Biological Assessment Letter of Submittal to National Marine Fisheries Service

U.S. Department of Transportation
Federal Highway Administration

Oregon Division

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April 14, 2010

In Reply Refer To:
HPL.2-OR

Mr. Kim Kratz
Oregon State Habitat Director
National Marine Fisheries Services
1201 NE Lloyd Boulevard, Suite 1100
Portland, Oregon 97232

RE: Sunrise Project, I-205 to Rock Creek Junction (OR 212/224)
Biological Assessment Submittal
ODOT Key # 12454; Federal-Aid # C005(046)

Dear Mr. Kratz:

Enclosed is a Biological Assessment (BA) to address the potential affects of the Sunrise Project, I-205 to Rock Creek Junction (OR 212/224) for compliance with Section 7 of the Endangered Species Act (ESA). The BA was prepared by a consultant and reviewed by the Oregon Department of Transportation (ODOT). The project is being funded by the Federal Highway Administration (FHWA), thus constituting the Federal nexus for this project. ODOT, on behalf of FHWA, is responsible for project management and the administration of funds for the project. FHWA requests formal consultation for the project.

This BA presents a **may affect, likely to adversely affect** determination for the Lower Columbia River Steelhead trout, Chinook salmon and Coho salmon and also addresses Essential Fish Habitat as required under the Magnuson-Stevens Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267). This action **will not result in the destruction or adverse modification** of designated critical habitat for Lower Columbia River Steelhead trout or Chinook salmon. The conservation measures described in the submitted BA are adequate to prevent long-term adverse effects on Essential Fish Habitat for Coho and Chinook salmon.

We kindly request that you reference Federal-Aid # C005(046) on correspondence related to this project. Pre-consultation on this project began with Tom Loynes in November 2009, while additional consultation occurred with Devin Simmons in September 2008. We appreciate you processing the biological opinion and EFH concurrence or recommendations no later than 135

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days from receipt of this letter and accompanying BA. **If NMFS is not able to meet this timeline, please notify FHWA and ODOT as soon as possible, with an estimated date for delivery of the biological opinion.** If you have any questions, please contact Jeff Buckland, ODOT Region 1 Environmental Project Manager at 503-731-4804.

Sincerely,

Michelle Eraut

Michelle Eraut
Environmental Program Manager

Enclosure: Biological Assessment

cc, w/o encl:
NMFS (Tom Loynes, ODOT Liaison)
ODOT (Jeffrey Buckland, Region 1 Environmental Project Manager)
(Thomas Picco, Project Manager)

ME/rm

National Marine Fisheries Service Biological Opinion

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to NMFS No:
2010/01606

December 15, 2010

Phillip Ditzler
FHWA Division Administrator
Federal Highway Administration, Oregon Division
530 Center Street NE
Salem, Oregon 97301

Re: Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Conservation Recommendations for the Sunrise Project: I-205 to Rock Creek Junction (OR 212/224), Johnson Creek 5th field (HUC 6th field HUC: 170900120103-Kellogg Creek) and the Lower Clackamas River 5th field (HUC 6th field HUC 170900110607-Clackamas River-Rock Creek), Clackamas County, Oregon (Federal ID # C005(046)) (Key Number #12454)

Dear Mr. Ditzler:

The enclosed document contains a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7(a)(2) of the Endangered Species Act (ESA) on the effects of Federal Highway Administration's (FHWA) proposed funding for the construction of the Sunrise Project: I-205 to Rock Creek Junction (OR 212/224) under the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU) Highway Bridge Program, sections 1101(a)(3) and 1114.

In this Opinion, NMFS concludes that the proposed action is not likely to jeopardize the continued existence of LCR Chinook salmon (*Oncorhynchus tshawytscha*), Lower Columbia River (LCR) coho salmon, (*O. kisutch*), and LCR steelhead (*O. mykiss*) or result in the destruction or adverse modification of designated critical habitat for these species, except for LCR coho salmon; critical habitat for LCR coho salmon has not yet been proposed or designated.

NMFS also concludes that the proposed action is not likely to adversely affect UWR Chinook salmon or UWR steelhead or their designated critical habitat.

As required by section 7 of the ESA, NMFS is providing an incidental take statement with the Opinion. The incidental take statement describes reasonable and prudent measures NMFS considers necessary or appropriate to minimize the impact of incidental take associated with this action. The take statement sets forth nondiscretionary terms and conditions, including reporting requirements, that the FHWA must comply with to carry out the reasonable and prudent measures. Incidental take from actions that meet these terms and conditions will be exempt from the ESA's prohibition against the take of listed species.

This document also includes the results of our analysis of the action's likely effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes two conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. These conservation recommendations are a subset of the ESA take statement's terms and conditions. Section 305(b)(4)(B) of the MSA requires Federal agencies to provide a detailed written response to NMFS within 30 days after receiving these recommendations. If the response is inconsistent with the EFH conservation recommendations, the FHWA must explain why the recommendations will not be followed, including the scientific justification for any disagreements over the effects of the action and the recommendations.

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we request that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

If you have questions regarding this consultation, please contact Tom Loynes in the Oregon State Habitat Office at 541.957.3380.

Sincerely,

for William W. Stelle, Jr.
Regional Administrator

cc: Frannie Brindle, ODOT
Ken Cannon, ODOT
Becky Crockett, ODOT
Michelle Eraut, FHWA

Endangered Species Act Biological Opinion

and

Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Conservation Recommendations

Sunrise Project: I-205 to Rock Creek Junction (OR 212/224)
Johnson Creek 5th field (HUC 6th field HUC: 170900120103-Kellogg Creek) and the Lower Clackamas River 5th field (HUC 6th field HUC 170900110607-Clackamas River-Rock Creek)
Clackamas County, Oregon
(Federal ID # C005(046)) (Key Number #12454)

Lead Action Agency:	Federal Highway Administration
Consultation Conducted By:	National Marine Fisheries Service Northwest Region
Date Issued:	December 15, 2010
Issued by:	for Michael Tehan William W. Stelle, Jr. Regional Administrator
NMFS No.:	**2010/01606**

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INTRODUCTION

This document contains a biological opinion (Opinion) that was prepared by the National Marine Fisheries Service (NMFS) in accordance with section 7(b) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq*.), and implementing regulations at 50 CFR 402.[1] It also contains essential fish habitat (EFH) conservation recommendations prepared by NMFS in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801, *et seq*.) and implementing regulations at 50 CFR 600. The Opinion and EFH conservation recommendations are both in compliance with section 515 of the Treasury and General Government Appropriations Act of 2001 (Data Quality Act) (44 U.S.C. 3504 (d)(1) and 3516), and underwent pre-dissemination review. The administrative record for this consultation is on file in the Oregon State Habitat Office in Portland, Oregon.

Background and Consultation History

On April 15, 2010, NMFS received a biological assessment (BA) and a request from the Federal Highway Administration (FHWA) for an ESA section 7 formal consultation on its proposed funding of the construction of the Sunrise Project: I-205 to Rock Creek Junction (OR 212/224). This Opinion is based on the information presented in the BA, site visits, project meetings, and discussions with Mr. Jeff Buckland, an Environmental Project Manager for the Oregon Department of Transportation (ODOT). The action area involves a section of the lower Clackamas River in the Clackamas River basin, near Clackamas, Oregon.

The FHWA determined that Lower Columbia River (LCR) coho salmon (*Oncorhynchus kisutch*), LCR Chinook salmon (*O. tshawytscha*), Upper Willamette River (UWR) Chinook salmon, LCR steelhead (*O. mykiss*) and UWR steelhead occur within the project area. The FHWA, using methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996), determined that the proposed action is likely to adversely affect LCR coho salmon, LCR steelhead, LCR Chinook salmon, and is not likely to adversely affect (NLAA) UWR Chinook salmon, and UWR steelhead. This Opinion is based on the information presented in the BA and developed through correspondence to obtain additional information and clarity.

UWR Chinook salmon will not be present within the action area during construction. The construction period for the proposed action is July through September, and UWR Chinook salmon are present in the lower Clackamas River tributaries outside of that time period. Therefore, exposure to turbidity plumes and fish salvage would not occur. The NMFS expects the effects of construction-related activities to be insignificant to the PCEs of UWR Chinook salmon critical habitat, because suspended sediments and the associated turbidity plumes will be localized, temporary in nature, and further reduced by the proposed conservation measures. Therefore, NMFS has determined that the proposed action is NLAA UWR Chinook salmon and they are not considered further in this Opinion.

[1] With respect to designated critical habitat, the following analysis relied only on the statutory provisions of the ESA, and not on the regulatory definition of "destruction or adverse modification" at 50 CFR 402.02.

UWR steelhead will not be present within the action area during construction. The construction period for the proposed action is July through September, and UWR steelhead migrate up the Willamette River past the construction project and would only be subject to sub-lethal effects from the additions of dissolved copper resulting from the stormwater, however, these effects will be reduced from pre-project conditions due to treatment of the contributing impervious area (CIA) and treatment to a higher design standard that NMFS currently requires. The NMFS expects the effects of construction-related activities to be insignificant to the PCEs of UWR steelhead critical habitat, because suspended sediments and the associated turbidity plumes will be localized, temporary in nature, and further reduced by the proposed conservation measures. Therefore, NMFS has determined that the proposed action is NLAA UWR steelhead and they are not considered further in this Opinion.

Description of the Proposed Action

Project Overview. Because of its complexity and scale, the project description is organized by "subareas" centered on the three interchanges (I-205, midpoint, and Rock Creek junction). The three subareas cover the following geographic areas: The I-205 Interchange area extends from the west end of the project area eastward to Camp Withycombe. The Midpoint area extends from Camp Withycombe to SE 152nd Avenue. The Rock Creek Junction area stretches from SE 152nd Avenue to SE 172nd Avenue.

In the I-205 Interchange Area, the proposed project includes improvements to two I-205 interchanges, widening of I-205 between the two interchanges at OR 224 and OR 212, and new and modified access to residential and business developments in the area. This section also includes:

- A new north Lawnfield industrial area connection between Sunnyside Road and Industrial Way.
- New access to/from SE 82nd Drive and the Lawnfield industrial area via an overcrossing of Union Pacific Railroad (UPRR) tracks to Tolbert Road.
- A connection between the existing north and south sections of the I-205 multi-use path and addition of a third westbound lane on OR 212/224 from I-205 to 98th Court, as well as a closure of Lake Road with a cul-de-sac at Johnson Road.
- The Sunrise Project western transition to the Milwaukie Expressway will be widened to three westbound lanes within the existing right-of-way for OR 224 and will be extended to the west through Webster Road.
- A dedicated westbound right-turn lane at 82nd Drive and OR 212/224.
  82nd Drive and its intersection with OR 212/224 will be expanded to improve overall mobility by:
  - Restricting all left-turns at this intersection and adding a raised median both north and south of the existing intersection.
  - Widening 82nd Drive and creating a new signalized intersection at 82nd Drive and Clackamas Road.
  - Widening and reconfiguring the existing signalized intersection at 82nd Drive and the northern Fred Meyer access point.

In the Midpoint Area, the project includes an interchange to connect the proposed Sunrise Highway to the existing OR 212/224. The interchange is a "tight diamond interchange" at 122nd Avenue with a connection to OR 212/224 at 122nd Avenue. The project corridor continues on a southern alignment between the Midpoint and Rock Creek interchanges. In addition to these features, a multi-use path between I-205 and the Midpoint Area will be extended along OR 212/224 to the Rock Creek interchange.

In the Rock Creek Junction Area, the project includes a Single Point Urban Interchange (SPUI) and the following features:

- The eastern leg of the SE Goosehollow Drive / OR 224 intersection would be closed.
- Existing OR 212 will become a cul-de-sac just east of SE 162nd Avenue. (SE 162nd connected to OR 212 on north side.)
- The Sunrise Project eastern transition reconnects with OR 212 east of the SE 172nd Intersection with OR 212.
- The Sunrise Project southern transition reconnects with OR 224 at SE Eckert Lane.
- A right-out-only access at the end of SE Orchard View Lane to northbound OR 224 will be created.
- A connection between SE 162nd Avenue and SE Goosehollow Drive south of OR 212 will be created at the NE corner of the Orchard Lake neighborhood.

Stream Crossings. The proposed project will require construction of 36 stream crossings comprised of four existing culvert crossing replacements, one existing bridge replacement, 18 new bridges, and 13 new culvert crossings. Their descriptions are summarized in Table 1. Three of the four culverts will affect habitat occupied by ESA-listed fish in Phillips Creek downstream from 82nd Avenue, and SE Goosehollow Drive and an adjoining access road on Trillium Creek. None of the structures occur in ESA-designated critical habitat. All permanent stream crossings will meet the fluvial design criteria described in NMFS 2008 by spanning the functional floodplain (FFP). The structures will span 1.5 (single span) or 2.2 (multi-span) times the active channel width. As described further below, the proposed project will also add 2.1 acres of fill above the ordinary high water mark for an approach for the bridge located near the confluence of Mount Scott Creek and Dean Creek.

New stream crossings, corresponding approach fills, and overpasses will remove approximately 3.4 acres of riparian forest- 87 mature (over 12-inch diameter) native trees and 105 immature (sapling to 12-inch diameter) native trees. To offset this removal the action will plant new trees along streams in the action area at a ratio of 2:1 for the number of trees and at a ratio of 1.5:1 for trees cleared.

Stream crossings will be designed to serve the project purpose while complying with Oregon State Fish Passage Act regulations. Stream crossing designs will comply with the NMFS fluvial criteria including spanning 1.5 times the active channel width for fully spanning crossings.

Table 1. Proposed stream crossings and riparian impacts. Bolded crossings denote in-water work. Items in bold (three culverts) indicate the only areas that have in-water work and fish salvage.

I-205 INTERCHANGE AREA				
Mount Scott Creek				
Location	Type	New or Existing	ESA Fish Species presence*	Riparian impact
EB Sunnyside to SB I-205	Bridge	New	LCR coho salmon and LCR steelhead trout. Project reach is designated critical habitat for LCR steelhead.	"Flyover" with no riparian impact.
SB I-205 to EB Sunrise	Bridge	New		"Flyover" with no riparian impact.
Ambler Road extension	Bridge	New		Removal of up to 5 mature** and 15 immature riparian black cottonwood
SE 82nd	Bridge	Existing		Removal of up to 10 mature and 20 immature riparian black cottonwood
SB SE 82nd to EB Sunrise	Bridge	New		"Flyover" with no riparian impact.
Bike Path over Dean and Mt Scott Creeks	Bridge and riparian path		LCR coho salmon and LCR steelhead trout. Project reach is designated critical habitat for LCR steelhead	Removal of up to 12 mature and 20 immature riparian black cottonwood and up to 5 mature riparian Oregon white oaks. Displace about 0.3 acre of riparian habitat on south bank of Mt Scott Creek.
Phillips Creek (drains to Mount Scott)				
Location	Type	New / Existing	ESA Fish Species presence*	
SB SE 82nd to EB Sunrise	Off-ramp to Bridge	New	Mapped winter LCR steelhead use. Project reach is designated critical habitat for LCR steelhead.	Displaces about 1 acre of riparian forest including about 20 mature and 20 immature bigleaf maple, and up to 5 mature Douglas fir
Dean Creek and tributary ditches (drains to Mount Scott)				
Location	Type	New / Existing	ESA Fish Species presence*	
SB SE 82nd to EB Sunrise	Bridge	New*	Not known to occur, habitat access is degraded by numerous piped and culvert sections.	
Ambler Road extension	Bridge/Culvert	New*		
SB I-205 to EB Sunrise	Bridge	New		
SB I-205 to EB Sunrise (tributary)	Bridge	New		
SB I-205 to OR 212	Bridge	New		
EB 212 to NB I-205	Bridge	New		
WB Sunrise to NB I-205	Bridge	New		
WB Sunrise to NB I-205 (tributary)	Bridge	New		
Bike Path	Bridge	New*		
Lawnfield (tributary)	Culvert	Existing		
Three crossings east of superfund site (three tributaries)	Culvert	New		
Tolbert Road to Industrial Way (tributary)	Culvert	New		
Widen existing OR 212 (tributary)	Culvert	Existing		

MID-POINT AREA				
Cow Creek (drains to Clackamas River)				
Location	Type	New / Existing	ESA Fish Species presence*	
Sunrise	Culvert	New	Does not support any fish in project reach.	
SE 122nd	Culvert	New		
Bike Path	Culvert	New		
Sieben Creek (drains to Clackamas River)				
Location	Type	New / Existing	ESA Fish Species presence*	
Sunrise	Culvert	New	None on site; multiple migration barriers downstream.	
Bike Path	Culvert	New		
Graham Creek (drains to Rock Creek)				
Location	Type	New / Existing	ESA Fish Species presence*	
Sunrise	Culvert	New	None on site; impassable culvert under OR 212/224	
Bike Path	Culvert	New		
Frontage Road	Culvert	New		
ROCK CREEK AREA				
Rock Creek (drains to Clackamas River)				
Location	Type	New / Existing	ESA Fish Species presence*	
Sunrise	Bridge	New	LCR steelhead, LCR Chinook and LCR coho salmon. Project reach is designated critical habitat for LCR steelhead and LCR Chinook.	Removal of up to 30 mature and 30 immature riparian bigleaf maple, Douglas fir, red cedar, and black cottonwood trees for bridge clearance
Ramp 1	Bridge	New		
Ramp 2	Bridge	New		
Bike Path	Bridge	New		
Trillium Creek and tributary (drains to Rock Creek)				
Location	Type	New / Existing	ESA Fish Species presence*	
OR 224	Bridge	New	LCR coho, LCR Chinook and LCR steelhead below OR 212. Waterfall at mouth creates partial barrier, and OR 212 culvert is likely a full barrier. Not designated as critical habitat for any species.	Displaces about 1.4 acre of immature riparian forest
Goosehollow Drive	Culvert	Existing		Displaces about 1 acre of riparian forest and 0.03 acres of stream habitat.
Access road west of Goosehollow Drive	Culvert	New		
NB OR 224 to EB Sunrise (tributary)	Culvert	New		

*Three crossings may involve work within the 2-year flood elevation, although not within the stream banks.

The ODFW in-water work window for the action-area Clackamas tributaries (Rock, Trillium, Cow, Sieben, and Graham creeks) is July 15 to August 31. The window for Kellogg Creek and its tributaries (Dean, Phillips, and Mount Scott creeks) is July 15 to September 30.

Floodplain Storage and Enhancement. Widening the existing SE 82'nd Ave (HWY 213) and constructing the new Ambler Road crossings over Mt. Scott Creek will place 2.1 acres of fill in the 100-year floodplain- creating a net rise. To maintain the baseline and to meet Clackamas County standards, private property will be acquired and 2.1 acres of artificial fill, a gravel parking lot, will be removed (Figure 1). It will be excavated to native soils, restoring access to the pre-development 100-year floodplain. BMPs will be implemented to stabilize the site and restore it to a riparian forest. BMPs will include but are not limited to silt curtains, seeding, and a planting plan using native trees and shrubs.

Figure 1. Floodplain Improvement Site (Clackamas County Required Mitigation)

Stormwater. Table 2 summarizes the project's effect on impervious surfaces within the project area by basin. The project will provide for collection and treatment of all CIA. CIA includes the following three elements:

1. All new impervious surface created for the project;
2. All existing impervious surface within the project area; and
3. All untreated water that flows onto action area impervious surfaces from impervious surfaces outside of the action area.

The project includes a total of 263 acres of CIA that includes the following:

1. A net increase of 114 acres new impervious surface (136 acres new impervious surface less 22 acres impervious removal).
2. Existing impervious surface within the action area of 135 acres.
3. An off-site contributing area of 14 acres, scattered in several locations (Appendix B, Figure 2).

Appendix A identifies the stormwater analysis areas, which are essentially the post-development subbasins from which water will be collected (Table 2). Appendix A also identifies the impervious area, treatment facilities, and discharge locations for each area.

The project proposes to treat runoff from all but 16 acres of impervious surface within the project area. The 16 acres to remain untreated are composed of small segments scattered throughout the project area (Appendix A). Seven acres of this untreatable impervious area lies in the Kellogg Creek sub-basin (Willamette watershed) and nine acres lie in the Cow Creek sub-basin (Clackamas watershed). The project will compensate for untreated impervious surface within the CIA by treating stormwater runoff from an equal area with higher traffic and pollutant load outside of the CIA on Highway 205.

Table 2. Impervious surface changes in acres within project area by drainage basin

Basin	Sub-basin	Pre-Existing Project-area Impervious	Proposed New Impervious	Off-site Contributing Area	Proposed Impervious Removal	Total Contributing Impervious Area (CIA)
Kellogg	Dean	50	43.0	1.6	10.4	84.2
	Phillips	3.8	2.0	0.0	0.0	5.8
	Mount Scott	13.9	8.7	8.9	1.6	29.9
	Kellogg	26.1	4.1	0.0	0.0	30.2
Clackamas	Cow	10.4	1.5	0.0	0.0	11.9
	Sieben	0.0	0.0	0.0	0.0	0.0
	Rock Graham/Trillium	9.2	30.7	3.6	1.2	42.3
	Clackamas	21.3	45.8	0.0	8.3	58.8
Totals		**134.7**	**135.8**	**14.1**	**21.5**	**263.1**

*(Pre-existing impervious + new impervious + off-site contributing area) - proposed impervious removal = CIA

Project stormwater treatment was designed using Clackamas County Water Environment Services (WES) standards which in this case were more conservative than ODOT or NMFS design standards as summarized below:

1. WES requires treatment of 2/3 of the 2-year storm for water quality, and reduction of the 25-year post developed runoff rate to the 2-year pre development rate.
2. ODOT requires treatment of 1/2 of the 2-year storm for water quality, and detention of 42% of the 2-year storm through the 10-year storm for water quantity.
3. NMFS recommends treatment of 50% of the cumulative rainfall from the 2-year, 24-hour storm, and detention sufficient to ensure that no increase in sediment transporting flows occurs between the bankfull event or the 10-year flow event, whichever is less.

The project stormwater design will meet the standards of all three agencies. It includes a series of stormwater treatment and detention ponds, and employs low impact development (LID) measures including bioretention, bioslopes, infiltration ponds, and amended soils (Appendix C). The ODOT BMP Selection Tool has been followed in the project stormwater treatment design in order to effectively remove pollutants including polycyclic aromatic hydrocarbons and dissolved metals including copper (ODOT 2009). The project stormwater design is shown and described in Appendix B. Typical details for the project stormwater facilities are attached as Appendix C.

Action Area

Action area means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For this consultation, the action area is within the Johnson Creek 5th field (HUC 6th field HUC: 170900120103-Kellogg Creek) and the Lower Clackamas River 5th field (HUC 6th field HUC 170900110607-Clackamas River-Rock Creek). The action area generally extends from Interstate 205 (I-205) eastward to the Rock Creek Junction where OR 212 and 224 diverge to the east and south (Figure 3).

The action area is used by adult and juvenile LCR Chinook salmon, LCR steelhead, UWR Chinook salmon, UWR steelhead (migration and rearing only), and LCR coho salmon for spawning, rearing and migration. LCR Chinook salmon, LCR steelhead, and LCR coho salmon were listed under the ESA, protective regulations were issued and critical habitat was designated (except LCR coho salmon) on September 2, 2005 (70 FR 52630). EFH is likely to be adversely affected by components of the project (Table 3).

Table 3. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation. Listing status: 'T' means listed as threatened under the ESA; 'E' means listed as endangered; "P" means proposed.

Species		Listing Status	Critical Habitat	Protective Regulations
Marine and Anadromous Fish				
Chinook salmon (*Oncorhynchus tshawytscha*)				
	Lower Columbia River	T 6/28/05; 70 FR 37160	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160
	Upper Willamette River	T 6/28/05; 70 FR 37160	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160
Coho salmon (*O. kisutch*)				
	Lower Columbia River	T 6/28/05; 70 FR 37160	Not applicable	6/28/05; 70 FR 37160
Steelhead (*O. mykiss*)				
	Lower Columbia River	T 1/05/06; 71 FR 834	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160
	Upper Willamette River	T 1/05/06; 71 FR 834	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160

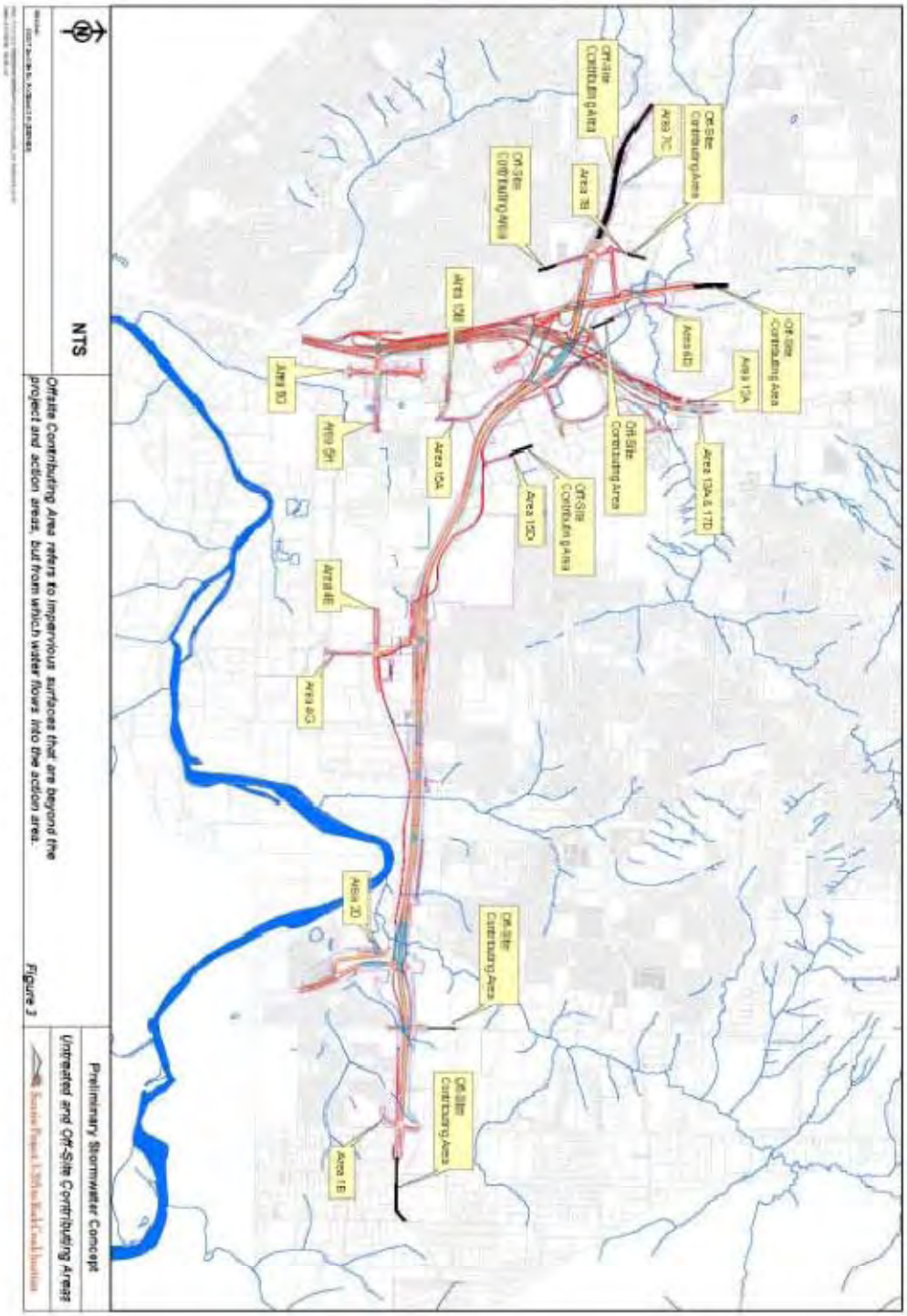

Figure 2. Diagram showing stormwater areas for the Sunrise Corridor Project, identifying off-site CIAs.

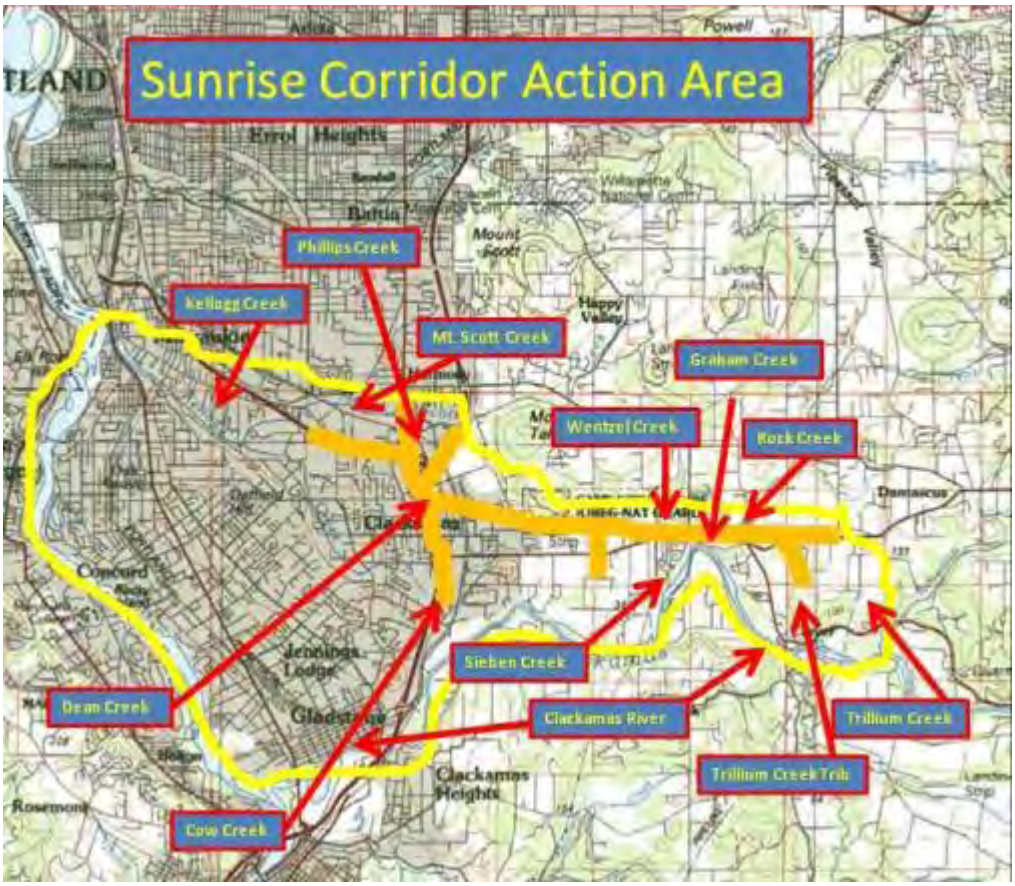

Figure 3. Sunrise Corridor Action Area

ENDANGERED SPECIES ACT BIOLOGICAL OPINION

Section 7(a)(2) of the ESA requires Federal agencies to consult with NMFS to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. The Opinion that follows records the results of the interagency consultation for this proposed action. The ITS provided after the Opinion specifies (1) the impact of any taking of threatened or endangered species that will be incidental to the proposed action; (2) reasonable and prudent measures that NMFS considers necessary and appropriate to minimize such impact; and (3) nondiscretionary terms and conditions (including, but not limited to, reporting requirements) that must be complied with by the Federal agency, applicant (if any), or both, to carry out the reasonable and prudent measures.

To complete the jeopardy analysis presented in this Opinion, NMFS reviewed the status of each listed species[2] considered in this consultation, the environmental baseline in the action area, the

[2] An "evolutionarily significant unit" (ESU) of Pacific salmon (Waples 1991) and a "distinct population segment" (DPS) (Policy Regarding the Recognition of District Vertebrate Population; 61 FR 4721, Feb 7, 1996) are both "species" as defined in section 3 of the ESA.

effects of the action, and cumulative effects (50 CFR 402.14(g)). From this analysis, NMFS determined whether effects of the action were likely, in view of existing risks, to appreciably reduce the likelihood of both the survival and recovery of the affected listed species.

For the critical habitat adverse modification analysis, NMFS considered the status of the entire designated area of the critical habitat considered in this consultation, the environmental baseline in the action area, the likely effects of the action on the function and conservation role of the affected critical habitat, and cumulative effects. The NMFS used this assessment to determine whether, with implementation of the proposed action, critical habitat would remain functional, or retain the current ability for the primary constituent elements (PCEs) to become functionally established, to serve the intended conservation role for the species.[3]

Status of the Species and Critical Habitat

The summaries that follow describe the status of the ESA-listed species, and their designated critical habitats, that occur within the geographic area of this proposed action and are considered in this Opinion. More detailed information on the status and trends of these listed resources, and their biology and ecology, can be found in the listing regulations and critical habitat designations published in the Federal Register.

Status of the Species. Over the past few decades, the sizes and distributions of the populations considered in this Opinion generally have declined due to natural phenomena and human activity, including the operation of hydropower systems, over-harvest, hatcheries, and habitat degradation. Enlarged populations of terns, seals, sea lions, and other aquatic predators in the Pacific Northwest have been identified as factors that may be limiting the productivity of some Pacific salmon and steelhead populations (Bottom *et al.* 2005, Fresh *et al.* 2005). It is also likely that climate change will play an increasingly important role in determining the abundance of ESA-listed salmon and steelhead by exacerbating long-term problems related to temperature, stream flow, habitat access, predation, and marine productivity (CIG 2004, Scheuerell and Williams 2005, Zabel *et al.* 2006, ISAB 2007).

LCR Chinook salmon. The range of this species includes all naturally-spawned populations of Chinook salmon from the Columbia River and its tributaries from its mouth at the Pacific Ocean upstream to a transitional point between Washington and Oregon, east of the Hood River and the White Salmon River, and includes the Willamette River to Willamette Falls, Oregon, exclusive of spring-run Chinook salmon in the Clackamas River. Historical records of Chinook salmon abundance are sparse, but cannery records suggest a peak run of 4.6 million fish in 1883. Although fall-run Chinook salmon are still present throughout much of their historical range, they are still subject to large-scale hatchery production, relatively high harvest, and extensive habitat degradation. The spring-run populations are largely extirpated as a result of dams that block access to their higher-elevation habitat. Abundances largely declined during 1998-2000, and trend indicators for most populations are negative, especially if hatchery fish are assumed to have a reproductive success equivalent to that of natural-origin fish. However, 2001

[3] Memorandum from William T. Hogarth to Regional Administrators, Office of Protected Resources, NMFS (November 7, 2005) (Application of the "Destruction or Adverse Modification" Standard Under Section 7(a)(2) of the Endangered Species Act) (Hogarth 2005).

and 2002 abundance estimates increased for most LCR Chinook salmon populations over the previous few years (Good *et al.* 2005).

