal stages as the wall is constructed from the top to the bottom of the wall. As the existing walls are removed, temporary timber lagging will be placed between the flanges of the HP section soldier piles. After the walls have been removed to an approximate depth of 5 to 6 feet, tie-back anchors will be installed in between the bridge piling. After the excavation has been completed, a new cast-in-place concrete facing will be constructed.

The concrete spillway floor will also be extended approximately 15 feet to the east due to the widening of the bridge above. A vertical concrete cut-off wall and approach slope retaining walls will be constructed. Class 2000 riprap will be placed in the channel to prevent future scour. The riprap will be installed at a 1V:5H slope to provide grade control for water exiting the spillway. Proposed grade control will benefit channel hydraulics downstream of the riprap. In the present condition, water exiting the spillway cascades down a steep (approximately 1:1) riprap slope, causing water to enter the channel at very high velocities and channel incision downstream. The proposed riprap will act as an energy dissipater. This will reduce velocities and help reduce bank erosion and the input of fine sediments into the downstream reaches.

In-Water Work

In-water work will consist of construction of the lower portions of the spillway walls, reconstruction of the spillway floor, construction of the vertical concrete cut-off wall, and installation of riprap for scour protection of the spillway and adjacent retaining walls. In addition, in-water work will include temporary stream isolation and form work for construction of the retaining and cut-off walls.

Based on measurements of representative channel sections obtained in the field, the average active channel width for this section of McMullin Creek was determined to be 24.0 feet downstream of the spillway. All work below OHW will be conducted during the ODFW-recommended in-water work period (IWWP) of June 15 through September 15. Due to the complexity of construction, a portion of the spillway reconstruction will be performed during the 2016 IWWP. Based upon personal communication with County personnel responsible for operation of the dam gate, the spillway is typically dry during the period from May through October. Temporary water management will be provided to ensure the spillway can adequately convey water during the construction period.

3. Passage will Not be Provided for the Following Reason(s):

☐ Already Mitigated**
☐ Already Granted a Waiver**
☒ No Appreciable Benefit for Native Migratory Fish
**Attach supporting documentation, a description of mitigation, and past ODFW approvals. The description of mitigation should include information detailed in the "Fish Passage WAIVER Application".

4. **DATE THE TRIGGER ACTION IS SCHEDULED TO BEGIN** (a minimum of one month should be planned for the exemption process after ODFW receives your application; requests that require detailed ODFW review or must go before the Commission will take longer):

The anticipated bid date for this project is March 2016 with construction most likely beginning in May 2016. The duration of construction is unknown at this time but is anticipated to be two years.

5. **LOCATION**
   - COUNTY: Josephine
   - ROAD CROSSING (if applicable): Lakeshore Drive
   - RIVER/STREAM: McMullin Creek
   - TRIBUTARY OF: Deer Creek/Illinois River/Rogue River
   - BASIN: Illinois (17100311)
   - COORDINATES*: Longitude: 123.5780°W Latitude: 42.2648°N

*a Geographic projection using NAD_83 and formatted as decimal degrees to at least 4 places.

6. **STREAM DESCRIPTION**
   6A. **BARRIER TABLE** (please provide the following information for barriers, which will help determine the benefit of providing passage at the Artificial Obstruction; indicate measurement units if applicable):

<table>
<thead>
<tr>
<th>Locations</th>
<th>Type</th>
<th>Length</th>
<th>Distance</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>NA</td>
<td>NA</td>
<td>400 ft</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>NA</td>
<td>NA</td>
<td>135 ft</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>D</td>
<td>NA</td>
<td>NA</td>
<td>5</td>
</tr>
</tbody>
</table>

**example**: C

Type = C (culvert/bridge), D (dam), T (tide gate), N (natural; describe below), O (other; describe below)
Length = length of the barrier in the stream (e.g., culvert's length, dam's width/footprint)
Distance = distance from the Artificial Obstruction (to closest point of other barriers)
Level = amount of passage at the barrier using the following codes:
   5 - barrier to all native migratory fish
   4 - barrier to some native migratory fish adults and/or species
   3 - barrier to some native migratory fish adults and/or species for only part of migration period
   2 - barrier to all native migratory fish juveniles
   1 - barrier to some native migratory fish juveniles and/or for only part of migration period