Factors limiting recovery for LCR Chinook salmon are reduced access to spawning/rearing habitat in tributaries, hatchery impacts, loss of habitat diversity and channel stability in tributaries, excessive sediment in spawning gravel, elevated water temperature in tributaries, and harvest impacts on fall Chinook (NMFS 2005, NMFS 2006). The NMFS (2007) identified degraded estuarine and near-shore habitat; floodplain connectivity, and function; channel structure and complexity; riparian areas and large wood; stream substrate, streamflow; fish passage; and harvest and hatchery impacts as the major factors limiting the recovery of this species.

LCR Chinook salmon in the action area are part of the Clackamas fall-run population. Based on a recent viability status report (McElhany *et al.* 2007), there are no reliable abundance data for this population, but estimates put the population in the "extirpated or nearly so" persistence category based on the minimum abundance threshold. There is no abundance or productivity evidence supporting the existence of a viable, natural-origin population in the Clackamas. This population is at significant risk based on the criteria for diversity, spatial structure, and abundance and productivity. From the perspective of all viability criteria, LCR Chinook in Oregon are at high risk (McElhany *et al.* 2007). Habitat degradation in the basin has reduced the spatial distribution of suitable habitats for fall Chinook.

LCR coho salmon. This species includes 25 populations that historically existed in the Columbia River basin from the Hood River downstream (McElhany *et al.* 2007). The boundaries do not extend into the upper Willamette portion of the basin because Willamette Falls is a natural barrier to fall-migrating salmon and steelhead. In general, wild coho in the Columbia River basin have been in decline for the last 75 years. Of the 25 historical populations, only the Clackamas and Sandy populations show direct evidence that coho production is not reproductively dependent on the spawning of stray hatchery fish (McElhany *et al.* 2007). However, in the last 5 years there has been an increase in the abundance of wild coho in the Clackamas and Sandy rivers, plus a reappearance of moderate numbers of wild coho in the Scappoose and Clatskanie rivers after a 10-year period in the 1990s when they were largely absent (McElhany *et al.* 2007).

The NMFS (2007) identified floodplain connectivity and function, degraded channel structure and complexity, degraded riparian areas and large wood recruitment, degraded stream substrate, degraded hydrology, degraded water quality, and harvest and hatchery impacts as the major factors limiting recovery of LCR coho salmon.

The Clackamas population would be the most likely population found in the action area. Based on a recent analysis, this population is most likely in the low risk category for abundance and productivity, although all the other populations are in the high or very high risk category (McElhany *et al.* 2007). Spatial structure scores are reduced because of significant habitat degradation in lower basin tributaries such as Johnson and Kellogg creeks, and other urbanized portions of the Lower Willamette River, Multnomah Channel, and Sauvie Island. This habitat loss has reduced the population's diversity score. Despite this, the Clackamas population is the

only population in Oregon's portion of the species that is most likely in the viable category, and the risk of extinction for LCR coho in Oregon remains high (McElhany *et al.* 2007).

LCR steelhead. This species includes all naturally spawning populations of steelhead in streams and tributaries of the Columbia River between, and including, the Cowlitz and Wind rivers in Washington, along with, and including, the Willamette River and Hood River in Oregon. Excluded are steelhead from the Upper Willamette River basin above Willamette Falls and steelhead from the Little and Big White Salmon rivers in Washington (NMFS 2004). Five populations of winter steelhead and one population of summer steelhead exist in Oregon (McElhany *et al.* 2007). The population most likely to be present in the action area is the Clackamas River population, which is part of the Cascade winter stratum.

In general, wild steelhead numbers are depressed from historical levels but probably exist in most of their historical range, and all historical populations are believed to be extant. However, up until recent years, the presence of naturally spawning hatchery fish in most populations has been high (McElhany *et al.* 2007).

The Clackamas population is at low risk for abundance and productivity, although the future impacts of human population growth and climate change add a degree of uncertainty (McElhany *et al.* 2007). The Upper Clackamas River basin contains most of the historically-productive habitat, and most of that habitat is of high quality today. For the species, the overall risk classification for Oregon LCR steelhead is moderate, with the Clackamas population at the lowest risk.

Factors limiting recovery for LCR steelhead are degraded floodplain and stream channel structure and function, reduced access to spawning/rearing habitat, altered streamflow in tributaries, excessive sediment and elevated water temperatures in tributaries, and hatchery impacts (NMFS 2005, NMFS 2006). The NMFS (2007) identified degraded floodplain connectivity and function, channel structure and complexity, riparian areas and large wood recruitment, stream substrate, streamflow, water quality, fish passage and predation/competition as the major factors limiting recovery of this species.

Status of the Critical Habitat. Climate change is likely to have negative implications for the conservation value of designated critical habitats in the Pacific Northwest (CIG 2004, Scheuerell and Williams 2005, Zabel *et al.* 2006, ISAB 2007). Average annual Northwest air temperatures have increased by approximately 1° C since 1900, or about 50% more than the global average warming over the same period (ISAB 2007). The latest climate models project a warming of 0.1^{o} to 0.6^{o} C per decade over the next century. According to the Independent Scientific Advisory Board (ISAB), these effects may have the following physical impacts within the next 40 or so years:

- Warmer air temperatures will result in a shift to more winter/spring rain and runoff, rather than snow that is stored until the spring/summer melt season.
- With a shift to more rain and less snow, the snowpack will diminish in those areas that typically accumulate and store water until the spring freshet.

- With a smaller snowpack, these watersheds will see their runoff diminished and exhausted earlier in the season, resulting in lower stream flows in the June through September period.
- River flows in general and peak river flows are likely to increase during the winter due to more precipitation falling as rain rather than snow.
- Water temperatures will continue to rise, especially during the summer months when lower stream flows and warmer air temperatures will contribute to the warming regional waters.

These changes will not be spatially homogeneous across the entire Pacific Northwest. Sites with elevations high enough to maintain temperatures well below freezing for most of the winter and early spring would be less affected. Low-lying areas that historically have received scant precipitation are likely to be more affected. The ISAB (2007) also identified the likely effects of projected climate changes on aquatic habitats in the Columbia River basin. These effects may include, but are not limited to, depletion of cold water habitat, variation in quality and quantity of tributary rearing habitat, alterations to migration patterns, accelerated embryo development, premature emergence of fry, and increased competition among species. Similar effects are likely to occur to some extent throughout the Pacific Northwest.

The NMFS reviews the status of critical habitat affected by the proposed action by examining the condition and trends of the PCEs of critical habitat throughout the designated area. Within the action area, critical habitat has been designated for LCR Chinook salmon, LCR steelhead, UWR Chinook salmon, and UWR steelhead. The PCEs consist of the physical and biological elements identified as essential to the conservation of the species in the documents identifying critical habitat (Table 4).

Table 4. PCEs of critical habitats designated for ESA-listed salmon and steelhead species considered in the Opinion, and corresponding species life history event

Primary Constituent Elements		Species Life History Event
Site Type	**Site Attribute**	
Freshwater spawning	Substrate Water quality Water quantity	Adult spawning Embryo incubation Alevin growth and development
Freshwater rearing	Floodplain connectivity Forage Natural cover Water quality Water quantity	Fry emergence from gravel Fry/parr/smolt growth and development
Freshwater migration	Free of artificial obstruction Natural cover Water quality Water quantity	Adult sexual maturation Adult upstream migration and holding Kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration
Estuarine areas	Forage Free of artificial obstruction Natural cover Salinity Water quality Water quantity	Adult sexual maturation and "reverse smoltification" Adult upstream migration and holding Kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration
Nearshore marine areas	Forage Free of artificial obstruction Natural cover Water quantity Water quality	Adult growth and sexual maturation Adult spawning migration Nearshore juvenile rearing
Offshore marine areas	Forage Water quality	Adult growth and sexual maturation Adult spawning migration Subadult rearing

Environmental Conditions within the Action Area

Natural stream basins in the action area have been extensively altered by drainage diversions. The action area drains to the Willamette River via Kellogg Creek and Mount Scott Creek to the west and north, and drains to the Clackamas River to the south. Project-area streams draining to Kellogg Creek via Mount Scott Creek are Dean Creek and Phillips Creek. Project area streams draining to the Clackamas River are Cow Creek, Sieben Creek, Rock Creek, Graham Creek, an unnamed tributary to Rock Creek, and Trillium Creek (Figure 2).

Mount Scott Creek. Mount Scott Creek drains the portion of the project area that lies north of SE Clackamas Road and east of approximately SE Piazza Avenue, including most of Camp Withycombe. This stream flows into the action area from the east under SE 97th Avenue through a large arch culvert. It continues westward under I-205 and SE 82nd Avenue NE, where Phillips and Dean creeks discharge to it in an undeveloped tract known as Three Creeks tract.

Three Creeks tract is part of the North Clackamas Regional Flood Control Detention Facility, which includes a series of detention ponds as well as a large undeveloped floodplain (WES 2009). Mount Scott Creek then parallels the north side of the Union Pacific Railroad (UPRR) track as it continues off site to its mouth at Kellogg Creek.

A ditch collects drainage from the area to the south of the UPRR tract and west of Three Creeks tract, and conveys it west along the tracks to discharge at Mount Scott Creek. This is an entirely artificial gravel-surfaced ditch. It has numerous piped sections and few salmonid habitat elements. Its conveyance is limited and it undergoes localized flooding during storm events larger than 5-year recurrence (WES 2009).

Mount Scott Creek supports steelhead trout and coho salmon spawning and rearing. Although there does not appear to be any fully impassable migration barrier, Chinook have not been documented in Mount Scott Creek or its tributaries. Other species documented to be present are Pacific lamprey, cutthroat trout, mosquitofish, prickly sculpin, reticulate sculpin, and largemouth bass (Friesen and Zimmerman 1999). Metro (2009) has mapped the on-site reach of Mount Scott Creek as "Class 1 Riparian Habitat, highest-value."

Dean Creek. The mainstem of Dean Creek begins in the large wetland area adjoining the KEX radio towers north of Lawnfield Road. Dean Creek flows north and eastward under I-205 and through box culverts under SE 82nd Avenue, ultimately discharging to Mount Scott Creek through culverts under the UPRR track at the Three Creeks tract.

The portion of the project drained by Dean Creek includes a network of roadside and drainage ditches in the KEX radio tower property and between Lawnfield and Mather Roads. The channelization of the stream was completed in the 1990s, and the stream and its tributaries generally have the morphology of uniform ditches in the project area (WES 2009). Metro in 2009) has mapped the project area reach of mainstem Dean Creek and several tributaries as "Class 2 Riparian, medium value habitat."

Although no impassable barriers block migration from Mount Scott Creek, Dean Creek does not support listed fish species. ODFW fish occurrence field studies at Dean Creek found none of the species addressed here (Friesen and Zimmerman 1999). The stream lacks significant salmonid spawning or rearing habitat because of its silty substrate, channelization, and lack of habitat elements such as pools, riffles, and large woody debris. Habitat access is degraded by numerous piped and culverted sections. The stream is likely to support few salmonids because of poor habitat and water quality (Dames and Moore 1993). Dean Creek currently exceeds State of Oregon acute water quality criteria for dissolved copper on a once in three-year basis (ODEQ 2006).

Phillips Creek. Phillips Creek is a small highly urbanized tributary of Mount Scott Creek that flows southward along SE 84th Avenue into the northern edge of the action area at the I-205 interchange. From there, it flows westward under SE 82nd Avenue through a box culvert to its mouth at Mount Scott Creek in the Three Creeks tract. A stormwater treatment facility operated by Clackamas County adjoins Phillips Creek immediately east of SE 82nd Avenue. The reach of Phillips Creek in the action area is characterized by channelized segments with broad deposits of

gravel and scoured areas. The stream has very few pools and little woody structure or cover. It flows through existing stormwater detention ponds immediately upstream of 82nd Avenue. The action-area reaches of Phillips Creek have been identified as supporting winter steelhead presence, and have been designated as critical habitat for that species.

Kellogg Creek. While most of the I-205 interchange project area drains northwest to the middle reaches of Kellogg Creek via Mount Scott Creek and its tributaries, about 32 acres of the project CIA will drain directly to the headwaters of Kellogg Creek at the southwest corner of the project. Kellogg Creek supports coho salmon and steelhead throughout much of its length, and supports Chinook salmon rearing in its lowermost reaches.

A dam at the mouth of Kellogg Creek is equipped with a fish ladder that forms a partial barrier to fish migration because it functions well only within a narrow range of flow level. The City of Milwaukie "Kellogg-for-Coho Initiative" program is working to remove the Kellogg Creek dam, but the construction schedule is uncertain.

Clackamas River. A bend in the Clackamas River extends close to but not into the action area immediately east of SE 142nd Avenue, where it borders OR 212/224. Most of the project area drainage in this vicinity appears to be captured by the Rock Creek tributary that passes under OR 212/224, rather than draining directly to the Clackamas River. The Clackamas River supports runs of coho salmon, Chinook salmon, and steelhead trout.

Metro (2009) has mapped the project area between the Clackamas River and OR 212/224 as "Class 1 Riparian Habitat."

Cow Creek. Cow Creek is a small, highly urbanized tributary of the Clackamas River that parallels OR 212/224 to the north in the project area. The uppermost open channel found in the site inspection was a small constructed swale at SE 125th Court north of OR 212/224. From this point, the stream flows through a series of channelized reaches and culverts, each up to several hundred feet long, passing through a pipe under the intersection of SE 102nd Avenue and OR 212/224, to its exit from the project area. Cow Creek discharges to the Clackamas River about two miles downstream of the project area. The channelized reaches are generally bordered by a narrow band of streambank vegetation dominated by Himalayan blackberry (*Rubus armeniacus*), willow (*Salix spp*.) and reed canarygrass (*Phalaris arundinacea*). Numerous stormwater outfalls were observed on the stream, together with moderate amounts of refuse in the stream. There is, however, a somewhat more natural reach of Cow Creek between SE 114th Avenue and SE 118th Avenue. This reach, which flows through an undeveloped field, includes a narrow riparian area vegetated with black cottonwood (*Populus balsamifera*) and Oregon white oak (*Quercus garryana*).

Currently, the action-area reach of Cow Creek is not known to support fish life. In fact, ODFW electrofishing studies found virtually no fish within the project area (Friesen and Zimmerman 1999). A variety of fish species have been documented in the lowest reach of Cow Creek, two miles downstream of the project area. Fish are not likely to occur upstream of these reaches because of poor water quality and habitat conditions farther upstream (Dames and Moore 1993). A diversion pipe at 106th Street was installed to divert peak flows from Cow Creek and send

them directly to the Clackamas River in order to assure adequate conveyance and to protect lower reaches of the creek (WES 2009).

Sieben Creek. Sieben Creek flows down from the hillslopes to the north of the project area in an open linear ditch. The stream is conveyed under OR 212/224 through a box culvert east of SE 135th Avenue and directly south to the Clackamas River in an open linear ditch. The stream substrate is primarily cobbles and large gravel. The segment upstream of the highway is about ten feet wide and three feet deep and flows through an open pasture with Himalayan blackberry thickets. The segment downstream of the highway flows through a 15-foot-deep eroded channel west of a mobile home park. Metro (2009) has mapped the project area corridor along Sieben Creek upstream of OR 212/224 as "Class 1 Riparian, highest-value habitat."

Speckled dace and rainbow trout are the most abundant fish in Sieben Creek, and they were the only species found upstream of OR 212/224 during ODFW sampling (Friesen and Zimmerman 1999). Other species found in the lowest reach of this stream were northern pikeminnow, longnose dace, redside shiner, largescale sucker, Chinook salmon, and coho salmon.

The culvert under OR 212/224 is partially passable, however, and resident and anadromous salmonids can access the on-site reaches of the stream. The project area portion of Sieben Creek currently has minimal salmonid habitat because it lacks habitat elements such as pools or cover (*e.g*., large woody debris).

Rock Creek. Rock Creek crosses the project area through a deep, narrow, forested ravine. The substrate is primarily cobble, boulders, and scoured bedrock, with gravel beds at some pool tails and depositional areas. Habitat is primarily high-gradient riffles and pocket water, with an average of one large pool every 165 feet (Dames and Moore 1993). A natural waterfall upstream of the OR 212/224 bridge blocks fish migration. Metro (2009) has mapped a corridor throughout the project area as "Class 1 Riparian, highest-value habitat."

Rock Creek supports all species addressed here, including the ESA listed coho salmon, Chinook salmon and steelhead trout (ODFW 2004). Fish species found in the project-area reach downstream of the waterfall include longnose dace, speckled dace, redside shiner, largescale sucker, rainbow trout, cutthroat trout, and torrent sculpin. Reticulate sculpin and Pacific lamprey were the only fish species found upstream of the waterfall (Friesen and Zimmerman 1999). ODSL (2004) has designated this reach as Essential Salmonid Habitat.

Graham Creek. Graham Creek extends down from the hillslopes to the north and enters the project area between SE 142nd Avenue and SE 152nd Avenue. The stream flows under OR 212/224 immediately east of a truck weigh station, through a culvert that is impassable because of a concrete apron at its inlet and a drop of several feet below its outlet. Above OR 212/224, the project area reach of the stream occupies an entrenched linear channel about eight feet wide and six feet deep; with Himalayan blackberry thickets along the bank and a substrate of cobble/coarse gravel. Downstream of the highway, the stream has formed a large eroded gulch about 50 feet wide and 30 feet deep, through which it flows down to Rock Creek. Metro (2009) has mapped the project area reach of this tributary as "Class 2 Riparian, medium-value habitat"

and the reaches immediately upstream and downstream as “Class 1 Riparian, highest-value habitat.”

Graham Creek is likely to support sculpins in its coarse substrate. Near its confluence with Rock Creek, it may contain salmonids, including cutthroat trout, juvenile coho salmon, and steelhead trout, and Pacific lamprey. Salmonid use upstream of OR 212/224 is unlikely because of the migration barriers and poor habitat. Because of the extensive erosion, the entire channel downstream of the 212/224 culvert would likely require reconstruction before fish passage is possible.

Wentzel Creek. Wentzel Creek is a small intermittent stream that flows down from the Clackamas Bluffs and is diverted into a west-flowing ditch north of the project area and into a roadside ditch along 142nd Avenue. It appears likely that Wentzel Creek flows are conveyed to Sieben Creek. Wentzel Creek appears to carry only intermittent seasonal flow and no migration access. Therefore it provides no habitat for fish species addressed here.

Trillium Creek. Trillium Creek enters the eastern end of the action area near 172nd Avenue and flows southwest through a forested ravine into the project area. It continues through an impounded detention/water quality treatment pond called “Orchard Lake” in a residential subdivision area (WES 2009). Trillium Creek crosses beneath OR 224 a short distance south of the existing Rock Creek interchange through an impassable corrugated metal culvert, with an approximate 1-foot drop at the outlet. Downstream of OR 224, Trillium Creek flows through a gulch that is well over 50 feet deep at its mouth at Rock Creek.

This reach of Trillium Creek is eroded down to hard clay bedrock, with a number of gravel deposits that are generally too small and narrow to provide significant spawning habitat. It includes several woody debris dams with associated plunge pools that may provide a minor amount of rearing habitat, and a four-foot-high waterfall near the mouth forms a partial barrier to fish migration.

Trillium Creek Tributary. An unnamed Trillium Creek tributary flows southward from its origin near the intersection of SE 162nd Avenue and OR 212. The tributary flows into the project area through a well forested ravine along the south side of OR 212. Like Trillium Creek, this tributary has formed a deep gulch and is incised down to hard clay material. It discharges to Trillium Creek upstream of the OR 224 culvert.

Species within the Action Area

LCR Chinook salmon, LCR steelhead, and LCR coho salmon reside in or migrate through the action area. Thus, for this action area, the biological requirements for LCR Chinook salmon, LCR steelhead, and LCR coho salmon are the habitat characteristics that support successful completion of LCR Chinook salmon, LCR steelhead, and LCR coho salmon survival through rearing and migration periods.

LCR coho salmon in the action area are important to the diversity of the species. Originally part of a larger Lower Columbia River/Southwest Washington species, LCR coho salmon were

identified as a separate species and listed as threatened on June 28, 2005. The LCR coho salmon species includes all naturally spawned populations of coho salmon in the Columbia River and its tributaries in Washington and Oregon, from the mouth of the Columbia up to and including the Big White Salmon and Hood rivers, and includes the Willamette River to Willamette Falls, Oregon, as well as twenty-five artificial propagation programs.

LCR Chinook salmon includes all naturally spawned populations of Chinook salmon from the Columbia River and its tributaries from its mouth at the Pacific Ocean upstream to a transitional point between Washington and Oregon east of the Hood River and the White Salmon River, and includes the Willamette River to Willamette Falls, Oregon.

LCR steelhead includes all naturally-spawned anadromous steelhead populations below natural and artificial impassable barriers in streams and tributaries to the Columbia River between the Willamette (up to Willamette Falls) and Hood Rivers in Oregon, as well as ten artificial propagation programs.

Critical Habitat within the Action Area

The NMFS reviews the status of critical habitat affected by the proposed action by examining the condition and trends of the PCEs of critical habitat throughout the designated area. Within the action area, critical habitat has been designated for LCR Chinook salmon, and LCR steelhead. The PCEs consist of the physical and biological elements identified as essential to the conservation of the species in the documents identifying critical habitat (Table 4).

Critical habitat was designated for LCR Chinook salmon and LCR steelhead and the action area contains one or more PCEs within the acceptable range of values required to support the biological processes for which the species use that habitat. The specific unit of LCR Chinook salmon and LCR steelhead, critical habitat that will be affected by the proposed action is the Johnson Creek and Clackamas River 5th fields. These subbasins contain PCEs necessary for spawning, rearing and migration. The NMFS Critical Habitat Analytical Review Team (CHART) identified the key management activities with the potential to affect the PCEs (Table 5).

Table 5. CHART conservation values by species and key management activities affecting PCEs.

ESA-Listed Species	5th Field HUC	CHART Conservation Value	Key Management Activities Affecting PCE's
LCR steelhead	Johnson Creek	High	A, C, I, R, U, W
	L. Clackamas R.	High	A, C, D, I, R, U, W
LCR Chinook salmon	Johnson Creek	Medium	A, C, I, R, U, W
	L. Clackamas R.	High	A, C, D, I, R, U, W

* Coding is as follows: F= forestry, G = grazing, A = agriculture, C = channel modifications/diking, R = road building/maintenance, U = urbanization, S = sand and gravel mining, M = mineral mining, D = dams, I = irrigation impoundments and withdrawals, T = river, estuary, and ocean traffic, W = wetland loss/removal, B = beaver removal, X = exotic/invasive species introductions, H = forage fish/species harvest.

The LCR Chinook salmon and LCR steelhead considered in this Opinion migrate through the action area and use it for spawning and rearing. Thus, the affected PCE is riverine area free of obstruction with water quality, water quantity, clean substrate, forage, cover, floodplain connectivity, juvenile mobility, and juvenile development growth and survival.

Effects of the Action

Effects of the action refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration.

Effects on the Environment

In-water construction activities in Phillips Creek and Trillium Creek will occur within isolation. The effects of culvert removal and installation, bridge construction, vegetation removal and ground disturbance, and floodplain improvements are discussed below.

Work Area Isolation. Cofferdams will be constructed to isolate the work area during construction. This will exclude fish from the work area, keep sediment and turbidity inside the work area and still allow fish passage through the site. Although in-water work area isolation is a conservation measure intended to reduce potential effects to water quality and fish from instream construction, fish present in the work isolation area will be captured, handled, and released.

Phillips Creek. Some LCR steelhead could be in the isolated work area. Isolation of the in-water work areas for the proposed action will isolate approximately 120 linear feet of Phillips Creek, for a total of approximately 3,200 square feet of glide-riffle habitat.

Trillium Creek. Some LCR steelhead and LCR coho salmon juveniles could be in the isolated work area. Isolation of the in-water work areas for the proposed action will isolate approximately 190 linear feet of Trillium Creek, for a total of approximately 2,880 square feet of glide-riffle habitat.

Work area isolation and dewatering will concentrate suspended sediment inside the cofferdam, reduce dissolved oxygen (during fish salvage operations) and increase water temperature (during fish salvage operations). For all three culverts, approximately 6,080 square feet of stream substrate (gravels, cobbles and fines) will be isolated, which will kill invertebrates within the isolation area. The 6,080 square feet is a very small portion of the total action area and will likely repopulate within a couple of months after construction is complete. The ODOT proposes to complete the in-water work for this project during the period of July 1 to September 30 for Phillips Creek and July 15 to August 31 for Trillium Creek. Duration of isolation of work areas in the Phillips Creek and Trillium Creek will be approximately 6 to 8 weeks. Conservation measures addressing containment, pollution and sediment control, and temporary water management are shown on page 44 through 51 of the BA.

Total Suspended Solids, Turbidity, and Sedimentation. In-water construction activities, such as work area isolation, culvert removal, culvert installation, vegetation removal and ground disturbance are likely to temporarily increase erosion, concentrations of TSS and turbidity. Work area isolation and conservation measures discussed in the BA on pages 44-51 will ensure that this exposure will be minimized.

The largest negative effects to substrate will likely be from instream construction in Phillips Creek and Trillium Creek. Impacts to the stream substrate and water quality, due to culvert removal, culvert installation and cofferdam removal will dislodge sediment, which will temporarily elevate suspended sediments (a source of turbidity), after removal and installation of the culverts and cofferdams. Short-term pulses of sediment are likely to occur after installation of the culverts and the areas where material was disturbed during construction. Decreasingly small pulses of sediment (re-suspension lasting a few hours to a day) may continue to occur for the next two months during bankfull flows until all disturbed materials in the construction area settle into place. This sediment is not likely to move more than 100 feet downstream from the work area isolation, culvert installation and removal activities, prior to reaching the lower limits of the action area. This will occur during a period of up to 6 to 8 weeks during construction (culvert replacement) and 1 to 2 months after construction is complete.

Some sedimentation of substrates, primarily in stream reaches used by LCR steelhead, LCR coho salmon, and LCR Chinook salmon for migration and rearing, will occur. Fine, re-deposited sediments have the potential to reduce primary and secondary productivity (Spence *et al.* 1996) and cover (Bjornn and Reiser 1991) for juvenile coho salmon. The majority of the LCR steelhead, LCR coho salmon, and LCR Chinook salmon spawning gravels exist upstream from the culverts and in other tributaries.

Sediment effects from the culvert installation and removal, and site restoration are likely to be small because ODOT will use BMPs during construction to reduce the amount of sediment

entering Phillips Creek and Trillium Creek. All exposed soils will be revegetated, and only a small amount of work (culvert removal and installation) will occur in the active stream channel.

Chemical Contamination. As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. The NMFS expects that the use of machinery will result in a small amount (a few ounces) of oil and hydraulic fluid being leaked during operations. The magnitude of these leaks will likely be very low because of the implementation and enforcement of pollution control plans.

Anytime machinery is operated in close proximity to a stream, there is some chance a large fuel spill or hydraulic line rupture will occur. The NMFS believes the probability of this occurring is very low, but not discountable. If a spill of this nature were to occur, its volume could likely be as little as a few ounces or as much as 50 gallons. If there is a leak, it is typically small, resulting in only a few ounces being released. Any spills on the work bridge will be contained due to the edge of the work bridge being curbed with plastic sheeting placed under the deck. The concentration of fuel would be high within the isolation area, but the spill control plan is likely to minimize the amount released to flowing water. A small amount of fuel likely would be released from the isolation area, where it would be noticeable as much as 100 feet downstream before being diluted to immeasurable concentrations, prior to reaching the lower limits of the action area on Phillips Creek and Trillium Creek. In the immediate area it could have short-term effects on water quality.

Riparian Disturbance. The estimated riparian impact is 3.4 acres of riparian forest displacement in addition to removal of 87 mature (over 12-inch diameter) native trees and 105 immature (sapling to 12-inch diameter) native trees for bridge or overpass clearance. The project will compensate for tree removal along streams supporting ESA-listed fish by planting new trees along such streams in the action area at a ratio of 2:1 for the number of trees removed and at a ratio of 1.5:1 for acreage cleared. In total, 6.1 acres of riparian will be planted. Riparian reforestation at a higher rate than loss / disturbance should offset temporary and long-term effects to the streams' riparian corridor, as well as create uplift above the baseline. Though some riparian areas will be permanently lost, much of the area is dominated by weeds and non-native plants absent of trees and overhanging vegetation. Reforestation will provide long-term benefits and uplift to the baseline through increased shading, coarse allochthonous organic input used by macroinvertebrate prey, and more contiguous habitat.

Fluvial Alteration. The addition of hardened structures (*i.e*. bridge bents) within a fluvial channel will increase flow velocities, encourage scouring, and limit the natural movement of bedload materials, thus causing habitat loss and sub-lethal adverse effects on aquatic and semi-aquatic species. With the installation of a bridge and culverts that span the functional floodplains, the water velocities should only increase slightly at very high flow events. Installing bridges and culverts that span beyond the functional floodplain will maintain water flowing naturally through the project site. The bents associated with these bridges will only interact with the flow during events at and above the OHWL elevation.

Stormwater Management. Stormwater runoff from the highway system, including roads, culverts, and bridges, delivers a wide variety of pollutants to aquatic ecosystems, such as

nutrients, metals, petroleum-related compounds, sediment washed off the road surface, and agricultural chemicals used in highway maintenance (Driscoll *et al*. 1990; Buckler and Granato 1999, Colman *et al*. 2001, Kayhanian *et al*. 2003). These ubiquitous pollutants are a source of potent adverse effects to ESA-listed salmon and steelhead, even at ambient levels (Loge *et al.* 2006, Hecht *et al*. 2007, Johnson *et al.* 2007, Sandahl *et al.* 2007, Spromberg and Meador 2006). Increased impervious surface and resulting stormwater management will result in discharged stormwater to tributaries of the Clackamas and Willamette rivers. The proposed project will add approximately 135.8 acres of new impervious surface primarily due to the action. The CIA for the project totals 263.1 acres.

The proposed stormwater facilities include 34 large treatment biofiltration and detention-ponds, 12 lengthy bio-slopes, 12 large biofiltration swales, and 11 water quality manholes (Appendices A, B, and C) and as shown in the Storm Water Management Plan (SWMP) in the BA. Taken together, these facilities are sized to accommodate the entire volume of runoff from the CIA associated with the project (except for 16 acres that cannot be treated within the CIA due to site constraints).

Project stormwater treatment was designed using Clackamas County Water Environment Services (WES) standards which in this case were more conservative than ODOT or NMFS design standards. The project will be treating 2/3 of the 2-year storm for water quality, and reduction of the 25-year post developed runoff rate to the 2-year pre development rate. In addition, the 16 acres that will not receive treatment within the CIA will be treated off-site on I-205. These off-site sections have a much higher average daily traffic and much higher pollutant and metal load. After the project is completed there will be a net reduction of pollutants and metals entering the Clackamas River and Willamette River systems.

Species within the Action Area

The proposed action is reasonably likely to have the following direct and indirect effects on ESA-listed LCR Chinook salmon, LCR steelhead, and LCR coho salmon. The duration of the effects will vary from ephemeral (instantaneous to hours) or short-term (days to months), and indirect effects are long-term (years to decades, or the life of the project). The large bridge and culvert openings will allow for natural stream flows and large wood transport. This opening and spanning of the functional floodplains at the crossings will maintain the available habitat for ESA-listed LCR Chinook salmon, LCR steelhead, and LCR coho salmon. Stormwater treatment will provide better water quality with a reduction of pollutants and metals in the Clackamas River and tributaries in the long term.

Sedimentation and Turbidity. LCR Chinook salmon, LCR steelhead, and LCR coho salmon will likely have exposure to very low levels (if any at all) of turbid water associated with the construction, since the work area will be contained within a cofferdam. Some slight sedimentation of substrates in stream reaches used by LCR Chinook salmon, LCR steelhead, and LCR coho salmon for spawning, rearing and migration will occur. However, this will primarily occur downstream where substrates already consist of pockets of gravel and fines. Fine, redeposited sediments have the potential to reduce cover (Bjornn and Reiser 1991) for juvenile coho salmon. Sedimentation is not likely to reduce food resources of juvenile LCR Chinook

salmon, LCR steelhead, and LCR coho salmon, due to the small amount of sediment disturbed, the sediment remaining within 100 feet of the activity, and sediment likely being flushed and dispersed with the fall rains prior to LCR Chinook salmon, LCR steelhead, and LCR coho salmon upstream migration. The 100 feet is an estimate of how far the sediment in low flow conditions is likely to travel downstream of the culvert removal, culvert replacement and cofferdam removal activities. The visable turbidity will likely end a short distance downstream of removed cofferdams. The NMFS is reasonably certain sedimentation and turbidity levels generated from this action will have an insignificant effect on LCR Chinook salmon, LCR steelhead, and LCR coho salmon.

Chemical Contamination. As stated earlier, an accidental release of fuel, oil, and other contaminants that can injure or kill aquatic organisms may occur. Petroleum based contaminants, such as fuel, oil, and some hydraulic fluids, contain polycyclic aromatic hydrocarbons, which can kill coho salmon at high levels of exposure and can also cause sublethal adverse effects at lower concentrations (Neff 1985).

Any spills outside of the contained work bridges may affect any LCR Chinook salmon, LCR steelhead, and LCR coho salmon that are immediately downstream of the isolated work areas. However, few individuals should be in the action area, and there is a very low risk of a spill occurring outside of the contained work bridge. Therefore, this should have very little effect on the species. Any spills within the contained work bridge should be cleaned up prior to dismantling the work bridge.

Fish Capture, Removal, and Relocation. Immediate or delayed death or injury of juvenile LCR Chinook salmon, LCR steelhead, and LCR coho salmon from capture and relocation stress may occur during fish capture by electrofishing, which can cause injury or death, removal and relocation within the in-water work isolation area. It may not be possible to capture, remove and relocate all of the individual fish within the isolated in-water work area, depending on conditions during isolation. The substrate is comprised of pockets of gravel and cobble with some fines, which sometimes makes it difficult to effectively get all of the fish in the isolated area. Any individual juvenile LCR Chinook salmon, LCR steelhead, and LCR coho salmon remaining within the isolated work area after fish capture, removal, and relocation has been attempted would die. This zone of harm or harassment will be approximately 80 to 120 linear feet long (Trillium Creek crossing 1:110 feet, Trillium Creek crossing 2:80 feet and Phillips Creek 120 feet) extending from the upper end of the isolation area, to the lower end of the isolation area on both ends of each culvert. The total potential area of isolation for the project will be 6,080 square feet (ft^2) (Trillium Creek 2,880 ft^2 and Phillips 3,200 ft^2). Juvenile LCR Chinook salmon, LCR steelhead, and LCR coho salmon will be released in an area that has adequate flow, depth, and cover.

A total of approximately 150 juvenile LCR steelhead and 150 LCR coho salmon are estimated to reside in the isolated work areas. The process of work area isolation for this portion of the proposed action is reasonably certain to cause incidental take (capture or wound) of up to 150 juvenile LCR steelhead and 150 LCR coho salmon. These numbers are based on the data showing less than 100 individuals are salvaged during any isolation activity. From 2007-2009, ODOT completed 99 work area isolation operations involving capture and release using nets and

electrofishing; 31 of those operations resulted in capture of 1 Chinook salmon, 760 coho salmon, and 62 steelhead (Ken Cannon, pers. Comm., 2010). The proposed action will isolate approximately 6,080 ft^2 of glide-riffle habitat in Phillips Creek and Trillium Creek. During the in-water work period juvenile LCR steelhead and LCR coho salmon are not expected to be present in significant numbers due to the water temperatures. No known cool water seeps are present in the area planned for isolation.

Riparian Disturbance. The estimated riparian impact is 3.4 acres of riparian forest displacement in addition to tree removal only for bridge or overpass clearance of 87 mature (over 12-inch diameter) native trees and 105 immature (sapling to 12-inch diameter) native trees.The project will compensate for tree removal along streams supporting ESA-listed fish by planting new trees along such streams in the action area at a ratio of 2:1 for number of trees and at a ratio of 1.5:1 for acreage cleared. In total, 6.1 acreas of riparian will be planted for the 3.4 acres that are proposed to be impacted. Impacts would be to food supply, potential large wood recruitment, and slight temporal temperature increases.

Fluvial Alteration. With the installation of the culverts and bridges, the water velocities that adult and juvenile and LCR Chinook salmon, LCR steelhead, and LCR coho salmon have to endure, should increase only slightly at very high flows. This will still allow for adequate fish passage at a full range of flows for both adult and juvenile LCR Chinook salmon, LCR steelhead, and LCR coho salmon. Even though this action includes new bridges and culverts, habitat function should be maintained after the project is complete due to the new bridges and culverts spanning the functional floodplain.

Stormwater Management. Stormwater runoff from the highway system, including roads, culverts, and bridges, delivers a wide variety of pollutants to aquatic ecosystems, such as nutrients, metals, petroleum-related compounds, sediment washed off the road surface, and agricultural chemicals used in highway maintenance (Driscoll *et al.* 1990, Buckler and Granato 1999, Colman *et al.* 2001, Kayhanian *et al.* 2003). These ubiquitous pollutants are a source of potent adverse effects to ESA-listed species, even at ambient levels (Loge *et al.* 2006, Hecht *et al.* 2007, Johnson *et al.* 2007, Sandahl *et al.* 2007, Spromberg and Meador 2006). Aquatic contaminants often travel long distances in solution or attached to suspended sediments, or gather in sediments until they are mobilized and transported by the next high flow (Anderson *et al.* 1996, Alpers *et al.* 2000a, 2000b). These contaminants also accumulate in the prey and tissues of juvenile coho salmon where, depending on the level of exposure, they cause a variety of lethal and sublethal effects on coho salmon, including disrupted behavior, reduced olfactory function, immune suppression, reduced growth, disrupted smoltification, hormone disruption, disrupted reproduction, cellular damage, and physical and developmental abnormalities (Fresh *et al.* 2005, Hecht *et al.* 2007, LCREP 2007).

The proposed stormwater facilities include 34 large treatment biofiltration and detention-ponds 12 lengthy bio-slopes, 12 large biofiltration swales, and 11 water quality manholes (Appendices A, B, and C) as shown in the SWMP. Taken together, these facilities are sized to accommodate the entire volume of runoff from the CIA associated with the project (except for 16 acres that cannot be treated within the CIA due to site constraints). Stormwater will infiltrate at or near the point at which rainfall occurs using low impact development, bioretention, filter subsoils, and

other practices that have been identified as excellent treatments to reduce or eliminate contaminants for highway runoff (Barrett *et al.* 1995, CWP and MDE 2000, NCHRP 2006, WDOT 2006, Hirschman *et al.* 2008).[4] With the addition of bio-swales, biofiltration ponds, and bio-slopes in this project, treatment for dissolved metals will occur, where it was non-existent prior to the project. Stormwater treatment should lead to decreased pollutant and metals loading and will be a benefit in the long term in the Clackamas and Willamette rivers.

The 16 acres of CIA that cannot be treated within the project will be treated off-site on three sections of I-205 that have a much higher average daily traffic and much higher pollutant load. These three sections of highway will be retrofitted with approximately 19,000 feet of bioslopes (Appendix B and C). This offsetting action would exceed requirements due to the fact that I-205 receives a much higher average daily traffic. More pollutants and metals will be treated than one would see in the CIA where the treatment isn't possible. This is part of the proposed action and will be completed.

The NMFS is reasonably certain LCR Chinook salmon, LCR steelhead, and LCR coho salmon, will experience sub-lethal effects from the additions of dissolved copper resulting from the stormwater, however these effects will be reduced from pre-project conditions due to treatment of the CIA and treatment to a higher design standard that NMFS currently requires.

Floodplain Storage and Enhancement. The removal of artificial fill will maintain the current hydrograph for Mt. Scott Creek downstream of its junction with its tributary Dean Creek by restoring 2.1 acres of 100-year floodplain. Restoration of native floodplain, as indicated in Figure 1, will eventually improve conditions by increasing the amount of contiguous riparian forest. Possible short-term negative impacts are likely to include erosion and chemical leaks from excavation. However, the BMPs described previously are expected to minimize possible effects, such that the adverse affects from erosion and leaks are not considered significant.

Critical Habitat within the Action Area

The action area is in the Johnson Creek and Clackamas River 5th field HUCs, which are designated as critical habitat for LCR Chinook salmon and LCR steelhead, and provide habitat to support successful freshwater rearing and migration life history requirements. LCR Chinook salmon and LCR steelhead adults and juveniles use the action area for spawning, rearing and migration. Thus, the affected PCEs in the action area are those that are essential for conservation of adult and juvenile LCR Chinook salmon and LCR steelhead for spawning, rearing, and migration. These PCEs include passage free of obstruction with water quality, water quantity, clean substrate, forage, cover, floodplain connectivity, juvenile mobility, and juvenile development growth and survival. The likely effects of the action on these essential features are listed below. The duration of effects will vary from ephemeral (instantaneous to hours) or short-term (days to months), and indirect effects are long-term (years to decades).

[4] See also Memos from Ronan Igloria, HDR (Henningson, Durham, and Richardson, Inc.), to Jennifer Sellers and William Fletcher, Oregon Department of Transportation, dated December 28, 2007 (Stormwater Treatment Strategy Development – Water Quality Design Storm Performance Standard) (HDR 2008a), February 28, 2008 (Stormwater Treatment Strategy Development – Water Quantity Design Storm Performance Standard - Final), and April 15, 2008 (Stormwater Treatment Strategy Development – BMP Selection Tool) (HDR 2008b).

LCR Chinook salmon and LCR steelhead freshwater spawning, rearing, and migration

Water quantity – Stormwater quantity should have little effect on LCR steelhead or LCR Chinook salmon critical habitat due to the treatment detention facilities on the project and the water discharging to large river systems like the Clackamas River and the Willamette River.

Water quality – Suspended sediment levels will be increased over background due to fine sediment mobilized by construction activities. In the short term, the proposed action is likely to slightly degrade water quality as disturbed soil from upland sources associated with the project becomes suspended in rising flows. However, suspended sediment is expected to decrease over the long term as disturbed areas are revegetated and loose soil in the channel is flushed downstream. The stormwater design will adequately treat pollutant runoff to existing standards and improve water quality, reducing the level of pollutants and dissolved copper entering the system. Accidental release of fuel, oil, or other contaminants is unlikely, but would degrade water quality from the spill location up to 100 feet downstream. Because these impacts are short-term or unlikely, the conservation value of the PCE will be improved within the Lower Clackamas River and the Johnson Creek River 5th field HUCs.

Clean substrate –There will be slight sedimentation of substrate in Trillium and Phillips creeks, however, the sediment from the culvert removal and installation will be minor and short-term. Fall rains will likely flush out any sediment. Trillium Creek has a scoured out substrate exposing a clay bottom throughout the project area and downstream. Phillips Creek has a gravel substrate that will probably only have temporary impacts due to the reasons listed above. Because these impacts are short-term or unlikely, the conservation value of the PCE will be maintained within the Lower Clackamas River and the Johnson Creek River 5th field HUC's.

Floodplain Connectivity – The bridges and culverts will be designed to meet NMFS fluvial design criteria spanning 2.2 times the active channel width on multi-span crossings and 1.5 times the active channel with on fully spanning structures and culverts and spanning the functional floodplain. This project should have no effect on floodplain connectivity.

Natural cover – Previous activities have eliminated the majority of the natural cover in the project area. The total riparian acreage that will be removed as part of this project is 3.4 acres and will be mitigated by planting 6.1 acres. All disturbed areas will be revegetated with native vegetation, improving habitat over time. In the long term, the proposed action is likely to result in increased native cover as riparian vegetation is established in higher densities than previously existed and also established at the mitigation site. Therefore, the conservation value of the PCE will be maintained and possibly improved.

Forage – Habitat suitability for macroinvertebrates will be temporarily reduced by 6,080 ft^2, thereby reducing the amount of habitat available to macroinvertebrates in a small portion of the Phillips Creek and Trillium Creek. While the temporary impact on habitat is great enough to result in some LCR steelhead and LCR Chinook salmon juveniles being affected, this will not significantly disrupt normal behavioral patterns. Long-term, with bridges and culverts spanning the functional floodplain, the amount of habitat available to macroinvertebrates and LCR steelhead and LCR Chinook salmon juveniles should be maintained at each site. As such, the

forage PCE will be maintained in the short term and improved over the long term due to the increase in native riparian vegetation and improved water quality.

Free passage – Suspended sediment may delay migration of juveniles during the first few storms in the spring on Phillips Creek and Trillium Creek, but will not prevent it from occurring. During work area isolation Phillips Creek and Trillium Creek will allow downstream passage for migration. Construction of a bridges and culverts that span the functional floodplain will maintain good fish passage and only slightly increase the water velocities at higher flows that LCR steelhead and LCR Chinook salmon experience. Removal of the culvert on Trillium Creek will allow for better fish passage than exists right now.

Summary of Effects to Critical Habitat. Information presented in the status and baseline sections of this Opinion demonstrate that the Johnson Creek and Clackamas River 5th field watersheds have been altered, but conditions still support successful spawning, rearing and migration. Two PCEs will be affected, but will not be functionally changed because effects will be small-scale, short-term, or unlikely. The adverse effects to water quality from sediment will be temporary and localized. This adverse effect is at the site and reach scale, and short-term. The natural cover will be adversely affected at the site but will be restored with native vegetation in a greater density. Fish passage conditions will be maintained at the site. Stormwater will be treated to a level higher than pre-project conditions due to treatment of the CIA and treatment of additional I-205 sections.

Cumulative Effects

Cumulative effects are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02).

In 2000, the population of Clackamas County was 338,387 and between 2000 and 2009, the population increased by 14.1%.[5] The NMFS assumes that future private and state actions will continue within the action area, increasing as population density rises. However, NMFS is not aware of any specific future non-Federal activities within the action area that would cause greater effects to a listed species or a designated critical habitat than presently occurs. In discussions with ODOT we were unable to identify future non-Federal actions that were planned within the action area.

Synthesis and Integration of Effects

The NMFS identified major factors limiting recovery of LCR Chinook salmon, LCR steelhead, and LCR coho salmon as reduced access to spawning/rearing habitat in tributaries, altered water quality and temperature in tributaries, lost/degraded floodplain connectivity and lowland stream habitat, altered streamflow in tributaries, and hatchery impacts. In the Clackamas River, access and use of migration and rearing areas will be maintained by this proposed action. Water quality will be reduced in the short term at the site and reach scales, however it will improve back to pre-

[5] U.S. Census Bureau, State and County Quickfacts. Clackamas County. Available at: http://quickfacts.census.gov/qfd/

project condition in the long term after the first fall rain events. Stormwater treatment will improve water quality in the long term due to the reduction of dissolved metals entering the Clackamas River and Kellogg Creek.

The LCR Chinook salmon, LCR steelhead, and LCR coho salmon in the Lower Willamette River and the Lower Clackamas River are within the Lower Willamette River biogeographic strata. Some PCEs (food resources, water quality and substrate) will be adversely affected in the short term, but these effects are not likely to meaningfully change LCR Chinook salmon, LCR steelhead, and LCR coho salmon survival rates, distribution or diversity at the population level and are not likely to meaningfully change the conservation value of the PCEs. The action area is limited to a very small portion of the Johnson Creek and Clackamas River 5th field HUCs. Thus, the action as proposed is not likely to reduce the conservation value of critical habitat within or downstream from the action area, or at the watershed or designation scales. The majority of the LCR Chinook salmon, LCR steelhead, and LCR coho salmon juvenile rearing habitat exists upstream in the upper portion of the Clackamas River and tributaries. Further, the short-term adverse effects will affect a very small proportion of the total number of LCR Chinook salmon, LCR steelhead, and LCR coho salmon, because few fish are likely to be migrating past, or rearing in, the site during the in-water work window when construction activities will occur. After the effects of the action, critical habitat would remain functional, or retain the current ability for the PCEs to become functionally established, to serve the intended conservation role for the species, and therefore the action is not likely to result in the destruction or adverse modification of critical habitat.

The effects of the action on individual LCR Chinook salmon, LCR steelhead, and LCR coho salmon, when added to the baseline and cumulative effects are not sufficient to have an effect at the population level. Due to temperatures in the mainstem Clackamas River, Kellogg Creek, and the tributaries very few individuals of the population are likely to be in the action area during the summer in-water work period. The majority of the population during this period is rearing in tributaries to the Clackamas River, where the water temperatures are cooler and food and adequate habitat is more abundant. The few fish within the action area during work area isolation (estimated 300 individuals), are a minor portion of the summer rearing juvenile LCR steelhead and LCR coho salmon population in the Johnson Creek and Clackamas River 5th Field HUCs.

The effects of the action on PCEs and designated critical habitat for LCR Chinook salmon and LCR steelhead, when added to the baseline and cumulative effects, are not sufficient to reduce the conservation value of the critical habitat at the 5th field watershed level. The functional floodplain will be fully spanned by the new bridges and culverts. Water quantity and quality will be improved over pre-project conditions due to treatment of the CIA for dissolved copper. Natural cover and forage will be affected slightly in the short term, however will likely improve over the long term as riparian vegetation gets established and grows. However, these effects will not be long-lasting and the long-term effects (months to years) are likely to improve migration and rearing conditions. Fish passage will be maintained at pre-project levels following construction and slightly improved in Trillium Creek.

Conclusion

After reviewing the status of LCR Chinook salmon, LCR steelhead, and LCR coho salmon and designated critical habitat (except LCR coho salmon), the environmental baseline for the action area, the action is not expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of LCR Chinook salmon, LCR steelhead, and LCR coho salmon in the wild by reducing the reproduction, numbers, or distribution of that species, and therefore will not jeopardize the continued existence of LCR Chinook salmon, LCR steelhead, and LCR coho salmon.

Because they will not be present in the action area during construction, NMFS also concludes that the proposed action is not likely to adversely affect UWR Chinook salmon or UWR steelhead or their designated critical habitat.

Incidental Take Statement

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by NMFS as significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by Fish and Wildlife Service as an intentional or negligent action that creates the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not prohibited under the ESA, provided that such taking is in compliance with the terms and conditions of an incidental take statement.

Amount or Extent of Take

Actions necessary to complete the proposed project will take place in locations where, at times, juvenile and adult LCR Chinook salmon, LCR steelhead, and LCR coho salmon are reasonably certain to occur. The habitat that will be affected (migration, spawning and rearing) will improve over time, and is not limited to the site-specific or watershed scale.

Incidental take caused by the adverse effects of the proposed action will include the following:

1. Capture of juvenile fish, some of which will be injured or killed, during work area isolation.
2. Injury or death of individual fish caused due to suspended sediments or chemical contamination.

This take will occur within an area of 6,080 ft^2 associated with the proposed bridge and culvert locations. Incidental take within that area, that meets the terms and conditions of this incidental take statement will be exempt from the taking prohibition.

Isolation of in-water work areas in Phillips Creek and Trillium Creek under the proposed action will isolate approximately 6,080 ft^2 of the action area. Juvenile LCR steelhead and LCR coho salmon juveniles within this area will be exposed to activities that will harass them to the extent that most will flee the area. The NMFS expects the process of work area isolation is reasonably certain to cause additional incidental take (capture, injure, or kill) of up to 300 of these (150 LCR steelhead and 150 LCR coho salmon) juveniles inside the isolation areas from the exposure to high levels of turbidity and the physical handling from the salvage operations. These numbers are based on the data showing less than 100 individuals are salvaged during any isolation activity. From 2007-2009, ODOT completed 99 work area isolation operations involving capture and release using nets and electrofishing; 31 of those operations resulted in capture of one Chinook salmon, 760 coho salmon, and 62 steelhead (Ken Cannon, pers. comm., 2010). There will be three isolations on this project.

Take of ESA-listed fish as a result of the project will be difficult to detect. However, without proper implementation of conservation measures and BMPs, adverse effects due to road construction, culvert installation and removal, cofferdams installation and removal, access roads, stormwater, *etc*. could potentially rise to the level of take. FHWA has integrated many environmental conservation measures shown in the BA on pages 44-51 that will avoid and minimize these effects due to construction.

The distribution and abundance of fish that occur within an action area are affected by habitat quality, competition, predation, and the interaction of processes that influence genetic, population, and environmental characteristics. These biotic and environmental processes interact in ways that may be random or directional, and may operate across far broader temporal and spatial scales than are affected by the proposed action. Thus, the distribution and abundance of fish within the action area cannot be attributed entirely to habitat conditions, nor can NMFS precisely predict the number of fish that are reasonably certain to be injured or killed if their habitat is modified or degraded by the proposed action.

Here, the best available indicators for the extent of incidental take are the acreage of the riparian vegetation removal associated with the stream crossings on this project, and the estimated area of stream isolation. In the accompanying Opinion, NMFS determined that this level of incidental take is not likely to result in jeopardy of the ESA-listed species. Effects outside of these areas are not expected to rise to a level of take due to implementation of best management practices (e.g. fish capture, isolation, turbidity monitoring) and timing of in-water work. The later minimizes opportunity for take due work in the in-water window and outmigration (juveniles) due to life history strategies and thermal stress.

The estimated number of juvenile LCR coho salmon and LCR steelhead to be captured or killed during the 6,080-square foot isolation areas associated with the culvert removals are up to 300 (150 LCR steelhead and 150 LCR coho salmon) individuals killed. The estimated extent of take due to riparian removal is 3.4 acres for LCR steelhead, and LCR coho salmon. Each (number of

individuals [separate numbers for each ESU]) and riparian acres removed (3.4 acres on streams inhabited by ESA-listed species) is a threshold for reinitiating consultation. Exceeding either of these limits will trigger the reinitiation provisions of this Opinion.

Reasonable and Prudent Measures

The following measures are necessary and appropriate to minimize the impact of incidental take of listed species due to the proposed action.

The FHWA shall:

1. Minimize incidental take resulting from construction by applying measures to avoid or minimize adverse effects to aquatic and riparian systems.
2. Avoid or minimize the amount and extent of take resulting from fish salvage.
3. Ensure completion of a monitoring and reporting program to confirm that the take exemption for the proposed action is not exceeded, and that the terms and conditions in this incidental take statement are effective in minimizing the impact of incidental take.

Terms and Conditions

The measures described below are non-discretionary, and must be undertaken by the FHWA or, if an applicant is involved, must become binding conditions of any permit or grant issued to the applicant, for the exemption in section 7(o)(2) to apply. The FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA (1) fails to assume and implement the terms and conditions or (2) fails to require an applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the FHWA or applicant must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement.

1. To implement reasonable and prudent measure #1 (general construction, riparian disturbance, and in-water work), the FHWA shall ensure that:

    a. Timing of In-water Work. Work within the active channel of the Trillium Creek will be completed during the period of July 15 to August 31. Work within the active channel of the Phillips Creek will be completed during the period of July 15 to September 30. All in-water work must be completed within these dates unless otherwise approved in writing by NMFS. Work done outside of this period must be fully isolated and contained.
    b. Minimize Impact Area. Confine construction impacts to the minimum area necessary to achieve project goals.
    c. Cessation of Work. Operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
    d. Pollution and Erosion Control Plan. A pollution and erosion control plan will be prepared and carried out to prevent pollution related to construction operations.

The plan must be available for inspection on request by FHWA or NMFS, contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations:

i. Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.

ii. A description of any hazardous products or materials that will be used, including procedures for inventory, storage, handling and monitoring.

iii. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

iv. Practices to prevent construction debris from dropping into any stream or waterbody and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

v. Turbidity monitoring shall be conducted and recorded as described below. Monitoring shall occur each day during daylight hours when in-water work is being conducted. An appropriately and regularly calibrated turbidimeter is recommended, however, visual gauging is acceptable. Turbidity that is visible over background is considered an exceedance of the standard

   (1) Representative Background Point: a sample or observation must be taken every two hours at a relatively undisturbed area approximately 100 feet upcurrent from in-water disturbance to establish background turbidity levels for each monitoring cycle. Background turbidity, location, date, and time must be recorded prior to monitoring downcurrent.

   (2) Compliance Point: Monitoring shall occur every two hours approximately 100 feet downcurrent from the disturbance and be compared against the background measurement or observation. The turbidity, location, date, and time must be recorded for each sample.

vi. Turbidity compliance: Results from the compliance points should be compared to the background levels taken during each monitoring interval. Exceedances are allowed as follows:

MONITORING WITH A TURBIDIMETER

ALLOWABLE EXCEEDANCE TURBIDITY LEVEL	ACTION REQUIRED AT 1st MONITORING INTERVAL	ACTION REQUIRED AT 2nd MONITORING INTERVAL
0 to 5 NTU above background	Continue to monitor every 2 hours	Continue to monitor every 2 hours
5 to 29 NTU above background	Modify BMPs & continue to monitor every 2 hours	Stop work after 4 hours at 5-29 NTU above background
30 to 49 NTU above background	Modify BMPs & continue to monitor every 2 hours	Stop work after 2 hours at 30-49 NTU above background
50 NTU or more above background	Stop work	Stop work

VISUAL MONITORING

ALLOWABLE EXCEEDANCE TURBIDITY LEVEL	ACTION REQUIRED AT 1st MONITORING INTERVAL	ACTION REQUIRED AT 2nd MONITORING INTERVAL
No plume observed	Continue to monitor every 2 hours	Continue to monitor every 2 hours
Plume observed	Modify BMPs & continue to monitor every 4 hours	Stop work after 4 hours with an observed plume

If an exceedance occurs at: 50 NTU or more over background; 30 NTU over background for 2 hours; or 5-29 NTU over back ground for 8 hours, the activity must stop immediately for the remainder of that 24-hour period.

e. Inspection of Erosion Controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.[6]
   i. If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements or install additional controls as necessary.
   ii. Sediment must be removed from erosion controls once it has reached 1/3 of the exposed height of the control.

f. Construction Discharge Water. All discharge water created by construction (e.g., concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows:
   i. Water quality treatment. Design, build and maintain facilities to collect and treat all construction discharge water, using the best available technology applicable to site conditions, to remove debris, nutrients, sediment, petroleum products, metals and other pollutants likely to be present.
   ii. Return flow. If construction discharge water is released using an outfall or diffuser port, velocities may not exceed four feet per second, and the maximum size of any aperture may not exceed one inch.

[6] 'Working adequately' means no turbidity plumes are evident during any part of the year.

iii. Pollutants. Do not allow pollutants such as green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any waterbody, wetland or stream channel below OHWL.

g. Pre-construction Activity. Before significant[7] alteration of the project area, the following actions are completed:

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[8]).

(2) An oil-absorbing floating boom whenever surface water is present.

iii. Erosion controls. Erosion controls must be in place and appropriately installed downslope of riparian areas to be disturbed until site restoration is complete.

h. Select Heavy Equipment with Care. Use of heavy equipment will be restricted as follows:

i. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (*e.g.*, minimally-sized, rubber-tired).

ii. Vehicle staging. Vehicles must be fueled, operated, maintained, and stored as follows:

(1) Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area 150 feet or more away from any stream, waterbody or wetland. All vehicles operated within 150 feet of any stream, waterbody or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by FHWA or NMFS.

(2) All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt and mud.

iii. Stationary power equipment. Stationary power equipment (*e.g.*, generators, cranes) operated within 150 feet of any stream, waterbody or wetland must be diapered to prevent leaks, unless otherwise approved in writing by NMFS.

i. Site Preparation. Native materials will be conserved for site restoration.

i. If possible, native material must be left where they are found.\

ii. Materials that are removed, damaged, or destroyed must be replaced with a functional equivalent during site restoration.

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[7] 'Significant' means an effect can be meaningfully measured, detected or evaluated.

[8] When available, certified weed-free straw or hay bales must be used to prevent introduction of noxious weeds.

iii. Any large wood,[9] native vegetation, weed-free topsoil and native channel material displaced by construction must be stockpiled for use during site restoration.

2. To implement reasonable and prudent measure #2 (work area isolation and fish salvage), the FHWA shall ensure that:

a. Isolation of In-water Work Area. The work area will be well isolated from the active flowing stream using inflatable bags, sandbags, sheet pilings or similar materials.

i. After completion of the project, the existing isolation area should be re-watered in a way that will not degrade water quality or cause fish stranding.

ii. An ODOT or ODFW biologist shall be on site to monitor for fish stranding during this process.

iii. The existing flow downstream from the action area will be maintained throughout the construction.

iv. Turbidity monitoring shall be conducted and recorded as described below. Monitoring shall occur each day during daylight hours when in-water work is being conducted. An appropriately and regularly calibrated turbidimeter is recommended, however, visual gauging is acceptable. Turbidity that is visible over background is considered an exceedance of the standard

b. Capture and Release. Fish will be captured and released from the isolated area using trapping, seining, electrofishing or other methods as are prudent to minimize risk of injury.

i. A fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish must conduct or supervise the entire capture and release operation.

ii. If electrofishing equipment is used to capture fish, the capture team must comply with NMFS' electrofishing guidelines.[10]

iii. The capture team must handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.

iv. Captured fish must be released as near as possible to capture sites.

v. ESA-listed fish may not be transferred to anyone except NMFS personnel, unless otherwise approved in writing by NMFS.

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[9] For purposes of this Opinion only, 'large wood' means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and other support aquatic habitat function, given the slope and bankfull width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

[10] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (NMFS 2000) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

vi. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.

vii. The NMFS or its designated representative must be allowed to accompany the capture team during the capture and release activity, and must be allowed to inspect the team's capture and release records and facilities.

3. To implement reasonable and prudent measure #3 (monitoring), the FHWA shall ensure that FHWA and ODOT shall provide a report to NMFS with the results of the hydroacoustic monitoring program.

a. Prepare a Project Completion Report. Prepare and submit a project completion report to NMFS describing the FHWA's success in meeting the terms and conditions contained in this Opinion. The content of the project completion report will include:

i. Project identification.

(1) Project name.

(2) Type of activity.

(3) Project location by 6th field United States Geological Survey (USGS) HUC and by latitude and longitude as determined from the appropriate 7-minute USGS quadrangle map.

(4) FHWA contact person(s).

(5) Starting and ending dates for work completed.

ii. Photo documentation. Photos of habitat conditions at the project site before, during and after project completion.[11]

(1) Include general views and close-ups showing details of the project and project area, including pre- and post-construction.

(2) Label each photo with date, time, project name, photographer's name and the subject.

iii. Other data. Include the following specific project data in the project completion report:

(1) A summary of pollution and erosion control inspection results, including a description of any erosion control failure, contaminant release, and efforts to correct such incidences.

(2) Dates work ceased due to high flows.

(3) Total cleared area (riparian and upland).

(4) Isolation of in-water work area and fish capture and release.

(5) Supervisory fish biologist – name and contact information.

(6) Methods of work area isolation and take minimization.

(7) Stream conditions before, during, and within one week after completion of work area isolation.

(8) Means of fish capture.

(9) Number of LCR Chinook salmon, LCR steelhead, and LCR coho salmon captured.

[11] Relevant habitat conditions may include characteristics of stream channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually-discernable environmental conditions at the project area, and upstream and downstream from the project.

(10) Location and condition of LCR Chinook salmon, LCR steelhead, and LCR coho salmon released.
(11) Any incidence of observed injury or mortality.
(12) A summary of the hydroacoustic monitoring results.

b. Site Restoration.
   i. Finished grade slopes and elevations.
   ii. Planting composition and density.

c. Monitoring for Extent of Take. Complete riparian removal monitoring as follows: The extent of take is covered for up to 3.4 riparian acres removed on the projects streams with ESA-listed species.

d. Reporting. Prepare and submit a summary of the turbidity monitoring, including a photograph of the baseline and compliance sites; a copy of turbidity measurements or observations with the date and time that each was taken; other relevant sampling conditions; and description of any sediment control failure, sediment release, and correction efforts. Copies of daily logs for turbidity monitoring shall be available to DEQ, USACE, NMFS, USFWS, and ODFW upon request. The log must include: background NTUs or observation, compliance point NTUs or observation, comparison of the points in NTUs or narrative, and location, date, time, and tidal stage (if applicable) for each reading. Additionally, a narrative must be prepared discussing all exceedances with subsequent monitoring, actions taken, and the effectiveness of the actions.

e. Submit Reports. To submit the project completion monitoring report, or to reinitiate consultation, contact:

Oregon State Habitat Office
National Marine Fisheries Service
Attn: 2010/01606
1201 NE Lloyd Blvd., Ste. 1100
Portland, Oregon 97232-1274

f. NOTICE. If a sick, injured or dead specimen of a threatened or endangered species is found in the project area, the finder must notify NMFS through the contact person identified in the transmittal letter for this Opinion, or through NMFS Office of Law Enforcement at 1-800-853-1964, and follow any instructions. If the proposed action may worsen the fish's condition before NMFS can be contacted, the finder should attempt to move the fish to a suitable location near the capture site while keeping the fish in the water and reducing its stress as much as possible. Do not disturb the fish after it has been moved. If the fish is dead, or dies while being captured or moved, report the following information: (1) The NMFS consultation number (found on the top left of the transmittal letter for this Opinion), (2) the date, time, and location of discovery, (3) a brief description of circumstances and any information that may show the cause of death, and (4) photographs of the fish and where it was found. The NMFS also suggests that the finder coordinate with local biologists to recover any tags or other relevant research information. If the specimen is not needed by local

biologists for tag recovery or by NMFS for analysis, the specimen should be returned to the water in which it was found, or otherwise discarded.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. The following recommendations are discretionary measures that are consistent with this obligation and therefore should be carried out by the FHWA:

1. FHWA should look for opportunities to treat stormwater from existing impervious surfaces that are currently untreated.
2. FHWA should look for opportunities to enhance riparian zones to allow for more shade, lower stream temperatures, and more potential for large wood to be added to the system.

Reinitiation of Consultation

Reinitiation of formal consultation is required and shall be requested by the Federal agency or by NMFS where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that has an effect to the listed species or designated critical habitat that was not considered in the biological opinion; or (d) if a new species is listed or critical habitat is designated that may be affected by the identified action (50 CFR 402.16).

To reinitiate consultation, contact the Oregon State Habitat Office of NMFS, and refer to the NMFS Number assigned to this consultation (2010/01606).

Please notify NMFS if the FHWA carries out any of these recommendations so that we will be kept informed of actions that are intended to improve the conservation of listed species or their designated critical habitats.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The consultation requirement of section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions, or proposed actions, which may adversely affect EFH. Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitats, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside EFH, and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences

of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that may be taken by the action agency to conserve EFH.

The Pacific Fishery Management Council (PFMC) described and identified EFH for Chinook salmon, coho salmon, and Puget Sound pink salmon (PFMC 1999). The proposed action and action area for this consultation are described in the Introduction to this document. The action area includes areas designated as EFH for various life-history stages of Chinook salmon and coho salmon.

Based on information provided by the action agency and the analysis of effects presented in the ESA portion of this document, NMFS concludes that proposed action will have the following adverse effects on EFH designated for Chinook and coho salmon:

1. Short-term elevation of turbidity and sedimentation within and immediately downstream from the construction area.
2. Disturbance of the bed and banks of the wetted stream channels due to culvert replacement and installation.
3. Riparian and vegetation loss from accessing and performing construction activities near or on the bank.
4. Potential chemical contamination from fuel and lubricant spills and stormwater pollutants and metals within the wetted channel.

EFH Conservation Recommendations

The following conservation measures are necessary to avoid, mitigate, or offset the impact of the proposed action on EFH. These conservation recommendations are a subset of the ESA terms and conditions.

1. Construction Activities. Follow term and condition #1 (general construction, and in-water work) as presented in the incidental take statement of this Opinion.
2. Monitoring and Reporting. Follow term and condition #3 (monitoring), not including extent of take; and notice requiring reporting to law enforcement of sick, injured, or dead specimens of Pacific salmon found.

Statutory Response Requirement

Federal agencies are required to provide a detailed written response to NMFS' EFH conservation recommendations within 30 days of receipt of these recommendations [16 U.S.C. 1855 (b)(4)(B)]. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse affects of the activity on EFH. If the response is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations. The reasons must include the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

Supplemental Consultation

The FHWA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations [50 CFR 600.920(k)].

DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

Section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-554) (Data Quality Act) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section addresses these Data Quality Act (DQA) components, documents compliance with the DQA, and certifies that this Opinion has undergone pre-dissemination review.

Utility: Utility principally refers to ensuring that the information contained in this document is helpful, serviceable, and beneficial to the intended users.

The Opinion in this document concludes that the proposed Sunrise Project: I-205 to Rock Creek Junction (OR 212/224) will not jeopardize the affected listed species. Therefore, the FHWA can fund this action in accordance within its authority. The intended users are the FHWA and ODOT.

Individual copies were provided to the above-listed entities. This consultation will be posted on the NMFS Northwest Region website (http://www.nwr.noaa.gov). The format and naming adheres to conventional standards for style.

Integrity: This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

Objectivity:

Information Product Category: Natural Resource Plan.

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the ESA Consultation Handbook, ESA regulations (50 CFR 402.01, *et seq*.) and the MSA implementing regulations regarding EFH [50 CFR 600.920(j)].

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the Literature Cited section. The analyses in this Opinion/EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with Northwest Region ESA quality control and assurance processes.