**LOCATIONS**:
AO = the existing or proposed Artificial Obstruction
1,2 = other barriers in the same stream as the Artificial Obstruction
3 = downstream barrier outside the immediate stream in which the Artificial Obstruction is located (only needed if C/N is a confluence rather than a complete natural barrier)
E = end of historic native migratory fish use, including all tributaries (i.e., potential range without any artificial barriers in place)
C/N = first downstream confluence or complete natural barrier, whichever comes first

**NOTE**: The example indicates that there is culvert which is 80 feet long, is located 1,200 feet from the Artificial Obstruction in question, and is a complete fish passage barrier.
According to the *Atlas of Oregon Lakes* the Lake Selmac Dam was constructed in 1961. The 34-foot high earthfill dam impounds McMullin and Quedo Creeks. The dam is owned and operated by Josephine County, which regulates the lake water level via a manually-operated radial tainter gate located at the lake’s northeast end. Water released from the lake via the gate is channeled through a concrete-lined spillway, approximately 135 feet in length. The upper portion of the spillway lies at an approximate slope of 3H:1V. The lower portion of the spillway passing under the bridge is relatively flat, with a slope of approximately 0.5 percent. Water is released in the spillway once the lake level reaches a certain pre-determined level. The lake level is maintained in order to provide a sufficient water depth for safe boating without overtopping the emergency spillway (Personal communication with County Parks and Recreation staff, April 2015). Flows within the spillway are variable, driven largely by precipitation within the upstream watershed basin and the storage capacity of the lake. The gate is routinely opened during the winter months when precipitation is higher. Between the months of May and October the gate is typically closed to maintain the lake level and the spillway is dry (Personal communication, Josephine County Parks and Recreation Staff, April 2015).

Tainter gates are considered to be the most economical type of gate for spillways due to their simplicity of design. The radial shape provides efficient transfer of hydrostatic loads, and can be operated manually and quickly. When the gate is closed, no water flows within the spillway and fish passage is precluded. When the gate is open, passage is likewise not possible due to a velocity barrier within the spillway and a physical barrier posed by the gate itself.

Upstream of the project area, Lake Selmac impounds McMullin Creek which originates approximately 5.4 miles to the southeast within the Siskiyou National Forest. The lake is also fed by Quedo Creek, which originates approximately 2.3 miles to the southwest. These two streams were not investigated for this project. As such, the resident fish and habitat conditions upstream of the lake are unknown. Lake Selmac itself is a popular recreational destination in Josephine County. Primarily known for largemouth bass fishing, the lake also contains rainbow trout, bluegill, and crappie.

Downstream of the project area, Thompson Creek flows into McMullin Creek approximately 400 feet below the dam. McMullin Creek extends approximately 1.5 miles downstream to its confluence with Deer Creek. One culvert was identified in the 1999 ODFW culvert inventory within McMullin Creek downstream of the dam. The culvert is identified as a 35-foot by 48-foot reinforced concrete box culvert with a 48-inch drop between the culvert water elevation and the water elevation in the stream below. Based on its description and location, this culvert is presumed to be the spillway passing beneath Lakeshore Drive. According to the inventory, this culvert was assigned a poor rating for habitat quality and a low priority for repair. Presumably, the low priority for repair was based on its proximity to the dam and the lack of upstream habitat that would be provided by replacing it.

No additional culverts or barriers were identified in the inventory in McMullin Creek downstream of the dam. No culverts or priority barriers were identified within Deer Creek from the McMullin Creek confluence to its mouth at the Illinois River approximately 7.5 miles downstream of the dam. Likewise, no artificial barriers were identified within the Illinois River downstream of its confluence with Deer Creek or the Rogue River downstream of its confluence with the Illinois River.