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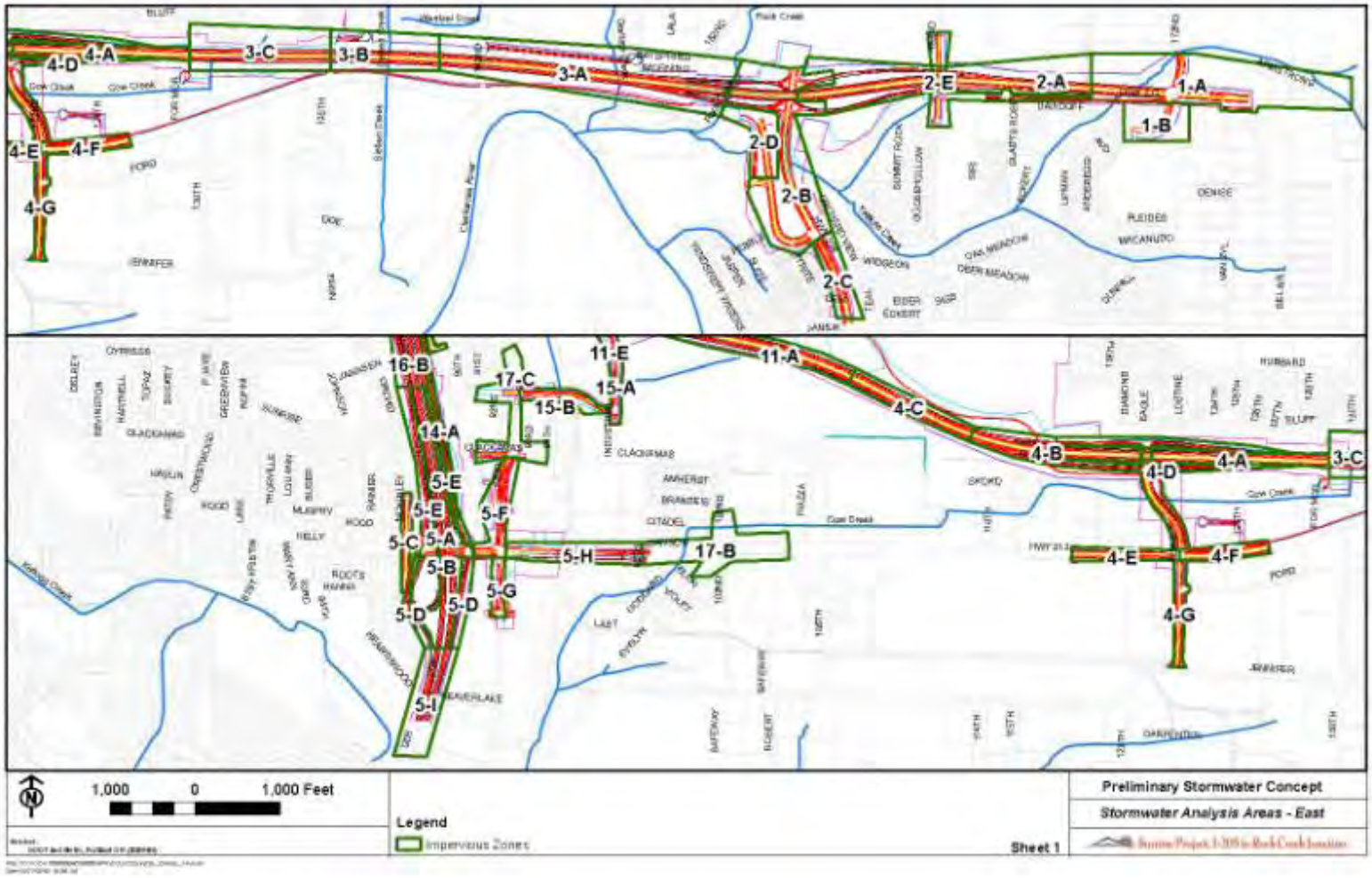
APPENDIX A. Stormwater treatment areas by section showing CIAs and untreated areas. The diagrams also show the locations of the treatment facilities and methods.



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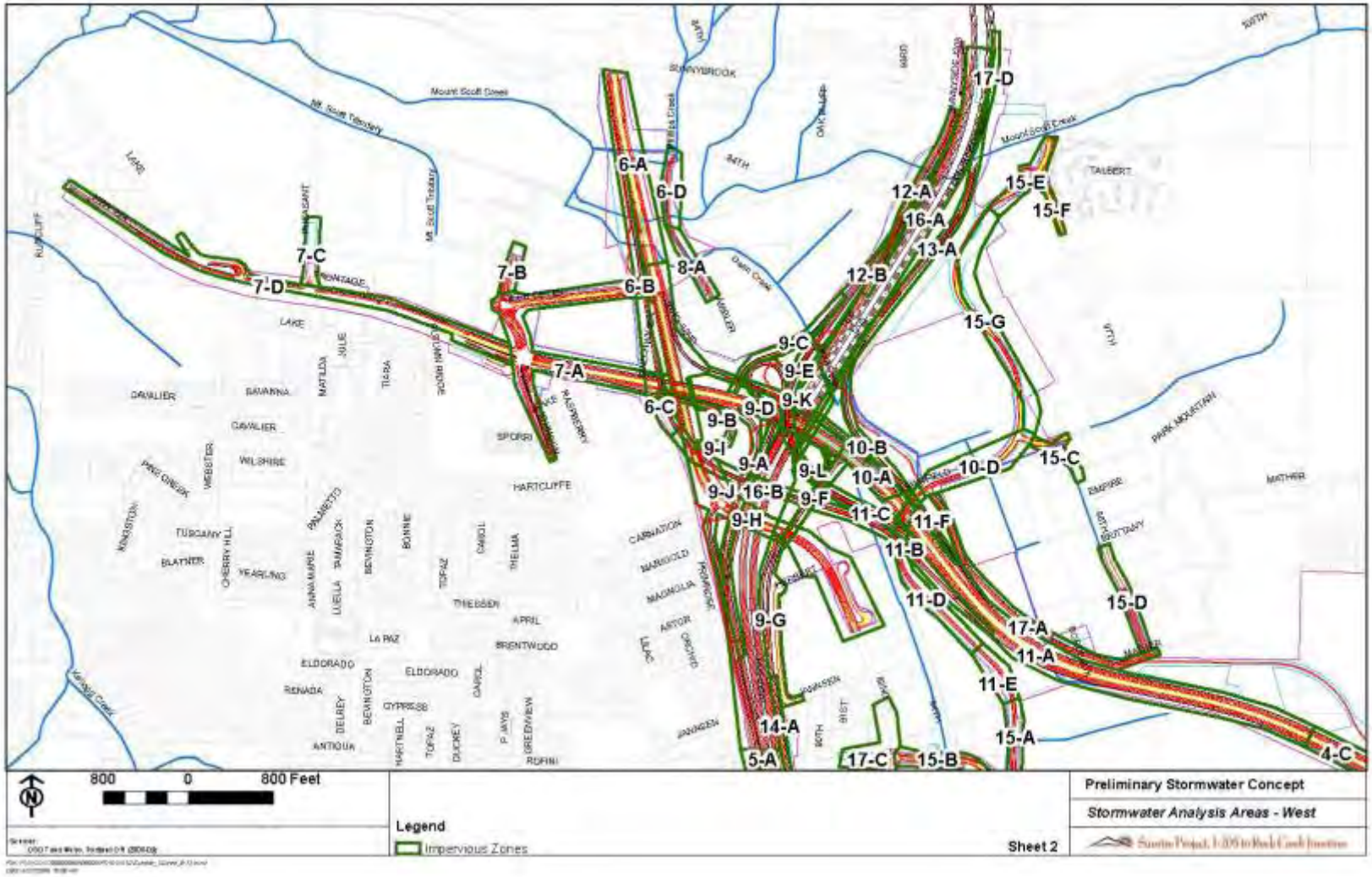

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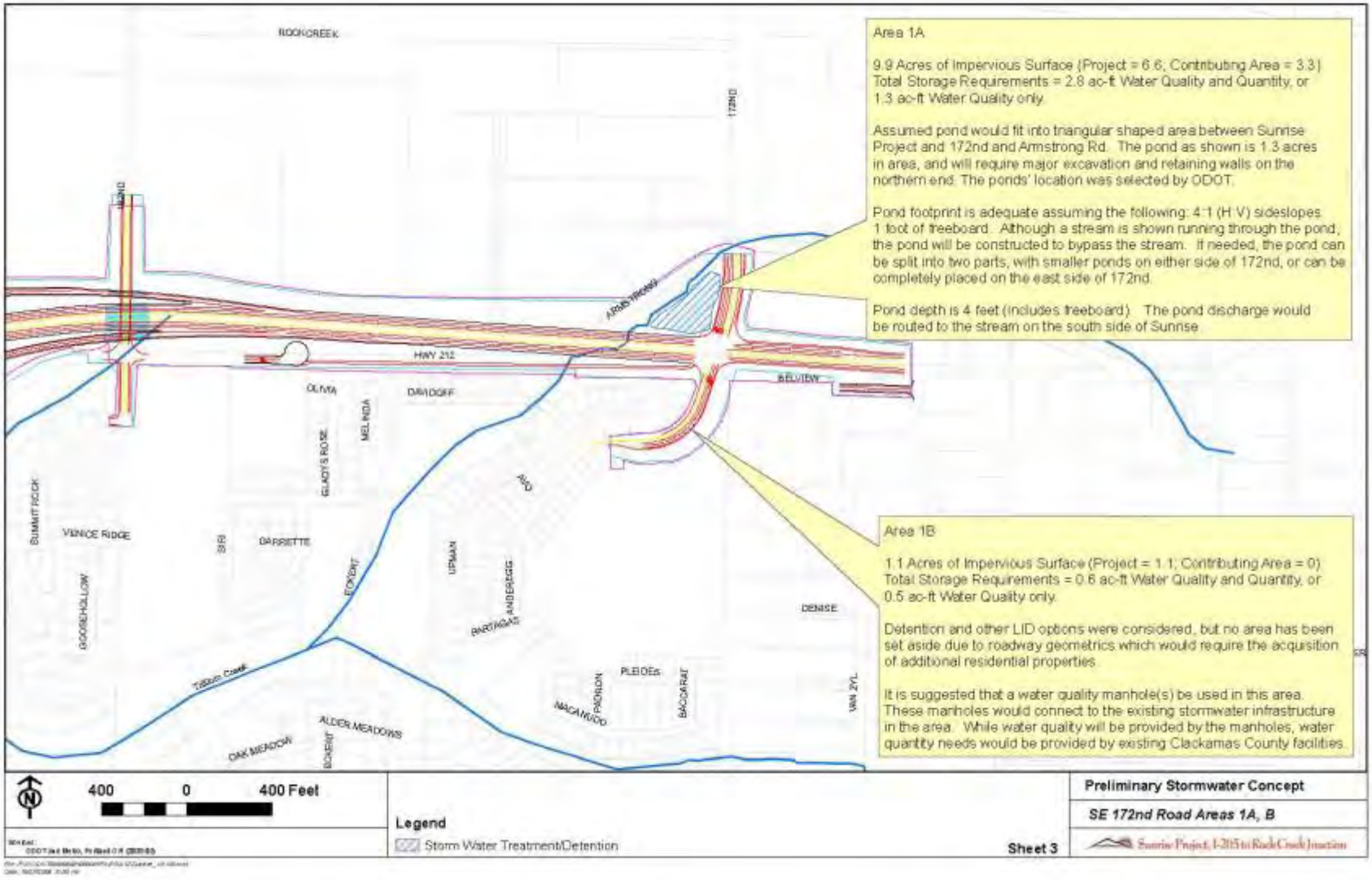

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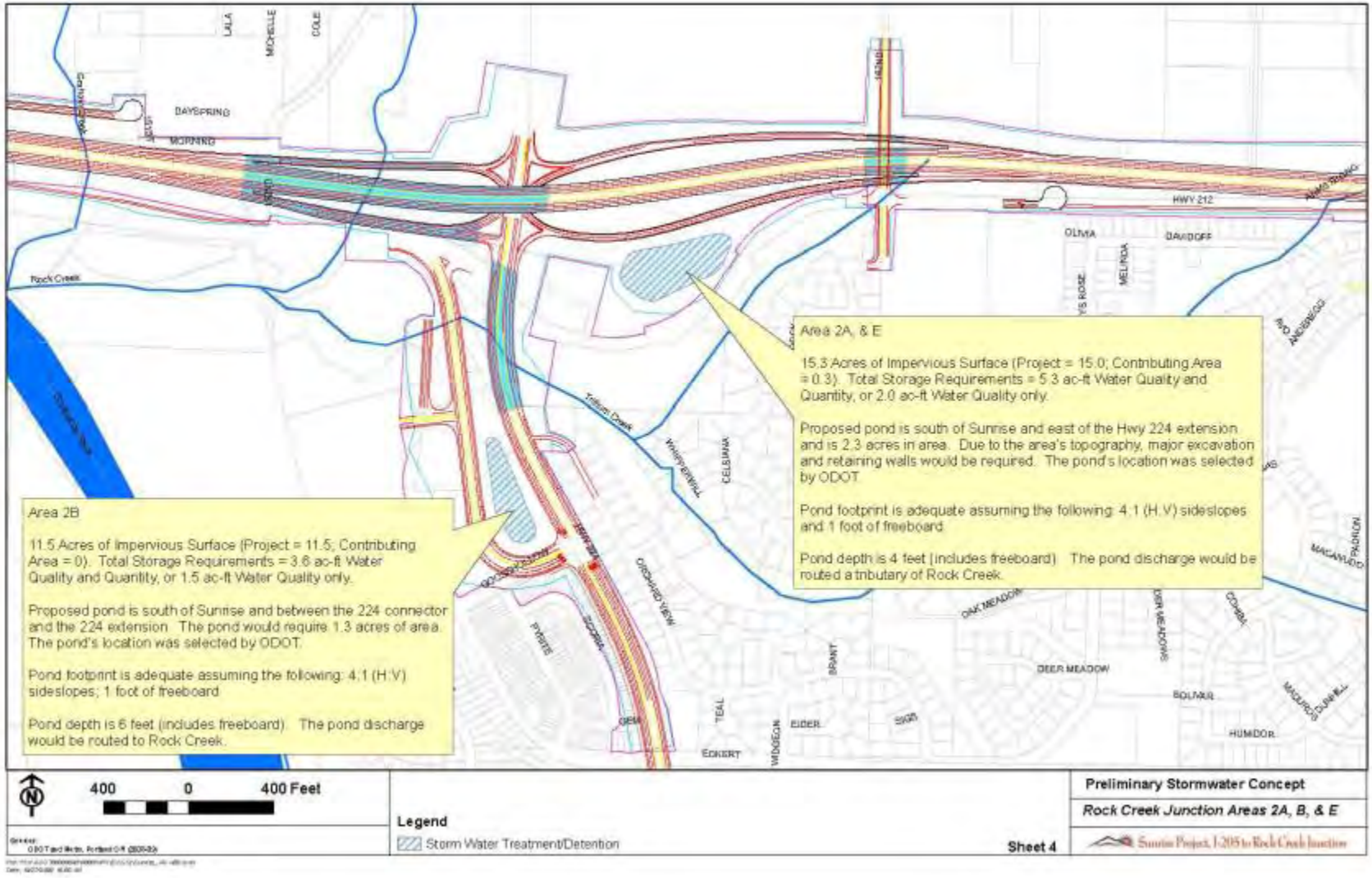

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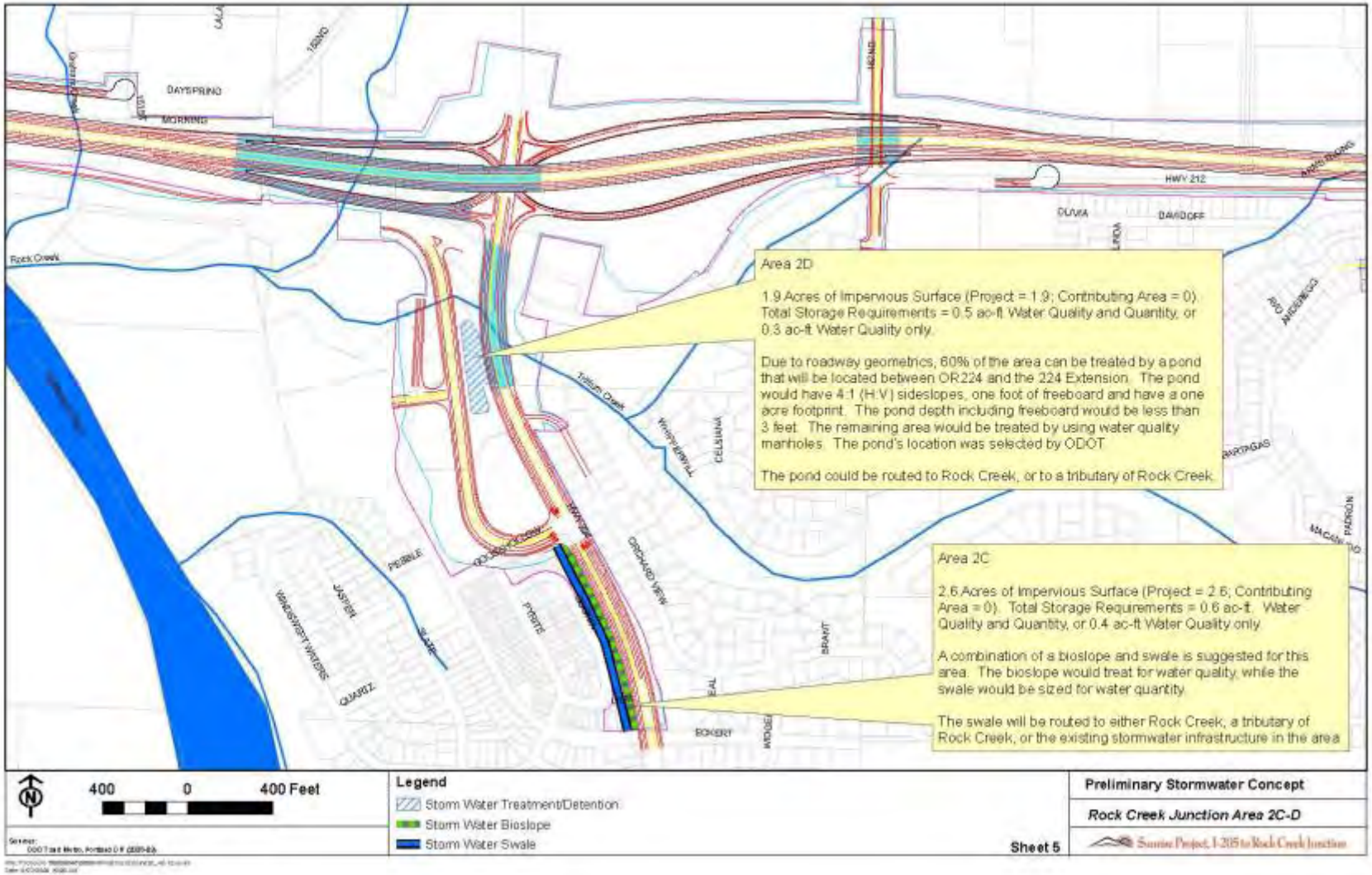

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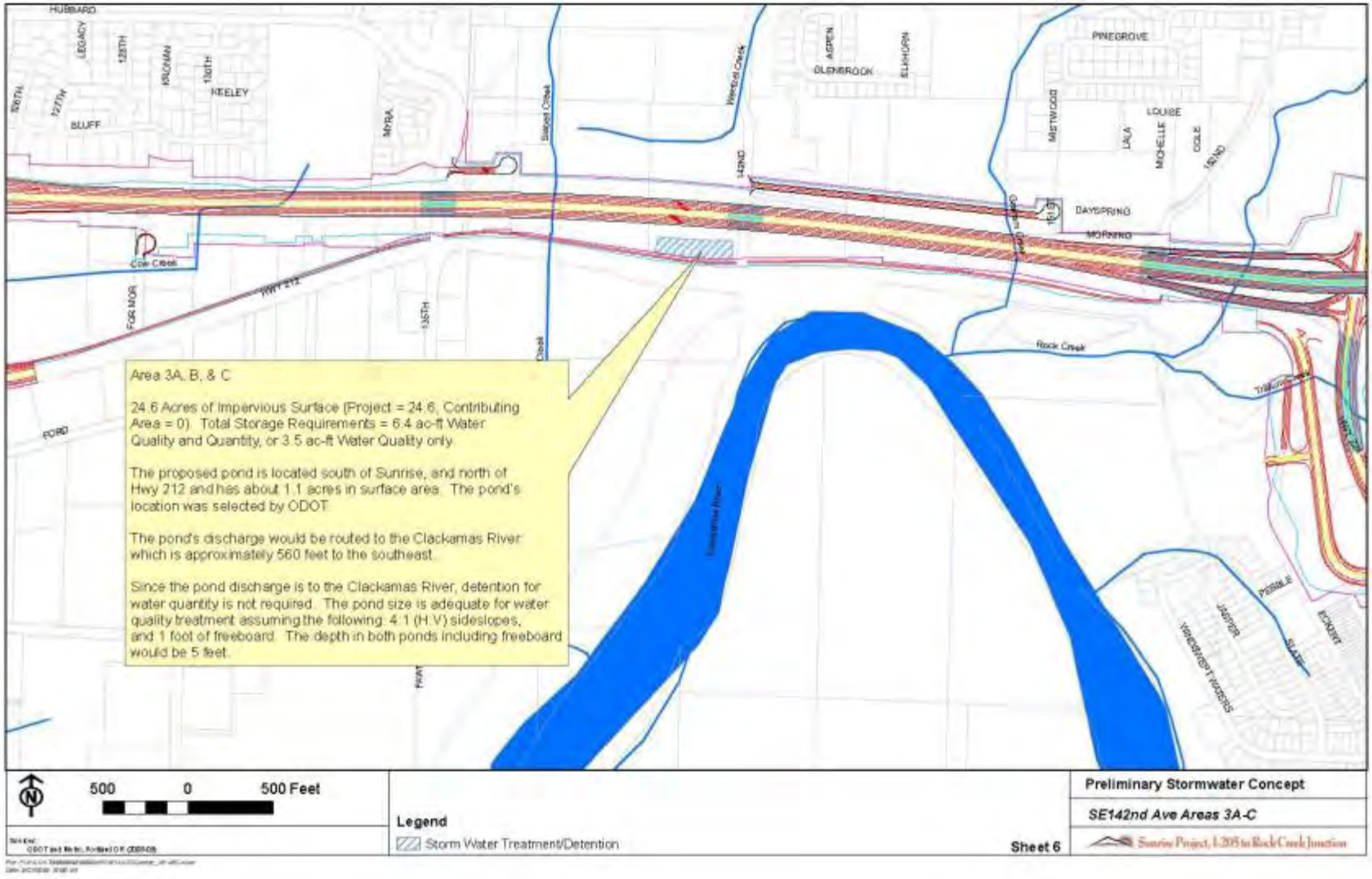

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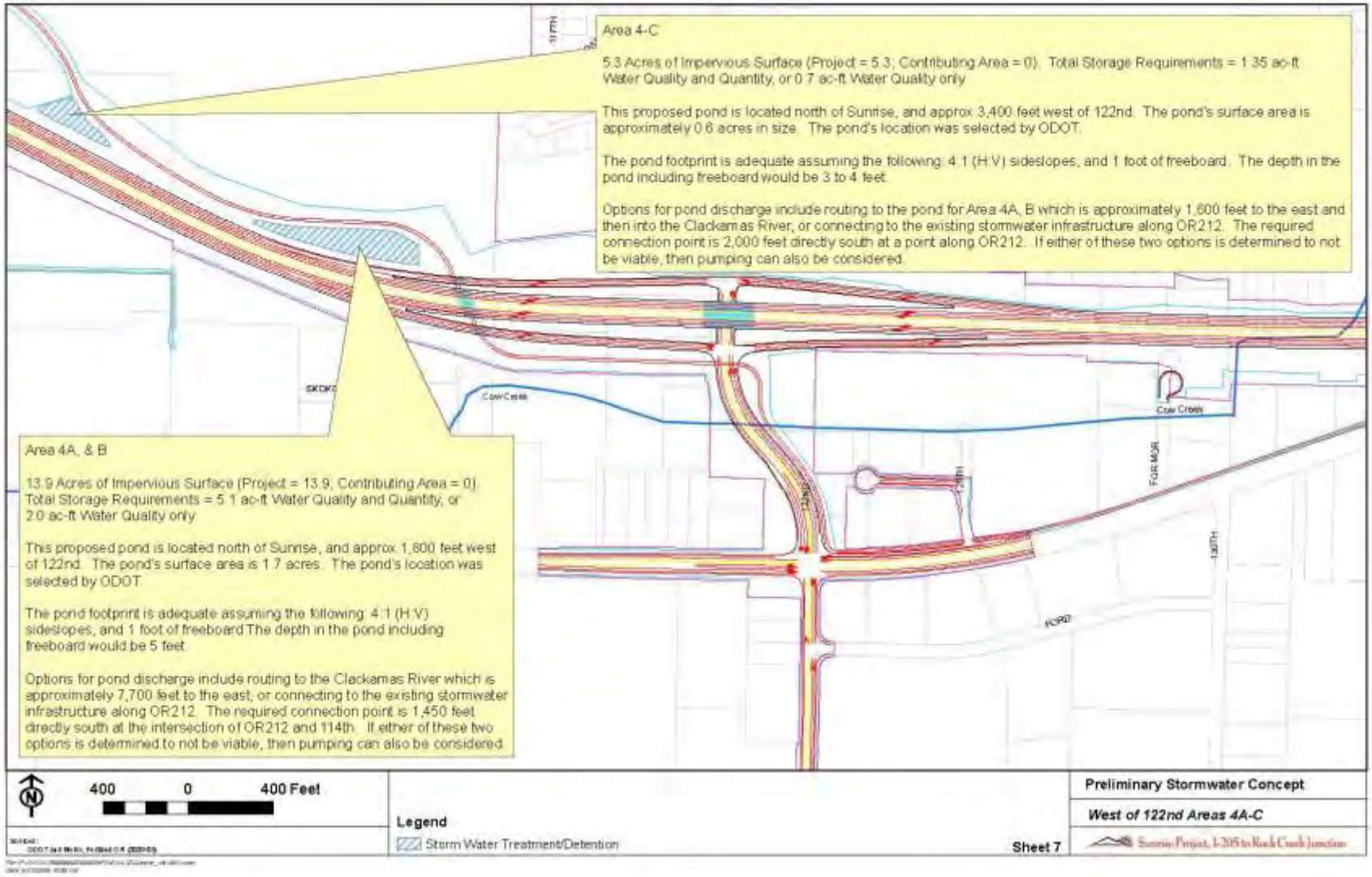

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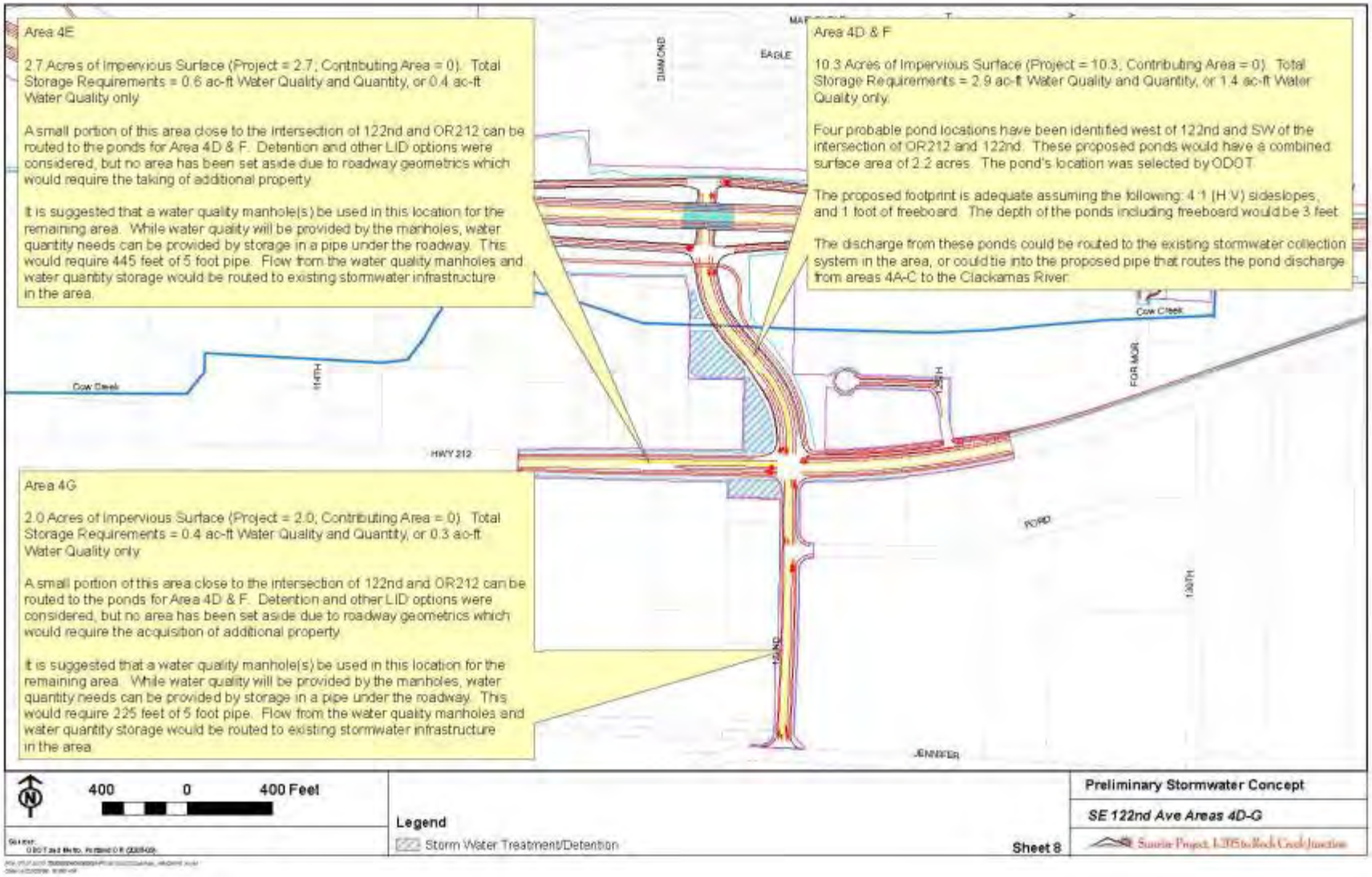

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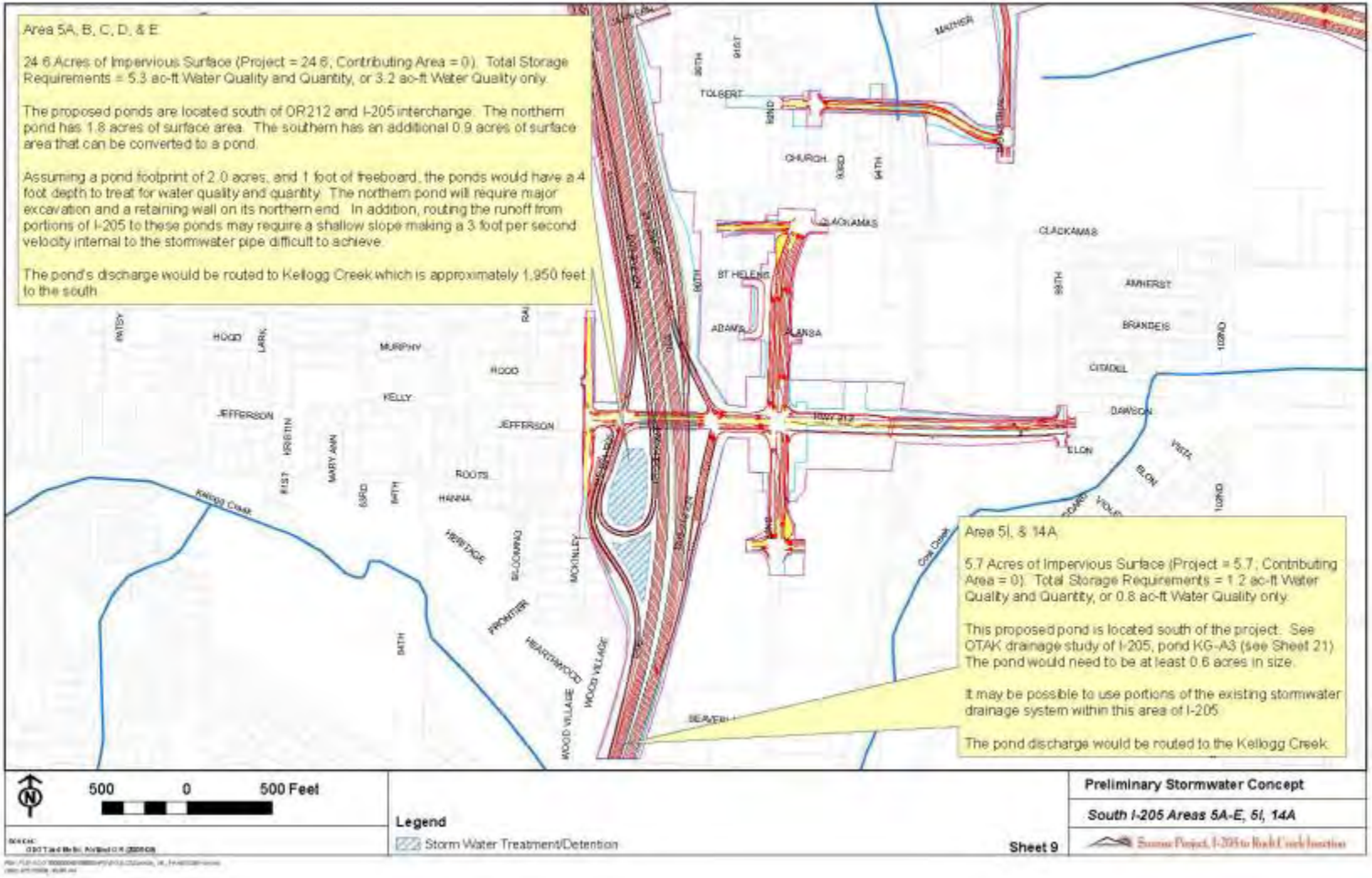

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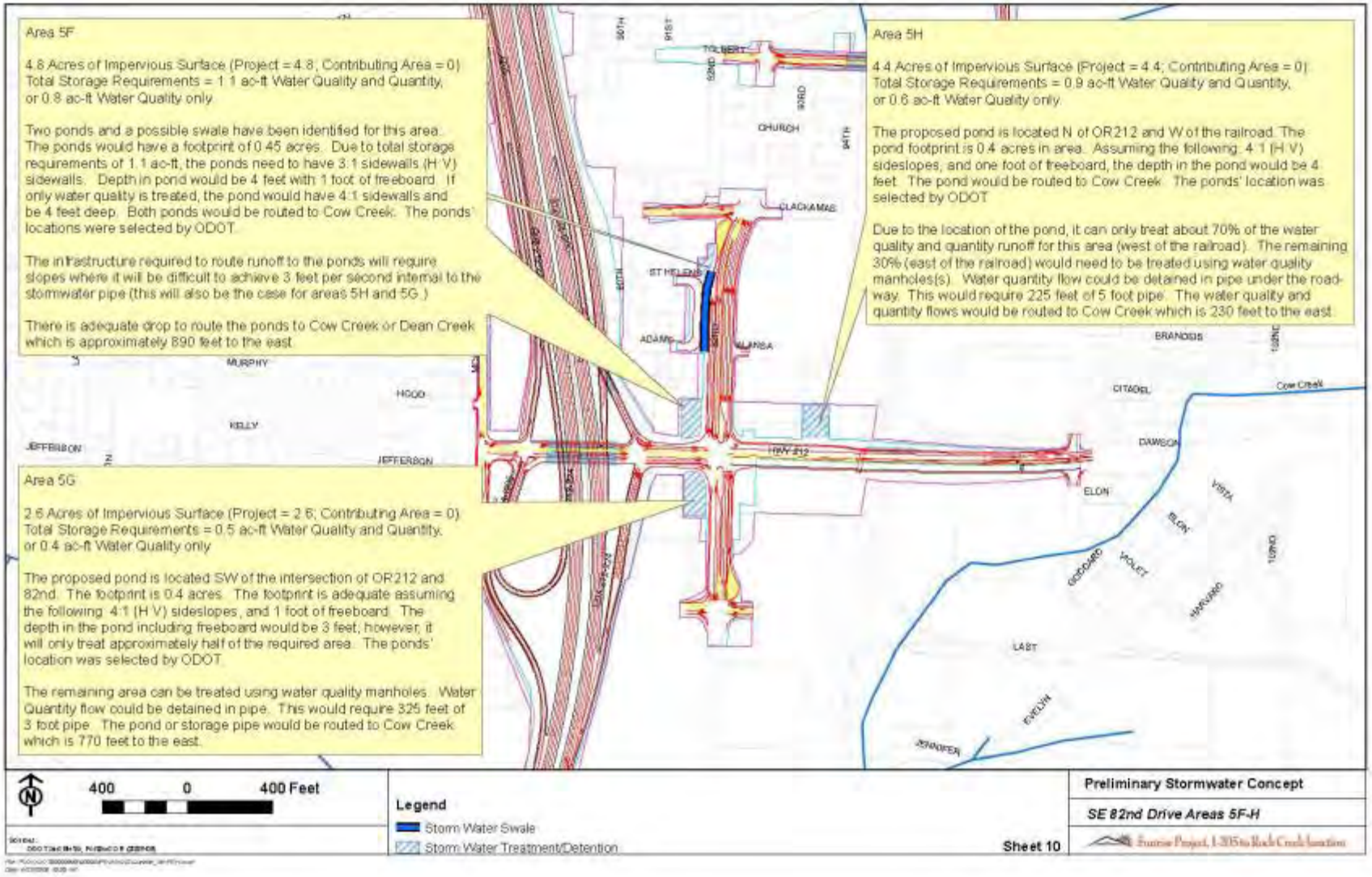

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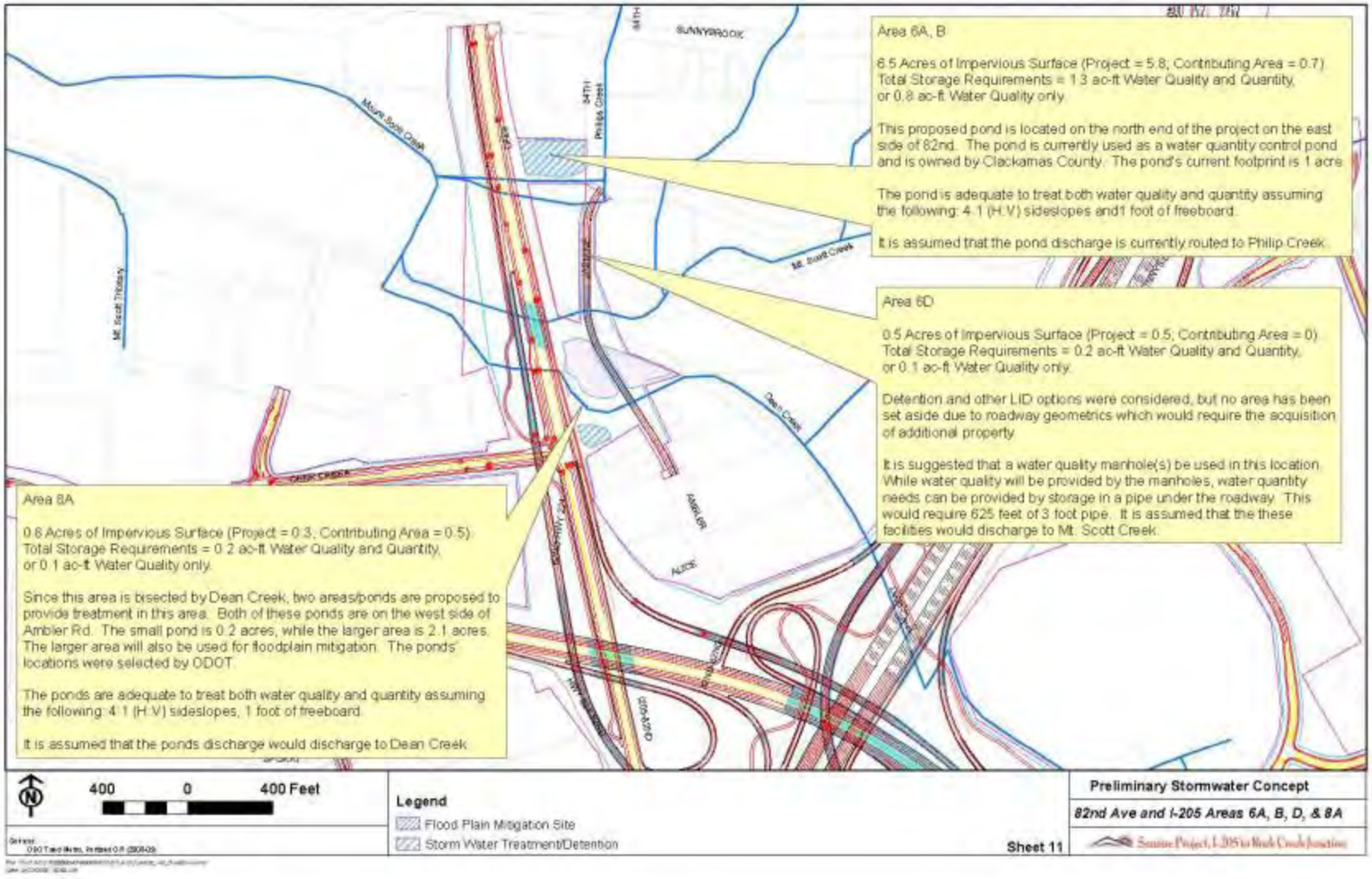

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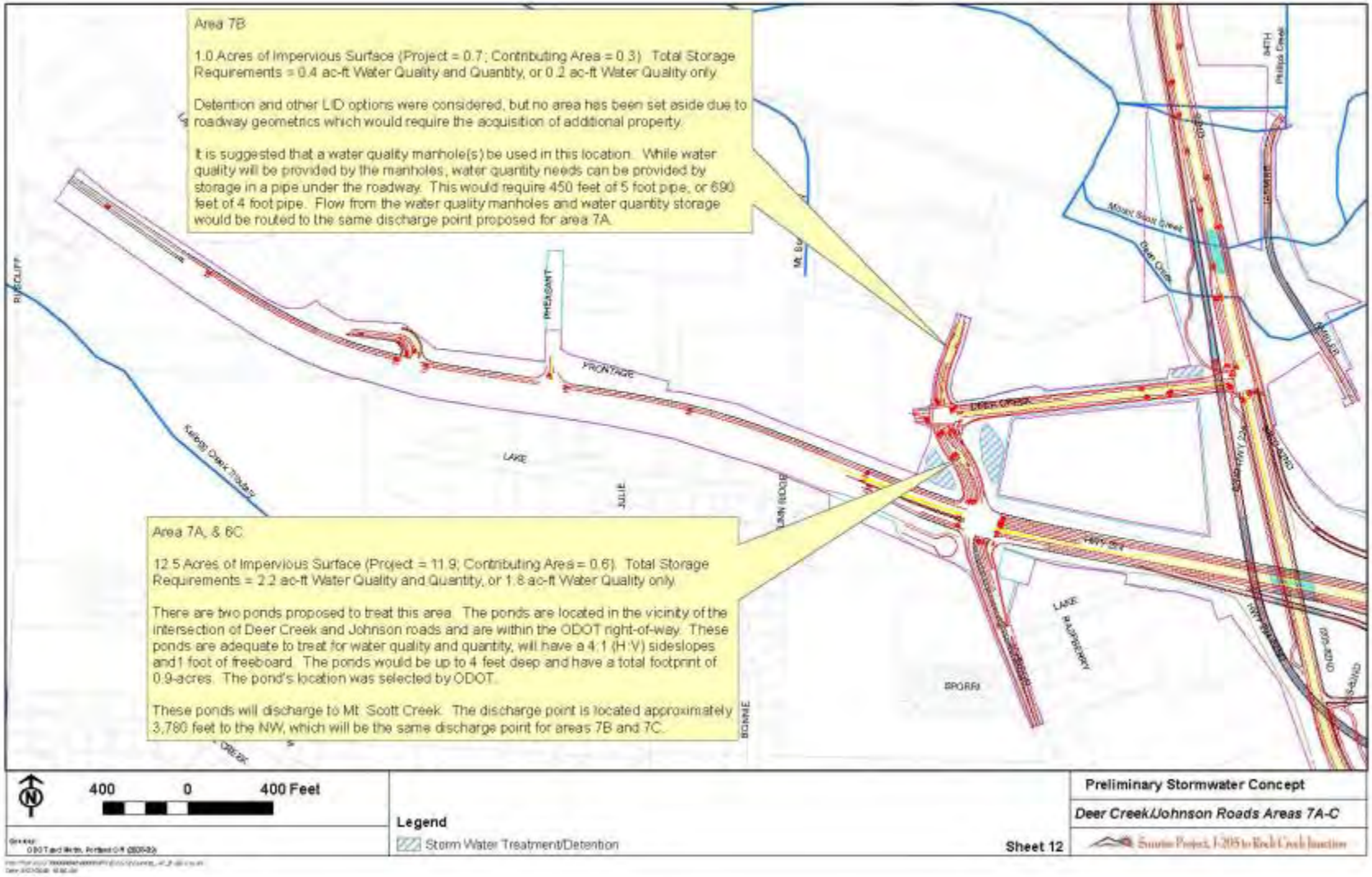

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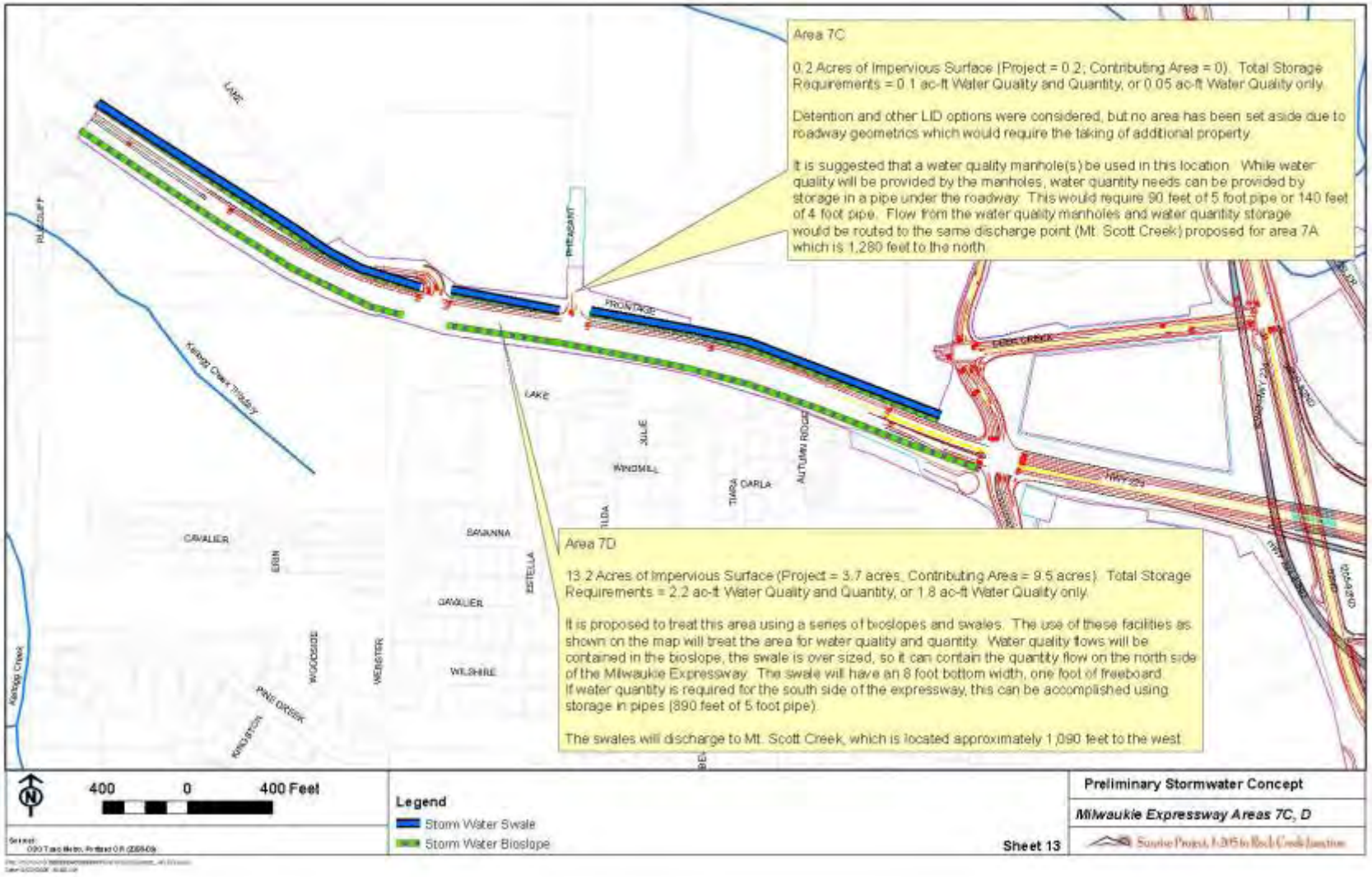

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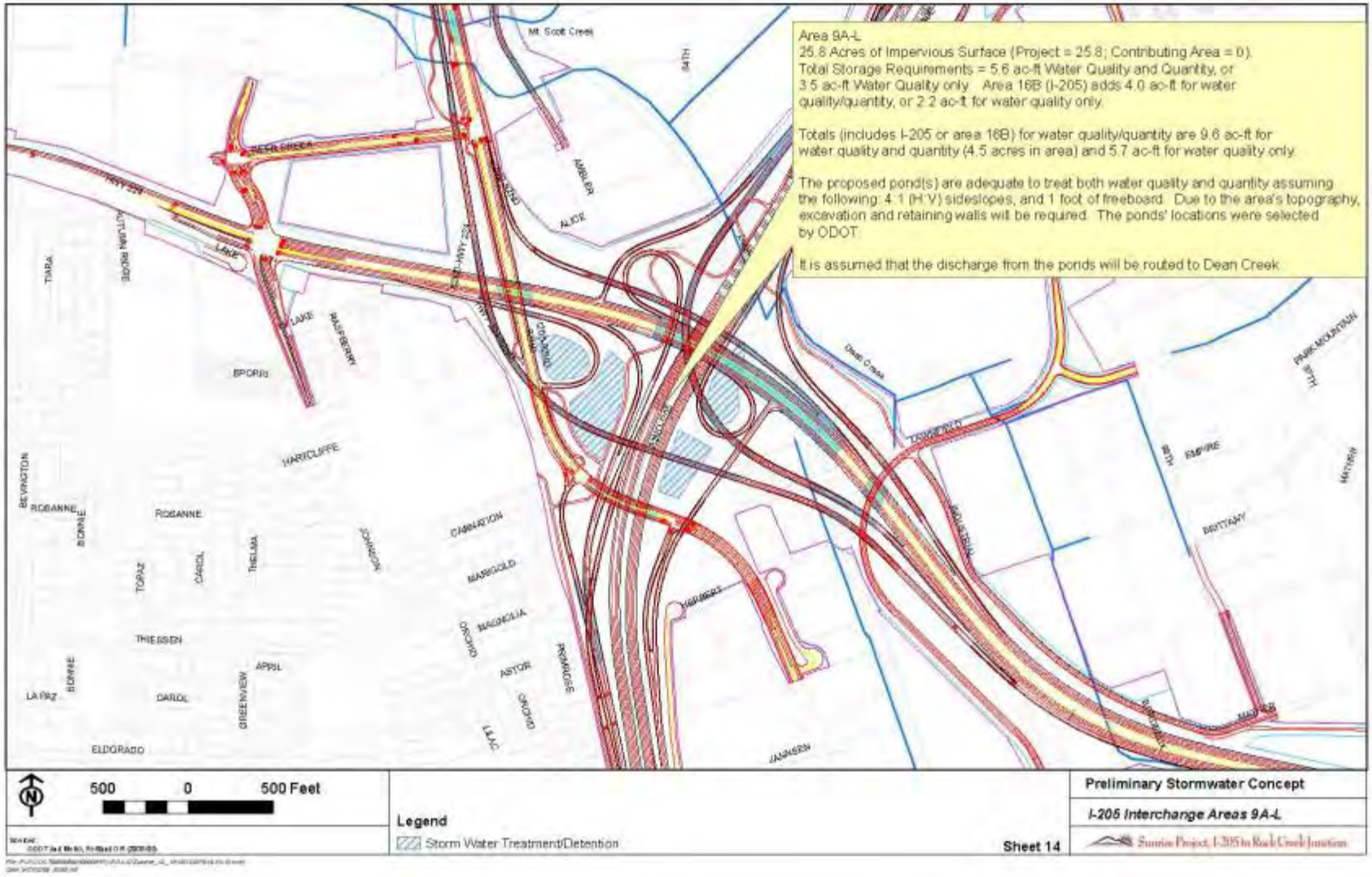

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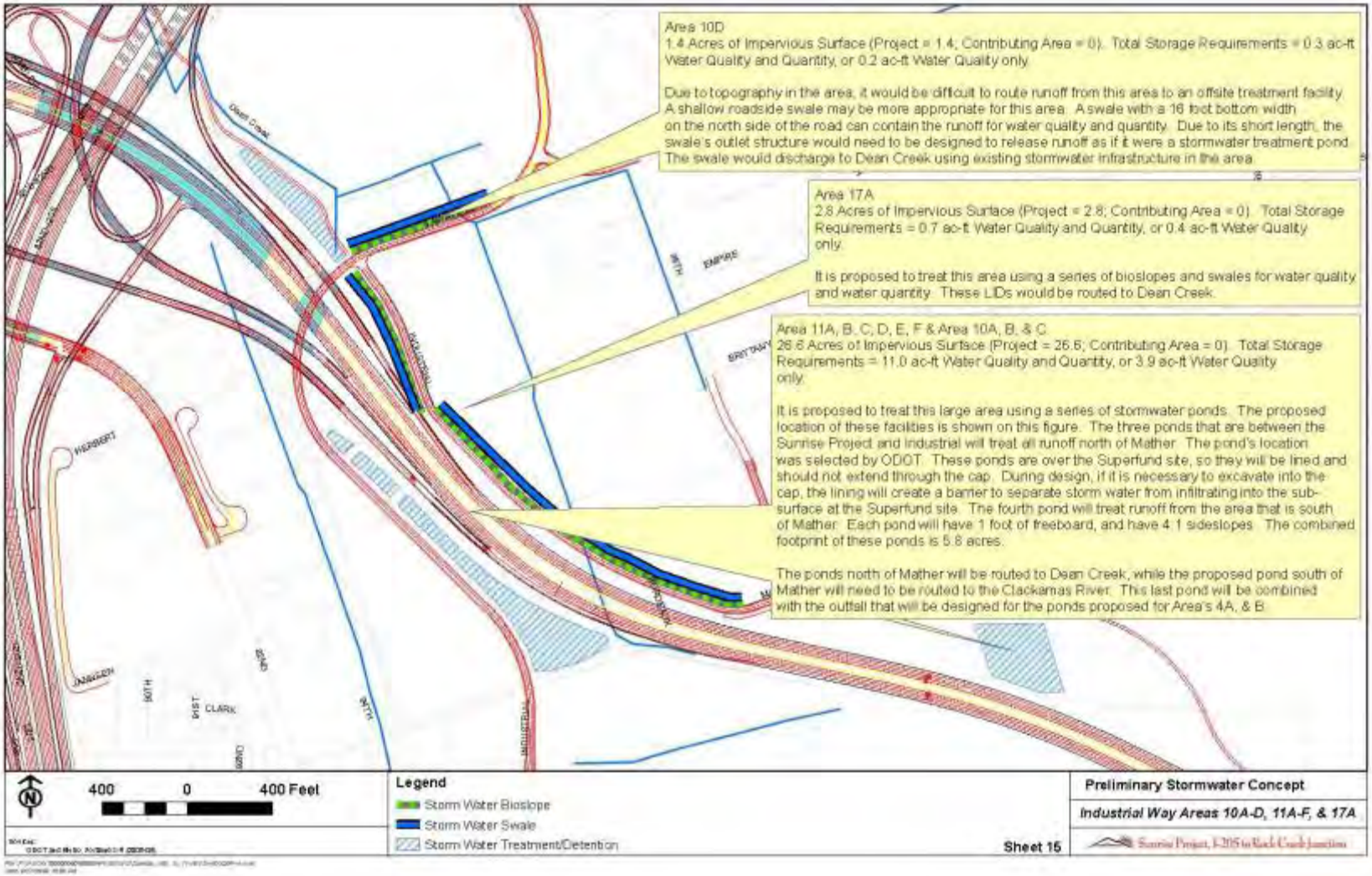

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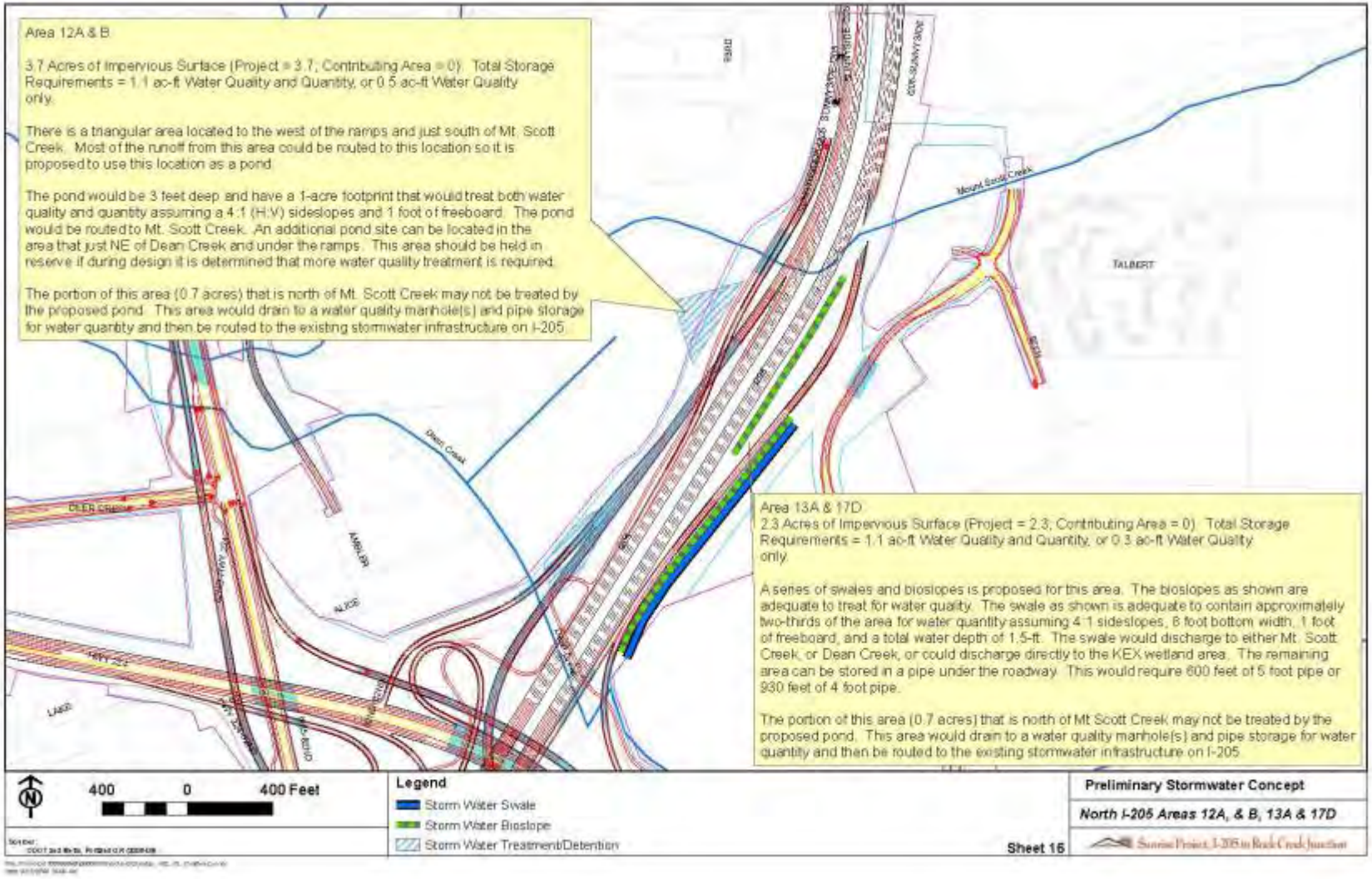

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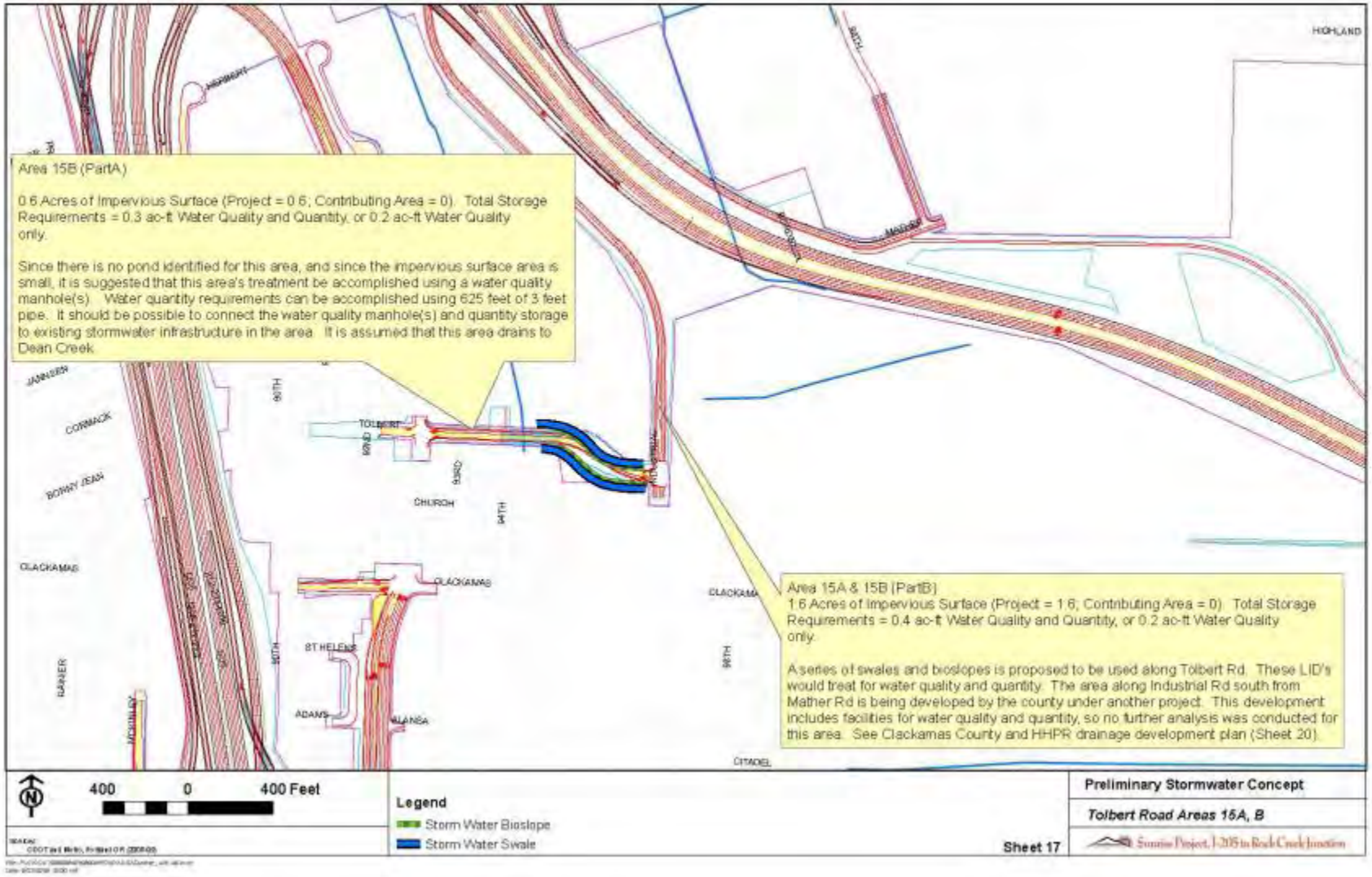

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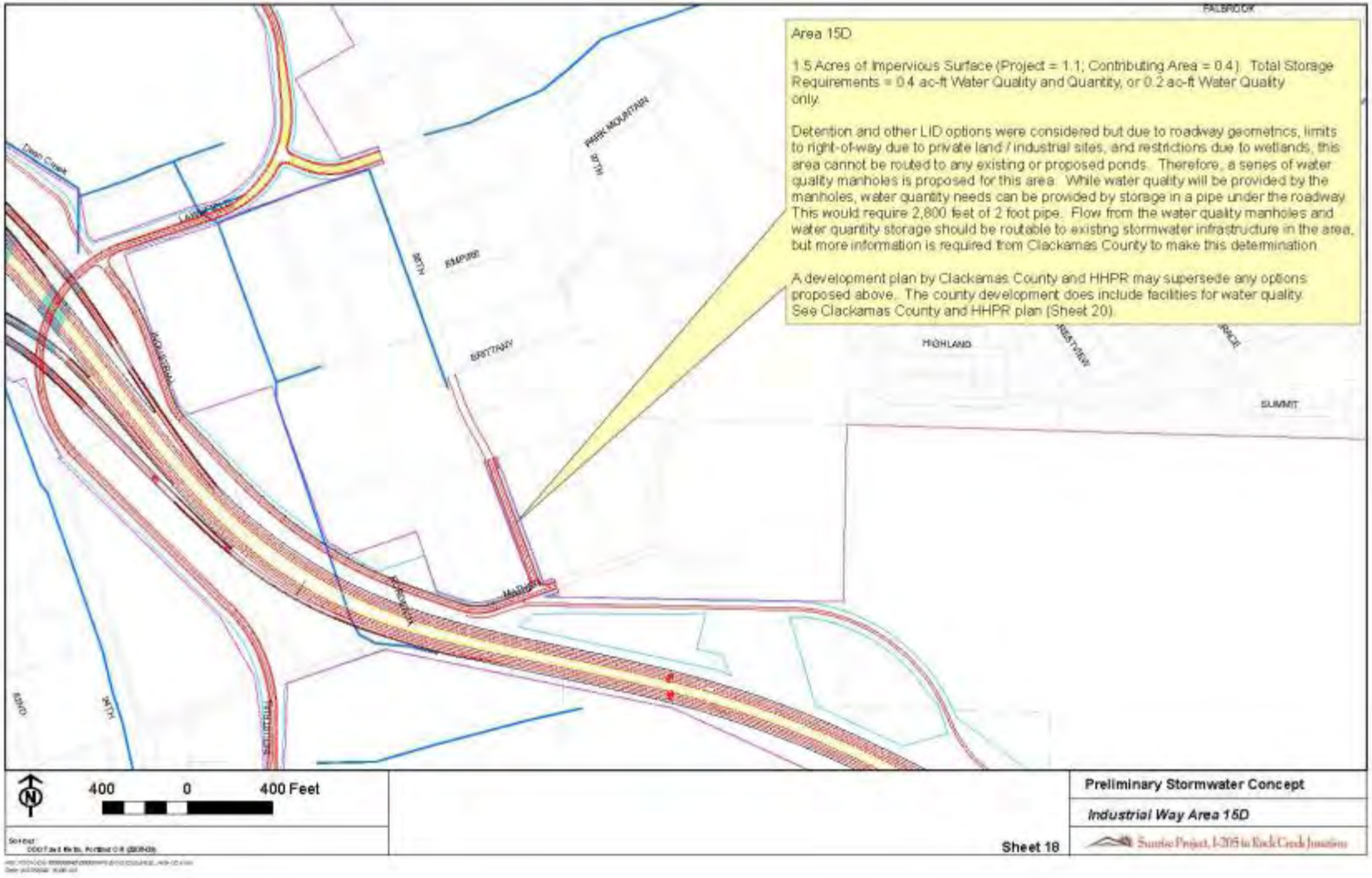