6B. **Summary Table** (please provide the following information relative to the Artificial Obstruction, which will help determine the benefit of providing passage at it):

<table>
<thead>
<tr>
<th></th>
<th><strong>Downstream</strong></th>
<th><strong>Upstream</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>NMF Species Present Currently</td>
<td>Coastal cutthroat trout, coho salmon, winter steelhead, Pacific lamprey</td>
<td>Rainbow trout</td>
</tr>
<tr>
<td>NMF Species Present Historically</td>
<td>Coastal cutthroat trout, coho salmon, winter steelhead, Pacific lamprey</td>
<td>Coastal cutthroat trout, coho salmon, winter steelhead, Pacific lamprey</td>
</tr>
<tr>
<td>Habitat Quality</td>
<td>Poor</td>
<td>Unknown/Not evaluated</td>
</tr>
</tbody>
</table>
### Flows

<table>
<thead>
<tr>
<th>Flows</th>
<th>Intermittent</th>
<th>Unknown/Not evaluated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality</td>
<td>Category 4A, water quality limited for temperature with an approved TMDL</td>
<td>Category 4A, water quality limited for temperature with an approved TMDL. Category 5, water quality limited for aquatic algae in Lake Selmac.</td>
</tr>
<tr>
<td>Water Right Availability</td>
<td>Yes - limited</td>
<td>Yes - limited</td>
</tr>
<tr>
<td>Land Use/Zoning</td>
<td>Varies (Rural Residential, Forest Commercial and Woodlot Resource)</td>
<td>Varies (Rural Residential, Forest Commercial and Woodlot Resource)</td>
</tr>
</tbody>
</table>

NMF = native migratory fish

### PLEASE PROVIDE ADDITIONAL DETAILS REGARDING THE INFORMATION PROVIDED IN THE SUMMARY TABLE

**NMF Species Historically/Currently Present**

According to StreamNet Maps and GIS data, Deer Creek provides spawning and rearing habitat for Southern Oregon/Northern California Coast coho salmon (ESA-listed threatened species). Due to its proximity and the apparent lack of passage barriers downstream of the project area, it is assumed that McMullin Creek also supports coho. Several species of native migratory fish inhabit McMullin Creek, including winter steelhead, coastal cutthroat trout, and Pacific lamprey. McMullin Creek is designated Essential Salmonid Habitat by the Oregon Department of State Lands (DSL). In addition, the project area is designated as Essential Fish Habitat (EFH) and critical habitat for coho listed by the National Marine Fisheries Service (NMFS). It is presumed that prior to the construction of the dam in 1961, the native migratory species identified in Table 6B were historically present within upper McMullin Creek. Upstream of the dam is Lake Selmac, a popular fishing destination in Josephine County. Fish species known to occur in Lake Selmac include largemouth bass, rainbow trout, crappie, and bluegill.

**Habitat Quality**

**Downstream**: Habitat quality within McMullin Creek was only evaluated immediately downstream of the project area. During the March 2015 site visit by OBEC staff, the following observations were made with regard to habitat: Tree canopy (primarily red alder) provides good coverage of native species; however, canopy coverage was observed to be variable farther downstream. The shrub understory consists primarily of non-native Himalayan blackberry with a small percentage of native species. No large wood was observed in the stream channel, no secondary channels were observed, and channels banks are fairly incised. Few gravels were observed in the channel, and the pool to riffle ratio was high. Riprap placed to provide scour remediation at the spillway floor has washed approximately 100 feet downstream. The habitat quality was assigned a rating of poor during the 1999 ODFW Assessment of Road Culverts for Fish Passage Problems on State-and County-Owner Roads.

**Upstream**: Lake Selmac is immediately upstream of the obstruction. The habitat quality of McMullin Creek upstream of Lake Selmac was not evaluated as part of this analysis.

**Flows**

As described above, flows within the spillway and McMullin Creek are determined by the water surface elevation in the lake, which in turn is driven by the upstream hydrology. During the winter months the dam gate is frequently open allowing flows to enter the spillway. From the period between May and October the dam gate is typically closed to maintain the lake at an appropriate level for boating. The water level within McMullin Creek during these months is only fed by groundwater through the earthfill dam and therefore presumed to be low. The hydraulic study for this project has not yet been completed. Results of the study, including and evaluation of flows within McMullin Creek, will be made available as needed.