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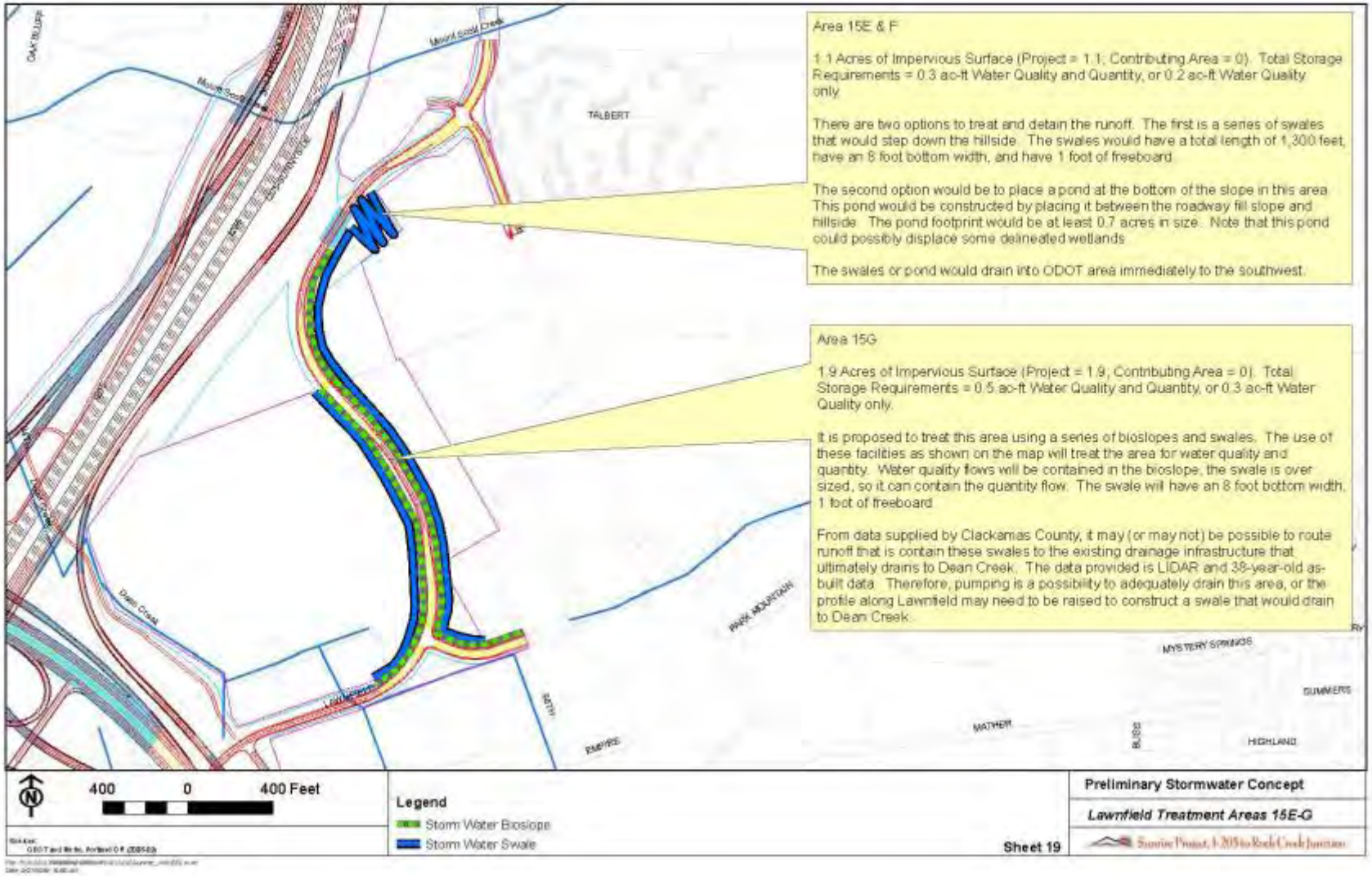
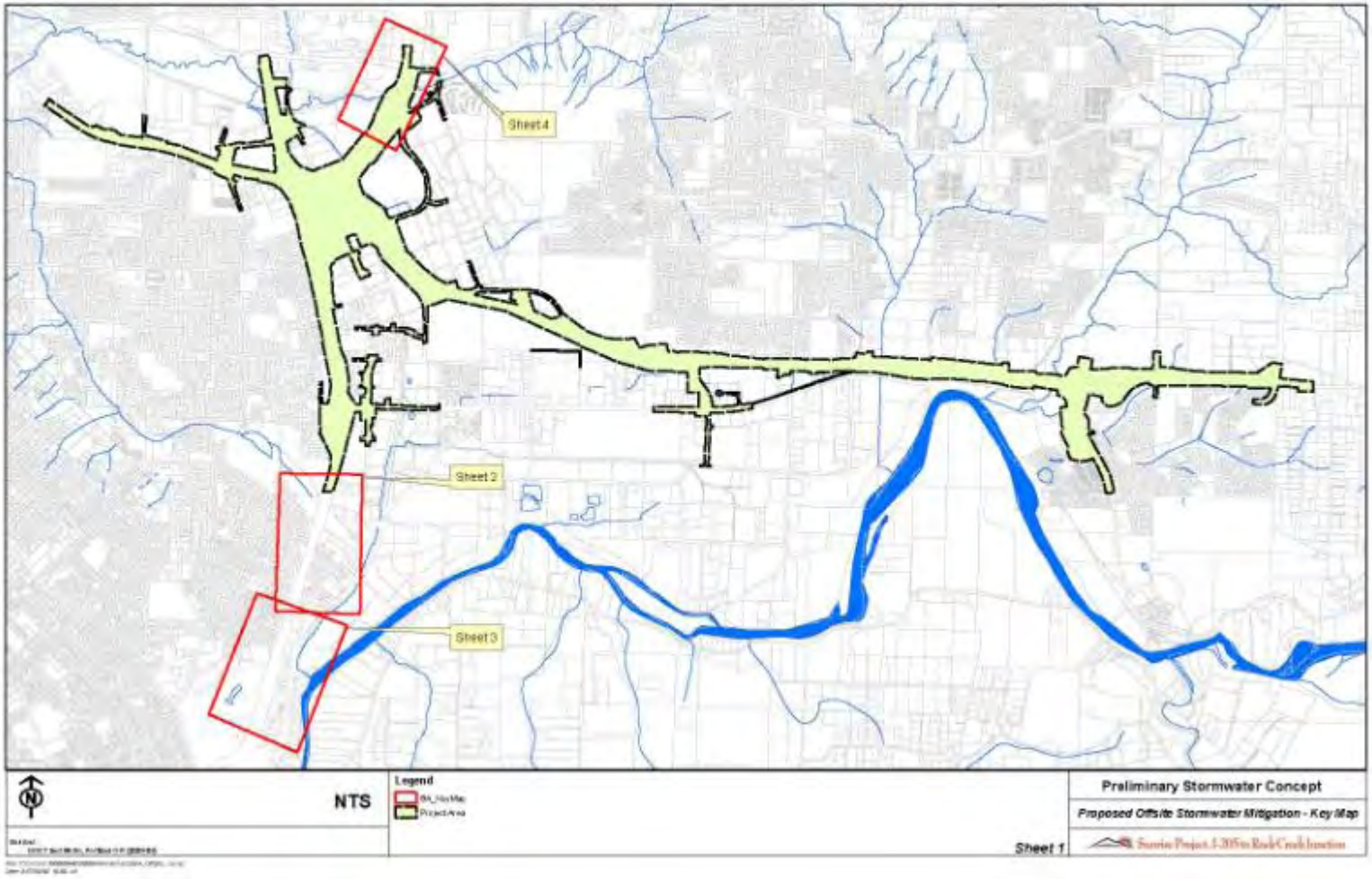


APPENDIX B. Stormwater offsite mitigation areas on Hwy 205 to offset areas within the CIA that the project was not able to treat.



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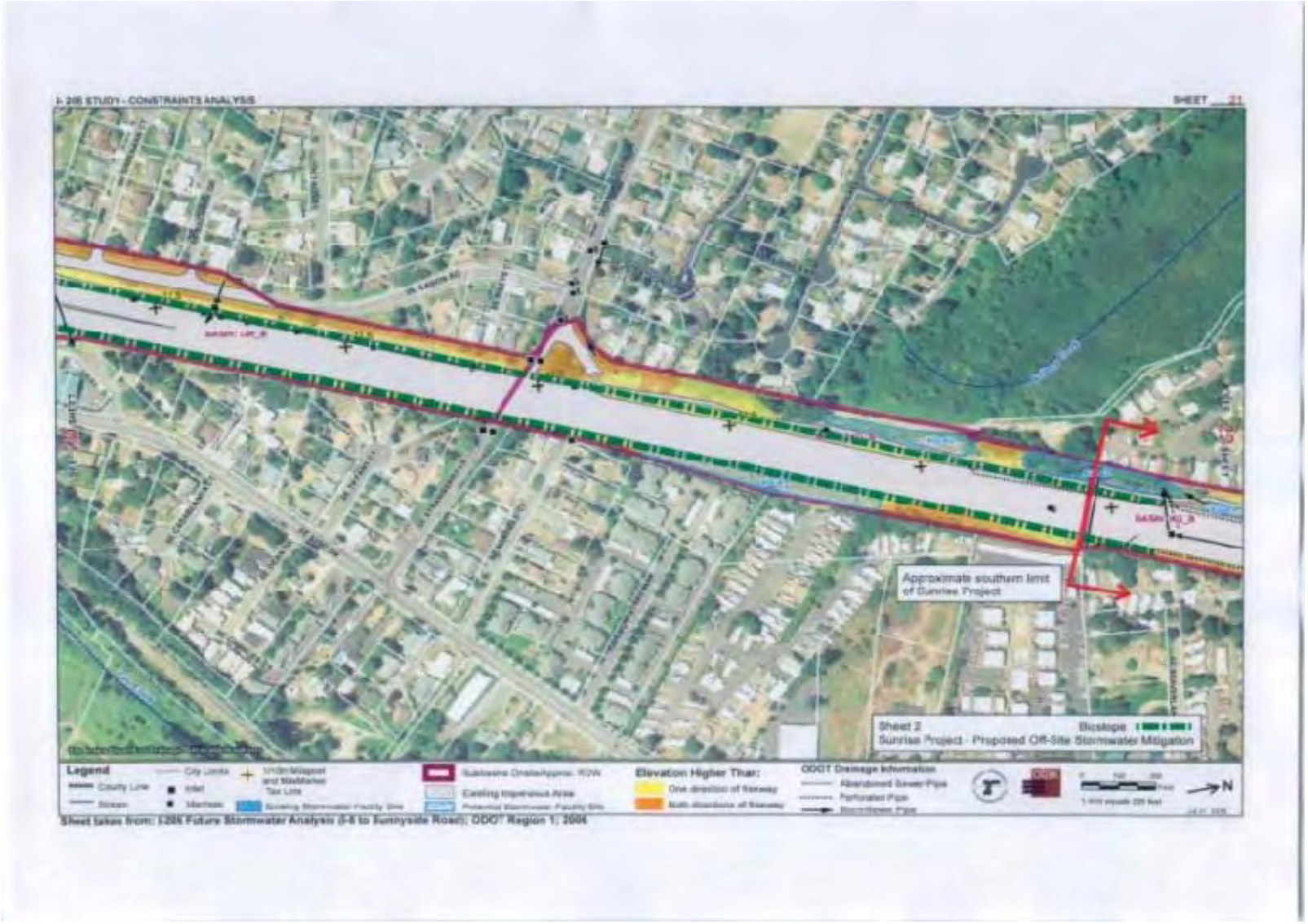
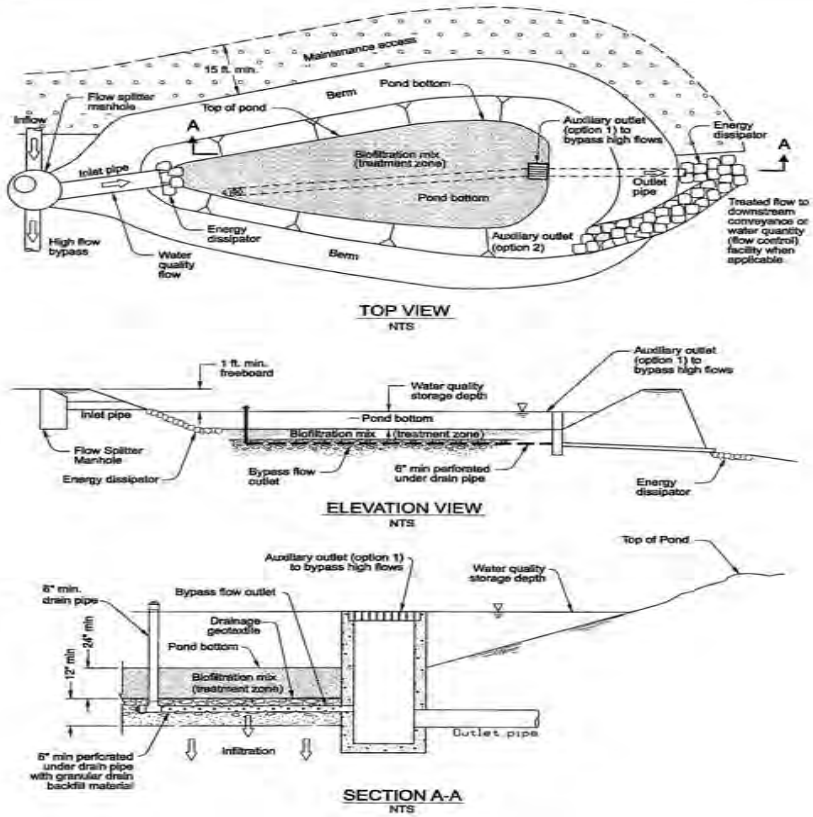


Figure 4.22 shows part of onsite sub-basin MS-A and the proposed stormwater facility site MS-A1. The primary feature in this area is the southern limits of the project study area. Stormwater runoff from MS-A continues south to Mt. Scott Creek. Additional information about stormwater management of I-205 south of the project study area will be investigated as part of a future study effort and was not included with this project.

Sheet taken from: I-205 Future Stormwater Analysis (Columbia River to Sunnyside Road); ODOT Region 1; 2008

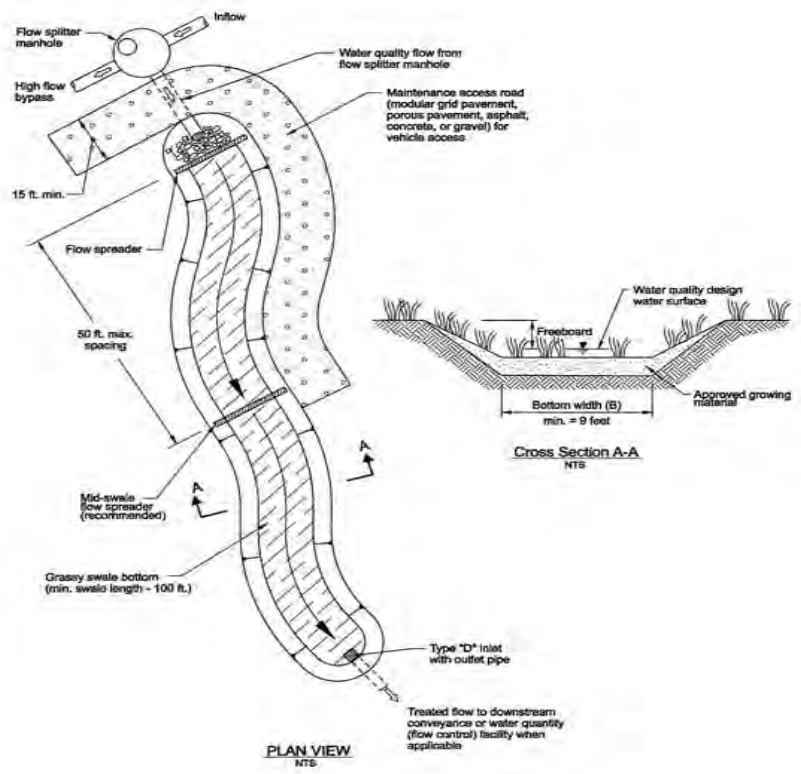
Figure 4.22—Part of onsite sub-basin MS-A and the proposed stormwater facility site, MS-A1

APPENDIX C. Types of stormwater treatment facilities used on the project.



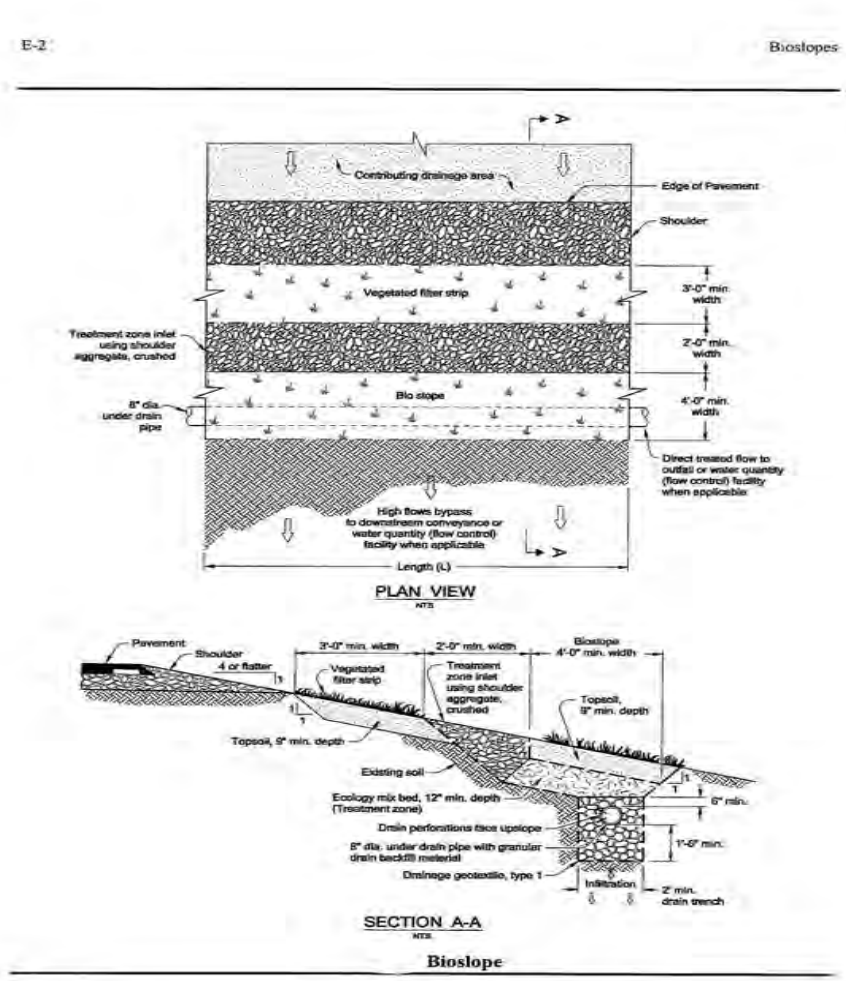
Bioretention Pond

APPENDIX C. Types of stormwater treatment facilities used on the project.



Biofiltration Swale

APPENDIX C. Types of stormwater treatment facilities used on the project.



No Effect Memorandum for USFWS Species

ESA Finding of NO EFFECT

KN 12454 Sunrise Project I-205 to Rock Creek Junction
Fed Aid No C005(046)
September 1, 2010

☒ USFWS Species ☐ NMFS Species ☐ EFH

Project Type: Construct a new limited-access expressway between I-205 and the Rock Creek Junction.

Location: The proposed project is located in the western, urbanized portion of Clackamas County in the vicinity of OR 212/224. The project limits extend approximately 4.9 miles from approximately 1,000 feet west of SE Johnson Road to SE 172nd Avenue, just beyond Rock Creek Junction where OR 212 and 224 diverge.

Township/Range/Section(s):

Township: 2 South	Range: 2 East	Sections: 4, 5, 9, 10, 11, 12, 16
Township: 2 South	Range: 3 East	Section: 7

Lat/Long:
Westernmost point:
Longitude: 122° 35' 57" W (decimal degrees: 122.599167)
Latitude: 45° 25' 35" N (decimal degrees: 45.426389)

Easternmost point:
Longitude: 122° 28' 57" W (decimal degrees: 122.4825)
Latitude: 45° 24' 37" N (decimal degrees: 45.410278)

City: Clackamas
County: Clackamas

HUC6: Lower Willamette HUC 170900120103 and Clackamas 170900110607

Project Topography: Varies. Topography is generally level with two notable exceptions: the Lawnfield Extension would be constructed on a steep hill near the western base of Mt. Talbert and a section of the project would be constructed along the base of the Clackamas Bluffs, a terrace escarpment east of Camp Withycombe.

Surrounding Environment: The project is in an urbanized area of Clackamas County. The majority of the project area either is currently industrial or residential. The east end of the project is primarily farmland, but in a rapidly urbanizing area of the City of Damascus.

☒ **Area of Project Impact (API) map** is attached as Figure 1.

Data Sources and Survey Method(s) Utilized: (Check all that apply.)

☐ NMFS Staff Contacted *[Include name(s)]* Date(s):

☒ USFWS Staff Contacted *[Include name(s)]* Date(s): John Marshall (June 8, 2004) and Kevin Maurice (July 8, 2004)
☐ Species List – NMFS Website Date(s):
☒ Species List – USFWS Website Date(s): 7/04, 2/09, and 2/10
☐ Federal Register Date(s):
☒ ORNHIC Database Date(s): 5/04, 2/09, and 2/10
☐ StreamNet Date(s):
☐ ODOT TransGIS Environmental Date(s):
☐ Field Survey – Complete Assessment Date(s):
☒ Field Survey – Appropriate Sample Date(s): 6/05 and 4/06
☐ Other *[Provide references if appropriate]* Date(s):

Field Survey Technique(s): Intuitive controlled rare plant survey. ODOT conducted two rare plant surveys for this project. The first survey was an intuitive controlled survey completed on June 10, 2005 (ODOT 2005). The second intuitive controlled survey was conducted on April 14, 2006 (ODOT 2006). No rare plants were found during either survey. Based on the results of the two surveys, ODOT concluded that adverse impacts to Threatened, Endangered, or other special status plants or their critical habitats will not occur as a result of the project.

Wildlife – Reconnaissance level with identification/mapping of all habitats present within the project area.

Listed Species likely to be within the API: See Table 1.

TABLE 1.
ESA Listed Species Which May Occur in Clackamas County Under U.S. Fish and Wildlife Service Jurisdiction

Species	Scientific Name	DPS[1]	Status	Designated Critical Habitat	Covered Under This NE[2]
Mammals					
None					
Birds					
Northern spotted owl	*Strix occidentalis caurina*	N/A	Threatened	Yes	Yes
Plants					
Willamette Daisy	*Erigeron decumbens var. decumbens*	N/A	Endangered	Yes	Yes
Nelson's checker-mallow	*Sidalcea nelsoniana*	N/A	Threatened	No	Yes

[1] – DPS: Distinct Population Segment
[2] – Species covered under this No Effect document under the jurisdiction of the U.S. Fish and Wildlife Service.

Designated Critical Habitat within the API: Designated critical habitat for the northern spotted owl and the Willamette daisy does not occur in the project's API.

Essential Fish Habitat (EFH) within the API: Not applicable.

☒ This project will have No Effect on species under jurisdiction of U.S. Fish and Wildlife Service and/or designated critical habitats. This No Effect document is in addition to a separate Biological Assessment (BA) that covers species/habitats that may be affected by the project that are under the jurisdiction of the National Marine Fisheries Service.

Brief Project Description: (1-2 paragraphs)
The Oregon Department of Transportation (ODOT) and Clackamas County propose to build a new, east-west oriented, limited-access highway through an industrial area of Clackamas, Oregon. The project area generally extends from Interstate 205 (I-205) eastward to the Rock Creek Junction where OR 212 and 224 diverge to the east and south.

The proposed Sunrise Project will connect the Milwaukie Expressway (OR 224 west of I-205) with OR 212 and OR 224 to the east. It will begin on OR 224 near Webster Road west of I-205, and will parallel the existing OR 212 to a point just east of 172nd Avenue. It will have six through-lanes plus two auxiliary lanes through most of its length, narrowing to six lanes total east of Rock Creek, and finally tapering to five lanes east of 172nd Avenue. As part of the project, the existing I-205/OR 224/82nd Avenue Interchange will be reconfigured with new ramps and access points to facilitate access between these roadways and the new Sunrise Highway. A new north Lawnfield connection between Sunnyside Road and Industrial Way would provide access to an industrial area north of the alignment. New interchanges will also be built at Rock Creek Junction and at a point near the middle of the project alignment. The new Sunrise Highway will parallel the existing OR 212 /224 through Clackamas to the north. This will leave the existing road as a local arterial, and access to properties or local streets from the new highway will be limited to the three interchanges: I-205, Rock Creek, and a third "mid-point" interchange.

Finding of Effect. This No Effect determination is based on the project as defined in the Final Environmental Impact Statement (FEIS). Changes in project scope or scale following the FEIS may invalidate this No Effect determination.

ODOT, acting as an agent of FHWA or other federal agency because of a federal nexus, determines that the project will have: (Check all that apply.)

☒ **No Effect on Listed Species**...
☒ Because there is no reason to believe that listed species are present in the Area of Project Impact (API). [*Absence Determination*]
☐ Because **avoidance measures** will be implemented to prevent effects on the listed species identified below that occur or are likely to occur within the API. (Complete **Section A** below.)

☒ **No Effect on Designated Critical Habitat**...
☒ Because designated critical habitat does not occur in the API. [*Absence Determination*]
☐ Because **avoidance measures** will be implemented to prevent effects on the designated critical habitat identified below that occurs within the API. (Complete **Section B** below.)

☐ **No Effect on Essential Fish Habitat**...
☐ Because EFH does not occur in the API. [*Absence Determination*]

☐ Because **avoidance measures** will be implemented to prevent effects on EFH identified below that occurs within the API. (Complete **Section C** below.)

Required Avoidance Measures.

For each applicable section below:

- Identify *specific* project impacts that could affect the identified resource if avoidance measures are not implemented to eliminate *all* potential impacts.
- Provide a brief description of *each* required avoidance measure.

Section A – Listed Species
Not applicable

Section B – Designated Critical Habitat
Not applicable

Section C – Essential Fish Habitat
Not applicable

Additional Supportive Information:

Northern Spotted Owl
Northern spotted owl (*Strix occidentalis caurina*) are listed as threatened under both the federal and state ESA. Northern spotted owl inhabit old-growth forests, forests of mixed mature, and old growth, and mature forests with structural characteristics similar to old-growth forests: a multi-layered, multi-species canopy, with snags, broken tops, etc. (Courtney et al. 2004). This habitat type is lacking in the project area and northern spotted owl are believed to be extirpated from the Metro region (Metro 2006).

Critical habitat for the northern spotted owl was originally established in 1992 (USFWS 1992) and revised in 2008 (USFWS 2008). While critical habitat for the northern spotted owl occurs in Clackamas County, its location in the forests of the west slope of the Cascade Mountains is far removed the project's API. The project would have no impacts to this species.

Nelson's Checker-mallow
Nelson's checker-mallow (*Sidalcea nelsoniana*) is listed as threatened under both the ESA (USFWS 1993) and the OESA (ORNHIC 2009). Critical habitat has not been designated for this species under the ESA. This species is reduced to relict remnant populations in the Willamette Valley centers, one population within the Coast Range, and a separate population in Cowlitz County, Washington. Over half of the remaining Willamette Valley locales have fewer than 100 plants. Nelson's checker-mallow is known to occur in Clackamas, Linn, Marion, Polk, Tillamook, Washington, Yamhill counties (ORNHIC 2009).

Nelson's checker-mallow occurs on moist, open ground in meadows and occasionally in wooded habitats. It is also known to occur along stream-sides and fencerows. The soils range from poorly

drained to well-drained clay, clay loam, and gravelly loam. This species blooms in June and July (USFWS 1993).

ODOT biologists observed potentially suitable habitat for Nelson's checker-mallow during their June 2005 survey. This survey took place after the optimal flowering period for this species. No individuals or populations of Nelson's checker-mallow were observed in June 2005 (ODOT 2005). Potentially suitable habitat was resurveyed in April 2006 and, again, no individuals or populations of Nelson's checker-mallow were observed (ODOT 2006). Most of this site appears to have been disturbed in the past from a variety of activities, providing marginal habitat at best (ODOT 2006).

Willamette Valley Daisy

Willamette Valley daisy (*Erigeron decumbens* var. *decumbens*) is listed as endangered under both the ESA (USFWS 2000) and the OESA (ORNHIC 2009). Critical habitat has been designated for this species under the ESA (USFWS 2006). The project's API does not contain any designated critical habitat. When the Willamette Valley daisy was proposed for listing, it was known to occupy 28 sites across 286 acres in the Willamette Valley. These sites are scattered within Clackamas, Lane, Linn, Marion, Polk, Washington, and Yamhill counties, Oregon (ORNHIC 2009).

This species generally flowers in June and July. The primary habitat for the Willamette Valley daisy is native wetland prairies where flooding creates anaerobic and strongly reduced soil conditions (USFWS 2000).

ODOT biologists found no individuals, populations, or suitable habitat for the Willamette Valley daisy during their survey of the project corridor in June 2005, concluding that the corridor was too disturbed to be considered potentially suitable habitat for this species (ODOT 2005).

References

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Oregon Department of Transportation. 2006. Botanical Clearance Report. Sunrise Corridor I-205 to Rock Cr Jct (Clackamas County). Unpublished.

Oregon Natural Heritage Information Center (ORNHIC). 2009. Data System Search for rare, threatened and endangered plants and animals for the Sunrise Unit 1 Corridor Project.

U.S. Fish and Wildlife Service. (USFWS). 1992. Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Northern Spotted Owl. Final Rule. Federal Register 57 FR 1796 1838.

U.S. Fish and Wildlife Service (USFWS). 1993. Endangered and Threatened Wildlife and Plants: Determination of Threatened Status for the Plant Sidalcea Nelsonniana (Nelson's Checker-Mallow). Federal Register 58 FR 8235.

U.S. Fish and Wildlife Service (USFWS). 2000. Endangered and Threatened Wildlife and Plants: Endangered Status for *Erigeron decumbens* var. *decumbens* (Willamette Daisy) and Fender's Blue Butterfly (*Icaricia icarioldes fenderi*) and Proposed Threatened Status for *Lupinus sulphureus* spp. *kincaidii* (Kincaid's Lupine). Federal Register 65 FR 3875.

U.S. Fish and Wildlife Service. (USFWS). 2006. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Fender's blue butterfly (*Icaricia icarioides fenderi*), *Lupinus sulphureus* ssp. *kincaidii* (Kincaid's lupine), and *Erigeron decumbens* var. *decumbens* (Willamette daisy); Final Rule. Federal Register 71 FR 63862.

U.S. Fish and Wildlife Service. (USFWS). 2008. Revised designation of Critical Habitat for the Northern Spotted Owl. Final Rule. Federal Register 73 FR 47325 47522.

Required Signatures. (Include signature, printed name, *and* administrative unit or organization. Alter required signatures as necessary for the particular project.)

Individuals Responsible for the No Effect Determination:

Becky Crockett

[Signature]
Becky Crockett
Region 1 Environmental Manager, ODOT

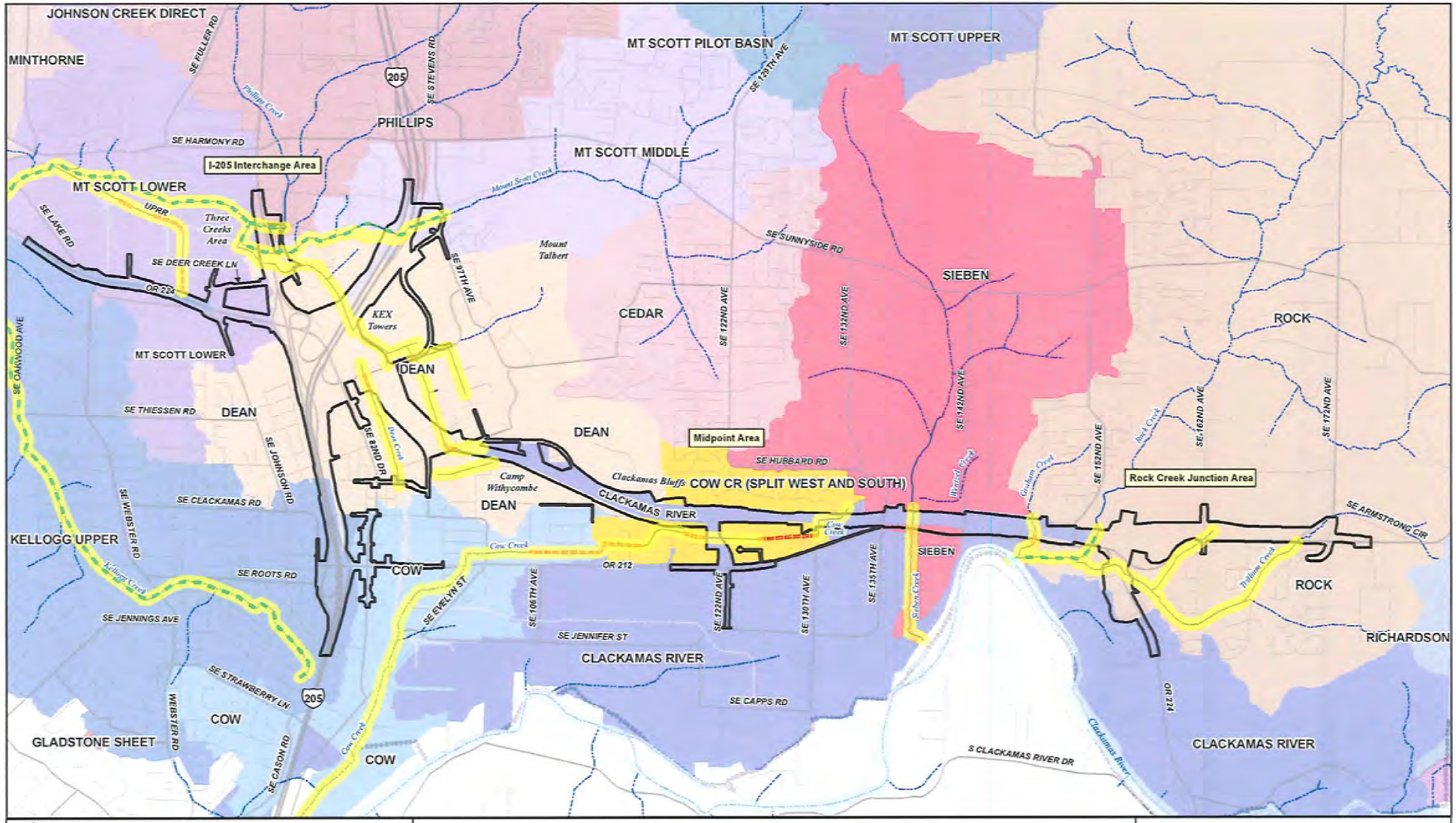
9/8/2010
Date

Kristine Marshall

[Signature]
Kristine Marshall
Qualified Biologist
David Evans and Associates, Inc

9-2-2010
Date

May 27, 2010
Date of last ODOT ESA Effects Determination Training


JOHNSON CREEK DIRECT
MINTHORNE
MT SCOTT PILOT BASIN
MT SCOTT UPPER
PHILLIPS
MT SCOTT MIDDLE
I-205 Interchange Area
MT SCOTT LOWER
Three Creeks Area
Mount Talbert
CEDAR
SIEBEN
ROCK
KEX Towers
DEAN
Midpoint Area
Rock Creek Junction Area
Clackamas Bluffs
COW CR (SPLIT WEST AND SOUTH)
CLACKAMAS RIVER
Camp Withycombe
KELLOGG UPPER
COW
RICHARDSON
GLADSTONE SHEET
SE HARMONY RD
SE DEER CREEK LN
SE SUNNYSIDE RD
SE HUBBARD RD
SE THIESSEN RD
SE CLACKAMAS RD
SE ROOTS RD
SE JENNINGS AVE
SE STRAWBERRY LN
SE JENNIFER ST
SE CAPPS RD
S CLACKAMAS RIVER DR
SE ARMSTRONG CIR
OR 224
OR 212
UPRR
205
2,000 0 2,000 Feet
Legend
Area of Potential Impact
Urban Growth Boundary (UGB)
Aquatic Action Area
Designated Critical Habitat
Rivers
Non-verified Metro Streams
DEA Field Verified Streams
Culvert
Open Channel
Drainage Basin
Sources:
DEA, ODOT and Metro, Portland OR (2005-09)
FEIS - Preliminary Design Concept
Figure 1. Area of Potential Impact
Sunrise Project, I-205 to Rock Creek Junction

U.S. EPA December 2, 2009 letter related to the Northwest Pipe and Casing site

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

December 2, 2009

Reply to
Attn. of: ECL-115

Peter L. Stroud, CEG
Principal Engineering Geologist
Senior Associate
9200 SW Nimbus Ave, Suite A
Beaverton, Oregon 97008

Dear Mr. Stroud,

The following are the EPA comments in response to your emails between November 18and December 1, 2009. Please note that some of the comments would pertain primarily to the larger Sunrise Corridor project: however, most apply to both of the proposals for construction on the Northwest Pipe and Casing Superfund site.