The lake remains nearly full most of the year. Flows within McMullin Creek upstream of Lake Selmac are unknown but presumed to be intermittent.
**Water Right Availability**

According to the *Water Quality Restoration Plan for the McMullin Creek Watershed*, there are no available water rights within the McMullin Creek Watershed (HUC 171003110503). According to the Oregon Water Resources Department there is water rights availability for HUC 171003110503 (identified as basin 71002 by the OWRD). However, water rights are available only for the month of February and for water storage within this basin.

6C. PROVIDE THE SOURCE FOR INFORMATION CONTAINED IN THE BARRIER AND SUMMARY TABLES:

**Sources for NMF Species Historically/Currently Present**

1. Email communication with Pete Samarin, Fisheries Biologist with the ODFW Rogue District, 4/13/2015.
2. StreamNet Maps and GIS data. Web accessed April 10, 2015. [http://psmfc.maps.arcgis.com/apps/webappviewer/index.html?id=3be91b0a32a9488a901c3885bbfc2b0b](http://psmfc.maps.arcgis.com/apps/webappviewer/index.html?id=3be91b0a32a9488a901c3885bbfc2b0b)

**Habitat Quality Sources**

3. OBEC field investigations, March 16 and May 15, 2015

**Water Quality Source**


**Flow Information Sources**

1. Site visit completed by OBEC in March, April, and May of 2015 during which time flows within the spillway were observed.
2. Personal communication, Josephine County Department of Parks and Recreation personnel responsible for operation of the dam gate. March 2015.

**Water Rights Availability Sources**


**Land Use/Zoning Source**

**Barrier Table Sources**

1. Dam measurements included in the Barrier Table were taken from project survey data.
2. Measurements to confluence points of downstream rivers and lengths of creeks upstream of the project area utilized Terrain Navigator Pro (Version 8.51).
3. OBEC Consulting Engineers performed a visual survey of the project area as well as areas immediately upstream and downstream of the project area on March 16, 2015.
4. Information on potential barriers was taken from the ODFW Statewide Culvert Inventory and the ODFW Statewide Fish Passage Priority List. Web accessed May 20, 2015.
   http://www.dfw.state.or.us/fish/passage/inventories.asp
   http://www.dfw.state.or.us/fish/passage/docs/summary.pdf

**MAP(S)**

- Please attach one or more maps indicating the Artificial Obstruction, the stream on which it is located, and other barriers in the stream. A 7.5 minute USGS quad map is sufficient.

  □ -- Map(s) included

**PHOTOS**

- Please include photographs of the following (JPG files are preferred):

  □ -- Artificial Obstruction
  □ -- up- and downstream habitat at the Artificial Obstruction
  □ -- other barriers up- and downstream of the Artificial Obstruction - NA

Please submit this application electronically to the ODFW Fish Passage Coordinator at greg.d.apke@state.or.us and send one signed original paper copy of the application to the ODFW Fish Passage Coordinator at 3406 Cherry Avenue NE, Salem, OR 97303.
PRELIMINARY BENEFIT ANALYSIS

1. The information contained in this application is accurate:

   True [ ] False [ ]

2. State or federal ESA-listed fish species can NOT currently access the site:

   True [ ] False [ ]

3. One or more of the following situations exist for the site (check those that apply):
   a. a complete downstream barrier (artificial or natural) prevents access to the site and
      there are no resident native migratory fish which currently have access to the site:
      True [ ] False [ ]
   b. a complete downstream barrier (artificial or natural) prevents access to the site and
      is within 100 feet of the site:
      True [ ] False [ ]
   c. total distance of habitat (including tributaries) upstream of the site to another
      complete barrier (artificial or natural) or up to the end of historic fish use is less
      than 100 feet in length:
      True [ ] False [ ]
   d. all habitat upstream of the site will not be utilized by any native migratory fish
      because of its poor or degraded condition:
      True [ ] False [ ]

4. The artificial obstruction (absent passage) will NOT preclude access to any "Habitat
   Category I" (as defined in OAR 635-415-0025(1)) habitat for native migratory fish:

   True [ ] False [ ]

5. Based on distances with which you concur in 6A. BARRIER TABLE, one of the
   following is true:
   a. the distance "E" is less than 1 mile from the artificial obstruction, or
      True [ ] False [ ]
   b. if "C/N" is a complete natural barrier, the distance to it is less than 1 mile from the
      artificial obstruction
      True [ ] False [ ]

- If all answers are "True", this suffices as the Final Benefit Analysis when filled in below.
- If any answers are "False" or you wish to provide further information, please provide a full Benefit
  Analysis and do not fill in below.
- Electronically return this form and a full Benefit Analysis, if needed, to the Fish Passage Coordinator
  when completed.

By filling in the following information, I determine that under the current conditions there is "no
appreciable benefit" for native migratory fish by providing passage at this Artificial Obstruction.

NAME: __________________________
TITLE: __________________________
ODFW OFFICE: ____________________
DATE: __________________________
FISH PASSAGE EXEMPTION
ATTACHMENT 1

Project Overview Maps
FISH PASSAGE EXEMPTION
ATTACHMENT 2

Photographic Record
Photo 1: Looking west at the tainter gate and spillway inlet from lake level.

Photo 2: Close-up of the tainter gate at the spillway inlet.
Photo 3: Looking at the spillway from the dam gate.

Photo 4: Looking at the spillway from the downstream outlet.
Photo 5: Looking downstream at McMullin Creek from the spillway outlet.

Photo 6: Looking upstream at channel conditions downstream of the spillway.
Photo 7: Looking at low-flow channel conditions downstream of the spillway.

Photo 8: Looking north at channel conditions downstream of the spillway.
FISH PASSAGE EXEMPTION
ATTACHMENT 3

Project Figures
1. Remove ext. structure
2. Structure no. 33C25
   Canal structure - 48' (Roadway width - 37.50')
3. Remove existing fence - 450'
4. Remove trees
5. Canal, P.C. conc. drainage curb
   Canal, guardrail - 12.5' (Type 3)
   Canal, guardrail transition
   Canal, guardrail terminal, non-flared
   Flared rate, W=0.5, E=0, L=25', TL=2
   Canal, guardrail - 12.5' (Type 3)
   Canal, guardrail transition
   Canal, guardrail terminal, non-flared
   Flared rate, W=0.5, E=0, L=25', TL=2
   Canal, guardrail - 12.5' (Type 3)
   Canal, guardrail - 112.5' (Type 2A)
   Canal, guardrail transition
   Canal, guardrail terminal, non-flared
   Flared rate, W=0.5, E=0, L=25', TL=2
   Canal, guardrail - 12.5' (Type 3)
   Canal, guardrail transition
   Canal, guardrail terminal, non-flared
   Flared rate, W=0.5, E=0, L=25', TL=2
10. Sta. "L" 21+17, 17.5' Rt. to Sta. "L" 22+03, 15.8' Rt.
    Canal, water quality Swale A
    Canal, water quality Swale B
Lake Selmac Spillway Retaining Wall 2 Plan and Elevation

Developed Elevation

Scale: 1"=10'

Plan

Vertical Datum, NAVD88.

Note: Elevations shown are based on the North American Vertical Datum, NAVD88.

Note: Elevation numbers are approximate.

Class 200 riprap

Figure 8

Location Map

No Scale

Oregon Department of Transportation

LAKE SELMAC SPILLWAY RETAINING WALL 2
LAKESHORE DR; LAKE SELMAC SPILLWAY BR REPLACEMENT
LAKESHORE DRIVE
JOSEPHINE COUNTY

REVIEWING ENGINEER

 tienes, P.E.

Prepared by:

Peter R. Pagter, P.E., S.E.

Drawn by:

Jeff Bernardo, P.E.

CHECKER:

Rodney Schultz

REVIEWER:

Xiqin Long, P.E.

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PLRS 0575

O 5/13/2015