1. The design report shall contain language that the stormwater conveyance system on and adjacent to the NW Pipe and Casing Superfund Site will be physically separated from contaminated subsurface soil and groundwater. Proposed bioswales and detention ponds will be lined and infiltration of stormwater will be limited.
2. The NW Development Business Park (Parcel A of the Site) has a history of localized flooding due to the limited capacity of its stormwater systems, inputs from the eastern drainage ditch (i.e. daylight channel), and shallow depth of groundwater in the winter and spring months. EPA recommends that the NW Development's existing stormwater conveyance system be integrated with the proposed system to the extent that is relevant and practical. This would likely include further evaluation of the eastern drainage ditch into the design.
3. EPA has concerns that the designed system may not have capacity to convey and treat stormwater flow due to existing conditions. Language in the FEIS should indicate that the system design requirements will meet applicable federal, state and county codes, approvals and permits.
4. The Groundwater Operable Unit Record of Decision for the NW Pipe and Casing Superfund Site includes explicit erosion control steps as a part of the remedy to ensure that Dean Creek is not impacted by remedial work. Given Paragraph 6 of the ODOT Consent Decree for this Site, which requires that ODOT integrate the Sunrise Corridor project with the remedial action at the Site, ODOT must be prepared to take steps to avoid using Dean Creek. ODOT will have to work directly with NMFS to ascertain whether the concerns with ESA salmon in Dean Creek continue to be an issue. ODOT

may have to find a way to avoid using Dean Creek. Alternatively, ODOT may have to document, following a consultation with NMFS on this issue directly, how use of Dean Creek will not be inconsistent with the remedial action for the Site.

5. Preliminary engineering and temporary construction activities to build roadways will need to take into consideration property land use restrictions and be consistent with the Site Contaminated Media Management Plan.

6. Mitigation measures must be put in place for the installation of footing (i.e. driven piles) to minimize drag down of contamination and/or creation of preferential pathways to the lower aquifer.

7. Stormwater generated during construction will need to be managed under a General NPDES Stormwater Construction Permit (1200-CA). The permit is subject to EPA approval.

8. Roadway construction will displace 11 Groundwater Circulation Wells and approximately 50 monitoring wells, EPA will not be responsible for the cost of removal of the wells. Additionally, decommissioning of these wells must be completed consistent with Oregon Department of Water Resource guidelines and subject to EPA approval.

9. EPA will require ODOT to construct a revised monitoring well network, at their expense, consistent with Site Remedial Actions. EPA projects that the total cost for the decommissioning and replacement of the Monitoring Well network and Groundwater Circulation Wells could be from $500,000 and $1,000,000. The estimated cost of the reduce version of the project should less than $250,000.

10. EPA must have unrestricted access to any wells that remain or are installed on the property. ODOT must coordinate on all aspects of the removal of and installation wells with EPA.

If you have any questions concerning this letter you may contact me at 206-553-1849.

Sincerely,

Mark Ader

Mark Ader
Remedial Project Manager
Environmental Cleanup Office
Cleanup Unit 2

Cc: Debbie Bailey DEQ
Thomas Picco, ODOT
Brian McNamara, ODOT
Barb Cartmill, Clackamas County
Elaine Somers, EPA

Northwest Pipe and Casing Easement and Equitable Servitudes

AUG 17 2009

NORTHWEST

After recording, return original to:
Grantee
Oregon DEQ
2020 S.W. Fourth, Suite 400
Portland, OR 97201
Att: Deborah Bailey

13P
5M

Clackamas County Official Records
Sherry Hall, County Clerk

2009-064891

01342288200900648910130135

$96.00

09/14/2009 11:00:32 AM

D-E Cnt=2 Stn=2 JANISKEL
$65.00 $5.00 $16.00 $10.00

Return a certified copy to:
Grantor
Oregon Department of Transportation
9101 SE Sunnybrook Boulevard
Clackamas, OR, 97015
Att: Charles Schwarz

EASEMENT AND EQUITABLE SERVITUDES

This Easement and Equitable Servitude is made August 19, 2009, between the State of Oregon, acting by and through the Oregon Department of Transportation (**Grantor**) and the State of Oregon, acting by and through the Oregon Department of Environmental Quality (**DEQ** or **Grantee**).

RECITALS

A. Grantor is the owner of certain real property located at 9200 S.E. Lawnfield Road, in Clackamas County, Oregon, the location of which is more particularly described in Attachment A to this Easement and Equitable Servitude, (the "Property") and referenced under the name Northwest Pipe and Casing, ECSI #139 in the files of DEQ's Environmental Cleanup Program, Northwest Region Office, 2020 S.W. Fourth St., Suite 400, Portland, OR 97201.

B. A detailed description of the residual risks present at the Property is presented in "Human Health and Ecological Baseline Risk Assessment, Northwest Pipe and Casing/Hall Process Company, Clackamas, Oregon," prepared by Weston for the United States Environmental Protection Agency (EPA) dated August 1998, and available at the DEQ office referred to above. The document is also available through EPA under CERCLIS Identification Number ORD 980988307.

C. The Property forms a part of a National Priority List (NPL) site consisting of the Property and portions of two adjacent properties: one to the east owned by Northwest Development Company and one to the south owned by the Clackamas County Development Agency (CCDA). EPA documents refer to the CCDA property as "Parcel B" and to the Northwest Development property and the Property as "Parcel A." Parcels A and B are shown on the map attached to this Easement and Equitable Servitude as Attachment B. A legal description of Parcel B is attached as Attachment C. The obligations of Grantor under this Easement and Equitable Servitude run to the Property only and not to any other portion of the NPL site.

D. ODOT has agreed, pursuant to the terms of a consent decree entered into on April 23, 1997, in the case of United States v. Oregon Department of Transportation (D. Or.) (the "Consent Decree"), to complete certain environmental remediation activities at the Property. ODOT also agreed in the Consent Decree to comply with any institutional controls imposed pursuant to the Record of Decision for the Property and EPA reserved the right to enforce ODOT's compliance with the Consent Decree.

E. DEQ and EPA have entered into an agreement, dated May 4, 2001, and titled "Superfund State Contract Between EPA and the State of Oregon for Remedial Action at the Northwest Pipe and Casing Company / Hall Process Company Superfund Site," (the "Contract"), and amended May 14, 2003, in which the State assures that institutional controls, considered part of operation and maintenance (O& M) of the implemented CERCLA funded remedial actions, will be monitored and retained, as part of O & M.

F. In September 2001, the EPA with concurrence from the Director of the Oregon Department of Environmental Quality selected the remedial action for the Groundwater Operable Unit on the NPL site, as set forth in the Record of Decision (ROD) for the Property (Record of Decision, Northwest Pipe and Casing Company/Hall Process Company, Groundwater Operable Unit (OU2), Clackamas County, Oregon, September 2001). The remedial action selected requires, among other things: placing and enforcing institutional controls on the Property to ensure access for treatment systems operations and monitoring purposes and to limit future use of contaminated groundwater. These institutional controls include property use restrictions or restrictive easements and warning signs and are described more fully in this Easement and Equitable Servitude.

G. Beginning June 18, 2001, remedial actions were performed on the Northwest Pipe and Casing site. Remedial actions conducted on Parcel B included soil and debris excavation, treatment, disposal, backfilling and reseeding work (June to December 2001)) and construction of a soil cap and a mitigation wetlands. Also, a groundwater treatment system was constructed on Parcel B and the Property (April 2003 to July 2004). DEQ and EPA conducted a joint inspection on July 20, 2004, and concluded that construction was complete for both OU1, the soil remedy, and OU2, the groundwater remedy.

H. There is in existence on the Property a portion of the "Groundwater Treatment System," defined below and described in the document titled "Preliminary Close Out Report, Northwest Pipe and Casing/Hall Process Company, Clackamas, Oregon" dated June 4, 2004, and in other site related documents. These documents may be found at the Northwest Region Office of DEQ. As of the Date of this Easement and Equitable Servitude, EPA is collecting data and information to evaluate potential replacement of the existing groundwater remedy for the Site.

I. The provisions of this Easement and Equitable Servitude are intended to protect human health and the environment and to meet the substantive institutional control requirements set forth in the ROD.

1. DEFINITIONS

1.1 "DEQ" means the Oregon Department of Environmental Quality, and its employees, agents, and authorized representatives. "DEQ" also means any successor or assign of DEQ under the laws of Oregon, including but not limited to any entity or instrumentality of the State of Oregon authorized to perform any of the functions or to exercise any of the powers currently performed or exercised by DEQ.

1.2 "EPA" means the United States Environmental Protection Agency, and its employees, agents, and authorized representatives. "EPA" also means any successor or assign of EPA under the laws of the United States, including but not limited to any entity or instrumentality of the United States authorized to perform any of the functions or to exercise any of the powers currently performed or exercised by EPA.

1.3 "Groundwater" means any water, except capillary moisture, beneath the land surface and within the boundaries of the Northwest Pipe and Casing property, whatever may be the geological formation or structure in which such water stands, flows, percolates or otherwise moves.

1.4 "Groundwater Treatment System" means the Groundwater Circulation Wells, Monitoring Wells, treatment infrastructure, including all above and below ground structures, equipment, materials, utilities and storage areas that have been constructed, or that may in the future be constructed, on the Property to implement the remedy selected in the Record of Decision, Northwest Pipe and Casing Company/Hall Process Company, Groundwater Operable Unit (OU2), Clackamas County, Oregon, September 2001, as it may be amended from time to time.

1.5 "Owner" means any person or entity, including Grantor, who at any time owns or acquires any right, title, or interest in or to any portion of the Property or a vendee's interest of record to any portion of the Property, including any successor, heir, assign or holder of title or a vendee's interest of record to any portion of the Property, excluding any entity or person who holds such interest solely for the security for the payment of an obligation and does not possess or control use of the Property.

2. GENERAL DECLARATION

Grantor, in order to discharge in part its obligations under the Consent Decree, grants to DEQ an Easement for access and accepts the Equitable Servitude described in this instrument and, in so doing, declares that the Property described in Attachment A to this Easement and Equitable Servitude, is now subject to and shall in the future be conveyed, transferred, leased, encumbered, occupied, built upon, or otherwise used or improved, in whole or in part, subject to this Easement and Equitable Servitude. Each condition and restriction set forth in this Easement and Equitable Servitude touches and concerns the Property and the equitable servitudes granted in paragraph 3 and easement granted in paragraph 4 below, shall run with the land for all purposes, shall be binding upon all current and future Owners of the Property as set forth in this Easement and Equitable Servitude, and shall inure to the benefit of the State of Oregon. Grantor

further conveys to DEQ the perpetual right to enforce the conditions and restrictions set forth in this Easement and Equitable Servitude.

3. EQUITABLE SERVITUDE (RESTRICTIONS ON USE)

3.1 **Groundwater Use Restrictions:** No use shall be made of groundwater at the Property, by extraction through wells or by other means, which use involves consumption or any other beneficial use of the groundwater, as long as the contaminant concentrations exceed risk-based cleanup levels for the beneficial use. This prohibition shall not apply to extraction of groundwater associated with groundwater treatment or monitoring activities either conducted by EPA or its authorized representatives or approved by DEQ nor shall the prohibition apply to dewatering activities related to construction, development, or the installation of sewer or utilities at the Property. Owner shall properly characterize and manage any groundwater that is generated by Owner.

3.2 **Soil Cap:** No use shall be made on or of the Property that will, or likely will, jeopardize the functional integrity of the soil cap on the adjacent property, Parcel B.

3.3 **Access Restrictions:** Owner shall control access to the Property and make good faith efforts to prevent damage to the groundwater treatment system by third parties consistent with Section 4 of this Easement and Equitable Servitude.

3.4 **Land Use Restrictions:** The following operations and uses are prohibited on the Property:

3.4.a. Residential use of any type; and
3.4.b. Agricultural (food-crop) use of any type.

3.5 **New Construction Restrictions:** Prior to construction of any new building on the Property, Owner shall review groundwater data to determine whether vapor intrusion controls must be incorporated into new buildings on site to prevent migration of site contaminants into buildings on-site. As long as this restriction continues on the property, Owner must consult with DEQ to determine whether such controls are required. In making its determination, DEQ will evaluate the most current available on-site groundwater data to determine whether migration of contaminants in concentrations above risk-based concentrations for indoor air is likely. If such migration is determined to be likely, vapor intrusion controls will be required.

3.6 **Notice of Transfer.** Owner shall notify DEQ and EPA at least thirty (30) days before the effective date of any conveyance, grant, gift, contract for, or other transfer, in whole or in part, of Owner's fee interest in the Property, except when such transfer is as security for the payment of an obligation to a person or entity that does not possess or control the use of the Property.

3.7 **Development.** Any development, construction, or other use (including, but not limited to, tenancies and leaseholds, of any nature) of the Property shall be consistent with and shall not interfere with investigative or remedial activities necessary at the Property, or the remedial actions that are or have been performed at the time of the proposed development or other actions at the Property pursuant to the RODs. Owner discloses that it is seeking funding to construct on the Property a major transportation project known as the "Sunrise Corridor Project." If the project is funded and proceeds, Owner shall integrate the Sunrise Corridor Project with investigative and remedial activities initiated or planned by DEQ or EPA to the maximum extent feasible, as required by section 6 of the Consent Decree. To ensure remedial actions are not adversely affected at the Property, any development, construction, or other use (including, but not limited to, the Sunrise Corridor Project and any tenancies and leaseholds, of any nature) of the Property must comply with this Easement and Equitable Servitude granted by Grantor to DEQ, and the following provisions:

(1) Owner shall notify DEQ and EPA prior to undertaking any development of the Property that involves the construction of new structures or expansion of the foundation of existing structures, paving or the material expansion of existing paving, trenching for placement of utility lines or for other purposes, or other actions that may impact the groundwater treatment system. Owner does not need to provide notice for minor activities, e.g.., installation of fence posts, street signs, and plantings or other such activities that go no deeper than 2 feet below ground surface and do not have the potential to impact the groundwater treatment system.

(2) The notice required by (1) above shall be submitted to the agencies at least 90 days prior to the date any ground disturbing activities are scheduled to begin. At DEQ's or EPA's request within 30 days of receipt of such notice, Owner must submit for DEQ and EPA review and approval, a development plan for any development, use, and /or other proposed activities. Any proposed relocation of monitoring wells, production wells, piping, or other components of the groundwater treatment system must be approved in writing by EPA before any such actions may be undertaken. Owner must receive written approval from DEQ and EPA before proceeding with development. DEQ will make good faith efforts to conduct plan and activity review promptly so that any proposed development activities are not unduly delayed. This provision does not apply to any actions conducted at the Property by EPA.

(3) The development plan required by (2) above shall, at a minimum, include the following:

- Conceptual site development plans showing buildings; foundation type (e.g., spread footings, slab-on-grade, or pilings); any proposed excavation; concrete, asphalt, and landscaped areas; and corridors for subsurface utility lines.

- Any proposed relocation of or modifications to existing facilities that are part of remedial actions at the property.

- Evaluation of potential risk from exposure to hazardous substances during and after development.

- Plans describing how groundwater encountered or removed by the activities will be managed during and after the proposed activities.

- A schedule describing when planned construction or development actions are expected to be performed.

(4) The development plan may describe development that will occur in phases or may apply to only a portion of the Property. Once a development plan, or portion of a development plan, has been approved by DEQ and EPA, development activities described in the approved plan, or approved portion of the plan, may proceed without separate notice to the agencies for implementation of each development activity, provided that such activities are consistent with the development plan. Owner will cause its tenants, licensees and other occupants of the Property to comply with the terms of this Paragraph.

3.8 **Zoning Changes.** Owner shall notify DEQ no less than thirty (30) days before Owner's petitioning for or filing of any document initiating a rezoning of the Property that would change the base zone of the Property under the Clackamas County zoning code or any successor code. As of the date of this Easement and Equitable Servitude, the base zone of the Property is I-2, Light Industrial. Any use or development of the Property following a zone change must ensure that conditions at the Property are protective of human health and the environment for the proposed use or development and must be consistent with the remedies and institutional controls selected for the Site. Any zoning change that would change the base zone to Residential or Partial Residential may require additional remedial action for the Property for which Owner would be responsible.

3.9 **Partition.** Owner shall notify DEQ and EPA no less than thirty (30) days before Owner's petitioning for or filing of any document initiating a partition of the Property, or relating to a possible partition of the Property. The restrictions in this Easement and Equitable Servitude shall run with any partitions of the Property.

4. EASEMENT (RIGHT OF ENTRY)

During reasonable hours and subject to reasonable security requirements, DEQ and EPA shall have the right to enter upon any portion of the Property for the following:

(1) to determine whether the requirements of this Easement and Equitable Servitude have been or are being complied with;
(2) to determine whether the provisions of the ROD have or are being complied with;
(3) to install, maintain, operate, repair, replace, remove, and decommission any and all components of the Groundwater Treatment System;
(4) to conduct all investigation, removal, and remedial measures described in the ROD; and
(5) to conduct all other investigation, removal, and remedial measures that DEQ or EPA may require in the future at the Property.

Violation of any condition or restriction contained in this Easement and Equitable Servitude shall give to DEQ and EPA the right, privilege, and license to enter upon the Property where such violation exists and to abate, mitigate, or cure such violation at the expense of the Owner, provided written notice of the violation is given to the Owner describing what is necessary to correct the violation and the Owner fails to cure the violation within the time specified in such notice. Any such entry by DEQ or EPA shall not be deemed a trespass, and neither DEQ nor EPA shall be subject to liability to the Owner of the Property for such entry and any action taken to abate, mitigate, or cure a violation.

5. THIRD PARTY BENEFICIARY RIGHTS OF EPA

5.1 EPA shall have the right, but shall not be obliged, to monitor and to enforce, by all means available in law or equity, the terms of this Easement and Equitable Servitude as a third party beneficiary of the agreement between Grantor and Grantee contained in this Easement and Equitable Servitude.

5.2 EPA's rights provided in this paragraph 5 are in addition to, and not in derogation of, all rights of DEQ to enforce the terms of this Easement and Equitable Servitude. Nothing in this paragraph 5 shall be construed to create, either expressly or by implication, the relationship of agency between EPA and DEQ and neither EPA nor DEQ is authorized by this paragraph 5 to represent or act on behalf of the other in the enforcement of rights granted under this Easement and Equitable Servitude.

5.3 Grantee represents that it has notified EPA of EPA's status as a third party beneficiary under paragraph 5 of this Easement and Equitable Servitude.

6. GENERAL PROVISIONS

6.1 The existence of this Easement and Equitable Servitude, the date of its recording, the name of the Grantee, EPA's status as a third party beneficiary, and any other information needed to locate it in the Deed Records of Clackamas County shall be recited in any deed conveying the property or any portion of the Property, and shall run with the land so burdened until such time as the condition or restriction is removed by written certification from DEQ and EPA, recorded in the Deed Records of Clackamas County, certifying that the condition or restriction is no longer required in order to protect human health or the environment.

6.2 Upon recording of this Easement and Equitable Servitude, all future Owners, as defined in Paragraph 2.2 above, shall be conclusively deemed to have consented and agreed to every condition and restriction contained in this Easement and Equitable Servitude, whether or not any reference to this Easement and Equitable Servitude is contained in an instrument by which such person or entity occupies or acquires an interest in the Property.

6.3 Upon any violation of any condition or restriction contained in this Easement and Equitable Servitude, DEQ, in addition to the remedies described in Paragraph 4 above, may enforce this Easement and Equitable Servitude or may seek any other available legal or equitable remedy to enforce this Easement and Equitable Servitude.

6.4 Owner shall pay all costs incurred by Grantee in implementing the terms and provisions of this Easement and Equitable Servitude, including but not limited to costs incurred by Grantee for performing review functions described in Paragraph 3.7 above. Owner shall not be responsible for costs incurred by DEQ and EPA in performing investigative or removal or remedial actions at the property.

6.5 Notwithstanding the fact that Grantor and Grantee are both agencies of the State of Oregon, Grantor and Grantee intend that the rights granted by Grantor to Grantee by this instrument will not merge but will remain distinct and separate from Grantor's fee interest in the Property and that upon any subsequent conveyance by Grantor of the Property or of any interest in the Property this Easement and Equitable Servitude will continue to burden the Property.

(The remainder of this page is intentionally left blank.
Signature page follows.)

IN WITNESS WHEREOF Grantor and Grantee have executed this Easement and Equitable Servitude as of the date and year first set forth above.

GRANTOR: The STATE OF OREGON, acting by and through
the OREGON DEPARTMENT OF TRANSPORTATION

By: _____ Date: 8/12/09
INSERT SIGNER'S NAME

STATE OF OREGON)
) ss.
County of Multnomah)

The foregoing instrument is acknowledged before me this 12th day of August, 2009, by Jason Tell of OREGON DEPARTMENT OF TRANSPORTATION, on its behalf.

OFFICIAL SEAL
GARY ADAMS
NOTARY PUBLIC-OREGON
COMMISSION NO. 423686
MY COMMISSION EXPIRES DEC. 30, 2011

Gary Adams
NOTARY PUBLIC FOR OREGON
My commission expires: 12-30-2011

GRANTEE: The STATE OF OREGON, acting by and through
the Oregon Department of Environmental Quality

By: _____ Date: 8/19/09
Wendy Wiles, Administrator,
Land Quality Division

STATE OF OREGON)
) ss.
County of Multnomah)

The foregoing instrument is acknowledged before me this 19th day of August, 2009, by Wendy Wiles of the Oregon Department of Environmental Quality, on its behalf.

OFFICIAL SEAL
DENISE ROTH
NOTARY PUBLIC-OREGON
COMMISSION NO. 419413
MY COMMISSION EXPIRES AUG. 18, 2011

Denise Roth
NOTARY PUBLIC FOR OREGON
My commission expires: 8.18.2011

ATTACHMENT A
The Property

IN THE COUNTY OF CLACKAMAS AND STATE OF OREGON:

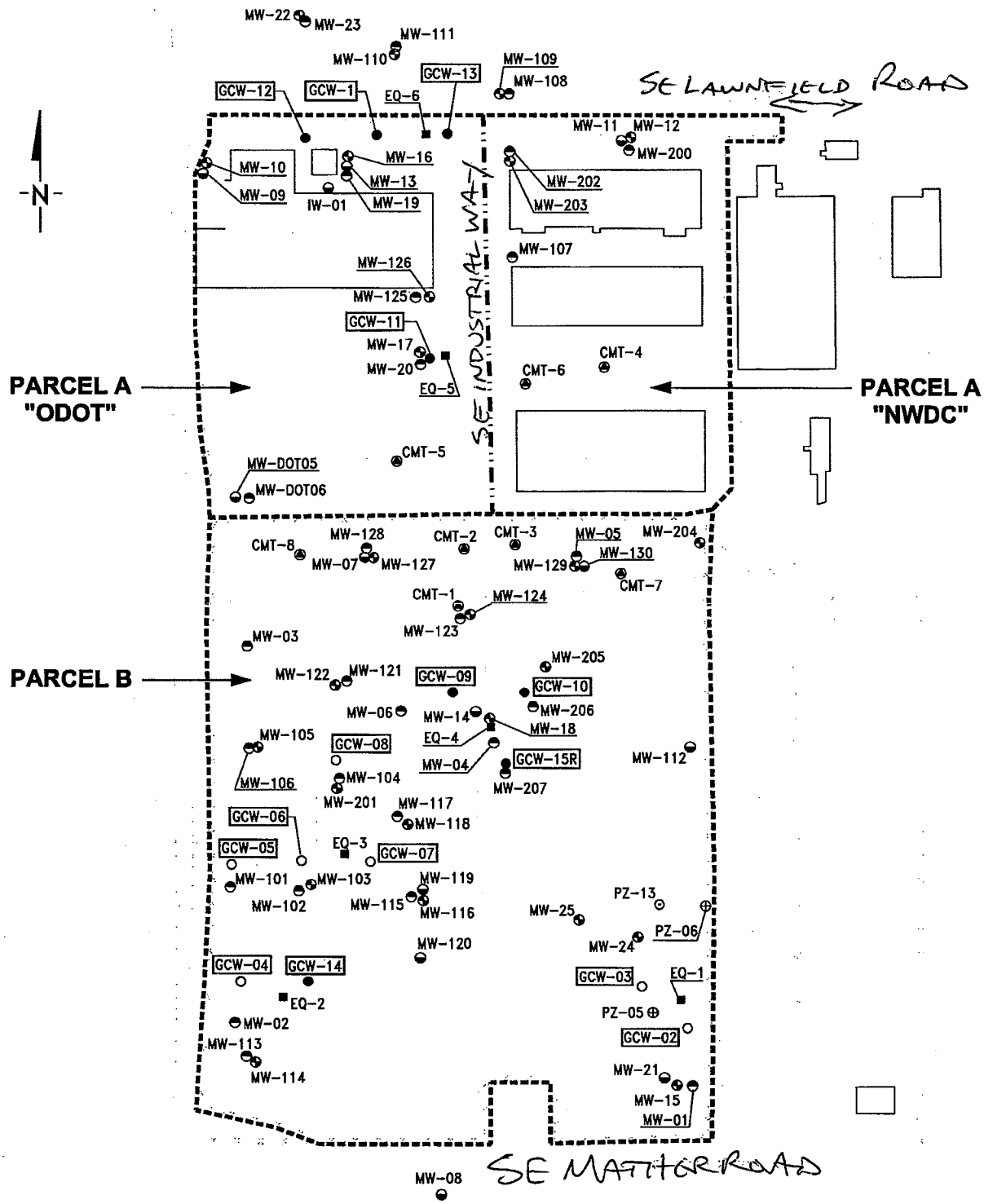
A tract of land in the WM. T. Matlock D. L. C. in Sections 4 and 9, Township 2 South, Range 2 East of the Willamette Meridian, and more particularly described as follows:

Commencing at the intersection of the northeasterly boundary of the original sixty foot wide right of way of the Southern Pacific Railroad with a line 30 feet southeasterly of (when measured at right angles to) the center line of Lawfield Road (CR 1317), said point being South 69° 30' West 1,297.33 feet and South 21° 35' 16" East 30.00 feet from the southeast corner of the M. V. Harrison twelve acre tract as described in a deed recorded in Book 98, page 431, Clackamas County Deed Records; thence North 69° 30' East parallel to the center line of said road 20.00 feet to the true point of beginning; thence North 69° 30' East 604.78 feet; thence South 21° 35' 16" East parallel to said railroad 822.20 feet to the southerly line of the tract owned by C. F. Clarke and Sarah Clarke, described in Book 7, page 436, Deed Records; thence South 69° 24' 57" West along the south line of said Clarke tract, 574.76 feet to a point 80 feet northeasterly of (when measured at right angles to) the center line of said railroad; thence North 29° 30' 40" West 217.60 feet to a point 50 feet northeasterly of (when measured at right angles to) said railroad center line; thence North 21° 35' 16" West parallel to said railroad 608.08 feet to the true point of beginning.

END OF ATTACHMENT A

ATTACHMENT B
MAP OF PARCEL A and PARCEL B

FIGURE 1-1. SITE LAYOUT AND WELL LOCATIONS.



(Note: Based on Figure Previously Prepared by Parametrix.)

EASEMENT & EQUITABLE SERVITUDES PAGE 11 OF 13
OREGON DEPARTMENT OF TRANSPORTATION

1072159-V5

ATTACHMENT C
Legal Description of Parcel B

PARCEL I:

Part of the William T. Matlock Donation Land Claim No. 37, in Section 9, Township 2 South, Range 2 East, of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at a point on the Southerly line of the William T. Matlock Donation Land Claim No. 37, in Section 9, Township 2 South, Range 2 East, of the Willamette Meridian, which is North 68° East, 50.165 chains from the Southwest corner of said claim; thence North 68° East along claim line 165.12 feet to the Southeast corner of land conveyed to Elvrage G. McIntosh and Dorothy M. McIntosh, his wife, by deed recorded November 8, 1945, in Book 355, Page 46, Clackamas County Records, and true beginning point of the land herein described; thence continue North 68° East along claim line 321.75 feet, more or less, to the Southwest corner of land conveyed to Earl A. Hemphill and Nancy Jane Hemphill, his wife, by deed recorded May 5, 1945, in Book 343, Page 495, said Records; thence North 22° West along the West line of said Hemphill land 1,319.22 feet to the Northwest corner thereof; thence South 68° 05' West, 321.75 feet, more or less, to the Northeast corner of said McIntosh land; thence South 22° East along the East line thereof 1,319.69 feet to the true point of beginning.

EXCEPTING THEREFROM that part thereof within the public road.

PARCEL II:

Part of the William T. Matlock Donation Land Claim No. 37, in Section 9, Township 2 South, Range 2 East, of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at an iron pipe which is North 68° 00' East, 50.165 chains and North 22° West, 151.9 feet from the Southwest corner of said Donation Land Claim, said point of beginning also being at the Southwest corner of that certain tract of land described in Deed to Wayne C. Hall, Sr. and Wayne C. Hall, Jr., recorded March 4, 1960, in Book 568, Page 186, Deed Records; thence North 22° West, 1,168.1 feet to an iron pipe; thence North 68° East, 165.12 feet to a point; thence South 22° East, 1,168.1 feet to an iron pipe; thence South 68° West, 165.12 feet to the place of beginning.

PARCEL III:

A part of the William T. Matlock Donation Land Claim No. 37, Township 2 South, Range 2 East, of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at a point in the Southerly boundary of the said Matlock Donation Land Claim No. 37, a distance of 40.41 chains North 68° East from the Southwesterly corner of said claim; running thence North 68°

(Continued)

East tracing claim boundary 643.83 feet; thence North 22° West, 1,320 feet to an iron rod; thence South 68° West, 643.85 feet; thence South 22° East, 1,320 feet to the place of beginning, being the Westerly one-half of a certain tract of land conveyed to Mary Celia Langerberg by deed recorded in Book 100, Page 403, Deed Records of Clackamas County.

EXCEPTING THEREFROM that portion described in deed to Southern Pacific Company recorded September 2, 1964, in Book 645,- Page 683, Deed Records; FURTHER EXCEPTING THEREFROM that portion described in Findings of Fact, Conclusions of Law and Judgment filed October 15, 1964, under Suit No. 60187 in the State Circuit Court for the County of Clackamas in favor of Southern Pacific Company and recorded October 20, 1964, in Book 648 Page 156, Deed Records; FURTHER EXCEPTING THEREFROM any additional portions lying within the Southern Pacific Company's railroad right-of-way.

END OF ATTACHMENT C

Northwest Pipe and Casing Consent Decree

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97 JUL 16 PM 12:49

97 JUL 18 PM 3:15

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF OREGON

UNITED STATES OF AMERICA, Plaintiff v. OREGON DEPARTMENT OF TRANSPORTATION, Defendant.	CASE NO. 97-682RE

ORDER

Upon consideration of the United States' Motion For Approval and Entry of Proposed Consent Decree and Memorandum of Law In Support Thereof, and the United States' unopposed request for two corrections of inadvertent errors in the Decree, it is hereby ORDERED that:

The Consent Decree lodged in this Court on or about April 29, 1997, is hereby APPROVED AND ENTERED with the following corrections:

1. On page 7, line 17, after "response costs," the words "or natural resource damages" are added.

2. On page 15, line 22, after "and this" the word "Court" is added.

SO ORDERED THIS 18 DAY OF July, 1997.

90-11-3-1555

United States District Judge

DEPARTMENT OF JUSTICE
JUL 29 1997

CERTIFICATE OF SERVICE

This is to certify that on the 14th day of July 1997, I caused to be deposited in the United States Mail, first class and postage prepaid, a copy of the United States' Motion For Approval and Entry of Consent Decree and Memorandum of Law In Support Thereof and certificate of service addressed to:

Larry Edelman, Esq.
Oregon Department of Justice
1515 S.W. Fifth Avenue
Portland, OR 97201

Alan S. Tenenbaum

Alan S. Tenenbaum
U.S. Department of Justice
Environment and Natural Resources Div.
Environmental Enforcement Section
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 2004
(202) 514-5409

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF OREGON

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CLERK, U.S. DISTRICT COURT
DISTRICT OF OREGON
PORTLAND, OREGON

UNITED STATES OF AMERICA, Plaintiff v. OREGON DEPARTMENT OF TRANSPORTATION, Defendant.	)	CASE NO. BCV 97-682-RE

FILED

CONSENT DECREE

WHEREAS, the United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), filed a complaint in this matter against defendant Oregon Department of Transportation ("ODOT") pursuant to Section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9607;

WHEREAS, the United States in its complaint seeks, inter alia: reimbursement of costs incurred by EPA and the Department of Justice for response actions at the Northwest Pipe and Casing Co. Superfund Site ("Site"), together with accrued interest; and a declaration of the defendant's liability for future response costs to be incurred by the United States for the Site;

WHEREAS, the Site has been placed on the National Priorities List ("NPL") pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, by publication in the Federal Register on October 14, 1992, 57 Fed. Reg. 47,180 (Oct. 14, 1992);

WHEREAS, the complaint alleges that defendant ODOT is a potentially responsible party pursuant to Section 107 of CERCLA, 42 U.S.C. § 9607, as the owner and operator of real property that is part of the Site;

WHEREAS, ODOT purchased its portion of the Site from Northwest Pipe & Casing Co. ("NWP"), which provided ODOT with an indemnification for environmental liability;

WHEREAS, NWP filed for bankruptcy relief and is entering into a separate Consent Decree with the United States relating to its liability for the Site;

WHEREAS, The Parties recognize, and this Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and implementation of this Consent Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public interest;

NOW, THEREFORE, with the consent of the Parties to this Decree, it is hereby Ordered, Adjudged, and Decreed:

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. §§ 9604, 9607, and 9613(b). This Court also has personal jurisdiction over ODOT. ODOT shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree.

2. This Consent Decree applies to and is binding upon the United States and ODOT and its successors and assigns.

3. Definitions. Unless otherwise expressly provided herein, terms used in this Consent Decree which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

A. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, et seq.

B. "Consent Decree" shall mean this Decree and all appendices attached hereto. In the event of conflict between this Decree and any appendix, this Decree shall control.

C. "Day" shall mean a calendar day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

D. "DEQ" shall mean the Oregon Department of Environmental Quality and any successor departments, agencies, or instrumentalities of the State.

E. "EPA" shall mean the United States Environmental Protection Agency and any successor departments, agencies, or instrumentalities of the United States.

F. "ODOT" shall mean the Oregon Department of Transportation and any successor departments, agencies, or instrumentalities of the State.

G. "Paragraph" shall mean a portion of this Consent Decree identified by an arabic numeral or an upper case letter.

H. "Parties" shall mean the United States and the Oregon Department of Transportation.

I. "RCRA" shall mean the Resource Conservation and Recovery Act, as amended, 42 U.S.C. §§ 6901, et seq.

J. "Site" shall mean the site designated by EPA as the Northwest Pipe and Casing Superfund Site, encompassing approximately 53 acres, located in Clackamas County, Oregon and depicted generally on the map attached as Appendix A, which is incorporated herein by reference.

K. "United States" shall mean the United States of America, including any agency, department, or instrumentality thereof.

L. "Waste Material(s)" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14) or any "pollutant or contaminant" under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (2) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27) or any "hazardous waste" under Section 1004(5) of RCRA, 42 U.S.C. § 6903(5) or any "sludge" under Section 1004(26A) of RCRA, 42 U.S.C. § 6903(26A); (3) any substance regulated by the Toxic Substances Control Act, 15 U.S.C. §§ 2601 et seq.; (4) any "hazardous material" under

Section 5102(2) of the Hazardous Materials Transportation Act, as amended, 49 U.S.C. § 5102(2); and (5) any hazardous material, substance, or waste, or any solid waste, or contaminant, or pollutant, or any substance regulated under Or. Rev. Stat. tit. 36, chs. 453, 459, 465, 466, 468A, and 468B, or Or. Ad. Rules ch. 340.

Work to be Performed and
Coordination of Activities with EPA

4. ODOT will complete investigation and cleanup of the underground storage tanks on its parcel at the Site pursuant to state law via an agreement with DEQ on a schedule to be completed contemporaneously with the EPA completion of RI/FS activities for the Site, subject to the availability of funds. EPA shall be notified on a quarterly basis as to the availability of funds. EPA shall have an opportunity to review the investigation and remediation data and results within thirty (30) days of their availability to ODOT.

5. ODOT will facilitate cleanup at its property. This will include, but is not limited to, assisting and coordinating with EPA so that the locations and outlets for drains within and/or under the buildings or structures are obtained and verified, granting EPA and its contractors access to ODOT's property at the Site, sharing data with EPA and coordinating studies conducted by ODOT with EPA, allowing groundwater investigation and monitoring wells (and treatment wells, if needed) to be placed on ODOT's property at EPA's discretion, and

not causing an increase, migration or spread, of the groundwater contamination to occur as a result of ODOT's activities.

6. In the event the ODOT project known as the Sunrise Corridor goes forward, then to the extent that EPA so requests, ODOT will integrate the project with the Site remedy to the maximum extent feasible. ODOT will not undertake any action inconsistent with the Consent Decree between the United States and NWP or the Site remedy. DEQ will hold part of the Site as trustee pursuant to Consent Decrees among DEQ, EPA, NWP, and Wayne C. Hall, Jr. ODOT will not take any action to acquire, condemn, or take any interest in any part of the Site without the written consent of both DEQ and EPA during the time DEQ is holding such property as trustee and in accordance with the Consent Decree.

Payment of Response Costs

7. Within ten (10) days of the Effective Date of this Consent Decree, ODOT agrees to pay the United States fifty thousand dollars ($50,000). Payment shall be made to the EPA Hazardous Substance Superfund by FedWire Electric Funds Transfer to the U.S. Department of Justice account in accordance with current electronic funds transfer procedures, referencing U.S.A.O. file number 9501332, EPA Region 10 and Site/Spill ID #10G8, and DOJ case number 90-11-3-1557. ODOT shall provide written notice to the United States when payments have been made.

8. Monies Received By EPA. EPA will deposit all amounts received pursuant to this Consent Decree into the NWP

Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance the response action at or in connection with the Site. Monies in this account will be used exclusively to implement response action at the Site. Any monies remaining in this account may be transferred by EPA to the EPA Hazardous Substance Superfund general account as reimbursement for prior response costs incurred with respect to the Site.

Covenants Not To Sue

9. In consideration of the payment that will be made and the work that will be performed by ODOT under the terms of this Consent Decree, and except as specifically provided in Paragraphs 10-12 of this Consent Decree, the United States covenants not to commence, pursue, or intervene in a civil judicial or administrative action against ODOT, for any and all civil liability for injunctive relief or reimbursement or recovery of past, present, and future response OR NATURAL RESOURCE DAMAGES costs pursuant to Sections 104, 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9604, 9606 and 9607, Section 7003 of RCRA, 42 U.S.C. § 6973, Or. Rev. Stat. § 465.255, 465.257, 465.325(6)(a), or any common law claim for nuisance, trespass, or indemnity, with respect to the Site or Waste Material migrating from the Site. The covenant not to sue contained in this Paragraph shall take effect after the receipt by EPA of the payment required by Paragraph 7 of this Consent Decree. The covenant not to sue contained in this Paragraph is conditioned upon the full performance by ODOT of its obligations

under this Consent Decree. The covenant not to sue contained in this Paragraph extends only to ODOT.

10. The covenant not to sue set forth above does not pertain to any matters other than those expressly specified in Paragraph 9 of this Consent Decree. The United States also reserves, and this Consent Decree is without prejudice to, all rights against ODOT with respect to the following:

(1) claims based on a failure by ODOT to meet a requirement of this Consent Decree;

(2) liability for the release or threat of release of any Waste Material disposed by or transported to the Site by ODOT after the lodging of this Consent Decree; or

(3) liability for the release or threat of release of any Waste Material resulting from the introduction of any Waste Material at the Site after the lodging of this Consent Decree where ODOT has liability under an applicable statute or regulation.

11. Nothing in this Consent Decree shall be deemed to limit any authority of the United States (a) to take all appropriate action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, or (b) to direct or order such action, or seek an order from a court, to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of

Waste Material on, at, or from the Site, subject to the covenants not to sue contained in Paragraph 9 of this Consent Decree.

12. Access. Notwithstanding any provision of this Consent Decree, the United States retains all access authorities and rights and information gathering authorities and rights with respect to the Site, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statute or regulations. ODOT agrees to cooperate with the implementation of response action, to comply with any institutional controls imposed pursuant to the Record of Decision for the Site, and not to interfere with response actions at the Site. ODOT shall provide the United States, DEQ, and their representatives, including EPA and its contractors, access at all reasonable times to the portion of the Site that it owns or operates for the purposes of:

a. Implementing or monitoring any response action at the Site;

b. Verifying any data or information submitted to the United States or the State;

c. Conducting investigations relating to contamination at or near the Site;

d. Obtaining samples; and

e. Assessing the need for, planning, or implementing additional response actions at or near the Site.

13. Except as specifically provided in Paragraph 14, ODOT hereby covenants not to sue and agrees not to assert any

claims or causes of action against the United States with respect to the Site or Waste Material migrating from the Site, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 107, 111, 112, 113, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, 9613, or any other provision of law;

b. any claims against the United States, including any department, agency or instrumentality of the United States under CERCLA Sections 107 or 113, 42 U.S.C. §§ 9607 or 9613, or Or. Rev. Stat. §§ 465.200 to 465.510, 466.005 to 466.845 related to the Site or Waste Material migrating from the Site;

c. any claims arising out of response activities at the Site or with respect to the migration of Waste Material from the Site, including claims based on EPA's selection of response actions, oversight of response activities or approval of plans for such activities; or

14. A. ODOT reserves, and this Consent Decree is without prejudice to, all rights against the United States with respect to the following:

(1) claims based on a failure by the United States to meet a requirement of this Consent Decree; and

(2) defenses to claims or actions brought by the United States against ODOT which are not proscribed by Paragraph 10 of this Consent Decree.

B. ODOT's covenant not to sue and agreement in Paragraph 13 shall not apply in the event that the United States brings a cause of action against ODOT pursuant to Paragraph 10(2) or 10(3) of this Consent Decree, but only to the extent arising from the same cause of action asserted by the United States pursuant to Paragraphs 10(2) or 10(3). ODOT further reserves, and this Consent Decree is without prejudice to, claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, for money damages for injury or loss or property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States while acting within the scope of his office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, any such claim shall not include a claim for any damages caused, in whole or in part, by the act or omission of any person, including any contractor, who is not a federal employee as that term is defined in 28 U.S.C. § 2671; nor shall any such claim include a claim based on EPA's selection of response actions, or the oversight or approval of plans or activities at the Site. The foregoing applies only to claims which are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA.

15. Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

16. ODOT waives any claim under CERCLA, RCRA, Or. Rev. Stat., common law, or contract against NWP, Wayne C. Hall, Jr., or Northwest Development Company, with respect to the presence of Waste Material on or under or migrating from the Site. The waiver pursuant to this Paragraph is conditioned upon and shall not become effective until ODOT receives a reciprocal, identical written waiver by such party. ODOT expressly reserves any other claims or rights of action against NWP, Wayne C. Hall, Jr., or Northwest Development Company.

17. Nothing in this Consent Decree shall be construed to relieve ODOT of the duty to exercise due care with respect to any Waste Material on its property, or the duty to comply with all applicable laws and regulations. ODOT agrees not to interfere with the implementation of any response actions at the Site.

18. The Parties agree, and by entering this Consent Decree this Court finds, that ODOT is entitled, as of the Effective Date of this Consent Decree, to protection from any and all contribution actions or claims as provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2), and Or. Rev. Stat. § 465.325(6)(a) and (b) for matters addressed in this Consent Decree. For purposes of this Paragraph, matters addressed shall

include all liability of ODOT for all past, present, and future response costs incurred by EPA, DEQ, or any person with respect to the presence of Waste Materials on or under or migrating from the Site, except for liability for the release or threat of release of any Waste Material resulting from the introduction of any Waste Material at the Site after the lodging of this Consent Decree where ODOT has liability under an applicable statute or regulation.

19. ODOT agrees that with respect to any suit or claim for contribution brought against it for matters related to this Consent Decree it will notify, in writing, the United States within ten (10) Days of service of the complaint on it. In addition, ODOT shall notify the United States within ten (10) Days of service or receipt of any Motion for Summary Judgment and within ten (10) Days of receipt of any order from a court setting a case for trial.

20. Nothing in this Consent Decree shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Consent Decree, except as provided in this Consent Decree. Each of the Parties reserves any and all rights (including, but not limited to, any right to contribution) defenses, claims, demands, and causes of action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto, except as provided in this Consent Decree.

21. Notices. Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be sent by one Party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other Parties in writing. All notices and submissions shall be considered effective upon receipt, unless otherwise provided.

As to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611, Ben Franklin Station
Washington, DC 20044
Re: DJ # 90-11-3-1557

Attorney for Northwest Pipe & Casing Superfund Site
Office of Regional Counsel, ORC-158
United States Environmental Protection Agency, Region 10
1200 Sixth Ave.
Seattle, WA 98101

Remedial Project Manager
Northwest Pipe & Casing Superfund Site
Office of Environmental Cleanup
United States Environmental Protection Agency, Region 10
1200 Sixth Ave.
Seattle, WA 98101

As To ODOT:

Larry Edelman
Assistant Attorney General
Natural Resources Section
Oregon Department of Justice
1515 S.W. 5th Ave., Suite 410
Portland, OR 97201

22. Disclaimers. ODOT, by entering into this Consent Decree, does not admit the allegations, facts, or legal

conclusions in EPA's Complaint, and does not acknowledge that the release or threatened release of hazardous substances at or from the Site constitutes an imminent or substantial endangerment to the public health or welfare or the environment. ODOT does not admit liability or responsibility for the contamination at or under or migrating from the Site. ODOT and EPA do agree to comply with all of their obligations, responsibilities, and agreements under this Consent Decree.

23. Effective Date. The effective date of this Consent Decree shall be the date upon which this Consent Decree is entered by this Court.

24. Retention of Jurisdiction. This Court retains jurisdiction over both the subject matter of this Consent Decree and ODOT for the duration of the performance of the terms and provisions of this Consent Decree for the purpose of enabling any of the Parties to apply to this Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction of this Consent Decree, or to effectuate or enforce compliance with its terms.

25. Modification. No material modifications shall be made to this Consent Decree without the written approval of the Parties and this court. Modifications to this Consent Decree that do not materially alter the Consent Decree may be made by written agreement between the United States and ODOT.

26. Survival of Terms. The terms set forth in this Consent Decree shall survive changes in existing law.

27. Lodging and Public Comment. This Consent Decree shall be lodged with this Court for a period of not less than thirty (30) Days for public notice and comment. The United States reserves the right to withdraw or withhold their consent if the public comments regarding the Consent Decree disclose facts or considerations which indicate that the Consent Decree is inappropriate, improper, or inadequate. ODOT consents to the entry of this Consent Decree without further notice.

28. If for any reason this Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the sole discretion of any Party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

29. Each undersigned representative of ODOT and the Assistant Attorney General for Environment and Natural Resources of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such Party to this document.

SO ORDERED THIS 30th DAY OF April, 1997.

United States District Judge

THE UNDERSIGNED PARTIES enter into this Consent Decree in United States v. ODOT (D. Or.)

FOR THE UNITED STATES OF AMERICA

Date: 4/17/97

LOIS J. SCHIFFER
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

Date: 4/24/97

ALAN S. TENENBAUM
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

THE UNDERSIGNED PARTIES enter into this Consent Decree in United States v. ODOT (D. Or.)

CHARLES C. CLARKE
Regional Administrator, Region 10
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

MARY S. QUEITZSCH
Assistant Regional Counsel
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue, SO-155
Seattle, Washington 98101

THE UNDERSIGNED PARTIES enter into this Consent Decree in United States v. ODOT (D. Or.)

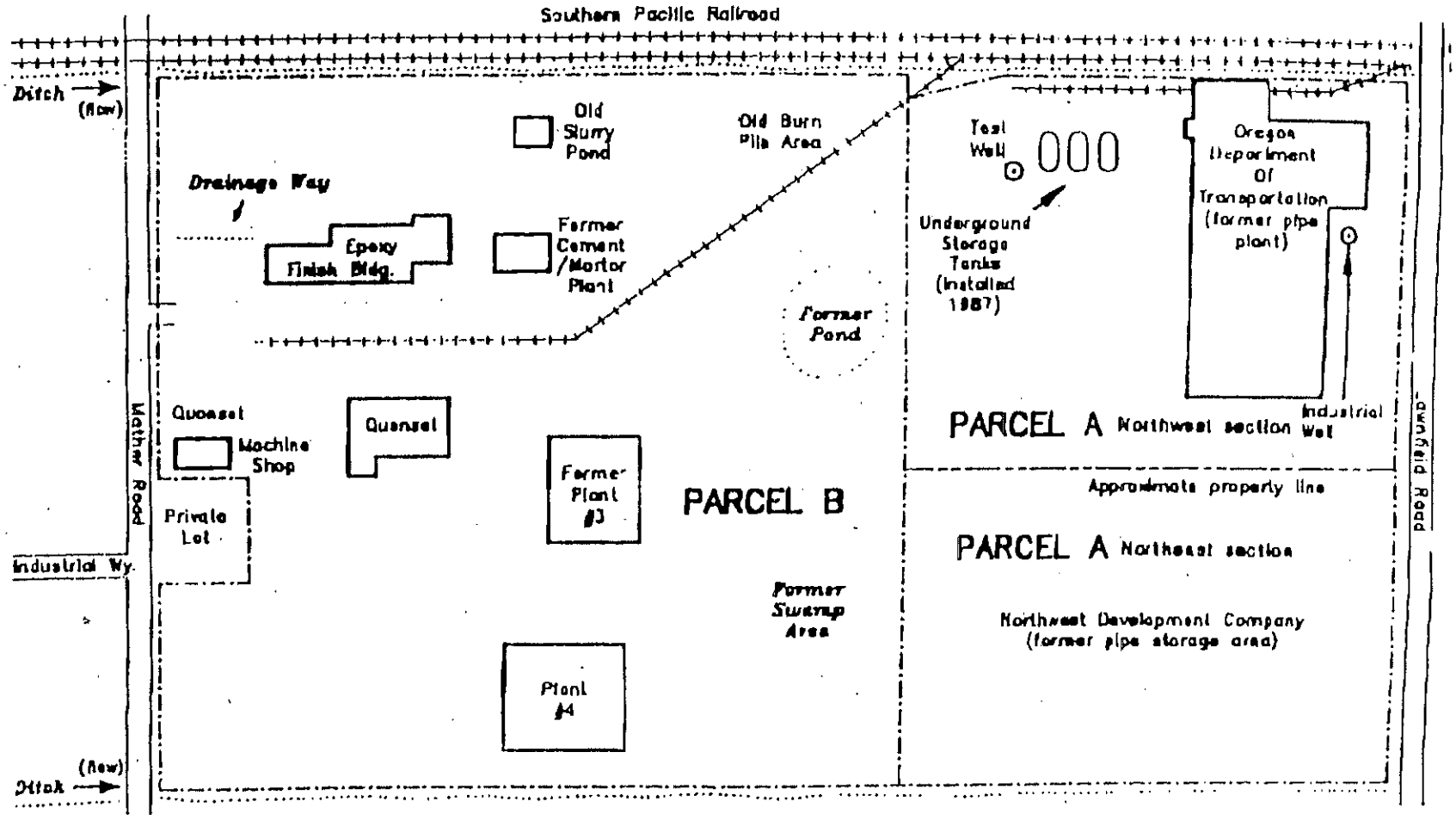
FOR OREGON DEPARTMENT OF TRANSPORTATION

Date: 4/23/97

LARRY EDELMAN
Assistant Attorney General
Natural Resources Section
Oregon Department of Justice
1515 S.W. 5th Ave.
Suite 410
Portland, OR 97201

Date: 4/21/97

GRACE CRUNICAN
Director
Oregon Department of Transportation
355 Capitol St. NE
Salem, OR 97310



LEGEND

—·—·— Parcel boundary (approximate)

0 150 300 450 600

approximate scale in feet

N

ecology & environment, inc.	
Job: F10-8906-02	Site: OR 0210
Drawn by: K.A.M.	Date: Jan. 17, 1990

FIGURE 2
SITE MAP
NORTHWEST PIPE AND CASING
Clackamas, OR

APPENDIX A

Table D-2: Evaluation of Noise Impact Mitigation Measures along Bluff

Table D-2: Evaluation of Noise Impact Mitigation Measures along Bluff

	Noise Mitigation Effective - ness	Federal $ eligible	State $ eligible	County $ eligible	Reasonable	Feasible	Cost Effectiveness	Limiting Factors – Construction and Environmental Feasibility	Summary
Typical Noise Mitigation Measures - Construct Noise Walls									
Construct Wall at north edge of new Sunrise Expressway (35 to 60 feet high) **(1.)**	Poor	N	Y (up to $35k)		N	N	$20M -$50M ($400K-$1M per residence)	• Has poor effect on noise mitigation due to distance and topography relative to houses on bluff. • Distance between wall and receptors too far. • Exceeds ODOT policy for cost effectiveness on noise mitigation measures • Sunlight impacts to wildlife corridor (size of wall [35' – 60'] would shade adjacent wildlife passage area).	This option has very little effect on the decibel level in the first row of houses, except when very tall. The wall along the highway would need to be at least 35' high to begin to have an effect on the noise on the bluff. More likely, the wall would need to be between 40-60 feet high to reduce noise impacts by meaningful amounts as required by ODOT design guidance. This would be very expensive. Additionally, a wall would result in a shadow area north of the wall, degrading the wildlife corridor. The distance between the wall and the receptors is too great to have much of an impact for the wall to reduce noise levels well.
Construct Wall (30-60 feet high) in center median (used in combination with north edge wall to reduce north wall height) **(2.)**	Poor	N	Y (up to $35k)		N	N	$20M -50M ($400K-$1M per residence)	• Has poor effect on noise mitigation due to distance and topography relative to houses on bluff. • Distance between wall and receptors too far. • Additional ROW needed to accommodate the wall • Exceeds ODOT policy for cost effectiveness on noise mitigation measures	This option has very little effect on the decibel level in the first row of houses. The wall in the median of the new Sunrise Expressway would need to be at least 30' high to begin to have an effect on the noise on the bluff. More likely, the wall would need to be between 35-60 feet to reduce noise impacts in an effective manner and would only be effective in combination with the wall at the north edge of the expressway because it would not mitigate sound from WB traffic. This would be very expensive. Would not mitigate sound from WB traffic. This option would widen the footprint of the proposed roadway.
Cover Sunrise Expressway (Partially enclose highway, with solid cover and opening to the South) **(3.)**	Good	N	Y (up to $35k)		N	Y	$50M - $100M ($1-2M per residence)	• Wider footprint by 5-20ft. • Exceeds ODOT policy for cost effectiveness on noise mitigation measures • Additional ROW needed to accommodate the wall	This option would result in a near tunnel-like segment of roadway by covering the entire width of the expressway (but open on south side). This cover would result in additional ROW needs to account for the need to provide protection for fixed objects in the clear zone. The cost of this would be very large relative to the overall cost of the project. This solution could have large visual impacts to motorists and residents.
Construct Concrete Wall at top edge of bluff (minimum 16 feet high) **(4.)**	Good	N	Y (up to $35k)		N	Y	$5M-$15M ($100-300K per residence)	• Very difficult to construct • Costly • Limits or eliminates views from backyards of homes. • Exceeds ODOT policy for cost effectiveness on noise mitigation measures • Could remove trees and vegetation in wildlife corridor • Easements needed to accommodate the wall	This option has the best effectiveness, although it cannot provide mitigation in all locations .This option is very disruptive (12' – 16' tall) and would be very difficult to construct. This would require permanent easements onto private property, and may require construction of a new access road. To avoid construction of an access road, the wall would have to be constructed with masonry blocks, with no large/heavy equipment, which could increase cost substantially. Also, if individual property owners resisted the easements, the mitigation quality of the wall would be very poor, as the wall needs to be continuous to achieve effectiveness.

Note: ODOT Noise Mitigation Policy on Allowed Maximum Costs per Household: $25,000 - $35,000. Financial eligibility based on funding requirements and use of money for noise mitigation

Table D-2: Evaluation of Noise Impact Mitigation Measures along Bluff

	Noise Mitigation Effective - ness	Federal $ eligible	State $ eligible	County $ eligible	Reasonable	Feasible	Cost Effectiveness	Limiting Factors – Construction and Environmental Feasibility	Summary
Construct Transparent Acrylic Wall at top edge of bluff (minimum 16 feet high) **(5.)**	Good	N	Y (up to $35k)		N	Y	$7M-$15M ($100-300K per residence)	• Very difficult to construct • Costly • Exceeds ODOT policy for cost effectiveness on noise mitigation measures • Could remove trees and vegetation in wildlife corridor • Easements needed to accommodate the wall	This option has the best effectiveness, although it cannot provide mitigation in all locations .This option is very disruptive (16' tall) and would be very difficult to construct. This would require permanent easements onto private property, and may require construction of a new access road. Clear acrylic panels will increase cost 30-50% from standard post and panel construction. Also, if individual property owners resisted the easements, the mitigation quality of the wall would be very poor, as the wall needs to be continuous to achieve effectiveness.
Adjust Location/Operating Characteristics of Sunrise Expressway									
Move new Sunrise Expressway further away from bluff, close to existing OR 212/224 **(6.)**	Moderate	Y	Y		N	N	$50M-$100M ($1-2M per residence)	• Results in 30+ businesses being removed • Substandard design • Eliminates possibility of mid-point single interchange • Exceeds ODOT policy for cost effectiveness on noise mitigation measures • Doesn't meet purpose and need	Moving the Sunrise Expressway would have a moderate impact on the decibel level on the bluff. This option would preclude a single mid-point interchange due to the shorter distance at 122nd Ave between the future Sunrise and OR 212. Moving the Sunrise Expressway would also result in the loss of an estimated 31 businesses, 792 jobs, $29 M in annual payroll (2004), 30 industrial buildings, 36 mobile homes, 4 houses and approximately $41.6 M in assessed value. Some residences still negatively impacted (approximately 20%), so a sound barrier would likely be needed in addition to moving the alignment on the west end.
Move new Sunrise Expressway on top of existing OR 212/224 **(7.)**	Good	Y	Y		N	N	$50M-$100M ($1-2M per residence)	• Results in 30+ businesses being removed • Substandard design • Eliminates possibility of mid-point single interchange • Exceeds ODOT policy for cost effectiveness on noise mitigation measures • Doesn't meet purpose and need	Moving the Sunrise Expressway would have a moderate impact on the decibel level on the bluff. Some residences still negatively impacted (approximately 20%), so a sound barrier would likely be needed in addition to moving the alignment on the west end. Moving the Sunrise Expressway would also result in the loss of an estimated 32 businesses, 400+ jobs, $17M in annual payroll (2004), 30+ lots, 6 mobile homes, 1 house and approximately $11.8 M in assessed value. A "double-deck" Sunrise Expressway would preclude a single mid-point interchange, and would greatly increase cost.
Reduce Speed Limit on Sunrise Expressway **(8.)**	Poor	n/a	n/a		Y	N	$0	• To achieve full mitigation (20+ MPH) would no longer meet project purpose and need. • Speed would need to be dropped below residential speeds to fully mitigate noise	A reduction to approximately 42 MPH would be needed to meet the minimum noise reduction of 5 dBA to qualify as feasible. However, most properties are impacted with 10+ dBA increase. A reduction in speed to the low 20s (MPH) would be needed to achieve 10+ dBA reduction. Reduced speed facility would no longer serve as regional expressway, and not adequately address project purpose and need.

Note: ODOT Noise Mitigation Policy on Allowed Maximum Costs per Household: $25,000 - $35,000. Financial eligibility based on funding requirements and use of money for noise mitigation

Table D-2: Evaluation of Noise Impact Mitigation Measures along Bluff

	Noise Mitigation Effective - ness	Federal $ eligible	State $ eligible	County $ eligible	Reasonable	Feasible	Cost Effectiveness	Limiting Factors – Construction and Environmental Feasibility	Summary
Reduce Traffic Volumes/Number of Travel Lanes (from 6+2 to 4+2 lanes) **(9.)**	Poor	Y	Y		Y	N	Unknown	• Reduction of traffic volumes by ½ only gains noise reduction of 3dBA. • Assumption of reduced traffic volumes by ½ inconsistent with project traffic forecast, and project purpose and need.	A reduction in forecast traffic volumes by ½ would not meet minimum noise reduction of 5 dBA to qualify as feasible. Most properties impacted in mid-point area are subject to 10+ dBA increase. Metro traffic forecast model indicates higher traffic volumes would need to be accommodated to adequately meet project purpose and need.
Lower Grade of Sunrise Expressway through bluff area **(10.)**	Poor	Y	Y		N	N	Unknown	• Results in unacceptable grades on east end. • Results in many structures for local roads • Precludes mid-point interchange • Adds cost by unbalancing cut and fill quantities	This option does not work due to the grade increase near Rock Creek Junction already maxing out, so any additional grade loss to the West would increase that, making it unattractive to trucks. This option makes a mid-point interchange very difficult and results in new structures.
Other Noise Mitigation Measures									
Apply Quiet Pavement **(11.)**	Poor	N	?		?	N	~ 40% higher cost vs standard asphalt paving. Shorter pavement lifespan/higher life cycle costs.	• Limited effectiveness – relatively small decreases in noise • Requires higher maintenance attention (application/sweeping); more frequent paving schedule; higher lifecycle costs.	Application of quiet pavement would have initial, but temporary, noise reduction of 3 – 5 dBA. Performance benefits come at a cost in durability, greatly reducing pavement life compared to traditional asphalt. Noise reduction degrades over relatively short periods of time. Lesser durability of quiet pavement, vulnerable to damage from studded tires, has much shorter life span (4 – 8 yrs) than traditional asphalt paving (12 – 16 yrs), resulting in much higher lifecycle costs.
Purchase Homes along the bluff **(12.)**	Good	N	N		N	?	$15M -30M ($300-600K per)	• Not currently allowed for Noise-related issues (noise issues are non-compensable, no exceptions) • Exceeds ODOT policy for cost effectiveness on noise mitigation measures • Only available with County $$.	This is not currently an option as noise-related impacts are non-compensable with state money.
Offer Financial Compensation to affected property owners • Pay difference between appraised value and re-sale value of homes • Architectural improvements (e.g., triple-pane windows, house wall insulation) **(13.)**	Poor/None	N	N		n/a	N	Unknown	• Only available with County funding • Does not count as mitigation	This option could be similar to the offer OHSU offered residents under the Tram, involving getting an appraisal, selling the house and paying the homeowner the difference between the sales price, and what the price would be had the Tram not gone in. This option could also entail "buying" the right to pollute the area with noise, which would be in the deed. Could also include providing "architectural" improvements, such as providing triple-pane windows on impacted homes; or installing clear acrylic walls around backyard decks/patios.

Note: ODOT Noise Mitigation Policy on Allowed Maximum Costs per Household: $25,000 - $35,000. Financial eligibility based on funding requirements and use of money for noise mitigation

Table D-2: Evaluation of Noise Impact Mitigation Measures along Bluff

	Noise Mitigation Effective - ness	Federal $ eligible	State $ eligible	County $ eligible	Reasonable	Feasible	Cost Effectiveness	Limiting Factors – Construction and Environmental Feasibility	Summary
Combination of Noise Mitigation Measures									
Quiet Pavement, Reduced Speed, and Reduced Traffic Volumes **(14.)**	Poor	N	N		Y	N	~ 40% higher cost vs standard asphalt paving. Shorter pavement lifespan/higher life cycle costs.	• Requires higher maintenance attention (application/sweeping); more frequent paving schedule; higher lifecycle costs. • Reduced noise levels not sustainable over time due to limited durability of quiet pavement. • Reduction of traffic volumes by ½ not supported by traffic forecasts.	A reduction to approximately 42 MPH would be needed to meet the minimum noise reduction of 5 dBA to qualify as feasible. An additional, initial, noise reduction of 3 to 5 dBA would be possible with application of quiet pavement, however, that noise reduction is not sustainable beyond 4 – 8 years without need to re-pave. Additional reduction of 3 dBA possible if traffic volumes reduced by ½, however, traffic volumes forecast, based on planned land-uses and employment in project area, are inconsistent with such assumptions. Higher lifecycle costs.

Note: ODOT Noise Mitigation Policy on Allowed Maximum Costs per Household: $25,000 - $35,000. Financial eligibility based on funding requirements and use of money for noise mitigation

SE 82nd Avenue Floodplain Impacts Memo

DAVID EVANS
AND ASSOCIATES INC

November 16, 2010

Thomas Picco
ODOT Region 1
123 NW Flanders
Portland, OR 97209

SUBJECT: FLOOD PLAIN IMPACTS AT SE 82ND AVENUE

Dear Mr. Picco:

An engineering investigation was conducted to see if the required fill would cause a significant impact to the floodplain. For FHWA, a rise of more than one foot above the base flood elevation is considered significant. The conclusion is that there will be no significant impact.

The finding is based on several factors. The amount of fill being placed (2.1 acre-feet) for the widening of SE 82nd Avenue will be kept to a minimum with a series of retaining walls along the roadway (Figure PA-25A, attached). ODOT has concluded that the culverts in the area will require no lengthening, so hydraulically there is no impact to the culverts.

While there is some fill being placed in the floodplain, it will not be placed in or otherwise impact the floodway. This fill will be mitigated in the same area by a similar amount of excavation within the same floodplain area, which will be consistent with the Clackamas County standard of no net rise in the base flood elevation (100-year flood). The approach for addressing potential impacts to the floodplain was discussed with the Clackamas County Floodplain Manager, Steve Hanschka. He concurred with the assessment of conditions and the proposal for mitigating impacts to the floodplain (pers. comm. between 8/30/2010 and 9/7/2010).

Sincerely,

DAVID EVANS AND ASSOCIATES, INC.

David Bissell, P.E.

Copies: file
Initials: DWBI/dgaf

2100 Southwest River Parkway Portland Oregon 97201 Telephone: 503.223.6663 Facsimile: 503.223.2701

Trillium Creek Floodplain Impacts and Culvert Analysis Memo

DAVID EVANS
AND ASSOCIATES INC.

November 16, 2010

Thomas Picco
ODOT Region 1
123 NW Flanders
Portland, OR 97209

SUBJECT: FLOOD PLAIN IMPACTS AND CULVERT ANALYSIS AT TRILLIUM CREEK

Dear Mr. Picco:

As requested, a culvert analysis for the Trillium Creek culvert crossing has been conducted. The analysis used CulvertMaster for the analysis, and all input data was taken from the Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) or provided by ODOT. The purpose of the analysis was to determine the appropriate size of culvert needed to ensure that no rise in the floodplain elevation would occur upstream from the OR224 culvert crossing after the Sunrise Project is built.

Two flows were analyzed, the 500-year (165 cubic feet/second) and the 100-year (147 cubic feet/second). The headwater elevations for these flows are 182 feet and 180 feet for the 500-year and 100-year flows, respectively. The existing culvert is 100 feet long, 36 inches in diameter, and constructed from corrugated metal pipe. The analyzed culvert will be segmented or discontinuous for up to 300 feet, with sections daylighted to provide light and ventilation. The culvert will be constructed of reinforced concrete pipe.

CulvertMaster shows that a 36-inch reinforced concrete pipe culvert would have a headwater elevation of 179.9 feet for the 100-year flow and 184.5 feet for the 500-year flow, thereby meeting a no-rise requirement for the 100-year flow, but not for the 500-yr flow. A 42-inch culvert has a headwater elevation of 175.5 feet for the 100-year, and 177 feet for the 500-year flow. Therefore, a no-rise requirement would be met using a 42-inch culvert.

Given that the culvert will be designed to be fish passable, per ODFW Fish Passage Criteria, as well as accommodate 'medium wildlife (e.g., smaller than deer) passage', a larger arch or three-sided box culvert is planned. Such fish and wildlife friendly culverts would be larger than a 42-inch culvert, so a no-rise requirement would also be met in that case.

The proposed culvert will change the hydraulics of the area, hydraulically causing the new construction area to be removed from the floodplain. Consequently, a remapping effort during final design and following construction will be required. Prior to FHWA's authorization of construction, a Conditional Letter of Map Revision (CLOMR) will be filed with FEMA. The CLOMR allows FEMA to comment on proposed projects that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source, and thus result in the modification of the existing regulatory floodway, the effective Base Flood Elevations (BFEs), or the Special Flood Hazard Area (SFHA). The letter does not revise an effective NFIP map; it indicates whether

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the project, if built as proposed, would be recognized by FEMA. **Building permits cannot be issued based on a CLOMR, because a CLOMR does not change the NFIP map.**

Once a project has been completed, the local jurisdiction (in this case, Clackamas County) must submit a Letter of Map Revision (LOMR) with analysis provided by ODOT and/or its contractors. The LOMR will result in a revision to the Flood Insurance Rate Map (FIRM) to reflect the project. The LOMR officially revises the FIRM or Flood Boundary and Floodway Map (FBFM), and sometimes the FIS report, and when appropriate, includes a description of the modifications.

The approach for addressing potential impacts to the floodplain was presented to the Clackamas County Floodplain Manager, Steve Hanschka. He concurred with the assessment of conditions and the proposal for mitigating impacts to the floodplain (email message, 9/8/2010).

Sincerely,

DAVID EVANS AND ASSOCIATES, INC.

David Bissell, P.E.

Copies: file
Initials: DWBI/dgaf